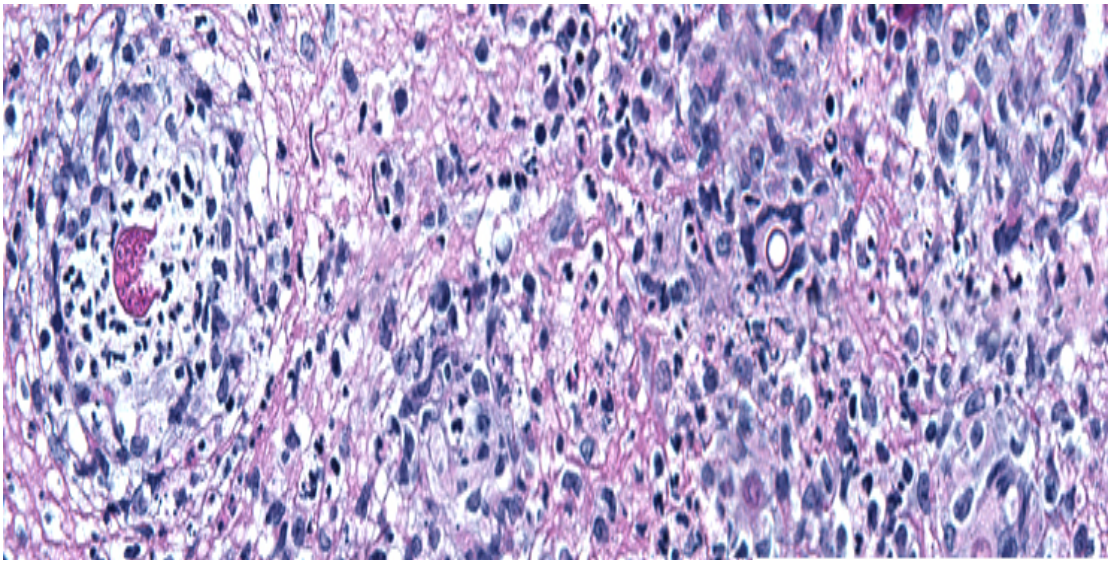
Stanford University Medical Center
Department of Pathology



Resident and Clinical Fellow Handbook 2012-2013

300 Pasteur Drive
Lane Bldg., Room L-235
Stanford, CA 93205-5324
Ph (650) 725-8383
Fx (650) 725-6902

TABLE OF CONTENTS

SECTION	PAGE #
Overview	4
Trainee Selection	4
Anatomic Pathology (AP) Training	7
Clinical Pathology (CP) Training	7
Combined Anatomic & Clinical Pathology (AP/CP) Training	8
Combined Anatomic & Neuropathology (AP/NP) Training	9
Goals of the Residency Program	10

GENERAL INFORMATION

Regular Work Hours & Availability	14
Call Guidelines	15
Anatomic Pathology	16
Clinical Pathology	17
MedHub Residency Management System	20
Conferences	21

ADMINISTRATIVE POLICIES & PROCEDURES

Vacation	26
Pathology Travel Policy	26
Reimbursements	27
Observing Hospital Holidays	27
Residency Schedule Changes	28
Residency Schedule Change – Routing Slip	28
Unassigned Rotations	29
Moonlighting	29
Supervision & Evaluation	29
Mentors	29
Evaluation by Faculty	29
Core Competencies	30
Mentor Meetings	31
Meetings with Program Director and Chair	31
Promotion & Dismissal	32
Evaluation of Training Program & Faculty	32
California Medical License	32
Resident In-Service Exam (RISE)	34
Providing Feedback	34
Medical Student Teaching	35
Resident Retreat	36
Grant Applications	36
Pathology Society Memberships	36
Responsibilities of Chief Resident(s)	37
Safety Policies and Procedures	44

ANATOMIC PATHOLOGY ROTATIONS FOR RESIDENTS

AP Quality Assurance	48
AP Ancillary Studies Rotation	54

Autopsy Pathology Learning Objectives 59
Autopsy at Stanford 61
AP Bone Marrow Hematopathology 72
Cytopathology 77
Dermatopathology 82
Forensic Pathology 91
AP Tissue Hematopathology 94
Neuropathology 99
Surgical Pathology Learning Objectives 108
Surgical Pathology at Stanford 112
Frozen Sections 128
Non-Heme I/O Case Rotation 130
Pediatric Solid Tumor Protocol 132
Anatomic Pathology at VAPAHCS 135

CLINICAL PATHOLOGY ROTATIONS FOR RESIDENTS

Blood Bank / Transfusion Medicine 144
Clinical Chemistry / Immunology 166
Chemistry / Special 169
Coagulation / RBC Special Studies 172
CP Hematology 178
Clinical Pathology at PAVA 186
Cytogenetics 190
Histocompatibility 197
Microbiology / Virology 199
Molecular Genetic Pathology 210
Pediatric Clinical Pathology 214

RESPONSIBILITIES FOR CLINICAL FELLOWS

General Policies 229
Cytopathology Fellowship 230
Dermatopathology Fellowship 241
Gyn/Breast Pathology Fellowship 244
Hematopathology Fellow Responsibilities 250
Molecular Genetics Pathology Fellowship 263
Neuropathology Fellowship 268
Surgical Pathology Fellowship 282
Transfusion Medicine Fellowship / Blood Bank 285
Post Sophomore Fellowship 289

CONTACT INFORMATION & FAQ

General Telephone Numbers 292
On-Call Pager Numbers 293
Addresses 294
Frequently Asked Questions 295

APPENDIX

Resident Handbook Agreement 300

TRAINING IN PATHOLOGY AT STANFORD

Overview

The Department of Pathology at Stanford University Medical Center seeks to train outstanding academically-oriented candidates for leadership positions in pathology.

We offer residency training in Anatomic Pathology (AP), Clinical Pathology (CP), and combined AP and CP (AP/CP). The overall goal of our program is to provide in-depth, flexible training in all aspects of pathology, leading to board certification in AP, CP or AP/CP.

We also offer accredited clinical fellowships in Blood Banking/Transfusion Medicine, Cytopathology, Dermatopathology, Gynecologic Pathology (Gyn/Breast), Hematopathology, Neuropathology, and Molecular Genetic Pathology and Surgical Pathology. Combined AP/Hematopathology and AP/Neuropathology are also offered, but must be discussed with the Associate Program Directors and appropriate fellowship directors prior to pursuing these training avenues.

Trainee Selection

All eligible applicants will be considered for training in the Pathology Department at Stanford. Applicants must have one of the following qualifications to be eligible for consideration:

- Graduates of medical schools in the United States and Canada accredited by the Liaison Committee on Medical Education (LCME)
- Graduates of colleges of osteopathic medicine in the United States accredited by the American Osteopathic Association (AOA)
- Graduates of medical schools outside the United States and Canada who have received a currently valid certificate from the Educational Commission for Foreign Medical Graduates or have a full and unrestricted license to practice medicine in a U.S. licensing jurisdiction.
- Graduates of medical schools outside the United States who have completed a Fifth Pathway program provided by an LCME-accredited medical school.

The Pathology Department selects trainees on the basis of their preparedness, ability, aptitude, academic credentials, communication skills, and fit.

All trainee applications are reviewed by the Selection Subcommittee of the Residency & Fellowship Committee (RFC), which selects those applicants to invite for interviews. Faculty, clinician educators and current residents and fellows interview selected candidates. All teaching faculty and trainees prepare written evaluations of each applicant they meet with.

Pathology Residency Positions (AP or CP or AP/CP combined training)
The Pathology Department participates in the National Resident Matching Program (NRMP). The final decision regarding the ranking of candidates is made by the Residency Program Director in consultation with the faculty.

Cytopathology Fellowship
Candidates who qualify based on the above criteria must also **be certified** in Pathology (AP only or combined AP/CP) or **have met the full training requirements** for certification by the American Board of Pathology (AP only). The final decision is made by the Fellowship Program Director in consultation with the faculty.

Dermatopathology Fellowship
Candidates who qualify based on the above criteria must also **be certified** or **have met the full training requirements** for certification by the American Board of Pathology (AP only or combined AP/CP) or Dermatology. The final decision is made by the Fellowship Program Director in consultation with the faculty.

Gyn/Breast Pathology Fellowship
Candidates who qualify based on the above criteria must also be certified in Anatomic Pathology or combined Anatomic/Clinical Pathology or **have met the full training requirements** for certification by the American Board of Pathology (AP or AP/CP). The final decision is made by the Fellowship Program Director in consultation with the faculty.

Hematopathology Fellowship
Candidates who qualify based on the above criteria must also **be certified** in Pathology (AP only, CP only or combined AP/CP) or **have met the full training requirements** for certification by the American Board of Pathology in AP, CP or AP/CP. The program may guarantee a position for Hematopathology Fellowship training at the time of entry into the residency program (with approval from the Director of the Hematopathology Fellowship). This training consists of 36 months of AP (the AP only program) followed by 12 months of hematology/hematopathology (the Hematopathology Fellowship). The 12 months of hematology/hematopathology training concentrates on clinical hematology and diagnostic hematopathology. The promise of a Hematopathology Fellowship position is contingent on maintaining a good standing in the AP training program. The three years of AP training may include a year of Surgical Pathology training, if desired by the candidate and approved by the faculty, but such a year is not guaranteed or required. Candidates who wish to be board certified in hematopathology must first become certified in AP before being eligible for certification in hematopathology. Time-wise this means that becoming board certified in AP and hematopathology will require 4 years - 3 years for AP and 1 year for hematopathology. The final decision is made by the Fellowship Program Director in consultation with the faculty.

Molecular Genetic Pathology Fellowship

Candidates who qualify based on the above criteria must also **be certified** in Pathology (AP only, CP only or combined AP/CP) or Medical Genetics (American Board of Medical Genetics) or **have met the full training requirements** for certification by the American Board of Pathology in AP, CP or AP/CP. The final decision is made by the Fellowship Program Director in consultation with the faculty.

Neuropathology Fellowship

Candidates who qualify based on the above criteria must also **be certified** in Pathology (AP only or combined AP/CP) or **have met the full training requirements** for certification by the American Board of Pathology. The final decision is made by the Fellowship Program Director in consultation with the faculty.

Combined Anatomic Pathology & Neuropathology training

The program can guarantee a position in the neuropathology fellowship program at the time they enter the residency program (assuming the trainee is in good standing). The combined AP/NP training consists of 24 months of AP (the first 24 - month structured portion of the AP only program) and 24 months of neuropathology.

Surgical Pathology Fellowship

Candidates who qualify based on the above criteria must also be certified in Anatomic Pathology or combined Anatomic/Clinical Pathology or **have met the full training requirements** for certification by the American Board of Pathology (AP or AP/CP). The final decision is made by the Fellowship Program Director in consultation with the faculty.

Transfusion Medicine/Blood Banking Fellowship

Candidates who qualify based on the above criteria must also be certified in Anatomic Pathology or combined Anatomic/Clinical Pathology or **have met the full training requirements** for certification by the American Board of Pathology (AP or AP/CP). The final decision is made by the Fellowship Program Director in consultation with the faculty.

Anatomic Pathology (AP) Training

Residents complete 24 months of structured training followed by 12 months of flexible training. The details of the current program of rotations are given below.

Structured Training in Anatomic Pathology (24 months)

- 10 months of **surgical pathology** experience and 1.5 months of **autopsy** experience at Stanford Hospital
- 4.5 months of combined **surgical pathology** and **autopsy** experience at the Veterans Affairs Palo Alto Health Care System (VAPAHCS)
- 8 months of **anatomic pathology specialty** training at Stanford Hospital to be distributed as follows: dermatopathology, forensic pathology, ancillary diagnostics, bone marrow hematopathology, tissue hematopathology, neuropathology (1 month each), one additional month of a "selective" rotation {choices being dermatopathology, neuropathology, cytopathology, neuropathology, I/O rotation or other subspecialty area (on approval of AP Program Director) }; and one month of an "elective" rotation (to be spent in any area on approval of a faculty mentor).

Flexible Training in Anatomic Pathology (12 months)

The third year of required training may be customized by the resident to meet her/his individual needs. Residents may apply for our Surgical Pathology Fellowship or do an alternative year of AP training designed in conjunction with the faculty in accord with the trainee's career plans. A wide variety of research opportunities also exists.

Clinical Pathology (CP) Training

Residents complete 24 months of structured training followed by 12 months of flexible training. The details of the current program of rotations are given below.

Structured Training in Clinical Pathology (24 months)

- 13 months of training in the four major established areas of laboratory medicine: **chemistry/immunology**, **hematology (including one month in coagulation/red blood cell special studies)**, **microbiology/virology**, and **transfusion medicine**. These are divided into introductory rotations of two months, followed by one-month return visits after all of the areas have been experienced, allowing the resident to integrate experience gained in various sections and function with a graduated level of responsibility.
- 2 months of training in laboratory **genetics** (biochemical genetics, molecular genetics and cytogenetics)
- 2 weeks of training in **pediatric laboratory medicine**
- 2 weeks of training in **histocompatibility**
- 2 months of training in **general laboratory medicine** at the Veterans Affairs Palo Alto Health Care System (VAPAHCS)

- 6 months of structured training in **pathology** and **laboratory medicine** or **research** to be determined by the resident, in consultation with Clinical Pathology faculty

Flexible Training in Clinical Pathology (12 months)
The third year of required training may be customized by the resident to meet his/her individual needs. A wide variety of patient care projects and/or research opportunities (clinical, translational or basic) exist.

Combined AP/CP Training

The combined program consists of 24 months of structured training in AP and 18 months of structured training in CP. This is followed by 6 months of flexible training which should be used to integrate aspects of AP and CP.

Structured Training in Anatomic Pathology (24 months)
Note: This is identical to the 24 structured months for AP only residents.

Structured Training in Clinical Pathology (18 months)
Note: This is identical to the 18 assigned structured months for CP only residents.

Flexible (Integrated) Training in Pathology (6 months)
The remainder of the fourth and final year of required training may be customized by the resident to meet her/his individual needs but she/he will be encouraged to synthesize and integrate ALL areas of diagnostic pathology during this period.

Combined AP/CP training at Stanford may be summarized as:

- Years 1 & 2: a solid grounding in *Anatomic Pathology*

- Year 3: an introduction to the core areas of *Clinical Pathology*

- Year 4: two periods of *integration*
  - Integration of Clinical Pathology
    The laboratory medicine rotations that complete the residents' 18 months of structured CP training are designed to allow the resident during which the resident to see familiar diagnostic and management problems in different ways. These include genetic and molecular approaches (during the two-month rotation in genetics), histocompatibility, the perspective of a community hospital (during the two-month rotation at the Veterans Affairs Palo Alto Health Care System) and the special viewpoint of the pediatric patient (during the rotation in pediatric laboratory medicine).

- Integration of all of Pathology
  The final six months of the four years of combined AP/CP training should be customized by residents to allow them to connect all areas of Pathology into one integrated knowledge base. We strongly recommend that this be solidified by doing an additional year of anatomic pathology (either a subspecialty fellowship or the Surgical Pathology fellowship).

Combined Anatomic Pathology & Neuropathology Training

The program guarantees a position in the neuropathology fellowship program at the time they enter the residency program (assuming the trainee is in good standing). The combined AP/NP training consists of 24 months of AP (the first 24 -month structured portion of the AP only program) and 24 months of neuropathology. The combined AP/NP training consists of 24 months of AP (similar to the AP only program) and 24 months of neuropathology. The current composition of the 48 months of required combined AP/NP training is as follows:

- Twenty four months of AP similarly scheduled as the AP only training.
- The first 12 months of NP training concentrates on general diagnostic surgical and autopsy neuropathology. The second 12 months offers the opportunity for the trainee to develop a research project and/or develop additional expertise in diagnostic NP, depending upon the ultimate career objectives of the trainee.
- Candidates who wish to be certified in NP must first become certified in AP which will require 2 years training for residents who ultimately seek certification in AP and NP. Time-wise this means that becoming certified in AP and NP will require 4 years - 2 years for AP and 2 years for NP.

GOALS OF THE RESIDENCY PROGRAM

Program Mission Statement

The Stanford University Pathology Residency Program's mission is to provide strong basic training in Anatomic and Clinical Pathology and its subspecialties, and, for those seeking careers as physician-scientists, outstanding opportunities for research training. The program's goal is to help our residents to develop professional attributes and medical knowledge and skills that allow them to practice pathology independently and competently, and to pursue a life-long commitment to continued learning and excellence. The program is designed to develop anatomic and clinical pathologists of the highest caliber who excel in community or academic practice.

Overall Goals

The overall goals of this residency program are the preparation of residents for:

1. the practice of pathology;
2. passing the American Board of Pathology examination;
3. fellowship training and/or training as physician-scientists, as pertinent;
4. life-long learning in pathology.

To that end, the program is designed to provide:

1. A setting that is conducive to self-study, didactics, and experiential learning, including opportunities for basic, translational, or clinical research in pathology.
2. Experience in a variety of skills necessary to obtain diagnostic and prognostic information from patient samples.
3. Guidance in developing the skills of critical and analytic thinking necessary for proper interpretation of patient or research data.
4. Instruction and experience in the interpretation of laboratory data as part of patient care decision-making and patient care consultation.
5. Experience in the management and direction of a pathology laboratory (including quality assurance, safety, regulations, and the use of hospital and laboratory information systems).
6. Guidance in perfecting the skills to communicate information about disease and its origins, classification, diagnosis and monitoring, both orally and in writing.

Competency-based goals

The residency program follows the mandate of the Accreditation Council for Graduate Medical Education (ACGME) Outcome Project for competency-based education and training. Residents will be evaluated during their training in the six general competencies as defined by the ACGME. In the context of training in pathology, the six general competencies can be described as follows:

1. **Patient Care**: The resident will acquire competency in the technical generation and interpretation of laboratory data and in the formulation of clinicopathologic correlations, so as to provide appropriate and effective consultation in the context of pathology services. The resident will learn how to work effectively within a multidisciplinary health care team, participating as appropriate in informed decision-making and clinical management. In those few situations where the resident has direct interaction with patients or families, the resident will perform the clinical duties with caring and respect.
2. **Medical Knowledge**: The resident will acquire knowledge about established and evolving biomedical, clinical, and clinically-related sciences and will apply this knowledge to the understanding of basic pathologic processes in both individual patients and the general patient population. The resident will apply concepts of investigational and analytic thinking to the interpretation of laboratory data.
3. **Practice-based Learning and Improvement**: The resident will learn to appraise and assimilate scientific data from the medical literature toward the practice of evidence-based medicine. The resident will learn to apply research and statistical methods to laboratory data. The resident will learn the principles and practice of information technology and how it can be used to manage patient data. The resident will learn to investigate and evaluate his/her own diagnostic and consultative practices, and to improve his/her patient care practices.
4. **Interpersonal and Communication Skills**: The resident will develop interpersonal and communication skills that result in the effective exchange of information and expertise with other health care providers, patients, and patients' families, and will assume an active role in the education of the health-care community.
5. **Professionalism**: The resident will develop a commitment to carrying out professional responsibilities, adhering to ethical principles, and being knowledgeable about and sensitive to a diverse population of patients and health care providers.
6. **Systems-based practice**: The resident will develop knowledge and experience in laboratory management, an awareness and responsiveness to the role of pathology in the larger context and system of health care, and the ability to call on resources within the system to provide pathology services that are of optimal effectiveness and value.

Attainment of the six core competencies is achieved through a training curriculum of four years for AP/CP residents (three years for AP-only or CP-only residents). The basic curriculum is composed of a series of required rotations through various areas of the anatomic pathology and clinical laboratory services. During each rotation, the resident will gain competency through didactic lessons with faculty and staff, independent study, participation in patient care activities as part of the health-care team, and participation in quality assurance and management activities.

Each separate resident rotation has a set of explicit objectives and progression of responsibilities, specific to that particular rotation, aligned with the six ACGME

competencies. These are thoroughly presented in the Resident Handbook, which all residents are given at the start of the program.

General Information

GENERAL INFORMATION

Stanford pathology residents and fellows play a central role in the Department's goal to provide quality service to patients. Clinical duties vary depending on the service being covered. In general pathology trainees take on graduated responsibility, functioning as liaisons between the clinical teams and the pathology laboratory. For a detailed description of resident and fellow duties on each of the services, refer to the appropriate section in this handbook.

Regular Work Hours & Availability

In general the work week is Monday through Friday and the day begins with a teaching conference at 8:00 AM and the day ends at around 6:00 PM. The days and times vary with the service but the total time commitment (including on-call coverage) should not be more than 80 hours per week, averaged over a four-week period. Trainees must have at least one full 24 hour period free of patient care responsibilities each seven days (averaged over four weeks) and must have a minimum rest period of 10 hours between duty periods.

If the trainee knows that he/she will be late or is ill and must stay home, he/she should notify the attending on service directly as soon as possible. If that person cannot be reached, the trainee should inform the attending through one of the chief residents or through one of the senior residents or fellows on their service. If covering frozen sections, it is also important to contact the administrative staff to let them know you are unavailable for frozen section coverage, e.g. receptionists in surgical pathology, secretary in neuropathology.

Each trainee will be issued a radio-pager (beeper) by the Graduate Medical Education (GME) office. Trainees are expected to be available by page during regular work hours. You can get replacement batteries from Pager Administration (basement Room HC009, accessed by escalator next to the Gift Shop) or from Security after hours (basement, approximately below the ATMs near the Emergency Room).

According to Pager Administration, the range of standard house staff pagers is 50 miles in ideal conditions. In practice, you may find that the range is closer to 15-20 miles. If you are unsure of pager coverage, call 650-723-8222 and page yourself from your location. If you do not receive the page, call Hospital Paging at 650-723-6661 and leave a telephone number where you can be reached. If you cannot be reached by paging or by phone, you must arrange coverage with another resident who can be reached, and notify the service involved of the change.

Individual Patient Hand-off

The policies and procedures for individual patient hand-off vary by service. Please check with your service director for patient hand-off procedures.

Night and/or Weekend On-Call Duty

On-call duty time must be counted toward the weekly duty hour limit.

Anatomic Pathology
First- and second-year AP residents on autopsy and neuropathology will share after hours and weekend call with other residents or fellows on those services.

Two AP residents on Stanford surgical pathology will share weekend call on a rotational basis. Call commences at around 8:00 AM on Saturday and continues until the cases are grossed-in, no later than 6:00 PM Sunday.

Surgical pathology fellows and cytology fellows take evening and weekend frozen-section call. Call commences at 6:00 PM on Monday and continues until 7:30 AM the following Monday.

Clinical Pathology
CP residents take evening and weekend call for all areas of the clinical laboratory (not surgical pathology). *Call commences at 5:00 PM and continues through 8:00 AM the following day.*

Cytopathology Fellows
Fellows share frozen section call on a weekly basis with surgical pathology fellows.

Dermatopathology Fellows
There is no call duty.

Gyn/Breast Fellows
Fellows share frozen section call on a weekly basis with surgical pathology fellows.

Hematopathology Fellows
Fellows rotating in Hematology cover this service during regular work hours as well as during evening and weekend periods (using their own beeper) while they are on the rotation. Faculty or CP residents will cover one weekend day each week to afford the fellow a 24-hour period free of clinical responsibilities.

Molecular Pathology Fellows
There is no call duty.

Neuropathology Fellows
There is night and weekend on-call duty.

Transfusion Medicine/BB Fellows
There is night and weekend on-call duty.

ANATOMIC PATHOLOGY CALL GUIDELINES

FROZEN SECTION/ ULTRA PROCESSING ON-CALL PROCEDURE

The designated on-call surgical pathology fellow is responsible for initial intake of all after hour requests for frozen section or ultra processing of specimens for surgical pathology. Responsibility for initial intake of all neuropathology frozen section calls resides with the designated on-call neuropathology fellow and/or neuropathology resident (unless there is no AP resident on rotation in neuropathology, in which case the responsibility is shared by the neuropathology fellow and/or the surgical pathology fellow on-call). **All requests for frozen section or ultra processing** are relayed to the respective on-call faculty for surgical pathology or neuropathology, immediately after the call is received by the resident or fellow. The relative indications, contraindications, appropriate course of action, and time-line, if a frozen section or ultra is to be performed are discussed with the faculty on-call. The **only exceptions** to this are requests for assessment of specimens for possible transplant (i.e., requests for liver fat content or number of sclerotic glomeruli). In these latter instances, the on-call fellow may make an initial, preliminary assessment which is then reviewed by on-call faculty on the following work day.

STAT GMS ON-CALL PROCEDURE

The designated on-call surgical pathology fellow is responsible for initial intake of all after hour requests for STAT GMS stains. The fellow is responsible for contacting the appropriate technician and screening the specimen once it has been processed. **All positive STAT GMS** stains are to be called to the designated faculty on-call prior to reporting the positive result to the requesting clinician. **All negative STAT GMS stains** are to be formally re-screened by the cytotechnologist(s) on the following work day. In the event that an initially negative STAT GMS is flagged as a possible positive on re-screen, the on-call fellow and the cytopathologist on service are immediately contacted to re-evaluate the specimen. If the GMS is considered to be positive on re-evaluation by the cytopathologist and fellow on-call, the requesting physician is notified.

*The on-call schedule is made up on a monthly basis and is available through the hospital operator and posted in the Laboratory of Surgical Pathology. All housestaff and faculty on-call are to be contacted by personal pager and/or personal cell phone. In the event that the on-call faculty cannot be reached by pager or cell phone, the co-director or co-associate director of surgical pathology on-call is to be contacted, except for neuropathology cases, in which case the director of neuropathology is to be contacted (or his designee, when he is not available).

CLINICAL PATHOLOGY CALL GUIDELINES

Chemistry

Analyte out of range

a. Critical Value (see panic/critical value list)
    a. Value should be confirmed and the value called to the ordering physician by the technologist per the new critical value (CV) policy.

    b. If the on-call resident is called about a very unusual case and the clinician cannot be contacted, the resident should investigate the problem and discuss the case with the medical director on call.
        1. Customer service (650-723-6111) may have additional contact information for physicians.
        2. The technologists are asked to call the resident/medical director with any issue they are uncomfortable with so please consider call questions carefully before dismissing a CV call; however,…
        3. The technologist calling the resident should be expected to discuss all difficult cases with the supervisor or lead on their shift and contact customer service and the pre-analytical staff for help when necessary before contacting the resident.

b. Absurd Value (patient would likely not be alive if the value was true)
    a. Result should be verified
    b. Review patient's history and other labs
    Specimen processing and instrumentation should be reviewed for possible sources of artifact.
        1. Sample questions to consider:
            a. Does it look like an instrument/reagent problem? (is there a trend in abnormal results over the last shift, is there more than one patient with this problem, how do the controls look, is it the same analyte)
            b. Is it a patient problem? (patient with similar problem in past, other labs show abnormal findings)
        2. Common analytes with problems
            a. Elevated K+ in hemolyzed samples
            b. Very low glucose levels old specimens in mint top tube
            c. Call medical director to review cases as necessary, when in doubt call- it is expected.

Hematology

1. Critical values where clinician cannot be reached-- follow description given for chem above

2. Peripheral blood smear review
    a. Presence of intracellular organisms (ICO)
        i. Check to see if there is a concurrent micro specimen for Gram stain and culture
        ii. Look into the processing of the specimen, to assess possibility of contamination- e.g. what other specimens are being stained on the stainer? Is this the only patient with ICO?
        iii. Gram staining and other stains can be initiated, in discussion with the medical director on call and the clinical team.

    b. Blasts
        i. Confirm morphology and percent, obtain help from the current heme resident/fellow if available (they may know the case) and a senior technologist

        ii. New patient? If patient is not in CC or misys search Powerpath (name search) they may be an outside consult case with a known diagnosis by flow in PP who is being sent to Stanford for treatment so they may not be in CC or misys yet.

        iii. Relapse? When was the last PB with blasts reviewed? Is the patient on chemo, thought to be in remission? Could it be G-CSF effect (look up patient's history)

        iv. Discuss cases with on call medical director and clinical team.

    c. MAP changes
        i. Confirm finding and quantitation (e.g. 2+, 3+)
        ii. Look at other labs, (e.g. platelet count; D-dimers; other coagulation labs including fibrinogen level; and blood culture or gram stain)
        iii. Look up patient's history and discuss case with MD on call and team

Body Fluids

1. Presence of intracellular organisms
    a. Check to see if there is a concurrent micro specimen

    b. Confirm finding

    c. Other stains (Gram stain, etc.) can be initiated, in discussion with medical director and clinical team

2. Blasts in CSF
    a. It is best to confirm morphology of cells with medical director unless case is very straight forward (e.g. history of blasts in CSF)

    b. Consider peripheral blood contamination of CSF specimen in patient with blasts in the PB smear.

3. Tumor cells (other than blasts) in all body fluids
    a. Rarely a medical emergency. Use your clinical judgment, look up history.

    b. If you do not come in to confirm morphology ask the technologist to type in “atypical pending.”

Microbiology & Virology

1. Gram stains
   Get expert help before reporting a gram stain result on your own, call the medical director- you don’t want the clinical team to base treatment on only your morphologic evaluation

2. Stat HIV tests: only the medical director can interpret stat HIV test results, so call the medical director (Dr. Ben Pinsky).

MEDHUB RESIDENCY MANAGEMENT SYSTEM

MedHub is a web-based system designed to track and document a variety of critical program and resident activities relating to institutional reimbursement, performance evaluation, procedures tracking, and program accreditation. Individual user names and passwords are sent via email to all House Staff from MedHub Support. Questions or problems with MedHub should be directed to the Program Coordinator.

All House Staff are required to log onto MedHub to:

- document duty hours and procedures
- complete faculty and rotation evaluations
- view the Master Rotation Schedule
- view Program Conferences
- address alerts in a timely manner
- request vacations and a leave of absence

Duty Hours Reporting

ALL house staff (residents and clinical fellows) are expected to document their duty hours in MedHub weekly; access is provided on a two-week rolling basis after which lockout occurs. As noted in the **GME House Staff Policies and Procedures** "***All residents and fellows must accurately report their work hours on a weekly basis using the MedHub system. Failure to do so may result in disciplinary action, including termination from the residency program.***" Access to incomplete duty hours of previous (locked-out) pay periods can be requested from the Program Coordinator.

Procedures Tracking

House Staff are expected to document applicable required procedures (i.e. autopsies, bone marrow specimens, fine needle aspirates, etc.) in the ACGME Resident Case Log System https://www.acgme.org/residentdatacollection/. House Staff can also access the Case Log System via MedHub by clicking on the Procedures tab. Individual user names and passwords for the Case Log System are sent via email by the Program Coordinator. Accurate data of procedures performed during training is required by the American Board of Pathology, therefore, everyone is highly encouraged to enter them in the system.

CONFERENCES

Residents are **required to attend 70%** of the **Anatomic Pathology Didactic Series** when on AP as well as **70%** of the **Laboratory Medicine Lecture Series** and **Clinical Pathology Case Presentations** when on CP.

Anatomic Pathology

- **Anatomic Pathology Didactic Series** – various topics and formats (including review of current cases) presented by faculty, residents and fellows; meets three times per week (Wednesday, Thursday and Friday, 8:00-9:00 AM); attendance is required for AP residents and expected of Surgical Pathology and Gyn/Breast Pathology fellows.

- **Dermatopathology Conference** - didactic review of key concepts in dermatopathology; meets monthly (Wednesday, Noon-1:00 PM); attendance is expected for AP residents rotating at Stanford.

Clinical Pathology

- **Blood Bank/Transfusion Medicine/Coagulation Conference** – problem case review presented by residents for discussion with faculty; meets weekly (Monday, 1:00-2:00 PM); attendance is expected for CP residents rotating at Stanford.

- **Core Lab Lecture Series** – Monthly presentation by faculty and fellows; meets the first Thursday, 4:00 – 5:30pm.

- **Clinical Pathology Call Conference and Case Presentations** – Review of calls over the past week and case discussion with faculty; meets weekly (Friday, Noon-1:00 PM); attendance is required for CP residents.

- **Laboratory Medicine Lecture Series** – various topics presented by faculty; meets weekly (Thursday, Noon-1:00 PM); attendance expected for CP residents.

Note:
Starting this year, the lectures at 8am Wednesday-Friday will continue to be "AP" and the lectures at 12 noon on Thursday will continue to be "CP"; however, the topics will be synchronized. Good examples of what have already occurred is the lecture on histocompatibility testing accompanied lectures on transplant pathology, and lectures on kidney and liver function tests accompanied lectures on liver and kidney biopsies. This re-organization of the lectures is intended to help combined AP/CP residents to strengthen their comprehensive base of knowledge and also allow straight AP and CP residents glimpse into the "other side".

Interdisciplinary

- **Current Concepts** – detailed review of major topics in pathology in a journal club format (using a recent relevant report), presented by faculty, residents & fellows; meets weekly (Tuesday, 8:00-9:00 AM); 70% attendance mandatory.

- **Journal Club Conference –** journal club targeted to review key developments in the AP and CP literature in a journal club discussion format with faculty; meets monthly (Wednesday, Noon-1:00 PM); 70% attendance mandatory.

- **Laboratory Management Conference** – review of administrative problems and issues related to informatics; meets monthly (Tuesday, Noon-1:00 PM); 70% attendance mandatory.

- **Pathology Grand Rounds** – detailed review of major topics in pathology by an invited faculty member from outside Stanford; meets monthly (Tuesday, Noon-1:00 PM - takes the place of *Current Concepts* that week); 70% attendance mandatory.

Other Conferences

In addition to these conferences, residents & fellows on specific rotations may need to participate in other departmental and interdepartmental conferences. All residents are invited to attend any and all of these as interest and time permits. These include (but are not limited to):

- **Anatomic Pathology Case Presentations** – interesting (and informal) case presentations by residents and fellows; meets weekly (Wednesday, 5:30-6:30 PM).

- **Anatomic Pathology Quality Assurance** – administrative review of department's performance; meets monthly (Tuesday, Noon-1:00 PM); attendance expected for all residents rotating at Stanford.

- **Autopsy Conference** – current cases presented by the residents to the autopsy faculty; on the weekday after the case has been performed; meets daily (Monday - Friday, 9:30-10:00 AM); attendance expected for residents on Autopsy rotation.

- **Clinical Pathology Quality Assurance** – administrative review of department's performance; meets monthly (Monday, 2:00-3:00 PM).

- **Consult Cases in Surgical Pathology** – review of interesting cases with Dr. Richard Kempson; meets weekly (Monday, 8:00-9:00 AM).

- **Coagulation Case Studies** – small group review of coagulation case studies; meets weekly (Wednesday, 3:00-4:00 PM); attendance expected of Coagulation/RBC special studies resident and Hematopathology fellows.

- **Genetics Conferences** - Pediatric Genetics Grand Rounds; meets weekly (Friday, 9:30-10:30 AM), Genetics Journal Club; meets weekly (Tuesday, 4:00-5:00 PM) and Genetics Conference; meets monthly (Wednesday, 1:00-2:00 PM) - attendance expected for residents on Genetics rotation.

- **Gross Conference –** review of gross prosection specimens at Stanford Surgical Pathology; meets daily (Monday – Friday, 1:00-1:30 PM); attendance expected for residents rotating on Stanford Surgical Pathology.

- **Adult Hematology/Hematopathology Conference** – review of interesting cases presented jointly by Hematology and Hematopathology fellows on a monthly basis; meets first Wednesday of the month (12:00 – 1:00pm) in Cancer Center, second floor conference room.

- **Hematology Scope Review** - informal review of week's problem peripheral and hematopathology cases; meets every Thursday, 1:00 – 2:00pm; attendance expected for residents on Hematology rotation & Hematopathology fellows.

- **Hematopathology Subspecialty Conference** – hematopathology microscopic slide review of cases presented by faculty; meets monthly (Wednesday, Noon-1:00 PM); attendance expected for AP residents rotating at Stanford.

- **Infectious Disease Grand Rounds** - presentation of recent ID clinical cases and discussion; meets weekly (Thursday, 4:30-5:30 PM); attendance expected for residents on Microbiology/Virology rotation.

- **Neuropathology Journal Club** - recent papers of relevance presented briefly and informally by faculty, residents & fellows; meets weekly (Tuesday, Noon-1:00 PM).

- **Pediatric Conferences** - Pediatric Genetics Grand Rounds, meets weekly (Friday, 9:30-10:30 AM). Perinatal Conference, meets weekly (Friday, Noon-1:00 PM). Pediatric Tumor Board, meets weekly (Tuesday, 5:00-6:00 PM); attendance suggested for residents on Pediatric Laboratory Medicine rotation.

- **Southbay Pathology Slide Conference –** review and discussion of cases to be presented at the monthly Southbay Pathology Society; meets monthly (Monday, Noon-1:00); attendance expected for AP residents rotating at Stanford.

- **Surgical Pathology Subspecialty Conference** – surgical pathology and cytopathology microscopic slide review of cases presented by faculty/fellows; meets two to three times per month (Tuesday, Noon-1:00 PM); attendance expected for AP residents rotating at Stanford.

- **Transfusion Medicine/Coagulation Conference** – review of transfusion medicine policies and unusual transfusion medicine and coagulation cases; meets weekly (Monday, 1:00-2:00 PM); attendance expected for all CP residents.

- **Veterans Administration Palo Alto Health Care System Anatomic Pathology Conference** - review of recent surgical pathology and autopsy cases; meets weekly (Tuesday for Surgical Pathology and Thursday for Autopsy, 1:00-2:00 PM); attendance expected for residents rotating at VAPAHCS.

- **Veterans Administration Palo Alto Health Care System Anatomic Pathology Conference** - review of recent literature in surgical pathology; meets twice a month (Tuesday, Noon-1:00 PM); attendance expected for residents rotating at VAPAHCS.

Some notes about conference presentations:

Audiovisual Support

Room L201, where most presentations occur, is equipped with a slide projector for 35 mm slides, an overhead LCD projector with computer access (including internet access) for computer-based (PowerPoint) presentations, and a light microscope with connections to the overhead LCD projector for slide conferences. There is a department-owned PC laptop computer attached to the presentation podium.

The Department of Pathology supports a Photo Laboratory (Room L206) for audiovisual needs of the department. Digital and conventional microscopes are enabled for photography. Digital files can be downloaded to CD-ROM and conventional 35 mm photographs can be processed for presentations. In order to access the Photo Lab after hours, your bar-coded ID badge needs to be approved for access (see Karen Kunkel in the main pathology office).

Current Concepts

Current Concepts serves to provide a regular review of the scientific basis of Pathology for all members of the department. It also helps Pathology residents read and understand scientific reports of basic, translational and clinicopathologic research. In this sense, it functions as our department's regular "journal club." Trainees will be contacted by the resident coordinator regarding the scheduling of these presentations.

To prepare a journal club, identify a recent research paper that is interesting and relevant to some aspect of pathology (including basic, translational and

clinicopathologic issues and problems). Provide a PDF (or URL link) of the primary reference to the resident coordinator so that it can be distributed to everyone a week before the seminar. Prepare a brief introduction; this should only provide a context for the findings of the research paper to be presented and need not be a comprehensive review of the topic. Then present the key findings of the paper, and critically discuss the data (not every figure and table; focus on the key findings). This discussion should include the implications of the findings, the strength of the approach, and what else may need to be done in future investigations of this topic. The presentation should be approximately 30-35 minutes to allow time for questions and discussion.

CP Case Presentations

All residents on CP rotations are expected to present on a rotating basis a brief (15-minute) description of an issue, finding or problem encountered during the week at the regular Friday lunchtime conference. This should not be a definitive review of the subject; rather, the problem or issue should be briefly presented and, after discussion, the resolution or diagnosis provided.

The most current information may be viewed (and the monthly schedule printed) from the Conferences tab in MedHub https://stanford.medhub.com

ADMINISTRATIVE POLICIES AND PROCEDURES

Vacation

Residents and fellows have three weeks of vacation per year. In addition, there is one week leave allowed for academic pursuits such as attending meetings, presenting at a conference, etc.

Vacation or leave plans for residents must be requested as promptly as possible and submitted to the chief resident. Fellow vacation leaves should be approved by the corresponding fellowship director and the dates relayed to the chief resident.

Note: *all absences must also be requested through Medhub and approved through the Medhub system by the Program Coordinator.*

No more than 2 consecutive vacation weeks should be taken. It is recommended that vacation weeks be spread among the rotations as much as possible (e.g., if 2 consecutive weeks are taken, select the last week of one rotation and the first week of the next rotation if at all possible).

What do I need to do before going on vacation?

Step 1: Identify services affected by your absence
Step 2: Check with other residents (and faculty) assigned to those services
Step 3: Try to arrange coverage
Hint: Ask for coverage; don't tell someone to cover (an attitude of entitlement does not inspire others to help you out).
Step 4: NOTIFY THE CHIEF RESIDENT AND THE PROGRAM COORDINATOR

Pathology Travel Policy for Conferences and Meetings

The Department of Pathology will reimburse residents and/or clinical fellows for travel-related expenses associated with a lecture or poster presented at an appropriate conference or meeting. The resident or clinical fellow must be on an active contract with Stanford University Medical Center and the presentation must be supported in advance by a Department of Pathology faculty member.

To be fully reimbursed for your travels, trainees must use the most economical travel options available, adhering to the travel policy stated in the University's Administrative Guide: http://adminguide.stanford.edu/36_7.pdf.

Requests for reimbursement of these travel-related expenses are processed by the Program Coordinator and must include all of the following items:

- A confirmation letter or email from the sponsoring-faculty member(s) which indicates their approval of the reimbursement request.
- A copy of the conference/meeting registration and schedule materials.
- The title, date and time of the lecture or poster presentation.

- Original receipts for each travel-related expense submitted within **30 days of traveling.**
- **Note:** gratuities will not be reimbursed unless they are included with a meal or service (such as a taxi cab ride).

Allow a minimum of six weeks for the request to be approved and processed by the university financial offices. Failure to provide the required items listed above could delay the processing of your reimbursement. Requests from meetings already attended will only be considered until the end of the relevant training year (June 30).

Reimbursements and Extra Funds

$8400	Housing Allowance from the Pathology Department. Half is given in September and second half in February (this benefit does not apply to Post-Sophomore Fellows)
$1000	Mileage, Cell Phone, Gas Fund from GME disbursed in July
$3000	Housing Allowance for only **NEW** residents and fellows in ACGME accredited programs disbursed in August
$2000	Educational Benefit in January to **ALL** Residents and Fellows in ACGME accredited programs
$1000	Educational allowance for all Fellows, including Post-Sophomore Fellows. Receipts should be submitted to the Program Coordinator for reimbursement.

Observing Hospital Holidays

Each year Stanford University Medical Center sets a number of paid major holidays, such as New Year's Day and Thanksgiving Day, for regular staff members, but these cannot be assumed to be holidays for pathology residents and clinical pathology fellows. As with other residency programs at Stanford, receiving such days off is not guaranteed and is based on clinical staffing needs of the hospital and department.

Protocol for Residency Schedule Changes

Chief Residents are responsible for managing the rotation and call schedules under the direction of the Residency Associate Program Directors, taking into account the needs of each service area. All schedule changes will be handled in the following manner to ensure the needs of each service area and to ensure that the program requirements are met. The following "**Schedule Change – Routing Slip**" will be used to guarantee that all affected parties receive timely notification and the Master Rotation Schedule maintained in MedHub can be revised as appropriate.

1. Residents will contact the Chief Residents to request a modification in the Master (MedHub) Schedule. Chief Residents generate the **Routing Slip** for approvals.
2. First-level approval of the request will be made by the appropriate Associate Program Director (Dr. Neeraja Kambham for Anatomic Pathology rotations and Dr. Iris Schrijver for Clinical Pathology rotations).
3. Second-level approval of the request will be made by the appropriate rotation Service Director(s).
4. Upon receipt of both first and second level approvals, the Chief Residents adjust vacation and call schedules; verifying coverage arrangements when required. Chief Residents will forward approved Routing Slips to the Program Coordinator.
5. Upon receipt of approved Routing Slips, the Program Coordinator will modify the Master (MedHub) Schedule and place a copy of the Routing Slip in the resident's file.

Residency Schedule Change – Routing Slip

Resident Name:	Date(s):	Service Area(s):
Chief Resident(s) Name:	Schedule type: ☐ **Rotation** ☐ **Vacation/Absence**	Coverage Arrangement(s):

FIRST-LEVEL APPROVAL

☐ Dr. Kambham (AP) ☐ Dr. Schrijver (CP)	Signature & Date reviewed:	☐ Approved ☐ Denied

SECOND-LEVEL APPROVAL

Service Director(s):	Signature & Date reviewed:	☐ Approved ☐ Denied

Distribution by Residency Coordinator

MedHub schedule revised:		☐ Copy: Resident File

Unassigned Rotations

Unassigned time should be used thoughtfully to enhance the curriculum, explore areas of particular interest in greater depth, or allow the resident to bring a research project to completion. These rotations must be planned in advance and a brief description of the activity submitted to the Chief Resident and Program Coordinator at the beginning of the academic year. Unfortunately, as of 2004-2005, it is not possible to spend any of this time outside of Stanford. (The medical center will not support your salary during such time away and there is no departmental funding available for these purposes.)

Moonlighting

All pathology residents and clinical fellows engaged in moonlighting must be licensed for unsupervised medical practice in the State of California or the state where the moonlighting occurs. It is the responsibility of the institution hiring the resident to moonlight to determine whether such licensure is in place, adequate liability coverage is provided, and whether the resident has the appropriate training and skills to carry out assigned duties. In addition, the Program Directors must acknowledge in writing that he is aware that the resident is moonlighting, and this information should be part of the resident's folder.

Time spent moonlighting must be counted toward the weekly duty hour limit.

Supervision and Evaluation

Mentors

All residents and fellows are assigned a faculty member to be their mentor, but all trainees may change mentors at any time during the training period. The mentor should be used as a resource for problems and questions about the training program, advice about career plans, decisions about resident projects and the use of unassigned time, and other matters. The mentor is also the primary person with whom the trainee's progress through the training program is followed.

All residents & fellows should meet with their mentor *at least* biannually (December and June).

Individual Evaluations by Faculty

Stanford Pathology residents and clinical fellows rotate through a variety of different experiences during both Anatomic and Clinical Pathology training. To ensure progress in the acquisition of the core competencies required to become a pathologist, the faculty evaluates trainees throughout their program.

Each faculty member who interacts with a trainee is required to submit a formal evaluation in MedHub. These evaluations cover the following **Core Competencies** identified by the Accreditation Council for Graduate Medical Education (ACGME).

- ***Patient Care***
  Residents must assume responsibility for providing appropriate and effective care to the patients served by our department's clinical areas. They must develop and demonstrate the ability to gather essential and accurate information about patients, make informed recommendations regarding differential diagnosis, and ensure that examination of specimens, resolution of problems and the reporting of results occur in a timely manner.

  New trainees will need to document that they are able to retrieve relevant patient care information from the medical center's Hospital Information System (HIS) by the end of their first rotation.

- ***Practice-Based Improvement***
  Trainees must develop an analytical approach to problem-solving. They must demonstrate that they can apply information learned from previous cases to new ones. They must regularly attend and contribute to departmental conferences. They should be open to constructive criticism and be able to identify areas of diagnostic Pathology and/or laboratory medicine in which they need to improve.

- ***Communication***
  Trainees must describe pathologic findings accurately, clearly and concisely. They must ensure that critical results are communicated promptly and acted on appropriately. They must provide effective and helpful consultation to other physicians and healthcare professionals and maintain good relationships with their colleagues, faculty and other members of the department.

- ***Professionalism***
  Trainees must demonstrate behavior that reflects a commitment to integrity and ethical practice. They must be available during assigned coverage and punctual for appointments. They must demonstrate respect and sensitivity to diversity in patients and professional colleagues and cooperate with technical and administrative staff. They must adhere to principles of patient confidentiality and scientific integrity.

- ***Medical Knowledge***
  Trainees must establish a command of the basic and clinical science that underlies diagnostic pathology and/or laboratory medicine. They must demonstrate the ability to access and critically evaluate current medical knowledge and/or scientific evidence relevant to their practice. They must

also read scientific literature pertinent to assigned cases and use this information to enhance their ability to make a diagnosis or solve a problem.

- ***Healthcare Delivery***
  Trainees must appreciate their role in the overall care of patients. They must demonstrate an understanding of the medical center's administrative organization and be facile in the use of its information systems. They must participate in interdisciplinary conferences and appreciate the role of diagnostic pathology and/or laboratory medicine in the prevention, diagnosis and management of specific diseases. Trainees must also participate significantly in the department's quality assurance program.

Each month, the trainee should receive feedback from one of the faculty with whom she or he has worked. This individual should show the trainee any evaluations filled out by other faculty on service that month. If this does not happen or if the trainee has any concerns about the feedback received, alert one of the associate program directors (either Dr. Kambham for AP or Dr. Schrijver for CP) ASAP. The evaluations should be signed by the resident and the responsible faculty member at the time of the evaluation and returned to the Program Coordinator within 10 days of the end of the rotation.

Semi-Annual Evaluation by Mentor

Every six months, the trainee should meet with her/his mentor. During this meeting, any issues raised should be addressed. The mentor should record details and/or conclusions of this discussion in the trainee's Progress File, which both the mentor and trainee must sign, documenting that the evaluation and counseling session was held. If the trainee indicates any disagreement, he or she may write a rebuttal, which will become part of the trainee's permanent Progress File.

Annual Meeting with the Residency Program Director and Chair

In the first three months of the program, each trainee will meet with the Program Director. In addition, each trainee will meet with the Department Chair at the end of the academic year. These meetings will assist in reviewing the resident's progress, discussing academic issues and plans, reviewing the resident's performance and deciding on activities and goals for the coming year.

Promotion and Dismissal

All residents and, if appropriate to the training program, clinical fellows will be offered reappointment to succeeding levels in their selected track, subject to continuing satisfactory performance and conduct.

In the unusual event that an unsatisfactory evaluation might result in a decision adversely affecting the trainee (such as probation or termination), the case will be discussed by the Associate Program Directors and a recommendation made to the Program Director. The Program Director will notify the trainee in writing of his decision at least six months in advance before the next re-appointment period. In all such cases, the trainee has the right to meet with the Program Director and/or the Resident/Fellow Committee.

Evaluation of Training Program & Faculty

All trainees are requested to evaluate rotations that they have had during the past six months as well as the performance of individual faculty members that they have worked with. These evaluations are anonymous and are done in MedHub. Scores from all of the individual evaluations will be averaged and any specific comments made will be transcribed to a summary sheet.

California Medical Licensure

All Stanford residents and fellows MUST obtain a California medical license. You must have **one year** of ACGME-approved postgraduate training before you are eligible for licensure and you must receive your license by the **beginning of your third year of training**. If you do not have your California medical license by the beginning of your third year, you will have to refrain from all medical duties (and the hospital will not pay you).

NOTE: Timelines in this section are for Pathology residents who have just graduated from a U.S. (or Canadian) medical school and are in their first-year of training at Stanford. If you have previous ACGME-approved training (or are a graduate of a foreign medical school), please consult the Program Coordinator.

1. Register participation in our residency program
This is accomplished by submitting *Form L3 - Postgraduate Training Registration Form* to the Medical Board of California. The hospital's GME office includes this as part of your orientation.

2. Begin work on your application
The application form consists of four parts:

- *Form L1A-D (Application for Physician's and Surgeon's License*
- *Form L2 (Certificate of Medical Education)*
- *Form L3A (Certificate of Completion of ACGME/RCPSC Postgraduate Training)*

- *Form L4 (Eligibility for Reduced Initial License Fee)*

You should download copies of Form L1A-D and Form L2 from the Medical Board of California website (http://www.medbd.ca.gov) and complete them. If you need assistance, consult the Program Coordinator. Forms L3A and L4 will be prepared by the hospital's GME office when you have completed Forms L1A-D and L2.

3. Begin to assemble the required documentation
You will need to send original transcripts from both undergraduate and medical school; a copy of your medical school diploma which has been "certified" by the school (do not plan to send your original); and fingerprints.

4. Plan to complete Step 3 of the U.S. Medical Licensing Exam
You should plan to take this exam as soon as possible. For more information, visit the USMLE website (http://www.usmle.org/default.asp). We recommend that you schedule the exam no later than March of your first year and that you choose a month in which your Pathology rotation affords you more flexibility. Do not cram for the exam. If you wish to take a review course, we recommend the Kaplan course (www.kaplanmedical.com). Notify the Program Coordinator when you will be taking the exam (and what the results are as soon you receive them). You do not need your USMLE scores to *apply* for a California medical license (but you will need them for the license to be issued).

5. Satisfy the General Medicine Training requirement
Pathology residents must have four months (512 hours) of training that involves direct patient care. At Stanford, several rotations offer opportunities to participate in direct patient care (and meet these requirements). But, it is your responsibility to periodically consult with one of the program directors (either Dr. Kambham for AP or Dr. Schrijver for CP) to insure that you are meeting this requirement.

6. Submit your application to the GME office
As soon as your application is complete (whether you have taken USMLE Step 3 or not), send it to the GME office with a check (payable to Medical Board of California) to cover the application fee. If you do this, the GME office automatically prepares Forms L3A and L4 and mails your application to Sacramento via Federal Express (to arrive on July 1). *If you get it to the GME office before March 1, they will reimburse the application fee to you.*

7. Send the licensing fee to the Medical Board of California
As a trainee, you are eligible for a reduced initial licensing fee. You need to send this check directly to the Medical Board. *Note: If you receive your license before September 1, the GME office will reimburse this licensing fee to you.*

8. Notify the Program Coordinator.
When you have received your license, make a photocopy and send it to the Program Coordinator.

RISE Examination

Each year in March, the Pathology Resident In-Service Examination (RISE) takes place in order to help the residents, their mentors, and the program directors assess resident progress in the training program. The exam is mandatory and the scores will be made available to the program directors and the residents' mentors; they will not be released to the chair of the department. The ACGME requires objective assessments of resident progress during training; for this reason, the individual scores of the In-Service Examination are utilized to evaluate resident competency along with other methods of evaluation. All residents are released from their clinical responsibilities during the examination.

How to convey suggestions and concerns about the residency program

Our department continuously strives to find ways to improve our program (following the principle: “All human activities can be improved.”). To do that best, we wish to hear suggestions from as many people as possible. If at any time, you have concerns or suggestions, there are multiple ways in which to bring them up:

1: Talk to your chief residents! They are **YOUR** representatives. Use them as the first step for voicing your opinions, ideas or concerns about the program. Anything you discuss with them can be brought up **ANONYMOUSLY**; either at the Residency and Fellowship Committee (RFC) or at the annual Residents' Retreat (see **2** & **3**, below).

2: Residency and Fellowship Committee (RFC). A meeting of the RFC is held approximately once a month. The goal of the RFC is to monitor, assess and attempt to improve our residency and clinical fellowship programs. As an important part of that process, the RFC can consider, and decide to take action regarding, **ANY** issues/topics that have been raised for discussion. The Program Director/Department Chair, Associate Directors of AP and CP, and chief residents, as well as elected representatives of the residents and certain members of the faculty, are regular members of the RFC. Other faculty/residents can be invited to attend as appropriate for the topics being discussed. Any resident or faculty member of the RFC can place a topic on the agenda for discussion.

3: Resident Retreat. An annual one day retreat where all aspects of the residency program can be discussed by the residents (no attendings or fellows attend these retreats, unless they are invited by the residents to be present for certain parts of the discussion) is held. The residents then write a report of these deliberations, which is formally presented by the chief residents at a meeting (or meetings) of the RFC. Many of the suggestions derived from these retreats have been implemented by the program, in the originally suggested or modified form, after discussion at the RFC and, in some cases, at faculty meetings.

4: Faculty Mentors. You are assigned a faculty mentor when you start the residency training and will meet with him or her at least twice a year. Please note

that residents can change mentors at any time for any reason (e.g., a change in your long term career interests). Please contact the faculty who you are interested in establishing a mentorship.

5: Associate Program Directors of AP or CP. You will meet with one of them once a year, depending on whether you are doing AP or CP during that year.

6: Program Director. You will meet with him once a year, and, during that meeting, he will ask for your thoughts about the program, including opportunities for improving it.

7: Resident Buddy (starting July 2009). You are assigned to another resident when you start the residency and will meet with him/her at least once at the beginning of the year and as many times as you wish thereafter. If you wish, you can bring up topics with her/him before discussing them with the chief residents.

8: Medhub Evaluations. Each month, you will be completing evaluations on your rotation for that month, as well as on the attendings you worked with during that period.

9: Program Evaluation. Before the Resident Retreat, you will have the opportunity to evaluate all rotations (AP or CP) **ANONYMOUSLY**. The evaluations will be used to decide upon topics for discussion at the Resident Retreat.

Medical Student Teaching

All trainees, residents and clinical fellows, will be asked to teach in the second-year medical student Human Health and Disease course. You will be asked in July to express your preferences for participation in individual labs on the annual Lab bid.

No sub-specialty expertise is required to prepare for these two-hour medical student laboratories. You may wish to bid for laboratories in a topic with which you are not already familiar. You may wish to bid for laboratories that are scheduled in or shortly after less intensive rotations.

You will be assigned as a laboratory "facilitator" for three to five laboratories. We ask that you bid for block of sequential laboratories so that you become familiar with the students in your assigned room.

Preparation for these laboratories is an excellent exercise for any trainee. You may review sections of Robbins or the course syllabus online. Glass slides and other course materials are available from the course coordinator in R354.

You will be invited to a facilitators luncheon before each block of labs, held in the Bing dining room. There you will be trained as a small-group facilitator and be oriented to the assigned laboratory cases. Novice instructors will be paired in each small-group with an attending who will be able to answer any questions that you can’t, so relax and have fun.

Resident Retreat

Each year in January, the department hosts an off-site retreat for the residents on a Saturday to discuss the residency training program. Many of the changes that have been implemented in the residency training program in recent years are a direct result of discussions and recommendations that were formulated during this annual retreat. Residents are strongly encouraged to take advantage of this opportunity. The retreat is coordinated by the Chief Residents in AP and CP, who then present the findings at the next RFC meeting.

Pathology Society Memberships and Post-Graduate Courses

The Department of Pathology sponsors resident membership in the United States and Canadian Academy of Pathology (USCAP) and the American Society for Investigative Pathology (ASIP) for all trainees who are interested. Contact the Program Coordinator for membership enrollment information. Please submit your completed membership form to the Resident Coordinator.

The Bay Area hosts several high quality post-graduate pathology courses that residents and fellows are strongly encouraged to attend. The South Bay Pathology Society hosts an annual meeting in the middle of May on a Saturday in the Bay Area. Registration fees are paid by the Department of Pathology for residents and fellows, provided they register in advance with the Program Coordinator. The California Society of Pathologists hosts a course in December that usually takes place in San Francisco. Attendance is free for trainees. Finally, the South Bay Pathology Society hosts a monthly meeting on the evening of the first Monday of each month and residents may attend this meeting on a rotational basis. Sign up is limited and posted at the Hot Seat station in Surgical Pathology. Residents are urged to take advantage of these educational opportunities.

Grant Applications

Trainees who are interested in submitting development grant applications should contact Ms. Patty Winningham, Post doc and Graduate Student Manager for the Department of Pathology, so that she may guide you with the application process. Obtaining approvals from various departments can take some time therefore you should contact her at least one month prior to the application deadline.

Ms. Patty Winningham
Tel: (650) 498-6134/ FAX: (650) 725-6902
E-mail: pattyw@stanford.edu

RESPONSIBILITIES OF CHIEF RESIDENT(S)

AP CHIEF RESIDENT – DESCRIPTION OF DUTIES

(Updated March 2010)

The AP chief resident is the main liaison between faculty and residents and is, as such, in a leadership role to optimize service work, facilitate program improvements where necessary, help ensure the residents' education, well-being and professional development, represent our residents within the department and in other areas of the hospital. The chief resident works closely with the Pathology program director, with the associate program director for AP, with the residency coordinator, and with faculty, fellows and residents. The AP chief resident coordinates with the CP chief resident as appropriate.

AP chief duties include, but are not limited to, the following examples:

- Transition with out-going chief residents. This transition should include attendance at RFC meetings prior to the full assumption of chief resident duties at the next academic year, and identification of all on-going "action items" in AP discussed in the resident retreat and/or RFC.

- Send welcome email to incoming residents. This email should provide information for orientation, resident "buddy" (selected by the AP chief resident(s)), and solicit requests for preferences for vacation time.

- Work with the residency coordinator to ensure a smooth transition at the beginning of the year, so that AP residents have badges, computer access, name plates for desks when in H2110, parking, etc.

- Work with the residency coordinator to organize departmental orientation for new residents/fellows, including scheduling key contributors (residency coordinator, residency co-directors, lab safety, etc). Ensure all incoming residents/fellows are notified. Attend welcome dinner for incoming residents/fellows.

- Create the academic rotation schedule
    - Distribute residents fairly and evenly
    - Keep in mind the number of fellows (including post-sophomore fellows) on a service and fellow vacations
    - Ensure coverage for services that require it
    - Work with the AP program director to finalize the schedule. Schedule must also be approved by all AP service chief (Dr. Berry, Dr. Kong, Dr. Longacre, Dr. Natkunam, Dr. O'Hara, Dr. Regula, Dr. Rouse, Dr. Sundram, Dr. Vogel)
    - Coordinate this schedule with the AP/CP4 resident requests for AP rotations

  - Avoid scheduling more than one person/month for forensics
  - Try to avoid scheduling off-site rotations (VA, forensics) after Stanford autopsy
  - Schedule monthly autopsy and neuropathology on-call coverage

- Create the monthly surgical pathology rotation schedule for the residents/post-sophomore fellows, keeping in mind the distribution of golden and gross weekends. Identify case cap for each visiting medical student/resident/post-sophomore fellow directly on the rotation schedule. See resident handbook or AP program director for case cap levels
    - Send schedule to Dr. Kong, no later than by the 15th of the month (6/15 for July schedule)
    - Work with PAs to organize a frozen section room orientation for the first year residents during their first month on the surgical pathology rotation

- Check FISHBOWL prior to onset of new academic year and monthly thereafter to stay abreast of rotating medical students. Orient all new visiting medical students on AP service. Ensure they have ID badge, PowerPath access, all required access codes, safety training, etc. Coordinate with residency coordinator farewell lunch for exiting medical students with other residents on service

- Create the vacation schedules so as not to impair service coverage
    - Be aware of national conferences (USCAP, CAP, etc)

- Ensure that residents know where to have their “base” and to assign lockers at Stanford. Collect locker keys from AP residents leaving the AP program and re-distribute to incoming AP residents.

- Regularly check in with the AP residents (especially first years) to check how things are going in the various rotations and address any issues that arise.

- Assign desks for residents in H2110 when on rotations that require their presence.

- Monitor surgical pathology rotations and send feedback to AP program director when problems arise. Remind resident to go to noon microscope conferences (as well as other required conferences). Provide feedback to AP program director if residents are being kept in sign-out past noon (and thus cannot attend the noon conference) or past 1:00 PM (and thus cannot complete their reports to meet turn-around-time)

- Work with the resident coordinator assistant to put journal club and resident lectures on the monthly conference schedule.

- Meet with the AP program director monthly (at a minimum) or as often as needed to communicate issues and facilitate prompt resolution

- Lead the quarterly “Jeopardy” AP conferences
    - Ensure residents sign in
    - Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
    - Start and end the meeting on time

- Coordinate the monthly AP Journal club
    - Make a schedule that includes all residents (evenly) and fellows
    - Send out an announcement to residents and AP faculty with location, time, speakers, topics and attached papers no later than the Friday before the journal club.
    - Work with resident coordinator to set up lunches
    - Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
    - Start and end the meeting on time

- Attend the monthly RFC meeting
    - The Chief is expected to attend each of these meetings. Should the Chief be away, then a substitute resident should attend and the AP program director needs to be informed beforehand.
    - Communicate with residents regarding RFC topics before and after the meeting
    - Help set the RFC agenda
    - Communicate with the AP program director regarding issues and potential solutions before each RFC meeting

- Work with the residency coordinator or Grand Rounds faculty to coordinate the AP noon slide sessions for Grand Rounds lecturers and other guest lecturers
    - Ensure the slides are out by the Hot Seat for review prior to conference
    - Ensure residents are aware that there are slides at the Hot Seat for review prior to conference
    - Ensure the audiovisual is set up in the plasma room prior to conference
    - Greet the guest speaker and introduce her/him to the residents, if this has not already been done by a member of the faculty
    - Ensure the guest lecturer feels welcome (cup of water if needed, etc)
    - Ensure all slides are gathered and returned to the guest lecturer

- Work with the residency coordinator to organize the resident retreat
    - Set the retreat agenda
    - Distribute and summarize rotation evaluations for retreat discussion

  - Report the retreat conclusions to the AP program director, RFC, and residents
  - Report plan to address issues identified in the resident retreat to the residents following the RFC meeting

- Schedule periodic informal/social meetings and more formal resident forums (one in September and one in May following the retreat) with residents to maintain morale, encourage team effort, etc.

- Work with the residency coordinator and AP program director to disseminate information to residents regarding the training program. Update AP rotation descriptions on Stanford Pathology webpage and Wiki

- Work with the residency coordinator during interview season
  - Ensure that the AP program is well presented to our interviewees (Hillview tours, making yourself available for more interviews, lunches, etc.)

- Attend all chief resident meetings held by GME Office

- Help plan first year awards for the end of year dinner with the AP program director

- Be involved in the Department of Pathology research retreat and encourage and coordinate resident participation

- Opportunity to work with faculty on teaching assignments

CP CHIEF RESIDENT – DESCRIPTION OF DUTIES

(*Updated March 2011*)

The CP chief resident is the main liaison between faculty and residents and is, as such, in a leadership role to optimize service work, facilitate program improvements where necessary, help ensure the residents' education, well being and professional development, and represent our residents within the department and in other areas of the hospital. The chief resident works closely with the Pathology program director, with the associate program director for CP, with the residency coordinator, and with faculty, fellows and residents. The CP chief resident coordinates with the AP chief resident as appropriate.

CP chief duties include, but are not limited to, the following examples:

- Work with the residency coordinator to ensure a smooth transition at the beginning of the year, so that CP residents have badges, computer access, parking, etc.

- Schedule and lead CP orientation for new residents

- Create the rotation schedule
    - Distribute residents fairly and evenly without fixed pairing
    - Keep in mind the number of fellows on a service
    - Ensure resident coverage for services that require it
    - Work with the CP program director to finalize the schedule

- Create the vacation schedules for CP residents

- Ensure that residents know where to have their "base" and to assign lockers at Hillview

- Create the CP call schedules
    - Schedule and lead the introductory "boot camp" orientation to CP call

- Create the monthly hemepath coverage schedule (rotations, flow call, weekend slide review, fellow coverage)

- Regularly check in with the CP residents (especially first years) to check how things are going in the various rotations and address any issues that come up.

- Meet with the CP program director monthly or as often as needed to communicate issues and facilitate prompt resolution

- Lead the weekly CP call conference on Fridays
    - Make a schedule that includes all residents (evenly) and fellows

  - Ensure residents sign in
  - Work with resident coordinator to set up lunches and reserve rooms
  - Make sure that the audiovisual is set up on both sides well in advance Start and end the meeting on time
  - Introduce speakers and topics and actively lead discussions

- Lead the monthly CP Journal club
  - Make a schedule that includes all residents (evenly) and fellows
  - Send out an announcement to residents and CP faculty with location, time, speakers, topics and attached papers no later than the Friday before the journal club.
  - Ensure residents sign in
  - Work with resident coordinator to set up lunches and reserve rooms
  - Make sure that the audiovisual is set up on both sides well in advance
  - Start and end the meeting on time
  - Introduce speakers and topics and actively lead discussions

- Attend the monthly RFC meeting
  - The Chief is expected to attend each of these meetings. Should the Chief be away, then a substitute resident should attend and the CP program director needs to be informed beforehand.
  - Communicate with residents regarding RFC topics before and after the meeting
  - Help set the RFC agenda
  - Communicate with the CP program director regarding issues and potential solutions before each RFC meeting

- Organize the Transfusion Service conference on Mondays
  - Reserve rooms at both Hillview and hospital for the year
  - Ensure residents sign in
  - Work with faculty to have teaching sessions scheduled for the year
  - Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
  - Start and end the meeting on time

- Make the annual schedule for the CP lecture series by faculty on Thursdays
  - Make the annual schedule together with Dr. Brent Tan
  - Ensure residents sign in
  - Work with resident coordinator to set up lunches
  - Work with admin to have flyers posted
  - Make sure that the audiovisual is set up on both sides well in advance (schedule a fellow resident on the other side each time)
  - Start and end the meeting on time
  - Introduce speakers and topics and actively lead discussions

- Work with the residency coordinator to organize the resident retreat

  - Set the retreat agenda
  - Distribute and summarize rotation evaluations for retreat discussion
  - Report the retreat conclusions to the CP program director, RFC, and residents

- Work with the residency coordinator during interview season
  - Ensure that the CP program is well presented to our interviewees (Hillview tours, making yourself available for more interviews, lunches, etc.)

- Be involved in the Pathology research retreat and encourage and coordinate resident participation

- Opportunity to work with faculty on teaching assignments

DEPARTMENT OF PATHOLOGY (SUMC & VAPAHCS) SAFETY POLICIES AND PROCEDURES

INTRODUCTION AND GENERAL INFORMATION

As a pathologist-in-training, you need and are required to practice routine safety measures in order to protect yourself from sharp injuries and infectious processes, as well as toxic chemicals. Below you will find a brief summary of exposure hazards and the steps necessary in protecting yourself and others. Remember, safety begins and ends with you.

GENERAL PHONE NUMBERS:

1.) Employee Health (located on the basement floor at the central escalators): 723-5922 Hours: Monday through Friday: 7:30 AM – 3:00 PM
2.) Fire-Police-Medical emergency, including Hazardous Materials incident: 211 (dial directly from any hospital phone)
3.) Needlestick and Exposure Hotline: 8-4000
4.) Environmental Health and Safety Department 3-8143
5.) http://somsafety.stanford.edu

PERSONAL PROTECTIVE EQUIPMENT

Your main health hazard as a pathologist is exposure to infectious materials.
Along with good sharps practice, you must wear protective barrier equipment (PPE) appropriate to the physical hazard in each training location. Appropriate barrier protection works against all infectious agents and also against accidental chemical exposure (eg- formalin splash).

You should always **WEAR** eyewear and double-gloves when dealing with any tissue, fixed or unfixed. A mask must be worn whenever there is a risk of splashing blood or bodily fluids in the face or when tissue particles might be aerosolized (e.g. with a bone saw).
Scrubs, cloth gown, apron, bonnet and shoe covers should be added when there is a risk of splashing blood or body fluids.
Appropriate PPE is provided at each training site, but you are personally responsible for gowning correctly. Both latex and nitrile gloves are available. There is absolutely NO EXCUSE for not wearing eye protection; if the glasses provided to you are uncomfortable, we will be happy to order you a different pair at no charge. If you don't see the PPE you need, ASK for it!

SHARPS
Scalpel blades and needles are the main sources of incised and puncture wounds in pathology, almost always on the hands. Minimize your use of scalpel blades and needles; use scissors or a larger knife whenever possible. Learn how to safely install and remove the blade from a scalpel; a special blade-removal device is safest. Use only one blade at a time and immediately dispose of that blade in the sharps disposal box; loose blades are a danger to you and your colleagues.

UNIVERSAL PRECAUTIONS
Treat ALL unfixed tissue as highly infectious (see below for additional precautions for prions). You can never be sure if the patient might be infected with hepatitis-C, HIV or another deadly pathogen. Prepare for and perform each dissection, as if the tissue was HIV+; never let your guard down. Although the staff take great lengths to ensure that the working environment is clean; you should assume that all instruments and surfaces are contaminated.

IMMUNIZATIONS
You must be immunized against several diseases, including hepatitis B and several childhood diseases, before beginning work at SUMC. Antibody titers against these diseases will be drawn by Employee Health at the time of employment and periodically thereafter (TB titers are drawn annually).

NEEDLE STICK OR OTHER EXPOSURE
Immediately notify a senior resident and/or attending and wash the area thoroughly. During work hours, proceed directly to employee health (basement floor, at bottom of central escalators). After hours, you can be seen in the ER. Alert someone in the ER that you are a Stanford Hospital employee and you have a sharp injury or blood/body fluid exposure. You should get rapid attention. If you have a deep wound, which may require stitches, go directly to the Emergency room. Your safety is first and foremost. You will need to fill out an employee injury report form (04-30A) (forms are available in surgical pathology on tall cabinet across from the receptionists.

SPECIAL PRECAUTIONS

Surgical Pathology Gross Room
Eyewear and gloves are required at all times. A mask is required whenever there is a splash or aerosol hazard. Hold tissue with an instrument, rather than your fingers, when taking sections. Practice safe sharps practices.

Frozen Sections
Performing and interpreting frozen sections is an important part of your training in Surgical Pathology. The frozen-section technician will show you how to safely operate the cryostat. Assume any tissue within and any surface of the cryostat is contaminated. Seek advice before cutting any potentially infectious tissue (such

as from a patient suspected of TB or from a patient with rapid-onset dementia [potentially CJD])

Bone Saw
Stanford has a single tissue band saw located in the cold room next to the Autopsy Room (L202). Rare specimens require cutting bone or frozen soft tissues. You must complete training and a certification examination before you operate this potentially dangerous equipment.

Autopsy Room
Complete gowning is required for the prosector and anyone else participating in the dissection of viscera.

Creutzfeldt-Jacob disease:
Suspect CJD in any middle-aged or older patient with rapid-onset dementia and rapid clinical course; myoclonus is not required.
Discuss any potential CJD case with an attending neuropathologist.
Special dissection and disinfection procedures are detailed in the Autopsy Manual.

Please see Appendix for further safety information.

Anatomic Pathology Rotations for Residents

QUALITY ASSURANCE

I. What is Quality Management?

A. **Quality Management** is the summation of the QC/QA/QI and includes preventative and corrective actions. The laboratory quality utilizes the PDCA model (Plan Do Check Act).

a. **Quality Control** is defined as the verifications and documentation that the quality control limits and thresholds are being met, including corrective actions.
b. **Quality Assurance** is defined as the measurement within thresholds, control limits, and specifications over time.
c. **Quality Improvement** is defined as the effective change to quality specifications.

B. What are Hospital and Laboratory Regulations, including Licenses?

a. **The Joint Commission:** SHC-Stanford Hospitals and Clinics and LPCH-Lucille Packard Children's Hospital are certified by the Joint Commission. Patient Safety Goals are published each year. For a listing of current patient safety goals, visit the Joint Commission website.
b. **College of American Pathologist (CAP):** Stanford Hospitals and Clinics Anatomic Pathology and Clinical Laboratories is certified by CAP. Every (2) years CAP inspects the laboratory following a list of Checklist guidelines. Additionally, annual mock inspections are conducted. For a full list of the guidelines, see Anatomic Pathology Quality Coordinator.
c. Congress passed the **Clinical Laboratory Improvement Amendments (CLIA)** in 1988 establishing quality standards for all laboratories' testing to ensure the accuracy, reliability and timeliness of patient test results regardless of where the test was performed.
d. **California Department of Public Health**: Primarily provides a license upon fee submission as long as the laboratory is in good standing with CLIA and FDA. They focus on insurance fraud, HIPAA, etc.
e. **FDA**: Food and Drug administration primarily focuses on Good Laboratory Practices guidelines. For Anatomic Pathology, this may pertain to using non-expired reagent lots, and validated testing procedures, like ER/PR and Her2. The FDA regulates sections of the laboratory more stringently depending on the service provided, i.e. transfusion is regulated more closely than other areas in the clinical laboratory.

II. Hospital Patient Safety

Anyone who witnesses a patient safety event can report it anonymously and confidentially through either Hospital portal resource websites:

a. S.A.F.E.: SHC Stanford Alerts for Events
    i. All visitors and employees may access a tutorial for how to use SAFE on the SHC Portal: http://portal.stanfordmed.org/Pages/Default.aspx
b. Quantros: LPCH Patient safety alert database
    i. https://qxpert.quantros.com/orm/jsp/LPCHLogin.jsp

III. **Monthly** Quality Meeting: QA Statistics measured in Anatomic Pathology

a. The surgical pathology faculty hosts the monthly QA/QI meetings for Anatomic Pathology. The Quality Coordinator facilitates the meeting by collaborating quality metrics for review, communicating timelines and resources for the meeting, and documenting minutes and follow up actions determined at the meeting. The meeting schedule is monthly at 1 hour duration, and all residents, fellows, faculty, operational staff, and qualified guests are required to attend the meeting regularly. Notification of the meeting schedule is distributed on the "Pathology Conference Schedule". All metrics included in the meeting can also be referenced in Admin-025 and Cyto-031, Quality Plans.
b. Turn-Around-Times are measured in various sections of the Anatomic Pathology laboratory. The following are monitored and reviewed routinely for performance. Many of these are required as compliance to the CAP guidelines; in this document, the guideline references are in brackets. Metric thresholds for performance have been established and are referenced in Admin-025 and Cyto-031, Quality plans for Anatomic Pathology and Cytology, respectively. For more information, reference the Policies and Procedure section of this handbook for how to retrieve a copy of policies and procedures used in the Anatomic Pathology and Clinical laboratories.
    i. Intra-Operative Frozen Turn-Around-Time (TAT) is documented on an approved worksheet. Each pathologist, fellow, or resident executing the patient intra-operative frozen service is responsible for documenting the TAT time for (2) time metrics on the worksheet. The first metric is the Response time, which is the pathologist arrival time to the frozen room minus the paged request time[1]. The second metric [ANP.11820] is the communication of DX to the surgeon time minus the specimen processing start time. For more detailed definitions of the required documentation, refer to policy Frozen Section-009.
    ii. Sign-out of DX TAT is documented in PowerPath, the approved reporting database for AP.
        1. Autopsy reporting- there are (2) TAT metrics measured and reviewed:
            a. CAP [ANP.33100] 2 - day preliminary report
            b. CAP [ANP.33150] 60 - day final report

2. Cytology (FNA, non-Gynecology, Gynecology) TAT is documented in PowerPath.
    a. FNA (fine needle aspirates) are reported as a 2-day [ANP .12500]
    b. Non-Gynecological specimens are reported as 2-day [CYT.07690]
    c. Gynecological specimens are reported as 5-day TAT metric
3. Surgical TAT (Dermatology, Breast, GI, etc.) [ANP .12500] is documented in PowerPath.

c. Pre-analytic errors consist of errors that occur prior to specimen analytical testing. These may include but are not limited to fixation (AKA Reprocessing), specimen-labeling errors (two (2) patient identifiers must be present on all specimens). When these errors are identified, they should be manually logged on Form-002, Quality Control and Incident form. All corrective actions should be timely pursued with the assistance of Section directors and/or AP Operations staff. The documented errors are tallied by the Quality Coordinator and presented for review of process improvements, patient care quality issues, and/or staff training.
d. Workload Volumes are tracked, and they are a valuable indicator of workload fluctuations. Workload volumes can be predictors of error %, valued process workflow improvements, and provide situational context to the other Quality indicators. [ANP.21350]
e. Urgent Diagnoses [ANP .41330] are unexpected diagnostic findings and should be reported timely to all necessary patient care providers. Communications between patient care providers should be in the form of a “read back” method [GEN .40935]. See your section director for mentorship and reference Admin-001.
f. Major diagnostic discrepancies in specimen correlations are reviewed for a variety of specimen types. Correlations are documented in PowerPath case reports.
    i. Frozen specimen Diagnosis (DX) [ANP.10100] to the permanent specimen DX is correlated for every applicable case. Any correlation that is not agreed upon between patient care providers is reviewed at the QA/QI meetings.
    ii. Preliminary Hot Seat DX is correlated to the resident’s DX as routine sign out occurs. If a Major discrepancy is noted by the Hot Seat, he/she will present their findings at the QA/QI review. This provides an invaluable learning tool and feedback to all pathologists involved. Hot seat records are retained for Quality review, should one be warranted as part of Patient Safety compliance.
    iii. Cytology Correlations are QA reviewed routinely by Cytotechnologists and Section directors. If sampling or interpretation errors are found, the results are reviewed and

compiled in the QA review. See Cyto-031 for details on the Cytology Quality Plan.

g. Tissue Committee Cases (TC3a, TC3b, TC3c) are flagged for (3) levels of discrepancies in patient care information. This metric is additionally reported to SHC Care Improvement Committee (CIC) and LPCH Tissue Committee. The definitions of the discrepancies are as follows:
    i. TC3a: Surgery performed here with no pathology confirmation of prior malignancy
    ii. TC3b: Major discrepancy pre-/post-op
    iii. TC3c: Major change in diagnosis I/O cases (Stanford diagnosis versus Outside diagnosis)
h. Report Revisions occur in (3) ways: corrections (faculty only), addenda, or amendments. Changes in Diagnosis [Gen .20316] are considered for review by CAP. For further details on report revisions, refer to Admin-063 and [GEN.41308 .41312 .41310].
i. Compliance with synoptic reporting and cancer protocols [ANP.12385] is managed in variety of forums. Daily patient case reporting follows a synoptic format when applicable to DX, and continuous trending and training to industry standards is pursued as QI projects. The assignment of QI projects is coordinated by the residency coordinator. For more details on requirements, reference Admin-061 procedure.

IV. **Daily** Quality Control in Anatomic Pathology Laboratory

a. Form-002 Quality Control and Incident form is located on AP teamsite policies and procedures. Print copies of the form are stocked at various locations of the laboratory.
b. Specimen, Block and Slide Patient identifiers (JC patient safety goal) are critical to quality patient care. There must be (2) patient identifiers on all specimens, including containers, blocks, and slides. Communications surrounding patient care requires “read back” of (2) patient identifiers; use this practice consistently in written and verbal formats. [ANP.21050, 21100, 21150] and [GEN.40491, .40490]
c. Specimen Adequacy forms (Form-003) are utilized when notable pre-analytic patient information is missing, erroneous, or conflicts with laboratory service requests. The form is available on AP teamsite Policy and Procedures, and is stocked in the Accessioning lab section area.
d. If a specimen is non-traceable, the AP Missing Specimen form (Form-001) is used to document the event. In instances where a specimen is not traceable, alert immediate attention to the AP Operations Manager and/or Section director for a timely investigation. The Quality coordinator may also be notified in instances where Patient Safety compliance is jeopardized.

V. Policies and Procedures
   a. To access Hospital policies and procedures visit the SHC portal and LPCH intranet websites. To access Laboratory Administrative (LADM) policies for the Anatomic Pathology and Clinical Laboratories, visit the Lab Home Site from the SHC Portal. Anatomic Pathology department specific procedures are accessed from the Anatomic Pathology teamsite (SharePoint). For SID access to the AP teamsite, privileges will need to be established from the AP System administrator. Contact the AP Lab Manager to find out more.
      i. "Access denied" dialogue screens may be a result of the SID not configured to the AP teamsite or Lab Home Site.
      ii. The SID hospital network log in allows for the easiest access to the SHC portal teamsites. You may use a University computer as long as the Hospital network log in access is utilized.
   b. Training Competency must be established before any patient testing can commence by that individual [GEN.55500]. See your section director or lab section supervisor for details about competency standards.

VI. Communication in the Laboratory is critical to the success of quality patient care.
   a. The AP laboratory has (3) documented communication pathways:
      i. Monthly QA/QI Meeting provides feedback on performance metrics and an open forum for discussion patient care improvement solutions.
      ii. Section meetings are led by each laboratory section supervisor and are intended to keep staff current with daily laboratory operations. Reference Admin-028 for details.
      iii. Between shift logs are retained in each laboratory section to document patient care critical events to the next shift personnel. Reference Admin-028 for details.
   b. Organizational charts for School of Medicine staff and SHC Hospital and Clinics staff are available on the Anatomic Pathology teamsite. Additionally, for easy identification of staff and residents, photos are available upon request from the Anatomic Pathology Manager.
   c. The Quality Coordinator facilitates a routine Quality section meeting for quality leaders that includes AP section directors, AP operations managers and supervisors, and adjacent Quality administrators. If you should have any questions or suggested improvements for the Quality Plan or executed program, you may direct your comments to:
      i. Anonymous to the "suggestion box" located in H2110A
      ii. Pathology Department Professional Practice Evaluation Committee Chair, Teri Longacre, MD
      iii. Anatomic Pathology Quality Coordinator
      iv. Anatomic Pathology Operations Manager
      v. Anatomic Pathology and Clinical Laboratories Medical Director and Director of Quality Management, Dan Arber, MD

vi. Anatomic Pathology and Clinical Laboratories Quality Manager, David Myrick

*Note: paged request time is documented by SP front desk staff.

Revised June 5, 2012
- Teri Longacre, MD
David Myrick

AP ANCILLARY STUDIES ROTATION

Erich Schwartz MD, PhD

Weekly Structure of the non-Heme IHC/AP Molecular/Cytogenetics Rotation

In this rotation, the resident is expected to gain knowledge in the areas of immunohistochemistry, fluorescence in situ hybridization (FISH) and molecular tests relevant to Anatomic Pathology training. Given the usual afternoon attending sign outs in both Immunodiagnosis and Molecular Pathology labs as well as Cytogenetics Laboratory for FISH analyses and interpretations, the weekly schedule of the resident is as follows (in general, 3 days of IHC & 2 days of Molecular/Cytogenetics):

Monday: Immunodiagnosis Laboratory
Tuesday: Molecular Pathology Laboratory, Cytogenetics Laboratory
Wednesday: Molecular Pathology Laboratory
Thursday: Immunodiagnosis Laboratory, Cytogenetics Laboratory
Friday: Immunodiagnosis Laboratory

As certain molecular tests are signed out on days other than Tuesday and Wednesday, the resident is encouraged to attend the molecular sign out on Thursday and/or Friday instead of Tuesday and Wednesday in some weeks, so as to gain exposure and knowledge in all the relevant tests performed at Stanford Molecular pathology laboratory. Both the non-heme IHC and Molecular Pathology attending should be notified prior to this.

The educational component of FISH testing is facilitated by the Cytogenetics Laboratory supervisor (Dana Bangs, x5-7476) on Tuesdays and Thursdays, usually in the late mornings. The resident is expected to check with Dana Bangs on a daily basis to accommodate any needed slide review.

Requirements of the non Heme IHC rotation/ Resident duties and responsibilities

First day of rotation in Immunodiagnosis:

1) Schedule 30 minutes on the first day of the rotation with the non-heme IHC attending to review the daily workflow and resident responsibilities
2) Take the immunohistochemistry rotation pre-test and turn it in to the non-heme IHC attending for scoring and feedback
3) Schedule 10-15 minutes within the first three days of the rotation with immunotechnologist Ed Gilbert for a review of laboratory procedures and automated staining platforms (this is best scheduled for a time after the resident has reviewed Chapter 1 of the Dabbs Immunohistochemistry book,

so that the resident has a basic understanding of principles of immunohistochemistry; see Recommended Reading below)

4) Review general immunodiagnosis billing guidelines and schedule approximately 30 minutes within the first three days of the rotation with Svetlana Litvinsky (Lana) at X 8-4969 to review immunodiagnosis billing and add-on tests
5) Present your weekly schedule of non-heme signout to the attendings on service for non-heme cases

Daily:

1) Check in with immunotechnologists around 2:00 pm to begin sorting cases into heme and non-Heme cases
2) Preview cases and enter antibody scores and interpretive comments into the Servoy database if possible
3) Participate in sign-out with attending assigned to immunodiagnosis (non-heme)
4) Distribute finalized cases to residents, fellows and attendings with comments and questions as appropriate
5) Assist in composing addendum report drafts for breast hormone studies, microsatellite instability studies and other “add-on” tests; send these reports electronically to the appropriate Immunodiagnosis attending
6) Review HER2 FISH images with attending signing out non-heme cases
7) Assume primary oversight responsibility of ordering add-on tests from special test requisitions (including “add-on” breast hormone receptors, therapeutic markers such as BRAF, KRAS, and EGFR, and microsatellite instability studies): this includes searching patient’s PowerPath history for an appropriate case on which to order studies, requesting or retrieving old blocks, selecting an appropriate block for testing and ordering the appropriate antibodies/studies, and maintaining an accurate and complete log of the status of add-on studies (this log should be checked daily for any follow-up on pending cases). Most of the administrative tasks will be performed by the part time IHC/Molecular administrative assistant.
8) Participate in trouble shooting problematic stains with the immunodiagnosis attending, lab directors and technologists
9) Participate in on-going validation of new antibodies and test platforms and quality assurance projects under the guidance of lab directors and technologists
10) Assist in searching for and collecting appropriate tissue for control blocks and/or in working up new antibodies, with the assistance of the lab directors, as appropriate and as needed throughout the rotation

Last day of rotation

1) Take the immunohistochemistry rotation post-test and turn it in to one of the directors for scoring and feedback

2) Prepare an itemized list of outstanding add-on tests that require follow-up action (e.g., call for blocks, blocks pending from Deliverex, etc.) and give this to the immunodiagnosis attending

Major Texts and Learning Resources

1) Dabbs DJ. Diagnostic Immunohistochemistry. Churchill Livingstone: Philadelphia, 2006. (Chapter 1 is required)
2) ASCO/CAP HER2 guidelines (required)
3) Rouse IPOX handout
4) CAP Laboratory Accreditation Checklist – Immunohistochemistry section (available online at www.cap.org – click on Accreditation and Laboratory Improvement tab, then scroll down and click on link to Inspection Checklists and select the most recent Anatomic Pathology checklist)

Supervision and Evaluation

The Resident's work will be supervised by attendings signing out on non-heme immunodiagnosis services. The Resident will be evaluated on his/her daily work as assessed by each director with the input of laboratory staff. Results will be reviewed formally with the resident.

Requirements of the AP Molecular Pathology rotation/ Resident duties and responsibilities

First day of rotation in Molecular Pathology:

1) Schedule a general, workflow, and laboratory orientation on the first day of the rotation with the molecular attending on service and the molecular fellows. ***At this time, the days of the week for presence in the Molecular Pathology laboratory will be finalized for the month. Any changes must be communicated with the attending faculty in the Molecular Pathology laboratory.***
2) Familiarize yourself with the platforms and general techniques used in the laboratory
3) Review new assay development and validation with the molecular fellows/attending
4) Explore potential projects and individual rotation goals with the attending on service

Daily:

1) Collect new add-on test requisitions Stanford and implement (see item 7 in "Daily" section of the IHC description).

2) Transfer to Hillview on Tuesdays and Thursdays and preview and prepare the day's cases in the morning. Assist the fellows in collecting clinical information from the EMR, in integration of pathology findings, and in calling clinicians.
3) Actively participate in signout and in associated didactics.
4) Reading and self-education regarding molecular techniques and principles with the fellows and attending faculty as a resource for questions.
5) Participate in/conduct a project and assist in assay design and work-up as appropriate.
6) Residents on the Ancillary Studies rotation should refer to the Molecular Genetic Pathology section for Residents, in the handbook, for a more detailed outline of responsibilities and expectations.
7) Residents on the Ancillary Studies rotation are expected to give a presentation in the laboratory that highlights the integration of various pathology analyses in patient care.

Major Texts and Learning Resources

1) molpath.stanford.edu
2) Assay binders located in molecular
3) Schrijver (Editor): Diagnostic Molecular Pathology in Practice
4) Leonard (Editor): Molecular Pathology in Clinical Practice
5) Books from the Molecular Laboratory library

Supervision and Evaluation

The Resident's work will be supervised by attending faculty who are on service in the Molecular Pathology laboratory and by the molecular fellows, with whom they will work closely in case preparation and interpretation. The Resident will be evaluated on his/her daily work as assessed by each attending in person and in MedHub.

Requirements of the Cytogenetics rotation/ Resident duties and responsibilities

First day of rotation in Cytogenetics (FISH):

1) The resident will meet with Tena Cherry, Cytogenetics Laboratory Director, and Dana Bangs, Cytogenetics Laboratory Supervisor for a tour of the laboratory and a general discussion of their responsibilities during their rotation.
2) The resident will review the Cytogenetics Laboratory's protocols for FISH testing on paraffin embedded tissues in the Cytogenetics Laboratory FISH Manual.

Daily:

1) The resident should check in daily (Monday through Friday) with Dana Bangs and/or Ilana Galperin, to determine if there are any FISH cases which need to be reviewed (x5-7476 or x5-6396).
2) Transfer to Hillview on Tuesdays and Thursdays for Molecular/Cytogenetics duties.
3) Touch base with Dana Bangs regarding the FISH workload and schedule for the day.

Major Texts and Learning Resources

1) Atlas of Genetics and Cytogenetics in Oncology and Haematology: http://AtlasGeneticsOncology.org
2) Cancer Cytogenetics, third edition, Heim, S. and Mitelman, F. (2009), Wiley-Liss, New York.
3) WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues (2008), editors, Swerdlow et al., IARC, Lyon, France.
4) HER2: Wolff et al. (2007), American Society of Clinical Oncology/College of American Pathologists guideline recommendations for human epidermal growth factor receptor 2 testing in breast cancer, Arch. Pathol. Lab. Med. 131:18-43.
5) ALK and lung cancer: Camidge et al. (2010), Optimizing the detection of lung cancer patients harboring anaplastic lymphoma kinase (ALK) gene rearrangements potentially suitable for ALK inhibitor treatment, Clin. Cancer Res. 16:5581-5590.

Supervision and Evaluation

The Resident's work will be supervised by Dana Bangs. The Resident will be evaluated on his/her work as assessed by Dana with the input of laboratory staff. Results will be reviewed formally with the resident.

AUTOPSY PATHOLOGY LEARNING OBJECTIVES

OVERVIEW
Residents on autopsy pathology are expected to master the following broad areas to the level expected of a new practitioner.

GOALS AND OBJECTIVES

Patient care

- To develop proficiency in all aspects of prosection and autopsy techniques, including standard dissection and removal of organs, including brain and spinal cord.
- To develop proficiency in selection and performance of routine and special (e.g., viral or fungal) cultures in the autopsy setting.
- To develop proficiency in procurement and preservation of special body fluids (vitreous fluid, bile, urine) for potential toxicology studies.
- To develop proficiency in removal of spinal fluid from adults and infants.
- To learn appropriate collection techniques for electron microscopy and molecular biologic studies.
- To learn appropriate collection techniques for samples for chromosomal analysis
- To develop proficiency in use of the Faxitron X-ray machine and frozen sections in appropriate cases
- To understand approaches for performance of postmortem examinations on patients known to have viral hepatitis, HIV, or Creutzfelt-Jacob disease.

Medical knowledge

- To understand basic concepts of disease and correlation with morphology.
- To develop expertise in correlation of autopsy findings with clinical course.
- To demonstrate an investigatory and analytic thinking approach to autopsy pathology.

Practice-based learning

- To use case-based learning as a tool for additional insight into disease pathogenesis.
- To locate, appraise, and assimilate pertinent evidence from scientific studies.
- To demonstrate effective problem solving skills, using a wide variety of information resources.

Interpersonal and communication skills

- To develop proficiency in presentation of autopsy findings to pathologists, medical students, and clinicians, at gross conference and standard clinical conferences at which autopsy cases are presented.
- To use effective writing skills to generate the autopsy report.

- To teach medical students who are assigned autopsy cases. In this role, the resident will develop the ability to explain what is being done during the dissection, clarify clinicopathologic issues, and direct students to other resources including appropriate faculty with specific expertise.
- To review pertinent gross findings in person with the relevant medical personnel involved in the patient care.

Professionalism

- To demonstrate respect, compassion, and integrity in the performance of the autopsy
- To understand that the autopsy report may be read by a wide variety of medical and non-medical readers, and write the report in a manner sensitive to needs of family members
- To complete written reports in a timely fashion
- To work effectively as a team with autopsy staff, and treat technical and administrative staff with respect

Systems-based practice

- To understand the role of autopsy in quality assurance of medical care
- To understand the role of the autopsy in determination of cause of death, and its impact upon epidemiologic studies using death certificate data
- To be able to establish a chain of custody for potential forensic cases
- To understand cost-effective use of special techniques, such as chromosomal analysis and electron microscopy
- To become familiar with OSHA requirements and assure that these requirements are met during the performance of the autopsy
- To understand the risks of formalin and other commonly used solutions and how to minimize exposure
- To become familiar with state and local laws governing reporting of communicable diseases
- To understand and practice the concept of "universal precautions"
- To understand the rationale and necessity for hepatitis B vaccination and annual tuberculosis testing
- To understand CAP requirements for documentation of intra- and extra departmental consultations
- To understand CAP requirements for documentation of discrepancies in clinical and pathologic diagnosis

AUTOPSY AT STANFORD UNIVERSITY MEDICAL CENTER

Director: Don Regula, M.D.
Associate Director: Andrew Connolly, MD, PhD

INTRODUCTION TO THE STANFORD AUTOPSY SERVICE

1. Your work area (L-236 and L-202)
2. Hours of operation and paging
3. Supervision
4. Health and Safety
5. The Autopsy Room
6. The reporting process
7. Conferences
8. Other educational opportunities
9. Hospital death procedures

YOUR WORK AREA

1. Your primary workstation is in the Autopsy Residents' Room (Lane L-236) in the corner to the left and deep in the room. You may be sharing this room with a post-sophomore fellow, a medical student rotating through the Stanford Autopsy service, or a trainee pursuing a pathology research project.

2. All AP-1 and AP-2 residents are assigned a locked cabinet in L-236 for their belongings. Please see the residency coordinator for a key.

3. There are several Windows PC-type computers in the Autopsy Residents' Room. Two workstations near the windows are “university-asset” computers running “PowerPath” AP-LIS and are the primary sites for working on autopsy reports. The “hospital-asset” computer closest to the door runs the hospital EPIC application and other hospital-specified software. Galen supports the university computers, while Tony Chen supports the one hospital computer.

4. There should be two complete, red-plastic, 3-ring bound copies of the Autopsy Service Manual in L-236. (See Dr. Connolly if either is missing.) The Autopsy Manual is detailed and explicit and includes numerous standard and unusual procedures, along with “standard” tables of normal organ weights. There is a separate white-covered bound copy of useful tables for Fetal Autopsy Pathology.

5. The Stanford Autopsy service maintains a modest library of reference books in the Autopsy Residents' Room. Please return these books promptly. (Specific book suggestions are always welcome, see Dr. Regula.)

6. You will be reviewing several different chart formats in the Autopsy Residents' Room, including paper charts enclosed in the classic manila folders, printouts from computerized records, and fax transmissions from outside providers. The paper charts are the property of the hospital and may be reclaimed, usually for coding, at

any time. Please keep your charts clearly visible on a desktop in the Autopsy Residents' Room. (Charts should be reviewed within 24hrs of receipt and then placed in the wooden box next to the door along with the original signed version of the autopsy consent form.) Do not take any of the confidential protected health information out of the medical center. When disposing of papers with protected information please use the box designated for shredding.

7. The multi-headed microscope in the Autopsy Residents' Room is primarily for your use. At least one other single-headed microscope will also be available. Various other groups may wish to use the multi-headed scope: this is your room and you may politely ask any group to return at a time more convenient to you (please use your best judgment when dealing with our colleagues from other departments!)

8. A 100x oil objective and microscope oil are available in the top drawer closest to the multi-headed microscope. Always remove the objective and clean the microscope after the use of oil. (Never mention the existence of the 100x objective to any outside personnel: there is no faster way to gum-up our scope, than to let clinicians pour oil on it!)

9. Various telephone lists and other notices may be posted in the Autopsy Residents' Room for your use. The attending and resident rotation schedules are taped to the pillar directly facing the door.

10. A large key ring, containing keys for L-202, other commonly used rooms, and the glass slide archive (in the hallway between Edwards and Lane buildings), is kept in an upper corner cupboard. Please return it to the cupboard immediately after use.

11. Discussions of autopsy cases should not occur in the hallway and should be restricted to appropriate rooms such as L236, L202, and autopsy attending offices. There are many non-medical personnel around the autopsy areas in the Lane building.

HOURS OF OPERATION AND PAGING

1. The Autopsy Room, L-202, is staffed by one or two Autopsy Room Attendants (ARA) between 8am and 5pm, Monday through Friday. Either ARA may be reached: Jaime Vargas on pager #15057 or Matt Jones at extension 723-7675.

2. Our ARAs and most of the faculty carry alphanumeric-enabled pagers, which you may contact at: http://smartpage.stanford.edu It is much easier to send a specific message, than to wait for a call-back (e.g. "Please bring up the body of Mr. Smith")

3. The Autopsy Service office (723-6265 / 723-6041) is staffed between 8am and 4pm M-F (with breaks covered by the receptionist in H-2110.)

4. The Autopsy/Neuropathology Service assistant can help you with many time-intensive activities, such as placing calls to outside clinicians or requesting outside medical records to be faxed. Feel free to ask for assistance.

5. You are expected to attend 8am teaching conferences in L-201 and encouraged to attend other educational activities as your duties permit. You may be paged at anytime during the above service hours and must be able to answer your page within 5 minutes and be prepared to return to L-236 within twenty minutes. You are Not required to stay in L-202 or L-236!

6. Our regular organ recital begins at 9:30am, each weekday following a case. Please be prepared to present a five minute clinical précis and to show the pertinent findings on your case. You are expected to thoroughly examine all tissues before conference. Most first-year residents require the entire 30 minutes after morning conference in L-201 to prepare for organ recital.

7. Given the ACGME restrictions on at-home call for PGY1 residents, it has been decided that there will be no overnight or weekend call for any of the residents while on the Stanford Autopsy Service. Please have your pager functioning for calls you will receive during working hours of 8am to 6pm. The page operator will route calls directly to your pager based on a monthly standing order, and you will not need to transfer pager coverage yourself.

SUPERVISION

1. Your direct supervisor is the autopsy attending on-call (pager #13216.) If that attending is unavailable, please contact the Autopsy Service director (pager #13451.)

2. Your supervisor carries the legal responsibility for all activities in the Autopsy Room and for all autopsy reports. Feel free to ask any question or ask about any unfamiliar procedure.

3. You will be given graduated responsibilities based on the demonstration of your ability. We do not expect any new resident to have technical knowledge of the skills for post-mortem prosection.

4. You may expect to be directly supervised by an attending (or Autopsy fellow):
   a) during your first three autopsy prosections
   b) whenever you ask for assistance
   c) until you are competent in Universal Precautions' gowning and sharps procedures
   d) during any unfamiliar dissection (the entire dissection, if you have no autopsy experience!)
   e) during complex cases which require an experienced dissector or active tissue collection (e.g. inborn error of metabolism.)

5. You or any of the Autopsy Service staff may convey any signed autopsy report to an interested clinician who has taken part in the care of the patient. Please be circumspect when reporting oral preliminary results. You can invite any such interested professional to the regularly scheduled Organ Recital in L-202, which occurs the next business day after each prosection. It is sometimes best to tell them to come at 10am, so that the autopsy team can review the organs before they arrive.

6. Discussions with family members of deceased patients can be quite tricky and this is almost always handled by the autopsy attending, but the resident/trainee will be kept informed of the conversations. These usually are either about administrative details before the case starts or autopsy results after the autopsy report is finalized. Family members may request autopsy reports from the Medical Records department and do not get reports directly from members of the autopsy team.

HEALTH & SAFETY

1. You are primarily responsible for your own safety! Your attention to proper barrier protection and sharps procedures are your prime defense against infection.

2. The Stanford Autopsy Service practices true Universal Precautions: All unfixed tissues are regarded as highly infectious. There are no extraordinary procedures for known cases of blood-borne organisms such as HCV (see the special procedures for CJD in the Autopsy Manual and understand why such procedures violate UP.)

3. We hold to the basic principle of Universal Precautions: if you would handle a suspected case of Herpes type-43 by a special method, then you should consider that method for All cases!

4. You should be vaccinated against the hepatitis-B virus. Vaccination is provided at no cost through hospital employee health program. You will be asked to undergo annual skin testing for tuberculosis (the Stanford practice of formalin-perfusion of both lungs greatly reduces the risk of infection with TB.)

5. The Autopsy Service will provide you with any glove, tool, goggle, or other barrier protection for which you can make a reasonable argument. (Ask the ARAs, if they do not have the device here, we will attempt to get it.) We encourage you to try different types of eye protection, etc., so that you will discover the most comfortable barrier protection for you.

6. You will be expected to strictly follow the gowning/glove/eye/mask protection rules (in the Autopsy Manual and posted in L-202.) You will be specifically evaluated on these procedures.

7. Good sharps practice is learned. We will teach you how to use sharp scissors and a large blade for virtually the entire prosection. Only one blade at a time at either table! (Let the Autopsy Room attendants handle the rectangular-based table; they will leave you to dissect the bloc on the round-based table.) Avoid the use of

scalpel blades, use only One scalpel blade at a time, never leave a scalpel blade on the table- discard them immediately in the plastic used-sharps containers (the ARAs can teach you how to safely remove a scalpel blade while fully gloved.)

8. Only professional staff associated with a specific case may enter L-202 at any time. Please refer all other requests for observation to Dr. Regula. You are expected to remind all visitors to L-202 of the appropriate gowning/mask procedures.

9. If you suspect a blood/fluid/unfixed tissue exposure, immediately stop prosection. Remove your gown and wash the suspected site. Tell someone of the staff or faculty of your injury and immediately go to hospital employee health (H-1250, first floor near escalators).
Tell the desk clerk that you have had a possible blood-borne pathogen exposure; they know what to do next.

10. Use common sense in L-202; surfaces are often wet and slippery.

11. The Gross photography stand in the Autopsy Room uses a touchscreen digital camera system. Please have the ARAs demonstrate its features on the first day. When properly labeled, photographs will upload into the respective autopsy report in PowerPath. Please take the time to take gross photographs of the important or unusual pathology in your case; it will be used during organ recital, clinical conferences, and during signout of the case. Photos at the autopsy table are taken with a handheld digital camera and uploaded to your autopsy report when replaced in its cradle.

THE AUTOPSY ROOM

1. The Autopsy Room door is locked requiring your magnetic card key. Please give Dr. Regula the entire number on the back of your card key, so he can request access for you. The Autopsy Room is designed for safe prosection and demonstration of unfixed tissues. Loud music and shouting are inappropriate. Practice decorum in the Autopsy Room; a post-mortem examination should be as professional and private as a pelvic examination.

2. The Autopsy Room Attendants are knowledgeable and easy to work with. Please remember to communicate your plans to the ARA, especially when you wish to start the prosection and if your prosection must be interrupted (e.g. to present at M&M). You will be present for the entire prosection. Right before the first incision, take a moment for a “time out” in which you state the patient’s name, date of birth, medical record number, autopsy restrictions, and special aspects of the case, such as whether you will need the special setup for sterile lung cultures.

3. Our Autopsy Room is kept spotless and the floors are disinfected nightly. Your assistance is greatly appreciated. Be judicious with the use of water and be careful as you move the organs about (particularly with the weighing scale.) Please use a

towel to prevent drips on the floor when you move organs from the table to the photography stand.

4. The vertical whiteboard, attached to the round-based table, is for your use during the prosection. You may write on that board while wearing dirty gloves, and then transcribe the weights to a clean sheet after the prosection. If you only have one case that day, leave the weights on the board- it provides an easy way for the attending and clinicians to read the weights during the organ recital.

5. A copy machine is available by the window to make clean copies of dirty documents. Do not bring contaminated sheets out of the Autopsy Room. You are encouraged to leave your dirty worksheet on the adjacent counter and to bring a clean copy to L-236 for your report.

6. The morning organ recital is an important teaching opportunity and you should be thoroughly prepared before 9:30am. You should cut the decalcified epicardial coronary arteries at 3mm intervals (cutting on a blue cloth towel is efficient.) The Autopsy Room Attendant will cut the formalin-inflated lungs into 1cm thick para-sagittal slices and place them to rinse on one of the tables. The fixed bowel from your case will also be placed on the table under running water. Try to keep the room neat and clean for organ recital.

7. The Autopsy Room Attendant will label ten cassettes for your tissue sections. Be sure to prefix all additional cassettes with the letter "A". Cassette “-BB” is used for a bone marrow squeeze from rib, acquired by the ARAs. Cassette “-PIT” is used by them for the pituitary and will be in the brain fixation bucket.

8. The Autopsy Room is the office for our Autopsy Room Attendants; please treat it as you would your own workplace! Do not enter or touch their desk area while wearing gloves, aprons or gowns.

THE REPORTING PROCESS

1. Your Autopsy / Neuropathology report is the major channel of communication with interested clinicians and the family. It should be accurate, clear, succinct, but complete, and prompt. (The Stanford reporting procedures differ slightly from other hospitals; we will explain where and why these differences occur.)

2. We want you to strive for "ownership" of each of your cases and to gain the familiarity and expertise necessary to be an outstanding consultant to your clinical colleagues. Stanford does not permit "doubling-up" on a single case, nor do we pass incomplete cases to other residents as a “handoff.” The complete autopsy is <u>not</u> just a "large surgical specimen". A complete autopsy entails the examination of the entire cadaver with a special attention for missed diagnoses (found in up to 20% of all cases!) You will be expected to not only identify the morphologic criteria for specific anatomical diagnoses, but to reconsider and extend the clinicopathologic correlative skills you developed with Pathophysiology in medical school. A good

autopsy pathologist can engage the clinician in a knowledgeable discussion of Why and How the autopsy findings explain the course of disease and death.

3. You are expected to participate in all relevant steps of the autopsy. The American Board of Pathology is very clear about the criteria for counting an autopsy towards the fifty required for primary certification in Anatomic Pathology:
"In order to report an autopsy to the ABP, the applicant must actively participate in the following (as appropriate to the case):
1) review of history and circumstances of death
2) external examination of the body
3) gross dissection
4) review of microscopic and laboratory findings
5) preparation of written description of gross/microscopic findings
6) development of opinion on cause of death
7) review of autopsy report with teaching staff."
[This is yet another reason why autopsy "handoffs" are not permitted]

4. You must consult with the attending pathologist before the post-mortem begins. You must contact the attending clinician or the delegate designated on the Autopsy Permit, before you present the case to your supervisor. Joint Commission requires your initials on the back of the Autopsy Permit testifying to this conversation. You may take this opportunity to remind the clinician that there is a standard Organ recital in L-202, each business day at 9:30am following the prosection (often the entire team will arrive.)

5. The "general" (below-the-neck) autopsy and the examination of the brain share the same autopsy number and report. The Power Path system lists "general" autopsies with a "SHA-" prefix and the report of neuropathologic findings with an "SHN" prefix. Our report shortens the number to "A" followed by the last five digits (your tissue cassettes are prefixed with "A" and these five digits.)

6. The "general" autopsy reports have three consecutive separately signed parts:
a) the Provisional Anatomical Diagnosis (PAD) is comprised of a list of preliminary diagnoses, based on gross examination only. State law requires the PAD to be in the chart within 48hrs of autopsy. We expect you to submit a draft PAD to your attending by noon of the day of the organ recital. The brief clinical synopsis should be typed immediately before or after the prosection (it may not be transcribed by the time the PAD is devised.) We suggest that you type the PAD as one-line diagnoses; this assures brevity and clarity. We strongly encourage you to complete the gross description of findings as soon as possible after your prosection. While not required for the initial PAD, your recording of the gross findings at this time minimizes the risk of omitting important diagnostic information. We provide detailed templates for the description of adult and neonatal cases. Open your report in Word, click on "Worksheets" button to record your Clinical History and detailed description. The first time you open a report in Word, you must choose the appropriate worksheet by clicking on "add Worksheet". You should select the worksheet that most closely

matches your patient and the restrictions on the case. Please review every line in the template; your case findings may not correspond to the "default" template entry (e.g.- the appendix may not be present!). You will find that recording information immediately after it is gathered is the most time-efficient approach to managing your workload. This is especially important when the workload is heavy. Periodically click "Save" on the worksheet so you do not lose any work.

b) the Final Diagnostic Outline (FDO) is comprised of a list of final diagnoses, based on all relevant gross, microscopic, microbiological and special examinations. Stanford and Packard hospitals expect 95% of all FDO reports to be in the chart in two weeks (this includes all transit time!) We expect you to submit a draft FDO to your attending within one week from the day of prosection. Our Service averages a seven-day turn-around for this report, which is widely distributed among interested clinicians. Many clinical services at Stanford expect and rely upon this rapid turn-around. As with the description of gross findings, you are encouraged to complete the microscopic description of findings as soon as you have reviewed the slides with the faculty attending pathologist.

c) the Final Anatomical Diagnosis, Narrative builds on the framework of the FDO to include a complete morphologic description of the pertinent findings (both gross and microscopic), along with your discussion of the correlation of the clinical questions and the anatomic findings (the epicrisis.) The FDN is required by CAP regulations to be in the chart within 30 days, and by the state, within 60 days. We expect you to submit a draft Narrative to your attending within one month from the day of prosection.

d) the Neuropathologic report is added to the FDN and follows the report deadlines assigned by the Neuropathology Service. (The NP report may be prepared by a different resident than the prosector.)

e) The autopsy reports are released as: 1) scanned documents that appear in the electronic medical records in the Scanned Documents tab of the Cerner system for LPCH patients and in the Media tab of the EPIC system for SHC patients. Please note that each phase of the report remains permanently and is not replaced by subsequent phases of the report. 2) transmissions of the reports are sent to clinicians listed in the General tab of the PowerPath, entered during accessioning of the case, using the preferred method specified by the clinician (fax or hardcopy) 3) reports can be mailed or faxed to additional clinicians through the Autopsy administrative assistant, Dory Palacio. For this, it is best to instruct clinicians to contact Dory directly at 650 723-6041.

7. You are expected to meet the following deadlines:
a) draft PAD to attending by noon the next working day after the prosection,
b) draft FDO to attending within one week of prosection, and
c) draft FDN to attending within one month of prosection.

You will be notified of late cases by your attending and by e-mail at the end of your rotation.

8. You are strongly encouraged to:
a) complete the description of gross findings immediately after the morning organ recital
b) complete the description of microscopic findings immediately after reviewing the case with your attending.

Failure to keep up with your work will require you to review the case multiple times!

9. The Stanford Autopsy/NP report is typed into the "Power Path" system. The computer screens and procedures are nearly identical to those in Stanford Surgical Pathology. Your login and password should be the same as with Surg Path. There are some slight differences from Surg path in updating your report status. Click on the … button by the status (or press Control-S) when your draft is ready to send to your attending. Choose the “Progress” check-box from the lower panel and select the “Faculty Review” option. The PAD and FDO reports are a single page and do NOT include the data you have entered into the worksheet. The worksheet is "Released" when the FDN is signed. When you check the box to release the worksheet, make sure the cursor had been positioned at the end of the report in the main Results page. If reports are “stuck” and do not save or progress, please let Tony Chen or Dr. Regula know.

10. You may enter the narrative portions of the Autopsy/NP report at any workstation installed with PowerPath.

CONFERENCES
1. Intra- and inter-departmental conferences are essential to learning new facts and for improving your skill as a consultant. A good autopsy pathologist is constantly reviewing not only the morphologic diagnoses, but their pathophysiologic correlates. We do not expect any new resident to be able to construct and give a cogent interdepartmental presentation of autopsy findings and correlates. We will teach you how to begin and how to improve this skill throughout the rotation.

2. You are expected to attend and participate in the usual 8am intradepartmental conferences. The Organ recital is scheduled for 9:30am to give you an opportunity to review the viscera, examine the cut sections of the fixed lungs, and to hone your presentation. You must attend the weekly brain-cutting conference, except when you are actually prosecting a case.

3. You are encouraged to avail yourself of other conferences and seminars which you find interesting. Stanford is an exciting medical center and you should feel free to explore the academic side of your residency experience.

4. Occasional cases are requested for presentation at an inter-disciplinary conference. You are expected to prepare, review with an attending, and present the

morphologic findings and pathophysiologic correlates of your case. In the event that you are unable to attend a requested session you may, with the approval of the attending autopsy pathologist, prepare the requested case and equip the autopsy resident on-service for its presentation.

5. Most clinicians relate easily to demonstrative gross photographs. We will teach you the various methods to best demonstrate a finding by photography. Some clinicians, particularly in the medical specialties, are reassured by the presentation of representative photomicrographs. We provide a complete, fully staffed photo laboratory in L-206 and the Photo lab staff or your autopsy faculty would be happy to explain the equipment and procedures. We are also happy to demonstrate how to attach an image in an secure; email to a clinician.

6. Most clinical conferences provide an LCD projector for your presentation, but please check whether you need to bring your own computer. Arrive early at conference to make sure the video projection is working properly. You do not want to waste the time of busy colleagues.

HOSPITAL DEATH PROCEDURES

1. The average clinician experiences one in-hospital patient death annually. Although clinicians at Stanford are required by the medical staff bylaws to request an autopsy on every death, only about 25% actually obtain a valid permission for autopsy.

2. Stanford Hospital has a decedent affairs coordinator, Susan Scott, available during regular working hours. She is available at extension 736-1040 in the chaplains' office and carries pager #15683. She coordinates discussions with physicians about the death certificate and discusses aspects of autopsy and disposition of remains with families. Autopsy permission is obtained by a physician involved with the case, but Susan Scott acts as a valuable coordinator. Decedent affairs are handled at LPCH through the Nursing Supervisor, who can be reached at 7-8430.

3. The Stanford and Packard hospital "Administrative Guide" contains a detailed death protocol with explicit instructions for all parties. These pages are included in the back of the red Autopsy Manual. (Most are common sense; you are Not expected to memorize the details!)

4. The typical "Authority for Autopsy" is granted through a written permit (Stanford 15-49A), which is available in bulk on every clinical floor. This permit is valid when the original or a fax copy is signed by the cognizant next-of-kin. Less frequently, a permit may be voice recorded, either with the dedicated digital-recording telephone in R-241 or by the hospital transport dispatcher. In either case the clinician need only remember a single telephone number "3-POST" (732-7678) and will be connected to an available clerk.

-A "witnessed", but un-recorded permission is Not valid; contact your attending.

5. At Stanford, the standard-of-practice is to have the attending clinician devise and sign the Death Certificate. In most private practices, the autopsy pathologist will complete the DC. You may wish to scan the spiral-bound manila booklet titled "the Medical Cause of Death Manual", available in the L-236 library.

6. The body of the deceased is generally enshrouded on their hospital bed and transported to the central Cold Room on the SHS loading dock in the basement. Removable valuables are placed in the hospital safe. (Be sure to note any jewelry which remains on the body.) Security services controls access to this room (3-7222.) The ARA will bring the body from the Cold Room to the Autopsy Room and return it after the prosection.

7. On rare occasion, you may be paged to give permission to accept a body from a patient who has died outside the confines of the hospital. Please page your attending if this delivery is unexpected.

8. There is No Charge for an autopsy for any patient seen at Stanford at any time (if the patient has a medical record number, that's good enough.) Please refer questions about other expenses, such as transportation or funeral expenses to the Service director. Any case without a Stanford medical record number must be explicitly cleared by the Service director (our criterion is that such rare cases must be of "extraordinary teaching value".)

9. We actively encourage clinicians to seek permission for autopsy for any Stanford patient who dies at home or in a hospice. We maintain a small fund to recover the additional transportation costs and hence, there are no additional costs to the family. Refer questions to your attending or the Service director.

AP – BONE MARROW HEMATOPATHOLOGY

Rotation Director: Susan Atwater, MD

Goals and Objectives

Patient care

- Be familiar with a wide variety of adult and pediatric hematologic disorders and bone marrow findings associated with non-hematologic diseases (for example, infectious agents, malnutrition, metastatic cancer)
- Develop proficiency in examining peripheral blood smears, bone marrow aspirate smears and bone marrow core biopsies, and interpreting their findings.
- Develop proficiency in correlating morphologic findings with results of ancillary diagnostic tests (e.g. special stains, flow cytometry, molecular studies, and tissue immunohistochemistry)
- Gain skill in the technical and interpretive aspects of flow cytometry for leukemia/lymphoma diagnosis
- Correlate clinical findings with morphology of clinical hematology samples
- Learn appropriate selection of diagnostic tests in hematology

Medical knowledge

- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases that may affect the bone marrow
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills

- Communicate clearly with clinical colleagues, including hematologists, oncologists, infectious disease specialists, stem cell transplant staff, and other medical or surgical services, to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with laboratory staff in coordinating timely processing of specimens

Professionalism

- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively with administrative and technical staff in the hematology and flow cytometry labs to maximize productivity and maintain the quality of the work environment
- Ensure that pathology reports are free of factual error, and complete them in a timely fashion

Systems-based practice

- Learn the process of case evaluation and work-flow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care

Practice-based learning

- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems.

Length of Rotation: 1 month required (a second elective month is recommended for trainees who will be responsible for bone marrow signout in their future career).

Requirements of the rotation / Resident duties and responsibilities

1. For the first week (first five weekdays) of the rotation for a first year AP resident, no more than 5 bone marrow cases will be signed-out by the AP resident per day. The remaining cases will be handled by CP residents, HP fellows, or the attending on-service.
2. Each afternoon, the resident should attempt to preview the peripheral blood and bone marrow aspirate smears for cases with biopsies coming out the following day, and obtain adequate clinical information for each case. When time is short, a brief informal preview is more helpful than none.
3. Flow cytometry studies are only performed if ordered by the clinician. Bone marrow cases with flow cytometry orders will have flow panels selected by the CP resident or resident at Hillview, in consultation with the attending pathologist. If additional flow cytometry markers are needed on an existing flow cytometry case, the AP resident handling the case will add them in consultation with the attending pathologist or fellow.
4. If the bone marrow attending believes that a flow study should be added to a case, the bone marrow resident or attending will contact the physician who submitted the bone marrow, discuss the relevant findings and ask if the clinician is willing to add the flow study. If so, it is preferable if the clinician enters the order for flow cytometry into either the EPIC or Cerner clinical information systems. If the clinician is not willing to do so, discuss the situation with the bone marrow attending. Flow cytometry studies are expensive, and not all patients are covered by insurance.

5. Anytime we recommend adding a flow study to a case, a note should be added to the Powerpath case, documenting the following: (1) the time and date of the conversation, (2) the full name of the clinician, (3) the name of the person contacting the clinician, (4) the abnormal finding that prompted the flow recommendation, and (5) the clinician's response. These notes aid in ensuring that the flow study will have a valid order and may be legally performed. Even if the clinician does not request the flow study, the note will document that we recommended it.
6. While Special Hematology lab staff will perform the initial bone marrow differential counts, additional counts (e.g. 500-cell blast counts) may be required. You may be asked to perform some counts under the attending's supervision after being provided the necessary training.
7. The resident will take "first call" for all questions addressed to the laboratory regarding bone marrow specimens, including aid in flow cytometry panel selection. As needed, smears can be reviewed with either the Hematology Specialist or the attending pathologist.
8. At 9:00-9:30 AM each day, the resident will collect the bone marrow biopsies for the day from H2110 and begin case sign out with the attending.
9. The resident will contact clinicians for additional clinical history or for urgent diagnoses as necessary.
10. Following review with staff, the resident will dictate the bone marrow report using the standard bone marrow report format (the template is available in Power Path under the Surgical Macros button as "Bone Marrow (template)" as well as in Voicebrook). Cases should be dictated as soon as possible, proofread for error correction, and forwarded to the attending for sign out on the same day. The slides and paperwork must be available to the attending for review.
11. The AP resident will interpret flow cytometry results with the fellow or attending, check the entered flow cytometry data for accuracy in Power Path, and will incorporate an interpretation in the report. Text comments for negative flow cytometry reports are available in Power Path.
12. If immunostains or other ancillary studies are needed, the resident will order the appropriate studies during or after signout, and will retrieve the stains for review with the staff as soon as they are available.
13. The resident will follow up on pending special studies, such as IPOX or other special stains.
14. The resident will become familiar with the "Heme Codes" section of the Surgical Macros in Powerpath, and code cases in PowerPath with the appropriate hematopathology diagnostic code.
15. Additional procedures for Pediatric bone marrow aspirates include:
16. If the pediatric hematologist has reviewed the aspirate and written a comment on the paperwork, include their comment in report as follows: ("Dr. X has reviewed the slides and provides the following comment: 'Dr. X's Comment' ") The name

of the pediatric hematologist is included in the bottom line just before the Pathology attending's name.

17. If the pediatric attending comes by to review the case with us at signout, include a comment to the effect that "the case was discussed with Dr. X, who agrees". The name of the pediatric hematologist is included in the bottom line just before the Pathology attending's name.
18. Attend weekly Friday 1:30 – 2:30 pm heme consensus conference, and bring cases designated by the attending to show.

CONFERENCES

- Friday: Heme Consensus Conference, 1:30 pm, Room H-1537M
- Wednesday: Hematopathology Conference, 1st week, 12 noon, location TBA.
- Wednesday: New Patient Conference, weekly, 4:30 pm, CC 2nd floor
- Thursday: Laboratory Medicine Lecture Series, 12 noon, H1551L
- Friday: CP Call Conference, 12 noon, L201
- Surgical Pathology & Current Concepts conferences

STUDY SETS

As it is not possible to see the large breadth of hematology during a rotation, glass slide sets are available for review of abnormalities on peripheral smear, bone marrow and body fluids. A list of correct diagnoses is provided. Independent study is strongly recommended to supplement the Hematology sign-out.

PRIMARY TEXTS AND ARTICLES

1. Swerdlow SH et al. WHO Classification of Tumours, Pathology & Genetics, Tumours of Haematopoietic and Lymphoid Tissues (IARC Press, 2008)
2. Bain BJ: Diagnosis from the Blood Smear. NEJM 2005; 353(5):498-507.
3. Craig FE, Foon KA: Flow Cytometric Immunophenotyping for Hematologic Neoplasms. Blood 2009; 111:3941-3967/
4. Foucar K, Reichard K, Czuchlewski D. Bone Marrow Pathology, 3rd Edition (2010)

OTHER USEFUL TEXTS AND RESOURCES

5. Bain B. Blood Cells. A Practical Guide, 3rd Edition (2002)
6. Glassy EF. Color Atlas of Hematology (1998).
7. Carey JL et al. Flow Cytometry in Clinical Diagnosis, 4rd Edition (2007)
8. Nguyen D et al. Flow Cytometry in Hematopathology (2003)
9. Knowles D. Neoplastic Hematopathology, 2nd Edition (2001)
10. Hoyer JD and Kroft SH. Color Atlas of Hemoglobin Disorders (2003)

11. Kjeldsberg C et al. Practical Diagnosis of Hematologic Disorders, 3rd Edition (2000)
12. Galagan KA, Blomberg D, Cornbleet PJ, Glassy EF. Color Atlas of Body Fluids (2006).

SUPERVISION AND EVALUATION

The resident's work will be supervised by an attending hematopathologist in all areas. The resident will be evaluated on his/her daily work as assessed by each attending and designated laboratory staff. All attendings as well as designated staff members will evaluate the resident's performance in the MedHub system.

CYTOPATHOLOGY

Director: Christina Kong, M.D.
Associate Director: Erich Schwartz, M.D. Ph.D.

Throughout their first and second years of AP training, residents rotate through Cytopathology every three to four days during their months on Stanford Surgical Pathology. In addition, residents can choose to do a one-month elective in cytopathology. The specific expectations for these two experiences are provided below.

Requirements of the Surgical Pathology Cytopathology rotation

- Preview cytology cases prior to sign-out
- Write FNA reports or perform FNA biopsies and adequacy assessments for image-guided FNA's (alternating responsibilities between two residents on service)
- Attend cytology sign-out with attending
- Perform primary screening of pap smears
- View "Fine Needle Aspiration Technique" DVD by Dr. Britt-Marie Ljung (also available at: http://www.papsociety.org/fna.html)
- Gynecologic cytology mock proficiency tests – two sets 1st year (first and second half of year), 1 set 2nd year (first half of year)
- ThinPrep Certification Exam – complete by second half of 2nd year
- Image-guided FNA adequacy assessments – participate in 10 with cytotechnologist or cytology fellow then have cytology faculty on-service assess competency by observing resident perform adequacy assessment during a procedure.

Requirements of the Cytopathology elective

- Preview cytology cases and write FNA reports
- Attend cytology sign-out with attending
- Perform FNA biopsies
- Perform adequacy assessment for image-guided FNA's
- Perform primary screening of pap smears
- View "Fine Needle Aspiration Technique" DVD by Dr. Britt-Marie Ljung (also available at: http://www.papsociety.org/fna.html)

Resident duties and responsibilities for each level of training:

Surgical Pathology Rotation

Preview Service

- Preview 5 non-GYN and 5 abnormal GYN specimens; enter your diagnosis under the "Notes" section in PowerPath prior to sign-out
- Write-up FNA cases: at least **2 for 1st yr** residents and **4 for 2nd yr** residents

- Do primary screening pap smears which will then be re-screened by a cytotechnologist: at least **1 for 1st yr** residents and **2 for 2nd yr** residents

FNA Service (1st and 2nd yr residents)

- Preview 5 non-GYN and 5 abnormal GYN specimens; enter your diagnosis under the "Notes" section in PowerPath prior to sign-out
- Attend at least one image-guided FNA with fellow or cytotech
- Attend all clinic FNA's from 9AM-1PM

Elective rotation

First-year Resident

- Preview all cytology cases (gynecologic, non-gynecologic and fine needle aspirates) prior to afternoon sign-out with the attending
- Take primary responsibility for at least two FNA cases and five non-gynecologic cases each day
- Do primary screening of one pap smear per day which will then be re-screened by a cytotechnologist
- Attend image-guided FNA biopsies with the cytology fellow or cytotechnologist to learn how to perform adequacy assessments
- Learn how to perform FNA biopsies
- Review cytology study sets

Second-year Resident

- Preview all cytology cases (gynecologic, non-gynecologic and fine needle aspirates) prior to afternoon sign-out with the attending
- Take responsibility for at least four FNA cases and five non-gynecologic cases each day
- Do primary screening of two pap smears per day which will then be re-screened by a cytotechnologist
- Independently perform adequacy assessments on image-guided FNA's
- Perform FNA biopsies under the supervision of the cytology attending or fellow
- Review cytology study sets

Supervision and Evaluation

- Daily supervision by on-service cytology attending and cytology fellow
- Monthly written evaluation by faculty
- Monthly 360^{o} evaluation by cytology supervisor
- Mock proficiency tests, ThinPrep certification exam, and direct evaluation of competency in performing immediate adequacy assessments of image-guided FNA biopsies.

FNA Service Information

Fine Needle Aspiration Biopsy

- Answering Pages for FNAs
  - Required information – Patient name and location
  - Optional but helpful information – Referring clinician, FNA site, cancer history

  Calls from Clinic E are for patients from off-site clinics. Please ask only for the Required Information, i.e. patient name and location

- Know who you're talking with
  - The office staff or medical assistant is unlikely to have information beyond the patient's name, location and referring clinician
  - Residents, fellows and physician's assistants will be able to give you more extensive information about the FNA site, patient's history and their differential diagnosis

- Occasionally, referring MDs, residents, and/or nurses from off-site clinics will page the FNA pager wondering how their patients can get an FNA. Please convey the following information:

  Patients from off-site clinics can drop-in for fine needle aspiration (FNA) biopsies Monday through Friday, 9:00AM-12:00PM and 1:00PM-3:00PM, at Clinic E in the Stanford Cancer Center, 875 Blake Wilbur Drive. No appointment is necessary.

Image-Guided FNA

- Check board in Cytology for scheduled image-guided FNA's
- Arrange with Cytotechnologist or Cytopathology Fellow to be paged for procedure

Cytopathology Goals and Objectives

Patient Care

- To develop proficiency…
  - In obtaining relevant clinical information for each case
  - In evaluating a patient for fine needle aspiration (FNA) biopsy
  - In obtaining an informed consent for FNA biopsy
- To learn appropriate…
  - Manner of communication with clinicians regarding results
  - Manner of interacting with patients and their families

Medical Knowledge

- To understand …
  - The Bethesda System 2001 terminology and how to apply it to cervical cytology diagnosis and patient management
  - The Bethesda System terminology for thyroid FNA and how to apply it to thyroid FNA diagnosis and patient management
  - The current management recommendations for patients with cervical dysplasia
  - The proper use of ancillary studies such as HPV testing, GC/Chlamydia testing, flow cytometry, etc. in cytology samples
  - The criteria for adequacy in gynecologic, non-gynecologic and FNA cases
- To develop expertise …
  - In the interpretation of pap tests utilizing three different preparation methods (ThinPrep, Surepath, conventional)
  - In the interpretation of non-gynecologic and FNA specimens
  - In performing immediate assessment for adequacy in FNA biopsies

Practice-Based Learning and Improvement

- To locate, appraise and assimilate …
  - Relevant clinical information, radiology results, microbiology/lab results from the hospital computer system
  - Relevant information regarding prior pathology results from the lab data system
  - Journal articles pertinent to a specific topic by performing computer-based literature searches (i.e. PubMed) and be able to critically review the literature
- To use case-based learning …
  - By reviewing cytology study set cases
  - By attending the monthly Cytology Unknown conference
  - By taking the gynecologic cytology proficiency tests

Interpersonal and Communication Skills

- To communicate…
  - Results accurately and in a timely fashion to clinicians
  - Effectively with patients and their families and be able to establish rapport and sense of trust when performing FNA biopsies
- To prepare concise, complete written reports on …
  - FNA biopsies

Professionalism

- To demonstrate integrity, honesty and respect …
  - When seeing patients for FNA biopsies
  - When working with the support staff (e.g. cytotechnologists, cytology prep techs, administrative assistants, clinic nurses, etc)
  - By understanding and following the principles of patient confidentiality and HIPAA requirements
- To work effectively as a team with …
  - The cytology staff (i.e. cytotechnologists, cytology prep techs, cytology fellow, cytology attending)
  - The clinicians and clinic staff when communicating results and when performing FNA biopsies
  - The radiology staff when assessing adequacy for image-guided FNA biopsies

Systems-based practice

- To understand …
  - How to evaluate cytology cases in a cost-effective manner
- To become familiar …
  - With the QA/QC regulations that apply to gynecologic, non-gynecologic and FNA cytology
  - With general performance improvement concepts pertinent to pathology by attending the annual departmental QA lecture

DERMATOPATHOLOGY

Director: Jinah Kim, M.D., PhD

Goals and Objectives

First-year and second-year residents

Patient Care

- To gain a basic understanding of diagnostic dermatopathology.
- To learn and develop competence in morphologic description of skin biopsies
- To develop skills in dermatopathology pattern recognition.
- To develop a systematic approach to evaluating a skin biopsy
- To understand the power and limits of ancillary techniques and learn to appropriately apply ancillary techniques, such as histochemical stains and immunohistochemistry
- To gain an appreciation of the importance of clinicopathologic correlation and communication with clinicians concerning diagnosis

Medical Knowledge

- Acquire knowledge of the structure and function of the skin.
- Develop a working knowledge of the diagnosis, pathogenesis and treatment of important dermatologic entities including common dermatoses, cutaneous infections, and basic skin tumors
    - To recognize basic dermatologic skin patterns such as the “lichenoid reaction pattern”, the “spongiotic reaction pattern”, and the “psoriasiform reaction pattern”
    - To recognize basic skin tumors such as basal cell carcinoma and squamous cell carcinoma
    - To recognize basic non-malignant skin tumors such as seborrheic keratosis
    - To recognize benign nevi
    - To develop an algorithm to approach atypical melanocytic lesions

Practice-Based Learning and Improvement

- To locate, appraise and assimilate …
    - Relevant clinical information and microbiology/lab results from the hospital computer system
    - Relevant information regarding prior pathology results from the lab data system
- To use case-based learning …
    - By reviewing dermatopathology study set cases
    - By participating in the weekly “Chapters of Weedon” fellow run teaching sessions

Interpersonal and Communication Skills
- To obtain relevant clinical information from the treating clinician.
- To report results accurately and in a timely fashion to clinicians
- To prepare concise, complete written reports on skin biopsies.

Professionalism
- To demonstrate integrity, honesty and respect …
  - When working with the support staff (e.g. histotechnologists,, administrative assistants, clinic nurses, etc)
  - By understanding and following the principles of patient confidentiality and HIPAA requirements
- To work effectively as a team with …
  - The dermatopathology staff (i.e. histotechnologists, administrative assistants, co-fellows and residents, dermatopathology attending)
  - The clinicians and clinic staff when communicating results

Systems-based practice
- To evaluate dermatopathology cases in a cost-effective manner
- To become familiar …
  - With the QA/QC regulations that apply to dermatopathology
  - With general performance improvement concepts pertinent to pathology by attending the annual departmental QA lecture

Surgical Pathology Fellow

Patient Care
- To continue gaining a basic understanding of diagnostic dermatopathology.
- To continue learning and developing competence in morphologic description of skin biopsies
- To develop skills in dermatopathology pattern recognition.
- To develop a systematic approach to evaluating a skin biopsy
- To learn how to develop a list of appropriate differential diagnoses
- To understand the power and limits of ancillary techniques and learn to appropriately apply ancillary techniques, including histochemical stains, immunohistochemistry, immunofluorescence, electron microscopy and molecular studies.
- To gain an appreciation of the importance of clinicopathologic correlation and communication with clinicians concerning diagnosis
- To develop proficiency in recognizing and obtaining relevant clinical information for each case.

Medical Knowledge
- Acquire knowledge of the structure and function of the skin.
- To continue to develop a working knowledge of the diagnosis, pathogenesis and treatment of important dermatologic entities including common dermatoses,

cutaneous infections, bullous diseases, cutaneous manifestations of systemic disease, skin tumors, disorders of nails, hair and pigmentation.

Practice-Based Learning and Improvement
- To locate, appraise and assimilate …
  - Relevant clinical information and microbiology/lab results from the hospital computer system
  - Relevant information regarding prior pathology results from the lab data system
  - Journal articles pertinent to a specific topic by performing computer-based literature searches (i.e. PubMed) and be able to critically review the literature
- To use case-based learning …
  - By reviewing dermatopathology study set cases
  - By attending the weekly Dermatology Grand Rounds conference
  - By participating in the weekly "Chapters of Weedon" fellow run teaching session

Interpersonal and Communication Skills
- To obtain relevant clinical information from the treating clinician.
- To report results accurately and in a timely fashion to clinicians
- To prepare concise, complete written reports on skin biopsies.

Professionalism
- To demonstrate integrity, honesty and respect …
  - When working with the support staff (e.g. histotechnologists,, administrative assistants, clinic nurses, etc)
  - By understanding and following the principles of patient confidentiality and HIPAA requirements
- To work effectively as a team with …
  - The dermatopathology staff (i.e. histotechnologists, administrative assistants, co-fellows and residents, dermatopathology attending)
  - The clinicians and clinic staff when communicating results

Systems-based practice
- To evaluate dermatopathology cases in a cost-effective manner
- To become familiar …
  - With the QA/QC regulations that apply to dermatopathology
  - With general performance improvement concepts pertinent to pathology by attending the annual departmental QA lecture

Introduction

At any given time the Dermatopathology service will have several trainees simultaneously rotating. Dermatopathology fellow(s) will be on the service throughout the entire academic year. Dermatology residents will attend

Dermatopathology (DP) sign-out during their second and third year of training for two 6 week rotations.

Daily sign-out will begin at 9:00 AM, except for Thursdays when sign-out begins immediately following Dermatology Grand Rounds at about 9:15 AM and for Tuesdays when the start of sign-out will be coordinated with the Dermatology lecture series at which pathology trained Dermatopathology fellows participate. While on the DP rotation, each person is expected to attend sign-out daily. Dermatology Grand Rounds are mandatory for DP Fellow(s) and Dermatology Residents and strongly recommended for Pathology Fellows and Residents.

Educational Goals

The dermatopathology rotation for SP residents is intended to build upon one's fund of knowledge in dermatopathology through examination, clinical correlation, and interpretation of dermatopathologic material. At the conclusion of the two-month rotation, the SP resident is expected to recognize the major patterns of inflammatory and neoplastic skin disease, construct a list of differential diagnostic possibilities, and arrive at a final diagnosis.

General

All trainees are expected to preview the day's slides and read about the respective disease entities.

For Pathology Residents and Fellows and Dermatology Residents, vacations should not exceed one week while on DP. Please inform the attending on service and your fellow residents of planned vacations. It is your responsibility that your area of the service is covered during your absence.

Rotating Surgical Pathology (SP) Residents and Fellows should also read the "in-depth responsibilities for surgical pathology residents and fellows" that follows this information.

Expectations

SP Residents (along with SP Fellows) are directly responsible for the organization of all "in house" cases (i.e. cases that come from Stanford Dermatology Clinics). This means organizing levels, IPOX material, etc., in preparation for sign-out. In addition, SP Residents should aid the DP fellow in organization of the consult cases.

SP Residents are expected to preview each case (in house and consult) prior to sign-out, read up on the respective disease entity and pull relevant prior material for all in-house cases.

Following sign-out, the SP resident (along with the SP Fellow) is responsible for dictating the final report for in-house cases. (Also see "in-depth responsibilities for surgical pathology residents and fellows").

In the afternoon, the SP resident is encouraged to work on a project of their choosing, not necessarily dermatopathology-related. The SP resident is also expected to attend the eye pathology sign-out on Thursday afternoon in Ophthalmology (run by Dr. Peter Egbert) between 2:00 pm and 3:00 p.m. in S014

(basement level). Please page Dr. Egbert (pager id number 13327) at the beginning of the rotation for instructions.
All eye pathology cases should be separated from the general stack of dermatology cases and placed in the "Ophthalmology department" mail slot next to the water cooler in surgical pathology.
As with other aspects of surgical pathology training, the surgical pathology resident should avail themselves of ancillary diagnostic techniques, as pertains to dermatopathology (including immunofluorescence, electron microscopy, immunophenotyping, and molecular diagnostics).
The SP Resident should attend the weekly Surgical Pathology teaching conferences held Tuesday through Friday mornings in L201. Residents are strongly encouraged to attend Thursday morning Dermatology Grand Rounds.
While there is no overnight or weekend "call" duty, SP Residents should realize that they are to complete assigned tasks in a timely manner, even if this requires staying late. As the dermatopathology service deals mostly with community dermatologists and is very service-oriented, we (the Stanford dermatopathology service, as a whole) are committed to dissemination of accurate pathology reports in a timely manner.

Stanford Dermatopathology Service
In-depth Responsibilities for Dermatopathology Fellow(s), Surgical Pathology Fellows and Residents

Welcome to dermatopathology. The following details the responsibilities of surgical pathology residents and fellows who rotate onto the service.

Sign-out begins at 9:00 a.m. (except on Thursday, when it starts at approximately 9:15 a.m. due to Derm Grand rounds) and is usually complete by 12:00 noon. Tuesday poses anther exception. The attending on service will determine the beginning of sign-out on Tuesdays and coordinate that time with the lecture schedule for pathology trained dermatopatholgoy fellows.

As part of your learning experience you are expected to preview the slides either on your own or with the dermatopathology fellow(s). Do this either the night before or early in the morning prior to sign-out. Keep the slides and paperwork together in the order in which you found them, and do not lose them.

Things to do prior to sign-out:

1. Check the computer for prior biopsies on the patient and pull relevant historical slides. For example a prior biopsy of "malignant melanoma" or "atypical melanocytic proliferation" or "atypical lymphoid infiltrate." In general, you do not need to pull prior BCCs, SCCs, AKs, etc., but if you think the attending may want to see a prior slide on a case, pull it. This will certainly be the case if there is a discrepancy in diagnosis between the initial biopsy and the subsequent excision.

2. Proof the draft copy of the report: Is the clinical information accurate? (i.e. compare the transcribed information on the draft copy to the handwritten information on the original requisition and make corrections as necessary) Is the gross description correct?

At the time of sign-out:

1. Pencil in the diagnosis (with comment, if necessary) on the white draft copy of the final report. This is important, as it is the attending's only way of verifying that case #07-2242 is in fact a BCC and not a melanoma, without having to re-examine the slide. Also, if the case is held for special study (i.e. levels, stains, IPOX), pencil in this information on the draft copy. This is a record keeping measure that will allow the resident to know what is/is not pending on a case, and also helps the attending with billing for special stains, etc. when the case is finalized.
2. For those dealing with consult cases: Keep in mind that many of the "outside" outside cases (see list of doctors below) should have a re-cut slide attached to the paperwork. Slides and blocks from I/O cases should also be attached to the paperwork, unless the attending decides to keep the material. If the slide/block is not returned immediately, please jot a note to Gloria in the upper right hand corner of the white draft copy of the final report stating, for example, "Gloria, slide kept".

After sign-out:

1. If a case is pending levels/special stains, keep the slides and paperwork together, and place both in the appropriate "inside pending" or "outside pending" box on the dermatopathology fellow's desk. Do not keep the cases at your own desk.

2. Call Gloria before and after you dictate to tell her that you are beginning your dictations, and that you have completed all of your dictations (at 3-6736)

3. Dictate the final diagnosis, or type it yourself via Power Path (Macro modules are available on the derm computers). Dictate corrections to the clinical and gross sections (or correct them yourself, via Power Path). Final diagnoses should read: "SKIN, SHOULDER, BIOPSY: SQUAMOUS CELL CARCINOMA IN-SITU, TRANSECTED". In general, inside cases do not need a "microscopic description." A "bottom line" diagnosis with or without a comment section will suffice.

4. There are three types of dictation:
   Bottom line: Most cases, particularly inside cases and Sunnyvale clinic cases (see list of Sunnyvale docs below), are signed out this way. There is no microscopic description and, usually, no comment. Tell Gloria "bottom line as nodular basal cell carcinoma" or "bottom line asbccnod."
   Bottom line plus *"macro"*: This is the way that many of the outside cases are signed out. The "macro" is the canned microscopic description that accompanies

the more common dermpath diagnoses. For instance, we have a macro for basal cell carcinoma, nodular type, which will bring up a microscopic description automatically. Refer to the dermatopathology manual (Red binder, should be at every derm desk) which lists all of our "coded" macros. Tell Gloria "Use the macro for nodular basal cell carcinoma" or "Use the macro 'bccnod'" We generally use macros only for inflammatory conditions, melanocytic lesions (excluding intradermal nevi) and some of the more rare tumors, for example inverted follicular keratosis. BCCs, SCCs, and AKs, etc. do not need a macro. Use your judgment.
Micros: For cases which need a microscopic description, but for which no canned description (i.e. "macro") is available. An example would be a microscopic description for invasive malignant melanoma. For this type of dictation, you need to dictate it like a routine surgical.

To make Gloria's life easier, please batch the *bottom line* and *bottom line/macro* dictations together, and do the more complex *micro*-type dictations separately.

5. Points to remember in your dictations:
   Nearly all tumors/neoplasms need margin status. One exception is as follows. For specimens which come in as "Moh's done" or "Moh's surgery performed," you need not include margin status. Instead, say "SKIN, CHEEK, **DEBULKING**: BASAL CELL CARCINOMA, NODULAR TYPE"

   In the line diagnosis, use "BIOPSY" for biopsies, and "EXCISION" for true excisions. Do not differentiate between shave and punch biopsies, just designate them as "biopsy" on the bottom line. If levels were performed please mention that in the "microscopic" or "comment" as "multiple leveled sections were examined" (VL macro)

   If special stains/IPOX stains were performed and used in the final interpretation, we must mention them in the "microscopic" or "comment" sections of the report. Otherwise, we will not get reimbursed for the work done and worse yet, one of your treasured attendings could end up in the big house for Medicare fraud.

   When using the "canned" microscopic descriptions, modify them as necessary to fit the case. In other words, if your case of lichen planus fails to show a "dense lichenoid infiltrate," then strike that from the description.

   Don't forget to dictate corrections to the clinical and gross description portions of the report, or correct them yourself in the computer.

6. After dictating (or typing) the case, place the *final paperwork* on the top shelf of the file box adjacent to the dermpath fellow's desk. Most of the time you will not have an opportunity to proof read the final report before the attending sees it, but that's OK. The *final paperwork* should include the white draft copy with your scribbled diagnoses, the original requisition, as well as the yellow IPOX

interpretation forms, if IPOX has been performed.

7. Other information:
   The dermpath phone ("hotline") number is 498-7396. To access voice mail type 3-1111 and then the password "DERMPA" (337672)

   Requesting blocks from APMG (Associated Pathology Medical Group)—FAX request to 408-395-0471

   Requesting blocks from Veena Kupelli please call Gloria.

Goals and Objectives: Dermatopathology Fellows

Core Competency I: Patient Care

- To integrate diagnostic information to develop an appropriate differential diagnosis including patient chart review, imaging studies, previous biopsies and immunofluorescence studies
- To develop patient management recommendations including appropriate therapy or consultation with other specialists
- To convey consultation results and recommendations for patient management to providers as appropriate including re-biopsy or re-excision
- To keep a log of difficult patient encounters to review for content and management.
- Demonstrate by prompt action the understanding of timely service delivery and indications for rush service

Core Competency II: Medical Knowledge

- To access current literature via web based tools, texts and journals
- To generate an appropriate diffferntial diagnosis and identify the most likely diagnosis during daily sign out and unknown conferences
- To identify common challenges and misdiagnoses in dermatopathology which should prompt consultation with a specialist
- To demonstrate a knowledge of when routine histology should be complemented by ancillary testing
- To maintain a patient case log of interesting cases for teaching and presenting.
- To use case logs as a record review with the fellowship director to provide evidence of the fellow's approach and knowledge relative to standard of care.

Core Competency III: Practice-Based Learning and Improvement

- To access online dermatology, pathology and dermatopathology resources for clinical and histologic aspects of skin disease
- To critically appraise the medical literature, and apply scientific evidenc to augment patient care
- To be able to access, navigate and edit the hospitals patient specific pathology database

- To be able to teach dermatopathology to residents
- To prepare a case or project for meeting or journal submission
- Present at Grand Rounds or case conferences
- Identify areas for quality improvement in their own dermatopathology experience, and subsequently devise and implement a quality improvement plan

Core Competency IV: Interpersonal and Communication Skills

- To report results accurately and in a timely fashion to submitting clinicians
- To use feedback from others to improve skills or behavior
- To use humor and language appropriately
- To prepare concise, complete written reports on skin biopsies.
- To resolve diagnostic disagreements through verbal and written communication
- To evaluate and be evaluated by their peers on the dermatopathology service with a 360^{o} evaluation

Core Competency V: Professionalism

- To arrive on time, prepared to work, and stay until the end of the work day
    - To remain behind or return from other duties to complete tasks assigned at the beginning of the work day
- To willingly perform the work of obtaining and reading slides, as well as generating reports
- To accept responsibility and accountability to patients, providers and the profession
- To verbally describe HIPAA policies
- To complete medical records honestly and punctually
- To dress professionally
- To serve on the dermatopathology fellowship selection committee as needed

Core Competency VI: Systems-based practice

- To understand the techniques of the histology laboratory and the kind of information histotechnologists need to have in order to perform their job
- To access patient information from other institutions
- To consult other experts in dermatopathology as needed
- To bill and code honestly and accurately for the diagnosis and level of service
- To keep a log of difficult management and billing issues for discussion
- To incorporate cost effective health care into practice without compromising care

Adapted from: Hinshaw M et al. Core competencies in dermatopathology. J Cutan Pathol 2006; 33:160-165.

FORENSIC PATHOLOGY

Director: Joseph O'Hara, MD

The forensics rotation is a required one-month rotation. Residents complete the forensics requirement at the Santa Clara County Medical Examiner-Coroner's Office. All residents are encouraged to take full advantage of the opportunities provided by this rotation. This includes going to scenes and attending court. Previous residents have found this experience extraordinarily informative and valuable. If you have planned a vacation during this rotation, one week is allowed; the Stanford Program Coordinator as well as the relevant Coroner's office should be notified well before the commencement of the rotation. For the most part, residents are excused from intradepartmental conferences during the forensic rotation.

Contact Information

Joseph O'Hara, MD
Lead Forensic Pathologist
Email: joseph.o'hara@mec.sccgov.org
Telephone: 408-793-1900

Santa Clara County Medical Examiner-Coroner Office
850 Thornton Way
San Jose, CA 95128

http://www.sccvote.org/portal/site/coroner/

There is a parking lot in front of the building. The Coroner's Office will provide VMC scrubs when you arrive at the facility.

On your first day of the rotation, please report to the Santa Clara County Medical Examiner Office at 8:00am and report directly to Dr. O'Hara.

GOALS AND OBJECTIVES

Patient care

- To acquire the ability to properly complete the "cause of death" and "manner of death" sections of the death certificate and understand the difference between "cause", "mechanism", and "manner of death".
- To understand the difference between and the reason for medicolegal autopsies and hospital autopsies.
- To attempt to complete a minimum of 10 autopsies during the rotation.
- To develop proficiency in all aspects of prosection and autopsy techniques, including standard dissection and removal of organs, including brain and spinal cord.

- To develop proficiency in selection and performance of routine and special (e.g., viral or fungal) cultures in the autopsy setting.
- To develop proficiency in procurement and preservation of special body fluids (vitreous fluid, bile, urine) for potential toxicology studies.
- To develop proficiency in removal of spinal fluid from adults and infants.
- To learn appropriate collection techniques for molecular biologic studies.
- To learn appropriate collection techniques for trace evidence.

Medical Knowledge

- To become familiar with means of identification of unknown victims.
- To become familiar with factors used to help establish time of death, including livor mortis, rigor mortis, algor mortis, insect activity, chemical tests, decomposition and the limitations of these factors.
- To recognize postmortem artifacts such as insect bites, animal destruction, pressure artifacts, postmortem injury, Tardieu spots, Tache noire and decomposition.
- To be aware of the cardiovascular, respiratory and central nervous system diseases, which most commonly result in sudden death.
- To be able to identify the characteristics and identifying criteria of the following types of gunshot wounds: entrance and exit gunshot wounds, contract wounds, near or distant range wounds.
- To be able to discuss the significance of examination of the clothing in forensic cases.
- To become familiar with suicidal deaths, the most common means, reasons and findings at the scene and at autopsy.
- To understand basic concepts of disease and correlation with morphology.
- To develop expertise in correlation of autopsy findings with clinical course.
- To demonstrate an investigatory and analytic thinking approach to autopsy pathology.

Practice-based learning

- To use case-based learning as a tool for additional insight into disease pathogenesis.
- To locate, appraise, and assimilate pertinent evidence from scientific studies.
- To demonstrate effective problem solving skills, using a wide variety of information resources.

Interpersonal and communication skills

- To develop proficiency in presentation of autopsy findings to pathologists, law enforcement, and clinicians, at conferences at which autopsy cases are presented.
- Attempt to dictate all performed autopsies from the provided resident dictation template.
- To use effective writing skills to generate the autopsy report.

- To teach interns who are participating in autopsy rotations. In this role, the resident will develop the ability to explain what is being done during the dissection, clarify clinicopathologic issues, and direct interns to other resources including appropriate faculty with specific expertise.
- To review pertinent gross findings in person with the relevant medical personnel involved in the patient care.

Professionalism

- To demonstrate respect, compassion, and integrity in the performance of the autopsy.
- To understand that the autopsy report may be read by a wide variety of medical and non-medical readers, and write the report in a manner sensitive to needs of family members.
- To complete written reports in a timely fashion.
- To work effectively as a team with autopsy staff, and treat technical and administrative staff with respect.

Systems-based practice

- To become familiar with the working relationships between the medical examiner and legal authorities, media representatives and governmental agencies.
- To understand the role of autopsy in quality assurance of medical care.
- To understand the role of the autopsy in determination of cause of death, and its impact upon epidemiologic studies using death certificate data.
- To be able to establish a chain of custody for potential forensic cases.
- To become familiar with OSHA requirements and assure that these requirements are met during the performance of the autopsy.
- To understand the risks of formalin and other commonly used solutions and how to minimize exposure.
- To become familiar with state and local laws governing reporting of communicable diseases.
- To understand and practice the concept of "universal precautions."
- To understand the rationale and necessity for hepatitis B vaccination and annual tuberculosis testing.

AP – TISSUE HEMATOPATHOLOGY

Rotation Director: Brent Tan, MD, PhD

Goals and Objectives

Patient care

- Be familiar with a wide variety of adult and pediatric hematologic disorders
- Develop competency in reactive and neoplastic lymphadenopathies, including correlating morphology with ancillary tests used for diagnosis, such as special stains, tissue IPOX, flow cytometry, FISH, cytogenetics and molecular diagnosis
- Correlate clinical findings with morphology and ancillary studies
- Learn appropriate selection of ancillary diagnostic tests

Medical knowledge

- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills

- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with fellows and staff in ancillary testing laboratories and outside hospitals to coordinate and communicate issues related to diagnostic cases for timely and appropriate handling of slides, blocks, reports etc.

Professionalism

- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff at Stanford and at outside hospitals from where cases are sent to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice

- Learn the process of case evaluation and work-up of lymph node cases
- Optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff to obtain all necessary information related to the

patient's diagnosis and ancillary testing results from outside hospitals or clinical colleagues that will be needed to sign-out cases
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

Practice-based learning
- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

Length of Rotation: 1 month required.

The Resident's Day

1) Two types of cases will be signed out on this service and include heme I/O cases and inside surgical cases with a hematologic diagnosis. The latter will be seen by the Hotseat and then given to the resident for sign out with the Tissue heme attending.
2) Each day, the resident should preview all cases accessioned to the service for sign-out the following day, or for urgent cases, the same day.
3) During preview of heme I/O cases, the resident should pay particular attention to whether all relevant material/information necessary to sign-out the case (slides, reports, immunostains, reports of ancillary studies such as flow cytometry or cytogenetics) is available.
4) If information is missing, contact the outside hospital pathology department to request necessary information/reports/immunostains/blocks. When in doubt, consult the Tissue heme attending or hematopathology fellows.
5) The resident will be responsible for all clinical questions addressed to the service regarding heme cases (with the exception of bone marrows), including ancillary IPOX, flow and molecular studies that may be pending.
6) At 9:00-10:00 AM each day, the resident will collect the accessioned cases for the day and sign out with the Tissue heme attending at an agreed upon time, typically after 10 am.
7) The resident will contact clinicians for additional clinical history or call outside laboratories for blocks or additional information as necessary.
8) Following sign out with the Tissue heme attending, the resident will dictate the reports. Cases must be dictated and forwarded to the attending for sign out in a timely manner. The heme I/O slides and paperwork must be available to the attending for re-review (place in attending mailbox).
9) For inside surgicals, the resident will check the cases with Hotseat before dictating and forwarding to the heme attending.
10) If ancillary studies, including immunohistochemistry, are needed, the resident will order the appropriate studies immediately after sign-out.

11) The afternoons will be spent on the heme IPOX sign out with the heme fellows and heme consult attending. The resident is responsible for previewing IPOX stains on their own cases. The heme IPOX sign out will begin around 3:30 pm each day.
12) The resident should touch base with the Tissue heme attending periodically regarding pending cases, and must bring the cases to their attention and re-review if the pending case volume exceeds 10 cases.
13) A pre- and post-test of 7 glass slides will be administered during the first and last weeks of the rotation and reviewed with the attending on-service for those weeks.

Conferences:

- Surgical Pathology morning conferences
- Tuesday: 8:00 am Current Concepts seminar series
- Wednesday: 12 noon twice-per-month, around-the-microscope sessions
- Wednesday: 12 noon Hematology medicine conference
- Friday: 1:30 pm Hematopathology consensus conference

STUDY SETS

Professor Ronald F. Dorfman has dedicated his lifetime collection of hematopathology cases to the Department of Pathology. This phenomenal study collection, spanning all aspects of lymph node pathology, is housed in room H-1537M. Residents are highly encouraged to avail themselves of this study collection as it is not possible to see a wide breadth of cases during a one-month rotation. Independent study is strongly recommended to supplement sign-out sessions.

Major Texts and Learning Resources:

Swerdlow et al. *WHO Classification of Tumours of Hematopoietic and Lymphoid Tissues*, WHO Press (2008). Chapter 10: Mature B-cell neoplasms, Chapter 12: Hodgkin lymphoma, and Chapter 13: Immunodeficiency-associated lymphoproliferative disorders are recommended readings for the rotation.

DP O'Malley, TI George, A Orazi, SL Abbondanzo. Atlas of Nontumor Pathology, First Series, Fascicle 7: Benign and Reactive Conditions of Lymph Node and Spleen. American Registry of Pathology & Armed Forces Institute of Pathology, Washington DC (2009).

Weiss, LM. Lymph Nodes, Cambridge University Press (2008).

SUPERVISION AND EVALUATION:

The hematopathology fellow will triage the I/O cases that will be signed out by the Tissue heme resident. Generally, the fellow will focus the I/O cases on basic lymph node and/or bone marrow cases (particularly staging marrows for lymphoma) while the fellow will retain more complex I/O cases. However, the I/O workload and fellow coverage for the consult service can vary, and at times, the Tissue heme resident may be assigned more complex cases, including bone marrows. The Tissue heme

attending is responsible for providing feedback to the fellow regarding the appropriateness of cases.

The Resident's work will be supervised by an attending hematopathologist at all times.
The Resident will be evaluated on his/her daily work as assessed by each attending through the MedHub system. Results will also be reviewed formally with the Resident.

WORKFLOW FOR INSIDE LYMPH NODE CASES (UPDATED JULY 2012)

ACCESSIONING/GROSS ROOM (DAY 0)

1. Accession and assign to Surgpath Resident
2. Follow lymph node protocol for freezing, flow etc

HOTSEAT FELLOW (DAY 1)

3. Review slides
4. Check flow before initiating IPOX, if appropriate (consult heme fellow or attending if necessary)
5. Give slides to assigned Surgpath Resident

SURGPATH RESIDENT (DAY 1)

6. Preview slides (depending on level of interest in hematopathology) and pass to tissue heme resident.

TISSE HEME RESIDENT (DAY 1)

7. Preview slides

TISSUE HEME RESIDENT (DAY 2)

9. Check flow status, IPOX status; Check clinical history in EPIC and history in PowerPath; pull priors as necessary
10. Signout with Tissue heme attending
11. Convey diagnosis to Hot Seat Fellow
12. Return all slides and report to original Surgpath Resident and or Surgpath attending

NEUROPATHOLOGY

Director: Hannes Vogel, M.D.

Read this first:

1. All cases for frozen section and/or signout require background checks for prior pathology, history and radiological findings. Bring prior pathology slides to the frozen section and to signout.
2. Dory Palacio, NP office assistant, is available to pull archival slides from both NP and Surgpath. Do not waste your time pulling slides.
3. Preview the OR cases at SHC, and LPCH for potential frozen sections the evening before and recheck in the morning and afternoon for add-ons or cancellations.
4. 25924 is the pager to be used while on the NP rotation. Please do not forward this number to your personal pager.
5. Do not assume responsibility for a NP frozen section without the attending neuropathologist and/or NP fellow present for supervision.
6. If a neurosurgeon does not have tissue ready upon entering the OR, please politely request that they call when it is ready and leave the room. I (HV) will take full responsibility for this.
7. Note: Any NS frozen section request occurring between 6pm and 8am or on the weekends, requires at least 2 hours advance notice, or we cannot guarantee availability in less than 60 minutes. The neurosurgeons have been reminded of this repeatedly. We do not ask them if they will need a frozen section after hours. That is their responsibility.
8. Please do not enter the Neurosurgery kitchen next to our front door. We have all the resources in that room readily available close by and it irritates Neurosurgery when Pathology personnel eats their food, drinks their bottled water, etc.

Introduction

On the neuropathology rotation, you see mostly brain, spine, muscle, and nerve biopsies, occasionally with metastases from other locations. You typically preview and show your cases to Dr. Vogel the same day the slides come out.

Weekly Activities

Monday	7:30 AM	pediatric tumor board (1st floor LPCH, Parker conference room 1644)
	5:00 PM	interesting case conference (1st and 3rd Monday of the month)
Tuesday	12:00PM	Neuropathology Journal Club. Each participant presents a paper informally (free lunch)
	1:30 PM	brain cutting with Dr. Haddix (morgue)
	5:00 PM	muscle / nerve conference (3rd Tuesday of the month)

Friday	12:15 PM	adult tumor board (Stanford Cancer Center)

Daily Schedule

8:00 AM - 9:00 AM	morning conference
9:00 AM - 11:00 AM	check greaseboards, ask Dory to pull all prior pathology in cases for frozen section, preview
11:00 AM - 12:00 PM	sign-out
12:00 PM - 4:00 PM	get neuropathology immunohistochemistry, preview
4:00 PM - 5:00 PM	sign-out
5:00 PM - 6:00 PM	Check for next day adult and pediatric frozen section cases and email summary to Dr. Vogel (hvogel@stanford.edu).

Call and Frozen Sections

1. **Call**

A. You are on call for frozen sections Monday to Friday, 9:00 AM to 6:00 PM, so wear scrubs daily.

B. During off hours, you share call with the neuropathology and surgical pathology fellows, and should arrange that with them.

C. Dr. Vogel is on call continuously, but off hours must be notified by the neurosurgeon 2 hours ahead of time.

2. **Frozen section handling**

A. The paperwork is the same as for general surgical pathology frozen sections.

B. If unknown, ask the surgeon about the biopsy / resection site and whether there is enhancement.

C. Dr. Vogel will evaluate the specimen first and instruct you on how and when to do a touch prep, squash prep, or frozen section. Do not freeze or squash tissue prior to reviewing with Dr. Vogel.

D. Frozen section guidelines

1) Process the specimen as you would at the VA, with the following modifications.
2) **ONLY use the -22° C (right side) microtome.** For the first frozen section of the day, be sure to put in a fresh blade. Put in a small round chuck and allow the OCT to freeze until the top is slightly damp. This way, the specimen sticks to the chuck better and is less likely to chunk out. Do **NOT** use the new chuck system.
3) For small biopsy specimens, **ONLY** use sterile blades to manipulate the specimen. Do **NOT** use forceps or the cotton end of an ink applicator. If you need to ink a small biopsy specimen, **ONLY** use the wooden end of the applicator.

Operating Room / Potential Frozen Section Schedules

1. Every day, look up the operating room schedules for potential frozen sections the next day. Each morning, check the grease boards for emergent and/or add-on cases.

A. Look for all neurosurgical cases which may need a frozen section, especially those with “tumor” or “biopsy” in the description. Open the chart and skim the latest notes to create a description of the case, including:

1) the neurosurgeon, operating room, case start and end times, and case description

2) the patient’s name and medical record number

3) a summary of the patient’s history (often just copy-pasted from the latest good note or H&P)

4) relevant prior pathology

5) the latest relevant imaging

B. For example:

Dr. Chang: 0800-1200, MOR 15, Stereotactic brain biopsy

History: 50 year old male with confusion and speech difficulty, found to have enhancing left temporal lobe mass

CT and MRI 1/1/2011: enhancing mass measuring 1.9 x 1.6 cm in the left temporal lobe

No priors on PowerPath

C. E-mail the list to Dr. Vogel the night before. In order to generate the lists, follow the instructions below:

D. **Stanford Main Operating Room (MOR) and Ambulatory Surgery Center (ASC) schedules**

1) For the next day’s schedule, log into Epic, from the top menu click “Reports”, click “OR Reports,” and select “Surgical Cases”. A new dialog box should appear.

A) Click on the folder labeled with your name and ID number.

1] In the “Criteria” tab:

a) Under “Status”, click on the “!” box, click the magnifying glass, select “Scheduled”, and click “Accept”.

b) Under “Search Options”, click “+ Location”; under “Location”, click on the empty box, click on the magnifying glass, select “Stanford Hospital Main OR”, and click “Accept”. Click on the next empty box below, click on the magnifying glass, select “Stanford Hospital ASC”, and click “Accept”.

c) Under “Search Options”, click “+ Services”; under “Services”, click on the empty box, click on the magnifying glass, select “Neurosurgery”, and click “Accept”.

d) Under “Search Options”, click “+ Surgery Date”; under “Surgery Date”, next to “Start date:” click the empty box and type T+1. Next to “End date:” click the empty box and type T+1.

2] Click on the “Display” tab. Under “Column Name” select “Priority” and click “Remove <”. Under “Available Columns” select “Case Time” and click “Add >”. Similarly, add the “Case End Time” and “Case Room” columns. You can rearrange the order using the up and down arrow boxes at the upper right of the dialog box.

3] At the bottom of the dialog box, click “Save”. Next to “Name:”, click the box with the “!” and type “neurosurgery”. At the bottom of the

dialog box, click “Save”. This saved search should now be available whenever and wherever you log in.

4] At the bottom of the dialog box, click “Run”. A new tab should appear in Epic labeled “Reports”, listing the neurosurgical reports for the next day.

B) The next time you want to perform the search, from the top menu click “Reports,” click “OR Reports,” and select “Surgical Cases”. From the new dialog box, just select your “neurosurgery” search and at the bottom of the dialog box click “Run”.

C) To open the chart, select the case and click the “Case” button. A new tab should open. Click on “Chart Review” to the menu bar at the far left.

2) To check the progress of today’s cases, use the greaseboard. Log into Epic, from the top menu click “Reports”, click “OR Reports,” and select “Grease Board”. A new dialog box should appear.

A) Click on the folder labeled with your name and ID number.

1] In the “Criteria” tab, next to “Date:” click the empty box and type T. Under “Locations” click on the empty box, click on the magnifying glass, select “Stanford Hospital Main OR”, and click “Accept”. Click on the next empty box below, click on the magnifying glass, select “Stanford Hospital ASC”, and click “Accept”.

2] At the bottom of the dialog box, click “Save”. Next to “Name:”, click the box with the “!” and type “greaseboard”. At the bottom of the dialog box, click “Save”. This saved search should now be available whenever and wherever you log in.

3] At the bottom of the dialog box, click “Run”. A new tab should appear in Epic labeled “Reports”, listing the neurosurgical reports for the day.

B) The next time you want to perform the search, from the top menu click “Reports”, click “OR Reports,” and select “Grease Board”. From the new dialog box, just select your “greaseboard” search and at the bottom of the dialog box click “Run”.

C) To open a chart, simply select the case and click the “Hospital Chart” button.

B. **Lucille Packard Children’s Hospital (LPCH) schedules**

1) Log into LINKS. Click on the compass icon to bring up the “Explorer Menu”. A new dialog box should appear.

A) Double-click “Main Menu”, double-click “Perioperative Services”, and then click “Perioperative Schedule”.

1] Next to “Surgery All Areas Bookshelf”, click the empty box and select “LPCH Main OR Book” from the drop-down menu.

2] Next to “Resource (Room)”, check the box next to “Any (*)”.

3] Next to “Date of Service (MM/DD/YY)”, type in the date desired (tomorrow or today).

4] Click “Execute”. A print preview should appear. I personally find it easiest to print the entire schedule; otherwise, be sure to use the next page button to see all the pages.

C. It may be useful to check cases by neurosurgeon. The main Stanford neurosurgeons are Drs. Chang, Dodd, Harsh, Jackson, Mindea, Steinberg, Shuer, Recht, Ryu, and Yu. The main LPCH neurosurgeons are Drs. Edwards and Guzman.
   1) Some of the cases (especially from Palo Alto Medical Foundation, Dr. Ryu) will have no history or radiology. In these cases, check the case’s ICD-9 description.
   2) Some spine cases come from orthopedic surgery, and some pituitary cases from head and neck surgery (Dr. Hwang).

New Cases

1. **Inside cases**: Get paperwork daily from the shelf behind hotseat, and the slides from the neuropathology box in histology.
2. I/O, consult, Kaiser, and muscle / nerve cases are either handed directly to you, left on your chair, or received in flats in the bottom right corner mailbox located immediately to the right after entering neuropathology.
   A. **Consults**: In consult cases, an outside pathologist is requesting an opinion / diagnosis on a difficult or unusual case.
      1) Once cases have a diagnosis, call a preliminary result in to the requesting pathologist, and write this in the report, e.g. “A preliminary result was communicated to Dr. X by Dr. Y on 1/1/2011 at 1:00 PM.”
      2) In the comment section, begin with, “Thank you for submitting this case to us in consultation.”
   B. **I/O cases**: In I/O cases, patients have been evaluated at another hospital and referred to Stanford for treatment, and the outside pathology must be reviewed first. The most important issue is whether you agree with them or not.
   C. **Kaiser cases**: Kaiser neurosurgical cases are received Mondays, with paperwork provided to compare their diagnoses with ours. However, we do not write reports or assume liability. These cases are pure learning and a good way to test yourself. Some cases provided are not final, do not have reads, and only say “Gross complete” in the box at the top of the paperwork.
   D. **Muscle and nerve cases**: Muscle and nerve biopsies are typically done by surgeons at the request of a neurologist at a nearby clinic. Marty processes these Tuesday to Friday.
      1) These are received with a form containing the gross description, and scout slides. Muscle scouts include an H&E and a trichrome on frozen sections, and several H&Es and a Congo red on paraffin. Nerve cases automatically come with plastic sections as well as H&Es.
      2) Preview these slides and show them to Dr. Vogel at the afternoon sign-out.
      3) For muscle, Dr. Vogel typically requests a “short panel” of stains. Write and circle “short panel” on the upper right corner of the gross description

form and place this and the entire flat of slides on Marty's computer / keyboard.

4) When the stains are done, preview and show them to Dr. Vogel at the next afternoon sign-out.

5) To write the report, use the templates on MedWiki.

A) Fill out the clinical history using the provided history or the notes on Epic / LINKS, e.g. "Per the provided history, the patient is a 50 year old male with bilateral lower extremity weakness and a CK of 800."

E. If cases require outside history, blocks, or slides, politely ask Dory to obtain these.

3. **Brain cutting**

A. On Tuesdays after journal club, go to the morgue, in the same hallway as the photo lab.

B. Dr. Haddix will prepare cutting boards with fixed brains. On an adjacent clipboard, there will be a block summary page, with some history on the page beneath. Read the history, and Dr. Haddix will step you through cutting and submitting sections.

1) Write any gross findings and the list of sections taken (including laterality, i.e. left or right) on the block summary page.

C. Using the templates on MedWiki, write up the gross description and send the case to Dr. Haddix's box in PowerPath.

D. The following Tuesday, Dr. Haddix will give you the slides to preview in the morning, and sign out the case with you after brain cutting. Write up the case, and send it to her box in PowerPath for final sign-out.

E. You can count these cases as autopsies for ACGME at https://www.acgme.org/residentdatacollection

4. **Special stains and tests**

A. To order regular stains on paraffin blocks, use PowerPath as usual.

B. To order neuropathology-specific stains, e.g. Bielschowsky or LFB, use either the order form or the stains list to the left of Marty's computer. It was relatively rare so I usually just asked Marty directly how to order many of these.

C. **MGMT testing on glioblastomas and gliosarcomas**

1) Write the request on the stains list to the left of Marty's computer.

2) He will cut scrolls and place them into a test tube labeled with an accessioning sticker.

3) Fill out the molecular pathology order form on the shelf above your desk, next to a stack of small orange envelopes, including the patient's name, sex, date of birth, and medical record number.

4) Label a small orange envelope with the accession number, block number, and "MGMT". Put the tube in, staple it to the form, and give it to Accessioning to send to Hillview and track in MYSIS/Sunquest.

Tumor Boards

1. The day before each tumor board, Dory will print a list of cases and put the slides and reports into flats. On Thursdays and Fridays, at the end of the afternoon sign-out, review the cases with Dr. Vogel.
2. Dr. Vogel will take pictures for you to put into PowerPoint. In the beginning, he will tell you what to say, which is a one- or two-sentence description and the diagnosis.
3. **Adult neurology tumor board**
   A. Prepare just one PowerPoint slide per patient. If there are two or more cases, try to put one case on the left half and one case on the right half, and label them.
   B. Arrive at the Stanford Cancer Center at 12:10 PM or so to copy the file to the computer.
      1) Check that the projector is working. The plugs are loose, so you may have to screw them in tightly or twist and anchor them under other objects.
4. **Pediatric neurology tumor board**

A. Prepare one or two PowerPoint slides per case, but otherwise the procedure is similar to that for adult neurology tumor board.

B. Arrive at the 1st floor LPCH, Parker conference room 1644 at 7:25 AM to copy the file to the computer. The radiologist typically sets up the projector. Sit at the seat directly to the right of the projector and computer, across from the radiologist.

Journal Club

1. Before noon on Tuesdays, prepare a journal article at least loosely related to neuropathology to verbally present. Do not prepare a PowerPoint presentation.
   A. There are no real guidelines. I found it useful to jot the methods, results, and conclusions for each section onto notepad.
   B. I use http://www.ncbi.nlm.nih.gov.laneproxy.stanford.edu/pubmed and query "(cell[jo] OR nature[jo] OR science[jo] OR proc natl acad sci usa[jo] OR nat neurosci[jo] OR n engl j med[jo] OR lancet[jo]) AND *x*", where *x* is the topic of interest.
2. Dr. Vogel will pay for lunch at the sandwich / burrito place, and you can get anything you want (e.g., sandwich, chips, and soda), and he will be reimbursed by the department.

Required reading: Manual of Basic Neuropathology. Escourolle & Poirier. At least Chapter 1.

Other recommended texts:

1) Ellison and Love Neuropathology Atlas
2) WHO 2007 Classification of CNS Tumours
3) AFIP Fascicle: Tumors of the Central Nervous System, by Burger and Scheithauer
4) Greenfield's Neuropathology, 8th Edition.
5) Fuller and Goodman: Manual of Basic Neuropathology
6) Vogel. Nervous System.

Goals and Objectives in Core Competencies

Patient Care

- To develop proficiency in diagnosing common neoplastic, degenerative, reactive, and metabolic conditions involving the brain and spinal cord, their coverings, and skeletal muscle and peripheral nerve by examining frozen and permanent sections of lesions of the nervous system.
- To learn appropriate methods of intraoperative diagnosis, grossing techniques, special stains and immunohistochemistry, and electron microscopy that are applicable to neuropathology.
- To learn to correlate clinical, radiological, laboratory and electrodiagnostic features important to the accurate diagnosis of neuropathological conditions with neuropathological findings.

Medical Knowledge

- To be familiar with the pathogenesis and typical morphology of diseases of the central nervous system, muscle and peripheral nerve.
- To understand the natural history, effects of treatment, and prognosis of common neurological diseases.
- To understand the role of the nerve and muscle biopsy in the evaluation of neuromuscular disease.
- To develop expertise in developing a differential diagnosis based upon clinical and laboratory information along with the gross and microscopic findings in each case.

Practice-Based Learning and Improvement

- To use case-based learning as a tool for additional insight into the basis of disease.
- To locate, appraise, and assimilate pertinent evidence from scientific studies
- To demonstrate effective problem solving skills in diagnostic neuropathology, using a wide variety of sources of information.

Interpersonal and Communication Skills

- To present surgical and autopsy neuropathology case findings effectively.
- To prepare concise, complete written neuropathology reports in surgical and autopsy neuropathology.

- To use effective verbal communication in the frozen section diagnosis setting.
- To participate in regularly scheduled neuropathology conferences (see below).

Professionalism

- To complete written reports and dictations in a timely fashion.
- To work effectively and with proper respect as a team with technical and administrative staff.
- To interact in a professional, helpful manner with clinicians in the performance of frozen sections and intraoperative consultations.

Systems-based practice

- To understand the role of quality assurance in diagnostic neuropathology by attending the group discussion of difficult cases twice a month.
- To practice cost-effective medicine in the selection of special studies as applied to neuropathology cases.

SURGICAL PATHOLOGY LEARNING OBJECTIVES

GOALS AND OBJECTIVES

OVERVIEW

Residents on surgical pathology are expected to master the following broad areas to the level expected of a new practitioner. While it is recognized that it is not entirely practical or necessarily desirable to delineate levels of competency that are specific for year of training, the following are offered as rough guidelines. It is expected that the resident will develop the knowledge base, tools, skills, and demeanor that will foster life-long learning in her/his professional career.

BASIC PRINCIPLES

Year 1: Resident demonstrates knowledge about tissue fixation (including commonly used special fixatives), tissue processing, embedding, orientation of specimens, section preparation, levels, use of special stains, immunohistology, electron microscopy (EM) and cytogenetics.

Year 1: Resident demonstrates basic computer skills in anatomic pathology.

Year 2: Resident is able to order and interpret immunohistochemical panels with minimal supervision.

Year 2: Resident is proficient in the preparation and presentation of PowerPoint presentation and is capable of independent case presentation.

Year 2: Resident is proficient at seeking interdepartmental consultation and is able to resolve diagnostic disagreement.

GROSS EXAMINATION

Year 1: Resident develops proficiency in specimen identification, performs anatomically correct dissection, dictates accurate descriptions, and takes appropriate sections for microscopic examination, including appropriate sections for examination of margins (where appropriate).

Year 1: Resident is knowledgeable about and able to perform specimen photography when appropriate.

Year 1: Resident is proficient in the handling of common specimens (e.g. culture, EM, cytogenetics, bone marrows)

Year 2: Resident develops the ability to gross in complicated specimens (e.g., Whipple's, pelvic exenterations, radical neck dissections) with minimal supervision. Must be able to recognize when to seek additional assistance from colleagues or surgeon.

MICROSCOPIC EXAMINATION

Year 1: Resident is able to generate an accurate morphologic description, with a reasonable diagnosis/differential diagnosis. Resident is able to provide basic elements of information in all reports, prepare report, correlate findings with frozen section findings, and have report prepared for sign-out with faculty.

Year 2: Resident is able to formulate an accurate diagnosis or recognize need for consultation, select special stains/ipox (where appropriate), interpret immunostains (and associated artifacts).

Year 2: Resident demonstrates adequate knowledge/use of grading systems, use of synoptic reports (as appropriate), indications for amended/addendum reports, and proper handling of consultation cases.

Year 2: Resident is proficient at photomicroscopy.

INTRAOPERATIVE FROZEN SECTIONS/SMEARS

Year 1: Resident understands role of intraoperative diagnosis; appropriate indications; tissue sampling for intraoperative diagnosis, can cut/stain frozen section (within 10 minutes), and is knowledgeable about precautions for handling fresh tissue or other specimens for intraoperative diagnosis.

Year 2: Resident is proficient at the preparation/staining of smears, interpretation of frozen sections/smears with minimal supervision, understand limitations of intraoperative diagnosis, and able to communicate effectively and engage in dialogue with treating surgeon and/or clinician.

SYSTEMS-BASED PRACTICE (LAB MANAGEMENT)

Year 1: Resident demonstrates knowledge of JCAHO/CAP standards/requirements for specimen submission and occupational hazards/infection control, particularly with respect to storage/disposal of specimens and hazardous chemicals.

Year 2: Resident is competent in billing/coding procedures and the cost effective practice of pathology and medicine.

Year 2: Resident demonstrates knowledge of quality assurance and improvement and basic risk management issues.

PROFESSIONALISM

Year 1: Resident develops expertise in use of appropriate phraseology in reports, demonstrates effective skills in communication to physicians and patients, when appropriate, and understands importance of timeliness, turnaround and rush cases.

Year 2: Resident assumes responsibility for informal and formal junior resident teaching conferences and actively and effectively participates in all pathology teaching conferences

Year 1&2: Resident communicates with support staff, administrative staff, technical staff, and supervising faculty in a respectful and efficient manner.

MEDICAL KNOWLEDGE

Year 1: Resident develops basic understanding of disease with correlation to morphology. The resident develops a managerial classification that includes concepts of benign, borderline (low malignant potential), uncertain malignant potential, and malignant.

Year 1: Resident develops understanding of the role of intraoperative frozen section/touch preparations in clinical decision making.

Year 2: Resident is proficient with the correlation of cytogenetic and molecular abnormalities with morphologic findings.

Year 2: Resident is proficient at analysis and investigation of unusual or difficult cases and can workup cases with minimal supervision.

PRACTICE-BASED LEARNING

Year 1: Resident develops case-based learning as a tool for disease pathogenesis via end-of-month resident conferences, daily gross conferences and interesting case conferences.

Year 2: Resident is able to use wide variety of information sources and is able to use effective problem solving skills in surgical pathology. Proficiency in literature searches and assimilation of scientific and clinical-pathologic information to apply to specific problems in surgical pathology is required.

INTERPERSONAL AND COMMUNICATION SKILLS

Year 1: Residents learn to prepare accurate, concise, complete and cogent written surgical pathology reports that incorporate all relevant findings (e.g., clinical, radiologic, serologic, cytogenetic, immunohistochemical, etc.)

Year 1: Residents learn to communicate effectively with surgeons and other clinicians during intraoperative consultation and at case sign-out, when appropriate.

Year 1&2: Residents teach medical students in the medical school pathology labs in an effective and clear manner: i.e., correlation of gross and microscopic findings with clinical findings.

Year 2: Residents actively participate in teaching medical students and post-sophomore fellows on surgical pathology rotation.

SURGICAL PATHOLOGY AT STANFORD UNIVERSITY MEDICAL CENTER

John Higgins, MD, Interim Director of Surgical Pathology

Background

Over a year ago, the Department of Pathology undertook an extensive strategic planning process, involving many faculty and trainees, to decide on whether to continue with our traditional "fully general" model of surgical pathology sign out or to introduce elements of "specialty sign out". As would be expected in any highly performing group of faculty and trainees, there was considerable thoughtful discussion, and some disagreement, about which sign out model would be best for Stanford at this time in its history.

Ultimately, the current "hybrid model" of subspecialty sign out (which is described below) was adopted in light of the following considerations.

1) Major academic medical centers increasingly have moved to at least partially and often fully subspecialized surgical pathology sign out systems, in part to ensure that the most appropriate expertise is brought to bear for each specimen seen and in part because academic pathologists are increasingly choosing to specialize in particular areas of surgical pathology, both for their clinical work and research.

2) Academically-oriented residents increasingly are seeking subspecialty training before seeking jobs in academic or large private practice settings, providing another impetus to move toward a training program that incorporates some elements of subspecialty sign out experience.

3) While Stanford has many faculty members with extensive subspecialty expertise, and who have an interest in developing a career focused on their subspecialty interests, we do not yet have the total volume of cases in each subspecialty area, or the number of surgical pathology faculty, to consider moving to a "fully subspecialized" model of surgical pathology sign out.

4) If we were to retain a fully general sign out system, in addition to missing the opportunity to provide more specialized sign out support for our clinical colleagues and their patients, we would risk losing highly performing faculty who want to develop a subspecialty-focused career to other institutions where such opportunities are available. We also would appear increasingly unattractive as a training site for academically-oriented trainees who wish to pursue careers with a subspecialty focus.

5) On the other hand, our faculty includes superb general surgical pathologists who are also well known for their particular subspecialty interests; indeed many of these individuals are acknowledged leaders in these subspecialty fields, despite continuing also to practice general surgical pathology. Such faculty members have much they can teach trainees, and more junior faculty, and they represent a tremendous asset to the department.

6) In considering modifications of our surgical pathology sign out system that would move it toward a more subspecialized model, we would seek to make each change focus on meeting three related goals: 1) enhance the quality of patient care; 2) improve the resident and clinical fellow training and career development program; and 3) improve faculty satisfaction, including for those who are seeking to develop careers based on subspecialty interests.

7) Our success in achieving these three related goals would be monitored by ongoing discussions and consultations involving faculty and trainees, including that which occurs formally in our monthly meetings of the Residency and Fellowship Committee, which

includes both appointed resident members (i.e., chief residents) and elected resident members. Should modifications of the system appear to be indicated, these will be implemented thoughtfully.

Current Stanford Surgical Pathology Rotation

In light of the considerations described above, Surgical Pathology has adopted a hybrid model of subspecialty sign-out, which is now being evaluated during a period of one year. We feel it's very important for applicants to understand some of the details of how our system works. Taking into account service size and numbers and complexity of specimens in various subspecialty areas, we are piloting subspecialized sign out for breast, gyn, and GI pathology. These services have separate sign outs in Surgical Pathology. The remaining organ systems, for example, head and neck, lung, soft tissue, and genitourinary, remain part of a general sign-out service on which all Surgical Pathology faculty rotate. As illustrated below, residents alternate between the breast/gyn/general and the GI/general services such that on their grossing day (day 1 & 4), they are either cutting in breast and gyn specimens or GI specimens, in either case they also cut in general surgical specimens that are neither breast/gyn nor GI. The residents continue to have a dedicated "preview" day (day 2 & 5) to review their cases prior to sign out. In addition to previewing their cases on days 2 and 5, the residents preview cytology cases and participate in cytology sign-out around 1pm.

Sign out Day 9 am- 12 Noon (day 3 & 6)

Resident 1	GI	General		**Resident 2**	Breast	Gyn	General

Seven residents are scheduled during each Surgical Pathology month. The 7 day schedule for each resident is as follows:

GI/GEN CYCLE (days 1-3)	BREAST/GYN/GEN CYCLE (days 4-6)	FROZENS (day 7)

The numbers of big specimens (defined as: complicated, time consuming case, typically major resections for malignancy) and total specimens assigned to each resident is capped according to level of training. Therefore, if the GI volume is high and the breast/gyn volume is low, the breast/gyn resident will cut in more of the general cases while the GI resident will focus on GI and vice versa. On their sign-out day, the residents sign out with 2 or 3 attendings, depending on their service, so that the breast/gyn resident will sign out with a breast attending, a gyn attending and a general surgical attending. The GI resident will sign out with the GI attending and then with a general surgical attending.

We think that our "hybrid model" gives trainees the best of both worlds because some of their cases are double scoped with a specialized attending with high-level expertise in that subspecialty, whereas other cases are signed out with a general surgical pathologist. Moreover, we wish to stress that our residents see the entire spectrum of surgical pathology cases each month they are on the surgical pathology service. This is because the residents alternate on the different services each month rather than month by month. That is, you will not have a month consisting of only one of the subspecialty areas. We strongly believe that our approach is preferable to an exclusive exposure to a subspecialty area for a block of time with no or limited further exposure to that area for extended periods of time during your training. Furthermore, we are developing a regular case conference in which interesting or

problematic cases are shown among the residents and faculty. It is hoped that this will promote faculty level discussion about diagnostic criteria and further enhance the educational experience in our program.

Conclusion

Changes in long-standing systems can be difficult, both because change itself is often difficult and because new systems may require ongoing monitoring, re-evaluation, and modification to deal with unanticipated problems, to enhance efficiencies, or otherwise to improve processes. When all participants in the changing system also are very busy, as is the case with our faculty and trainees, accomplishing the goal of optimizing the system can be even more challenging. Working together, we can achieve the goals that prompted the department to put in place these changes in our surgical pathology sign out system.

Residents are expected to be dictating all their cases, as well as keeping brief notes with their paperwork. Except for the first month of Surg Path in the first year, residents are expected to come to sign-out prepared with their preliminary diagnoses on all cases.

Breast core needle biopsies that are grossed in on Thursday are to be prioritized by the hot seat fellow as the slides come out and signed out by the breast attending on Friday afternoon (and checked off with hot seat Friday afternoon/evening).

Friday biopsies are divided between Thursday gross room residents to be signed out on Monday. Thursday gross room residents can choose to preview their cases for Monday sign-out on Friday night or over the weekend, with the understanding that biopsies from Friday (cut in histology Saturday, slides to Hot Seat Saturday) will not be available until Saturday afternoon (could also preview biopsies early Monday morning, if they don't want to come in over the weekend).

The "G" residents on Fridays will gross cases on Saturday.
One vacation week will be allowed (provided there is cross coverage) during the Surg Path rotations.

THINGS TO DO ON EACH CASE

- Proofread your (and those of the PAs) gross dictations.
- Check patient history in Power Path (“History” tab has a blue square on it when the patient has prior pathology.
- If cervical/endocervical specimen has a concurrent Pap smear, ask the Cytology Supervisor to pull the case for screening on your *preview day* so that it can be seen by the Cytopathology faculty for sign-out on the following day.
- Pull relevant prior cases (slides) from slide room. Check them out with the accession number, your name, the date, and your pager number (this takes a few extra minutes of your time, but is helpful when someone is looking for a case!).
- Preview cases and make notes. Check Epic for any missing clinical history/lab results.
- It may be helpful to make your notes in black pen, then to take a red pen into sign-out with your attending and add their notes in red ink, so that you know what the final diagnosis is.
- Once you feel comfortable doing so, you should pre-dictate your reports (tubular adenomas, POCs, etc.) the night before sign-out to streamline the next day’s work.
- Once a case is reviewed with the faculty, it must be checked off with the Hot Seat. THIS INCLUDES ALL CASES REVIEWED BY THE FACULTY, INCLUDING CASES PENDING ADDITIONAL STUDIES. IT IS THE RESPONSIBILITY OF THE RESIDENTS TO KEEP HOT SEAT INFORMED OF THE STATUS OF ALL OF THEIR CASES.

WHEN TO PULL CYTOLOGY PRIORS

General Rule: ***If surgical and cytology specimens from the same site do not share the same diagnosis, the prior cytology must be reviewed.***

Why do we do this?
- Ensure that a surgical biopsy or excision has not missed a neoplastic lesion that was identified cytologically
- Educational - refine our histologic and cytologic criteria (i.e. what led to an overcall or undercall on one of the cases?)

How do we do this?
- Check "History" tab in PowerPath for prior cytology cases
- Pull cytology slides:
  - Absolutely required if there is a discordance
  - For educational benefit, especially if signing out with a cytopathologist

What to do with discrepant cases?
- Have the prior cytology reviewed by a Cytopathology attending
- **Obtain level sections** on the surgical or submit more material
- Comment on discrepancy in surgical report

Cervical Cytology

Critical Correlations:
- Cytology is suspicious or positive for a high grade lesion (ASC-H, HGSIL, SCC, AGUS favor neoplastic, AIS, and adenocarcinoma) and the surgical is negative. In these situations, imagine the clinical quandary caused by the discordance.

ASC-US or LSIL Cytology:
- Not unusual to have negative cervical biopsy in these cases
- Still helpful to confirm cytologic diagnosis of LSIL and **obtain levels** on surgical
- Also helpful to make sure the surgical findings explain the ASC-US cytology

Concurrent Cases:
- On your preview day, ask the cytology supervisor to pull the pap smear for immediate screening to ensure the case is signed-out in time for correlating. Do not mention Cytologic Diagnosis in surgical report unless the cytology is final.

Fine Needle Aspiration (FNA) Cytology

Critical Correlations:
- FNA is suspicious or malignant and the surgical specimen is negative, e.g. thyroid FNA suspicious or malignant and the thyroidectomy is benign.

HELPFUL DICTATION HINTS

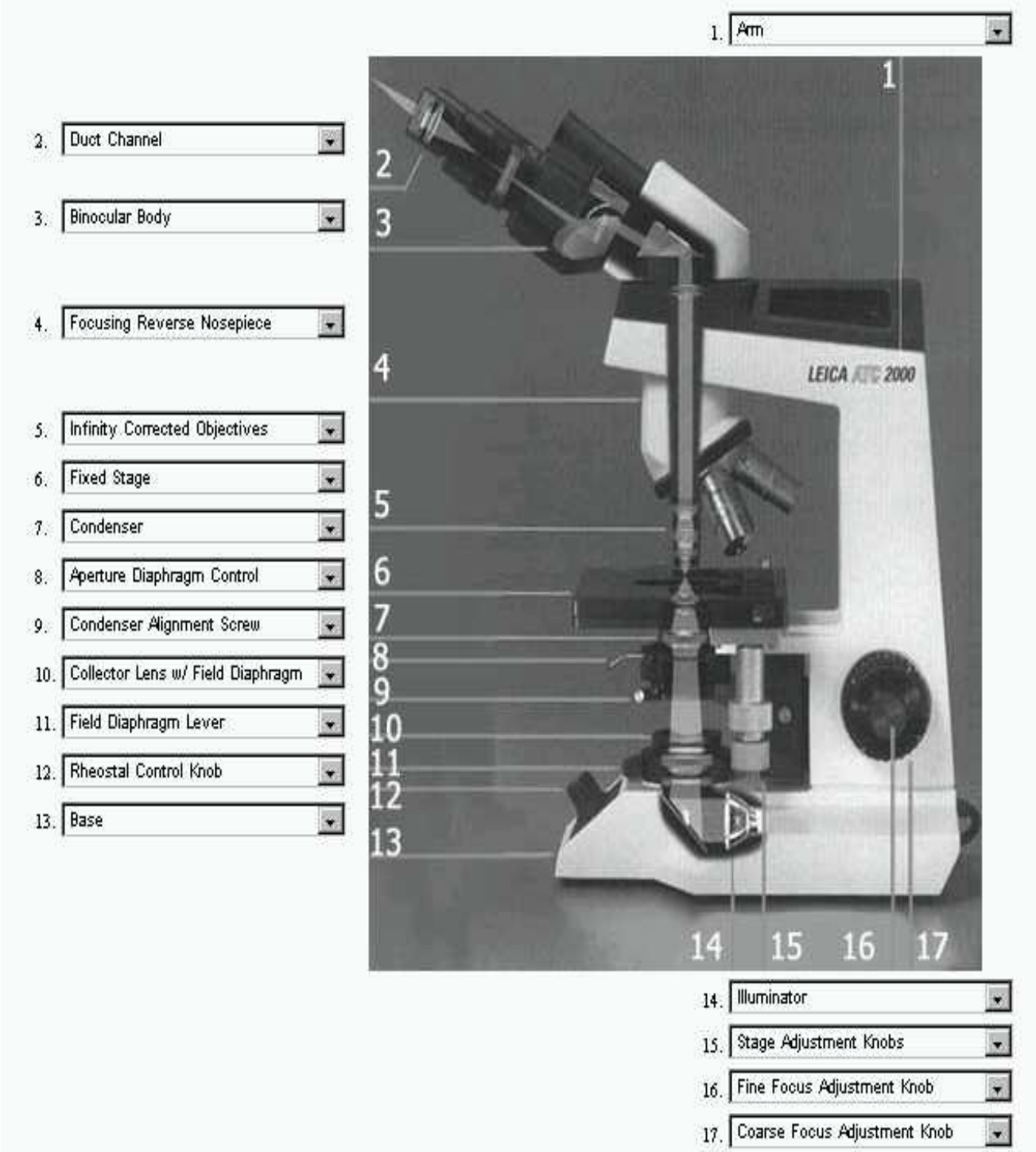
You may find it more efficient and safer to take the time to jot down relevant measurements and maybe even cassette numbers with a description of their contents on the requisition sheet as you gross specimens (pink area at the top that says “for pathology use only”). Then you can dictate the gross description of the case in a more continuous and flowing manner and, if the dictation gets lost, you still have all your relevant measurements!! DO NOT GET INTO THE PRACTICE OF DELAYING YOUR GROSS DICTATION – DO IT AT THE TIME THE CASE IS ACTUALLY BEING GROSSED!

SPECIAL INFORMATION

Ordering specials	Special stains and VLs (vladd) and IPOX are all ordered in Power Path under the “Specimens” tab. See Power Path manual for detailed instructions. Specials and VLs have to be ordered by noon to come out the same afternoon. IPOX orders have to be in by 6:00PM and will be done the following day (you’ll get results the following evening). Don’t forget to save (F10 button) the case after you input the ordering info.
IPOX orders	For IPOX, you must also input information into the requisition data tab of the case in Power Path. Scroll down to the IPOX info section. Enter the site of the tissue, the histologic findings, your question, and your name. This page and the specimen page with the particular stains that you order should be printed out (control-P, then select Form Image; see instructions in Power Path manual) and placed in the wooden in-box at the side of the Kempson consult desk.
Correlating frozens	Frozen sections need to be mentioned in the comment (“Permanent sections confirm the frozen section diagnosis of …” or “The original frozen section slides were reviewed and all frozen sections confirmed” – the second phrase for cases where tissue is exhausted at the time of frozen section) and also need to be correlated in Power Path. To do this, go to the Results tab in Power Path and click on the Correlate button. Highlight the specimen you wish to correlate, then click on the QA Results button. Click on Macros, then Agree (unless you disagree), then click on the Pathologist and scroll down to insert the name of the pathologist (attending) who did the frozen section (it will be in the frozen section diagnosis box at the bottom of the requisition). Click OK

	after all that. I don't think you have to save after doing this, but it might not be such a bad idea to just hit F10 to be safe.
Reviewed priors	If you review the priors on a case, you can insert a line into the comment section to the effect of "We have reviewed the patient's prior pathology (SHS-XX-XXX) and agree with the diagnosis of …".

ANATOMY OF A MICROSCOPE



SAMPLE GROSS DICTATIONS

NOTE: Many residents like to dictate all their cassettes in list form at the end of the dictation (all cassettes should be dictated at the end of the dictation anyway). This can make previewing and sign-out more organized and easier.

ALL RESIDENTS ASSIGNED TO THE GROSS ROOM MUST PREVIEW ALL OF THEIR CASES WITH A PA (OR AN ATTENDING) PRIOR TO GROSSING THEM IN. **The PAs are there to instruct you in methods of prosection and will be evaluating your gross dictations in order to assist you in proper prosection techniques and in the preparation of a clear, concise, and complete gross report.** The only exception to this may be the week-end resident; this resident should feel free to request advice from the Hot Seat resident if there is concern about the correct method to gross in a weekend specimen. Please refer to the Gross Room Manual at each grossing station for more detailed descriptions of complicated specimens and instructions on labeling cassettes.

Initial sentence

(Number of specimens) specimens are received, each labeled with the patient's name, "(patient last name, say and spell)", and medical record number.

Small biopsy

Received in formalin additionally labeled "(specimen label)" (is a single/are #/are multiple) fragment(s) of (color) tissue measuring (#) x (#) x (#) cm (in aggregate). (It is/These are) entirely submitted between sponges in a single cassette labeled (cassette letter) (special stain tags if needed).

Singleton placenta

Specimen A is received (fresh/fixed) labeled with (patient's name). It consists of a placenta with attached umbilical cord and fetal membranes.

The (tan/grey/white/green) umbilical cord measures _____cm in length by ____ cm in maximum diameter. It inserts (centrally/ eccentrically/ at the margin/ in the membranes- *if in membranes, measure distance of intramembranous course of vessels to disc*) and contains (1/2/3) vessels on cut section. No (*or give # and describe if present*) true knots, edema (*unless present*) or other lesions are seen.
[Cut off cord 1-1.5 cm above insertion and take sections for cassettes A1, A2]

The (translucent/tan/green-tinged) fetal membranes attach (normally at the disc margin/circumvallate for __% of the circumference/circummarginate for __% of the circumference). The area of membrane rupture is located __cm from the closest placental margin (*delete sentence if C-section, or membranes are excessively torn*).
[Take two membrane rolls for cassette A1, cut off membranes]

The (round/oval/irregularly shaped) placental disc weighs _____g and measures ____X___X___cm. The fetal surface is (steel gray/blue/purple) with (normal/magistral/sparse) dispersion of the chorionic plate vessels. No (*or describe if present*) thrombi are identified. The maternal surface appears intact with no grossly obvious missing cotyledons (or not). *[Identify and measure any adherent blood clot].* Serial sectioning through the placental disc at one cm intervals reveals spongy dark red parenchyma with (no grossly identifiable lesions/or note # tan areas, firm areas, measuring __cm in greatest diameter, located __cm from the nearest the margin).

Representative sections are submitted as follows:
A1 Umbilical cord, fetal end, and membrane rolls.
A2 Umbilical cord, placental end, and chorionic plate section near cord insertion**.** ***[take section approx. 2cm away from cord insertion, trying to show chorionic plate vessels]***
A3 Central placenta, full thickness section.
A4 Placenta, full thickness section. ***[Can take from more peripheral areas, but avoid <2cm from margin]***
(A5 Section any lesions – i.e. chorionic plate thrombi with underlying parenchyma, firm areas, tan areas, placenta beneath blood clot AND/OR take 3-4 small wedge sections of maternal surface to try to get maternal spiral arteries if pre-eclampsia/pregnancy-induced hypertension case).

Twin placenta

Specimen A is received (fresh/fixed) labeled with patient's name. It consists of (a single/two separate) placenta(s) with attached umbilical cords and fetal membranes.

The twin A placenta is identified by a clamp on the umbilical cord (correct if different).

The (tan/grey/white/green) umbilical cord of twin A measures _____cm in length by ____ cm in maximum diameter. It inserts (centrally/ eccentrically/ at the margin/ in the membranes- *if near the margin, state how close, if in membranes, measure distance of intramembranous course of vessels to disc*) and contains (1/2/3) vessels on cut section. No (*or give # and describe if present*) true knots, edema (*unless present*) or other lesions are seen.
[Cut off cord 1-1.5 cm above insertion and take sections for cassettes A1, A2]

The (tan/grey/white/green) umbilical cord of twin B measures _____cm in length by ____ cm in maximum diameter. It inserts (centrally/ eccentrically/ at the margin/ in the membranes- *if near the margin, state how close, if in membranes, measure distance of intramembranous course of vessels to disc*) and contains (1/2/3) vessels on cut section. No (*or give # and describe if present*) true knots, edema (*unless present*) or other lesions are seen.

[Cut off cord 1-1.5 cm above insertion and take sections for cassettes A5, A6]

(If monoamnionic, dictate one description for membranes and placenta of both twins. Otherwise, continue dictating separately)

The (translucent/tan/green-tinged) fetal membranes of twin A attach (normally at the disc margin/circumvallate for __% of the circumference/circummarginate for __% of the circumference). The area of membrane rupture is located __cm from the closest placental margin (*delete sentence if C-section, or membranes are excessively torn*).
[Take twin A membrane roll for cassette A1]

The (translucent/tan/green-tinged) fetal membranes of twin B attach (normally at the disc margin/circumvallate for __% of the circumference/circummarginate for __% of the circumference). The area of membrane rupture is located __cm from the closest placental margin (*delete sentence if C-section, or membranes are excessively torn*).
[Take twin B membrane roll for cassette A5]

The interplacental membrane is (translucent/tan/green-tinged) (with/without) a delicate branching pattern of regressed chorionic villi.
[Take interplacental membrane roll T-section for cassette A9, cut off fetal membranes]

The (round/oval/irregularly shaped) placental disc weighs _____g and measures ____X___X___cm. The fetal surface is (steel gray/blue/purple) with (normal/magistral/sparse) dispersion of the chorionic plate vessels. No (*or describe if present*) thrombi are identified.
If monochorionic, or dichorionic fused:
(Identify any twin-twin arterial-arterial, or venous-venous anastomoses on the surface of the placenta. Remember that arteries cross over the veins. Arteries and veins should dive down into the parenchyma in pairs. Any single penetrating vessel is suspicious for a deep arterio-venous anastomosis.)

The maternal surface appears intact with no grossly obvious missing cotyledons (or not). *[Identify and measure any adherent blood clot].* Serial sectioning through the placental disc at one cm intervals reveals spongy dark red parenchyma with (no grossly identifiable lesions/or note # tan areas, firm areas, measuring __cm in greatest diameter, located __cm from the nearest the margin).

Representative sections are submitted as follows:
A1 Twin A umbilical cord, fetal end, and membrane roll.
A2 Twin A umbilical cord, placental end, and chorionic plate section near cord insertion**.**
A3 Twin A central placenta, full thickness section.
A4 Twin A placenta, full thickness section.
A5 Twin B umbilical cord, fetal end, and membrane roll.

A6 Twin B umbilical cord, placental end, and chorionic plate section near cord insertion**.**
A7 Twin B central placenta, full thickness section.
A8 Twin B placenta, full thickness section.
A9 Interplacental membrane T-section

Benign uterus

Received in formalin additionally labeled "uterus (and tubes and ovaries, if included)" is a uterus (with attached bilateral fallopian tubes and ovaries) which weighs (#) grams and measures (#) cm from cornu to cornu, (#) cm from anterior to posterior, and (#) cm from cervix to fundus. The serosal surface is smooth, pink-tan and glistening (also describe additional features, e.g., leiomyomata). The fallopian tube(s) are pink-tan and tortuous (also describe any paratubal cysts, hydrosalpinx, etc.) and measure (#) cm in length and (#) cm in average diameter. The right ovary is yellow-white and lobulated (also include any cysts or masses) and measures (#) x (#) x (#) cm. The cut surface is (color and texture, cysts, masses). The left ovary is yellow-white and lobulated (also include any cysts or masses) and measures (#) x (#) x (#) cm. The cut surface is (color and texture, cysts, masses). The uterus is bivalved to show an endocervical canal without masses, cysts or ulceration. The endometrial cavity is red-tan and velvety (also describe masses, leiomyomata, polyps) and measures (#) x (#) x approximately (#). The myometrial wall thickness is (#) cm (describe any abnormalities in the myometrium: adenomyosis, leiomyomata, etc.). Representative sections are submitted as follows: anterior cervix (cassette letter), posterior cervix (cassette letter), anterior endomyometrium (cassette letter), posterior endomyometrium (cassette letter), right ovary and fallopian tube (cassette letter), left ovary and fallopian tube (cassette letter), additional abnormalities (describe) (cassette letter).

Uterus for cervical cancer

As above under benign uterus, only with a more extensive description of the ecto- and endocervix and any gross masses, biopsy sites, etc. Also, the peritoneal reflections of the uterus will be inked (anterior surface one color and posterior surface another) and sections of the vaginal cuff and right and left parametria will be submitted (entire parametria should be submitted). Finally, the cervix is typically amputated and treated like a cone biopsy (the entire cervix is submitted according to quadrants of a clockface with 12 o'clock representing the mid-anterior cervix).

Uterus for endometrial cancer

As above under benign uterus, only with a more extensive description of the endometrial lining and any masses present in the endometrium, particularly stressing their depth of invasion into the myometrium. It is important to get a full-thickness section (sometimes a section will have to be cut into several cassettes) of the maximum myometrial invasion of the tumor.

Prostate

Received in formalin additionally labeled "prostate" is a prostate gland (with attached bilateral seminal vesicles, if attached). It measures (#) x (#) x (#) cm and weighs (#) gm. The right seminal vesicle measures (#) x (#) x (#) cm and the left seminal vesicle measures (#) x (#) x (#) cm. The anterior surface is inked green, the right posterolateral surface is inked black and the left posterolateral surface is inked blue. The seminal vesicles are then amputated and the anterior nodular portion of the gland is removed. The remainder of the prostate is serially sectioned from apex to base and submitted as follows (cassette letters).

Breast biopsy or needle-localized biopsy

The specimen is received fresh in a Dubin's container (usually only the needle-localized biopsies are received from Radiology in a Dubin's container), labelled with the patient's name "XXXX" and medical record number, and additionally labeled "one stitch_____, two stitches_____" (include clinician's orientation comments in label). [The specimen is accompanied by a Dubin's radiograph showing (wires, microcalcifications circled by mammographer with coordinate designation)]. It consists of a fatty/fibrofatty/fibrous piece of tissue measuring X by Y by Z cm (is skin present; what does it measure? what color? any lesions on skin?). It is oriented as follows: (or as described above).
The specimen is inked per protocol (anterior/superior inked blue, anterior/inferior inked green, posterior inked black). The specimen is fixed overnight in formalin and subsequently serially sectioned at approximately 3 mm intervals to reveal…..HERE IS WHERE A GROSS DESCRIPTION OF THE TISSUE BELONGS: CYSTS, AREAS OF HEMORRHAGE, FIBROSIS, INDURATION, STELLATE SCAR, COMEDO NECROSIS, ETC. The specimen is laid flat from (medial to lateral or lateral to medial), with _____at 12 o'clock and _____ at 3 o'clock on each slice (write this down on x-rays too). The specimen is then radiographed. The specimen radiograph shows (calcifications, circumscribed mass, spiculated mass, dense tissue, biopsy site cavity, etc). Gross examination shows (describe). Sections are submitted in cassettes A1 to A15, as noted on the specimen radiograph (draw on x-ray the sections submitted). Areas of microcalcifications are submitted in cassettes A_ and A_. Areas of mass are submitted in A_ and A_, etc.

Note: Many biopsy specimens arrive in Dubin's container, fresh.
Mnemonic for inking: blue like the sky (ant/**superior**), green like the grass (ant/**inferior**) and the back (deep) is black

Submit on the order of 15 cassettes per breast biopsy, if specimen is extremely large. Note: This does not apply to all specimens. In most instances, representative sections of breast reduction procedures and fibroadenomas are sufficient.

Mastectomy (with nodes, including sentinel)

The specimen is received fresh labelled with the patient's name "XXXX" and medical record number, and additionally labeled "one stitch_____, two stitches_____"

(include clinician's orientation comments in label). It consists of a mastectomy specimen measuring X by Y by Z cm . It contains an ellipse of skin measuring A by B cm (any scars, nipple?). It is oriented as follows: (or as described above).

The specimen is inked per protocol (anterior/superior inked blue, anterior/inferior inked green, posterior inked black). The nipple is amputated and the area under the nipple is inked yellow. The specimen is fixed overnight in formalin and subsequently serially sectioned at approximately 3 mm intervals to reveal ….THIS IS WHERE THE GROSS DESCRIPTION OF THE BREAST TISSUE GOES – SEE ABOVE. The specimen is laid flat from (medial to lateral or lateral to medial), with _____at 12 o'clock and _____ at 3 o'clock on each slice (write this down on x-rays too). The specimen is then radiographed. The specimen radiograph shows (calcifications, circumscribed mass, stellate mass, dense tissue, biopsy site cavity etc). Gross examination shows (describe). Sections are submitted in cassettes A_ to A_, as noted on the specimen radiograph (draw on x-ray the sections submitted). The nipple is submitted in cassette A_.

The axillary tail is dissected and X# of candidate lymph nodes are identified, measuring up to Y cm in greatest dimension. These are submitted in cassettes as follows (list # of candidate nodes in each cassette and whether or not they are bisected or appear grossly involved). Note that sometimes axillary nodes will be sectioned with main specimen; these should be retrieved.

Received in formalin labeled with the same patient's name and medical record # and labeled "_____ (include surgeon's designated CPM counts and color)" is a sentinel lymph node measuring X by Y by Z cm. It is serially sectioned and submitted in a (single) cassette with a SLN tag.

FROZEN SECTIONS

When the resident is assigned to the frozen section room, they should arrive in time to change into scrubs and preview the OR schedule in order to prepare for the day's frozen sections. All residents will be formally instructed in the mechanics (and art) of preparing a frozen section by Alonzo Velasquez, Dr. Gerry Berry and Dr. Teri Longacre (see Outline below). The level of responsibility that a resident assumes for frozen sections will be gradated, depending on the level of the individual resident's overall experience and specific expertise in preparing the frozen section. Faculty will supervise at all times.

FROZEN SECTION TRAINING FOR 1ST/2ND YEAR HOUSESTAFF

A. GENERAL CONCEPTS:

1. Ranchod M. Intraoperative Consultation: Introduction & General Principles. In Ranchod M Intraoperative Consultations in Surgical Pathology. Philadelphia. Hanley & Belfus, Inc, 1996. pp.259-271.
2. "To exhaust or not" (see frozen section room paper)

B. TECHNICAL COMPONENTS OF FROZEN SECTION PREPARATION AND STAINING:

1. TISSUE PREPARATION
2. PREPARATION OF TISSUE BLOCK
3. TISSUE PLACEMENT & FREEZING
4. TRIMMING OF THE BLOCK
5. FACING THE BLOCK
6. SLIDE LABELLING/PREPARATION
7. STAINING SEQUENCE (Timing is everything!)
8. COVERSLIPPING

C. TROUBLE SHOOTING IN THE FROZEN SECTION ROOM

1. THE DIFFICULT SPECIMEN (FATTY, STAPLED, ETC)
2. STAINING ARTIFACTS & PROBLEMS
3. CRYOSTAT SETTINGS
4. INFECTIOUS CASES

D. SAFETY ISSUES IN THE FROZEN SECTION ROOM

1. HANDLING KNIVES AND SCAPEL BLADES
2. EXPOSURE TO POTENTIAL INFECTIOUS/TOXIC MATERIALS

NON-HEME INSIDE/OUTSIDE CASE (I/O) ROTATION

General Information

Length of the rotation: At least one elective month is recommended

Eligibility: AP second year residents (AP only, AP/CP), third year AP only residents and 4th year AP/CP residents are eligible to do the surgical pathology I/O rotation.

Resident responsibilities

1. The residents are expected to select two of four subspecialty oriented categories of I/O cases for the first 2 weeks of their rotation and are subsequently responsible for other two categories of I/O cases in the second half of the month. The case categories include:
    a. GI/Liver
    b. Genitourinary
    c. Breast
    d. Lung/Thoracic/ENT

2. The resident will be responsible for presenting at two weekly tumor boards/interdepartmental conferences during the month. In other words, the resident will be responsible for a total of 8 tumor boards/interdepartmental conferences during the month unless he/she is on vacation during that month. The various tumor boards/interdepartmental conferences the resident can choose from are:

Urology tumor board (Tue 7 am)
Liver tumor board (Tue 10:30 am)
Thoracic tumor board (Tue 2pm)
Pediatric tumor board (Tue 5 pm)
GI tumor board (Wed 3:30 pm)
Digestive disease conference (Wed 5:30 pm)
Liver Transplant conf (Thu 12:30 pm)
Gyn Tumor board (Friday 7:30 am)
Sarcoma tumor board (Fri 7:30 am)
Breast tumor board (Fri 10 am)

Workflow during the I/O rotation

1. On the first day of service, the resident will discuss with the Surgical Pathology “point person” on service (refer to monthly Surgical Pathology sign out schedule for the faculty member identified as “point person”) if they would prefer to help triage the cases regularly for review by specific attending.
2. Each day, the resident must preview non-heme I/O cases accessioned to the service for sign-out the following day. The Gyn and soft tissue tumor cases should be handed over to Surgical Pathology fellow on Kempson consult service.

3. During preview, the resident should pay particular attention to whether all material/information necessary to sign-out the case (slides, reports, immunostains, reports of ancillary studies such as FISH) is available.
4. If information is missing, resident should contact the outside hospital pathology department to request necessary information/reports/immunostains/blocks.
5. The Surgical Pathology schedule and Tumor board schedule will help identify the faculty member responsible for signing out I/O cases that belong to a specific subspecialty. Please take input from Surgical Pathology Director/"point person" if the I/O sign out faculty schedule is unclear.
6. The sign out time is variable as Surgical pathology resident sign out takes precedence over the I/O case sign out.
7. The resident will contact clinicians for additional clinical history or call outside laboratory for blocks or additional information as necessary.
8. If ancillary studies, including immunohistochemistry, are needed, the resident will order the appropriate studies immediately after sign-out and retrieve the stains for review with the attending as soon as they are available.
9. Following review with faculty, the resident will dictate the reports. Cases must be dictated and, after correcting the dictations, must be forwarded to the attending for sign out in a timely manner. The slides and paperwork must be available to the attending for re-review.
10. Senior residents are encouraged to pre-dictate cases prior to sign out. The resident will be responsible for all clinical questions addressed to the service, including ancillary studies that may be pending.
11. In the absence of an AP resident on I/O service in any given month, the cases will be the responsibility of surgical pathology fellows or the subspecialty faculty member for the month.
12. Resident involvement in tumor boards/interdepartmental conferences:
    a. The resident will contact the faculty member responsible for specific tumor boards at least 24 hours prior to the tumor board (please check the monthly tumor board schedule above).
    b. The list of cases to be presented at the tumor board can be obtained from Letty or a designated person in the slide room. The resident will review all the slides corresponding to the cases and anticipate relevant questions from the surgeons/clinicians.
    c. The resident will participate/present cases in the tumor board along with the faculty member responsible for the tumor board/interdepartmental conference.

Supervision & Evaluation

The Surgical Pathology Director and faculty members working directly with the resident will be responsible for supervision. Based on the input from the faculty members and direct supervision, the resident will be evaluated by the Surgical Pathology Director or Point Person through the MedHub system. The results will also be reviewed formally with the resident.

PEDIATRIC SOLID TUMOR PROTOCOL

IMPORTANT:
Notify Kim Hazard, MD (Director of Pediatric Surgical Pathology) AND Surgical Pathology Director on service when any Pediatric Tumor is received.

1. Coding: **ST7 – Soft tissue tumor, Biopsy**
1 cassette:
1 H&E
1 IPOX H&E and 10 unstained slides (held in IPOX lab for 1 week)

ST8 – Soft tissue tumor, Resection
10 cassettes:
A1 with DO NOT CUT tag (for COG submission) *(pilot section of tumor)*
A2 – 1 H&E, 1 IPOX H&E and 10 unstained slides (held in IPOX lab for 1 week) *(pilot section of tumor)*
A3-A10 1 H&E

KID10 – Pediatric Kidney, Nephrectomy
21 cassettes:
A1 with DO NOT CUT tag (for COG submission) *(pilot section of tumor)*
A2 – 1 H&E, 1 IPOX H&E and 10 unstained slides (held in IPOX lab for 1 week) *(pilot section of tumor)*
A3 – A21 2 H&Es
Second set of H&Es are for COG submission (slides placed in "Pediatric Kidney box" at Hot Seat)

2. Tissue should be submitted in a GOLD cassette either the same day or the following morning following fixation if received late in the evening. For large specimens, put through TWO pilot sections (cassettes A1 and A2 as described above in coding section) and submit additional sections the following day. ALL SECTIONS SHOULD BE SUBMITTED IN GOLD CASSETTES.

3. If after hours, place patient last name and date of birth on cassette in lieu of accession number. On the side of the cassette (A1 for biopsy, A2 for resection) write: VL + 10 ust (this will generate 1 IPOX H&E and 10 unstained slides automatically). Notify Kim Hazard, Surgical Pathology Director and Hot Seat fellow that the case is coming through.

4. If needed, Hot Seat fellow will order a panel of immunohistochemical stains when slides are reviewed. (**However, if small round blue cell tumor & you know it needs immunostains: order SRBCT panel (whole or in part) on the day of specimen receipt.** Coordinate this with Kim Hazard and/or Surgical Pathology Director.
Power Path IPOX code: IP SRBCT

<u>FROZEN SECTION ROOM/GROSS ROOM</u>

1. **Submit tissue for Cytogenetic analysis:**
   A. Save 3-4 cubes measuring 0.1 x 0.1 cm in RPMI

B. Complete the Cytogenetics requisition form located in the gross room
C. Give tissue sample and Cytogenetics requisition form to Accessioner to send to Hillview for analysis. *(DO NOT hold tissue, send promptly. Cytogenetic analysis order can be cancelled following initial microscopic evaluation if warranted.)*

2. **Portions of fresh tumor should be frozen** (and/or keep the frozen section sample frozen):
A. Freeze fresh tissue sample(s) in plastic clear containers located in frozen section room and gross room. Containers should be labeled with the patient's name, medical record number, specimen site, tumor vs. normal and date (PAs can help freeze tissue with isopentane solution)
B. Record specimen in Gross Room log book
C. Place tissue sample(s) in -80C freezer in IPOX lab boxes (third cabinet):
Box# 1: Gross Room box (organized by Month)
Box# 2: "COG"
**If at least 2 samples cannot be frozen, place tissue in Gross Room box only*

Things to think about...
3. Should the tumor be sent for <u>flow cytometry</u>?
A. Save 3-4 cubes measuring 0.1 x 0.1 cm in RPMI and HOLD in refrigerator
B. Send tissue for flow cytometry after initial microscopic evaluation, if appropriate

4. Should the tumor be saved for <u>electron microscopy</u>?
A. Save 3-4 cubes measuring 0.1 x 0.1 cm in gluteraldehyde and HOLD in refrigerator
B. Activate electron microscopy by contacting EM lab (5-5196) after initial microscopic evaluation, if appropriate

<u>Special Consideration</u>

On occasion, patients are enrolled on special study protocols prior to resection of their tumor. In this situation, Kim Hazard and the Gross Room PAs will be contacted by a Clinical Research Associate (CRA) from LPCH (typically via email or pager) prior to the surgery. The CRA will provide special instructions for processing the fresh tissue to ensure the patient can be enrolled on the study. Although these instructions often mirror those of the Pediatric Solid Tumor Protocol (see above), additional requirements may exist.

Please touch base with Kim Hazard or the Gross Room PAs if you retrieve the specimen and must divide the tissue to fulfill the study protocol requirements. On the day of the surgery you may be paged when the specimen is ready to either be picked up from the LPCH OR by you or delivered via the Operating Room Assistant (ORA) to the SHC Frozen Section Room. Once the specimen has been received, please call the LPCH OR to confirm you have the specimen. Then process the fresh tissue as required by the study protocol and Pediatric Solid Tumor Protocol. Place this tissue in the IPOX -80C freezer and/or Gross Room refrigerator, as per instructions. The remaining tissue can be grossed in as per our usual procedures. Finally, contact the CRA in charge of the case to let him/her know the tissue is ready for them to retrieve.

If you experience any difficulty or have questions at any point, please contact Kim Hazard, MD, Director of Pediatric Surgical Pathology.

GROSSING OF SPECIMENS

For Special considerations for grossing pediatric tumors, see Chapter 39, page 212 in Surgical Pathology Dissection Guide, Second edition, 2003.

1. **Neuroblastoma/Ganglioneuroblastoma:** (also see page 208 in surgical path dissection guide)
   A. Look for circumscribed hemorrhagic nodules (a feature of nodular ganglioneuroblastoma)
   B. State the presence or absence of these nodules in gross description

2. **Wilms tumor:** (also see page 215 in surgical path dissection guide)
   A. Assess the number of tumor nodules present; measure each nodule
   B. State the presence or absence of nephrogenic rests
   C. Map the sections on a gross photograph of the tumor or a free hand diagram of the tumor slices (helps determine focal versus diffuse anaplasia)
   D. Take special care to submit sections of *the entire renal sinus*
   E. ***Scan the section map into Powerpath for records!***

3. **Osteosarcoma/Ewing sarcoma:** (also see page 117 in surgical path dissection guide)
   A. Assess the extent of tumor involvement (bone, joint space, dermis, subcutaneous tissue, etc…)
   B. Measure the distance between the tumor and proximal and distal surgical resection margins.
   C. Submit an entire longitudinal cross-section of the greatest extent of tumor
   D. Map the sections taken on a gross photograph, radiograph, or free hand diagram (to assess the distribution and percentage of viable versus non-viable tumor)
   E. ***Scan the section map into Powerpath for records!***

ANATOMIC PATHOLOGY AT THE VA PALO ALTO HEALTH CARE SYSTEM

Director: Kristin C. Jensen, M.D.

Residents in the Anatomic Pathology (AP) or combined (AP/CP) program rotate through the VA Anatomic Pathology Service for 4.5 months during their first and/or second years. The Anatomic Pathology Service at VA Palo Alto Health Care System is a rotating service consisting of 2-3 residents (depending on vacation schedules and other leave time). The three day rotation is as follows:

First day
- All grossing *
- Cover frozen sections
- Finish up cases from previous sign-outs

Second day
- Any autopsies (including removal of the brain) prosected by 11 am (see below)
- Cut brains if on brain cutting day
- Review microscopic slides of any current autopsy brains
- Preview surgical (including dermatopathology) pathology cases (released from other duties at 4 pm)
- Finish up cases from previous sign-outs

Third day
- Signout surgical pathology (including dermatopathology) cases and generate all reports
- Attend cytology signout in the afternoon (optional)
- Finish up cases from previous sign-outs
- Attend Stanford interesting case neuropathology conferences, if scheduled for that day

The two day rotation is as follows:

First day
- All grossing *
- Any autopsies (including removal of the brain)
- Finish up cases from previous sign-outs

Second day
- Preview surgical (including dermatopathology) pathology cases
- Signout surgical (including dermatopathology) pathology cases and generate all reports
- Cover frozen sections
- Finish up cases from previous sign-outs

A sample two-week schedule for residents A, B, and C will look like this:

WEEK 1

	Mon	Tuesday	Wednesday	Thursday	Friday
Resident A	G/FS	A/P	S/O	G/FS	A/P
Resident B	A/P	S/O	G/FS	A/P	S/O
Resident C	S/O	G/FS	A/P	S/O	G/FS

WEEK 2

	Mon	Tuesday	Wednesday	Thursday	Friday
Resident A	S/O	G/FS	A/P	S/O	G/FS
Resident B	G/FS	A/P	S/O	G/FS	A/P
Resident C	A/P	S/O	G/FS	A/P	S/O

G/FS=Gross/frozen sections (first day duties as above)
A/P=Autopsy/preview (second day duties as above)
S/O=Signout (third day duties as above)

* Unfixed large specimens requiring overnight fixation may occasionally arrive in the late afternoon and be postponed until the following day; this will be monitored by the Surgical Pathology Attending.

The decision as to day and time to perform an autopsy will be made by the morgue attendant/consultant, with input as needed from the Autopsy Attending. In general, when an organ block is available before 11 am, the resident on A/P will do the case that day. When the organ block is not available until after 11 am, the dissection is postponed until the next day. Exceptions are made in certain circumstances.

While the rotation system is designed to parallel common practice in community pathology groups as well as provide well-defined duties and responsibilities for residents, the overall VA Anatomic Pathology rotation is intended to be an integrative and collaborative service maintained by three (or two, when one resident is on leave) residents with cross-service coverage and/or assistance provided for frozen sections, autopsies, or during busy times on the service.

GOALS AND OBJECTIVES

OVERVIEW

During each month of the rotation, residents will see on the order of 300 specimens obtained in the operating rooms, various clinics or from referring institutions. Residents will be responsible for whatever material they gross each day, including dermatopathologic and neuropathologic specimens. Residents are responsible for the gross description and placement of the fixed specimens in the automatic processor (or outside laboratory collection canisters). When the stained sections are delivered by the histology laboratory (usually around noon the following day), the resident will examine them and obtain the appropriate ancillary information needed in some instances (e.g., clinical history, prior biopsies, etc.). On signout days, every attempt will be made to

complete the surgical pathology and initial dermatopathology signout by noon (both done by the attending on surgical pathology); in a two-person rotation, the signout will be in the afternoon. Specialty dermatopathology signout with Dr. Egbert will occur on Monday, Wednesday and Friday afternoons, or according to her schedule. During signout, the attending and the resident will agree upon a diagnosis and will decide whether or not a microscopic description is necessary. Following this signout session, the resident will dictate or enter into the surgical pathology database the diagnosis and description. The diagnosis of routine cases may be dictated or entered by the attending. Following signout, the resident should also order any special stains or immunohistochemical stains needed for the case, and seek consultative opinions from other attendings on difficult or malignant cases as required. The resident will verify all cancer diagnoses with a second attending and, where appropriate, CAP protocols will be followed and TNM staging will be performed. Subsequently, the attending will review the entire report (gross and microscopic descriptions, diagnosis, etc.) and release the diagnosis for the clinical staff. The residents, in conjunction with the given attendings, are responsible for presenting interesting and/or challenging surgical (including dermatopathologic and neuropathologic) pathology cases at the weekly microscopic conference (Friday at noon). When necessary, the resident will communicate with clinicians regarding critical values and/or when there may be a delay in a given case.

During the first day of the rotation scheme, the resident will be responsible for operating room consultations from 8 am until 6 pm. A pager carried by the resident announces the request from the operating room or a clinic. Approximately 15 to 20 operating room consultations occur per month, with 30 to 50 individual specimens cut as frozen sections. The resident should obtain all the necessary information to process further the specimens used for operating room consultations. When a request is received, the resident will inform the surgical pathology faculty attending of the request; then, will proceed to pick up the specimen (and the important clinical information that comes with it) in the operating room, noting the time of the pickup. Once the specimen is obtained, the resident and attending will decide if and where to sample the tissue. If needed, a frozen section (FS) will be cut by the resident under faculty supervision. The result will be communicated to the surgeon by the resident and the diagnosis will be written verbatim for the report, noting the time of the communication and obtaining the signature of the attending. The resident must maintain specimen orientation and information regarding specimen sampling for further processing.

The number of autopsies during each rotation at the VA will be variable; residents might expect to perform anywhere from 0 to 6 autopsies in a given month. The resident will be instructed and assisted in the external examinations of the body and in the dissection by experienced morgue attendant(s) and/or the autopsy attending. The resident is strongly encouraged to learn and participate in the evisceration process.

For each case the resident will:

-- Examine and validate the autopsy permit and identify the body.
-- Read the clinical history, consult with clinicians, and discuss the case with the attending.
-- Determine if there is a significant possibility of an infectious process with a high risk of aerosol transmission, and note it on the permit copy in the morgue.

-- Obtain the names of at least four clinicians (for VA cases) involved in the care of the patient from the review of clinical history, and enter these names in the appropriate field in the autopsy report.
-- When appropriate, contact the coroner.
-- Do an external examination and dissection of organs.
-- Obtain and fix samples of all appropriate tissues.
-- Discuss the organ findings with the attending.
-- Formulate, with the attending, a Provisional Anatomic Diagnosis (PAD).
-- Enter (or dictate) a gross description of all organs.
-- Trim for histology, and submit the samples when fixation is completed.
-- Present a brief clinical history as well as the organ findings at the weekly organ recital for all staff (including radiology staff and interested clinicians).
-- Examine the histologic sections independently and then with the attending.
-- Discuss the case with the attending and formulate a Final Anatomic Diagnosis (FAD).
-- Participate in brain removal.
-- Take pictures of gross findings.

If the resident's autopsy rotation falls on the day of a family conference (Thursday afternoons), the resident is strongly encouraged to participate in these conferences during the first rotation and to conduct the conferences after obtaining appropriate training and experience.

If brain cutting will be performed on the second day of the rotation, the resident will participate in brain cutting. In addition, the resident will review the diagnostic neuropathology slides on current autopsy cases and present interesting autopsy (including neuropathologic) findings at the weekly microscopic conference.

All residents are encouraged to attend several interdepartmental conferences routinely involving pathology (Tumor Boards, weekly Medicine Multidisciplinary conferences, GI, Urology, etc.). The entire pathology staff (faculty and residents and students and visitors) is encouraged to attend the weekly autopsy organ presentation (Thursday at 1:15 pm in the morgue). Journal clubs are held on most Mondays, providing an opportunity to critically review current literature. Interesting cases are presented at the weekly pathology microscopic conference at noon on Fridays. Stanford conferences (8 am Tuesday through Friday and occasional others) are available via teleconference and/or an internet connection. Attendance at the 8 am Tuesday through Friday lecture series is required and is documented using the conference calendar in the VA residents' room.

Since medical students often spend clerkship rotations in the VA pathology service, it is expected that the residents provide to them some guidance and teaching within their frame of expertise and availability. In turn, students are expected to assist the residents as appropriate for their level of training.

Residents on anatomic pathology at the VA are expected to master the following broad areas to the level expected of a new practitioner. While it is recognized that it is not entirely practical or necessarily desirable to delineate levels of competency that are specific for year of training, the following are offered as rough guidelines. It is expected

that the resident will develop the knowledge base, tools, skills, and demeanor that will foster life-long learning in her/his professional career.

The anatomic pathology rotation at the VA requires considerable dedication and efficient organization. Residents should be prepared to spend time in the preparation and study of cases. In the second and subsequent months, the technical and logistical experience gained during the first month should make work easier and more efficient.

PATIENT CARE

BASIC PRINCIPLES

Year 1: Resident demonstrates knowledge about tissue fixation (including commonly used special fixatives), tissue processing, embedding, orientation of specimens, margin assessment, section preparation, levels, use of special stains, immunohistology, electron microscopy (EM), and cytogenetics.

Year 1: Resident demonstrates basic computer skills in anatomic pathology.

Year 1: Resident is able to present pathology findings at intradepartmental conference.

Year 2: Resident is able to order special stains and levels independently when previewing.

Year 2: Resident is proficient in the preparation and delivery of PowerPoint presentations and is capable of independent case presentation.

Year 2: Resident is proficient at seeking intradepartmental consultation and clinical correlations and is able to resolve diagnostic disagreement.

Year 2: Resident is able to present pathologic findings at weekly interdepartmental conferences.

GROSS EXAMINATION

Year 1: Resident develops proficiency in specimen identification, performs anatomically correct dissection, dictates accurate descriptions, and takes appropriate sections for microscopic examination, including appropriate sections for examination of margins (where appropriate).

Year 1: Resident is knowledgeable about and able to perform specimen photography when appropriate.

Year 1: Resident is proficient in the handling of common specimens requiring special processing (e.g., culture, EM, cytogenetics, bone marrows, direct immunofluorescence).

Year 1: Resident is proficient in the handling of neuropathologic specimens (including brain removal at the time of autopsy).

Year 1: Resident is proficient at recognizing the need for special studies or dissections (e.g., cultures, bone lesions, peripheral vascular lesions).

Year 2: Ability to gross in complicated specimens (e.g., Whipple resection, pelvic exenterations, radical neck dissections) and dissect complicated autopsy cases (e.g., post-surgical, ampullary/bile duct lesions) with minimal supervision. Must be able to recognize when to seek additional assistance from colleagues or surgeon.

MICROSCOPIC EXAMINATION

Year 1: Resident is able to generate an accurate morphologic description, with a reasonable diagnosis/differential diagnosis. Resident is able to provide basic elements of information in all reports, prepare report, correlate findings with any frozen section findings, and present report to faculty at sign-out.

Year 2: Resident is able to formulate an accurate diagnosis or recognize need for consultation, select special stains/IPOX (where appropriate), interpret special stains (and associated artifacts).

Year 2: Resident demonstrates adequate knowledge/use of grading systems, use of synoptic reports (as appropriate), indications for supplementary reports, and proper handling of consultation cases.

INTRAOPERATIVE FROZEN SECTIONS/SMEARS

Year 1: Resident understands role of intraoperative diagnosis; appropriate indications; tissue sampling for intraoperative diagnosis, can cut/stain frozen section (within 10 minutes), and is knowledgeable about precautions for handling fresh tissue or other specimens for intraoperative diagnosis.

Year 2: Resident is proficient at the preparation/staining of smears, interpretation of frozen sections/smears with minimal supervision, understands limitations of intraoperative diagnosis, and is able to communicate effectively and engage in dialogue with treating surgeon and/or clinician.

SYSTEMS-BASED PRACTICE (LAB MANAGEMENT)

Year 1: Resident demonstrates knowledge of JCAHO/CAP standards/requirements for specimen submission and occupational hazards/infection control, particularly with respect to personal protective equipment, storage/disposal of specimens and hazardous chemicals.

Year 2: Resident is competent in the cost-effective practice of pathology and medicine.

Year 1&2: Resident participates in QA review activities and demonstrates knowledge of quality assurance and improvement and basic risk management issues.

Year 1&2: Resident recognizes which autopsy cases require consultation with the coroner.

PROFESSIONALISM

Year 1: Resident develops expertise in use of appropriate phraseology in reports, demonstrates effective skills in communication to physicians and patients, when appropriate, and understands importance of timeliness, turnaround and rush cases.

Year 2: Resident assumes responsibility for presentation of pathology at interdepartmental conferences.

Year 1&2: Resident communicates with support staff, administrative staff, technical staff, housestaff colleagues, and supervising faculty in a respectful and efficient manner. Residents receive 360 degree evaluations on every rotation.

Year 1&2: Resident functions as a member of an integrated anatomic pathology team, helping colleagues as appropriate, to provide accurate, efficient, high quality patient care.

MEDICAL KNOWLEDGE

Year 1: Resident develops basic understanding of disease with correlation to morphology. The resident develops a managerial classification that includes concepts of benign, borderline (low malignant potential), uncertain malignant potential, and malignant.

Year 1: Resident develops understanding of the role of intraoperative frozen section/touch preparations in clinical decision making.

Year 2: Resident is proficient at dissection, analysis and investigation of unusual or difficult cases and can workup cases with minimal supervision.

Year 1&2: Resident participates in journal club.

PRACTICE-BASED LEARNING

Year 1: Resident develops case-based learning as a tool for disease pathogenesis via weekly gross conferences.

Year 2: Resident is able to use wide variety of information sources and is able to use effective problem solving skills in pathology. Proficiency in literature searches and assimilation of scientific and clinico-pathologic information to apply to specific problems in pathology is required.

Year 1&2: Resident reviews chart and/or prior anatomic pathology specimens, contacts relevant clinicians and summarizes clinical findings and correlates them with the gross and microscopic findings.

INTERPERSONAL AND COMMUNICATION SKILLS

Year 1: Resident learns to prepare accurate, concise, complete and cogent written surgical pathology and autopsy pathology reports that incorporate all relevant findings (e.g., clinical, radiologic, serologic, cytogenetic, immunohistochemical, etc.).

Year 1: Resident learns to communicate effectively with surgeons and other clinicians during intraoperative consultation and at case sign-out, when appropriate.

Year 1: Resident participates in post-mortem conferences with family members of the deceased.

Year 2: Resident actively participates in teaching medical students and first year residents on the anatomic pathology rotation.

Year 2: Resident conducts post-mortem conferences with family members of the deceased.

Year 1&2: Resident teaches medical students in the medical school pathology labs in an effective and clear manner, i.e., correlation of gross and microscopic findings with clinical findings.

Clinical Pathology Rotations for

Residents

BLOOD BANK / TRANSFUSION MEDICINE

Program Director: Lawrence Tim Goodnough, MD
Director of Education, Transfusion Service: Magali Fontaine, MD, PhD
Director of Education, Blood Center: Chris Gonzalez, MD

Goals

The goal of this rotation is for the resident to attain proficiency in managing medical issues related to a hospital based **transfusion service**, including selection of appropriate products, pre-transfusion testing, and evaluation of transfusion-related complications. Additionally, the trainee will acquire a firm background in immunohematology, blood inventory management, apheresis, and in the principles of safety, quality assurance, and record keeping. Similarly, the trainee will confidently understand the principles and confidently deal with issue related to blood collection, preparation, storage, and shipment.

Objectives

The resident rotating on the Transfusion Service (TS) will be an integral part of the Transfusion Service/Blood Center operations. He/she will have substantial responsibilities for patient care, and usually serve as the primary link between the clinical services and the Blood center/Transfusion Service. The following objectives (see Appendix I) for the rotation are listed as follows:

Patient care

- To develop a thorough knowledge of blood collection, preparation, storage, and shipment
- To understand indications for transfusion and develop proficiency in selection of appropriate blood products for transfusion
- To understand pre-transfusion testing
- To attain proficiency in managing transfusion-related complications

Medical knowledge

- To understand the immunologic and genetic principles that underlie transfusion medicine
- To understand the role of transfusion medicine and cellular therapies in managing specific acute and chronic diseases
- To understand complications of blood transfusion, including infections and iron overload and other non-infectious side effects

Interpersonal and Communications Skills

- To teach medical technology staff thorough presentation of continuing education lectures
- To develop effective writing skills by writing a brief case report of an unusual case appearing during the rotation
- To serve as a liaison between blood bank staff and clinicians

- To communicate effectively in the role of first call consultant to clinicians with questions or problems
- To serve as a helpful resource for technologists and clinicians regarding blood banking/transfusion medicine issues
- To assist in teaching Core Lab rotation residents principles and practices of the Transfusion Service

Professionalism

- To complete interpretive reports in an accurate and timely fashion
- To interact in a professional, helpful and respectful manner with clinicians, other house staff, and technical and administrative staff
- To display sensitivity to ethical, cultural, and religious issues relating to blood transfusion

Systems-based Practice

- To develop an understanding of quality assurance in blood banking and transfusion medicine
- To understand the role of the Stanford University Medical Blood Center in relationship to the Stanford Medical Center transfusion service
- To understand CAP and AABB accreditation requirements
- To provide consultation in cost-effective medical practice regarding indications for transfusion and selection of appropriate products
- To become familiar with the regulatory agencies and rules governing collection, processing and distribution of blood products
- To be aware of emerging pathogens and their potential impact on national blood supply
- To understand inventory management of blood products, at the local and national level

Practice-based Learning

- To use case-based learning as a tool for additional insight into the basis of disease
- To locate and assimilate pertinent evidence from scientific studies
- To demonstrate effective problem solving skills in transfusion medicine, using a wide variety of information resources

The core competencies described are summarized in Appendix II.

Requirements of the rotation

During the first two-month rotation, the resident will learn the basic immunologic and genetic principles of transfusion medicine, and will have hands-on experience with the bench work. The resident will work on transfusion reactions under the close supervision of the service director. This will include chart review and patient examination as necessary. The resident will become familiar with blood donor questionnaire donor deferral, blood collection, preparation, storage, and shipment. The resident will become familiar with typical consultative questions from clinical staff, including special needs, massive transfusion guidelines, etc.

During the return rotations to the Blood Center/Transfusion Service laboratory, the resident will function with increasing independence in the evaluation of transfusion reactions and in consultative responsibilities with clinical staff, as deemed appropriate by the service director.

Responsibilities:

1) To be actively present in the Transfusion Service from 8:00am – 5:00pm, to gather relevant information to be presented on daily rounds which starts at 9:30 AM, and during which the following items are reviewed:

a. Problems from the night call
b. Blood Component inventory including RBCs, platelets, and plasma products
c. Special requests such as HLA/crossmatched platelets.
d. Transfusion reactions
e. Special antibody work ups, and or ABO discrepancies
f. Donor reactions

2) The resident will meet with the Transfusion Service Director and/or the Blood Center Director on a regular basis to review the objectives of the rotations, listed below. The list of objectives should be covered the first two one-month rotations and reinforced during the third-month rotation.

3) The resident will rotate through the different areas of the Blood Center and the Transfusion Service according to a schedule kept by Jason Calcagno, the education coordinator.

4) The resident will take first call, until 5pm, for the Transfusion Service/Blood Center related issues addressed to either the transfusion service or the blood center and with the backup of an attending physician the resident should be able:

- **to receive** phone calls regarding:
  - Donor eligibility
  - Donor reactions
  - Transfusion reactions
  - Trigger hemoglobin values for transfusion
  - Therapeutic indications of blood products from physician in other specialties.
- **to place** phone calls regarding:
  -Indication for special products i.e., washed, irradiated, leukoreduced, CMV negative
  - Clarification of surgical orders

- Clarifications of transfusion reactions
- Assessment and prioritization of the transfusion needs of patients with multiple alloantibodies or autoantibodies
- Clarification of clinical condition and follow up of transfused patients

5) The resident will actively assist with inventory management and provide clinical consultation in patients with extraordinary needs (eg, massive transfusion protocol in trauma, surgery, or obstetrical emergencies; coagulopathic bleeding; bloodless medicine patients; and non standard protocol in patients with alloantibody problems who require substantial blood support).
6) The resident will attend and participate in a weekly conference (Mondays at 1 PM) during which weekly on-call transfusion /blood center issues will be presented
7) The resident will keep a portfolio of all transfusion service and blood center related cases, in which he or she was involved. Each case summary will include a brief description, the resolution, and the alternative therapy providing a brief review of the related literature.
8) The resident will present a blood bank related seminar during the rotation for the Blood Bank technologists. Topic may be one suggested/requested by the techs. This may be presented in shifts during the day of the last week of the rotation.
9) At Friday-noon CP on call-interesting case conference, the resident will present a case report of one of the interesting cases that appeared during the rotation on transfusion service/Blood center.
10) The resident will be encouraged to write up a case report during the rotation of one of the interesting cases that appeared during that time, including recent literature support for the discussion.
11) The resident will be encouraged to get involved in the Laboratory Administrative and Management activities regarding personnel, staffing, budgeting, quality assessment and improvement.
12) The resident will attend all Transfusion Service/Blood Center supervisors meeting, QA and Quality Committee meetings.
13) Perform Quality Audits as requested, including participation in CAP, AABB, and other outside audits when they occur.

Teaching staff responsible for supervision and instruction:
The directors of education for the Transfusion Medicine Service/Blood Center and the Program Director and the education coordinator of the transfusion service will together be primarily responsible for the instruction of the resident. A list of related transfusion and blood center topics will be presented and discussed by each attending. The list of topics (Appendix III) and recommended reading materials will be handed out at the beginning of each month rotation. Residents will be expected to generate two standardized and structured test questions for each didactic topic in order to develop a test library for the curriculum. Supervision is the ultimate responsibility of the service director, with assistance from the laboratory supervisor and from technologists in the lab during the teaching of specific bench procedures.

Manner of supervision and evaluation:

The transfusion medicine physician on service will meet with the resident daily to review assigned topics in order to verify that the resident is progressing in his or her understanding of transfusion medicine. All interpretations, conclusions, and consultative opinions will be verified with the director for education prior to posting in the chart or final communication with the clinical staff.

The resident will be evaluated by the director for education, with input from the Medical Directors from both the Blood Center and the Transfusion Service and with input from the laboratory supervisors and manager. This evaluation will be documented in the standard evaluation form used throughout the program. In addition, feedback is continuous throughout the duration of the rotation.

Evaluation based upon

1. Daily report quality and accuracy.
2. Report of completion of bench work
3. Verbal interactive evidence of comprehension of the reading.
4. Multiple choice exams.
5. Work ethic/habits.
6. Interaction with staff daily and at meetings
7. Educational activities for staff and/or students
8. Written case report
9. Oral case reports at CP conference
10. Attendance and participation at required meetings/conferences

Evaluation criteria:

- Unsatisfactory: anything below successful completion of all of the above activities/responsibilities.
- Appropriate for level: Responsibilities and Activities completed promptly. Thorough preparation for daily sessions. Good interaction with clinicians/staff to investigate and educate about problems.
- Unable to evaluate: because of incomplete rotation

Text books:

Roback JD, Combs, MR, Grossman BJ, Hillyer, CD. Technical Manual, 18th Edition. AABB, 2012.
Blackall DP, Helekar PS, Triulzi DJ, Winters J. Transfusion Medicine Self-Assesment and Review, 2nd Edition. AABB, 2009
Galel SA, Nguyen DD, Fontaine MJ, Goodnough LT, Viele MK. Transfusion Medicine, in (Greer JP, Foerster J, Rodgers G et al, eds), Wintrobe's Clinical Hematology, 12th edition, Philadelphia, Lippincott Williams & Wilkins, 2009; 672-721.
Goodnough LT. Transfusion Medicine. In Cecil's Textbook of Medicine; 24th Edition (L. Goldman, ed) WB Sanders Co., Phila, PA, 2011, 1154-1157.

Goodnough LT. Blood Banking. In Concise Guide to Hematology. Schmaier AH and Lazarus HM (eds). 2012, Blackwell Publishing Ltd, Oxford, UK, pp 319-331.
Goodnough LT. Alternatives to allogeneic transfusion in patients with surgical anemia. In Transfusion Therapy: Clinical Principles and Practice, 3rd Edition (Mintz P, ed), AABB Press, 2011;699-720.

Competencies for Stanford Transfusion Medicine/Blood Center
ACGME Competencies for Transfusion Medicine/Blood Center

Goal	This document defines the Stanford University Transfusion Medicine/Blood Center rotation program objectives, strategies, and assessment tools, used to fulfill ACGME requirements. Trainees are responsible for reviewing the objectives as they begin the rotation. A detailed description is available in the Transfusion Service/Blood Center

ACGME Competency	Program Objectives	Strategy	Assessment Tool
Patient Care	Develop Diagnostic Competence • Appropriate & effective consultation (in context of Transfusion Medicine Service) • Gather essential & accurate information on specific patient/donor issues • Make informed decisions concerning patient/donor safety and product quality (i.e. safety, purity, potency and efficacy)	• Management of daily Transfusion Medicine activities • Discussion and presentation of patient cases, donor/donor testing issues, and inventory concerns at conference	• 360^{o} Evaluation • Case presentation at daily rounds and weekly on-call conference
Medical Knowledge	Demonstrate • Knowledge about the established & evolving science of Transfusion Medicine • Application of knowledge about the established & evolving science of Transfusion Medicine	• Didactic sessions with lectures from staff physicians and technical training personnel • Wet laboratory experience • Computer based training • Attendance and participation in morning conference • Required maintenance of weekly portfolio entries	• Pre-Post Examination • 360^{o} Evaluation • Review of Case Log entries
Practice-Based Learning & Improvement	Demonstrate ability to: • Analyze, evaluate, appraise, their practice in Transfusion Medicine • Locate, appraise and assimilate information from scientific studies related to patients'/donors' health care problems • Provide educational experiences for co-workers and other allied health professionals	• Required maintenance of weekly portfolio entries • Deliver Divisional continuing educational events	• 360^{o} Evaluation • Review of Case log entries

Interpersonal & Communication Skills	Demonstrate • Effective communication with co-workers • Ability to prepare diagnostically accurate reports • Accurately and effectively communicate diagnostic information verbally to colleagues	• Management of daily Transfusion Medicine activities • Consultation with physicians, patients, donors and allied health personnel • Discussion and presentation of patient cases, donor/donor testing issues, and inventory concerns at conference	• 360^{o} Evaluation • Review of Case log entries
Professionalism	Demonstrate commitment to: • Professional responsibilities • Adherence to ethical principles • Sensitivity to the diverse patient/donor and co-worker populations	• Management of daily Transfusion Medicine/Blood Center activities	• Daily rounds • Presentation at Monday on-call conference • 360^{o} Medhub evaluation
System-Based Practice	Demonstrate: • Ability to efficiently perform Transfusion Medicine Trainee responsibilities • Understanding of Stanford Hospital organization, processes and systems, and the impact of Transfusion Medicine decisions on that system. • Identify strengths and weaknesses in the Div. of Transfusion Medicine/Blood Center operational processes • Ability to call on Stanford Hospital system resources to provide better service • Understanding of insurance and reimbursement issue associated with Transfusion Medicine practices • Understanding of regulatory and accreditation agency standards influencing the practice of Transfusion Medicine	• Management of daily Transfusion Medicine activities • Consultation with physicians, patients, donors and allied health personnel • Required maintenance of weekly case log entries	• 360^{o}MedHub Evaluation • Review of Case log entries

Requirements of the rotation

During the first two-month rotation, the resident will learn the basic immunologic and genetic principles of transfusion medicine, and will have hands-on experience with the bench work. The resident will work on transfusion reactions under the close supervision of the service director. This will include chart review and patient examination as necessary. The resident will become familiar with blood donor questionnaire donor deferral, blood collection, preparation, storage, and shipment. The resident will become familiar with typical consultative questions from clinical staff, including special needs, massive transfusion guidelines, etc.

During the return rotations to the Blood Center/Transfusion Service laboratory, the resident will function with increasing independence in the evaluation of transfusion reactions and in consultative responsibilities with clinical staff, as deemed appropriate by the service director.

Responsibilities:

1) To be actively present in the Transfusion Service from 8:00am – 5:00pm, to gather relevant information to be presented on daily rounds which starts at 9:30 AM, and during which the following items are reviewed:

g. Problems from the night call
h. Blood Component inventory including RBCs, platelets, and plasma products
i. Special requests such as HLA/crossmatched platelets.
j. Transfusion reactions
k. Special antibody work ups, and or ABO discrepancies
l. Donor reactions

2) The resident will meet with the Transfusion Service Director and/or the Blood Center Director on a regular basis to review the objectives of the rotations, listed below. The list of objectives should be covered once during the first two-month rotations and reinforced during the third-month rotation.

3) The resident will rotate through the different areas of the Blood Center and the Transfusion Service according to a schedule kept by Jason Calcagno, the education coordinator.

4) The resident will take first call, until 5pm, for the Transfusion Service/Blood Center related issues addressed to either the transfusion service or the blood center and with the backup of an attending physician the resident should be able:

- **to receive** phone calls regarding:
  - Donor eligibility
  - Donor reactions
  - Transfusion Reactions
  - Trigger Hemoglobin values for transfusion

- Therapeutic indications of blood products from physician in other specialties.

- **to place** phone calls regarding:
  -Indication for special products i.e., washed, irradiated, leukoreduced, CMV negative

  - Clarification of surgical orders
  - Clarifications of transfusion reactions
  - Assessment and prioritization of the transfusion needs of patients with multiple alloantibodies or autoantibodies

  - Clarification of clinical condition and follow up of transfused patients

5) The resident will actively assist with inventory management and provide clinical consultation in patients with extraordinary needs (eg, massive transfusion protocol in trauma, surgery, or obstetrical emergencies; coagulopathic bleeding; bloodless medicine patients; and non standard protocol in patients with alloantibody problems who require substantial blood support).
6) The resident will attend and participate in a weekly conference (Mondays at 1 PM) during which weekly on-call transfusion /blood center issues will be presented
7) The resident will keep a portfolio of all transfusion and blood case, in which he or she was involved. Each case summary will include a brief description, the resolution, and the alternative therapy providing a brief review of the related literature.
8) The resident will present a blood bank related seminar during the rotation for the Blood Bank technologists. Topic may be one suggested/requested by the techs. This may be presented in shifts during the day of the last week of the rotation.
9) At Friday-noon CP on call-interesting case conference, the resident will present a case report of one of the interesting cases that appeared during the rotation on transfusion service/Blood center.
10) The resident will be encouraged to write up a case report during the rotation of one of the interesting cases that appeared during that time, including recent literature support for the discussion.
11) The resident will be encouraged to get involved in the Laboratory Administrative and Management activities regarding personnel, staffing, budgeting, quality assessment and improvement.
12) The resident will attend all Transfusion Service/Blood Center supervisors meeting, QA and Quality Committee meetings.
13) Perform Quality Audits as requested, including participation in CAP, AABB, and other outside audits when they occur.

Teaching staff responsible for supervision and instruction:
The director of education for the Transfusion Medicine Service/Blood Center and the education coordinator of the transfusion service will together be primarily responsible for the instruction of the resident. A list of related transfusion and

blood center topics will be assigned to each attending. Supervision is the ultimate responsibility of the service director, with assistance from the laboratory supervisor and from technologists in the lab during the teaching of specific bench procedures.

Didactics:

Professor	Subject
Dr. Andrews	Hemolytic Disease of the Newborn and the use of Rhlg
	Uremic Bleeding
	Computer systems in the Transfusion Service
	Transfusion Service Basics
Professor	**Subject**
Dr. Fontaine	
	Transfusion reactions and special needs
	Basics of immunohematology
	Transfusion medicine quality systems - overview regulation
	Therapeutic apheresis
	TRALI
	polyagglutination
	Hemolytic anemia
	Lookbacks
	Platelet Refractoriness

Professor	Subject
Dr. Goodnough	
	Blood Transfusion and blood conservation
	Therapeutic apheresis
	Anemia of chronic disease
	Erythropoietin, iron and erythropoiesis
	Factor VIIa indications

Professor	Subject
Dr. Galel	
	MSM policy regarding donation from men who have sex w/ men
	Current good manufacturing practices
	Biologic product deviations
	HIV HCV look back studies
	Investigation of post-transfusion hepatitis or TRALI reports

Professor	Subject
Dr. Gonzalez	
	Apheresis collections
	Transfusion associated graft vs. host disease
	Autologous and designated donations: logistics, safety relative to community donations
	UDHQ: what is on it, deferral policies, CUE option
	Support of patients with sickle cell anemia
	Molecular vs. serologic red cell typing: when to use each method
	Donor anemia: prevention, management

Manner of supervision and evaluation:

The transfusion medicine physician on service will meet with the resident daily to review assigned topics in order to verify that the resident is progressing in his or her understanding of transfusion medicine. All interpretations, conclusions, and consultative opinions will be verified with the director for education prior to posting in the chart or final communication with the clinical staff.

The resident will be evaluated by the director for education, with input from the Medical Directors from both the Blood Center and the Transfusion Service and with input from the laboratory supervisors and manager. This evaluation will be documented in the standard evaluation form used throughout the program. In addition, feedback is continuous throughout the duration of the rotation.

Evaluation based upon

11. Daily report quality and accuracy.
12. Report of completion of bench work
13. Verbal interactive evidence of comprehension of the reading.
14. Multiple choice exams.
15. Work ethic/habits.
16. Interaction with staff daily and at meetings
17. Educational activities for staff and/or students
18. Written case report

19. Oral case reports at CP conference
20. Attendance and participation at required meetings/conferences

Evaluation criteria:

- Unsatisfactory: anything below successful completion of all of the above activities/responsibilities.
- Appropriate for level: Responsibilities and Activities completed promptly. Thorough preparation for daily sessions. Good interaction with clinicians/staff to investigate and educate about problems.
- Unable to evaluate: because of incomplete rotation

Appendix I

TRANSFUSION MEDICINE TRAINING OBJECTIVES	
THEME	**TOPICS**
To be met in the First Month	**To be met in the First Month**
Understanding of the donor selection and phlebotomy process	1. Donor history 2. Donor examination 3. Interval between donations 4. Community vs. directed donors 5. Reactions to donation 6. Therapeutic donation 7. Collection process a. Whole blood (manual) b. Apheresis
Knowledge of specific tests performed on donated blood	1. Know what tests are done on donor blood and how they are performed. 2. Screening tests vs. confirmatory tests 3. Testing algorithms 4. Donor deferral/re-entry
General knowledge regarding component preparation and storage	1. Red blood cells (additive, packed, dry packed) 2. Fresh frozen plasma 3. Platelet concentrates 4. Apheresis

	a. platelets b. granulocytes c. lymphocytes d. red cells e. plasma 5. Cryoprecipitate 6. Quality control testing requirements for components 7. Fibrin sealants 8. Commercial products; e.g. coagulation factor concentrates 9. Solvent/detergent plasma 10. RBC substitutes
Understanding of different alternatives for autologous blood collection, advantages and contraindications	1. Pre-deposit collection 2. Peri-operative salvage 3. Acute normovolemic hemodilution 4. Role of iron and erythropoietin
Understanding of the following component manipulation methods/techniques	1. Sterile connection 2. Irradiation 3. Leukoreduction 4. Freezing 5. Pathogen inactivation 6. Washing 7. Packing 8. Pooling 9. Thawing

Basic knowledge of the major blood group systems	1. ABO system a. Forward and reverse typing b. Blood components compatible with patient's ABO type c. Inheritance of ABO blood groups d. ABO discrepancies e. Major crossmatch: immediate spin & AHG 2. Rh system a. Nomenclature b. Du phenotype c. Clinical relevance/HDN 3. Other major blood groups 4. Clinically significant vs. clinically insignificant antibodies 5. Antibody screen and compatibility testing
Basic knowledge and indications for the following tests	1. Direct AHG 2. Indirect AHG and antibody panel studies 3. Eluates 4. Kleihauer-Betke 5. Thermal amplitude/Titer studies 6. Special reference techniques: enzyme, absorption studies, use of phenotypically similar cells, rare cells, survival studies
To be met in the Second Month	**To be met in the Second Month**
Indications for the following products	1. Cold 2. Warm 3. Drug related
Evaluation and management of AIHA	1. Allergic 2. Febrile 3. Acute hemolytic 4. Delayed hemolytic/delayed serologic 5. Bacterial contamination 6. TRALI 7. Complications of massive transfusion
Evaluation and management of transfusion reactions	1. Leukoreduced red cells, platelets 2. CMV safe cellular products 3. Irradiated cellular products 4. Rh+ products given to RH- recipients 5. Prevention of HDN
Determination of need, timing, and appropriate dose of RhIg	
Managing the platelet refractory patient	1. Definition of refractoriness 2. Causes of refractoriness 3. Methods of managing the HLA-alloimmunized patient 4. Managing refractoriness not related to HLA 5. Platelet alloantigens, PTP, NAITP

Understanding of special protocols	1. Massive transfusion 2. Emergency processes (uncrossmatched blood, type specific, antigen negative, infectious testing incomplete)
General overview of inventory management	1. Considerations in managing inventory 2. Selection of products when ideal products are not available
Guidelines for appropriate use of blood components and indications for component therapy	1. Approaches to Blood Utilization management and review (e.g. MSBOS, prospective vs. retrospective review) 2. Indications for use of each blood component
Knowledge of blood administration procedures	1. Importance of proper identification 2. Transfusion administration devices 3. Product doses/rates of infusion 4. Management of transfusion reactions

To be met in the Third Month	To be met in the Third Month
Understanding of "lookback" procedures	1. Regulatory requirements 2. Methods 3. Legal and ethical issues
Information Systems in Blood Banking	1. Importance of controls over product release 2. Electronic crossmatch 3. Tracking of products
Special considerations in perinatal transfusion	1. Intrauterine transfusion 2. Exchange transfusion 3. ECMO 4. Selection of products for use in aliquot vs. massive transfusions in neonates 5. Doses of blood products for neonates 6. Compatibility testing in neonates
Therapeutic uses of apheresis technology: indications, methods, and complications	1. Therapeutic plasma exchange 2. Collection of hematopoietic progenitor cells* 3. Processing of hematopoietic progenitor cells*
Use of coagulation laboratory tests to guide transfusion therapy*	1. Review available laboratory, point of care, and reference coagulation tests and the turnaround time for each* 2. Identify how these tests can be used to guide transfusion therapy*
Insuring compliance with regulatory requirements	1. Review agencies/regulations involved (e.g. FDA, AABB, State, CLIA, JCAHO, OSHA) 2. Blood Bank as a manufacturer (GMP's) 3. Quality Assurance 4. SOP's, training, documentation, quality control, proficiency testing, event monitoring

Appendix II

Competencies for Stanford Transfusion Medicine/Blood Center
ACGME Competencies for Transfusion Medicine/Blood Center

Goal	This document defines the Stanford University Transfusion Medicine/Blood Center rotation program objectives, strategies, and assessment tools, used to fulfill ACGME requirements. Trainees are responsible for reviewing the objectives as they begin the rotation. A detailed description is available in the Transfusion Service/Blood Center

ACGME Competency	Program Objectives	Strategy	Assessment Tool
Patient Care	Develop Diagnostic Competence • Appropriate & effective consultation (in context of Transfusion Medicine Service) • Gather essential & accurate information on specific patient/donor issues • Make informed decisions concerning patient/donor safety and product quality (i.e. safety, purity, potency and efficacy)	• Management of daily Transfusion Medicine activities • Discussion and presentation of patient cases, donor/donor testing issues, and inventory concerns at conference	• 360^{o} Evaluation • Case presentation at daily rounds and weekly on-call conference
Medical Knowledge	Demonstrate • Knowledge about the established & evolving science of Transfusion Medicine • Application of knowledge about the established & evolving science of Transfusion Medicine	• Didactic sessions with lectures from staff physicians and technical training personnel • Wet laboratory experience • Computer based training • Attendance and participation in morning conference • Required maintenance of weekly portfolio entries	• Pre-Post Examination • 360^{o} Evaluation • Review of Case Log entries
Practice-Based Learning & Improvement	Demonstrate ability to: • Analyze, evaluate, appraise, their practice in Transfusion Medicine • Locate, appraise and assimilate information	• Required maintenance of weekly portfolio entries • Deliver Divisional continuing educational events	• 360^{o} Evaluation • Review of Case log entries

	from scientific studies related to patients'/donors' health care problems • Provide educational experiences for co-workers and other allied health professionals		
Interpersonal & Communication Skills	Demonstrate • Effective communication with co-workers • Ability to prepare diagnostically accurate reports • Accurately and effectively communicate diagnostic information verbally to colleagues	• Management of daily Transfusion Medicine activities • Consultation with physicians, patients, donors and allied health personnel • Discussion and presentation of patient cases, donor/donor testing issues, and inventory concerns at conference	• 360^{o} Evaluation • Review of Case log entries
Professionalism	Demonstrate commitment to: • Professional responsibilities • Adherence to ethical principles • Sensitivity to the diverse patient/donor and co-worker populations	• Management of daily Transfusion Medicine/Blood Center activities • Conduct/lead TS rounds at designated opportunities in second half of Fellowship year	• Daily rounds • Presentation at Monday on-call conference • 360^{o} Medhub evaluation
System-Based Practice	Demonstrate: • Ability to efficiently perform Transfusion Medicine Trainee responsibilities • Understanding of Stanford Hospital organization, processes and systems, and the impact of Transfusion Medicine decisions on that system. • Identify strengths and weaknesses in the Div. of Transfusion Medicine/Blood Center operational processes • Ability to call on Stanford Hospital system resources to provide better service • Understanding of insurance and reimbursement issue associated with Transfusion Medicine practices	• Management of daily Transfusion Medicine activities • Consultation with physicians, patients, donors and allied health personnel • Required maintenance of weekly case log entries	• 360^{o}MedHub Evaluation • Review of Case log entries

	• Understanding of regulatory and accreditation agency standards influencing the practice of Transfusion Medicine		

CLINICAL CHEMISTRY & IMMUNOLOGY

CORE CLINICAL CHEMISTRY AT HOSPITAL

Rotation Director: Raffick Bowen PhD

Goals and Objectives

Patient Care

- Learn to interpret results for a variety of Clinical Chemistry tests including:
  - markers of myocardial damage and cardiovascular risk
  - tests important in management of critical illness
  - common markers of renal and liver function
  - therapeutic drug monitoring and toxicology

Medical Knowledge

- Become familiar with the wide variety of analytical principles used in Clinical Chemistry including spectrophotometry, electrochemistry, chromatography and immunoassay
- Understand how laboratory tests used in the diagnosis and treatment of a variety
- of diseases reflect the underlying pathophysiology

Practice-Based Learning and Improvement

- For all important Clinical Chemistry analytes, become familiar with:
  - common pre-analytic influences on test results
  - common uses in diagnosis and/or monitoring of clinical disease

Interpersonal and Communication Skills

- Be able to interact effectively with clinical physicians regarding interpretation of
- laboratory results and selection of appropriate tests.

Professionalism

- Be able to interact effectively with clinical laboratory scientists regarding laboratory technical problems
- Understand different approaches to resolving human resource issues

Healthcare Delivery

- Recognize important aspects of the administration of a clinical laboratory
- Be capable of implementing a method, as indicated by understanding how to:
  - do a formal method evaluation
  - write a procedure
  - establish quality control policies and evaluate QC performance
  - evaluate proficiency testing results

Requirements of the rotation

The Clinical Chemistry in the Core Laboratory rotation is a one-month rotation.

1) The resident will meet with the director each weekday to review any major clinical issues, and with a supervisor each weekday to review any major technical problems.

2) The resident will attend the following meetings:
   - Chemistry Core Lab Operations Meeting (Wednesday, 7:30–8:30 AM in H1551-Left,– weekly)
   - Chemistry Quality Meeting (Friday, 9:00–10:00 AM in H1551 Left, first Friday of each month)
   - Clinical Chemistry Journal Club (Friday, 9:00-10:00 AM in Hillview room 2906, last Friday of each month)

3) The resident will take "first call" (in place of director) for all clinical questions addressed to laboratory during each weekday.

4) The resident will also assume primary responsibility for:
   - review all toxicology analyses, with appropriate follow-up (e.g., evaluate discrepancies)
   - review results of all requests for intra-operative PTH
   - review any problematic testing results and determine the appropriate interpretation.

5) The resident should cover all of the major topics of Clinical Chemistry in the Core Laboratory. To assist the resident, each of these has a specific "didactic" exercise (see table).

Didactic Table

THEME	TOPICS
Chemistry Methods & Instruments	1. Specimen Processing & Instrumentation 2. Photometry 3. Electrochemistry
Critical Care Chemistry	4. Osmolality & Electrolytes 5. Blood Gas & Acid/Base 6. Glucose & Ketones
Growth & Development	7. Pregnancy & Perinatal Testing 8. Proteins & Enzymes 9. Iron & Heme
Organ Injury & Dysfunction	10. Liver Disease 11. Renal Disease 12. Cardiovascular Disease
Toxicology & TDM	13. Pharmacokinetics & Therapeutic Drug Monitoring 14. Immunosuppressive Drugs 15. Toxic Syndromes

Supervision and Evaluation

During the rotation, the resident will meet daily with the medical director to discuss problems encountered during the day, on-going issues or any of the topics outlined in the schedule noted above. He or she should reserve some time for these review sessions.

The resident will be evaluated not only based on his/her daily work as assessed by the director and supervisors but also by a written, open-book, examination, administered at the end of each month of the rotation. The examination will be designed to highlight areas of importance and to assess whether the resident needs additional help in gaining competence in any specific areas. Results will be reviewed formally with the resident.

Major text and learning resources:

For our primary textbook, we have selected Kaplan & Pesce, ed. Clinical Chemistry, 5th Edition (2010) from which reading assignments for each didactic session will be given. However, it should be noted that this text will frequently be supplemented with more current journal articles; these supplemental references will be included, along with the textbook reading assignments, in the didactic session handout.

SPECIAL CHEMISTRY AT HILLVIEW

Rotation Director: Run Shi PhD

Goals and Objectives

Patient Care

- Learn to interpret results for a variety of Clinical Chemistry & Immunology tests including:
  - tests used to diagnose common and uncommon endocrine disorders
  - serologic markers of autoimmune & allergic disorders and infectious diseases
  - trace & toxic metals

Medical Knowledge

- Be familiar with the wide variety of analytical principles used in Clinical Chemistry
- & Immunology including spectrophotometry, electrochemistry, chromatography,
- mass spectrometry and immunoassay
- Understand how laboratory tests used in the diagnosis and treatment of a variety
- of diseases reflect the underlying pathophysiology

Practice-Based Learning and Improvement

- For all important Chemistry & Immunology analytes, become familiar with:
  - common pre-analytic influences on test results
  - common uses in diagnosis and/or monitoring of clinical disease

Interpersonal and Communication Skills

- Be able to interact effectively with clinical physicians regarding interpretation of
- laboratory results and selection of appropriate tests.

Professionalism

- Be able to interact effectively with clinical laboratory scientists regarding laboratory technical problems
- Understand different approaches to resolving human resource issues

Healthcare Delivery

- Recognize important aspects of the administration of a clinical laboratory
- Be capable of implementing a method, as indicated by understanding how to:
  - do a formal method evaluation
  - write a procedure
  - establish quality control policies and evaluate QC performance
  - evaluate proficiency testing results

Requirements of the rotation

The Special Chemistry rotation at Hillview is divided into two parts:

Requirements during Months One:

6) The resident will meet with a director each weekday to review any major clinical issues, and with a supervisor each weekday to review any major technical problems.
7) The resident will attend the following meetings:
   - Special Chemistry Operations Meeting (Tuesday, 4:00 – 5:00 PM in lab, weekly)
   - Chemistry Quality Meeting (Friday, 9:00–10:00 AM in H1551 Left, first Friday of each month)
   - Clinical Chemistry Journal Club (Friday, 9:00-10:00 AM in Hillview room 2906, last Friday of each month)
8) The resident will take "first call" (in place of director) for all clinical questions addressed to laboratory during each weekday.
9) The resident will also assume primary responsibility for:
   - review any problematic testing results and determine the appropriate interpretation.
10) During the introductory one month rotation, the resident should cover all of the major topics of Special Chemistry and Clinical Immunology. To assist the resident, each of these has a specific "didactic" exercise (see table).

Didactic Table

THEME	TOPICS
Chemistry Methods & Instruments	16. Chromatography & Electrophoresis 17. ICP/Mass Spectrometry 18. LC/Tandem Mass Spectrometry 19. Immunochemistry & Immunoassay
Endocrine Disorders	20. Diabetes Mellitus 21. Thyroid Disorders 22. Adrenal Disorders 23. Reproductive Disorders 24. Unusual Endocrine Disorders
Growth & Development	25. Mineral & Bone 26. Vitamins 27. Trace Elements
Organ Injury & Dysfunction	28. Gastrointestinal Disorders 29. Tumor Markers
Toxicology & TDM	30. Environmental Toxins
Immunologic Disorders	31. Innate Immunity & Cytokines 32. Serologic Diagnosis of Infectious Disease 33. Allergic Disorders 34. Autoimmune Disorders 35. Chemistry of Myeloma & Lymphoma 36. Immunodeficiency Disorders

Requirements during Month Three:
The resident will function as the overall medical director for both Core Clinical Chemistry at the Hospital as well as Special Chemistry at Hillview (handle all medical and administrative issues, review quality control and proficiency test results). In addition, miscellaneous special topics in Clinical Chemistry (such as point-of-care testing, body fluid analysis, etc.) will be covered. The resident will need to divide her/his time between both campuses during this month.

Supervision and Evaluation

During the rotation, the resident will meet daily with a medical director to discuss problems encountered during the day, on-going issues or any of the topics outlined in the schedule noted above. He or she should reserve some time for these review sessions.

The resident will be evaluated not only based on his/her daily work as assessed by the director and supervisors but also by a written, open-book, examination, administered at the end of each month of the rotation. The examination will be designed to highlight areas of importance and to assess whether the resident needs additional help in gaining competence in any specific areas. Results will be reviewed formally with the resident.

Major text and learning resources:

For our primary textbook, we have selected Kaplan & Pesce, ed. Clinical Chemistry, 5th Edition (2010) from which reading assignments for each didactic session will be given. However, it should be noted that this text will frequently be supplemented with more current journal articles; these supplemental references will be included, along with the textbook reading assignments, in the didactic session handout.

COAGULATION / RBC SPECIAL STUDIES

Director, Coagulation: James Zehnder, MD
Directors, RBC Special Studies: Bertil Glader, MD and Tracy George, MD

Goals and Objectives

Patient care

- Be familiar with a wide variety of adult and pediatric coagulation and red blood cell disorders
- Develop competency in interpretation of coagulation and special red cell disorder testing
- Gain skill in the technical and interpretative aspects of these special tests
- Correlate clinical findings laboratory results in samples submitted for coagulation and special red blood cell testing
- Learn appropriate selection of diagnostic tests in these areas

Medical knowledge

- Develop basic knowledge of the clinical, pathogenetic, and laboratory features of the more common coagulation and red cell disorders
- Understand the significance of the various diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common coagulation and red cell diseases

Interpersonal and communication skills

- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the results and testing that support those diagnoses effectively, both verbally and in written reports
- Work closely with laboratory staff in coordinating specimen timely processing

Professionalism

- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff in the lab to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice

- Learn the process of case evaluation and work flow in the laboratory, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff

- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

Practice-based learning
- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnosing coagulopathies and red cell disorders using a wide variety of information resources, including laboratory and hospital information systems

Length of Rotation: One month
- 2-3 weeks spent in coagulation and
- 1-2 weeks in the red blood cell laboratory

Requirements of the rotation/ Resident duties and responsibilities

Week 1: Coagulation

Monday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Processing, PT, PTT, TT, Inhibitor Screen
Meet with Dr. Zehnder: Introduction to Coag, Inhibitor Screens

PM:
1pm Transfusion Call Conference

Tuesday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Heparin Level, ATIII, D-Dimer, vWF antigen

Noon: Hematology Journal Club (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases: 1-10

Wednesday:
AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Factor Levels and Inhibitors

Noon: Hematology Conference (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases 11-20

Thursday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Platelet Aggregation

Noon: CP Lecture series Hillview Purple Room

PM:
Sign out Inhibitor Screens
Work on cases 21-30

Friday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Heparin Induced Platelet Aggregation, Heparin Induced Platelet Antibodies
Meet with Dr. Zehnder: Case Discussion

Noon: CP Call Conference

PM:
Sign out Inhibitor Screens

Week 2: Coag/Red Cell Special Studies

Monday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: Protein C, Protein S, alpha2-antiplasmin, Activated Protein C, DDRVV
Meet with Dr. Zehnder: Case Discussion

PM:
1pm Transfusion Call Conference

Tuesday:

AM:
Meet with Technologists in the Special Coagulation laboratory (9:30AM):
Review: FactorXIII, PFA. Euglobulin

Noon: Hematology Journal Club (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases: 31-40

Wednesday:

AM:
Meet with Technologists in the Red Cell Special Studies Laboratory:

Noon: Hematology Conference (Cancer Center, Room #?)

PM:
Sign out Inhibitor Screens
Work on cases 41-50

Thursday:

AM:
Meet with Technologists in the Red Cell Special Studies Laboratory:

Noon: CP Lecture series Hillview Purple Room

PM:
Sign out Inhibitor Screens
Work on cases 51-60

Friday:

AM:
Meet with Technologists in the Red Cell Special Studies Laboratory:
Meet with Dr. Zehnder: Case Discussion

Noon: CP Call Conference

PM: Sign out Inhibitor Screens

Coagulation reference materials:

1) Clinical Use of Coagulation Tests: Zehnder JL, UpToDate (available on line):
2) Disorders of Hemostasis and Thrombosis: Goodnight SH, Hathaway WE, McGraw Hill (available at medical bookstore, residents' library)
3) A syllabus of laboratory tests and case histories for review and discussion will be provided.

Supervision and Evaluation:

The resident's work will be supervised by an attending hematopathologist in all areas. The resident will be evaluated on his/her daily work as assessed by each director. Results will be reviewed formally with the resident.

CP HEMATOLOGY

Rotation Director: Tracy George, MD

Note: CP only residents will initially do a one-month rotation identical to the AP bone marrow hematopathology rotation before doing the CP rotation described here. Some other CP residents may also do additional weeks or months of the previously described AP hematopathology rotation.

Goals and Objectives

Patient care

- Be familiar with a wide variety of adult and pediatric hematologic disorders, neoplastic and benign
- Develop competency in peripheral blood smear, body fluid and bone marrow interpretation, including correlating morphology with ancillary tests used for diagnosis, such as special stains (i.e. cytochemistry, iron, etc…), HPLC/ hemoglobin electrophoresis, NBT test, Kleihauer Betke test, flow cytometry, and tissue immunohistochemistry
- Gain skill in the technical and interpretative aspects of flow cytometry
- Correlate clinical findings with morphology of clinical hematology samples
- Learn appropriate selection of diagnostic tests in hematology
- Develop basic expertise in medical microscopy of body fluids and urinalysis
- Correlate findings in fluid samples with those in the cytopathology laboratory

Medical knowledge

- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills

- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with laboratory staff in coordinating specimen timely processing

Professionalism

- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case

- Work effectively and efficiently with support and administrative staff in the hematology/flow cytometry lab to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice

- Learn the process of case evaluation and work flow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

Practice-based learning

- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

Length of Rotation: The total rotation length is 3 months with the third month occurring later during training. The third month has similar Goals and Objectives to the first months, but also has the objective of the resident learning more about interacting effectively with clinical physicians regarding interpretation of laboratory results and selection of appropriate tests

Requirements of the rotation/ Resident duties and responsibilities

1) The work load will be divided between CP residents and Hematopathology Fellows with one trainee handling peripheral blood smears and body fluids at Stanford, and the other handling flow cytometry specimens at Hillview.
2) If covering peripheral blood smears, each morning at Stanford one trainee will review held-over abnormal blood smears. As necessary, they will call physicians with results or to request further clinical information. Smears will be reviewed daily with the attending pathologist at ~9AM.
3) If covering body fluids: Body fluid sign-out will begin at a time agreed upon by the on-service resident and attending pathologist, typically mid morning or early afternoon. The resident is responsible for entering results into the pathology information system (Powerpath/Tamtron) and for correlating results with Cytology (also in Powerpath).
4) At Stanford, from 9:30AM – noon each day trainees can attend the bone marrow sign-out as determined by the bone marrow and body fluid hemepath attendings, and the number of residents on the rotation. This sign-out will include AP and CP

residents and HP fellows as scheduled. Trainees should preview, perform 200-cell differential counts and be responsible for signing out at least 2 bone marrow cases per day.

5) The CP resident or Hematopathology fellow (whomever is covering flow cytometry at the time) will take "first call" for all clinical questions regarding the morphologic evaluation of aspirates and peripheral blood smears prior to testing and cases that (s)he is writing up. For flow cytometry specimens submitted with in-house marrows that the AP resident will sign out, the AP resident will take "first-call" during normal working hours once the flow results are available and/or have been reviewed with the AP bone marrow sign-out attending. As needed, smears can be reviewed with either the Hematology Specialist or the attending pathologist.

6) Hematopathology fellows on body fluids will also be responsible for signing out selected bone marrow cases and review molecular and cytogenetic results weekly to create amendment reports to integrate results.

7) Residents will contact clinicians for additional clinical history or for urgent diagnoses as necessary.

8) At Hillview, the resident will interpret flow cytometry results with the fellow or attending, check the entered flow cytometry data for accuracy in Power Path, and will incorporate an interpretation in the report. Text comments for negative flow cytometry reports are available in Power Path. Cases will be dictated as soon as possible and, after correcting the dictation, will forward the cases to the attending for sign out on the same day. The slides and paperwork must be available to the attending for re-review.

9) Bench Training by Clinical Laboratory Scientists: Each week on Tuesday afternoon at 2PM or as agreed upon with the supervisor the resident rotates through a different section of hematology for detailed instruction by a reference technician, The residents are excused for their clinical work during this time. *The resident should touch base with the rotation director immediately if any issues arise in scheduling the bench training sessions.*

Stanford Hospital: (coordinator: Mercy Dones, hematology supervisor)

- Hematology specimen processing, automated hematology & QA
- Body fluids
- Urinalysis
- Special hematology

Hillview:

- Flow cytometry (2 sessions coordinated by Veronica Wei, flow supervisor)
- RBC special studies laboratory (coordinated by Carolyn Wong, lead technologist in RBC SSL)

10) Teaching

- The resident is to give at least 1 in-service to the Hematology techs at the Hematology section meetings
- The resident is to give at least 1 in-service to the Flow Cytometry techs

11) Conferences:

- Friday Noon CP Conference- Each resident will select at least 1 case for discussion.
- Tuesday: 8AM Current Concepts seminar
- Thursday: 12 noon Laboratory Medicine Lecture Series
- 3rd Monday of the month: QA/QI Meeting
- Tuesday: 12 noon—once per month around-the-microscope session
- Surgical Pathology conferences are optional
- Friday 1:30pm, weekly interesting hemepath case conference
- Monthly Hematology QA meeting
- Friday: 8AM or 2:30PM, Hematology Operations meeting
- Monthly Hematology/Hematopathology Conference- Optional
- Bimonthly Acute Leukemia Tumor Board-Optional
- Bimonthly MDS Tumor Board-Optional

CALL RESPONSIBILITIES

The CP resident on call (#12005) handles all calls after normal working hours. A hematopathology fellow is usually also on call as an initial back-up to the resident, but the bone marrow service attending pathologist for any given week is the ultimate back-up person for both the resident and fellow. Monthly call schedules that designate the fellow and attending pathologists on call are posted on the first day of each month throughout the clinical laboratory.

During normal working hours, the resident or fellow on a given part of the CP hematology service takes the initial calls for that service with fellow and attending back-up. For example, if the CP resident is handling flow cytometry specimens in a given week, all requests related to flow cytometry will be initially directed to that resident, with the designated service attending available to assist the resident.

For evenings and weekends, “first-call” involving picking flow panels and morphologic evaluation of specimens submitted for flow cytometry evaluation should be taken by the CP resident/hemepath fellow covering the flow cytometry service. All other hematopathology-related “first-call” (e.g., peripheral smears and body fluids) involving “critical” issues should be taken by the on-call CP resident (#12005 pager). Routine examination of peripheral blood smears and body fluids, however, will be performed by the CP resident/hemepath fellow covering the Peripheral Smears/Body Fluids service.

STUDY SETS

As it is not possible to see the large breadth of hematology during a rotation, glass slide sets are available for review of abnormalities on peripheral smear, bone marrow and body fluids. A list of correct diagnoses is provided. A pre-test of 10 peripheral blood smears and body fluids is available, as is a post-test of 10 peripheral blood smears and body fluids. Independent study is strongly recommended to supplement the Hematology sign-out.

Although it is best to cover themes when problems and issues in those areas arise, here is an approximate guide for gaining experience in the following important topics during the rotations in Hematology and Coagulation.

THEMES		TOPICS
THE CBC	1	THE CBC
	2	Peripheral smear: RBC morphology
	3	Peripheral smear: WBC morphology
	4	Reticulocyte counts
	5	CBC analyzers
	6	WBC differentials
Coagulation Testing	7	Routine coagulation testing
	8	Coagulation: special
	9	INR
	10	Platelet aggregometry
Coagulopathies	11	Factor deficiencies
	12	Von Willebrand's Disease
	13	Anticoagulation
	14	Inhibitors
	15	Platelet disorders
	16	DIC and thrombotic disorders
	17	Delayed bleeding disorders
Anemias	18	Marrow failure
	19	Acquired Hemolysis
	20	Abnormal membranes
	21	Hemoglobinopathies
	22	Abnormal Enzymes/Polycythemia
Special Hematology	23	HPLC/Hemoglobin electrophoresis/sickling tests
	24	Serum viscosity, urine hemosiderin, Heinz bodies
	25	Monospot, malaria smear, ESR, fecal blood
	26	G6PD, osmotic fragility
Pediatric Hematology	27	Neonatal hematology
	28	KB stain
Body Fluids	29	Body fluid morphology
	30	Urinalysis
Flow Cytometry	31	Leukemias
	32	Lymphomas
	33	PNH
	34	MDS
	35	Lymphocyte subsets
Hematopathology	36	Lymphoproliferative disorders
	37	Reactive disorders
	38	Myelodysplastic syndrome

	39	Myeloproliferative neoplasms
Miscellaneous	40	CAP standards, QI/QC

Major Texts and Learning Resources:

- Bain B. Blood Cells. A Practical Guide, 4th Edition (2006)
- Foucar K, K Reichard, D Czuchlewski. Bone Marrow Pathology, 3rd Edition (2010)
- Galagan KA, Blomberg D, Cornbleet PJ, Glassy EF. Color Atlas of Body Fluids (2006).
- George TI. Laboratory Hematology, UpToDate (online)
- Glassy EF. CAP Color Atlas of Hematology (2005).
- Haber M, Blomberg D, Galagan K, Glassy EF, Ward P. CAP Color Atlas of the Urinary Sediment (2011).
- Hoyer JD and Kroft SH. Color Atlas of Hemoglobin Disorders (2003)
- Jaffe ES, Harris NL, Vardiman JW, Campo E, Arber DA, eds. Hematopathology. Philadelphia: Elsevier, 2011.
- Keren DF et al. Flow Cytometry in Clinical Diagnosis, 3rd Edition (2001)
- Kjeldsberg C. Practical Diagnosis of Hematologic Disorders, 5th Edition (2010)
- Kjeldsberg C & Knight J. Body Fluids, 3rd Edition (1993)
- Knowles D. Neoplastic Hematopathology, 2nd Edition (2001)
- McPherson RA, Pincus MR.. Henry's Clinical Diagnosis and Management by Laboratory Methods. 21st Ed. (2006)
- Nguyen D et al. Flow Cytometry in Hematopathology, 2nd Edition (2007)
- Pereira I, George TI, Arber DA. Atlas of Peripheral Blood: The primary diagnostic tool. Lippincott Williams & Wilkins, Philadelphia, 2012.
- Swerdlow SH et al. WHO Classification of Tumours, Pathology & Genetics, Tumours of Haematopoietic and Lymphoid Tissues (2008)

Recommended assignments for the initial 2 month rotation block:

Week 1: Slide Pre-test
Chapters 1-3 Pereira et al. Atlas of Peripheral Blood
Intro and CSF chapters of Galagan et al. CAP Body Fluid Atlas

Week 2: Chapters 4-6 Pereira et al. Atlas of Peripheral Blood
Pleural, Peritoneal, and Pericardial Fluids chapter and
Synovial Fluid chapter of Galagan et al. CAP Body Fluid Atlas
Urinalysis in Health and Disease chapter of Haber et al. CAP Color Atlas of the Urinary Sediment

Week 3: Chapters 7-9 Pereira et al. Atlas of Peripheral Blood
Erythroid and Lymphoid Series chapters of Galagan et al. CAP Body Fluid Atlas
Diagnostic issues chapter of Haber et al. CAP Color Atlas of the Urinary Sediment

Week 4: Chapters 10-12 Pereira et al. Atlas of Peripheral Blood
Myeloid and Mononuclear-Phagocytic Series chapters of Galagan et al. CAP Body Fluid Atlas
Cells chapter of Haber et al. CAP Color Atlas of the Urinary Sediment

Week 5: Chapters 13-15 Pereira et al. Atlas of Peripheral Blood
Lining Cells and Miscellaneous Cells chapters of Galagan et al. CAP Body Fluid Atlas
Casts chapter of Haber et al. CAP Color Atlas of the Urinary Sediment

Week 6: Chapters 16-18 Pereira et al. Atlas of Peripheral Blood
Crystals and Microorganisms chapters of Galagan et al. CAP Body Fluid Atlas
Crystals and Organisms chapter of Haber et al. CAP Color Atlas of the Urinary Sediment

Week 7: Chapters 19-20 Pereira et al. Atlas of Peripheral Blood
Miscellaneous Findings chapter of Galagan et al. CAP Body Fluid Atlas
Miscellaneous chapter of Haber et al. CAP Color Atlas of the Urinary Sediment

Week 8: Slide Post test

Supervision and Evaluation:

The resident's work will be supervised by an attending hematopathologist in all areas. The resident will be evaluated on his/her daily work as assessed by each attending and designated laboratory staff. All attending pathologists, as well as designated staff members, will evaluate the resident's performance in the MedHub system.

CLINICAL PATHOLOGY AT VA PALO ALTO HEALTHCARE SYSTEM

Director: Stephen S. Chen, MD

Goals and Objectives

The primary goal of this rotation is to offer residents an experience of practicing clinical pathology in a setting in which organization and management are more similar to those in community hospitals than those in Stanford Medical Center. The resident will play the role of a "laboratory director," taking service calls from the Chemistry, Hematology, Microbiology, Blood Transfusion, Serology and Molecular Diagnostics sections and helping clinicians appropriately utilize specialized tests and interpret test results.

Patient Care

- To develop proficiency in the interpretation of commonly ordered laboratory tests, such as electrolytes, enzymes, hormones, tumor markers, blood gases, blood cell counts and serum antibody titers.
- To learn microscopic examinations of body fluids, peripheral blood smears, and bone marrow specimens.
- Opportunity to perform bone marrow biopsies under supervision by hematology attending, both to fulfill the requirement for board certification (minimum 5 biopsies) and to become comfortable with this important procedure often performed by pathologists in community practice.

Medical Knowledge

- To understand the biochemical basis of metabolic diseases and the pathogenesis of coagulation disorders.
- To become familiar with the role of Microbiology laboratory in the diagnosis and management of infectious diseases.

Practice-Based Learning and Improvement

- To use case-based learning (test results and clinical findings) as a tool for insight into the basis of the disease.
- To improve problem solving skills in clinical pathology by using a wide variety of informational resources.
- To stay informed of the current clinically relevant literature through journal club.

Interpersonal and Communication Skills

- To present cases at clinical conferences in support of patient care and medical education of staff, residents and faculty.
- To write concise and clear interpretative reports when indicated.
- To communicate effectively with clinical colleagues in case evaluation and with laboratory staff in technical and management issues.

Professionalism

- To recognize and be sensitive to the needs of patients and clinicians in making timely diagnoses in a cost effective manner.

- To work effectively as a team with other staff in the lab to maximize productivity and maintain an excellent quality of work environment.

Systems-based practice

- To understand principles of QC and QA, and to resolve problems when they occur.
- To become familiar with the missions of VA, and management issues within Veterans Affairs Medical Centers.
- To understand federal regulatory issues governing the clinical pathology laboratory.

Requirements of the rotation: Two months.

Resident duties and responsibilities

The VA rotation is offered to the residents in the second year of their clinical pathology training. The emphasis is to train residents how to function as a "director of clinical laboratories" in a community hospital environment. Thus, residents will take service calls from all six sections of the lab on every working day. The following are examples of their activities:

Chemistry

- Residents evaluate requests for sending samples to reference laboratories. They discuss with clinicians justifications for sending tests out.
- Residents review interesting cases, and correlate test results with clinical findings.
- Residents answer inquiries from clinical staff regarding test significance and possible interferences.

Hematology

- Do microscopic examinations of body fluid cytology.
- Review and interpret abnormal CBC and peripheral blood smear findings. Determine whether special studies requested by clinicians (flow cytometry, cytogenetics, molecular studies) are indicated.
- Preview bone marrow aspirates (wet read) and determine whether special studies requested by clinicians (flow cytometry, cytogenetics, molecular studies) are indicated.
- Read bone marrow aspirates with accompanying peripheral blood smears and core biopsies, and formulate diagnostic reports. Incorporate results of special studies.
- Opportunity to learn and improve bone marrow biopsy skills under hematology attending supervision.

Microbiology

- Participate in the laboratory bench-side "show and tell" session every Wednesday in which all interesting cases of the week are reviewed.

Blood Transfusion Service

- Perform review of blood product utilization.
- Review and investigate blood transfusion reactions.
- Attend quarterly Blood transfusion Committee meetings.

Serology

- Recommend to clinical staff the selection of appropriate laboratory tests for autoimmune disorders and neuro-syphilis.
- Review and approve requests for performing those very expensive genetics tests.

Molecular Diagnostics

- Our laboratory performs nucleic acid testing of HIV and HCV for all VA patients in Northern California. Residents provide consultative services to clients.

Laboratory management

- Residents attend monthly Supervisors' meetings and monthly QA meetings.
- Residents participate in CAP inspection tours, and perform as inspectors for laboratory accreditation.
- Review results of CAP proficiency testing and Q-Probes.
- Residents have access to hospital-wide, computerized information system, e-mail and internet.

Supervision and Evaluation

The teaching staff for supervision are the attending clinical pathologists and hematopathologists at the VA. Staff pathologists discuss with residents all consultative reports.

The primary evaluation tool is the form, RESIDENT ROTATION EVALUATION, completed in Medhub by staff pathologists.

The organization and services of VA Clinical Laboratories closely resemble those in community hospitals. The VA rotation offers residents an experience of practicing clinical pathology in a setting different from that of Stanford Medical Center.

Service Responsibilities

Clinical laboratories are divided into six sections: Chemistry, Hematology, Blood transfusion, Serology, Microbiology and Molecular diagnostics. However, CP residents in the VA rotation play the role of "laboratory director," being responsible for taking service calls from all six sections every working day via a dedicated pager. Specifically, the majority of the residents' work will consist of the following:

1. Daily rounds in all laboratory sections
2. Participation in QC and QA programs and all clinical laboratory meetings.
3. Consultative activities: Under guidance of VA attending faculty, residents review and approve requests for sending tests out to reference laboratories. They interact with clinicians to discuss findings and reasons for the request.
4. Review of abnormal test results and interesting cases for clinical-laboratory correlations.
5. Reading and interpretation of peripheral blood smears, bone marrow specimens and body fluids, with formulation of reports for bone marrows.
6. Review of blood product utilization, and investigation of transfusion reactions.

Teaching Activities

Residents need to attend teaching activities arranged by pathologists and medical technologists.

1. Attend required Stanford clinical pathology residency lectures.
2. (Optional) Monday noon journal club meetings involving the whole VA pathology department (AP and CP faculty, residents and fellows).

CYTOGENETICS

Director: Tena Cherry, PhD
Assistant Director: Melanie Manning, MD

Goals and Objectives

Patient Care

- To develop proficiency in the basic interpretation of cytogenetics laboratory results and their clinical significance.
- To learn appropriate skills to search reference materials and databases to arrive at a correct interpretation of results and concise, helpful communication of these results to the treating clinician.
- Learn about the considerations involved in appropriate test selection and development.

Medical Knowledge

- To understand genetic principles and cytogenetic and molecular cytogenetic testing techniques.
- To develop expertise in the test selection and results interpretation of inherited and acquired chromosomal disorders.

Practice-Based Learning and Improvement

- To locate, appraise and assimilate clinical and laboratory information, as well as information from scientific studies.
- Become proficient in correlating these results with morphology, flow cytometry, molecular, and other laboratory results.

Interpersonal and Communication Skills

- To present in-service talks to the staff, and case presentations to fellow residents.
- To prepare concise, complete written reports on complex clinical cases, newly developed assays, and for publications (as appropriate).
- Communicate laboratory results and interpretation effectively to laboratory and clinical colleagues.

Professionalism

- To demonstrate integrity, honesty and respect in personal interactions as well as in patient care, through careful interpretation of results reports, attention to quality assurance and completion of the daily tasks in a timely fashion.
- To work effectively and as a team with the medical directors, laboratory staff, and administrative staff, as well as with consulting physicians and patients.

Systems-based practice

- To understand the interplay between laboratory and clinical results from various clinical disciplines and their impact on patient care.
- To become familiar with the interdisciplinary nature of genetic disease testing and the continuous evolution in technology as well as knowledge about the human genome and proteome.
- Develop awareness and skills related to cost-effective diagnostic testing, laboratory work-flow, and turn-around time

Requirements of the rotation

The two month Genetics rotation in the Stanford Pathology Department is interdisciplinary and includes participation of faculty in the Departments of Pathology, Medicine, Pediatrics (Division of Medical Genetics) and Department of Genetics.

Laboratory rotations include formal training in Molecular Pathology, Cytogenetics, and Biochemical Genetics and residents spend approximately three weeks in each area. Residents are strongly encouraged to attend sign-out sessions in all three areas during the two month rotation. Residents will be involved in assay development, quality assurance and results interpretation in all three laboratories.

Residents are expected to initiate a project during their two-month rotation. This project can be performed in any of the three laboratories, and may involve research, quality assurance, or test development.

Resident duties and responsibilities for each level of training

The genetics rotation for pathology residents is always scheduled in the second year of pathology residency training. Individual objectives for each of the three laboratory rotations are:

3 weeks	3 weeks	3 weeks
Molecular Pathology rotation—CP aspects. *Objectives:* Become proficient in a wide range of molecular diagnostic methods and interpretation, learn about the development of new assays, perform case interpretations, have interaction with physicians from other disciplines, and have teaching Sessions with attending directors, give case presentations. Emphasis on DNA diagnostic tests and the forefront of diagnostic developments.	Cytogenetics rotation. *Objectives:* Become familiar with cytogenetic methods and interpretation, be able to make correlations with molecular genetic results, and to explore diagnostic advantages and disadvantages of cytogenetic and molecular pathology techniques for individual genetic diseases. Be able to recognize the significance of abnormal cytogenetic results, both acquired and constitutional. Learn ISCN nomenclature.	Biochemical Genetics rotation. *Objectives:* Become familiar with biochemical screening and diagnostic methods, interpretation of results and their clinical correlation, confirmation by molecular methods, development of new assays, interaction with physicians from other disciplines, attend clinics and consults for biochemical genetic disorders.

These objectives are adjusted for elective rotations of both AP and CP residents on an individual basis and discussed at the beginning of the elective.

Daily schedule

Regular working hours are approximately 8:00AM to 6:00PM, Monday-Friday.

Responsibilities:

Sign out cases with attending directors in each of the three genetics laboratories. During the remainder of the day, CP residents are expected to be present in the laboratory where they currently rotate and discuss their activities with the attending director. They are expected to carefully prepare and preview cases for sign-out, be available for consultation and laboratory issues, observe, perform, study and help develop laboratory assays, and work on their project.

Table of the typical meeting schedule

Meeting/Lecture	Day	Time	Location
Attend the weekly laboratory meetings (italic):			
Molecular Pathology lab meeting	Mondays	9 AM	HV sign-out room
Metabolic Conference	Mondays	1:00 PM	Pediatric Library
Hemepath clinpath correlation conference	Mondays	2:30	Heme signout
Teaching session mol genetics	Mondays	4.30	HV sign-out room
Current Concepts lecture series	Tuesdays	8:00 AM	L201
Hematology journal club	Tuesdays	noon	2nd fl., Cancer center
Human Genetics Journal Club	Tuesdays	4:00 PM	Beckman Center, B200
Cytogenetics lab meeting	Every other Wednesday	9:30 AM	Cytogenetics Lab
Hematology conference	Wednesdays	noon	2nd fl., Cancer center
Hematology new patient conference	Wednesdays	4.30 PM	2nd fl., Cancer center
Biochemical Genetics lab meeting	Thursdays	10:00 AM	HV sign-out room
Clinical Pathology lecture series. This series includes a block of genetics lectures, which address critical aspects of genetic diagnostic testing in molecular, biochemical and cytogenetics.	Thursdays	noon	H1551L
OB/Genetics Prenatal Clinical	Thursdays	12:30 PM	OB Library, 3rd floor

Conference			
Medical Genetics Grand Rounds. Inter- disciplinary meeting with lecture and case presentations. General discussion of genetic concepts.	Fridays	9:00 AM	LK102
Present interesting cases at the Friday Clinical Pathology residents conference and discuss involvement in phone calls received from physicians regarding interpretation of genetic tests.	Fridays	noon	H1551L
Self study and conducting a project			
Pediatric Tumor Board conference	Tuesdays	5:00 PM	LPCH Board Room
Integrated genetics laboratories meeting (lecture, with technologists)	TBA	TBA	TBA
Elective: Attending genetics clinics			

Supervision and Evaluation

Residents are evaluated monthly by the attending directors (using the pathology department evaluation form) and by the staff (using the pathology department 360-degree evaluation form).

Cytogenetics test list:

1. Chromosomal Analysis of:
   a. Amniotic fluid for prenatal diagnosis
   b. Chorionic villi sampling (CVS) for prenatal diagnosis
   c. Peripheral blood (stimulated - routine) for constitutional anomalies
   d. Peripheral blood (high resolution)
   e. Bone marrow for acquired anomalies
   f. Peripheral blood (unstimulated – leukemic) for acquired anomalies
   g. Products of conception
   h. Skin fibroblasts
   i. Solid tumors
   j. Peripheral blood for breakage studies (Fanconi and ataxia telangiectasia)
2. Fluorescence In Situ Hybridization (FISH):
   a. Microdeletion syndromes:
      (1.) DiGeorge/Velocardiofacial syndrome: 22q11.2
      (2.) Distal 22q13 deletion
      (3.) Prader-Willi syndrome: 15q11.2
      (4.) Angelman syndrome: 15q11.2
      (5.) Williams syndrome: 7q11.23

(6.) Miller-Dieker syndrome: 17p13.3
(7.) Smith-Magenis syndrome: 17p11.2
(8.) STS deletion (X-linked ichthyiosis): Xp22.3

b. Prenatal panel: X, Y, 13, 18 and 21
c. X/Y
d. Whole chromosome painting panel (Octochrome)
e. Cancer-related:
(1.) BCR/ABL1 for t(9;22)
(2.) PML/RARA for t(15;17)
(3.) CBFB for inv(16), t(16;16), del(16)
(4.) TEL/AML1 for t(12;21)
(5.) ETO/AML1 for t(8;21)
(6.) IGH/BCL2 for t(14;18)
(7.) +4, +10 and +17 in ALL
(8.) CMYC separation for t(8;14), t(2;8) and t(8;22)
(9.) MLL separation for 11q23
(10.) EWS separation for t(11;22)
(11.) CLL panel for 11q-, +12, 13q- and 17p-
(12.) Myeloma panel: t(11;14), 13q- and 17p-, reflex to t(4;14) and t(14;16)
(13.) CCND1/IGH for t(11;14)
(14.) -5/5q-
(15.) -7/7q-
(16.) +8
(17.) ALK separation for t(2;5) for lung cancer and lymphoma
(18.) SYT separation for t(X;18) [synovial sarcoma]
(19.) MALT1 separation in t(11;18)
(20.) HER2/neu amplification (breast cancer)
(21.) Urovysion (+3, +7, +17, 9p-)

3. Array comparative genomic hybridization (array CGH)

Cytogenetics Checklist:

1. Culture initiation and/or culturing, harvesting, slidemaking, G-banding, analysis, interpretation and report, for all tissue/test types, including:
   - ❑ Amniotic fluid
   - ❑ Chorionic villus sampling
   - ❑ Bone marrow/leukemic blood
   - ❑ Peripheral blood/high resolution
   - ❑ Breakage studies (Fanconi anemia and/or ataxia telangiectasia)
   - ❑ Products of conception
   - ❑ Skin biopsies
   - ❑ Solid tumors

2. Interphase and metaphase fluorescence in situ hybridization (FISH), slidemaking, analysis, interpretation and report including:

- Enumeration probes
- Whole chromosome paints (Octochrome)
- Unique sequence probes for microdeletion syndromes
- Fusion and break-apart probes for cancer rearrangements
- HER2/neu amplification in breast cancer

3. Array CGH, set up, hybridization, scanning, analysis and interpretation.

4. Other banding techniques (as performed).

HISTOCOMPATABILITY

Histocompatibility curriculum for residents and fellows
Course director: Matthew W. Anderson

Background: The Stanford Histocompatibility, Immunogenetics, and Disease Profiling Laboratory (HIDPL) provides diagnostic testing services for the solid-organ and bone marrow transplant programs at Stanford Hospital and Clinics and Lucille Packard Children's Hospital. The HIDPL performs greater than 47,000 tests per year and employs a staff of approximately 50 full-time employees. The HIDPL offers a wide selection of testing services to include molecular HLA genotyping, HLA antibody detection, engraftment monitoring, and immune function assays. The HIDPL also has an active research and development program focused on designing and validating novel diagnostic assays to determine pre-transplant compatibility and monitor for antibody-mediated rejection. Finally, the HIDPL houses and curates a bio-repository of patient specimens, which serves as an invaluable resource for investigators throughout the Stanford research community.

Overview: The ten-day training program in histocompatibility for residents and fellows is designed to provide students with a broad exposure to the theory and practice of histocompatibility testing. The rotation begins with an introduction to the laboratory and discussion of selected patient cases, each related to a different category of testing that the laboratory performs (crossmatch, typing, *etc.*). Students then rotate through the various testing areas of the laboratory, and learn the techniques from licensed technologists at the bench. Throughout their experience in the HIDPL, students will meet with directors and other senior staff to engage in case-based discussions relevant to the testing they observe. Students will also be given direct "hands-on" instruction on how to perform and analyze selected tests on their own sample. Pathology residents and fellows will also attend meetings with the transplant services to learn about the clinical impact of histocompatibility testing.

Expectations: Participants are expected to be present for all scheduled meetings with Directors and technical staff. Rotating clinical pathology residents are to be excused from other clinical duties (call conferences, *etc.*) if those obligations conflict with scheduled laboratory training.

Course objectives: At the end of the rotation, students will have learned:

<u>Specimen processing</u>:

1. How to prepare serum, cells, and DNA from patient specimens
2. Methods to isolate and store lymphocytes from whole blood
3. DNA extraction and quantification by manual and automated approaches

<u>Molecular HLA typing</u>:

1. Understand the genetic structure and function of the MHC and HLA genes, including haplotypes, genetic linkage, and recombination
2. Definition of HLA antigens vs. alleles
3. Difference between low vs. high resolution genotyping
4. Use of online bioinformatics resources for HLA

5. Appreciate the extreme polymorphism of HLA genes and the concept of genotype ambiguity
6. Methods for low resolution HLA genotyping (SSP and SOP)
7. Methods for high resolution HLA genotyping (sequencing)

HLA and bone marrow transplantation:

1. HLA matching for related and unrelated bone marrow donors
2. Pedigree analysis and haplotype assignment
3. Haplotype frequencies and unrelated donor searches using online bioinformatics resources
4. Permissible vs. non-permissible mismatches and the risk of graft vs. host disease

Engraftment monitoring for bone marrow transplantation:

1. Single tandem nucleotide repeat sequences and use in monitoring for donor cell engraftment/chimerism
2. Methods of lymphocyte subset isolation
3. Understand how to estimate donor cell percentages using STR analysis, and how the data reflects successful engraftment vs. graft failure

HLA antibodies:

1. Understand the concepts of serologic detection of HLA antibodies: antigens, splits, CREGs
2. Mechanisms of sensitization to HLA
3. Current methods to detect HLA antibodies: IgG and C1q assays
4. The complement cascade and antibody-mediated rejection
5. Cellular methods to detect HLA antibody (Flow and CDC crossmatch)
6. Strategies for desensitization and the use of IVIG

HLA and solid-organ transplantation:

1. Recognize common diseases that lead to solid-organ transplantation
2. Understand rules for organ sharing and cadaveric donor utilization
3. The use of panel-reactive antibody (cPRA) and “avoids” for organ allocation
4. Interpretation of donor and recipient compatibility (flow and CDC crossmatch)
5. Monitoring of donor specific antibody post-transplant

HLA and disease association:

1. Recognize the common HLA disease associations (diabetes, ankylosing spondylitis, etc.)
2. Know potential mechanisms which may underlie the influence of HLA on the development of autoimmune disease

MICROBIOLOGY / VIROLOGY

Directors: Niaz Banaei, MD and Benjamin Pinsky, MD, PhD

Goals and Objectives

Patient Care

- To develop proficiency in helping physicians interpret microbiology/virology test results
- To learn appropriate tests to order based on clinical criteria as described by the patient's physician
- To determine which results are critical and learn to convey those results to the appropriate caregivers.

Medical Knowledge

- To understand the microbiology/virology of infectious diseases based on organ system, history, and epidemiology
- To develop expertise in interpreting the clinical implications of lab results, suggesting antibiotics to test, and determining the medical necessity of unusual test requests.

Practice-Based Learning and Improvement

- To locate, appraise and assimilate microbiology/virology laboratory test results, particularly microscopic images and nucleic acid testing.
- To use case-based learning to correctly interpret microbiology/virology laboratory test results.

Interpersonal and Communication Skills

- To present learning modules to Infectious Disease fellows and attendings, and to present case results at Infectious Disease rounds
- To prepare concise, complete written reports on test evaluation, interesting cases, inspections, and other lab-based activities.

Professionalism

- To demonstrate integrity, honesty and respect.
- To work effectively as a team with the physicians caring for the patients, the laboratory scientists and assistants, the infection control practitioners, and the director.

Systems-based practice

- To understand basic identification and susceptibility testing of bacteria and yeast, basic detection and identification methods for fungal and parasitic agents of infectious disease, and the basic identification of viral pathogens using traditional culture and immunofluorescent microscopy techniques.

- To be able to interpret nucleic acid amplification tests for pathogen identification and quantitation.
- To understand sequencing analysis for pathogen identification, genotyping and drug resistance testing.
- To be able to differentiate commensal flora from pathogens.
- To choose and interpret results of sendout tests.
- To become familiar with the administrative and logistical areas of a microbiology/virology laboratory, including specimen collection, transport, front end processing, results delivery, QC and QA, and financial considerations.

Requirements of the rotation

See attached guidelines.

Resident duties and responsibilities for each level of training

See attached guidelines.

Supervision and Evaluation

The directors will oversee training and receive feedback from CLSs. Meetings to go over rotation questions will be the best basis for evaluating the level of progress. An evaluation will be given after each month of rotation based on:

1. Level of participation in daily rounds
2. Meeting the learning objectives
3. Completion of weekly unknown cases
4. Participation in ID plate rounds and ID grand rounds

The resident will be evaluated not only based on his/her daily work as assessed by each director but also by a written, open-book, unknown cases, administered weekly during the rotation. The unknown cases will be designed to highlight areas of importance and to assess whether the resident needs additional help in gaining competence in any specific areas. Results will be reviewed formally with the resident.

Microbiology & Virology Expectations:

A. *Virology Rounds one day/week from 10:00am – 11:00am*
B. *Microbiology Plate rounds everyday from 11:00am -12:00am.*
C. *Present interesting cases at the weekly plate rounds with peds and adult ID teams on Thurs at 10:30 am at Stanford Hospital.*
D. *Weekly I.D. Conference, Thursdays 4:30pm – 6:00pm*

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:00		ID Fellows Lecture			
10:00	VIRO ROUNDS	VIRO ROUNDS	VIRO ROUNDS	ID PLATE ROUNDS 10:30	VIRO ROUNDS
11:00	MICRO ROUNDS	MICRO ROUNDS	MICRO ROUNDS		MICRO ROUNDS
12:00			Micro & Immuno Research Conf.	*CP Lecture	*Call conference
3:30					
4:30				ID conference	

** lunch served*

E. Residents will take first call for microbiology problems that arise during the day shift and for all clinician consults or questions. Please review calls with the Lab Director as appropriate.
F. *Assume primary responsibility for:*
- *Contacting physicians to discuss cases and determine additional workup for complex microbiological culture results*
- *Approve unusual Microbiology and Virology lab send-out test and discuss with director*

G. *Workup unknown cases during the first month. See handout.*
H. *Assay validation and development appropriate for the level of training*

Objectives and Responsibilities:

A. *Discuss with lab director about budget and cost containment*
B. *Attend laboratory meetings*
C. *Follow up on problems and questions related to laboratory and patient care*
1. Work with laboratory staff and clinicians
2. Checking on pathology reports, review charts, etc. (will add value to the concurrent microbiology on patient samples).

D. *Prepare short tutorials for I.D. Fellows – once per week. Pick a topic relevant to current cases.*

Topics to choose from Microbiology:

Enteric gram-negative rods.
Streptococci.
Non-fermenting and fastidious gram-negative rods.
Aerobic gram-positive rods.
Explain media used for microbe isolation.
Gram stain appearance.
Nucleic acid tests.
Other useful special identification methodologies.

Topics to choose from Virology cover the following:
Transport media
Cell lines for viral culture
Direct Viral Exam
Viral Serology
Nucleic acid testing

E. *Training time is broken down in the following manner:*

1. 8 weeks in Microbiology:
   a. Will involve review of microbes from the following types of specimens:
      i. CSF
      ii. Respiratory
      iii. Blood
      iv. Stool
      v. Urine
      vi. Wound
      vii. Genital
      viii. Body Fluids
   b. Training on Molecular, Susceptibility Testing and Anaerobes
   c. Training in Parasitology and Mycology
2. 6 weeks training time in Virology, broken down in the following manner:
   a. Time will be spent discussing methods and virus families
   b. Training will be technique oriented and will cover the following:
      i. Culture
      ii. Serology
      iii. Molecular
3. Complete assigned Unknown Cases.

F. *Review the training objectives recommended by the ASCP and those from the Washington University Medicine Training Program.*

1. *These objectives are attached as "Additional Core Knowledge".*

2. *They provide an excellent summary of the topics with which you should become familiar. It is your responsibility to identify topics that have not been covered and plan to discuss them with Dr. Baron in advance of completing your rotation.*

At the end of the two month training, the resident should:

A. Be familiar with a wide variety of microorganisms and viruses causing clinical disease.

B. Know these essential concepts:
   1. Organisms that commonly occur as normal flora at a given site
   2. Microbes and viruses commonly associated with infection at a given site.
   3. Factors associated with susceptibility to infection at this site.
   4. Optimum specimen required for documentation of infection at a given site.
   5. Work-up and interpretation of "mixed cultures" at a given site

C. *Learn to identify common agents of infectious diseases by morphology and key test results and understand the theory and basis of the tests used.*

D. *Review common antibiotics and antivirals by class, mechanisms of action and resistance and spectrum of activity and be familiar with the uses, limitations and techniques of anti-microbial and anti-viral susceptibility testing.*

1. *Microbiology:*
   i. Knowing the process of certain staining techniques.
   ii. Be an expert at direct gram stains for all important clinical specimen types
   iii. Understand antibiograms

2. Virology:
   I. Learn the strategies used for viral classification.
   II. Understand the basics of a viral replication cycle.
   III. Learn the major virus families and the viruses that cause human disease.
   IV. Learn the clinical manifestations of common viral infections.
   V. Understand the identification viral pathogens using traditional culture and immunofluorescent microscopy techniques.
   VI. Understand the methodology and utility of shell vial cultures for the identification of viral pathogens.
   VII. Understand the methodology and utility of direct fluorescent antibody testing for the identification of viral pathogens.
   VIII. Be able to interpret viral serologic markers.
   IX. Be able to interpret nucleic acid amplification tests for viral identification and quantitation.
   X. Understand sequencing analysis for viral genotyping and antiviral resistance testing.

Schedule the following activities for the 3rd month rotation:

A. One-day visit to a public health laboratory. You will visit and interview the lab director about the degree of support which a public health laboratory can provide to a hospital laboratory and what the public health laboratory needs from a hospital lab.

Choose from the following options:

Alameda County Lab, 499 5th St., Rm. 403, Oakland,
- Contact Jim Carlson (Director) at (510) 268-2705

Santa Clara County Lab
- Pat Dadone (Supervisor) at (408) 885-4272

San Francisco Dept. Health Lab, 101 Grove St., Rm. 419, San Francisco
- Contact Mark Pandori, (Director) at 415-554-2800

B. One-day visit to PAMF's Toxoplasmosis laboratory at the Palo Alto Medical Foundation (plan for a Thursday):

Contact Cindy Press (Lab supervisor) at (650) 614-3215.

Note:
- Women must sign a form stating that they are not pregnant or planning to get pregnant within the next 6 months.
- Everyone needs baseline Toxo IgG (performed in our lab).

C. Infectious Disease (ID) Clinical Rounds:

1. Attend afternoon rounds with ID Team. Make arrangements with Fellow.
2. Collect available microbiology, virology, and histopathology lab data on the patients they are following prior to attending rounds.

D. Schedule two afternoons to observe E1 and ICU satellite pharmacies:

1. Discuss antibiotic utilization efforts and how the Microbiology Laboratory can support these or other pharmacy efforts.
2. Contact Larry Witt (5-5802) or Deepak Sisodiya (3-5272) to schedule.

E. Infection Control (Sasha Madison at 5-1106)

1. Accompany IC on rounds to at least two departments.
2. Discuss laboratory-based surveillance and how the laboratory can support the infection control program.

At the end of the 3rd month rotation, the resident should:

A. Be able to interact effectively with clinical physicians regarding interpretation of laboratory results and selection of appropriate tests
B. Be capable of implementing a method, as indicated by understanding how to:
   1. Do a formal method evaluation
   2. Write a procedure
   3. Establish quality control policies and evaluate QC performance
   4. Evaluate proficiency testing data.

Although it is best to cover themes when problems and issues in those areas arise, here is an approximate guide for gaining experience in the following important topics during the introductory (two-month) rotation in Microbiology/Virology:

WEEK	THEMES	TOPICS
1	**Blood Cultures**	a. Major Clinical syndromes b. Specimen collection, transport processing c. Laboratory methodology d. Epidemiology & Infection control e. Bacteria to focus on: - Enterobacteriaceae* - Nonfermentative gram-negative bacilli* - Miscellaneous/fastidious gram-negative bacilli - Gram-negative cooci - Gram-positive bacilli/aerobic actinomycetales - Mycobacteria* - Gram-positive cocci* - Spirochetes - Mycoplasma - Anaerobic bacteria
1	**Respiratory Cultures**	
2	**CSF Cultures**	
2	**Genitourinary Cultures**	
2	**Gastrointestinal Cultures**	
3	**Wound and Tissue Cultures**	
3	**Special Studies**	a. Pharmacokinetics and pharmacodynamics b. Susceptibility testing methods c. Empiric therapy
4	**PCR & Sequencing**	a. Specimen Processing b. Contamination prevention c. Other molecular detection technologies
4&5	**Serology**	a. Hepatitis B b. EBV c. Toxoplasmosis

WEEK	THEMES	TOPICS
5	**Serology/management**	a. Prepare a cost analysis of one conventional and one molecular test. b. Identify a new or revised protocol that must be created and write it. Talk to all relevant parties to incorporate all necessary factors.
6	**Management**	
6	**Strain typing**	a. Epidemiology b. Nosocomial Infections
6	**Parasitology**	a. Specimen collection b. Protozoa c. Helminths d. Arthropods
7	**Mycology/AFB**	a. Specimen Collection b. Stain methodologies c. Clinically relevant Fungus & Mold d. Stat AFB e. DNA testing for select Mycobacterium species f. Cutaneous mycoses g. Subcutaneous mycoses h. Systemic mycoses i. Opportunistic mycoses
8	**Viral Culture/DFA**	a. Specimen Collection b. Culture workup c. CMV, Herpes, Respiratory Viruses
8	**Viral Nucleic Acid Testing**	a. HIV, HCV, HBV Viral Load Testing b. CMV, EBV, BK Viral Load Testing c. Respiratory Viruses d. Sequencing

Journals

1. *Antimicrobial Agents and Chemotherapy*
2. *Clinical Infectious Diseases*
3. *Clinical Microbiology Reviews*
4. *Diagnostic Microbiology and Infectious Diseases*
5. *European Journal of Clinical Microbiology and Infectious Diseases*
6. *Journal of Clinical Microbiology*
7. *Journal of Clinical Virology*
8. *Emerging Infectious Diseases*

Many articles of importance to clinical microbiology appear in general medical journals, such as *JAMA, The New England Journal of Medicine* and *Annals of Internal Medicine*. It is presumed that residents are already familiar with these periodicals.

See selected articles on important microbiology topics in S:\TRAINING (Residents)\ClinPath Residents and ID Fellows\Objectives\30 topics at rounds.

See selected articles on important virology topics on the Stanford Pathology Google docs site in the Virology Rotation folder:
Email: stanfordpathology
Password: hillview

Books

1. Baron EJ, Peterson LR, Finegold SM, ed. *Bailey and Scott's Diagnostic Microbiology*, 9th edition. Mosby; St Louis. 1994
2. De la Maza L, Pezzlo M, Baron EJ. *Color Atlas of Diagnostic Microbiology*. Mosby; St Louis., 1997.
3. Forbes B, Sahm D, and Weissfeld A. *Bailey and Scott's Diagnostic Microbiology*, 10th edition. Mosby; St Louis. 1998.
4. Hodinka RL, Young SA, Wiedbrauk DL ed. *Clinical Virology Manual*, 4th Edition,
5. Knipe DM, Hawley PM ed. *Fields Virology*, 5th Edition.
6. Koneman EW, Allen SD, Janda WM, Schreckenberger PC, Winn WC. *Color Atlas and Textbook of Diagnostic Microbiology*, 5th edition. J.B. Lippincott; Philadelphia. 1998.
7. Mandel GL, Douglas RG, Bennett JE ed. *Principles and Practice of Infectious Diseases*, 4th edition. Churchill Livingstone; New York. 1998.
8. Miller JM. *A Guide to Specimen Management in Clinical Microbiology*, 2nd ed. American Society for Microbiology: Washington, D.C. 1999.
9. Murray, P, et al. eds. *Manual of Clinical Microbiology*, 9th edition. American Society for Microbiology: Washington, D.C. 2011.
10. Murray P. *Pocket Guide to Clinical Microbiology*, 2nd ed. American Society for Microbiology: Washington, D.C. 1999.
11. Richman DD, Whitley RJ, Hayden FG ed. *Clinical Virology*, 3rd Edition.

12. Woods G. *Diagnostic Pathology of Infectious Diseases*. Lee and Febinger; Philadelphia. 1993.

Lantern Slide Teaching Collections

Lambert HP, Farrar WE. *Infectious Diseases Illustrated*. Gower; London. 1982
Smith JW, ed. *Diagnostic Medical Parasitology*. ASCP Press; Chicago. 1976

Handbooks and Miscellaneous Materials

1. CD-ROMs- Case studies in medical microbiology; Gram stain Tutor; Mycology Tutor; Parasitology Tutor (if available)
2. Microbiology CheckSamples. American Society of Clinical Pathologists.
3. National Committee for Clinical Laboratory Standards. Methods of Dilution Antimicrobial Susceptibility Tests for Bacteria that Grow Aerobically - Third Edition; Approved Standard. NCCLS Document M7-A3. NCCLS, Villanova, Pennsylvania 19085
4. National Committee for Clinical Laboratory Standards. Performance Standards for Antimicrobial Susceptibility Tests for Aerobic Bacteria- Approved Standard. NCCLS Document M2-A7. NCCLS, Wayne, PA.

MOLECULAR GENETIC PATHOLOGY

Directors: Iris Schrijver, MD and James Zehnder, MD

Goals and Objectives

Patient Care

- To develop proficiency in the basic interpretation of molecular diagnostic laboratory results and their clinical significance.
- To learn appropriate skills to search reference materials and databases to arrive at a correct interpretation of results and concise, helpful communication of these results to the treating clinician.
- Learn about the considerations involved in appropriate test selection and development.

Medical Knowledge

- To understand genetic principles and molecular testing techniques.
- To develop expertise in the test selection and results interpretation of inherited and acquired genetic disorders.

Practice-Based Learning and Improvement

- To locate, appraise and assimilate clinical and laboratory information, as well as information from scientific studies.
- Become proficient in correlating these results with morphology, flow cytometry, cytogenetic, and other laboratory results.
- To use case-based learning during daily sign-out sessions with the directors and staff, through review of previous patient and results records, through the interactive molecular pathology website (http://www.molpath.stanford.edu), and through case-based learning from books in the molecular pathology library, such as: Schrijver (Editor), Diagnostic Molecular Pathology in Practice

Interpersonal and Communication Skills

- To present in-service talks to the staff, and case presentations to fellow residents.
- To prepare concise, complete written reports on complex clinical cases, newly developed assays, and for publications (as appropriate).
- Communicate laboratory results and interpretation effectively to laboratory and clinical colleagues.

Professionalism

- To demonstrate integrity, honesty and respect in personal interactions as well as in patient care, through careful interpretation of results reports, attention to quality assurance and completion of the daily tasks in a timely fashion.
- To work effectively and as a team with the medical directors, laboratory staff, and administrative staff, as well as with consulting physicians and patients.

Systems-based practice

- To understand the interplay between laboratory and clinical results from various clinical disciplines and their impact on patient care.
- To become familiar with the interdisciplinary nature of genetic disease testing and the continuous evolution in technology as well as knowledge about the human genome and proteome.
- Develop awareness and skills related to cost-effective diagnostic testing, laboratory work-flow, and turn-around time

Requirements of the rotation

The two month Genetics rotation in the Stanford Pathology Department is interdisciplinary and includes participation of faculty in the Departments of Pathology, Medicine, Pediatrics (Division of Medical Genetics) and Department of Genetics. Laboratory rotations include formal training in Molecular Pathology, Cytogenetics, and the elective of Biochemical Genetics. Residents spend approximately three weeks in each area if the elective is chosen and one month in Molecular Pathology and Cytogenetics each if it is not chosen. Residents will be involved in assay development, quality assurance and results interpretation in all three laboratories.

Resident duties and responsibilities for each level of training

The genetics rotation for pathology residents is always scheduled in the second year of pathology residency training. Individual objectives for each of the three laboratory rotations are:

3 weeks	**3 weeks**	**3 weeks**
Molecular Pathology rotation—CP aspects. *Objectives:* Become proficient in a wide range of molecular diagnostic methods and interpretation, learn about the development of new assays, perform case interpretations, have interaction with physicians from other disciplines, and have teaching Sessions with attending directors, give case presentations. Emphasis on DNA diagnostic tests and the forefront of diagnostic developments.	Cytogenetics rotation. *Objectives:* Become familiar with cytogenetic methods and interpretation, be able to make correlations with molecular genetic results, and to explore diagnostic advantages and disadvantages of cytogenetic and molecular pathology techniques for individual genetic diseases. Be able to recognize the significance of abnormal cytogenetic results, both acquired and constitutional. Learn ISCN nomenclature.	Biochemical Genetics rotation. *Objectives:* Become familiar with biochemical screening and diagnostic methods, interpretation of results and their clinical correlation, confirmation by molecular methods, development of new assays, interaction with physicians from other disciplines, attend clinics and consults for biochemical genetic disorders.

These objectives are adjusted for elective rotations of both AP and CP residents on an individual basis and can be discussed at the beginning of the elective.

Daily schedule
Regular working hours are approximately 8:00AM to 6:00PM, Monday-Friday.

Responsibilities:

Schedule a general, workflow, and laboratory orientation on the first day of the rotation with the molecular attending on service and the molecular fellows. Explore potential projects and individual rotation goals with the attending on service.

5) Initiate a project during the two-month rotation. This project can be performed in any of the clinical genetics laboratories, and may involve research, quality assurance, or test development. Residents are expected to discuss this with the attending faculty at the beginning of their rotation.
6) Perform a pre- and post-test for MGP.
7) Familiarize yourself with the platforms and general techniques used in the laboratory
8) Be present in the laboratory and to carefully prepare and preview cases for sign-out.
9) Select at least one assay each day and prepare cases by reviewing the assay procedure, looking up patient history, and interpreting the data. Discuss test results with an MGP fellow, before sign-out.
10) Sign out cases with the attending director.
11) Be available for consultation and laboratory issues, observe, perform, study and help develop laboratory assays, and work on their project.
12) Review new assay development and validation with the molecular fellows/attending.
13) At the end of the rotation, give a presentation to the laboratory about a molecular topic.
14) Attend all conferences that are attended by the MGP fellows, including:

    1. Monday morning MGP operational laboratory meeting
    2. Tuesday 8AM Current Concepts
    3. Tuesday 4PM Human Genetics journal club
    4. Thursday noon Clinical Pathology Didactics
    5. Friday noon CP rounds
    6. Genomic Medicine lecture series
    7. Additional genetic topics lectures as scheduled

Supervision and Evaluation:
The Resident's work will be supervised by attending faculty who are on service in the Molecular Pathology laboratory and by the molecular fellows, with whom they will work closely in case preparation and interpretation. The Resident will be evaluated on his/her daily work as assessed by each attending in person and in MedHub.

WEEKLY SCHEDULE FOR RESIDENTS

	Day	Time	Location
Molecular Pathology lab meeting	Mondays	9 AM	HV sign-out room
Metabolic Conference	Mondays	1:00 PM	A051
Hemepath clinpath correlation conference	Mondays	2:30	Heme signout
Current Concepts lecture series	Tuesdays	8:00 AM	L201
Genomic Medicine course	Tuesdays subset of Current Concepts lectures, attend in L201	8:00 AM	L201
Advanced Genomic Medicine course	TBD	TBD	TBD
Biochemical Genetics lab meeting	Tuesdays	10:00 AM	HV sign-out room
Hematology journal club	Tuesdays	noon	2nd fl., Cancer center
Human Genetics Journal Club	Tuesdays fellows give HGJC 1x	4:00 PM	Beckman Center, B200
Cytogenetics lab meeting	Every other Wednesday	10:15 AM	Cytogenetics Lab
Molecular Pathology staff meeting	2nd Wednesday/mo	10.30 AM	HV sign-out room
Hematology conference	Wednesdays	noon	2nd fl., Cancer center
Hematology new patient conference	Wednesdays	4.30 PM	2nd fl., Cancer center
Clinical Pathology lecture series. This series includes a **block of MGP lectures**, which address critical aspects of genetic diagnostic testing in molecular, biochemical and cytogenetics.	Thursdays	noon	H1551L
OB/Genetics Prenatal Clinical Conference	Thursdays	12:30 PM	OB Library, 3rd floor
Medical Genetics Grand Rounds Inter-disciplinary meeting with lecture and case presentations. General discussion of genetic concepts.	Fridays	9 AM	M114
Present interesting cases at the Friday Clinical Pathology residents conference and discuss involvement in phone calls received from physicians regarding interpretation of genetic tests.	Fridays	noon	HV purple room/L201
Pediatric Tumor Board conference	Tuesdays	5:00 PM	LPCH Board Room

Bold = mandatory core curriculum while on rotation

PEDIATRIC CLINICAL PATHOLOGY

The performance and interpretation of clinical laboratory tests on infants, children, and adolescents present unique challenges to the clinical pathologist. Laboratory tests are essential to the correct diagnosis of pediatric diseases, many of which either present in childhood, or are unique to this age group. Laboratory tests are also critically important for prognosis, and for monitoring of the response to therapy in these patients. Yet the small size of the youngest patients, their metabolic instability, the effect of growth and development on the interpretation of results, the tremendous breadth and yet the relative rarity of most pediatric diseases require specialized consideration. The trainee will prepare for these challenges by developing expertise in pediatric laboratory medicine throughout Clinical Pathology training in the areas of clinical chemistry, endocrinology, hematology, urinalysis, coagulation medicine, transfusion medicine, immunology, microbiology, virology, biochemical genetics, cytogenetics, molecular diagnostics, point of care testing and laboratory management. This rotation will allow for additional focus on topics in pediatric laboratory diagnostics, training experiences and learning resources that will facilitate the transition of the resident to a consultant in pediatric laboratory medicine.

Goals and Objectives

Specific competencies for the trainee to develop in pediatric laboratory medicine are organized in the six AGCME-designated areas, as follows :

Patient Care

- communicate effectively with pediatric colleagues
- gather essential and accurate information about pediatric patients
- make informed decisions about diagnostic testing selection and interpretation for pediatric patients based on patient information, scientific evidence, and clinical judgment
- use information technology to support clinical consultations and diagnostic decision-making
- provide health care providers with test selection, interpretation and clinical consultation aimed at health maintenance and preventative health care for children
- work collaboratively with health care providers to support patient-focused pediatric care

Medical knowledge

- demonstrate an investigatory and analytic approach to diagnostic decision-making, test interpretation and clinical consultation in pediatrics
- know and apply basic and clinical sciences to pediatric laboratory medicine

Practice-based Learning and Improvement

- analyze laboratory practice experience and perform practice-based improvement activities using systematic methodology
- locate, appraise and assimilate evidence from scientific studies related to pediatric diagnostics
- obtain and use information about the pediatric patient population and the larger pediatric population
- apply knowledge of study designs and statistical methods to appraisal of test performance and diagnostic efficacy for pediatric health problems
- use information technology to manage information, access on-line information and for educational advancement in pediatric pathology
- facilitate the learning of students and laboratory professionals about pediatric health and disease

Interpersonal and Communication Skills

- develop and sustain effective working relationships with clinicians
- use listening skills to elicit information regarding patient cases; use effective verbal skills to provide diagnostic information; and effective writing skills to provide clear, concise diagnostic reports
- work collaboratively with members of the pediatric clinical team, laboratory professionals, or other professional group

Professionalism

- demonstrate respect, compassion , integrity; responsiveness to the needs of pediatric patients and society that supersedes self-interest; accountability to patients, society and the profession; commitment to excellence and ongoing professional development
- demonstrate commitment to ethical principles pertaining to provision or withholding of care to premature, neonatal and pediatric patients, confidentiality of patient information, informed consent and business practices of the laboratory
- demonstrate sensitivity and responsiveness to patient culture, age, gender and disabilities

Systems-Based Practice

- understand how laboratory practice affects other health care professionals , the health care organization, and society; and how these elements affect laboratory practice
- understand methods of controlling laboratory costs and allocating laboratory resources for pediatric patients
- practice cost-effective health care and resource allocation that does not compromise quality of pediatric care
- advocate for quality pediatric health care including laboratory services
- partner with health care managers and providers to assess, coordinate and improve pediatric health care and understand how these activities can affect system performance

Length of Rotation: Two weeks.

Requirements of the rotation/ Resident duties and responsibilities
The resident's duties will be divided into two one week blocks. The first week will include rounding with the Neonatology team in the NICU, second floor LPCH. In this experience the rotation director will call the NICU to notify the team(s) of the pathology residents attendance and to arrange the meeting time/place to begin rounds. There are currently two teams in the Neonatal Intensive Care Unit, each with an attending neonatologist for the calendar week. The residents, if several in number, will be assigned to one of the teams. Each of the residents will each present at a minimum of one Perinatal conference (Friday at noon, Friedenrich Auditorium, LPCH) during the first and second week of the rotation, by discussion in advance with the NICU fellow who is organizing the conference. Cases that are appropriate may involve diagnostic testing strategies, interesting results, and/or surgical pathology findings, depending on the week's case mix and the residents interests/training. During these weeks the resident is excused from call conference. Each day, the resident will bring back questions and issues from rounds with the NICU team, meet with the rotation director for didactics, take calls from pediatric clinicians, referred from various laboratory sections, review any interesting pediatric cases, attend practical hands-on experiences, attend specialty conferences (as outlined in the calendar) and prepare for Perinatal conference presentations. The second week will include point of care testing didactics, in addition to the recurrence of regular conferences and activities as outlined for week one, with the exception of NICU rounding.
The resident is generally expected to be physically present in the SHC Laboratory between 0800 (8:00 AM) and 1700 (5:00 PM) daily, unless attending an approved conference or working in the Residents' Room. On the first day of the rotation, the resident(s) will meet with the Rotation Director to review expectations and requirements of the rotation, and to meet personnel as required , with whom the resident will need to set up meetings times (e.g. POCT Manager). Before or at this time, the resident should make known any leave time that will be taken during the rotation, and any preference for exposure to an area of special interest. Requests for an unexpected leave of absence must be approved by the Rotation Director and Clinical Pathology Training Program Director.

Curriculum Topics in Pediatric Laboratory Medicine
The following topics represent a compendium of special topics in pediatric laboratory medicine which can be used throughout the training experience to provide pediatric focus for individual study by the resident during the rotation.

(Adapted from: Pysher, Bach, Geaghan et al, Teaching Pediatric Laboratory Medicine to Pathology Residents. Arch Pathol Lab Med 2006 July; 130(7)1031-8.)

Clinical Chemistry
1) utilization of age-appropriate (and gender–appropriate, when indicated) reference intervals;

2) principles of screening strategies using serum markers in singleton and in multiple gestations;
3) antenatal assessment of fetal lung maturity screening;
4) significance of umbilical cord blood gas values in diagnosis of neonatal asphyxia;
5) effect of fetal hemoglobin on blood gas and oximetry, and factors that might affect the transition from fetal to adult hemoglobin;
6) effect of interferences commonly present in neonatal samples (lipidemia, hemolysis, hyperbilirubinemia) on frequently ordered laboratory tests;
7) the biochemistry, metabolism, and measurement of bilirubin and the interpretation of conjugated and unconjugated bilirubin results in infants;
8) characteristics of an ideal chemistry analyzer for pediatric specimens;
9) possible physiologic causes of elevated or depressed levels of common automated chemical tests in children;
10) therapeutic drug tests that should be performed in a clinical laboratory serving a pediatric population;
11) analytic consideration in digoxin monitoring of neonates (neonatal digoxin-like immunoreactive substances);
12) toxicology testing (including meconium) in neonate and mother in the peripartum setting;
13) performance and interpretation of tests for heavy metals (lead, copper) in children;
14) performance and interpretation of tests for cystic fibrosis with emphasis on their limitations;
15) lipid screening in children;
16) limitations of the laboratory evaluation of nutritional status in children;
17) monitoring parenteral nutrition therapy in children;
18) characteristic biochemical abnormalities in neuroblastoma, and the reasons why neonatal screening for neuroblastoma is not recommended;
19) utility of the following analytes in the diagnosis, prognosis and monitoring of pediatric tumors:
    a. alpha-fetoprotein,
    b. human chorionic gonadotropin,
    c. lactate dehydrogenase;

Endocrinology

1) utilization of gender, age- and development-specific reference intervals;
2) laboratory evaluation of a neonate with ambiguous genitalia;
3) diagnosis of neonatal hypothyroidism; including clinical urgency of expedited results;
4) the differential diagnosis and evaluation of neonatal hypoglycemia;
5) monitoring of microalbumin and glycated hemoglobin in children with diabetes mellitus;
6) laboratory evaluation of the thin child , and the overweight child;
7) laboratory evaluation of the child with short stature; and tall stature;
8) laboratory evaluation of the child with early sexual development, and
9) late sexual development;
10) laboratory evaluation of a child with suspected hypo- or hyperthyroidism;

11) evaluation of marked elevation of alkaline phosphatase;
12) pathogenesis and evaluation of congenital adrenal hyperplasia, acute adrenal insufficiency, and Cushing syndrome in children;
13) laboratory evaluation of the child with polyuria and dehydration;

Hematology/Urinalysis

1) sources for age-appropriate hematologic reference intervals, and the challenges to developing or validating ranges in each laboratory;
2) characterization and potential uses for placental and umbilical cord blood hematopoietic: progenitor cells;
3) laboratory evaluation of fetal- maternal hemorrhage;
4) developmental changes in red cell parameters and counts, reticulocyte counts, leukocyte counts and differential in the neonate, infant and child;
5) quantitative nucleated red blood cell counts for evaluation of neonatal status;
6) cord blood hemoglobin content and expected time course of transition from fetal to adult hemoglobin;
7) characteristics of an ideal automated hematology analyzer for pediatric specimens;
8) differential diagnosis of and outline of a sequence of laboratory testing for the following in an infant;
    a. anemia,
    b. neutropenia,
    c. thrombocytopenia,
    d. bone marrow failure
    e. lymphocytosis,
    f. lymphocytopenia;
9) basis for utilization of immature neutrophil counts in the evaluation of sepsis in neonates;
10) molecular lesion, pathogenesis, diagnosis, and treatment of the following conditions:
    a. G6PD deficiency,
    b. pyruvate kinase deficiency,
    c. hereditary spherocytosis,
    d. sickle cell disease,
    e. thalassemia syndromes
11) laboratory diagnosis of transient erythroblastopenia of childhood versus other causes of pure red cell aplasia in childhood;
12) expected bone marrow cellularity and cellular populations (differential) as a function of age;
13) proper handling and distribution of bone marrow and tissue specimens in cases of suspected pediatric hematologic malignancy;
14) accurate identification of the following disorders by examination of microscopic slides, and recognition of the characteristic flow cytometric, cytogenetic, and/or molecular genetic abnormalities, and associated prognosis, of each of the following:
    a. acute lymphoblastic leukemia, and subtypes,
    b. acute myeloid leukemia, including congenital leukemia and subtypes,

c. transient leukemia of Down's Syndrome
d. juvenile myelomonocytic leukemia,
e. chronic myelogenous leukemia,
f. malignant lymphoma – lymphoblastic, Burkitt, diffuse large B-cell, and anaplastic large cell,
g. atypical lymphoid proliferations, including post-transplantation lymphoproliferative disorder,
h. the histiocytic disorders, including hemophagocytic syndrome,
i. metatastic tumor involving bone marrow;

15) appearance of the following disorders by examination of bone marrow morphology:
    a. parvovirus infection,
    b. Gaucher disease,
    c. Niemann-Pick disease,
    d. Chediak-Higashi syndrome,
    e. ceroid lipofuscinosis;
16) health – associated reference values for cerebrospinal fluid white counts in neonates, and children;
17) recognition of cerebrospinal fluid contaminants found in neonatal specimens (bone marrow; germinal matrix);
18) appearance of the following conditions on cytocentrifuge preparations from pediatric body fluid specimens:
    a. acute lymphocytic leukemia,
    b. remote CSF hemorrhage,
    c. CSF shunt,
    d. CNS tissue : neuroglia, choroid plexus, and ependymal cells,
    e. chylothorax in a neonate;
19) utility of urinalysis in the evaluation of suspected urinary tract infection in children;
20) evaluation of proteinuria and hematuria, alone and in combination, discovered on a routine urinalysis in a child;

Coagulation

1) expected values for coagulation tests in premature infants and neonates, and the effect of high hematocrit on coagulation tests;
2) basis for hemorrhagic disease of the newborn, and vitamin K therapy;
3) differential diagnosis of thrombocytopenia in the following:
    a. a term neonate,
    b. a healthy child,
    c. a hospitalized bone marrow transplant patient;
4) criteria for diagnosis of anti-phospholipid syndrome in cases of recurrent fetal loss or a neonatal thrombotic disorder;
5) work-up for suspected thrombophilia in a child;
6) laboratory evaluation for a bleeding diathesis in a child;
7) expected results of screening tests (prothrombin time, activated partial thromboplastin time, and platelet count and morphology), and outline the definitive tests that should be performed to make a diagnosis for the following:

   a. disseminated intravascular coagulation in a low birth weight infant,
   b. Hemophilia A and B,
   c. other congenital deficiencies,
   d. von Willebrand Disease,
   e. qualitative platelet disorders;
8) coagulation laboratory support for cardiovascular surgery and extra-corporeal membrane oxygenator (ECMO) therapy in infants;

Transfusion Medicine

1) familiarization with availability of autologous storage of placental – umbilical cord blood and potential uses (especially for high-risk families);
2) diagnostic testing for neonatal alloimmune thrombocytopenia;
3) diagnostic work up for ABO hemolytic disease of the newborn;
4) diagnostic testing for isoimmune neonatal neutropenia;
5) pretransfusion testing and product selection in the following situations:
   a. intrauterine transfusion,
   b. newborn infant,
   c. exchange transfusion for hemolytic disease of the newborn or severe hyperbilirubinemia,
   d. neonatal alloimmune thrombocytopenia,
   e. pediatric trauma,
   f. pediatric cardiovascular surgery and extra-corporeal membrane oxygenator (ECMO) therapy ,
   g. sickle cell disease,
   h. hemophilia,
   i. idiopathic thrombocytopenic purpura,
   j. bone marrow transplant recipient,
   k. solid organ transplant recipient,
   l. for an ABO- incompatible transplant;
6) prevention of volume overload in pediatric transfusion therapy;
7) expected response to product therapy in children;
8) indications for and controversies surrounding use of the following in pediatric transfusions:
   a. sterile docking and issue of aliquots
   b. additive solutions for red blood cell storage,
   c. leukoreduced products,
   d. irradiated products,
   e. cytomegalovirus “safe” products
   f. autologous and directed products
9) major indications for, and limitations of therapeutic apheresis in children;

Immunology

1) development of the immune response in the fetus and infant, and placental transfer of maternal antibodies;
2) sources for reference intervals for immunoglobulins and lymphocyte populations in infants and children;

3) laboratory evaluation of the child with suspected allergy;
4) problems associated with the diagnosis of Epstein-Barr Virus infection in young children;
5) outline of an initial set of tests for the infant or child with suspected immunodeficiency;
6) characteristic serologic findings in the following:
    a. neonatal lupus syndrome,
    b. juvenile rheumatoid arthritis,
    c. juvenile ankylosing spondylitis,
    d. celiac disease;
    e. inflammatory bowel disease;
    f. autoimmune hepatitis in childhood,
    g. acute rheumatic fever,
    h. mucocutaneous lymph node syndrome;

Microbiology/Virology

1) principles of preventative strategies, diagnosis and pathogenesis of early-onset and late-onset Group B Streptococcal disease in neonates;
2) historical background and current limitations of TORCH serologies, and interpretation of serologies in suspected perinatal infections;
3) laboratory studies recommended for infants adopted from developing countries;
4) direct observation of nasopharyngeal aspirate and swab specimen collection for respiratory virus detection
5) test performance limitations and best practices for Group A streptococcal for testing in children;
6) test means of diagnosing the following common infections in infants and children:
    a. cytomegalovirus,
    b. hepatitis B,
    c. herpes simplex virus,
    d. toxoplasmosis,
    e. enterovirus,
    f. respiratory viruses,
    g. pertussis,
    h. human immunodeficiency virus;
7) proper testing and interpretation of microbiological specimens from the following:
    a. a NICU patient with suspected sepsis,
    b. a febrile infant 30-90 days of age,
    c. a patient with Cystic Fibrosis;
8) principles of antimicrobial susceptibility testing with emphasis on agents that should and should not be used in children;
9) salivary sample collection and testing for adolescent patient HIV testing and other applications;

Biochemical Genetics

1) process for collecting dried blood spots for neonatal screening
2) principles of neonatal screening and list the disease that are screened for in CA

3) principles and clinical applications of tandem mass spectrometry
4) clinical presentation of metabolic diseases in the neonate and older child;
5) tests most frequently used to diagnose the following categories of inborn errors of metabolism
    a. amino acidopathies, including urea cycle defects,
    b. disorders of organic acid metabolism, including fatty acid oxidation defects,
    c. disorders of carbohydrate metabolism (galactosemia, fructose disorders);
    d. disorders of steroid metabolism,
    e. hypothyroidism,
    f. congenital disorders of glycosylation,
    g. glycogen storage diseases,
    h. lysosomal storage diseases (including mucopolysaccharidoses),
    i. mitochondrial respiratory chain disorders,
    j. purine and pyrimidine disorders,
    k. peroxisomal disorders,
    l. porphyrias;
    m. congenital disorders of glycosylation
6) principle and clinical applications of tandem mass spectrometry, particularly the metabolic diseases that can be detected by amino acid and acylcarnitine profiling;
7) collection and preservation of postmortem specimens in stillborns and pediatric demise cases of suspected genetic metabolic disorders.

Cytogenetics / Molecular Genetics

1) principle methods of antenatal diagnosis, including risks, indications, invasiveness and accuracy (chorionic villous sampling, amniocentesis, fetal blood sampling);
2) indications for chromosome studies in the following situations:
    a. spontaneous abortion,
    b. stillbirth,
    c. fetuses or infants with congenital malformations or ambiguous genitalia,
    d. children with mental retardation,
    e. pediatric tumor specimens,
    f. pediatric hematologic malignancies and bone marrow failure syndromes;
3) major clinical and anatomic findings associated with each of the following:
    a. Monosomy X,
    b. Trisomy 13,
    c. Trisomy 18,
    d. Trisomy 21,
    e. Beckwith-Weidemann Syndrome,
    f. Prader-Willi and Angelman Syndromes,
    g. DiGeorge Syndrome,
    h. Williams Syndrome;
4) basic principles and limitations of molecular diagnostic testing (including PCR-based assays (including nested techniques and quantitative PCR; detection methods; gene sequencing; genomics; cell-free DNA in maternal-fetal testing; fluorescent resonance energy transfer technique; and Southern blot)
5) common applications for molecular diagnostics in the following settings:

   a. antenatal testing,
   b. mental retardation,
   c. pediatric hematopoietic neoplasms,
   d. pediatric small round cell tumors ,
   e. congenital hearing loss,
   f. thrombophilia
6) cost-effective use of molecular genetic tests in pediatric health care

Point-of-Care Testing

1) opportunities for, and successful applications of, neonatal and pediatric point-of-care testing (POCT);
2) physiologic characteristics of premature and neonatal populations which support the use of point-of-care blood gas and electrolyte monitoring
3) factors to be considered in implementing POCT in both inpatient and outpatient settings, including informatics, regulations and health care economics

Laboratory Management

1) pre-analytic and analytic factors that can be optimized to minimize the volume of sample required for a laboratory test;
2) familiarization with specialized sample collection devices for premature and neonatal heel sticks
3) direct observation of neonatal blood spot collection and preparation for state screening program
4) direct observation of specimen collection, including patient preparation, safety precautions, and possible sources of error, including:
   a. capillary blood from a neonate,
   b. venipuncture from pre-school age child,
   c. sweat test
5) processing pediatric specimens, including limitations and possible sources of error;
6) consideration of pediatric patient needs in the selection of test methods and laboratory equipment (sample size, dynamic range, interferences);
7) utilization of appropriate reference intervals when interpreting pediatric test results;
8) obstacles to the recommendation that each laboratory should determine its own reference intervals for the population it serves as it relates to pediatric tests, and list alternative approaches for meeting this goal;
9) selection of critical values for neonates, infants, children
10) selection of reference laboratories for pediatric laboratory testing;
11) practical exercise of finding a rare analysis for patient testing
12) effective communication with pediatric clinicians regarding test menus, report formats, and appropriate expectations for turn-around time;
13) effective communication with laboratory staff and hospital administration regarding laboratory service needs of pediatric patients.

Resources

General

Soldin SJ, Brugnara C, Wong EC.Pediatric Reference Ranges. Fifth Edition. AACC Press, Washington, 2005.

Hicks JM, Young DS. DORA 2005-2007: Directory of Rare Analysis. Washington, DC, American Association of Clinical Chemists Press, 2005.

Coffin CM, Hamilton MS, Pysher TJ, et al. Pediatric laboratory medicine; current challenges and future opportunities. Am J Clin Pathol 2002; 117:683-90.

National Committee for Clinical Laboratory Standards: Procedures and Devices for the Collection of Diagnostic Capillary Blood Specimens; Approved standard – Fifth edition. NCCLS Document H4-A5., National Committee for Clinical Laboratory Standards, Wayne, PA.,2004.

http://www.childx.org/topics.htm (PubMed search links for pediatric laboratory medicine topics)

http://www.labtestsonline.org/

Soldin SJ, Rifai N, Hicks JM. Biochemical Basis of Pediatric Disease. Third Edition, AACC Press, Washington, 1998.

EXPERT RESOURCES

Ask a community of experts questions in Anatomic Pathology and Clinical Pathology at this **Society of Pediatric Pathology**-sponsored listserv:
Pediatric Pathologists of the World (pedpath@u.washington.edu)

Ask a community of experts questions in clinical chemistry and laboratory medicine at this **AACC**-sponsored listserv; join at AACC website, under Divisions—Pediatric Maternal Listserv (open to nonmembers)

LeGrys VA. Assessment of sweat-testing practices for the diagnosis of Cystic Fibrosis. Arch Pathol Lab Med 2001;125:1420-4.

http://www.aacc.org American Association for Clinical Chemistry.

http://www.cff.org Cystic Fibrosis Foundation

Hematology

Nathan DG, Orkin SH, Ginsburg D, Look AT. Nathan and Oski's Hematology of Infancy and Childhood. Sixth Edition. W.B. Saunders, Philadelphia, 2003.

Kjeldsberg C, Elenitoba-Johnson K, Foucar K, et al. Practical Diagnosis of Hematologic Disorders. Fourth Edition. ASCP Press, Chicago, 2006.

Collins RD, Swerdlow SH. Pediatric Hematopathology. Churchill Livingstone, New York, 2001.

Foucar, K. Special Considerations for Bone Marrow Evaluation in Children. In Bone Marrow Pathology. ASCP Press, Chicago, Ill.., 2001.

Geaghan SM, Guest Editor. Clinics in Laboratory Medicine: Diagnostic Pediatric Hematology, 19:1, March 1999.

Geaghan SM, Hematologic Values and Appearances in the Healthy Fetus, Neonate and Child. In Clinics in Laboratory Medicine: Diagnostic Pediatric Hematology, 19:1, March 1999, pp.1-37..

Geisinger K. Silverman, P. Wakely, Jr. Cerebrospinal Fluid and Central Nervous System. In Pediatric Cytopathology. American Society of Clinical Pathologists Press, Chicago, Ill.., l994, pp.37-98.

Geisinger,K. Silverman, P. Wakely, Jr. Acute Leukemias. In Pediatric Cytopathology. American Society of Clinical Pathologists Press, Chicago, Ill., 1994, pp. 11-35.

Geisinger, K. Silverman, P. Wakely, Jr. Serous Effusions. In Pediatric Cytopathology. American Society of Clinical Pathologists Press, Chicago, Ill., 1994. pp. 99-125

Penchansky, Lila. Pediatric Bone Marrow. Springer- Verlag, Berlin, 2004.

Coagulation

Andrew M, Paes B, Milner R, et al. Development of the human coagulation system in the full-term infant. Blood 1987;70:165-72.

Andrew M, Vegh P, Johnston M, et al. Maturation of the hemostatic system during childhood. Blood 1992;80:1998-2005.

Monagle P, Chan A, Massicotte P, Chalmers E, Michelson AD. Antithrombotic Therapy in Children. The Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest 2004;126:645S-687S.

Transfusion Medicine

Herman JH, Manno CS. Pediatric Transfusion Therapy. American Association of Blood Banks, Bethesda, MD, 2003.

Hillyer CD, Strauss RG, Luban NLC. Handbook of Pediatric Transfusion Medicine. San Diego, CA., Elsevier, 2004.

American Association of Blood Banks Staff. Pediatric Transfusion: A Physician's Handbook. Second Edition. American Association of Blood Banks, Bethesda, MD., 2006.

Pisciotto P. Pediatric Hemotherapy Data Card. American Association of Blood Banks, Bethesda, MD., 2002.

Broxmeyer HE. Cord Blood: Biology, Immunology, Banking and Clinical Transplantation, American Association of Blood Banks Press, Bethesda, MD., 2004.

Judd WJ, Guidelines for Prenatal and Perinatal Immunohematology. American Association of Blood Banks, Bethesda, MD., 2005.

http://www.aabb.org American Association of Blood Banks

http://www.bloodline.net/

Microbiology

American Academy of Pediatrics. Red Book: 2006 Report of the Committee on Infectious Diseases. 26th edition. Pickering LK, ed. American Academy of Pediatrics, Elk Grove Village, IL, 2006.

Biochemical Genetics

Hommes FA. Techniques in Diagnostic Human Biochemical Genetics: A Laboratory Manual. Wiley-Liss: New York, 1991.

Nyhan WL, Ozand PT. Atlas of Metabolic Diseases. Chapman & Hall Medical: London, 1998.

Al-Essa MA, Ozand PT. Atlas of Common Lysosomal and Peroxisomal Disorders. King Faisal Specialist Hospital and Research Center: Riyadh, 1999.

Fernandes J, Saudubray JM, van den Berghe G. Inborn Metabolic Diseases: Diagnosis and Treatment. 3rd edition, Springer: Berlin, 2000.

Gilbert-Barness E, Barness LA. Metabolic Diseases: Foundations of Clinical Management, Genetics, and Pathology. Eaton: Natick (MA), 2000.

Scriver CR et al. The Metabolic and Molecular Bases of Inherited Disease, 8th edition, McGraw-Hill, New York, 2001.

Blau N, Duran M. Blaskovics ME, Gibson KM. Physician's Guide to the Laboratory Diagnosis of Metabolic Diseases. 2nd edition, Springer: Berlin, 2003.

Clarke JTR. A Clinical Guide to Inherited Metabolic Disorders. Cambridge, 2002.

Burton BK. Inborn errors of metabolism in infancy: a guide to diagnosis. Pediatr 1998;102(6):e69.

http://www.geneclinics.org/

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=OMIM

Point of Care Testing

Pysher TJ, Bach PR, Pederson DH. Point of care testing in the Children's Hospital in Kost GJ, ed., Principles and Practice of Point-of-Care Testing. Lippincott Williams & Wilkins, Philadelphia, 2002.

Gill FN, Bennett MJ. The Pediatric Unit. In Price CP, Hicks, JM, eds Point-of-Care Testing. Press, Washington, DC, 1999.

Responsibilities for Clinical Fellows

GENERAL POLICIES FOR CLINICAL FELLOWS

Fellow personal time off guidelines

Many fellows will be interviewing for jobs during their fellowship and may be moving or under pressure to start a new position immediately following the end of the fellowship year, making June a difficult time of year for programs that rely on fellows for pager coverage and service work. To minimize the disruption of service, we ask that you adhere to the following guidelines for personal time off during your fellowship year:

- Please review the House Staff Policy Handbook at the GME website (http://gme.stanford.edu/). A section on personal time-off is available under "Other benefits."
- Three weeks personal time off is provided to fellows. Separate educational leave for presenting at national conferences is allowed. Time-off for job interviews should be arranged with the fellowship director (or proxy) in conjunction with the attending on-service. Total allowable time off is limited to four weeks.
- No more than one week of personal time off should be taken on any given rotation (in a given month), unless approved by the fellowship director (or proxy) and the faculty on-service.
- No more than one week of personal time off can be granted during the month of June (please plan your start dates accordingly).
- Please contact your fellowship director (or proxy) for approval of your proposed personal time off no later than two months prior to proposed dates.
- DO NOT make irreversible plans prior to fellowship director (or proxy) approval.
- Please provide the fellowship director (or proxy) with a proposed coverage schedule during your absence
- Every effort will be made to respond to personal time off requests in one week or less

Methods of assessment/evaluation

All clinical fellows are assessed by the relevant faculty during each given rotation, using the Stanford Pathology Department's evaluation tool located at the MedHub website.

Policies and procedures

Stanford Hospital and Clinics House Staff Policies and Procedures govern the policies and procedures for the Stanford Hospital and Clinics residents during this rotation.

CYTOPATHOLOGY FELLOWSHIP

Director: Christina Kong, MD

Education content: The fellow's time will be divided between Stanford and VA Palo Alto when there is more than one fellow, typically five months at each location. If there is one fellow, 10 months will be spent at Stanford with the option of spending elective time at the VA.

Stanford Rotation:
During the rotation at Stanford, the fellow is responsible for running the cytopathology service. This includes daily previewing of non-gynecologic, FNA and gynecologic cases, performing fine needle aspiration biopsies with the cytology attending on-service, and participating in adequacy assessments for image-guided FNAs. The fellow is also responsible for coordinating with the AP residents on-service. Towards the end of the year, the fellow will "junior attend" on the cytology service, signing out cases with the residents which will then be finalized by the cytology attending on-service.

PAVAHCS Rotation:
The rotation at PAVAHCS is an opportunity for cytopathology fellows to extend their technical and interpretive cytopathology skills with graduated responsibility and independence. In addition, cytopathology fellows enhance their morphologic skills and cytologic-histologic correlations by assuming graduated responsibility of "junior attending" surgical pathology sign-out. The patient population at PAVAHCS consists predominantly of aging male veterans, although increasing numbers of younger and female patients are being seen and are expected to accumulate in future years. Currently, the prevalence of malignancy is relatively high and advanced states of malignant disease are not uncommon. This setting provides excellent material for the cytologic diagnosis of a wide spectrum of malignant (and benign) disease processes.

Level of supervision:
Cytopathology fellows have attending back-up at all times, for all procedures, cytologic interpretations and presentations. As fellows increase their technical fine needle aspiration skills, they assume increased responsibility for independently performing this procedure as well as increased responsibility in assessing adequacy of samples, providing preliminary and final results and presenting cytopathologic findings at multi-disciplinary conferences. The overwhelming majority of cytopathology fellows are PGY4 or beyond, with 3 or more years of anatomic pathology experience. There is no difference in level of supervision or responsibilities between fellows of different PGY levels.

Competency-based goals and objectives:
Please see the following pages.

Instructional methods:
Instruction is interactive with teaching during daily sign-out at a multi-headed microscope. The faculty will also work with the fellow one-on-one teaching fine needle aspiration technique using props (e.g. pork liver) and at the patient bedside. The fellow will additionally learn by observing fine needle aspiration procedures performed by the attending and by participating in clinical discussions with referring physicians. Independent study is an important aspect of the fellowship, and fellows are expected to independently prepare for microscopic sign-out sessions on a daily basis.

Methods of assessment/evaluation:
Cytopathology fellows are assessed by the cytopathology and surgical pathology faculty on-service during each rotation, using the Stanford Pathology Department's evaluation tool located at the MedHub website. The fellow is expected to take the three Progression Evaluation of Competency tests that are administered through the American Society of Cytopathology. These multi-choice exams are an objective measure of the fellow's progress over the course of the year.

At PAVAHCS, the site director (Dr. Kristin Jensen) shall be responsible for notifying the program director promptly, of any issue, clinical or academic, that may seriously affect the trainee.

Policies and procedures:
Stanford Hospital and Clinics House Staff Policies and Procedures govern the policies and procedures for the Stanford Hospital and Clinics residents during this rotation.

Fellow personal time off guidelines:
See policy for all fellows in the Department of Pathology (above).

Educational Goals and Objectives: Stanford

ACGME competency	Program Goals and Objectives: First Month*	Program Goals and Objectives: Subsequent Months*	Resources
Patient care	1) Participate in signout of cytopathologic specimens received in the laboratory 2) Understand and observe privacy policies, and participate in all appropriate training 3) Understand the implications of the cytologic diagnosis for each specific body site 4) Watch the "Fine Needle Aspiration Technique" DVD by Dr. Britt-Marie Ljung 5) Practice fine needle aspiration (FNA) technique using non-human liver in a latex glove and slide smearing under observation by cytology attending on-service 8) Perform clinical fine needle aspirations and obtain informed consent, initially under direct observation and supervision 9) Read relevant literature on the management of patients with cervical cytologic abnormalities, including indications for HPV testing and different methods available for HPV detection	1) Independently interpret and classify FNA, gynecologic and non-gynecologic specimens, entering a first draft report for attending review at the time of signout 2) Know and be able to identify infectious organisms seen in exfoliative cytology 3) Know and be able to identify common slide artifacts seen in exfoliative cytology 4) Participate in immediate adequacy assessments of various FNA specimens 5) Independently perform clinical FNAs, becoming proficient in performing biopsies and in preparing aspirate smears, as well as adequacy assessment and specimen triage 6) Understand when to collect material for ancillary studies 8) Understand and explain current Consensus Guidelines for management of patients with cervical cytologic abnormalities	1) "Fine Needle Aspiration Technique" DVD by Dr. Britt-Marie Ljung (available online at http://www.papsociety.org/fna.html) 2) The Bethesda System for Reporting Cervical Cytology (2nd edition) 3) ASCUS-LSIL Triage Study literature: *Am J Obstet Gynecol* 2003;188:1383-1392 and *Am J Obstet Gynecol* 2003;188:1393-1400 4) Consensus Guidelines: www.asccp.org 5) The Bethesda System for Reporting Thyroid Cytopathology
Medical knowledge	1) Learn and apply criteria for adequate, sub-optimal and unsatisfactory samples, specific to each body site 2) Learn diagnostic	1) Organize and present Cytology Noon conference 2) Present at Current Issues conference (journal club) 3) Understand and	1) Cibas and Ducatman, Cytology: Diagnostic Principles and Clinical Correlates (2nd edition) 2) DeMay, The Art and Science of Cytopathology: Exfoliative Cytology 3) DeMay, The Art and

	criteria of malignancy, specific to each body site 3) Learn causes of inflammation specific to each body site, including infectious and non-infectious etiologies 4) Understand preparatory and processing steps for all types of cytology specimens 5) Learn The Bethesda System for Reporting Cervical Cytology and The Bethesda System for Reporting Thyroid Cytopathology, including criteria for unsatisfactory specimens and quality indicators 6) Learn and understand the etiology of cervical squamous intraepithelial lesions	apply appropriate use of special stains and/or studies to facilitate diagnosis	Science of Cytopathology: Aspiration Cytology 4) Atkinson, Atlas of Diagnostic Cytopathology 5) Gray and McKee, Diagnostic Cytopathology 6) Geisinger et al, Modern Cytopathology 7) Bibbo, Comprehensive Cytopathology 8) Holladay, Cytopathology Review Guide 9) The Bethesda System for Reporting Cervical Cytology (2nd edition) 10) ASCUS-LSIL Triage Study literature: *Am J Obstet Gynecol* 2003;188:1383-1392 and *Am J Obstet Gynecol* 2003;188:1393-1400 10) The Bethesda System for Reporting Thyroid Cytopathology
Practice-based learning and improvement	1) Be able to explain proper collection methods for FNA, gynecologic and non-gynecologic specimens 2) Become proficient at various Stanford information systems (e.g., PowerPath, EPIC) 3) Comply with all safety regulations 4) Become familiar with and adhere to patient safety goals as they apply to cytology (use of two patient identifiers, performing "time-out" confirmation before performing an FNA procedure)	1) Learn how to perform cyto-histo correlations 2) Learn how to perform pertinent literature searches	1) Monthly Stanford QA Conference 2) Monthly cyto-histo correlation conference 3) Cytopathology fellow self-assessment 4) Journals (e.g. *Cancer Cytopathology, Acta Cytologica, Diagnostic Cytopathology, American Journal of Surgical Pathology*, *Modern Pathology*, *American Journal of Clinical Pathology* (other journals available online through Lane Library at Stanford)
Interpersonal and communicati	1) Effectively communicate with all others within and	1) Learn how to sign-out cases independently	1) Act as a "junior attending", signing out cytology cases with residents 3-5 times/week

on skills	outside the laboratory 2) Compose clear and concise pathology reports, with explanatory comments as needed 3) Be able to explain the fine needle aspiration procedure to patients, including potential complications of the procedure	2) Learn how to teach fine needle aspiration technique 3) Learn to communicate with clinicians and patients by discussing preliminary and final cytologic results with clinicians and patients (as applicable)	2) "Fine Needle Aspiration Technique" DVD by Dr. Britt-Marie Ljung" (available online at http://www.papsociety.org/fna.html)
Professionalism	1) Participate in all Stanford HIPAA training prior to obtaining computer password and access 2) Demonstrate ethical behavior	1) Ensure continuity of care by informing the cytopathology faculty of any pending cases prior to a scheduled absence	
Systems-based practice	1) Become familiar with the cytopathology section of the College of American Pathologists' (CAP) Laboratory Inspection Checklist	1) Understand how to write a policy and procedure 2) Understand how to prepare for a lab inspection	1) Department-wide annual quality assurance meeting 2) Mock CAP inspections or actual CAP inspection (inspections occur approximately once every two years) 3) www.cap.org

Educational Goals and Objectives: PAVAHCS

ACGME competency	Program Goals and Objectives: First Month*	Program Goals and Objectives: Subsequent Months*	Resources
Patient care	1) Participate in signout of cytopathologic specimens received in the laboratory 2) Understand and observe privacy policies, and participate in all appropriate training 3) Understand the implications of the cytologic diagnosis for each specific body site 4) Learn how to perform a fine needle aspiration (FNA) biopsy 5) Understand how patients with cervical cytologic abnormalities are managed 6) Learn indications for HPV testing and different methodologies available	1) Learn how to interpret and classify FNA, gynecologic and non-gynecologic specimens 2) Know and be able to identify infectious organisms seen in exfoliative cytology 3) Know and be able to identify common slide artifacts seen in exfoliative cytology 4) Learn how to perform immediate adequacy assessments of various FNA specimens 5) Learn how to perform clinical FNAs and become proficient in performing biopsies, slide prepration, adequacy assessment and specimen triage 6) Understand when to collect material for ancillary studies 7) Understand and explain current Consensus Guidelines for management of patients with cervical cytologic abnormalities	1) Dr. Kristin Jensen available for teaching FNA and slide prepration technique 2) Flow cytometry, molecular pathology and cytogenetics sign-out of cytology cases at Hillview 3) "Fine Needle Aspiration Technique" DVD by Dr. Britt-Marie Ljung (available at http://www.papsociety.org/fna.html) 4) The Bethesda System for Reporting Cervical Cytology (2nd edition) 5) ASCUS-LSIL Triage Study literature: *Am J Obstet Gynecol* 2003;188:1383-1392 and *Am J Obstet Gynecol* 2003;188:1393-1400 6) Consensus Guidelines: www.asccp.org
Medical knowledge	1) Learn and apply criteria for adequate, sub-optimal and unsatisfactory samples, specific to each body site 2) Learn diagnostic criteria of malignancy, specific to each body site 3) Learn causes of inflammation specific to each body site, including infectious and non-infectious etiologies	1) Learn how to evaluate medical literature 2) Understand and apply appropriate use of special stains and/or studies to facilitate diagnosis	1) Pathology Morning Conference available via teleconference 2) FNA, gynecologic and non-gynecologic slide and online educational programs as available (e.g., CAP, ASCP, and/or VA medical education programs) 3) VA Journal Club 4) Cytology textbooks and journals 5) ASCUS-LSIL Triage Study literature: *Am J Obstet Gynecol*

	5) Understand preparatory and processing steps for all types of cytology specimens 6) Learn The Bethesda System for Reporting Cervical Cytology, including criteria for unsatisfactory Pap smears and quality indicators according to Bethesda 2001 7) Learn and understand the etiology of squamous intraepithelial lesions		2003;188:1383-1392 and *Am J Obstet Gynecol* 2003;188:1393-1400
Practice-based learning and improvement	1) Be able to explain proper collection methods for FNA, gynecologic and non-gynecologic specimens 2) Become proficient at various VA-based information systems (e.g., CPRS, VISTA and Filemaker Pro) 3) Understand safety regulations 4) Become familiar with and adhere to patient safety goals as they apply to cytology (use of two patient identifiers, performing "time-out" confirmation before performing an FNA procedure)	1) Understand how QA is performed at the VA, and participate in QA activities	1) Monthly VA cytology-histology correlation conference (last Wednesday of each month at 11 am) 2) *Cancer Cytopathology*, 3) *American Journal of Surgical Pathology* *4) Modern Pathology* 5) *American Journal of Clinical Pathology* (other journals available online through Lane Library at Stanford)
Interpersonal and communication skills	1) Effectively communicate with all others within and outside the laboratory 2) Compose clear and concise pathology reports, with explanatory comments as needed 3) Be able to explain the fine needle aspiration procedure	1) Learn how to present pathology results at a tumor board 2) Learn how to sign-out independently 3) Learn how to discuss preliminary and final cytologic results with clinicians and patients (as applicable)	1) Present cytopathology findings at the monthly cardiothoracic tumor board (third Thursday of the month) 2) In the second half of the year, act as a "junior attending", signing out surgical cases with a resident one or more times per month 3) Instruct anatomic

	to patients, including potential complications of the procedure		pathology residents on fine needle aspiration technique 4) "Fine Needle Aspiration Technique" DVD by Dr. Britt-Marie Ljung"
Professionalism	1) Understand patient privacy restrictions and HIPAA regulations 2) Know what constitutes ethical behavior	1) Learn how to effectively communicate with cytopathology faculty, clinicians and support staff	
Systems-based practice	1) Learn how to present at departmental conferences 2) Become familiar with the cytopathology section of the College of American Pathologists' (CAP) Laboratory Inspection Checklist	1) Learn how to analyze cytology case data by observing for trends in sample yield by sampling method and/or operator, non-diagnostic rates, rates of malignancy, and usage of FNA for diagnosis, as well as identifying possible areas of performance improvement	1) Department-wide annual quality assurance meeting 2) Weekly VA microscopic conference (Tuesdays at noon) 3) Weekly autopsy (gross) conference (Thursdays at 1:15 pm) 4) www.cap.org

*** Time allotted for initial knowledge and skill acquisition may vary depending on the fellow's prior training and individual learning experience. One month is considered to be a goal timeframe for acquisition of introductory knowledge and skill; however, fellows may proceed to more graduated responsibilities in an earlier time interval as determined appropriate by cytopathology faculty.**

STANFORD/PAVAHCS
CYTOPATHOLOGY FELLOWSHIP
REQUIRED CONFERENCE ATTENDANCE SUMMARY

ALL ROTATIONS

Conference	Frequency	Required?	Percent Attendance
Current Concepts (Journal Club)	1x/week	Yes	50%
Pathology Morning Conference	3x/week	Yes	50%
Optional Conferences (Attendance Not Required)			
Pathology Grand Rounds	1x/month	No	N/A

STANFORD ROTATIONS

Conference	Frequency	Required?	Percent Attendance *
Cytology Noon Conference	1x/month	Yes	80% (4/5)
Cytology Teaching Conference	2x/month	Yes (starting in September)	100% (given by fellow)
Pathology Gross Conference (FNA session)	1x/month	Yes	80%
Stanford ENT Tumor Board (when fellow is assigned primary responsibility)	1x/week	Yes	100%
Cytology-Histology Correlation Conference	1x/month	Yes	80% (4/5)
Lab Management Conference	1x/month	Yes	60% (3/5)
Surgical Pathology QA Conference	1x/month	Yes	80% (4/5)
Optional Conferences (Attendance Not Required)			
Cytology CME Conference	1x/month	No	N/A

PAVAHCS ROTATIONS

Conference	Frequency	Required?	Percent Attendance *
VA Pathology Journal Club	2x/month	Yes	90%
VA Autopsy (Gross) Conference	1x/week	Yes	90%
VA Thoracic Tumor Board	1x/month	Yes	80%
VA Interesting Case Conference	1x/week	Yes	90%
Optional Conferences (Attendance Not Required)			
VA Oncology Tumor Board	1x/month	No	N/A
VA Medicine Conference	1x/week	No	N/A

Formal Teaching Presentations by Fellow

Session Date	Name of Fellow	Topic	Audience

Copy and attach additional pages as needed.

Professional Meetings Attended by Fellows

Meeting Date	Name of Fellow Who Attended	Name of Meeting and Sponsoring Organization

Research Projects

Faculty Mentor/ Senior Author	Subject/Title	Date Project Started	Anticipated Completion Date	Goal for Presentation/ Publication

Please give a brief description of the project below, including research hypothesis, size of study group, stains or special studies to be done, etc.:

_____

_____

_____

_____

_____

_____

Copy and attach additional pages as needed.

DERMATOPATHOLOGY FELLOWSHIP

Director: Jinah Kim, MD, PhD

Educational Goals:
This one year fellowship is intended to provide pathologists or dermatologists with subspecialty competence in dermatopathology. At the end of the year trainees are expected to have acquired the expertise to independently set up and operate a DP laboratory. This expertise includes diagnostic abilities, competence in ancillary techniques (immunofluorescence, immunophenotyping, molecular diagnostics, electron microscopy) supervision and training of laboratory personnel, laboratory management, quality assurance, and a fundamental understanding of basic science. The Dermatopathology Fellow(s) will be involved in the DP service throughout the entire year and will attend morning sign-out every day.

Expectations:
- Fellows are expected to preview each case (in house and consult) prior to sign-out, read up on the respective diagnoses and retrieve relevant prior material for all consult cases.
- Following sign-out DP Fellows are responsible for dictating the final report for consult (outside) cases. (Also see “in-depth responsibilities for surgical pathology residents and fellows”)
- DP fellows are required to attend the weekly Dermatology Grand Rounds held on Thursday morning from 7:30 to 9 AM at SMOC.

- DP Fellows mandatory conferences:
    - Thursday morning dermatology grand rounds (SMOC)
    - Dermatology resident teaching conferences (SMOC) held Tuesday AM (for Pathologists)
    - Surgical pathology teaching conferences held Wednesday and Friday AM in L-201 (for Dermatologists)
    - “Chapters Weedon conference” Tuesday 7:30 AM (SMOC)
    - Pathology resident Unknown conference (Plasma room)
    - Fellow lecture series (TBA)

- DP Fellows should involve themselves in the evaluation and interpretation of immunofluorescence, molecular diagnostic, microbiologic, and electron microscopic material.
- DP Fellows should involve themselves in issues of laboratory management, including QA, laboratory procedures, and personnel management.
- DP Fellows should review, as time permits, the extensive teaching slide collection.

- Each DP fellows should examine at least 5000 dermatopathology specimens.

- DP Fellows who are **pathologists** must participate in the examination of at least 1000 dermatology patients during the one-year fellowship.

    - This is met by attending the dermatology clinics 2-3 times per week in the afternoon at Stanford Medicine Outpatient Center (Redwood City, CA).
    - You will keep a log of all patients seen, which would include date of clinic, diagnosis, and any procedures (e.g. biopsies) performed. This serves as a record of your clinical activities for Board Certification.

- DP fellows who are **dermatologists** must examine at least 1000 surgical pathology specimens and 200 cytopathology specimens.
- The activities of the surgical pathology service include a four month rotation on surgical pathology, a one month rotation on the Hematopathology service, a one month rotation on the Kempson consult service, a rotation on Molecular pathology, and a one month rotation on the Immunopathology service.
    - These rotations occur in the afternoon, following dermatopathology sign-out.
    - DP Fellows who are dermatologists should attend the 8:00 a.m. Anatomic Surgical pathology teaching conferences held Wednesday and Friday in L201 (Thursday mornings are reserved for Dermatology Grand Rounds).
- DP Fellows lead the “Chapters of Weedon” review conference for the dermatology residents. This is a teaching conference for first year dermatology residents held on a weekly basis.
- The DP Fellow should read the assigned chapter of Weedon’s Skin Pathology, and pull relevant slides from the teaching archive. These slides are reviewed with the dermatology residents on Tuesday morning at 7:30 at SMOC.
- DP Fellows guide the unknown conference for the senior dermatology residents. This conference is also on Tuesday morning at 7:30.
- DP fellows guide microscope sessions for the pathology residents, which are held one Wednesday a month at noon. The fellow should choose the topic for the session and may show recent interesting cases or cover a topic in dermatopathology.

During the course of the fellowship, DP Fellows are expected to participate in at least one research project that results in presentation or publication. The research project can be clinical, pathologic or basic science-related (in consultation with Dermatopathology faculty)

DP Fellows are encouraged to attend the annual meeting of the American Society of Dermatopathology, and funds are available to pay for this trip. (Fellows may utilize up to 5 work days to attend academic conferences during the academic year)

DP Fellows are expected to give two didactic lectures per year in the Department of Pathology.

The DP fellows are expected to cover emergent call on weekends (home call). This entails serving as a consultant for the surgical pathology fellow on call or hotseat fellow on “gold cassette” DP cases that come in over the weekend.

DP fellows will be evaluated monthly by faculty and semiannually meetings with the Program Director will occur.

During the Annual Program Review, toward the end of the academic year the Program Assessment will include:

a. Resident Performance
b. Faculty Development
c. Graduate Performance
d. Program Quality

GYNECOLOGIC/BREAST PATHOLOGY FELLOWSHIP

Director: Teri A. Longacre, MD

General Philosophy

The fellowship in gynecologic/breast pathology is designed to offer advanced, focused and intensive diagnostic training in gynecologic and breast pathology. Specific responsiblities include: sign out of consultation material (including immunohistochemistry and other special diagnostic techniques), supervision of resident during sign out of breast/gyn frozen sections, supervision of resident during sign out of breast/gyn surgicals, and participation in weekly breast and gyn tumor boards. Additional time is designed to pursue additional subspecialty training in areas of cytopathology (as it relates to breast/gyn pathology), immunohistochemistry and FISH (as it relates to breast/gyn pathology), placental pathology, and research.

Specific Responsibilities

Fellows participate in departmental and interdepartmental conferences such as the Breast Tumor Board and Gynecologic Oncology Tumor Board, as well as medical student and resident teaching. The fellow is also responsible for review of gynecologic and breast cases sent from outside hospitals.

During the course of the year long fellowship, the fellow is expected to participate in at least one research project that results in presentation and publication. The research project can be clinical, pathologic or basic science-related. Contribution to book chapters and review articles is encouraged.

The fellow is also responsible for participating in 2 QA/QI projects relating to breast/gynecologic pathology. One of these projects is designed by the fellowship director. The second project is designed by the fellow with assistance from the fellowship director and quality improvement staff.

On-Call

Refer to the on-call schedule for specific coverage dates. Coverage is provided from 6:00PM to 7:30AM on weekdays and all day on Saturdays, Sundays and holidays. Responsibilities include preparation, interpretation and reporting of GMS specimens, preparation of FNA samples from radiology for immediate evaluation/tissue and frozen section coverage. The on-call fellow should contact the on-call faculty member by pager or home number to sign out frozen sections or if reporting a positive finding on GMS.

Frozen Section Rotation (1 month)

The fellow is responsible for frozen section coverage from 7:30AM to 2:00PM Monday through Friday during the frozen section rotation. It is expected that the fellow, in conjunction with the assigned resident in surgical pathology and the frozen section technician, prepare and interpret all frozen sections and touch preparations following discussion(s) with the submitting surgeon. This may include preparation of tissue for special studies. The assigned faculty is available for assistance and is expected to

preview all frozen sections and their diagnoses following the fellow's preliminary diagnoses. The assigned faculty will take over frozen section coverage from the fellow for the 2:00PM to 6:00PM period.

Surgical Pathology Sign-Out Rotation (1 month)
During this rotation, the fellow is responsible for resident sign-out. The fellow will be responsible for sign-out of breast and gynecologic specimens. This will include ordering of additional stains, determination of cases to be shown to additional faculty, instruction provided to the resident concerning the gross, microscopic, and relevant diagnostic and differential diagnostic issues, as well as preparation of the final report integrating all the findings. Once the final report is completed and corrected by the fellow, the case is to be forwarded to the assigned faculty within the prescribed turn-around-time and formally signed out by that faculty member.

Consult Rotation (6 months)
The fellow is responsible for preview and work-up of gynecologic/breast consult cases, but may take on additional cases as desired. On this service, this includes showing individual cases to the relevant faculty, preparing a consult report with relevant references and conveying these interpretations to the consulting physicians. In almost all cases, the fellow will be required to telephone consulting physicians with preliminary diagnoses and requests for more clinical or pathologic data, additional slides/blocks and/or additional reports, if required. At times, this may appear somewhat daunting, but the ability to discuss difficult cases with colleagues who may on occasion have differing opinions and develop a cogent report that addresses these differences is an important aspect of the fellow's training experience. Once the report is completed and corrected by the fellow, the case is forwarded to the assigned faculty and formally signed out by that faculty member.

The fellow is also responsible for preparation of gynecologic/breast cases for the Monday morning Consult Conference as well as the monthly Tuesday noon Consult Conference for the residents. The latter conference is conducted by the fellow(s) and is meant to provide exposure and teaching of interesting consult cases to the first and second year residents.

Cytopathology Rotation (1 month)
The fellow is responsible for Pap smear evaluation including QC and correlation with biopsy specimens, breast FNA (performance and interpretation), and the interpretation of other cytology specimens obtained during the course of evaluation for breast or gynecologic tract disease. The fellow will learn how to perform immediate adequacy assessments for breast ultrasound-guided FNA biopsies performed by Radiology. The fellow will participate in the daily cytology sign-out where all the cytology specimens are reviewed with the faculty on-service. If the fellow has completed an ACGME accredited cytopathology fellowship, a third selective month can be substituted for the Cytopathology Rotation.

Placenta Rotation (1/2 month)
The fellow is responsible for gross and sign-out of abnormal placentas during this rotation. At the end of the rotation, the fellow will be able to list the indications for placental exam, be able to recognize and diagnose common conditions that impact fetal welfare as well as maternal welfare (including future pregnancies), and recognize and diagnose gestational trophoblastic diseases. The latter will be accomplished by didactic lectures, review of study sets and sign out of consultation material.

Breast Predictive Factor Rotation/Immunohistochemistry (1/2 month)
The fellow is responsible for interpretation and sign-out of breast predictive factors (ER/PR/HER2, including HER2 FISH in invasive breast carcinomas with faculty supervision. A minimum 20 cases must be performed by the fellow; these are to include ER negative, HER2 positive and HER2 negative cases. The fellow must demonstrate an ability to resolve borderline or ambiguous studies, troubleshoot possible fixation problems and review positive and negative controls. The fellow is also responsible for interpretation and sign-out of mismatch repair proteins in gynecologic cancer specimens. A minimum of 20 cases must be performed by the fellow under faculty supervision, including stable and unstable cases. At the end of the rotation, the fellow must demonstrate a thorough understanding of test algorithms for gynecologic cancer and how they differ from colorectal cancer.

Selective/Research (2 months)
The fellow may select any rotation in anatomic or clinical pathology as a selective rotation, provided space availability and approval by the relevant service chief. Research months are supervised by the fellowship director or the research mentor following approval by the fellowship director.

Specific Educational Goals and Objectives:

ACGME competency	Program Goals and Objectives: First Month*	Program Goals and Objectives: Subsequent Months*	Resources
Patient care	1) Participate in sign out of gynecologic/breast specimens received in the laboratory 2) Understand and observe privacy policies, and participate in all appropriate training 3) Understand the controversies & implications of the diagnosis of atypical hyperplasia of the endometrium 4) Understand the role of breast core needle biopsies & the implications of specific diagnoses 4) Understand the role & limitations of sentinel lymph node biopsy in breast cancer patients 5) Understand the role of the pathologist in the evaluation of patients with possible hereditary breast/gynecologic cancer 8) Understand the role of the pathologist n the evaluation of possible gestational trophoblastic disease 9) Read relevant literature on the management of patients with cervical abnormalities, including indications for HPV testing and different methods available for HPV detection	1) Independently interpret and classify gynecologic and breast specimens, entering a first draft report for attending review at the time of sign out 2) Know and be able to identify reactive conditions seen in gyn/breast pathology 3) Know and be able to identify (and resolve) common problematic differential diagnoses in gyn/breast pathology 4) Participate in gyn/breast tumor boards 5) Independently perform & interpret frozen sections of gyn/breast pathology specimens 6) Understand when to collect material for ancillary studies 8) Understand and explain current consensus guidelines for management of patients with cervical cytologic/biopsy abnormalities 9) Understand and explain current consensus guidelines for management of patients with breast core needle biopsy abnormalities	1) Consensus Guidelines: www.asccp.org 2) Consensus Guidelines: ADASP
Medical knowledge	1) Learn and apply criteria for adequate, sub-optimal and unsatisfactory samples, specific to gyn/breast diagnosis & immunodiagnosis 2) Learn diagnostic	1) Attend the 8 am Wed-Fri surgical pathology didactic conferences 2) Organize and present gyn/breast consult cases at Tuesday noon conference	1) Longacre, Kempson, Atkins & Hendrickson, *The Uterine Corpus* In Sternberg's Pathology (4th edition) 2) Hendrickson, Longacre. Problems in uterine corpus

	criteria of malignancy, specific to breast & gyn site 3) Learn grading & staging of breast/gyn malignancies 4) Attend the 8 am Wed-Fri surgical pathology didactic conferences & Tues noon conferences 5) Understand preparatory and processing steps for all breast/gyn cytology specimens 6) Learn The Bethesda System for Reporting Cervical Cytology, including criteria for unsatisfactory Pap smears and quality indicators according to Bethesda 2001 7) Learn prosection & microscopic exam techniques for placentas. Learn major differential diagnoses in gestational & placental pathology 8) Attend and present at monthly journal club	3) Participate in monthly journal club 4) Particpate in medical student teaching in the breast/gyn blocks 5) Understand and apply appropriate use of special stains and/or studies to facilitate diagnosis 6) Become familiar with outcome and prognosis of common breast/gyn malignancies 7) Attend and present at monthly journal club	pathology: In Gynecologic Cancer: Controversies in Management, Elsevier, Philadelphia, PA, 2004. 3) Tavasolli, WHO Breast & Gyn Pathology 4) Scully AFIP Ovarian Tumor Fascicle 5) Young & Clement Atlas of Gyn Pathology, (2nd edition) 6) Longacre & Hendrickson, Frozen Section in Gyn Pathology, 1996 7) Page, Breast Pathology 8) The Bethesda System for Reporting Cervical Cytology (2nd edition)
Practice-based learning and improvement	1) Attend monthly Stanford QA/QI conference (3rd Tuesday of each month) 2) Become proficient at various Stanford information systems (e.g., PowerPath, EPIC) 3) Comply with all safety regulations 4) Become familiar with and adhere to patient safety goals as they apply to breast/gyn specimens (use of two patient identifiers)	1) Participate in cyto-histo correlation conference for Pap smears 2) Perform literature searches on cases when indicated	1) *American Journal of Surgical Pathology* 2) *Modern Pathology* 3) *International Journal of Gynecological Pathology* (other journals available online through Lane Library at Stanford)

Interpersonal and communication skills	1) Effectively communicate with all others within and outside the laboratory 2) Compose clear and concise pathology reports, with explanatory comments as needed 3) Be able to present and explain gyn/breast pathologic findings to other health care professionals in the tumor board setting	1) In the last quarter of the year, act as a "junior attending", signing out gyn/breast cases with residents 3) Instruct anatomic pathology residents on breast/gyn pathology 4) Discuss preliminary and final gyn/breast pathology results with clinicians and patients (as applicable)	1) Monthly lab management meetings (Tuesday, Noon-1:00 PM)
Professionalism	1) Participate in all Stanford HIPAA training prior to obtaining computer password and access 2) Demonstrate ethical behavior	1) Insure continuity of care by informing the gyn/breast faculty of any pending cases prior to a scheduled absence	1) Monthly lab management meetings (Tuesday, Noon-1:00 PM)
Systems-based practice	1) Attend department-wide annual quality assurance meeting 2) Attend anatomic pathology monthly QA/QI meeting 2) Become familiar with the College of American Pathologists' (CAP) guidelines for reporting ER/PR/HER2	1) If timing permits (inspections occur approximately once every two years), participate in the immunodiagnosis portion of a CAP inspection, esp as it pertains to breast/gyn 2) Participate in the annual QA/QI review of synoptic reporting n breast/gyn cancers 3) Participate in proficiency testing for ER/PR/Her2 4) Serve as a consultant for ordering immunodiagnostic and other ancillary studies in problematic gyn/breast cases	1) www.cap.org 2) Monthly lab management meetings (Tuesday, Noon-1:00 PM)

HEMATOPATHOLOGY FELLOWSHIP

Program Director: Yaso Natkunam MD, PhD

Rotations	**Months**
(A) Laboratory Hematopathology/Bone marrows	4
(B) Consult/Tissue Hematopathology/Immunodiagnosis	4
(C) Cytogenetics/Molecular Diagnosis	1
(D) Coagulation/RBC Special Studies	1
(E) Elective/Research	2

General Philosophy

The goal of the Stanford Hematopathology Fellowship program is to provide comprehensive exposure to all aspects of the hematopathology, including laboratory hematology (adult and pediatric), clinical coagulation, surgical hematopathology, flow cytometry, immunodiagnosis, cytogenetics, and molecular diagnostics. The program has a particular emphasis in developing expertise in the morphologic aspects of hematopathology, with extensive exposure to both bone marrow and lymph node pathology and in gaining sufficient expertise in integrating ancillary diagnostic testing. In addition, scholarly research and publication is strongly encouraged.

Specific Goals and Objectives

Laboratory Hematology/Bone Marrows

Patient care

- Be familiar with a wide variety of adult and pediatric hematologic disorders
- Develop competency in peripheral blood smear, body fluid and bone marrow interpretation, including correlating morphology with ancillary tests used for diagnosis, such as special stains, flow cytometry, and tissue immunodiagnosis
- Gain skill in the technical and interpretive aspects of hematologic flow cytometry
- Correlate clinical findings with morphology of clinical hematology samples
- Learn appropriate selection of diagnostic tests in hematology
- Develop basic expertise in medical microscopy of body fluids
- Correlate findings in fluid samples with those in the cytopathology laboratory
- Learn the technique of performing bone marrow aspirates and biopsies
- Recognize the importance and time-sensitive nature of certain hematologic diagnoses

Medical knowledge

- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system

- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills

- Communicate clearly with clinical colleagues to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with laboratory staff in coordinating timely specimen processing

Professionalism

- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff in the hematology/flow cytometry lab to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice

- Learn the process of case evaluation and work flow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

Practice-based learning

- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

Consult/Tissue Hematopathology/Immunodiagnosis

Patient care

- Develop competency in interpretation of lymph nodes and other hematolymphoid tissues, including correlation of morphology with ancillary tests used for diagnosis, such as immunohistochemistry and in situ hybridization
- Attain proficiency in hematologic immunohistochemistry, including both technical and consultative aspects
- Gain skill in tissue *in-situ* hybridization techniques and interpretation
- Learn how histopathologic diagnoses in tissue hematopathology affect clinical prognosis and therapy
- Learn about quality control and quality assurance in surgical pathology
- Learn appropriate selection of diagnostic tests in the work up of hematopathology specimens

Medical knowledge

- Develop basic knowledge of the clinical, pathogenetic, morphologic, immunophenotypic and genetic features of the more common diseases of the hematopoietic system
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills

- Communicate clearly with clinical colleagues and consulting pathologists to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with pathology staff in coordinating timely specimen processing

Professionalism

- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case
- Work effectively and efficiently with support and administrative staff in the surgical pathology, immunodiagnosis, cytogenetic and molecular pathology labs to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice

- Learn the process of case evaluation and work flow in hematopathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff

- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

Practice-based learning
- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in diagnostic hematopathology using a wide variety of information resources, including laboratory and hospital information systems

Cytogenetics, Molecular Diagnosis and Coagulation

Patient care
- Learn cytogenetic and molecular techniques and procedures, including technical pitfalls and limitations
- Learn to detect visual chromosome banding abnormalities.
- Gain consultative skill in hematologic cytogenetic and molecular test selection and clinical interpretation.
- Learn about quality control and quality assurance in cytogenetics, molecular diagnosis and coagulation.
- Increase understanding of the relationship of the coagulation results to the diagnosis of clinical bleeding and thrombosis problems

Medical knowledge
- Learn cytogenetic and molecular nomenclature
- Increase understanding of FISH analysis
- Understand the correlation of cytogenetic and molecular testing with other complimentary test results, such as tissue morphology/diagnosis, flow cytometry immunophenotyping, FISH.
- Understand the significance of various hematologic diagnoses in determining treatment plans
- Become familiar with outcomes and prognoses of common hematologic diseases

Interpersonal and communication skills
- Communicate clearly with clinical colleagues and consulting pathologists to obtain clinical information in case evaluation
- Communicate diagnoses and describe the features that support those diagnoses effectively, both verbally and in written reports
- Work closely with pathology staff in coordinating timely specimen processing

Professionalism
- Recognize and be sensitive to the needs of the patients and clinicians in making a timely diagnosis in a cost-effective manner appropriate to the clinical circumstances of each case

- Work effectively and efficiently with support and administrative staff in the coagulation, cytogenetics and molecular pathology labs to maximize productivity and maintain the quality of the work environment
- Complete written reports in a timely fashion

Systems-based practice

- Learn the process of case evaluation and work flow in coagulation, cytogenetics and molecular pathology, from accessioning and processing of specimens to sign-out and delivery of patient reports
- Use awareness of laboratory work flow to optimize efficiency and turn-around-time through working with laboratory, administrative and clerical staff
- Develop skills in selecting the most cost-effective diagnostic studies that provide quality medical care
- Begin to develop awareness of issues in coding and billing

Practice-based learning

- Use case-based learning as a tool for additional insight into the basis of disease
- Locate, appraise and assimilate pertinent data from scientific studies
- Demonstrate effective problem solving skills in these specialized areas using a wide variety of information resources, including laboratory and hospital information systems

Fellows will supervise and perform, as needed, the activities described in the AP and CP hematopathology resident rotations.

A detailed description of each rotation follows:

(A) LABORATORY HEMATOLOGY/ BONE MARROW

1. The work load will be divided between CP residents and Hematopathology Fellows with one trainee handling peripheral blood smears and body fluids at Stanford, and the other handling flow cytometry specimens at Hillview.
2. If covering peripheral blood smears, each morning at Stanford one trainee will review held-over abnormal blood smears. As necessary, they will call physicians with results or to request further clinical information. Smears will be reviewed daily with the attending pathologist at ~9AM.
3. If covering body fluids: Body fluid sign-out will begin at a time agreed upon by the on-service resident and attending pathologist, typically mid morning or early afternoon. The resident is responsible for entering results into the pathology information system (Powerpath/Tamtron) and for correlating results with Cytology (also in Powerpath).
4. At Stanford, from 9:30AM – noon each day trainees can attend the bone marrow sign-out as determined by the bone marrow and body fluid hemepath attendings, and the number of residents on the rotation. This sign-out will include AP and CP residents and HP fellows as scheduled. Trainees should preview, perform 200-cell

differential counts and be responsible for signing out at least 2 bone marrow cases per day.

5. The CP resident or Hematopathology fellow (whomever is covering flow cytometry at the time) will take “first call” for all clinical questions regarding the morphologic evaluation of aspirates and peripheral blood smears prior to testing and cases that (s)he is writing up. For flow cytometry specimens submitted with in-house marrows that the AP resident will sign out, the AP resident will take “first-call” during normal working hours once the flow results are available and/or have been reviewed with the AP bone marrow sign-out attending. As needed, smears can be reviewed with either the Hematology Specialist or the attending pathologist.
6. Hematopathology fellows on body fluids will also be responsible for signing out selected bone marrow cases and review molecular and cytogenetic results weekly to create amendment reports to integrate results.
7. Residents will contact clinicians for additional clinical history or for urgent diagnoses as necessary.
8. At Hillview, the resident will interpret flow cytometry results with the fellow or attending, check the entered flow cytometry data for accuracy in Power Path, and will incorporate an interpretation in the report. Text comments for negative flow cytometry reports are available in Power Path. Cases will be dictated as soon as possible and, after correcting the dictation, will forward the cases to the attending for sign out on the same day. The slides and paperwork must be available to the attending for re-review.
9. Bench Training by Clinical Laboratory Scientists: Each week on Tuesday afternoon at 2PM or as agreed upon with the supervisor the resident rotates through a different section of hematology for detailed instruction by a reference technician, The residents are excused for their clinical work during this time.

    Stanford Hospital: (coordinator: Mercy Dones, hematology supervisor)
    a. Hematology specimen processing, automated hematology & QA
    b. Body fluids
    c. Urinalysis
    d. Special hematology

    Hillview:
    a. Flow cytometry (2 sessions coordinated by Veronica Wei, flow supervisor)
    b. RBC special studies laboratory (coordinated by Carolyn Wong, lead technologist in RBC SSL)

10. Teaching
    a. The fellow is to give at least 1 in-service to the Hematology techs at the Hematology section meetings
    b. The fellow is to give at least 1 in-service to the Flow Cytometry techs
11. Conferences:
    a. Friday Noon CP Conference - Each fellow will select at least 1 case for discussion.
    b. Tuesday: 8AM Current Concepts seminar
    c. Thursday: 12 noon Laboratory Medicine Lecture Series

d. 3rd Monday of the month: QA/QI Meeting
e. Tuesday: 12 noon—once per month around-the-microscope session
f. Surgical Pathology conferences are optional
g. Friday 1:30pm, weekly interesting hemepath case conference
h. Monthly Hematology QA meeting
i. Friday: 8AM or 2:30PM, Hematology Operations meeting
j. Monthly Hematology/Hematopathology Conference- Optional
k. Bimonthly Acute Leukemia Tumor Board-Optional
l. Bimonthly MDS Tumor Board-Optional

Call Responsibilities
A hematopathology fellow is scheduled to be on call for all hematopathology cases after hours and on weekends. The CP resident on call (#12005) handles all calls after normal working hours and the HP fellow will function as the initial back-up to the CP resident on all days except Sundays. The bone marrow service attending pathologist for any given week is the person responsible for all call cases and for supervision of the fellow. Monthly call schedules that designate the fellow and attending pathologists on call are posted on the first day of each month throughout the clinical laboratory.

During normal working hours, the resident or fellow on a given part of the CP hematology service takes the initial calls for that service with fellow and attending back-up. For example, if the CP resident is handling flow cytometry specimens in a given week, all requests related to flow cytometry will be initially directed to that resident, with the designated service attending available to assist the resident.

For evenings and weekends, “first-call” involving picking flow panels and morphologic evaluation of specimens submitted for flow cytometry evaluation should be taken by the CP resident/hemepath fellow covering the flow cytometry service. All other hematopathology-related “first-call” (e.g., peripheral smears and body fluids) involving “critical” issues should be taken by the on-call CP resident (#12005 pager). Routine examination of peripheral blood smears and body fluids, however, will be performed by the CP resident/hemepath fellow covering the Peripheral Smears/Body Fluids service.

Study sets
As it is not possible to see the large breadth of hematology during a rotation, glass slide sets are available for review of abnormalities on peripheral smear, bone marrow and body fluids. A list of correct diagnoses is provided. A pre-test of 10 peripheral blood smears and body fluids is available, as is a post-test of 10 peripheral blood smears and body fluids. Independent study is strongly recommended to supplement the Hematology sign-out.

Although it is best to cover themes when problems and issues in those areas arise, here is an approximate guide for gaining experience in the following important topics during the rotations in Hematology and Coagulation.

THEMES		TOPICS

THE CBC	1	THE CBC
	2	Peripheral smear: RBC morphology
	3	Peripheral smear: WBC morphology
	4	Reticulocyte counts
	5	CBC analyzers
	6	WBC differentials
Coagulation Testing	7	Routine coagulation testing
	8	Coagulation: special
	9	INR
	10	Platelet aggregometry
Coagulopathies	11	Factor deficiencies
	12	Von Willebrand's Disease
	13	Anticoagulation
	14	Inhibitors
	15	Platelet disorders
	16	DIC and thrombotic disorders
	17	Delayed bleeding disorders
Anemias	18	Marrow failure
	19	Acquired Hemolysis
	20	Abnormal membranes
	21	Hemoglobinopathies
	22	Abnormal Enzymes/Polycythemia
Special Hematology	23	HPLC/Hemoglobin electrophoresis/sickling tests
	24	Serum viscosity, urine hemosiderin, Heinz bodies
	25	Monospot, malaria smear, ESR, fecal blood
	26	G6PD, osmotic fragility
Pediatric Hematology	27	Neonatal hematology
	28	KB stain
Body Fluids	29	Body fluid morphology
	30	Urinalysis
Flow Cytometry	31	Leukemias
	32	Lymphomas
	33	PNH
	34	MDS
	35	Lymphocyte subsets
Hematopathology	36	Lymphoproliferative disorders
	37	Reactive disorders
	38	Myelodysplastic syndrome
	39	Myeloproliferative neoplasms
Miscellaneous	40	CAP standards, QI/QC

Summary of Weekly Laboratory Rotations

WEEKS	TOPIC	DESCRIPTION
1	Specimen processing, slide preparation, malaria slide preparation and identification, manual counts, WSR.	Observe tests and become familiar with appropriate use and interpretation. Review malaria study sets with Hematology Specialist Technologist.
2	Flow cytometry	Observe tests and become familiar with appropriate use and interpretation of flow panels and gating strategies . Analyze ungated archival cases stored in computer.
1	Automated hematology, Quality control.	Observe tests and become familiar with appropriate use and interpretation. Learn about interpretation of instrument scatterplots. Become familiar with factors that can cause spurious instrument results. Review laboratory algorithms for quality control. Review monthly QC data with Clinical Pathologist.
1	Body fluid cell count and morphology.	Observe tests and become familiar with appropriate use and interpretation. Review abnormal body fluid slide sets with technologist. Optionally review previous year's files of malignant fluid slides.
1	Special stains, bone marrow slide preparation, Ficoll density gradient cell isolation, cryoglobulins, serum viscosity, G-6-PD screen.	Observe tests and become familiar with appropriate use and interpretation. Note that selected readings in bone marrow morphology interpretation are assigned in the syllabus for this week.

(B) CONSULT/TISSUE HEMATOPATHOLOGY/IMMUNODIAGNOSIS

During this four-month rotation covering consult and inside/outside cases of lymph nodes, bone marrow and immunohistochemistry, the HP fellow will have the following responsibilities:

1. Attend the hematopathology sign-out sessions 5 mornings each week. In addition to reviewing the cases, the fellow will assist with the ordering of immunohistochemical stains and molecular studies, communication with referring pathologists and clinicians, dictation of reports, and obtaining additional consultation, particularly in cases including lymph nodes or bone marrow materials.
2. Sign-out immunodiagnosis cases 5 afternoons each week. The antibody stains will be entered into the computer database, immunohistochemical stains will be reviewed and the results entered in the database, and cases will be finalized with the faculty attending.
3. Serve as a consultant, to determine which immunohistochemical stains and molecular studies to order on diagnostic problem cases.
4. Participate in monthly microscopic teaching sessions, presenting the most interesting hematopathology cases to the surgical pathology residents.
5. Attend the morning teaching conferences in Surgical Pathology Topics, 3 days per week.
6. Attend the interdepartmental Lymphoma Staging conference, 1 day per week.
7. Attend the monthly surgical pathology QA/QC meeting.

(C) CYTOGENETICS/MOLECULAR DIAGNOSIS

CYTOGENETICS

Week One:
1. Initial orientation – setting up, harvesting and slidemaking for all sample types.
2. Fellow may initiate/harvest/make slides/do analysis of own peripheral blood cultures.
3. Review Cytogenetics Laboratory manual.
4. Attend conferences with the laboratory director.

Week Two:
1. Learn how to karyotype normal and abnormal chromosomes.
2. Learn how to write cytogenetic nomenclature per ISCN 1995.
3. Observe/participate in FISH analysis.
4. Observe other special staining and/or banding techniques.
5. Attend conferences with the laboratory director.

Week Three:
1. Do cytogenetic analyses of normal and abnormal unknowns.
2. Write proper nomenclature for these cases.

3. Attend conferences with the laboratory director.

Week Four:
1. Review normal/abnormal cases with the laboratory director and/or supervisor.
2. Attend conferences with the laboratory director.

In addition, the fellows have the opportunity to attend genetic counseling sessions in both prenatal diagnosis clinic and pediatric genetics clinic.

MOLECULAR DIAGNOSIS

1. Observe and/or perform basic molecular methods, including DNA and RNA extraction from blood, bone marrow and tissue; reverse transcription of RNA to cDNA; PCR methods for qualitative and quantitative amplification of genomic DNA and cDNA; restriction enzyme digestion, agarose gel electrophoresis and Southern hybridization.
2. Review test procedures and interactive online teaching tool developed for this rotation, understand molecular basis for tests performed in the laboratory.
3. Interpret test results. Understand errors that can be made in test performance and limitations of tests. Under the supervision of the laboratory directors, participate in troubleshooting problems with tests.
4. Correlate molecular rest results with other complimentary tests, such as surgical pathology tissue diagnosis, flow cytometry immunophenotyping, FISH.
5. Under the supervision of the laboratory directors, function as a consultant to clinicians in test selection and result interpretation.
6. Attend laboratory QC/QA meetings.

(D) COAGULATION/RBC SPECIAL STUDIES

1. Two weeks of intensive exposure to coagulation testing and interpretation, including specimen processing, routine coagulation tests and special coagulation tests (D-dimer, FSP, KC4, inhibitor screens, ATIII, factor assays, factor inhibitors, ristocetin cofactor, vW antigen, anticardiolipin, euglobulin clot lysis, factor XIII, clot retraction, protein S, protein C, platelet aggregation, alpha-2, plasminogen, Xa, factor V Leiden, PT20210A, MTHFR, HIPA, ELISA D-dimer, platelet function testing).

2. Observe techniques in Hb electrophoresis. Begin Hb electrophoresis unknown case sets and complete during your rotation. Review additional Hb electrophoresis study case materials.

(E) ELECTIVE/RESEACH

There are two months in which the fellow can decide to schedule additional training in a subspecialty area of interest, additional months on the consult service or pursue

research endeavors under guidance of a faculty member. Research activities leading to a presentation at a national meeting and publication are strongly encouraged.

Major Texts and Learning Resources:

- Bain B. Blood Cells. A Practical Guide, 4th Edition (2006)
- Foucar K, K Reichard, D Czuchlewski. Bone Marrow Pathology, 3rd Edition (2010)
- Galagan KA, Blomberg D, Cornbleet PJ, Glassy EF. Color Atlas of Body Fluids (2006).
- George TI. Laboratory Hematology, UpToDate (online)
- Glassy EF. CAP Color Atlas of Hematology (2005).
- Haber M, Blomberg D, Galagan K, Glassy EF, Ward P. CAP Color Atlas of the Urinary Sediment (2011).
- Hoyer JD and Kroft SH. Color Atlas of Hemoglobin Disorders (2003)
- Jaffe ES, Harris NL, Vardiman JW, Campo E, Arber DA, eds. Hematopathology. Philadelphia: Elsevier, 2011.
- Keren DF et al. Flow Cytometry in Clinical Diagnosis, 3rd Edition (2001)
- Kjeldsberg C. Practical Diagnosis of Hematologic Disorders, 5th Edition (2010)
- Kjeldsberg C & Knight J. Body Fluids, 3rd Edition (1993)
- Knowles D. Neoplastic Hematopathology, 2nd Edition (2001)
- McPherson RA, Pincus MR.. Henry's Clinical Diagnosis and Management by Laboratory Methods. 21st Ed. (2006)
- Nguyen D et al. Flow Cytometry in Hematopathology, 2nd Edition (2007)
- Pereira I, George TI, Arber DA. Atlas of Peripheral Blood: The primary diagnostic tool. Lippincott Williams & Wilkins, Philadelphia, 2012.
- Swerdlow SH et al. WHO Classification of Tumours, Pathology & Genetics, Tumours of Haematopoietic and Lymphoid Tissues (2008)

Supervision and Evaluation:

The fellows will be supervised by an attending physician in all areas and rotations in hematopathology. This supervision includes all daily clinical responsibilities during normal working hours as well as on-call responsibilities. An attending physician is always scheduled to supervise the fellows' clinical activities. The fellows will at no time perform any unsupervised clinical work. The hematopathology coverage calendar, which lists attending pagers and telephone numbers, is updated and circulated monthly and is also posted at multiple key locations in the hematology and subspecialty laboratories, multi-headed scope rooms, House Staff offices and work rooms and on the pathology bulletin boards. The Stanford and Lucile Packard Hospital switch-board and page operators also have access to faculty pagers and other preferred mobile devices and home telephone numbers, and can assist fellows in contacting faculty when necessary, such that direct lines of communication are always available to the fellows at all times. Faculty responsibilities are outlined in detail in a separate document, which is updated and circulated to all hematopathology faculty once per year, usually at the beginning of the fellowship year in July, or following any changes to these responsibilities. Major changes are discussed at hematopathology faculty meetings before implementation.

The fellows will be evaluated on his/her daily work as assessed by each faculty member and by laboratory and other appropriate staff members designated by the program director and laboratory medical directors. Each faculty member who works with the fellows on each weekly rotation will evaluate fellows' performance on the MedHub system. These will be done on a monthly basis. In addition, staff members will also perform 360-degree evaluations through the MedHub system. These evaluations, or any alerts, are available to the fellows and to the program director through the MedHub system immediately. Evaluations will be reviewed formally with the fellow at six months and at the end of the year by the program director. In addition, mentor meetings will be set up during the course of the fellowship year, as needed, including career counseling and help with recommendations for job positions.

MOLECULAR GENETIC PATHOLOGY FELLOWSHIP

Director: Iris Schrijver, MD

The Molecular Pathology Fellowship is an ACGME-accredited fellowship offering comprehensive training in Molecular Genetic Pathology.

General overview of the one-year fellowship:

Rotation	Length	Objectives
Molecular Pathology — CP aspects	3 months	Become proficient in a wide range of molecular diagnostic methods and interpretation, in the development of new assays, case interpretations, have interaction with physicians from other disciplines, and teaching sessions by attending physicians, give case presentations. Emphasis on DNA diagnostic tests and the forefront of diagnostic developments.
Clinical Genetics and Cancer Genetics	2 months	Expand knowledge of clinical cancer genetics, genetic counseling aspects, and examination and counseling of patients in genetics clinics.
Cytogenetics rotation	1 month	Become familiar with cytogenetic methods and interpretation, be able to make correlations with molecular genetic results, and explore diagnostic advantages and disadvantages of cytogenetic and molecular pathology techniques for individual genetic diseases.
Biochemical Genetics rotation	1 month	Become familiar with biochemical diagnostic methods and interpretation, their correlation with and confirmation by molecular methods, development of new assays, interaction with physicians from other disciplines, attend clinics and consults for biochemical genetic disorders.
Molecular Pathology research project	2 months	Carry out a Molecular Pathology research project. Residents can choose from a large number of research projects and labs. This rotation may be spread out over the year. Research is expected to lead to publication and will provide residents with the opportunity to gain bench experience, critically evaluate research results, and understand the difference between molecular pathology research tools and diagnostic applications.
Molecular Pathology — AP aspects	3 months	Become proficient in a wide range of molecular diagnostic methods and interpretation, in development of new assays, case interpretations; have interaction with physicians from other disciplines, and teaching sessions by attending physicians, give case presentations.

The Stanford Molecular Pathology program serves the adult and pediatric populations at Stanford and also sees referrals from Northern California and the U.S. The program is interdisciplinary and includes participation of faculty in the Departments of Pathology, Medicine, Pediatrics (Division of Medical Genetics) and Genetics.

Laboratory rotations include formal training in Biochemical Genetics and Cytogenetics. Fellows will be trained in assay development, quality assurance and results interpretation in the Molecular Pathology Laboratory at Stanford and the Kaiser-Permanente Regional Molecular Diagnosis Laboratory, a large reference laboratory for the Kaiser system which offers a testing menu that is complimentary to that at Stanford.

Fellows are expected to initiate a research project during the fellowship. This project can be performed in any appropriate laboratory at Stanford, which offers unmatched opportunities for research in Molecular Pathology and Molecular Genetics. Departmental funding is available for suitable research projects. Moreover, additional funding may be available for qualified fellows to continue their research beyond the period of the formal fellowship.

Weekly schedule

Daily: sign out cases with attending in the Molecular Pathology laboratory and the current lab of rotation /anatomic pathology area/ examine and counsel patients in pediatric and cancer genetics.

	Day	Time	Location
Molecular Pathology lab meeting	Mondays	9 AM	HV sign-out room
Metabolic Conference	Mondays	1:00 PM	A051
Hemepath clinpath correlation conference	Mondays	2:30	Heme signout
Current Concepts lecture series	Tuesdays	8:00 AM	L201
Genomic Medicine course	Tuesdays subset of Current Concepts lectures, attend in L201	8:00 AM	L201
Advanced Genomic Medicine course	TBD	TBD	TBD
Biochemical Genetics lab meeting	Tuesdays	10:00 AM	HV sign-out room
Hematology journal club	Tuesdays	noon	2nd fl., Cancer center
Human Genetics Journal Club	Tuesdays fellows give HGJC 1x	4:00 PM	Beckman Center, B200
Cytogenetics lab meeting	Every other Wednesday	10:15 AM	Cytogenetics Lab
Molecular Pathology staff meeting	2nd Wednesday/mo fellows give inservices	10.30 AM	HV sign-out room

Hematology conference	Wednesdays	noon	2nd fl., Cancer center
Hematology new patient conference	Wednesdays	4.30 PM	2nd fl., Cancer center
Clinical Pathology lecture series. This series includes a **block of MGP lectures**, which address critical aspects of genetic diagnostic testing in molecular, biochemical and cytogenetics.	Thursdays	noon	H1551L
OB/Genetics Prenatal Clinical Conference	Thursdays	12:30 PM	OB Library, 3rd floor
Medical Genetics Grand Rounds Inter-disciplinary meeting with lecture and case presentations. General discussion of genetic concepts.	Fridays fellows give MGGR 1x	9 AM	M114
Present interesting cases at the Friday Clinical Pathology residents conference and discuss involvement in phone calls received from physicians regarding interpretation of genetic tests.	Fridays	noon	HV purple room/L201
Pediatric Tumor Board conference	Tuesdays	5:00 PM	LPCH Board Room

Bold = mandatory core curriculum

Certification

Certification in molecular genetic pathology is a joint and equal function of The American Board of Medical Genetics (ABMG) and the ABP. Such function relates to qualifications of candidates, standards of examination, and the form of the certificate.

All candidates applying for certification must be physicians and hold a currently valid, full, and unrestricted license to practice medicine or osteopathy in the United States or Canada.

The ABMG and the ABP will qualify candidates for examination for certification in MGP who:

a. Are diplomates of the ABMG or the ABP

and

b. Document MGP practice of at least 25% full-time experience within each of the immediately preceding five years or 100% experience over the immediately preceding two years to the satisfaction of the ABMG and the ABP

and

c. Submit a completed application that includes a logbook of 150 cases from the time period in b and a completed supplemental information form.

Section: Molecular Genetic Pathology Responsibilities

Responsibilities:

- Regular working hours are approximately and minimally 8AM to 6PM, Monday-Friday. One of the Fellows will carry the on-call beeper for the laboratory during the week.
- Daily sign out of all cases with the attending in the Molecular Pathology laboratory
- Development of new molecular pathology assays
- Perform and complete a research project
- Daily sign out of cases with the attending in the lab of current rotation
- Attend and present at seminars and meetings as outlined in the weekly schedule
- Collect 150 cases for the logbook, as required for subspecialty examination
- Self study

Specific expectations:

1. All cases are expected to be presented with knowledge of clinical history whenever possible (should always be available on Stanford patients in Epic, Cerner or Powerpath, usually a short history is provided for UCSF patients. There should be a low threshold for contacting a referring clinician/resident/fellow if the reason for the test is unclear. They are usually glad to provide these details. This knowledge makes the experience more interesting and rewarding for all participants, as every case is a story, they are all interesting and unique, and there is always something to learn.

2. It is critical that prior results from our lab always be documented and correlated with the current specimen. This is the standard of care for our laboratory, and deviations from this will require corrective action documentation.

3. The information from our lab must, where possible, be integrated with testing performed in other labs on the same patient. This most commonly (but by no means exclusively) happens in hemepath cases. For example, a referring physician may independently order histopath and molecular testing on a given specimen. It is critical that this data be correlated prior to result reporting (unless the molecular result is ready prior to other testing, which will only rarely be the case) so that discrepancies are addressed before the results are released.

4. It is not uncommon for equivocal or difficult cases to have repeat or additional testing performed, which can result in a significant increase in TAT. In such cases it is imperative for the fellow to communicate with the referring physician. Often this will lead to a discussion about the case, which results in a better understanding of why the test was ordered, additional tests which might be indicated, or study of additional specimens.

5. Similarly, if a result is equivocal or complex, it is our policy to call in advance the referring physician and give them the opportunity to consider, question and discuss the result. Very few referring clinicians are experts on the nuances of molecular pathology, and they depend on the expertise provided to provide clarity in difficult cases, or, if a result is unclear, recommendations for additional evaluation and follow up.

6. The Laboratory Directors are always available to discuss these cases. As in all areas of medicine, fellows should not feel forced out of their comfort zone. If you don't know the answer to a question, rather than hedge or guess, involve the Director who will be signing out the case.

7. Additional specific expectations and details will be communicated at the beginning of the Fellowship.

NEUROPATHOLOGY FELLOWSHIP

Director: Hannes Vogel, MD

Duration: 24 months (contiguous)

Prerequisites: Completion of at least one year of Anatomic Pathology training

Organization of the fellowship

Surgical neuropathology:
During the first 6-9 months of the first year, the Fellow is expected to become familiar with the elements of surgical neuropathology necessary for the competent practice of diagnostic neuropathology in an academic or community setting. This includes competency in the skills required for frozen section, and the ability to diagnose most common CNS tumors, demyelinating, and infectious diseases as may be encountered in routine surgical neuropathology. At the latter portion of training (usually the final 2- 3 months), the Fellow functions as an experienced and capable fledgling neuropathologist, whereby the rationale for ordering appropriate special stains, immunocytochemistry, FISH, cytogenetics, and electron microscopy is learned. By this phase, the fellow has greater autonomy and responsibility, but consults with a staff neuropathologist prior to any critical patient care related decisions being made.

Autopsy neuropathology:
The fellow devotes the first six months mainly to an introduction to the fundamentals of classical neuropathology that includes review of neuroanatomy, basic necropsy dissection, including both adult and pediatric brain and spinal cord removal, under close supervision.

Muscle and nerve pathology:

The fellow will learn the proper method of handling fresh muscle and nerve biopsies within the first months of the program, and occasionally be encouraged to be actively involved in the techniques of freezing muscle biopsies for enzyme histochemistry, nerve teasing, and cutting sections for plastic embedding.

Developmental and pediatric pathology:

Over the 2-year fellowship, the fellow will gradually accrue exposure to common forms of pediatric neuropathology related to prematurity, chromosomal abnormalities and infection through the autopsy experience. The fellow will also be expected to become knowledgeable in common metabolic and heritable diseases often presenting in childhood through responsibilities for muscle/nerve, skin, brain and other diagnostic procedures.

Neurodegenerative pathology:

Through the gradual and continual accrual process of both in-house and consultative brain specimens in cases of neurodegeneration, the fellow is expected to attain competency in the gross and microscopic diagnosis of common neurodegenerative diseases, and the proper technique of brain sampling for microscopy for such diagnoses. During the second year, a more complete familiarity with diverse neurodegenerative diseases and their etiologies is expected, along with an awareness of contemporary molecular diagnostic approaches.

Forensic pathology:

The fellow will organize a plan for the equivalent of one month full time training in forensic neuropathology, preferably in the second year, using the existing arrangement with the Alameda County Medical Examiner, or the Santa Clara County Medical Examiner.

Individual research:

After the first 3-6 months of training, the fellow is expected to begin appropriate reading and discussion with faculty that will enable him/her to formulate and initiate research projects. Case reporting is expected to promote the skills of thinking, review of literature, and writing scientific papers.

CONFERENCES

Pediatric Neuro-Oncology Tumor Board: (Monday 7:30 a.m. – 8:30 a.m.)– in LPCH, Radiology Department. Slides previewed previous Friday, and AP Resident from Friday attends the Monday conference, then may attend regular 8AM conference in progress or leave the Tumor Board in time to attend 8AM conference. Customarily the first year NP Fellow or AP resident is responsible for the presentation of cases as requested

Journal Club, Tuesday 12-1 p.m. Meet in R241 at 11:45 to go buy lunch (department provided). Select any article for informal presentation. No copies necessary.

Biweekly Monday Case Conference, R241 sign-out room, 5:00-6:00 PM every 1st and 3rd Monday.

Tuesday Muscle/Nerve Pathology Conference, R241 sign-out room, 5:00-6:00 PM, every 3rd Tuesday of the month

Adult Neuro-Oncology Tumor Board: Cancer Center, 12:15-1:15 p.m. every Friday

Brain Cutting, Tuesday 1:30-2:30 p.m.

Neurology Grand Rounds, Friday 8:00 a.m.-9:00 a.m.

Required reading:

Manual of Basic Neuropathology. Escourolle & Poirier

Other recommended texts:

1.) Ellison and Love Neuropathology Atlas
2.) WHO 2007 Classification of CNS tumors
3.) AFIP Tumors of the Central Nervous System, Fascicle by Burger and Scheithauer
4.) Greenfield's Neuropathology, 8th Edition.
5.) Fuller and Goodman: Manual of Basic Neuropathology
6.) Vogel: Nervous System

Goals and Objectives

COMPETENCY #1: PATIENT CARE IN NEUROPATHOLOGY
Fellows must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. In the context of neuropathology, this means recognizing one's personal responsibility to provide clear, accurate, and timely consultations in the context of a medical team. Fellows are expected to do the following:

- Communicate effectively and demonstrate caring and respectful behaviors when interacting with patients and their families. For example, the fellow must be available to explain the findings to the patient and/or next of kin in a sympathetic and understandable way and must recognize the private nature of all personal health information.

  Assessment Tools:
  Objective structured clinical examination (OSCE): Opportunities to meet with families and access to standardized patients are often limited in a pathology training program. In the absence of these opportunities, one may utilize role-playing in which the resident provides information to a member of the clerical staff about a hypothetical situation.
  Checklist: Observe the resident's behavior for respectful interactions in the following or similar circumstances:

  Provides lay language answers to questions from families
  Observes discretion during awake surgical procedures
  Observes the right of privacy about personal health information in public places (elevator, hall, cafeteria conversations)

- Gather essential and accurate information about their patients. For example, pertinent clinical history, imaging data, and laboratory results must be available

at sign-out.

Assessment Tools:
Checklists: Verify that essential history, imaging studies, and laboratory results are available at sign-out (meets minimal standards).
Portfolio: The fellow collects checklists and reflects on potential significance of missing information on cases (should show improvement over time).
OSCE: Give test slide to fellow and ask what extra information is needed to formulate differential diagnosis (minimal standards).

- Make informed diagnoses that incorporate patient information, pathological/clinical judgment, and up-to-date scientific evidence. For example, formulation of the surgical neuropathologic diagnosis should include knowledge of the diagnostic and therapeutic implications for the individual patient. Formulation of the autopsy neuropathologic diagnosis should include consideration of the clinical history and the implications, if any, of the diagnosis for surviving family members.

  Assessment Tools:
  Chart stimulated recall: Pull 10 reports, including frozen section cases and autopsy cases. Discuss the implications of each diagnosis for management Discuss the significance of differences between frozen section diagnosis and final diagnosis to assure that the resident understands the different circumstances under which each was rendered. This tutors the resident on his/her understanding of the art of rendering a frozen section diagnosis.
  Literature portfolio: As the resident progresses, he/she should show significant improvement in the ability to find and apply key literature with regard to a specific patient. This activity may also be used to document improvement in use of information technology over time.

- Make informed selections of diagnostic tests, counsel the clinician on the appropriateness of test selection, and take responsibility for the cost and ethical implications of the tests ordered.

  Assessment Tools:
  Chart stimulated recall: Pull cases with genetic and/or special tests. Query resident on the utility of the additional tests and the implications of the tests for patient/third party/departmental costs, further treatment, and disease prognosis.
  Checklist: The fellow should bring a written list of recommended special stains to sign-out. After sign-out, compare tests on the list to tests actually ordered and determine the appropriateness of the suggested studies.
  Portfolio: Collect information above over time to determine progress.

- Counsel and educate patients and their families. The fellow should be able to explain the importance of medical tests in an understandable manner and be available for counseling on the results of tests.

  Assessment Tools:

OSCE: Direct interactions with patients and families are often limited in pathology. However, one may utilize role-playing in which the resident provides information to a member of the clerical or technical staff about a hypothetical situation such as a new diagnosis of inherited or possibly inherited disease (such as Duchenne's muscular dystrophy, Alzheimer's disease, hemangioblastoma) or a misdiagnosed brain tumor. The staff member then completes a brief questionnaire on the fellow's effectiveness (enough information given, information understandable, fellow encouraged questions, etc.).

- Use information technology to support patient care decisions and patient education. In neuropathology, this includes searching the current literature and the Web for help in difficult diagnostic situations.

  Assessment Tools:
  Literature portfolio: Difficult and unusual cases frequently require literature searches for complete evaluation. Such cases can be used in a portfolio method to evaluate both information technology skills and improvement in these skills over time. The faculty member should provide a direct assessment of the pertinence of the literature collected and also give feedback as to inclusion of both recent and classic papers. This can be done on a scale of 1 (most pertinent and/or current) to 5 (irrelevant and/or obsolete).
  Record Review: Review appropriateness of citations in 10 neuropathology consults.
  OSCE: Case conferences offer an excellent opportunity for fellows to perform literature searches, prepare reviews, and teach others. Conference evaluations may be kept to fulfill this requirement.

- Perform competently all dissection and sectioning skills necessary to perform diagnostic services. For example, the fellow must be able to remove brains at autopsy, localize pertinent brain regions, cut frozen sections on a cryostat, provide complete and accurate descriptions of gross and microscopic features, and provide appropriate descriptions of special stains and their results.

- **Assessment Tools**:
  OSCE: Give the fellow a test slide and have him/her describe and photograph the diagnostic features. This exercise can also be performed in the context of preparing for a case conference. Document an assessment of the trainee's initial conference preparation (choice of images, inclusion of proper diagnostic fields and special stains, etc.) and not just the final presentation, as the latter may reflect "coaching" by the attending.
  Checklist: Observe the fellow as s/he cuts brains, prepares frozen sections, makes touch preps, etc. Evaluate surgical and autopsy gross descriptions for specimen size, weight, etc. according to organ- and disease-specific standards developed by the hospital or outside agencies.

- Provide health care services aimed at preventing health problems or maintaining health. For example, the fellow may demonstrate the ability to counsel the clinician and the patient on the implications of DNA testing and can provide general health education on preventive neurological health maintenance (decreasing stroke risk, etc.).

  Assessment Tools:
  OSCE or oral examination: Opportunities to teach the patient directly are often limited in pathology training and practice. In the absence of such opportunities, one may utilize role-playing in which the resident provides information to a member of the clinical staff about a hypothetical situation. Alternatively, one may provide clinical scenarios and ask for either a verbal or a short essay answer.
  Checklist: Observe the resident's interactions with the clinicians.

- Work with health care professionals, including those from other disciplines, to provide patient-focused care. In the context of neuropathology this includes ordering appropriate tests, keeping the patient's welfare at the forefront, and recognizing the sanctity of the human body in the context of autopsies, the operating room, and the laboratory. These behaviors incorporate aspects of professionalism, ethical behavior, and interpersonal communication skills that are also tested in the other competencies**.**

- **Assessment Tools:**
  360° evaluation: Determine that the fellow is taking personal responsibility for clinical consultations in the context of a health-care team. An instrument for this purpose is under development by ACGME staff (4/29/02).
  Checklist: A yes-no checklist for fellows on surgical neuropathology rotations might include appropriate tests ordered, cases brought to sign-out in a timely manner, outside slides ordered in a timely fashion and followed up in a timely fashion, surgeon contacted and feedback elicited, reports completed in a timely and complete manner, resident available and prepared for discussions at interdisciplinary conferences.
  Global assessment: Document these behaviors in a qualitative assessment at the end of each

COMPETENCY #2: MEDICAL KNOWLEDGE IN NEUROPATHOLOGY
Fellows must demonstrate knowledge about established and evolving biomedical, clinical and cognate (e.g.. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care in neuropathology. Fellows are expected to do the following:

- **Demonstrate an investigatory and analytical thinking approach to clinical situations.** From time to time in their training neuropathology fellows will be confronted with difficult diagnostic problems that require extensive research of the medical literature and, in some cases, experimental laboratory investigation. The fellow's ability to appropriately investigate the medical and scientific questions raised by these cases will often result in the advancement of medical science through publications in the peer-reviewed literature.

- Know and apply the basic and clinically supportive sciences that are appropriate to the practice of neuropathology. A large part of the fellow's training will be the mastery of the large body of clinical, histologic, and scientific knowledge that constitutes modern neuropathology. Teaching that material and its application to diagnostic neuropathology is the primary mission of a neuropathology fellowship program and is something most training programs have traditionally done very well. Only the required degree of documentation is new.

Assessment tools:
Oral examination: Possibly the most efficient assessment tool for evaluating the competency of a neuropathology fellow in medical knowledge will be the regular use of oral examinations. Conducted informally on a daily basis in the context of case sign-outs and brain cuttings, these conversations provide both the fellow and the mentor with regular feedback about the fellow's progress through the program. These informal examinations should trigger the provision of immediate informal remedial instruction. For this teaching style to be counted as an assessment tool, the mentor must document both the results of the examinations and the subsequent instruction. In many programs it will also be desirable to conduct more formal oral examinations at regular intervals to assess and document the fellow's progress

through the program and his/her ultimate mastery of neuropathology.

Multiple-choice examination: This tool is a traditional way to monitor the fellow's progress and to prepare him for the board examination. Large collections of excellent questions are available at many institutions and are freely circulated over the Internet.
Portfolio: Finally, a portfolio of presentations at scientific meetings and published papers is an excellent way of assessing and documenting the fellow's competency in the use of investigatory and analytical thinking in the analysis of clinical situations.

COMPETENCY #3: PRACTICE-BASED LEARNING AND IMPROVEMENT IN NEUROPATHOLOGY
Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practice. Fellows in neuropathology are expected to do the following:

- Analyze practice experience and perform practice-based improvement activities using a systematic methodology. Tools listed on the ACGME website for this subcompetency include questionnaires for patients and colleagues about practice habits. Some general pathology curricula suggest a management project (quality assurance or continuing quality improvement project). The neuropathology fellow is similarly expected to analyze his/her own practice in a systematic way for needed improvements (administrative, behavioral, or knowledge-based) and then make the improvements in a systematic way.

  Assessment tool:
  Hybrid tool combining record review, chart-stimulated recall, OSCE, and/or portfolio formats: The fellow or the faculty member can select current or standardized cases for the fellow to evaluate using a questionnaire similar to that below. The faculty will then evaluate the answers and provide feedback to the fellow. These forms can also be incorporated into the fellow's portfolio for further reflection and assessment and for documenting improvement over time.

  Sample Practice-Based Learning Case Work-Up Questionnaire:
  1. What are the critical issues in this case?
  2. Do you have enough information to make a final diagnosis?
  3. What information do the clinicians want and need with respect to this case?
  4. What do you need to be able to complete this case?
  5. How do you go about obtaining what you need and finalizing the case?
- Locate, appraise and assimilate evidence from scientific studies related to patient material in neuropathology cases. This includes knowing how to utilize hospital information systems (patient records, pathology records, radiology records), how to do a literature search, how to evaluate the validity and reliability of data, how to critically review a scientific study, and how and when to incorporate scientific data into everyday practice.

- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
- Use information technology to manage information, assess online medical information and support their own educations.

  Assessment tools for the above three subcompetencies:
  Hybrid tool combining record review, chart-stimulated recall, OSCE, checklist, and/or portfolio formats: Identify an academic activity (departmental conference, classroom lecture, journal club, or other formal or informal presentation) where the fellow will have had to review the literature and make a presentation. Complete an anchored rating form documenting that the fellow performed an appropriate literature search, is able to critically analyze the studies, accurately synthesize new information from the literature, and appropriately judge the applicability of this information to neuropathology practice. For convenience, appropriate questions may simply be added to the written case-based hybrid tool described above. The following items could be incorporated:

  Additional Questions for Practice-Based Learning Case Work-Up Questionnaire
  1. The learner performed an appropriate literature search for this activity.
  2. The learner is able to critically analyze the studies.
  3. The learner is able to synthesize new information from the literature.
  4. The learner is able to appropriately judge the applicability of this information.

Portfolio: The fellow keeps the above rating forms for reflection and documentation of improvement over time.

Facilitate the learning of students and other healthcare professionals. Fellows should participate in divisional/departmental teaching activities, actively involve and guide rotating students and housestaff in service activities, and present appropriate information to clinicians and other healthcare professionals regarding optimal patient management.

- **Assessment tool:**
  Anchored 360° global rating: A sample form for evaluating and assessing competence in facilitating learning is attached in the Appendix. Such a form is recommended as a routine exit survey for rotators. Pertinent questions should also be incorporated into the faculty's monthly evaluation of each fellow.

COMPETENCY #4: INTERPERSONAL AND COMMUNICATION SKILLS IN NEUROPATHOLOGY
Neuropathology fellows must be able to demonstrate excellent interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, colleagues, technicians, secretaries, other residents, and students. Fellows are expected to:

- Be able to explain diagnoses, procedures, results to be expected, costs associated with neuropathologic studies of autopsy and neurosurgical specimens to another person in a manner that will create ethically sound relationships with patients and their families.
- Promote a constructive working relationship with a colleague, resident/student, or subordinate during the study of a specific case and ensure that results are obtained in a timely and cost effective manner.

Assessment tools:
Portfolio: The fellow's portfolio should document the following:

Formal presentations of clinical cases at pathology and interdisciplinary conferences
Scientific and clinical papers
Scientific and clinical presentations at professional meetings
Communication of findings in clinical cases to clinicians, family, and others (including samples of reports, letters, and notes about telephone calls)
Communication with other members of the pathology laboratory team
Analysis of the quality of the communication (attendings, administration, legal affairs, and resident)
Modification of the communication as indicated

360-degree evaluation instrument: Clinicians, clerical and technical personnel, and attendings rate the fellow's interpersonal and communication skills. An anchored checklist would be an appropriate format. Such a checklist would include a list of desired behaviors or skills that are evaluated on a 5-point scale with verbal "anchors" describing the meaning of the scale. For example:

Skill: Able to explain diagnosis and its implications for therapy
Anchors: Rate from "Unable to provide understandable information" (1) to "Always provides clear and concise information" (5)

Skill: Able to write diagnoses and reports in Standard English
Anchors: Rate from "Unable to write intelligible reports" (1) to "Writes well organized, grammatically correct reports" (5)

Skill: Able to work with technicians to solve problems
Anchors: Rate from "Acts in ways that inhibit problem-solving in laboratory" (1) to "Always works effectively as a member of the laboratory team in problem-solving" (5)

COMPETENCY #5: PROFESSIONALISM IN NEUROPATHOLOGY
Fellows must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diverse populations. It is recognized that neuropathologists interact only occasionally with patients and their families. More frequent interactions include those with colleagues in pathology, colleagues in

neurology and neurosurgery, laboratory technicians, secretaries, other residents and students. Fellows are expected to:

- Carry out their duties in an altruistic, ethical, respectful and timely manner. This includes demonstrating a commitment to ethical principles pertaining to confidentiality of patient information, informed consent and business practices
- Show sensitivity when interacting with those who are different from them in educational level, cultural background, age, gender and disability status.
- Adopt practices that promote their own personal well being, both physical and mental, so that they can better perform their professional duties.

Assessment tools:
OSCE: Neuropathology fellows will be asked to respond to open-ended queries based on a case scenario with professional/ethical choices. Multiple competencies may be tested from a single scenario. Scenarios may be presented in their entirety or adapted for progressive disclosure. Case scenarios may be formulated for oral, written, or computer-based testing.

Example #1: You are the neuropathology autopsy resident at brain cutting. You read the consent for the autopsy and read that all organs were to be returned to the body after the autopsy. The brain is now before you on the table. What do you tell the family?

Example #2: A brain tumor support group asks you to speak at their next meeting. They request you to discuss the grading of astrocytomas to their lay audience. Outline your talk. A month later you are asked to participate in a CPC of a patient with an anaplastic astrocytoma. One section of your discussion will concern the grading systems of astrocytomas. Please outline your discussion.

Example #3 with progressive disclosure:
You are a pathology fellow assigned to surgical neuropathology. A therapeutic abortion specimen (approximately 18 weeks gestational age) is received. The specimen is referred to neuropathology due to a possible meningomyelocele. The attending is meeting with the dean but is available for urgent consultation.

The OB chief resident calls. Tissue from that fetus is immediately needed for Professor X's stem cell project. He requests that tissue for this fetus be sent to Professor X's lab. What will you do?

The district attorney calls. The pregnancy allegedly was the result of a rape. He wants immediate information about the specimen. What do you tell him?

The family calls 2 weeks later. Although they had spoken with their OB attending, they wanted to ask a neuropathologist about meningomyelocele. Should you speak with them? They found a story about fetal surgery for meningomyelocele and they weren't told about such surgery.

Portfolio: The fellow's portfolio should document the following:

Events where professional behavior was observable
Analysis of the quality of the behavior (attendings, administration, legal affairs, and resident)
Modification of the behavior as indicated

360-Degree Evaluation Instrument: The fellow's professionalism is evaluated by technicians, clerical staff, attendings, administration, and legal affair (if indicated). An anchored checklist would be an appropriate format. For example:
Attitude or behavior: Respect for others
Anchors: "Treats others with disdain and disrespect" (1) to "Always highly respectful" (2)

Attitude or behavior: Altruism
Anchors: "Never inconveniences self for others" (1) to "Invariably helpful; delays personal wants to finish professional work" (5)

Attitude or behavior: Able to admit and correct mistakes
Anchors: "Never admits to making mistakes" (1) to "Actively moves to admit and correct mistakes" (5)

COMPETENCY #6: SYSTEMS-BASED PRACTICE IN NEUROPATHOLOGY
Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care. In neuropathology, the fellow must be able to provide effective guidance to the clinicians directly responsible for making treatment decisions and calling on system resources. The fellow must be aware of the consequences to the patient of the diagnosis and play an active role in assuring that the appropriate care is provided. Fellows are expected to:

- Understand how their diagnostic opinions and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice. For example, neuropathology fellows need to be aware of the specific deadlines faced by the clinical services that rely on their diagnostic information and to know the consequences of their turnaround times. At the same time fellows need to know the costs of various tests both in terms of financial cost to the institution and in terms of the effort required by the technical and secretarial staff.
- Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources. Neuropathology fellows need to understand the financial realities faced by health care system administrators and be sympathetic to decisions that result in what they may perceive as inadequate support of their services.
- Practice cost-effective health care and resource allocation that does not compromise quality of care. Neuropathology fellows must demonstrate

knowledge of the availability of outside resources (such as genetic testing labs, outside opinions, etc) and show good judgment in choosing when to use such resources.

- Advocate for quality patient care and assist the clinicians in dealing with system complexities. Neuropathology fellows should be aware of the appropriate clinical protocols for treating the patients they diagnose, especially when there are diagnostic uncertainties in a particular case, and be prepared to provide guidance to other health care professionals. For example, in a glioma where grading is difficult, the fellow should be able to provide some guidance as to how a specific patient should be treated. The fellow should understand the importance of using only CLIA-approved laboratories for diagnostic testing and be able to refer specimens to appropriately certified reference laboratories for specialized testing (e.g., genetic or other "boutique" testing).
- Know how to partner with health care managers and health care providers to assess, coordinate and improve health care and know how these activities affect system performance. Neuropathology fellows should know how to provide quality assurance (QA) on resource management in a pathology laboratory and be able to assure that their laboratory is conducting appropriate but not excessive special studies. Fellows should know how to prepare a laboratory for inspection by the College of American Pathologists (CAP), the Joint Commission on Accreditation of Health Care Organizations (JCAHO), or a similar accrediting agency.

Assessment tools:

360° evaluation instrument: The most effective assessment tool for evaluating the competency of a neuropathology fellow in Systems Based Practice may be a 360? global rating. This need not be a lengthy questionnaire requiring substantial institution investment in staff time and effort. As long as the results of the assessment are rigorously documented, a simple questionnaire or even a telephone interview could suffice. For example, in one institution the residents are evaluated at the end of the monthly anatomic pathology (AP) section meeting by the attending staff with input from the senior technologist, the physicians' assistants, and the senior transcriptionist. Additional input in a neuropathology setting could be obtained from neurosurgeons and neurologists. In such an evaluation, open-ended questions like "Tell me about your interactions with Dr. X this month" may be the most effective way of eliciting the desired information.

OSCE: The objective structured clinical examination is usually modified for a neuropathology setting by replacing the patient encounters with a description of a clinical scenario and an examination of pathologic material (slides or gross tissue). Questions pertaining to Systems-Based Practice may be included along with more "traditional" questions on diagnosis.

Multiple-choice examination: Written multiple-choice questions could be another effective tool for evaluating some aspects of competency in Systems Base Practice. For example a fellow should know the amount billed for a test like an immunohistochemical stain and how little reimbursement the institution actually receives from Medicare or a private insurance company. Questions about the financial health of the fellow's own institution and department are also

appropriate (are they operating in the black this year or not?), and the fellow should be aware of the major contractual arrangements of the institution with insurance companies, HMO's, and the like.

Clinician survey: Since the primary interaction of a neuropathologist is with the referring neurosurgeon or neurologist rather than the patient, a survey of referring neurosurgeons or neurologists may be used in lieu of a patient survey. This tool could be very effective in the assessment of competency in neuropathology Systems Base Practice. For example, the referring physician might be asked, "Does Dr X often act as an advocate for the patient (play an active role in insuring that the patient receives appropriate treatment or is enrolled on an appropriate protocol)".

Record review and chart stimulated recall: These are less effective ways of assessing competency of a fellow's own Systems Based Practice because in most training programs the attending neuropathologist makes the decisions reflected in the record or chart. However, they may be used as "springboards" for discussions with the fellow.

SURGICAL PATHOLOGY FELLOWSHIP

Director: Gerald Berry, MD

General Philosophy

The fellowship in surgical pathology is designed to offer advanced, focused and intensive training in diagnostic surgical pathology. Specific rotations include: “Hot Seat”, Frozen Section, sign out of consultation material (including immunohistochemistry and other special diagnostic techniques), surgical pathology sign out (“junior attend”) of residents and elective time. Elective time may be designed to pursue additional subspecialty training in areas of gynecologic, soft tissue, breast, gastrointestinal, renal, cardiopulmonary, transplantation, molecular pathology, hematopathology, neuropathology, dermatopathology, cytopathology and/or research.

Specific Responsibilities

The specific responsibilities associated with each rotation will be discussed during the Surgical Pathology fellowship orientation. Objectives and goals related to Cytopathology, Dermatopathology, and Hematopathology can be found in their respective sections of this manual.

Surgical pathology fellows have attending back-up at all times including on-call. Increasing levels of responsibility are recognized through the year. Most fellows are PGY3 and above with at least 2 years of anatomic pathology experience.

Fellows participate in departmental and interdepartmental conferences such as the ENT and Pediatric Tumor Boards, as well as medical student and resident teaching. The laboratory accessions over 45,000 specimens (14,000 of them consultation cases) annually and departmental resources and support for clinicopathologic and translational research projects are available.

On-Call Fellow

The Chief Resident(s) formulate the on-call schedule. Refer to the on-call schedule for specific coverage dates. Coverage is provided from 6:00PM to 7:30AM on weekdays and all day on Saturdays, Sundays and holidays. Responsibilities include preparation, interpretation and reporting of stat GMS specimens, preparation and assessment of FNA samples from Interventional Radiology/ Ultrasound for tissue adequacy, and frozen section coverage. The on-call fellow should contact the on-call faculty member by pager or home number when notified of a frozen section request.

Hot Seat Fellow

The Hot Seat Fellow issues preliminary diagnosis on all surgical pathology cases. In general the initial set of slides arrive at the Hotseat by 9:00 AM. The fellow is responsible to organizing the slides according to the different services (Hemepath, Dermpath, Neuropath, Surgical Path). The cases assigned to the Surgical Pathology

Service are given a preliminary diagnosis that is recorded in the electronic "Hotseat book". In addition, the fellow is responsible for ordering both the necessary preliminary diagnostic (e.g. the initial immune panel on a poorly-differentiated neoplasm) and protocol-based stains, e.g. ER and PR on all ductal carcinoma in situ biopsy specimens and the entire breast panel (ER/PR/Ki67/HER2NEU FISH) on all invasive breast carcinoma biopsy specimens. NOTE: The breast panel should be ordered on slides that contain sufficient in situ and invasive carcinoma so that both can be scored, when applicable. All DCIS cases must include ER/PR results in order to be signed out, so it is important that these tests be ordered on Day 2. The breast panel is signed out as an addendum.

The Hot Seat Fellow is responsible for distributing cases to the residents for sign-out after issuing a preliminary diagnosis. A case 'cap' system has been established for first and second year residents and will be noted at the beginning of each monthly rotation in consultation with the faculty. At the initial rotation for the first year resident (or post-sophomore fellow), the cap is adjusted down and gradually increased to over the ensuing rotation cycle. This will require judgment on the part of the Hot Seat in consultation with faculty and the Associate Director of Residency Training (Anatomic Pathology). Overflow cases are signed out by the designated faculty assigned to overflow for that particular subspecialty. Overflow cases should be selected by the Hot Seat so as not to diminish resident education. For example, although 'big' cases can go into overflow (especially early in the training year and during particularly high volume periods), no case grossed in by a trainee should go to overflow. Similarly, bone cases that require radiological correlation do not belong in overflow.

Frozen Section Fellow

The Frozen Section Fellow is responsible for frozen section coverage from 7:30AM to 2:00PM Monday through Friday. It is expected that the fellow, in conjunction with the assigned resident in surgical pathology and the Pathologists' Assistant, prepare and interpret all frozen sections and touch preparations following discussion(s) with the submitting surgeon. How this occurs is dependent on the preferences and comfort level of both the fellow and assigned faculty member; however, that faculty member will be available for assistance and must review all frozen sections diagnoses as soon as practically possible either simultaneously with the fellow or following the fellow's preliminary report to the surgeon. The assigned faculty will take over frozen section coverage from the fellow for the 2:00PM to 6:00PM period.

Resident Signout ("Junior Attending") Fellow

During this rotation, the Surgical Pathology Fellow is responsible for resident sign-out and frozen section coverage from 7:30-9:00 AM. The fellow will be responsible for sign-out of either one resident or a specific subspecialty of their choice each day. This will include ordering of additional stains, determination of cases to be shown to additional faculty, instruction provided to the resident concerning the gross, microscopic, and relevant diagnostic and differential diagnostic issues, as well as preparation of the final report. Once the final report is completed and corrected by the fellow, the case is to be forwarded to the assigned faculty with the slides and formally signed out by that faculty member.

Consult Fellow(s)
The Consult Fellow(s) are responsible for preview and work-up of all consult cases on the Kempson Consult Service. This includes showing individual cases to the relevant faculty, preparing a consult report with relevant references and conveying these interpretations to the consulting physicians. In almost all cases, the fellow will be required to telephone the submitting physicians with preliminary diagnoses and requests for more clinical or pathologic data, additional slides/blocks and/or additional reports. At times, this may appear somewhat daunting, but the ability to discuss difficult cases with colleagues who may on occasion have differing opinions and develop a cogent report that addresses these differences is an important aspect of the fellow's training experience. Once the report is completed and corrected by the fellow, the case is forwarded to the assigned faculty and formally signed out by that faculty member.

The Surgical Pathology Consult Fellows are responsible for selecting cases for the Kempson Consult Conference (held every Monday at 8am with the exception of the first Monday of the month) and the surgical unknowns conference (held every Monday at noon with the exception of Mondays on which journal club takes place). The latter conference is conducted by the fellow(s) and is meant to provide exposure (and teaching) of interesting consult cases to the first and second year residents.

Methods of assessment/evaluation:
Surg Path fellows are assessed by the surgical pathology faculty on-service during each rotation, using the Stanford Pathology Department's evaluation tool located at the MedHub website. Direct feedback is provided following the Consult, Hotseat, Frozen Section and "Junior Attending" rotations by the senior faculty. The fellows meet biannually with the Surg Path Fellowship Director.

Policies and procedures:
Stanford Hospital and Clinics House Staff Policies and Procedures govern the policies and procedures for the Stanford Hospital and Clinics residents and fellows during rotations.

Fellow personal time off guidelines:
See policy for all fellows in the Department of Pathology (above).

BLOOD BANK/TRANSFUSION MEDICINE FELLOWSHIP

Program Director: Lawrence Tim Goodnough, MD
Director of Education, Transfusion Service: Magali Fontaine, MD, PhD
Director of Education, Blood Center: Chris Gonzalez, MD

Goals

This one year fellowship is intended to provide trainees with additional subspecialty competence in the practice of Blood Banking and Transfusion Medicine. At the end of the year trainees are expected to have acquired the foundation and expertise for an academic career in Transfusion Medicine, and to independently run a Transfusion Medicine Service and/or a Blood Center in an academic medical center. This expertise includes such domains as immunohematology, blood collection and processing, stem cell collection and cellular therapies, consultative transfusion medicine, therapeutic apheresis, supervision and training of laboratory personnel, laboratory management, and quality assurance.

Objectives

The Transfusion Medicine Fellow will be an integral part of the Transfusion Service/Blood Center operations. He /she will have substantial responsibilities for patient care, and usually serve as the primary link between the clinical services and the Blood center/Transfusion Service. The following objectives (Appendix I) and core competencies (Appendix II) for the rotation are listed as follows:

Patient care

• To develop a thorough knowledge of blood collection, preparation, storage, and shipment
• To understand indications for transfusion and develop proficiency in selection of appropriate blood products for transfusion
• To understand pre-transfusion testing
• To attain proficiency in managing transfusion-related complications

Medical knowledge

• To understand the immunologic and genetic principles that underlie transfusion medicine
• To understand the role of transfusion medicine and cellular therapy in managing specific acute and chronic diseases
• To understand complications of blood transfusion, including infections and iron overload and other non-infectious side effects

Interpersonal and Communications Skills

• To teach medical technology staff thorough presentation of continuing education lectures
• To develop effective writing skills by writing a brief case report of an unusual case appearing during the rotation

• To serve as a liaison between blood bank staff and clinicians
• To communicate effectively in the role of first call consultant to clinicians with questions or problems
• To serve as a helpful resource for technologists and clinicians regarding blood banking/transfusion medicine issues
• To assist in teaching Core Lab rotation residents principles and practices of the Transfusion Service

Professionalism
• To complete interpretive reports in an accurate and timely fashion
• To interact in a professional, helpful and respectful manner with clinicians, other house staff, and technical and administrative staff
• To display sensitivity to ethical, cultural, and religious issues relating to blood transfusion

Systems-based Practice
• To develop an understanding of quality assurance in blood banking, transfusion medicine, and cellular therapy.
• To understand the role of the Stanford University Medical Blood Center in relationship to the Stanford Medical Center transfusion service
• To understand CAP and AABB accreditation requirements
• To provide consultation in cost-effective medical practice regarding indications for transfusion and selection of appropriate products
• To become familiar with the regulatory agencies and rules governing collection, processing and distribution of blood products
• To be aware of emerging pathogens and their potential impact on national blood supply
• To understand inventory management of blood products, at the local and national level

Practice-based Learning
• To use case-based learning as a tool for additional insight into the basis of disease
• To locate and assimilate pertinent evidence from scientific studies
• To demonstrate effective problem solving skills in transfusion medicine, using a wide variety of information resources

During the first six-months (two months on TS, two months on SBC, and return to each for an additional third month), the fellow will learn the basic immunologic and genetic principles of transfusion medicine, and will have hands-on experience with the bench work (see Appendix III). The fellow will become familiar with blood donor questionnaire donor deferral, blood collection, preparation, storage, and shipment. The fellow will become familiar with typical consultative questions from clinical staff, including special needs, non-standard protocols, massive transfusion guidelines, ECMO protocols, etc.

During the seventh, eighth, and ninth month, the fellow will have required rotations. Therapeutic Apheresis Unit, the HLA laboratory, the coagulation laboratory and the Stem Cell Processing Laboratory. During the last three months, the fellow will function with increasing independence in the evaluation of transfusion reactions and in consultative responsibilities with clinical staff, as deemed appropriate by the service director. He/She will take first calls during the first six months and progressively will take second calls being covered by the attending, who will be third call. During the last and fourth quarter, the fellow will be expected to lead rounds daily at SHC Transfusion Service and also at the Blood Center, when appropriate.
The Transfusion Medicine Fellow will be expected to attend all Clinical Pathology conferences related to Transfusion Medicine by the Transfusion Medicine / Blood Center Medical Directors and Staff. He/she will be expected to teach the residents and technical staff by giving a 45 minute didactic at least once a quarter. He/she will also be expected to actively participate in the Transfusion Medicine and Blood Center Management and quality meetings and to contribute substantially to a scholarly project which results in publication.

Responsibilities:
1) The fellow will lead the weekly conference (Mondays at 1 PM) during which weekly on-call transfusion /blood center issues will be presented.

2) The fellow will supervise residents and students on rounds and during calls (taking second call with the supervision of an attending as third call) as soon as the second or third quarter of the fellowship.

3) The fellow will be in charge of the house staff training in transfusion medicine. This will consist in a one hour lecture to residents and fellows in surgery, medicine, pediatrics, and anesthesia.

4) The fellow will develop one project to work on during his/her elective time for a potential presentation at a national meeting and/or a publication.

Evaluation
Monthly evaluations are generated through Medhub that includes all of the core competencies. The completed evaluation is electronically forwarded to the Trainee for review. All potentially negative evaluations must be discussed with the Trainee by the middle of the month, to allow the Trainee to improve before the formal evaluation is completed. All negative final evaluations must be discussed directly with the Trainee and a plan for improvement addressed. Additionally, the Trainee will complete quizzes throughout the year. These quizzes should serve as an assessment tool of the objectives to be met. A list of objectives will be handed out at the beginning of each rotation in the Transfusion Service, Blood center, HLA laboratory, Apheresis and stem cell lab, and coagulation lab (see appendix). The Trainee will meet quarterly with the Directors of the Educational Program, Dr. Fontaine and Dr. Gonzalez, review the list of objectives that have been completed, and discuss their progress in the program.

During the third, fourth and fifth month, the fellow will have required rotations. Therapeutic Apheresis Unit, the HLA laboratory, the coagulation laboratory and the Stem Cell Processing Laboratory. During the last three months, the fellow will function with increasing independence in the evaluation of transfusion reactions and in consultative responsibilities with clinical staff, as deemed appropriate by the service director. He/She will take first calls during the first six months and progressively will take second calls being covered by the attending, who will be third call.
The Transfusion Medicine Fellow will be expected to attend all Clinical Pathology conferences related to Transfusion Medicine by the Transfusion Medicine / Blood Center Staff. He/she will be expected to teach the residents and technical staff by giving a 45 minute didactic at least once a quarter. He/she will also be expected to actively participate in the Transfusion Medicine and Blood Center Management and quality meetings and to contribute substantially to a scholarly project which results in publication.

Responsibilities:
1) The fellow will lead the weekly conference (Mondays at 1 PM) during which weekly on-call transfusion /blood center issues will be presented.

2) The fellow will supervise residents and students on rounds and during calls (taking second call with the supervision of an attending as third call) as soon as the second or third quarter of the fellowship.

3) The fellow will be in charge of the house staff training in transfusion medicine. This will consist in a one hour lecture to residents and fellows in surgery, medicine, pediatrics, and anesthesia.

4) The fellow will develop one project to work on during his/her elective time for a potential presentation at a national meeting and/or a publication.

Evaluation
Monthly evaluations are generated through Medhub that include all of the core competencies. The completed evaluation is electronically forwarded to the Trainee for review. All potentially negative evaluations must be discussed with the Trainee by the middle of the month, to allow the Trainee to improve before the formal evaluation is completed. All negative final evaluations must be discussed directly with the Trainee and a plan for improvement addressed. Additionally, the Trainee will complete a series of quizzes during the first month of the rotation; this quiz will be repeated at the end of the curriculum (see appendix). The Trainee will meet quarterly with the Director of the Educational Program, Dr. Fontaine, review the list of objectives that have been completed, and discuss their progress in the program.

POST SOPHOMORE YEAR FELLOWSHIP

Co-Directors: John Higgins, MD and Andrew Connolly, MD, PhD

Educational Goals

The goal of this one year program is to offer medical students between their pre-clinical and clinical years a broad exposure to the practice of pathology in an academic medical center. The year is comprised of six months of clinical work and six months of research. The research months are primarily dedicated to a single research project, which for Stanford medical students must represent an approved Medical Scholars project. To enhance the pathology training experience, post-sophomore fellows (PSF) are strongly encouraged but not required to work with a faculty member in the Pathology Department.

The clinical service months consist of four months of Surgical Pathology, one month of Autopsy, and one month of elective time. The elective month must be directed toward clinical activities in pathology, and may include rotations in subspecialty areas of Anatomic or Clinical Pathology. The research and clinical service months consist of rotating one-month blocks. In general, the responsibilities of the PSF are similar to those of the pathology residents, as outlined in this handbook, but on a smaller scale. It is not the intention of this program to have the PSF fill gaps in the resident schedule, but to allow them to carry a manageable workload for optimal educational benefit. However, their experience will be greatly enhanced by being an integral component of the workflow. They are required to assume full responsibility for the work-up and completion of their cases in a timely manner.

Expectations on Surgical Pathology

The PSF on Surgical Pathology rotate in the same six-day cycle as the residents: Sign-out (S), gross room (G), cytology/preview (CY), sign-out (S), gross room/frozen sections (G/FS), cytology fine needle aspiration/preview (CY/FNA). This is detailed on pages 68 – 79 of this handbook and the PSF should become familiar with the system.

The PSF will initially be assigned no more than 10 cases in the Gross Room. These are to be cut-in under the guidance of the Pathology Assistants (PA). Based on the assessment of the faculty members with whom the PSF is signing out, the number of cases may be increased in increments of 5 for a minimum of 20 cases by the end of the first month. The number of cases assigned to the PSF will be determined by educational goals and not based on the amount of work or the number of residents available to cover service work. However, the ‘cap’ is set at 30 total cases per sign-out.

Prior to sign-out the PSF must:

1. Organize their slides and paperwork by case accession number.
2. Preview all cases and write the potential diagnoses on the cover page.

3. Read about the topics pertaining to the cases.
4. Pull all relevant prior specimens from the Surgical Pathology slide file.
5. With experience, be able to pre-dictate the diagnosis and comment prior to sign-out.

Following sign-out the PSF must:

1. Check all cases with the Hot Seat fellow.
2. Show cases with disputed diagnoses and cases that require consultation to other faculty.
3. Dictate the diagnosis and comment sections of the reports, being careful to comment on special stains, address clinical concerns, address issues raised in the gross description, include synoptic reports for neoplastic cases, include TNM and correlate frozen section diagnoses as appropriate. **Note: It is essential that the cases be dictated rather than typed. This is an important skill and must be learned by the PSFs.**
4. Proofread and correct the entire report once the dictation is transcribed.
5. Transfer the electronic version of the report to the sign-out faculty's folder and deliver the paperwork to him/her for sign-out.
6. Bring additional levels and special stains including IPOX to the faculty member as they become available.
7. Be mindful of the importance of timely turnaround of cases.

The PSF responsibilities on the Cytopathology day are the same as those of the first year residents on the Surgical Pathology rotation. These are detailed on pages 44 – 47 of this handbook.

The PSF will not be expected to take weekend call.

Expectations on Autopsy Pathology

The PSF rotates on Stanford Autopsy Pathology with responsibilities similar to those of the residents as detailed on pages 30 – 41 of this handbook. The PSF should read and be familiar with these pages prior to beginning their Autopsy rotations. A sense of "ownership" of one's cases is particularly encouraged, but this may be somewhat constrained by the number of cases available and cases may be shared with the resident rotating on the Autopsy service.

The Autopsy Service is an excellent opportunity to learn more about general medicine and pathophysiology. By the end of the rotation on the Autopsy Service, the PSF will be expected to analyze the autopsy findings and generate a cogent differential diagnosis, just as one would be expected to do on a clinical clerkship.

Conferences

The PSF must attend all Tuesday – Friday 8:00 AM and noon Surgical Pathology conferences and preview unknown slides prior to those conferences when applicable.

They are expected to attend daily Gross Room conferences while rotating on Surgical Pathology.

The PSF is expected to present cases at the “End-of-the-Month” case conference during each of their four months on Surgical Pathology. In addition, they are expected to give one “Current Concepts” talk on their research or a topic of their choice.

The PSF must attend the monthly QA/QI meetings in L201.

Supervision and evaluation

- **Mentors**

The PSF will initially be assigned a faculty mentor, either Andy Connolly, MD PhD or John Higgins, MD. However, the PSF may choose a different mentor at any time. The mentor should be used as a resource for problems and questions about the training program. The mentor will also closely follow the PSF progress through the fellowship. The PSF should meet with their mentor at least once every six months.

- **Individual Evaluations by Faculty**

The PSF will receive a formal evaluation for each clinical month. These will be submitted to the Program Coordinator. Areas evaluated are identical to those of the residents and are described in detail on page 15 – 16 of this handbook.

- **Semi-Annual Evaluation by Mentor**

Every six months the PSF will meet with their mentors. Issues discussed at this meeting are recorded by the mentors, signed by both the mentor and the PSF, and entered into the PSF file.

- **Annual meeting with the Chair**

At the end of the year the PSF will meet with the Chair of the Department of Pathology to review the PSF performance and to discuss academic issues and plans.

- **Evaluations of Training Program & Faculty**

Every 6 months the PSF will be asked for written evaluations of their rotations and the faculty members. These evaluations are anonymous and are collated by the Program Coordinator.

GENERAL TELEPHONE NUMBERS

The following phone number extensions should be dialed when calling from a Stanford phone. If calling from a non-Stanford phone, call 650-72_-____ unless otherwise stated.

Accessioning (Surg Path)	5-5190
Autopsy	
Resident's Room 1	5-5891
Resident's Room 2	3-7154
Autopsy Suite (Morgue)	3-7675
Bone Marrow Reading Room	8-6274/3-8847
California Café	325-2233
Carolyn Fat (Chemistry Lab)	4-3342
Clinical Labs (SUH main)	3-6111
Cary Schrandt (LIS Support)	5-5619
Cytogenetics	5-6396
Cytogenetics Lab Supervisor	5-7476
Education Coordinator	3-9711
Flow Cytometry	4-2250
Fluids (e.g., CSF)	4-2252
Microbiology	3-6671
Molecular	3-6574
Special Heme (marrows)	4-2249
Virology	3-5706
Clinical Labs (LPCH main)	7-8614
Microbiology	7-8618
Cytology	3-7553
David Myrick (Heme Section Chief)	3-6122
Dictation Access	(877) 729-9791
EM Lab	5-5196
Frozen Section Room	5-7145
Gloria Brown (Chemistry Lab)	5-5634
Gloria Magpantay (Derm)	5-5192/3-6736
Graduate Medical Education	3-5948 (Ann Dohn)
Gross Room	5-5191
Histology	5-5188
Information (SUH)	3-4000
Immunology/Endocrinology	6-2426
Immunoperoxidase Lab	3-6075
Immunoperoxidase Fellow	4-7800
Irma Pereira (Heme specialist)	4-2245
John Williams (Heme Lab)	4-2246
Karen Backer (RBC Lab)	3-5235
Lane Medical Library	3-6831
Linda Thomason (Heme supervisor)	7-8630
Mary Arroyo (Virology supervisor)	5-4146

Melissa Parry (Virology supervisor)	4-7092
Mercy Dones (Heme supervisor)	4-3594
Nancy Brooks (Dr. Mohler's nurse)	15556 pager
Neuropathology (main)	3-6041
Martin Estrada (Histotech)	3-6042
Resident's Room	5-4903
Operating Room Scheduling	3-6454
Operating Room Control Desk	3-7251
Individual Main ORs	4-70XX
Paging Access (in hospital)	222
Paging Access (outside hospital)	723-8222
Page Operator (in hospital)	288
Page Operator (outside hospital)	723-6661
Photo Lab	3-7521
Radiology File Room (SUH)	3-6717
Radiology File Room (LPCH)	7-8578
Radiology Reading Room	3-6737
Dr. Chris Beaulieu	#13168
Dr. Kate Stevens	#23202
Rosie Nolley (Urology)	8-4639
Residency Coordinator	5-8383 (Rachael Jacinto)
Security (hospital)/Cold room access	3-7222
Slide Room	8-7527
Surgical Pathology (reception)	3-7211
Transfusion Service Ed Coordinator	5-4493/3-6445
VA Hospital (main)	493-5000
Resident's Room (Autopsy)	6-5092
Resident's Room (Surg path)	6-6239
Autopsy Suite (Morgue)	6-5079
FAX	725-7023
Will Flores (Coagulation)	5-9866

ON CALL NUMBERS

Surgical Pathology Fellow (eve, S, S)	12642
Histotech Frozen Section Pager (days)	16032
FNA Pager	13378
Histotechnologist (on call, after hours)	17362
Autopsy Attending	13216
Weekday Resident Frozen Pager	17353
Clinical Pathology On Call Pager	12005

ADDRESSES

Laboratory of Surgical Pathology
Room H2110
300 Pasteur Drive
Stanford, CA 94305-5243
(650) 723-7211 Telephone
(650) 725-7409 FAX

Department of Pathology
Room L235
300 Pasteur Drive
Stanford, CA 94305-5324
(650) 723-5252 Telephone
(650) 725-6902 FAX

Department of Pathology
Veterans Affairs Palo Alto Health Care System
3801 Miranda Avenue, Building 101
Palo Alto, CA 94304
(650) 493-5000 Main Telephone
(650) 725-7023 Pathology FAX

SHC Clinical Laboratory
3375 Hillview Avenue
Palo Alto, CA 94304

School of Medicine
Blood Center
3373 Hillview Avenue
Palo Alto, CA 94304

FREQUENTLY ASKED QUESTIONS

Who do I call if I'm late/sick?

The most important person to call is your attending. If you can't reach that person, try contacting a chief resident or one of the senior residents or fellows for your rotation. It is also a good idea to contact the administrative support person(s) for your rotation (i.e., receptionists in surgical pathology, neuropathology, etc.).

What do I need to do before going on vacation?

Please see the vacation guidelines in this handbook. Coverage should be arranged (contact the chief residents for assistance). Leave detailed notes for or have a discussion with the covering resident on any pending cases. Alert your attending(s) and any other residents on your rotation well in advance, including the appropriate coverage. It is helpful for the receptionists and the accessioning staff to know when you will be gone and who will be covering so that they can appropriately direct inquiries.

Where can I get office supplies (pens, pencils, dotting pens, post-its, etc.)?

Many office supplies (ballpoint pens, staples, paper clips) are stored in the cabinets above the water cooler in Surgical Pathology, Room H2110. If you can't finding something or have any questions, one of the receptionists can usually point you in the right direction.

Where are pager batteries?

Pager batteries can be obtained in Surgical Pathology. Replacement batteries are also available from Pager Administration (first floor, across from the Gift Shop) or from Security after hours (basement, approximately below the ATMs near the Emergency Room).

What is the range on my pager?

According to Pager Administration, the range of standard housestaff pagers is 50 miles in **ideal** conditions. In practice, you may find that the range is closer to 15-20 miles. You may call the Page Operator and forward any pages to a cell phone if you will be out of range.

Who do I see about dictation problems?

Please contact the Service Desk (723-3333) for problems with dictation, your user ID, reports without gross dictations, etc.

What happens if I have an accident in the gross room?

If you have a chemical spill (including formalin), alert the gross room supervisor and one of the gross room employees. There are spill pillows and neutralizing agents available in the cabinets opposite the accessioning area.

If you get hurt (needle stick/scalpel wound), alert the gross room supervisor or one of the pathologist's assistants. You should be seen in Employee Health (3-5922) or the Emergency Room. Note if it was a clean or dirty blade/needle and note the name of the patient(s) from whom the specimen(s) you were working with came. If your injury is “dirty”, you and the patient will undergo testing for blood-borne diseases and you may be provided with the opportunity to initiate anti-infective therapy, if available. Injuries at the VA should be seen at the VA Emergency Room; testing and treatment may start in the VA ER. Follow-up will be with Stanford Employee Health. For more information, please refer to the Hospital’s Blood/Body Fluid Exposure policy. Finally, your injury should be documented within the department for Quality Assurance purposes.

What if my microscope isn't working/light bulb burns out?

Perform a cursory check of all cord connections, etc. If your bulb is burned out or your microscope doesn’t seem to be working, contact Karen King Clelan for assistance. The Department contracts with an instrument company to perform regular maintenance and emergency repair.

What do I do when a clinician wants to see a case?

If you do not feel comfortable showing the case, ask your attending, a senior resident or the hot seat fellow for assistance. If the clinician(s) is/are calling in advance, set up a convenient time **for yourself** to meet them. It’s often easiest to show cases around the multi-headed derm room microscope or one of the multi-headed scopes in the faculty sign-out offices.

What do I do if a patient calls?

Although pathologists rarely speak to patients, occasionally a patient may request to speak to you. Be polite, respectful and understanding. The best thing to do is get the patient’s phone number and ask if you can have your attending give them a call. If there is an unusual request, again defer a definitive answer until you check with your attending.

Where is the photo lab?

The photo lab is located in Room L206, in the Lane Building.

What if I've never given a pathology talk before?

Public speaking can be overwhelming and intimidating. Despite the initial impression that these talks are simply the means by which to torture trainees, the purpose of resident presentations is truly educational. Your presentation skills will be enhanced, and your subject knowledge will improve greatly. It is easier said than done, but try to relax and enjoy yourself. Ask a more senior resident or attending for suggestions or assistance. Allow yourself plenty of time to prepare. Some people find practicing a talk in front of a mirror (or in front of another person) helpful. Some people use "case breaker" slides with humor or an outside area of interest (photos from a recent trip) to lighten the talk up every 15 minutes or so.

What do I have to do for the end of the month Surg Path presentation?

The end of the month Surgical Pathology presentations are meant to be casual and fun. There is no defined format, although most people present one-three interesting cases from the month. You can choose cases according to a theme, according to organ or completely at random. Try to choose cases for which you have a gross photograph available. You can solicit audience participation (your turn to put the senior residents or attendings on the spot) if you'd like. Ask a senior resident or fellow to help you take microscopic photos if you've never taken them before. Most residents read a little bit about the entity they will present to know its diagnostic features and the differential diagnosis, and then photograph areas to highlight these points or other interesting points from the case (a diagnostic pitfall, a rare finding, etc.). Text slides are not required and each resident's presentation should be no longer than 10 minutes. Residents are encouraged to make use of this opportunity to develop (& exhibit) their gross and microscopic photography skills.

What is available in our surgical pathology library?

Copies of almost all the major general and specialty surgical pathology textbooks and several pathology journals are available in the Surgical Pathology library. If you can't find the text you require, ask one of the Surgical Pathology fellows. If there is a text you think we need in the library, ask one of the Surgical Pathology directors.

What do I need to know for the student labs?

Weeks in advance of your designated student lab, you will receive material from the pathology course coordinator, Vuong Vu, regarding your lab. In addition, there will be a meeting of all the residents and faculty participating in the given laboratory prior to that section, usually held in the Bing Dining Room with a free meal. You will be paired with an attending who will be able to answer any questions that you can't, so relax and have fun. If you are so motivated, you can review sections of Robbins or the course syllabus as a self-review and in preparation for the lab.

How do I call the VA?

The VAPA hospital main number is (650) 493-5000. An automatic greeting will then come on the line. You will then be instructed to enter the five-digit extension (VAPA extensions start with 6-XXXX) and be transferred. If you know the five-digit extension, press 1 when the greeting begins.

How do I get to the VA?

The Veterans Affairs Palo Alto Health Care System facility is located at 3801 Miranda Avenue in Palo Alto. From Stanford Hospital, exit to Campus Drive, heading in the direction of Highway 280 (west). Turn left on Junipero Serra Avenue, which becomes Foothill Expressway as you cross Page Mill Road. Turn left at Hillview Avenue and make an immediate right onto Miranda Avenue. The hospital will be the first left following the stop sign. Drive around the perimeter drive (watch your speed, the VA hospital is on government property and if you get a speeding ticket, you will have to appear in federal court in San Francisco!) to the helicopter pad in the back and park. You can go up the back stairwell of building 100 to the fourth floor. The pathology suite is down the first hallway to the right after you exit the stairwell on the fourth floor (the resident's room is straight back to the windows (great view!).

How do I get to Forensics (Santa Clara County Coroner)?

From the Palo Alto area, take Highway 280 South. Exit Winchester Boulevard towards Campbell. Turn left on Moorpark Avenue, cross under Highway 880 and take a right on Thornton Way. The office is located a few blocks down on the left, at 850 Thornton Way. There is a parking lot at the building.

Where are housestaff mailboxes?

Housestaff mailboxes are located on the wall outside the departmental office in Room L235, Lane Building. The first two

rows of mailboxes are faculty mailboxes, organized alphabetically by last name. The mailboxes are located above the name. The next row is resident mailboxes, also alphabetical. The final row of mailboxes is for general lab groups and administrative assistants.

Where are faculty mailboxes?

In addition to the faculty mailboxes outside L235 (see above), Surg Path faculty have mailboxes located within Room H2110, Surgical Pathology. These are located near the sink and water cooler. Use the mailbox area above the posted name. These mailboxes generally have enough room to store slide flats.

Where can I keep my things?

All of the cubicles in Room H2110 have ample drawer and desktop space; many include vertical files. While it is safest not to bring in valuables, you can also obtain a key to lock the desk drawers from Karen King Clelan. Because the cubicles relate to the position and not the person, the residents play monthly musical desks. See Karen King Clelan for more permanent space if needed (there are cabinets available in the autopsy residents' room). As a courtesy to the person inheriting your desk at the end of the month, try to clean up any old paperwork or personal items in order for the other person to move in a timely manner. There is a small refrigerator in Room H2110 in which to store your lunch. Please promptly remove any items you do not plan to eat.

All AP residents are assigned a locker that is located in the Autopsy Resident Room (Lane building Room L236). You will be provided a key to your locker as well as a key to the Resident Room. You can keep your belongings in this locker for the entire duration of your AP training. If you have questions about your locker, please see the Residency Coordinator.

RESIDENT AND FELLOW HANDBOOK AGREEMENT

I. I have received the Stanford University Department of Pathology Resident and Clinical Fellow Handbook (2012-2013).

II. I have been informed of the following requirements for house staff:

1. Required conference attendance
2. Formal teaching responsibilities
3. Reporting of duty hours in MedHub
4. Safety policies and procedures
5. On call procedures
6. Procedure for schedule changes and vacation requests
7. Licensure requirements

III. I understand that it is my responsibility to be aware of the policies/procedures as stated in the handbook.

Name: _____

Signature: _____

Date: _____

**** Please submit this signature page to the Residency Coordinator no later than July 12, 2012 ****