



CSB STUDENT GUIDE

Department of Chemical and Systems Biology
Stanford University School of Medicine

2015-2016

Rotations:

Fall rotations for all incoming 1st year graduate students are in one of the laboratories of CSB primary faculty (Ferrell, Teruel, Chen, Mochly, Jarosz, Wysocka, Qi, Cimprich, Wandless, Elias or Meyer). You can discuss potential rotations with CSB faculty at any time, but we request that you finalize your first rotation laboratory only after the departmental retreat to have a chance to meet people from the different laboratories and to learn more about potentially interesting rotation projects you may not be aware of. Short talks and poster sessions at the retreat offer excellent opportunities to see what kind of research projects are currently active in the labs. As for the concern that laboratories can be full, it is our experience that you will be able to find a rotation place in your laboratories of choice in one of the three quarters. We limit the number of rotating students in the same laboratory in any one quarter to two to ensure that you have a chance to closely interact with the faculty during the rotation. Winter and spring quarter rotations can be in any of the Stanford Bioscience laboratories. You are required to give approximately 12 minute long presentations of your respective rotation project at the end of each of the first three quarters at our Pizza Talk series Tuesday at noon. Please make sure that the PI's of any labs that you rotate in know that you are required to give a departmental Pizza Talk presentation at the end of your rotation.

To give you a chance to explore different project options, the CSB program only allows you to select a thesis laboratory during your 3rd rotation (after April 1st). Selection of a thesis laboratory should be initiated by students discussing with an advisor possible projects. Such a selection requires that the host laboratory guarantees regular meetings with the student (we expect weekly individual meetings with the advisor), is providing a scholarly research environment (we expect weekly journal clubs and weekly lab meetings in the host laboratory), is allowing students to actively participate in all CSB program activities, and supports students to attend conferences. Independent of which laboratory you land, we expect that you will be attending throughout your thesis the departmental Pizza talks (on Tuesday), the CSB yearly retreat as well as departmental seminars, symposia and social events. In rare occasions, if the planned thesis project does not align well with the CSB department's mission; if the CSB faculty feel that our expertise does not allow us to evaluate the proposed research; or if the student does not any more believe that the department's seminars and interests are a good match for their research, students may be asked to transfer to a home program that offers a better environment for them.

Quarterly student meetings during the first 2 years

At the end of each quarter, 1st and 2nd year students have a meeting with the Student Advisor committee Jim Ferrell, Tobias Meyer and Marisol Urbano to discuss potential issues with the program, issues with host laboratories, classes, qualifying exam and career planning. This is also a good meeting to discuss ideas about student activities as well as additions or changes to the program. Students are also encouraged to meet with the Student Advisor Committee members individually if there are issues throughout the year.

Each 1st and 2nd year student will be assigned in addition a faculty advisor who the student can contact for advice about rotations, host laboratory issues, career planning and personal issues.

Please feel free to contact your advisor and also Jim Ferrell, Tobias Meyer or Marisol Urbano to discuss program, personal or other issues as they come up.

Coursework

All 1st year graduate students take the same core classes in the fall semester:

BIOS 200: Section 01, Foundations (6 units)

CSB 201: Section 01, Bootcamp (1 unit)

CSB 270: Research Seminar Discussion (1 unit)

CSB 399: Section 06, Graduate Research (2 units)

For all other quarters, you will select courses in an individual quarterly meeting where you discuss with James Ferrell and James Chen training deficiencies and research interests. Our goal with the classes you will be taking is that you gain a broad basis in the fields of Systems Biology, Chemical Biology as well as Regulatory Biology to be able to understand research seminars and papers in the biosciences. In addition, we would like to make sure that you are filling critical training holes you may have and make sure that you gain the expertise you need for your planned thesis research. Please make sure that your units add up to 10 in each quarter (use CSB 399 to reach 10 units). After the second year, students focus on research and typically fill their coursework only with CSB399 units. After 3.5 years, students have to transfer to a terminal graduate student status which reduces the tuition cost. A list of classes currently offered by the department include:

Fall Qtr:

CSB 242: Drug Discovery and Development Seminar Series - Daria Mochly-Rosen, Kevin Grimes (1 unit, 10 weeks, Wed 5:30-7:30PM)

CSB 270: Research Seminar Discussion (1 unit, CSB Faculty, days/times TBD)

Winter Qtr:

CSB 210: Cell Signaling - Tobias Meyer (4 units, 8 weeks, MWF 1:15-2:45PM)

CSB 240A: Drug Discovery and Development Seminar Series - Daria Mochly-Rosen, Kevin Grimes (3-4 units, 10 weeks, Wed 5:30-7:30PM, Fridays 10AM-12PM)

CSB 242: Drug Discovery and Development Seminar Series - Daria Mochly-Rosen, Kevin Grimes (1 unit, 10 weeks, Wed 5:30-7:30PM)

CSB 270: Research Seminar Discussion (1 unit, CSB Faculty, days/times TBD)

Spring Qtr:

CSB 220: Chemistry of Biological Processes - James Chen, Tom Wandless (3 units, 8 weeks, T/Th 1:15-3PM)

CSB 240B: Drug Discovery and Development Seminar Series - Daria Mochly-Rosen, Kevin Grimes (3-4 units, 10 weeks, Wed 5:30-7PM, Friday 10AM-12PM)

CSB 242: Drug Discovery and Development Seminar Series - Daria Mochly-Rosen, Kevin Grimes
(1 unit, 10 weeks, Wed 5:30-7:30PM)

CSB 245: Economics of Biotechnology - Daria Mochly-Rosen, Kevin Grimes
(2 units, 10 weeks, Th 3-4:50PM)

CSB 261: Quantitative Principles in Cell Differentiation - Mary Teruel
(3 units, 8 weeks, M/W 1:15-3PM)

BIOS 204: Practical Tutorial on the Modeling of Signal Transduction Motifs - James Ferrell
(2 units, 2 week minicourse, everyday 10-11AM, 2-4PM)

CSB 270: Research Seminar Discussion
(1 unit, CSB Faculty, days/times TBD)

CSB 250: The Biology of Chromatin Templated Processes - Karlene Cimprich, Joanna Wysocka
(3 units, 8 weeks, days/times TBD)

Qualifying exam:

The qualifying exam in the CSB program has to be taken before the end of the second year (before the fall quarter that starts in September). Students themselves make sure that they have fulfilled all course requirements before scheduling the exam. In rare circumstances, an extension of the exam date can be requested and approved by the CSB department chair.

The CSB qualifying exam lasts approximately 2 hours and is attended by the student and three eligible faculty (they have to be tenure track and on the Academic Council), of which at least 2 need to have a primary appointment in the CSB department. The exam committee is chosen by the student in consultation with the thesis advisor. The student has to ask one of the two CSB faculty members on the committee to be the qualifying exam chair in advance of the meeting. The thesis advisor must be present at the beginning of the exam and provide background about the student before leaving the room. In special cases, the thesis advisor may send instead a written report about the student to the three members of the exam committee.

Students present a research proposal orally and in writing. The written thesis proposal should be 5 pages (one inch margin; single line, 11 or 12 pt; Abstract, Specific Aims, Background, Research Plan and Time Line for completion of each aim; Figures are encouraged). The written report must be received by the committee no later than 7 days before the exam, or the exam is otherwise canceled. During the exam, the committee will discuss the thesis proposal with the student and ask the student general questions about the proposed work, background in the field as well as general scientific questions.

The student will leave the room at the end of the exam and the three committee members will then decide by majority vote either (a) to pass, (b) to conditionally pass or (c) to fail the student. The student will be informed immediately after the vote whether he or she passed, conditionally passed or failed. If a student passes or conditionally passes, the student will write a one page report within one week summarizing the suggestions from the committee. This student report will first be sent to the committee members for additions and corrections. Once approved by the committee, the report has to be sent to the thesis advisor and the Student Services Coordinator Marisol Urbano and the student is expected to discuss the points raised by

the committee with the advisor. Only after a pass decision and the approval of the student report will the student become a “Candidate for a CSB graduate degree”.

A conditional pass can either include a requirement for a rewrite of the proposal or a requirement for an oral re-examination. After a conditional pass, the committee members can only be changed with the agreement of the CSB department chair. If an oral examination is required with the conditional pass, it must be completed within 6 months of the first examination. A final decision has to be made at this oral re-examination. There is only one chance to pass an oral re-examination. If the student passes the re-examination, he or she writes again a report and has it approved by the committee as before. A re-writing of the proposal involves the submission of a revised proposal and requires approval by the committee. In some cases, this may involve more than one round of changes. Also when re-writing is required, the student must pass in 6 months or less from the initial examination date. In all cases, a final pass or fail decision for the CSB qualifying exam has to be made before the end of winter quarter of the third year. Finally, in the case of a conditional pass, the final pass decision is only made after at least two of the three committee members have approved the revised proposal and the revised student report.

If the student fails, he or she has to leave the graduate program. In consultation with the committee, the committee chair will write within a week a report to the student, the advisor and the department chair stating the reasons for the fail decision. The student has the right to make an appeal to the department chair if a student is failed in the qualifying exam. Such an appeal has to be made in writing within one month of the fail decision. In consultation with the CSB department faculty, the chair has then the options to either let the fail decision stand or to schedule a re-examination with the same or different faculty. If approved by a majority of the committee and the chair of the CSB department, a student leaving the graduate program may be qualified to obtain a Masters degree.

Miscellaneous: Fellowship applications, ongoing requirements, conferences and authorship

Students in the CSB program have to apply for possible funding from external and internal sources such as NSF, NIH, Bio-X and others. Each eligible student has to apply to NSF in the fall quarter. Please work on your proposal when you start with the first rotation. We will assign also a CSB faculty, student or postdoc to make recommendations for improvements. To have a good chance, you need to finish a first draft several weeks before the deadline. After the second year, we also request that all eligible students take a training class and apply for an NIH fellowship even if they have or had funding before. These fellowship applications are both a good learning experience and, if funded, are also a good addition to your CV.

Starting in the 2nd year, students give every year a 30 minute presentation of their progress to the department at the Tuesday Pizza talks. They also have to attend the retreat and present a poster or give a talk. Furthermore, students are expected to attend the departmental CSB Cutting lectures and departmental symposia that were selected by students, postdocs and faculty to include speakers that can explain their work to a broad audience. We also encourage students to meet with speakers after the seminar for lunch (there is a sign-up email before each

visit). We also are asking students for input about selecting potential speakers and make sure that we have a few student invited speakers every year. We also encourage students to attend department social events: a Holiday party in December, a summer barbeque in June, outdoor game and sports events in nearby parks in spring and fall as well as happy hours.

While covering the cost of conferences is the responsibility of the thesis laboratory, students can get one-time in their PhD career support from the department of up to \$1500 to attend a conference if they will give a talk or present a poster. Please make a request to Marisol Urbano. We encourage students to attend conferences at least once a year starting in the 3rd year of their thesis.

It is not uncommon that there are different opinions about the order of authorship and the inclusion of authors on publications. We recommend that you discuss authorship early in a project - if at all possible before a publication has been submitted. A good strategy is to periodically discuss authorship both with your co-workers and with the thesis advisor as a project advances since the authorship may change as contributions are changing. Contributions to a paper can include significant experimental or theoretical work as well as ideas or unpublished critical reagents or methods. If there is no satisfying solution after such discussions, you should discuss the issue with one or more members of your thesis committee. If there is still no resolution, you may contact the department chair. A final decision may in some cases involve the consultation of an outside faculty to help clarify the relevance of different contributions.

Committee meetings are every 6 months starting after the qualifying exam:

Committee meetings are the best opportunity for you to get feedback about your progress and to get second opinions about which types of experiments you should pursue to answer the questions you are trying to address in your thesis. To provide you with regular input, we mandate that you schedule committee meetings every 6 months after the qualifying exam. Each of these meetings should be scheduled to be 90 minutes long and should include 4 faculty members counting the thesis advisor (faculty on the committee do not need to be tenure track). At least one of the four faculty members has to be a primary faculty in the CSB department but the composition can be different from that in the qualifying exam and can also change during your thesis work as you may need to pursue different directions. In rare occasions when scheduling is difficult, not all members have to be present and you can meet with missing members separately. The committee is tasked to give you advice about your experiments, future directions, make recommendations about attendance of conferences, career plans and more personal laboratory issues. Each meeting should include a time plan to ensure that the thesis project can be completed within less than 5.5 years. At the beginning of each meeting, the student will exit the room to allow for a discussion between the advisor and the rest of the committee. A few minutes before the end of the meeting, the advisor is asked to leave the room to allow for the student and the rest of the committee to discuss issues about the lab, potential personal issues, training opportunities and to discuss possible differences in research goals or issues relating to authorship. Meetings become more frequent in case the

thesis is not completed by 5.5 years.

Following the committee meeting, as with the qualifying exam, the student is required to summarize the discussion and formulate a revised plan for subsequent work. This summary should be discussed with the advisor and sent to the committee members within one week for comment. A final copy of the report will need to be submitted to the Student Services Coordinator Marisol Urbano.

Ph.D. exam:

Upon completion of your experimental and analysis work, you will be writing a thesis and will be orally defending your thesis to the department and University. The decision to schedule an oral defense requires the support of each member on the committee including the thesis advisor. The University, <https://studentaffairs.stanford.edu/registrar/students/dissertation-thesis>, mandates the format of the defense. In short, the 4 members of your thesis committee are typically also the “Oral Examination Committee” for your thesis defense. We request however that the oral examination committee needs at least 2 primary CSB faculty (all faculty have to be tenured or tenure track, members of the Academic Council). If only one CSB faculty was on your committee, a CSB faculty has to be added. In addition, you will also need a committee chair. The thesis defense chair has to be from a department other than CSB and the home department of your thesis advisor. Potential conflicts about scheduling the thesis defense should be resolved in discussions between the student, advisor and committee, or, if requested, in consultation with the CSB department chair. We would like to see a mean time to degree in the program of 5.5 years or less, which means that you should defend your thesis typically after the end of the 5th year to allow for a writing quarter and a potential 3 month delay to the end of a quarter when the degree is actually granted. At the same time that we expect a time to degree of less than 5.5 years, we expect that each student completes for their thesis two or more first author papers. In most cases, by the time you are scheduling your thesis, both these papers should be accepted for publication.