

Scientists I.D. mutation found in human lymphomas

By Meghan Lewit

Researchers at the Keck School of Medicine have explained how certain key mutations occur in human lymphomas—a process that has, until now, remained a mystery.

The findings of the study, published in the Dec. 12 issue of the journal *Cell*, will have a significant impact on future study of how human lymphoma occurs.

Chromosomal translocations, in which segments of DNA are moved around the genome, are DNA mutations frequently found in blood cancers. They occur when two chromosomes break and the resulting fragments are reassembled in an exchange, said Michael R. Lieber, Rita and Edward Polusky Professor in Basic Cancer Research at the Keck School of Medicine and the study's principal investigator.

"Our study provides new insight into understanding how these translocations occur and describes a key and informative fingerprint at these chromosomal break sites," Lieber said.

The fingerprint had been overlooked for decades because chromosomal break sites typically suffer damage that obscures the fingerprint, he said.

"The precise steps leading to this pathologic rearrangement process—especially how the DNA is broken—have been a mystery for 25 years, in large part because these events occur long before the cancer becomes clinically apparent, and conventional experimental techniques do not reflect the process as it occurs naturally," said Albert Tsai, M.D/Ph.D. candidate at the Keck School of Medicine and the lead author of the study.

Expanding on previous work done at the Keck School and USC Norris Comprehensive Cancer Center and elsewhere, researchers studied patient tumor chromosomal translocations to gain an important clue as to how the most common lymphomas are caused. The study demonstrated that these breaks are focused at CpG sites, short special sequences in the genome, within restricted breakage zones. The CpG localization occurs in early B-cells, but not in translocations before or after that stage. B-cells are the cells responsible for producing antibodies.

Their findings implicated roles for two enzymes—AID and RAG complex—which are normally present in lymphocytes and that function to diversify the immune system to defend against attack by bacteria,

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USC receives \$19 million for genetic research

By Meghan Lewit

A multi-institution team of investigators led by researchers at the Keck School of Medicine has received \$19 million in funding from the National Institutes of Mental Health for a groundbreaking effort to collect genetic information on tens of thousands of patients in order to study the genetic risks for schizophrenia and bipolar disorder.

The USC Center for Genomic Psychiatry and Massachusetts General Hospital together received more than \$25 million in grant funding to lead an international network of academic medical centers in creating the Genomic Psychiatry Cohort.

Blood and DNA from approximately 40,000 subjects will be deposited in a repository, along with clinical and phenotypic data.

Professors Michele T. Pato, holder of the Della Martin Chair in Psychiatry, and Carlos N. Pato, chair of the Department of Psychiatry and Behavioral Sciences and the Franz Alexander Professor of Psychiatry at the Keck School of Medicine, will head the national effort to collect

data on 10,000 patients with schizophrenia, as well as 10,000 individuals without the disorder.

The duo will study 5,000 patients with bipolar disorder as part of a coordinated effort led by Massachusetts investigators Jordan Smoller and Pamela Sklar to collect an additional 19,000 patients with bipolar disorder.

The cohort will be the largest coordinated effort ever undertaken to understand the underlying genetic risks for these illnesses, according to Carlos Pato, who also directs the Center for Genomic Psychiatry at the Keck School of Medicine.

"Our focus is on both determining genetic risks for serious mental illnesses and in developing a new model of care for these diseases," he said. "This will be the major national effort in this area for the next five years. We expect a number of important studies to result from this

effort."

USC researchers will conduct large-scale genomic investigations in this population and also have a unique ability to follow patients for long-term studies.

"This aspect of the design is critical to allow a number of follow-up studies and the opportunity to explore disease course and future treatment options," Carlos Pato explained. "We are building a resource for future studies."

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Genetic researchers Carlos and Michele Pato will head national effort to study risks for mental illness.

Mark Berndt

Keck retreat underscores value of teaching

By Jane Brust

Emphasizing the importance of teaching medical students, residents and fellows—while balancing commitments to research and service—80 Keck School of Medicine faculty and staff gathered Dec. 3 for a retreat focused on challenges and opportunities for enhancing medical education.

"One of the most important duties of the Keck School of Medicine is the education of its medical students," said Henri Ford, vice dean for medical education. "Active participation of the entire faculty in medical student education at various levels is essential in order for the Keck School to fulfill its core mission."

Ford reported that the Medical Education leadership and staff are working to promote an optimal learning environment for students by ensuring that the faculty is committed to teaching and has adequate resources and preparation to be effective teachers, mentors and role models.

Allan Abbott, associate dean for curriculum and continuing medical education, highlighted the innovative aspects of the years 1 and 2 curriculum and the success enjoyed by Keck students taking the United States Medical Licensing Examination (USMLE) Step 1 exam. Further changes were proposed for years 3 and 4 of the curriculum in an effort to enhance the clinical experience of Keck students.

According to Keck School Dean Carmen A. Puliafito, education for medical students is inextricably linked to training for residents and fellows. "We need more faculty



Henri Ford, vice dean for medical education, presents plans for the future at the Keck School's education retreat on Dec. 3.

Carol Matthieu

committed to teaching roles at all levels, and we need to recognize the efforts that our faculty put into teaching," he said.

To foster such recognition, a proposed Educational Activity Report was unveiled as an online tool for documenting teaching efforts. Faculty would use the report to record the hours they spend in lectures, small group teaching, laboratory settings and other teaching roles, including mentoring, career advising, etc. The documentation would be reported to department chairs and considered for recognition, including promotion and merit reviews.

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RETREAT: Education goals outlined

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Judy Garner, senior associate dean for faculty affairs, noted that tenure track promotion requires a track record in teaching. At the junior level, she explained, less service is expected but faculty must do well in teaching and research. "At the senior level, promotion depends on leadership in research and teaching, as well as significant school, university, national and international service," she said.

Garner noted that approximately two-thirds of Keck School faculty are on the clinical track. For these faculty, teaching can be the major area in which they excel and the primary basis for their promotion.

Among the timely topics discussed during the four-hour retreat was preparation for the November 2009 site visit by the Liaison Committee for Medical Education.

Pulifito pointed out that issues raised in previous site visits have been effectively addressed, but keeping communication lines open to hear medical student concerns is essential as is a timely response.

Creating a positive educational environment for medical students, residents and fellows is vitally important, emphasized Donna Elliott, associate dean for student affairs, and Larry Opas, associate dean for graduate medical education.

"We need to promote and maintain a culture of profession-

alism, which requires ongoing vigilance by all our Keck leaders," Elliott said. "Lapses in professional behavior must be addressed, and extraordinary professional behavior should be rewarded."

Opas outlined specific requirements for the Keck School and LAC+USC Medical Center to achieve a five-year accreditation from the Accreditation Council for Graduate Medical Education when it conducts an institutional survey in April 2010.

"The highest possible accreditation is for five years, and that is what we want," Opas said. "Among other things, that will require keen attention to any residents who do not feel engaged in our programs."

In discussing another dimension of medical education, Abbott briefed attendees on the Keck School's Continuing Medical Education (CME) program. "CME serves to promote lifelong learning through the participation of our medical students, residents and fellows," he said. "CME is also vitally important to maintaining the image of the Keck School regionally, nationally and internationally."

Abbott and his staff are considering ways to make CME offerings more interactive, building on the effectiveness of current courses and strengthening the referral base to Keck's Doctors of USC.



KIDNEY RESEARCH RECOGNITION – John McKay Jr. presents to Li Yang the John McKay Fellowship in Renal Research for her work at the Keck School of Medicine of USC. Named for USC's legendary football coach John McKay, who died from kidney disease, the award was presented Nov. 22 at the University Kidney Disease Research Associates (UKDRA) benefit event at the Beverly Hilton Hotel. Yang, who received her M.D. degree from Beijing Medical University in China, earned her Ph.D. in physiology and biophysics at USC under the mentorship of Alicia A. McDonough. She gained additional training in the lab of Janos Peti-Peterdi at the Zilkha Neurogenetic Institute. UKDRA presented the Leadership Award in Nephrology to Shaul Massry, professor emeritus of medicine, physiology and biophysics at the Keck School of Medicine. Massry served as chief of the division of nephrology at the Keck School from 1974 to 2000.

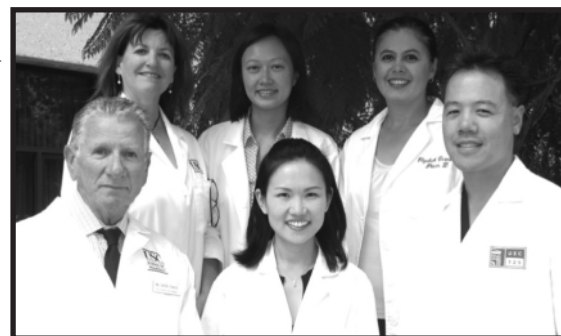
ASHP honors USC pharmacists for innovative practice

By Kukla Vera

A School of Pharmacy team received the American Society of Health-System Pharmacists (ASHSP) Best Practices Award for work in safety-net clinics. The award was presented at the opening session of the ASHP Midyear Clinical Meeting Dec. 8 in Orlando, Fla.

The winners were honored for successfully creating and implementing innovative approaches to improve the delivery of patient care within their practice settings. Sponsored in cooperation with Amgen, the award recognizes leadership in the enhancement of patient care and other areas of pharmacy practice. ASHP established the award in 1999 to recognize and foster innovation in health-system pharmacy.

The USC winning team includes Kathleen Johnson, the William A. and Josephine A. Heeres Chair in Community Pharmacy; Steven Chen and Mel Baron, both associate professors; Cecilia Wu and Elizabeth Cervantes, both clinical pharmacists practicing full-time in the clinics; and Sally Lu, director of pharmaceutical services at the Community Clinic Association of Los Angeles County, previously a clinical pharmacist with USC.



USC winners of the ASHP award (front row) Mel Baron, Sally Lu, Steve Chen, (back row) Kathleen Johnson, Cecilia Wu and Elizabeth Cervantes.

The group also previously won the American Pharmacists Association Foundation Pinnacle Award for their work in the safety-net environment.

The USC group provides clinical pharmacy services at seven safety-net clinics in Los Angeles. Before they launched these services, the clinics lacked pharmacists and the clinical services and formulary oversight that they provide. Since their incorporation in the clinics, they have successfully improved patient outcomes while saving health care dollars. Among other services, the team provides medication therapy management for patients, typically working with those who have chronic diseases like diabetes, high blood pressure and asthma.

Faculty and staff to need I.D. cards for after-hours access to campus buildings

By Ina Fried

Faculty, staff and students have about a month to practice using USC I.D. badges as access cards for after-hours entry to buildings on the Health Sciences Campus.

The existing key locks on exterior doors will be removed on Jan. 10. After that time, access control card readers must be used to gain access outside normal business hours.

New security measures implemented Dec. 1 include a requirement for all USC faculty and staff to wear their

USC I.D. badges on the Health Sciences Campus at all times and to use the I.D. badges for after-hours access to authorized buildings. After the first week, no major glitches were reported.

"We have had some people locked out," said Shane Hapuarachy, Department of Public Safety (DPS). In the past, DPS officers began locking certain buildings at 6 p.m., but by the time they locked the last building, it might have been 7 p.m., he explained. People who were accustomed to a later

time for lockup, now must adjust to a designated lockup time, when all the exterior doors lock electronically. The exact time for each building has been determined in consultation with departments located in the building.

From now until Jan. 10, existing key locks remain in all the exterior doors.

"This means that during this first month of operation, if for any reason you need after-hours access and you have not yet gotten an activated USC I.D. card, you can still use your keys," Hapuarachy said. "However, it is

important that you begin using your I.D. card for access to ensure that you have the appropriate authorizations."

Only those faculty, staff and students who have been predetermined to need after-hours access will be granted entry once the doors lock.

If you are unsure of your access privileges, please see your Home Department Coordinator.

If you encounter any problems with the system, please contact the Department of Public Safety at (213) 740-6000.

Faculty appointed to AAMC positions

By Katie Neith

Three members of the Keck School of Medicine Office of Educational Affairs have been named to national groups or committees of the Association of American Medical Colleges (AAMC).

At the AAMC annual meeting in November, Lawrence Opas, associate dean for graduate medical education at the Keck School, was named national chair elect for the Group on Resident Affairs. Donna Elliott, associate dean for student affairs at Keck, was named the national chair for the Group on Educational Affairs, Undergraduate Medical Education Section.

"There aren't that many elected leadership positions in the AAMC—approximately 15—and the Keck School has two of them," Elliott pointed out. "I'm personally honored to serve as national chair and help guide the AAMC national agenda for undergraduate medical education. My interests include the interface of curriculum and career advising in the senior year of medical school, as well as the integration of undergraduate and graduate medical education as a continuum."

The AAMC is a prestigious non-profit organization committed to improving the nation's health through medical education, research, and patient care.

"It is a tremendous honor to be able to contribute to a group of incredibly talented, passionate and nationally recognized leaders of graduate medical education and to bring added recognition to the Keck School of Medicine for its leadership in education within the AAMC," said Opas. "I hope that I can increase awareness of the need to support the invaluable contributions provided by safety-net institutions,

such as LAC+USC Medical Center, to the education of the current and next generation of physicians."

Erin Quinn, associate dean of admissions at the Keck School, was also recognized with an appointment to an advisory panel that is conducting the fifth comprehensive review of the Medical College Admission Test (MCAT).

"In a time where we are faced with a shortage of primary care physicians, as well as physician distribution, we need to re-evaluate how we select our physician workforce and how we train physicians," said Quinn. "The first step in this is evaluating the type of data we use for selecting medical students. A re-examination of what the MCAT exam measures and then how we translate that into selection criteria will be beneficial to the medical school applicants, future physicians and the communities that they serve."

The panel of 21 medical education, student and undergraduate representatives will review current content and recommend changes to increase the usefulness of the MCAT.

"I am very delighted that three members of our Educational Affairs team have been elected to prestigious leadership positions by their peers at the national level," said Henri Ford, vice dean for medical education and professor of surgery at the Keck School of Medicine. "This special recognition is a testament to the outstanding quality of the faculty at the Keck School of Medicine and to their passionate commitment to promote excellence in medical education."



Lawrence Opas, associate dean for graduate medical education



Donna Elliott, associate dean for student affairs



Erin Quinn, associate dean of admissions

DNA: Study sheds light on chromosomal changes

Continued from Page 1

viruses and parasites, Lieber said. The diversification process involves altering the DNA which encodes antibodies, by cutting and rejoining the DNA in a way that sometimes goes awry. This appears to be what causes the chromosomal translocations, he said.

"Based on previous clues, we did a number of biochemical studies to verify our hunch about the mechanism of translocation," Lieber said. "Our study demonstrates the biochemical feasibility

of the sequence of events proposed, and this matches the fingerprint left by the chromosomal translocations."

The study relied on an important collaboration with Chih-Lin Hsieh, Catherine & Joseph Aresty Chair in Urologic Research at the Keck School, and Markus Muschen, associate professor of pediatrics, biochemistry and molecular biology at the Keck School and director of the Leukemia Research Program at Childrens Hospital Los Angeles.



Meleeneh Kazarian

USC students prepare holiday arts and crafts projects for pediatric patients at Shriners Hospital for Children on Dec. 5.

Students share the holiday spirit with children

By Meleeneh Kazarian

The holiday season brings feelings of anticipation for students—for the completion of final exams and the beginning of winter break. But on Dec. 5, the Graduate and Professional Student Senate (GPSS) Governing Council thought of those less fortunate by hosting a holiday party for pediatric patients at Shriners Hospital for Children in downtown Los Angeles.

More than 25 USC students from occupational therapy, pharmacy, public health, biochemistry, medicine and physical therapy assisted pediatric patients in various holiday arts and crafts projects, including decorating frames, ornaments, cards and reindeer candy pots.

"I was truly in awe of all the students from various departments that came together and sacrificed their Friday afternoon before upcoming final exams," said Sonya Soni, second-year public health master's student and GPSS community service chair. "Thanks to the overwhelming number of students who signed up to volunteer, we were able to assign a student to each patient, and as a result, personal atten-

tion was given to each child and deep connections were made between them."

Lyndsay Price, a third-year occupational therapy doctorate student, enjoyed the opportunity to work one-on-one with the patients and to share in their holiday excitement. "It was great to see so many student volunteers, and even greater to spend time engaged in fun activities with the amazing kids," she said. "It was a great way to take a break from studying for finals and to get to know other health sciences graduate students."

The pediatric patients received gifts from the GPSS HSC Toy Drive, producing many smiles and much gratitude from both children and their parents.

Volunteers also visited children who were unable to leave their hospital beds to attend the holiday party. They distributed toys and arts and crafts projects for the children to enjoy in their rooms.

"Community service events such as these are very important for the Health Sciences Campus," said Price. "They provide a great opportunity for the student body to come together for the common good."

GENETICS: Studies will help I.D. early risk factors

Continued from Page 1

"Large scale population-based studies are critical for this work," Michele Pato said. "The ultimate goal is the development of treatments to better intervene in these disorders. If we are able to identify the risks earlier, we may, through observation and pre-treatment, be able to limit the impact of these diseases on people's lives."

Founded in 2006, the USC Center for Genomic Psychiatry is based at the Zilkha Neurogenetic Institute and the Department of Psychiatry and Behavioral Sciences.

Carlos and Michele Pato and the research team from the Center for Genomic Psychiatry benefited from the efforts of USC's Washington, D.C., Office of Research Advancement, which helped to identify the funding opportunity and worked closely with

National Institutes of Health staff to fully understand what the federal agency was looking for in a successful proposal.

The D.C. Office then worked with Keck faculty to assure that the proposal submitted was scientifically competitive. "This is exactly the circumstance where it was envisioned that a D.C. office could have a significant effect," said Steven Moldin, the executive director.

Thomas Lehner, chief of the genomics research branch of the National Institutes of Health, said, "We're very excited that we're able to support cutting-edge research like this. The cohort will collect an unprecedented amount of data and will become a major resource for researchers around the world."

Calendar of Events

The HSC Calendar is online at
www.usc.edu/hsccalendar

Friday, Dec. 12

11 A.M. Hematology Grand Rounds. "How to Improve the Outcome of Adults with Acute Lymphoblastic Leukemia," Dan Douer, USC. IPT C2J103 Info: (323) 865-3950

Tuesday, Dec. 16

9 A.M. Neurology Grand Rounds. "Chronic Daily Headache: A Headache for the Clinician Too?" Soma Sahai, USC. ZNI 112. Info: (323) 442-7686

NOON. Cancer Ctr. Grand Rounds. "Brain Tumor Trends and Risk Factors," Roberta McKean-Cowdin, USC. NOR 7409. Info: (323) 865-0801

Wednesday, Dec. 17

7 A.M. Medicine Grand Rounds. "Chronic Meningitis," Corinne Yarbrough, USC. IPT C2J104-B. Info: (323) 226-7556

NOON. "Autism Risk and the MET Receptor Tyrosine Kinase," Daniel Campbell, Vanderbilt Univ. ZNI 112. Info: (323) 442-2144

Friday, Dec. 19

8 A.M. Pathology and Laboratory Medicine Grand Rounds. "Histiocytic and Dendritic Neoplasms," Lawrence Weiss, City of Hope. NOR 7409. Info: (323) 442-1180

Wednesday, Dec. 24

7 A.M. Medicine Grand Rounds. "Infective Endocarditis," Anita Andra, USC. IPT C2J104-B. Info: (323) 226-7556

Wednesday, Jan. 28

NOON. "The Role of Regulated Protein Synthesis in Visual Circuit Development," Hollis Cline, Watson School of Biological Sciences. ZNI 112. Info: (323) 442-3219

Notice: Deadline for calendar submission is 4 p.m. Monday to be considered for that week's issue—although three weeks advance notice of events is recommended. Please note that timely submission does not guarantee an item will be printed. Send calendar items to HSC Weekly, KAM 400 or fax to (323) 442-2832, or e-mail to eblaauw@usc.edu. Entries must include day, date, time, title of talk, first and last name of speaker, affiliation of speaker, location, and a phone number for information.



Carol Matthieu

BRINGING JOY TO GOOD GIRLS AND BOYS—USC School of Pharmacy and Keck School of Medicine students spread holiday cheer to pediatric patients at LAC+USC on December 5. The merry carolers delivered more than 150 toys donated to the annual Skull and Mortar/Alpha Iota Pi toy drive.

Sample to present State of the School address Feb. 10

USC President Steven B. Sample will present his annual State of the School address on Tuesday, Feb. 10, at 4 p.m. in the Aresty Auditorium, Harlyne J. Norris Cancer Research Tower. A reception will follow the address.

Sample is expected to present his vision for the year ahead, as well as provide his thoughts on changes affecting the University overall, and the Health Sciences Campus, specifically.

USC Blood Donor Center sponsors drives for Blood Donor Month

In celebration of National Blood Donor Month, the USC Blood Donor Center will be having three blood drives on the Health Sciences Campus during the month of January. All donated blood will benefit patients at USC University and USC Norris Cancer hospitals.

1/8—USC University Hospital (near Doheny Eye Institute);

10 a.m. - 4 p.m.

1/9—USC Norris Cancer Hospital (near valet parking); 9 a.m. - 3:30 p.m.

1/21—Harry and Celesta Pappas Quad; 10 a.m. - 4 p.m.

The USC Blood Donor Center is also open Monday through Thursday from 8 a.m. to 6 p.m. for those with schedule conflicts.

Blood is traditionally in short

supply during the winter months due to the holidays, travel schedules, bad weather and illness.

Every day in the United States, approximately 39,000 units of blood are required in hospitals and emergency facilities for patients with cancer and other diseases, for organ transplant recipients, and to help save the lives of accident victims.

ETCETERA

Anat Erdreich-Epstein, associate professor of pediatrics and pathology, and Michele Kipke, professor of pediatrics and preventive medicine, have been elected to the Society for Pediatric Research, and will be formally honored at its annual meeting in May 2009, in Baltimore, Md. Erdreich-Epstein is director of Basic and Translational Pediatric Brain Tumor Research at the Saban Research Institute of Childrens Hospital Los Angeles. Kipke is head of the Division of Research on Children, Youth and Families, and the director of the Community, Health Outcomes, and Intervention Research (CHOIR) Program in the Saban Research Institute.

HSC NEWSMAKERS

Complete listing at: www.usc.edu/uscnews/usc_in_the_news/

A Dec. 7 *New York Daily News* article quoted **Jennifer Holtzman** of the USC School of Dentistry about gum disease and pregnancy.

A Dec. 4 *U.S. News & World Report* article quoted sickle cell disease expert **Cage Johnson** about the discovery of a gene mutation that inhibits the production of fetal hemoglobin, causing sickle cell disease and thalassemia. The story also ran in *Forbes*.

On Dec. 3, KNBC-TV reported that a multi-institution team led by mental health experts **Carlos and Michele Pato** received \$19 million to study the genetic risks for schizophrenia and bipolar disorder.

On Dec. 3, *MedCenterToday* online ran an announcement that **Inderbir S. Gill** has been appointed chair of the Catherine and Joseph Aresty Department of Urology, effective Feb. 1, 2009.

A Dec. 2 Reuters article quoted Keck School graduate student **Rebecca Sadun** in a widely carried story about recommendations that would reduce the number of hours medical school resident doctors spend on call. She was also quoted on CBC News (Canada).

A Dec. 1 *Washington Post* article quoted USC Norris oncologist **Christy Russell** about seed therapy for breast cancer, which is a partial-breast radiation treatment also known as brachytherapy.

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