

Bone Marrow Transplant Program



HAS ITS 20-YEAR ANNIVERSARY

Patients with leukemia, lymphoma and other life-threatening diseases can be treated by a bone marrow/stem cell transplant. Stem cells are derived from marrow, and when transfused, they help reinitiate the patient's immune system.

TO UNDERSTAND HOW GREAT THE NEED for marrow donors is, it helps to know a little about the National Marrow Donor Program (NMDP). For a successful transplant, the tissue type of a donor needs to match the patient's as closely as possible. The NMDP maintains a registry of people all over the world who are potential marrow donors; currently, that list is more than 12 million people strong. When a patient needs a transplant and a donor is not available within the family, the NMDP registry is searched to find registered donors who match the patient's tissue type. Potential donors are then contacted, and if they choose to participate, they then begin the process of final selection. Besides the NMDP, other crucial parts to this process are a Donor Center and a Transplant Center.

In 1987, Stanford Blood Center became the fourth entry on the NMDP's list of Donor Centers. The first couple of years were quiet. "Back then, there were no matched donors selected from Stanford Blood Center (SBC). We finally got established and averaged four or five donors per year," says Derek Leith, Bone Marrow Donor Coordinator. "In fact, our first donor traveled to Palo Alto and stayed with Diane, who was Donor Coordinator at the time," he says as he looks at his predecessor, Diane Hill, with admiration and pride. Diane continues, "Well, the donor asked me about hotels in the area, and we had spent so much time talking that I felt like we were old friends. So I wasn't going to let her stay by herself in some sterile hotel room," she says. "I picked her up at the airport, cooked dinner, and then drove her to the hospital the next morning for her donation. People who are willing to undergo a medical procedure in order to help a stranger deserve all the warmth and hospitality in the world." It is with that level of personal commitment that Stanford has grown into a much larger program. They currently usher about 14 people through the donation process each year.

The Transplant Center of our BMT program is housed at Stanford Cancer Center and Stanford Hospital. The integrated team includes researchers, clinicians, administrative staff and a lab for processing blood products. "Teamwork is a core value of ours and a big part of our success," says professor Robert Negrin, MD, director of the BMT program. A great asset of the program is its team of experienced nurses,



some of who have been with the program from the beginning and who work closely with the doctors.

Kate Tierney, RN, PhD, has been a clinical nurse with the BMT program for 18 years. She recognizes supportive care as one of the most drastic changes during her tenure: "In the 1980s, anti-nausea medications were not around, and the length of stay for recipients was 25-30 days. Now, we keep patients for about 15 days after their transplant, and are able to make their recovery more comfortable by administering drugs that keep them from feeling nauseous." Laura Adams, Administrative Director of the BMT program, explains that there are three types of BMTs: "Allogeneic donations are when a matched donor is found—from either a family member or the NMDP; autologous donations are when a patient has their own cells collected, frozen and then re-administered when needed; syngeneic donations are rare—it's when one identical twin gives cells to the

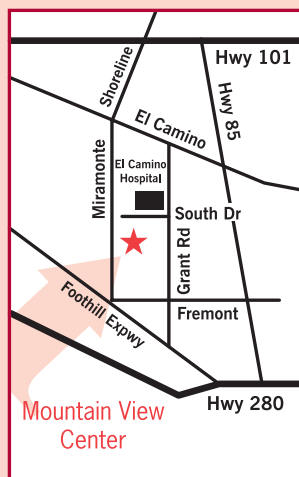


TOP PHOTO: Derek Leith and Diane Hill are truly dedicated to their work at the BMT Donor Center.

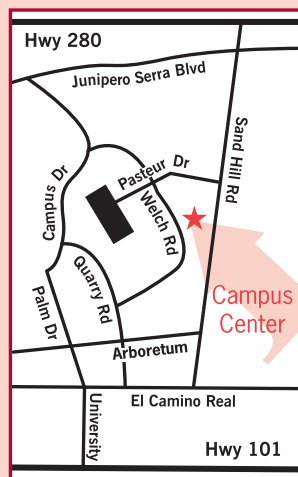
BOTTOM PHOTO: Mike Wu and his wife, Jennifer, celebrate their third visit to the annual Bone Marrow Transplant Reunion with Mike's BMT doctor, Robert Negrin (center).

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STANFORD BLOOD CENTER LOCATIONS



MOUNTAIN VIEW DONOR CENTER
515 SOUTH DRIVE, SUITE 20
MOUNTAIN VIEW, CA 94040



CAMPUS DONOR CENTER
780 WELCH ROAD, SUITE 100
PALO ALTO, CA 94304



HILLVIEW DONOR CENTER
3373 HILLVIEW AVENUE
PALO ALTO, CA 94304

How To Reach Us

Appointment Office
650-723-7831 or 888-723-7831

Administration
650-723-7994

Autologous and Designated Donations
650-723-6667

National Marrow Donor Program
650-723-5532

Web Site
<http://bloodcenter.stanford.edu>

E-mail
giveblood@med.stanford.edu

Ongoing Promotions—

Free "Thinking of You" Cards for Friends and Family

All Centers, Canteens
You will now find Thinking of You cards in our canteens for your use. These are lovely note cards to send to a patient or someone else who may need a lift knowing you've done a good deed with them in mind.

Monday Movie Madness PLUS! Now at Campus for ABC!
Hillview & Campus Centers
Mondays 7:30 a.m. to Noon at Hillview
7 a.m. to 10:30 a.m. at Campus

We need your help on Monday mornings. Donate at 3373 Hillview Avenue in Palo Alto anytime between 7:30 a.m. and Noon and you will receive an AMC theatres envelope with movie ticket and vouchers for a small popcorn and a small fountain drink. Receive the same gift pack when you give blood through an appointment for ABC donation at our Campus location, 780 Welch Road, on Monday mornings. Let Stanford Blood Center take you to the movies!



3373 Hillview Avenue
Palo Alto, CA 94304-1204
<http://bloodcenter.stanford.edu>

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LifeLink

A link between donors, volunteers, staff & friends of the Stanford Blood Center

WINTER 2007

CALENDAR

Have Your Gifts Wrapped While You Donate!

Hillview Center only
All Saturdays Thanksgiving through Christmas Day
Bring in your gifts and we'll wrap while you donate! Let someone else worry about taping and scissors for a while, you've got an important job to do; saving lives.

Healing HeARTs T-shirts!

All Centers
Monday, Dec. 17 through Saturday, Jan. 12
Our annual collectible shirt is back; designed by another talented patient from Lucile Packard Children's Hospital. Wear one home when you donate on one of the dates above.



Daily Holiday Prize Drawings!

All Centers
Monday, Dec. 17 through Saturday, Jan. 12
Local vendors have donated fabulous gifts to give away each day for 22 days! One winner will be chosen each day amongst all who donated in the Centers.

Win a Specialized Hardrock XC Bike!

All Centers
Friday, Dec. 21
Enter to win and you may ride off with this great set of wheels, courtesy of our friends at Menlo Velo.

TOP PHOTO: Jessamine is a lively eight-year-old who loves her little brother, Chase. She is also fighting neuroblastoma, the most common extracranial solid tumor. Treatment will consist of chemotherapy to shrink the tumor, surgery to remove it, radiation to make sure there is no recurrence, and a stem cell transplant to replenish Jessamine's white blood cells. So far, Jessamine has received two transfusions of red blood cells.



AMC Movie Tickets to Each Donor!

All Centers
Monday, Dec. 24 through Saturday, Jan. 5
Donate during the holidays and be rewarded with a ticket for AMC theatres. It's our thank you for coming in to donate when we need you most!

Enter to Win a \$25 Valero Gas Card!

All Centers
Monday, Dec. 31 through Saturday, Jan. 5
You might win a chance to gas up and go! Three donors each day, one at each Center, will win a Valero gas card good for \$25 during this promotion.

Casino Night Community Mixer!

Hillview Center
3373 Hillview Avenue in Palo Alto
Wednesday, Jan. 2, 4:30 – 7:30 p.m.
The money may be fake, but the lives you'll save are real! Donate during this annual donor favorite and get some buffet grub, Rat Pack tunes, and blackjack fun.

Pint for a Pint!

All Centers
Monday, Jan. 7 through Saturday, Jan. 12
Get a coupon for a free pint of Baskin Robbins ice cream when you donate on these dates.



Stanford Blood Center was created in 1978 to meet the increasingly large and complex transfusion needs of Stanford Hospital and Lucile Salter Packard Children's Hospital at Stanford, and to perform research and teaching. We are proud to uphold a standard of service excellence in meeting the needs of physicians, our generous donors, and our diverse patient populations.

If you have any suggestions for upcoming issues of LifeLink, please contact Brooke Krannich at krannich@stanford.edu, or 650-723-8270.

Special thanks to our contributors: Michelle Busenius, Monica Doleshel-Aguirre, Lori Kunder, Jennifer Reczowski, Julie Ruel.

We would like to thank the following for their continued contributions to our Centers:

Andronico's, Los Altos
Better Bagels, Mountain View
Hobe's, Palo Alto
JJ&F, Palo Alto
Noah's Bagels, Palo Alto
Sigona's, Stanford Shopping Center
Stanford Floral Design, Palo Alto

Milestones

Congratulations to all who recently reached a milestone donation. Your dedication is appreciated by the innumerable patients whose lives you have touched.

100 Donations

Frankie Jemison
Vince Yalon
James Levison
David G. Olson
Susan Sorensen
Mary Sue Grasshof
Dennis L. Feick
Gail Ann Waldo
Gerhard Hahne
Ernest Boyd
Lawrence Yegge
Gaelen Harber

200 Donations

Graham Burnette

300 Donations

Dave Ahn

500 Donations

Dick Tagg



TOP PHOTO:
Milestone Donor Sue Sorensen and her husband Ted.



BOTTOM PHOTO:
From left: Milestone Donor and SBC Volunteer Bob Laughead, Milestone Donor and BMT Coordinator Diane Hill, SBC Volunteer Coordinator Tessa Moore, SBC Public Relations Manager Michele Hyndman, and Liz Laughead.

WHAT WE ARE LEARNING NOW HAS THE POTENTIAL TO CHANGE ORGAN-MATCHING POLICY.

—Dolly Tyan

The Science of blood

Increasing the Odds—Part II: RESPONDING TO HLA-SENSITIZED PATIENTS

IN THE SUMMER 2007 *LIFELINK*, the Science of Blood article "Increasing the Odds" examined Stanford Blood Center's Histocompatibility, Immunogenetics, and Disease Profiling Laboratory's (HLA) important research in developing tests that assist organ transplant matching.

Although transplant acceptance rates have increased greatly since the first organ transplants were performed decades ago, many people who need transplants are, for various reasons, unable to receive one, or experience rejection after transplant. Researchers, including ones here at SBC, are continuously seeking new tests, treatments, and technologies that will allow more people (in the U.S. alone, there are an estimated 74,000 patients awaiting a kidney transplant) to find a match, and be successfully transplanted.

SBC's HLA Laboratory Director, Dr. Dolly Tyan, has dedicated her life's work to discovering ways to save lives through improving transplant matching tests and protocols. Dr. Tyan's connection with SBC spans several decades, beginning in the early '70s when, shortly after



receiving her master's degree in Biological Sciences, she joined SBC as a Research Assistant. Tyan, under the direction of Dr. Carl Grumet, studied serology (in general, the study of the antibody content in blood serum) and trained alongside the late Dr. Rose Payne—a noted expert in tissue typing, and pioneer in transplant matching research.

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After leaving SBC, Tyan moved to Southern California, received her PhD in Microbiology and Immunology, and became Director of the Cedars-Sinai Medical Center Transplantation and Immunogenetics Laboratory and a professor at the David Geffen School of Medicine at UCLA. One focus of her research involved discovering ways to overcome barriers in finding matches for patients with high levels of antibodies.

As mentioned in Part I of *Increasing the Odds*, the best organ matches occur when the donor tissue and recipient are as compatible as possible, and cross-match studies are negative, meaning that the organ recipient does not have antibodies that may react with HLA (human leukocyte antigens) present in the donor organ. A positive cross-match indicates that the patient has developed anti-HLA antibodies to those present in the organ tissue, and almost assures that a transplant will fail.

Finding an organ match is difficult enough, and unfortunately, for patients who are highly HLA sensitized to many different HLA types—meaning that they have high levels of pre-formed anti-HLA antibodies—finding a match is next to impossible. Moreover, if such patients are transplanted, they suffer very high rates of allograft loss (organ rejection).

And the number of patients awaiting transplant who are highly HLA sensitized is growing. In 2003, an estimated 32% of patients awaiting a kidney transplant had HLA antibodies. To respond to this population, Dr. Tyan has sought ways to decrease patients' HLA sensitivity enough to allow transplant to occur. Tyan, and other researchers, discovered that IVIG therapy, (Intravenous immunoglobulin) effectively provides this window of opportunity to allow HLA sensitized patients to receive a kidney. IVIG products are derived from human plasma and have been used for decades to treat primary immunodeficiency disorders.

During clinical trials, a high-dose IVIG product,

designed to desensitize the organ recipient to HLA, is administered to selected patients prior to transplant. Before IVIG treatment is considered, tests are first performed that determine the patient's antibody specificity. Once specificity is determined, a cytotoxicity assay is performed. This test involves reacting IVIG with the donor's antibodies to see if cell death occurs. If the IVIG appears successful in inhibiting cell death, the patient receives a number of IVIG doses, and hopefully, will become desensitized to HLA and able to receive a transplant.

IVIG therapy has enabled transplantation of patients previously considered untransplantable, and, in concert with new diagnostic techniques, has resulted in many positive outcomes. Dr. Tyan believes that improved organ testing platforms, IVIG, and other pre-and-post transplant therapies have the potential to dramatically increase the number of patients eligible for transplant, and provide better matching between donor organ and patient.

Dr. Tyan asserts, "What we are learning now has the potential to change organ-matching policy." Dr. Tyan returned to Stanford as Director of the HLA Laboratory in 2006 and brings to SBC not

only her many years of experience, but a new mission. She and other researchers are working to encourage The United Network for Organ Sharing (UNOS) to adopt more emerging tests and treatments into their organ matching protocol. UNOS is the national organization that is responsible for the entire organ matching and allocation process and data collection for every transplant occurring in the United States. Currently, UNOS relies upon cross-matching, an arguably outdated technique, to determine organ donor and recipient matches.

Dr. Tyan believes that a policy change in how UNOS determines matches can save lives. Increasingly, clinical trials and studies are demonstrating the efficacy of new organ matching tests and pre-operative treatments, and changes in organ matching policy are sure to become reality in the near future. Despite her significant contributions, Dr. Tyan is modest about her accomplishments, and describes her life's work as gratifying "when what you know how to do really helps." And here at SBC, we're grateful to Dr. Tyan and researchers worldwide for their tremendous efforts in discovering ways to improve and extend lives.

Bone Marrow Transplant Program

CONTINUED FROM OUTSIDE RIGHT PANEL

other." And they've been busy; since 1987, Stanford has done more than 3,400 transplants.

One of those recipients is Michael Wu. In January, 2003, he was diagnosed with Chronic Myelogenous Leukemia (CML) after complaining to his doctor about persistent abdominal pain. He and his then-girlfriend, Jennifer, were shocked to hear that he had leukemia and needed immediate treatment, especially since they were just starting their lives together and had so much to look forward to—they had recently bought a fixer-upper together and were planning to be married the very next week. Together, they postponed the wedding and re-aligned their focus on getting Mike well. He began taking a laundry list of prescribed medications that compromised his immune system; he lost about 30 pounds.

Some of the drug therapies Mike underwent eventually made him feel better and stronger, and he spent some time at home, returned to his job as an engineer, remodeled their kitchen, and he and Jennifer were married on May 14, 2003.

After being ultimately disappointed with the results of drug therapy which did not help to control his CML, Mike was relieved to hear from Stanford Blood Center that a suitable marrow donor had been found in China through the NMDP Registry. He underwent a bone marrow transplant in July, 2004, and several

transfusions of platelets and red blood cells in the following weeks of recovery. And, while there were some painful side effects—sores, a staph infection, a urinary tract infection, fingernails falling off—of radiation and chemotherapy, Mike says "I feel very, very fortunate. Despite having some issues arise during and after the transplant, I survived it! All the many doctors, nurses and hospital staff at Stanford Hospital are truly remarkable. They saved my life. I even got my BMT doctor—Robert Negrin—to bike with me after I recovered." One person Mike hopes to eventually thank in person is his anonymous bone marrow donor.

Having leukemia has changed Mike's focus in life. "I decided not to go back to my previous job after my treatment. Being so close to death made me realize how important time is, so now I spend it doing things I enjoy and doing things that matter: spending time with loved ones, cycling and staying healthy, and raising awareness and funding for blood-related cancers." Mike and Jennifer are actively involved with Team-in-Training, The Leukemia and Lymphoma Society, and the Asian American Donor Program to support other people who are battling cancer.

SOURCES: MARROW.ORG, BMT.STANFORD.EDU, LEUKEMIA-LYMPHOMA.ORG, AADP.ORG

TOP PHOTO: Dolly Tyan

LEFT PHOTO: Zhongmin Su, Lily Bulanadi, and Julie Engstrom working in the Histocompatibility lab.

