Welcome to the winter 2016 issue of the Keck Research Quarterly. The faculty spotlight in this issue is on Jae Jung, PhD, Distinguished Professor and Chair of the Department of Molecular Microbiology and Immunology (MMI). Dr. Jung has made major contributions to the field of molecular biology of cancer-causing herpesviruses and is one of Keck’s top funded investigators. He also has a very strong track record of developing successful junior faculty members in his department. Jae was a driving force behind the creation of the Hastings Foundation and Wright Foundation Laboratories, which is our featured core facility. The Hastings Foundation and Wright Foundation Laboratories are a Biosafety Level 3 facility for the study of serious airborne diseases. We introduce readers to this new state-of-the-art core facility in the Keck Cores section of this issue. The Hastings and Wright Laboratories enable our investigators to develop vaccines and other therapeutic treatments for infectious diseases in humans.

In my Research Dean Corner, I’ll bring you up to date on the USC Clinical Trials Office, which is now within the Keck School of Medicine; introduce you to a new tool, called i2b2, that can help with planning and recruitment for clinical studies; and introduce you to a new program in the Dean’s office that is designed to increase our portfolio of Career Development Awards. As with previous issues, the KRQ provides updates on faculty recognition for research and tips on managing your research program, including resources for lab safety and grants management. I hope you enjoy this issue of the KRQ!

Tom Buchanan, MD
Vice Dean for Research

Faculty Spotlight
Jae U. Jung, PhD
Distinguished Professor
Fletcher Jones Foundation Professor
Hastings Foundation Professor
Chair, Department of Molecular Microbiology and Immunology
Director, USC Institute of Emerging Pathogens

What initially attracted you to study infectious diseases?
As a child, I had always been intrigued by the amount of diseases prevalent around the world. When I was in fourth grade, my elementary school teacher left for maternity leave and was replaced by a substitute teacher who taught science and infectious diseases. It was at this moment that my interest in infectious studies soared and I began memorizing piles of science books detailing infection and biographies of famous microbiologists like Louis Pasteur. The more I studied, the more I became hooked.

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Grants Management Resources: Grants Management Training for Staff
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the facility is designed for the study of agents and toxins that can cause potentially severe or fatal illness as a result of exposure by inhalation. Examples include Mycobacterium tuberculosis, West Nile virus, chikungunya virus and influenza virus. In addition to providing a peak level of safety and security for researchers, and the public at large, the facility includes rooms dedicated to studies on rodents that adhere to all applicable federal, state and institutional guidelines governing animal use in research.

Federally-funded investigators at USC with expertise in virology, bacterial pathogenesis and ongoing public health agents in the fields of molecular biology, pathology, immunology and marine biology. Since the laboratories were first constructed in 2009, Dr. Comai has supervised the facility’s daily operations and assured compliance with federal guidelines. He works together with the USC administration and faculty to stimulate the expansion of cutting-edge clinical and basic research programs on infectious diseases at USC and assure that the facility is utilized for cutting-edge infectious disease research. He is available for discussions with researchers interested in developing projects that use the facility, thereby expanding research into evolving and established infectious diseases.

In Vivo specific equipment

Specialized animal housing is available for short-term housing only. The laboratory uses HEPA filtered cage racks, cages and a specifically designed cage changing biosafety cabinet for the care and husbandry of rodents for the safety of workers and animals.

TechniPlast iD’Grafe system

- A dedicated rack with Air Handling Unit
- A Biohazard Class II cabinet, the Isolator Biosafety Station (IBS), is purposely designed to ensure the safe handling of the animals.
- ISO cages systems have alarm systems

Major Services, Technologies and Equipment Provided

By having access to equipment within containment, users of the facility are able to perform a myriad of sophisticated analyses in a secure and safe environment. The Laboratory Core will provide access and assistance with this facility, as well as training and consultation for members of the USC community who are planning projects requiring BSL3 containment.

Facility

- The facility has a dedicated HVAC exhaust system designed to keep the laboratory rooms under negative pressure, thus preventing contaminated air from escaping to surrounding areas.
- The lab’s ventilation system is equipped with state-of-the-art monitoring systems and alarms. All exterior and interior doors are electronically interlocked to prevent simultaneous opening. Building and facility security includes multi-point entry security measures and constant video monitoring. Additional safeguards will not be disclosed for security purposes.

Equipment

Personal Protective Equipment (PPE)

- Maxair Ibo Powered Air Purifying Respirator (PAPR) will be provided, and maintained when working in the BSL3 laboratory.
- Biosafety Cabinets
- In the BSL-3 laboratory, both Class II type “A” and “B” BSCs are used.

Centrifuges

- Table top and microcentrifugation are available with each laboratory space. Ultra cry centrifugation is available with HEPA filtration of vacuum air

Storage

- Ultra low freezer space is available for long term storage and inventory of samples. -20 freezer and a degree refrigerators available for short term storage and inventory of samples and reagents.

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SomanSuite

- The SomanSuite is available and validated for use.
- SomanSuite is factory-calibrated for use with sarin, soman, yperites and desflurane.

Service, Certification and Maintenance of all facility functions and equipment is provided when working in the BSL3 laboratory.

Training

All staff receive extensive training and take all measures required to ensure their own safety and the safety of others when working in the laboratory. Training topics include, but are not limited to: standard operating procedures, common BSL laboratory hazards, and emergency preparedness. The learning objectives are met through active dialogue between researchers and instructors. Learning experiences stress problem solving, challenge critical thinking skills, and promote active Risk Assessment. The management of the facility works closely with the USC Environmental Health and Safety office and campus regulatory committees, which include community representation.

All work involving biological agents is closely supervised by the Biological Safety Officer processes), and document the training to satisfy OSHA, Injury and Illness Prevention Program requirements.

In the USC Department of Environmental Health & Safety (EH&S) will be conducting laboratory safety inspections starting this month. They could arrive at your laboratory without warning. To help you better prepare for this visit, please go to the USC EH&S links below and review the list of items they will be checking for in your laboratory.

- General Lab Inspection Checklist: [link]
- Lab Hazard Analysis Tool (LHAT): [link]
- PPE Inspection Checklist: [link]

For Lab Safety Questions and Concerns, contact: labsecurity@usc.edu

Annual Safety Training Refresher

It is time again for your Laboratory Safety Refresher Training. EH&S sent a reminder memo to all faculty on January 29 with instructions. What to do:

- Complete annual refresher training for all faculty and staff.
- Update your chemical inventory online.
- Select all suggested safety topics listed on the memo attachment that are relevant to your research and operations.
- Use the checklist/table on the following pages to mark off the safety topics you cover and use the attached Site Specific Training Record (SSTR) to document attendance.
- Submit your completed safety topic checklist and SSTR to EH&S via email to labsecurity@usc.edu
- Deadline for training completion is March 29, 2016.

If you are a USC Principal Investigator interested in using the facility and usage fees, please contact Jill Henley at jhenley@usc.edu or (213) 449-4813.

PPE STANDARDS

- You must wear either full-length pants or clothing that otherwise fully covers the legs and ankles, as well as closed toe/heel shoes.
- You must wear an appropriate laboratory coat, AHS-approved protective eyewear, and other appropriate PPE equipment when working with hazardous materials is being performed.
- Laboratory coats must be appropriately sized and fitted for the worker.
- Laboratory coats must be buttoned/ snapped to their full length.

Failure to meet these standards will prohibit individuals from entering or working in a facility containing hazardous materials and may result in corrective action.

OTHER SAFETY STANDARDS

- No food/drink in lab.
- The lab should be kept clean.
- Hazardous waste should be disposed of appropriately.
- Be aware of what to do in case of emergency.
New Home for the USC Clinical Trials Office

On January 1, 2016, the USC Clinical Trials Office (CTO) moved into the Keck School of Medicine. The School is committed to providing efficient, transparent, and user-friendly service to investigators and research teams conducting clinical trials and other studies that require health system resources at USC. To achieve these goals, the Keck School has combined the formerly separate pre-award (contract budgeting and negotiation) and post-award (accounts payable and accounts receivable) functions into a single unit that will provide all of these functions for industry-sponsored clinical trials, and coverage analysis as part of the budgeting process for all clinical trials, regardless of sponsor. We conducted a national search that led to hiring of Melissa Archer as the new director of the CTO. Melissa has strong experience in leadership and in clinical trials operations. She will work closely with you and with Ted Budge from the Dean's Office to ensure that the staffing and operations of the CTO meet the needs of our clinical research community and the patients they work with.

Going Live with Our Clinical Trials Management System, OnCore

One of the major advances that will help streamline our clinical research operations is the implementation of our new clinical trials management system, OnCore. OnCore is designed to support the initiation, management, and financial accounting of clinical research studies. The OnCore team has been pilot testing the system with different types of studies. It will go live for all new clinical trials on April 1, 2016. A series of training sessions is being offered in March to be sure that staff members are ready to use OnCore when it goes live on April 1. For information about training in OnCore, contact Amanda Schmitz at Amanda.Schmitz@med.usc.edu.

In2b2 - A New Tool for Planning and Recruiting for Clinical Studies

An early challenge in designing clinical studies is estimating your sample size. Statistical approaches help you estimate the power of various sample sizes, but you also need to know the feasibility of recruiting a cohort that will provide solid statistical power. I am delighted to introduce you to a new online tool that can help. It is called In2Bio. Integrating Biology & the Bedside (I2b2 for short). I2b2 was developed by members of the national Clinical and Translational Science Award (CTSA) consortium to get “counts” of potential study participants who meet specific inclusion and exclusion criteria. I2b2 is now live at USC and CHLA. You can use it to help refine your target study cohort. Using a self-service interface, researchers can drag-and-drop various study entry criteria (e.g., age, diagnosis, medications, recent lab results) and choose the magic of In2Bios – find out how many patients are in the Keck Medicine and/or CHLA electronic health record(s) meet the criteria. Change the entry criteria and see how a slightly different study design will affect the pool of potential participants. No protected health information is provided by I2b2, so there is no risk to patient privacy. All you get is counts. But fear not – that is not where these resources stop. Once you finalize your study design and get IRB approval to open enrollment, you can submit the results of your I2b2 query to request contact information for the potential participants. In my mind, this is a major advance in our ability to support study design and recruitment at USC and CHLA.

New Program to Expand Research Career Development at the Keck School

Part of expanding our research programs is developing a pipeline of young talent who are serious about pursuing careers in biomedical research. The National Institutes of Health offers a variety of Career Development (K) Awards that support mentor-guided research career development for our next generation of researchers. A description of the types of K awards can be viewed at https://www.nih.gov/training/estrai/Pages/career.aspx. Dean Puliafito has provided resources to establish a new Research Career Development Program with the Keck School. Cecilia Patino-Sutton, MD, PhD, who has contributed greatly to the success of the KL2 program of the Southern California Clinical and Translational Science Institute, has agreed to lead this new program. Cecilia has already started meetings with departmental leadership at the Keck School to identify junior faculty members who are interested in this program. We are currently in the process of reviewing applications and will announce the successful candidates soon.

SAVE THE DATE

March 30, 2016 Optimizing NIH R01 Grant Finding Success - Focused on 1) developing your chances of funding; 2) developing successful grant writing templates for grant writing; and 3) increasing the chances your proposal will receive positive reviews and scores.

April 1, 2016 Commercialize Innovative Technologies - Funding to Commercialize Innovative Technologies

Dr. Cockburn joined the faculty of the Department of Preventive Medicine at the Keck School of Medicine in 2008, and was granted tenure as an Associate Professor of Preventive Medicine. In 2014 he received secondary appointments in the Department of Dermatology and in the Spatial Sciences Institute in the Dornsife College. Dr. Cockburn is an accomplished environmental health scientist who has made significant contributions in the study of risk factors and prevention for melanoma, prostate cancer and leukemia as well as potential environmental factors associated with birth defects, Parkinson’s disease and autism. As the leader of multiple interdisciplinary groups, including the California Cancer Registry, he has been able to apply novel surveillance approaches to identify a growing problem of melanoma prevalence among Hispanics in California. He has been able to apply these observations in a clinically relevant manner by developing and testing interventions to raise skin exposure awareness in Hispanic adolescents in the Los Angeles Unified School District. In addition, he is internationally recognized for his ability to apply geospatial assessment models to determine environmental exposures to radiation and pesticides and to evaluate their role in the etiology of malignancies and neurodevelopmental disorders. Dr. Cockburn is an author on over 100 peer-reviewed publications in journals such as Blood, Epidemiology, Circulation and the Journal of the American College of Cardiology.

NEWS & UPDATES FROM FACULTY AFFAIRS

Promotions

Myles Cockburn, PhD
Professor of Preventive Medicine, Dermatology, and Spatial Sciences

Dr. Cockburn joined the faculty of the Department of Preventive Medicine at the Keck School of Medicine in 2008, and was granted tenure as an Associate Professor of Preventive Medicine. In 2014 he received secondary appointments in the Department of Dermatology and in the Spatial Sciences Institute in the Dornsife College. Dr. Cockburn is an accomplished environmental health scientist who has made significant contributions in the study of risk factors and prevention for melanoma, prostate cancer and leukemia as well as potential environmental factors associated with birth defects, Parkinson’s disease and autism. As the leader of multiple interdisciplinary groups, including the California Cancer Registry, he has been able to apply novel surveillance approaches to identify a growing problem of melanoma prevalence among Hispanics in California. He has been able to apply these observations in a clinically relevant manner by developing and testing interventions to raise sun exposure awareness in Hispanic adolescents in the Los Angeles Unified School District. In addition, he is internationally recognized for his ability to apply geospatial assessment models to determine environmental exposures to radiation and pesticides and to evaluate their role in the etiology of malignancies and neurodevelopmental disorders. Dr. Cockburn is an author on over 100 peer-reviewed publications in journals such as Blood, Epidemiology, Circulation and the Journal of the American College of Cardiology.

Li Zhang, PhD
Professor of Physiology and Biophysics and Otolaryngology

Dr. Li Zhang joined the faculty of the Keck School of Medicine as an Assistant Professor in 2004, and was promoted to Associate Professor with tenure in 2010. In addition to his Departmental affiliations, Dr. Zhang is a member of the Zilkha Neurogenetics Institute (ZNI). Dr. Zhang’s ultimate research goal is to decipher brain circuits, to understand how perception and behaviors are generated and controlled, how the brain’s cortex adapts in response to changes in the dynamic external environment, and how specific changes in cortical functions result in neurological and psychiatric disorders. He has primarily addressed this global goal through work elucidating the connections and tuning of auditory cortical circuits using electrophysiology, two-photon imaging, and optogenetics in mouse models. Dr. Zhang’s studies span the range from synaptic activity to mouse behavior. He has been particularly successful in pioneering whole cell patch clamp recording (in vivo) with simultaneous two photon imaging, which allows measurement of both excitatory and inhibitory inputs to each neuron during sensory stimulation. He has primarily addressed this global goal through work elucidating the connections and tuning of auditory cortical circuits using electrophysiology, two-photon imaging, and optogenetics in mouse models. Dr. Zhang’s studies span the range from synaptic activity to mouse behavior. He has been particularly successful in pioneering whole cell patch clamp recording (in vivo) with simultaneous two photon imaging, which allows measurement of both excitatory and inhibitory inputs to each neuron during sensory stimulation. He has primarily addressed this global goal through work elucidating the connections and tuning of auditory cortical circuits using electrophysiology, two-photon imaging, and optogenetics in mouse models. Dr. Zhang’s studies span the range from synaptic activity to mouse behavior. He has been particularly successful in pioneering whole cell patch clamp recording (in vivo) with simultaneous two photon imaging, which allows measurement of both excitatory and inhibitory inputs to each neuron during sensory stimulation. He has primarily addressed this global goal through work elucidating the connections and tuning of auditory cortical circuits using electrophysiology, two-photon imaging, and optogenetics in mouse models. Dr. Zhang’s studies span the range from synaptic activity to mouse behavior. He has been particularly successful in pioneering whole cell patch clamp recording (in vivo) with simultaneous two photon imaging, which allows measurement of both excitatory and inhibitory inputs to each neuron during sensory stimulation. He has primarily addressed this global goal through work elucidating the connections and tuning of auditory cortical circuits using electrophysiology, two-photon imaging, and optogenetics in mouse models.
WHERE CAN I FIND THE USC POLICIES RELATED TO SPONSORED RESEARCH PROJECTS?


The Guide To Research has been developed by the Office of Compliance and the Office of Research as a ready reference on university processes for: (1) proposal submission, (2) account establishment, (3) research management, (4) closeout, and (5) research education. Please print and save a copy as a reference for your research related questions.

WHAT TYPE OF AGREEMENTS SHOULD I SUBMIT THROUGH KUALI COUES (KC)?

Kuali Coues (KC) is the system used by the University for routing/approval/establishment of all sponsored research agreements, with the exception of industry sponsored clinical trials. KC ensures that proposals are routed to the right approvers, that all regulatory approvals occur, and that proposals and negotiations are tracked. Effective April 1, all proposals of the following types must be submitted for approval through KC:

- Sponsored research agreements (with exception of industry sponsored clinical trial agreements) – as before
- Unfunded research collaboration agreements (e.g., industry Affiliate Agreements, MOUs, CRADAs, etc.) – new
- Non-disclosure agreements, if primary purpose is to enable sponsored research, other than those managed by USC Stevens or the Clinical Trials Office – new
- Research service agreements – new

Agreements pertaining to intellectual property for research (patent license, material transfer, software license, software of university-owned software, data use agreements [other than for protected health information], confidential disclosure agreement related to intellectual property) will continue to be submitted through Sophia managed by USC Stevens.

For master research agreements with industry sponsors where no initial statement of work is identified, please consult Vasiliki Anez at USC Stevens (anetz@usc.edu). For master agreements with other types of sponsors, please consult your Department of Contracts and Grants representative, or the Clinical Trials Office (solely for industry sponsored clinical trials).

Processes for industry sponsored clinical trials agreements will be assessed by the Clinical Trials Office as part of the deployment of the OnCore system.

Resources on how to create and submit research collaboration agreements and research service agreements through KC can be located at:


FUNDING OPPORTUNITIES?

Are you currently looking for funding opportunities? For a listing of current extramural and intramural funding opportunities, please visit http://www.usc.edu/schools/medicine/school/offices/resaid/newsletter/funding.html

The Office of Research has implemented a new, simpler portal for submission of internal research proposals (http://appplicant.ucr.com/kuali/). This portal is a one-stop shop for researchers to submit proposals.

The Office of Research has also implemented an updated grants management system called Kuali Coeus (KC) that can be accessed through the University’s online learning platform, TrojanLearn. The system is used to manage all sponsored research agreements on campus.

The Grants Management Training for Faculty is mandatory for all new faculty prior to receipt of an extramurally sponsored award. Go to the Trojan Learns portal and log in using your USC ID.

CLINICAL RESEARCH RESOURCES

 USC Health Sciences Profiles is an expertise discovery and research collaboration tool. Visit http://profiles.sc-ctsi.org/ for access.

The Clinical Studies Directory features more than 300 active clinical studies at USC. Visit http://clinicaltrials.keckmedicine.org/

NEED GRANTS SUBMISSION HELP?

If you are looking for help with your budget or assembling grant sections, Janet Stoeccker, Director of Research Advancement, is available to assist you. Contact Janet at (323) 442-3568 or email stoeccker@med.usc.edu.

DID YOU KNOW?

That Keck School PIs receive the majority of all NIH funding at USC?

Your research involves virus-induced cancer. What influenced your decision to focus in this area?

During my postdoctoral training, HIV studies were in vogue. I completed my fellowship under the guidance of Dr. Ronald Desrosiers over at Harvard Medical School, who had always been interested and passionate about virus-induced cancers, but had recently moved away from this topic to focus on the HIV/AIDS. In a competitive lab consisting of twenty-five postdoctoral fellows all researching HIV, I was the only one studying a cancer-causing herpesvirus of monkey origin because this virus was a near-perfect experimental tools for studying in vivo lymphoma induction in primates. Fortunately, within a year and half, I managed three publications and was promoted to faculty at Harvard Medical School. Two years later, the discovery of a new human cancer-causing virus, called Kaposi’s sarcoma-associated herpesvirus (KSHV), hit the news and went “viral.” Because the monkey herpesvirus that I had been studying showed the highest similarity to human KSHV compared to any other viruses, suddenly, famous virologists and even several members of the National Science Academy called me to compile all the information I had on the monkey herpesvirus. The opportunity was thrown at me in a blink of an eye and I wholeheartedly jumped into the field of KSHV-causing cancers. Since then, my research focused on this field and how herpesvirus evade host immune responses to establish life-long infection and how herpesviruses induce rapidly progressing cancers. Moreover, our black humor of this life-long herpes infection is, “What’s the difference between true love and herpesvirus infection? Herpes is forever!”

What other areas of research are you interested in and why are they important?

Over the past decade, the global health community has been stricken with the occurrences and rapid widespread of novel pathogens, we had the Ebola epidemic in 2014, the MERS outbreak in 2015 and now the emergence of misspouto-born Zika virus in 2016. The risks in incidences and spread of novel pathogens have led to collaborations with other researchers around the world to study the biochemical, immunological and structural significance of emerging and rapid spread of infectious diseases. Globalization of pathogens is a major factor causing profound, sometimes unpredictable, impact on infectious diseases. One patient with a conventional medical problem today can be zero or still one tomorrow. However, one patient with infectious disease today can be zero, one, hundreds or millions tomorrow. So having even a single patient is a major concern in the infectious disease field.

What advice would you give to junior faculty about being competitive in getting grant funding?

The best advice I can give to junior faculty is to be persistent as persistent as a herpesvirus. There is no magic bullet for grant funding. The best outcome results from an accumulation of hard work, persistence, and knowledge from failure. In addition, it is best to be well rounded in all areas of scientific disciplines. Every morning, I allot myself an hour to peruse through five to seven journals to keep up to date with various research topics, as well as technological innovations targeted to advancing science. I firmly believe that chance favors the prepared mind.
One of the Keck School of Medicine’s many strengths is the outstanding achievements of our faculty.

KECK FACULTY AWARDS & DISTINCTIONS:
NOVEMBER 2015 TO JANUARY 2016

ACADEMY & SOCIETY FELLOWS

ERIC CHANG
Professor of Radiation Oncology
Fellow – American Society of Radiation Oncologists

DAN STRAM
Professor of Preventive Medicine
Fellow – American Association for the Advancement of Science

INTERNATIONAL AWARDS AND DISTINCTIONS

QI-LONG YING
Associate Professor of Stem Cell Biology & Regenerative Medicine
McEwen Award for Innovation – International Society for Stem Cell Research

NATIONAL AWARDS AND DISTINCTIONS

LILYANA AMEZCUA
Assistant Professor of Clinical Neurology
Volunteer Hall of Fame: Health Professionals Award – National Multiple Sclerosis Society

PETER CONTI
Professor of Radiology
2016 Peter C. Abelesold Award – Society of Nuclear Medicine and Molecular Imaging

MARK HUMAYUN
University Professor of Ophthalmology

JUSTIN ICHIDA
Assistant Professor of Stem Cell Biology & Regenerative Medicine
2015 Robertson Stem Cell Investigator Award – New York Stem Cell Foundation

MATTHEW KIRKPATRICK
Assistant Professor of Research Preventive Medicine
2016 Young Psychopharmacologist Award – American Psychological Association

HEINZ-JOSEF LENZ
Professor of Medicine
2016 Outstanding Investigator Award – Western Society for Clinical Investigation

TAKESHI SAITO
Assistant Professor of Medicine
2016 Outstanding Investigator Award – Western American Federation for Medical Research

LESLIE SAXON
Professor of Medicine (Clinical Scholar)
2015 Most Tech-Friendly Doc – Rock Health

STUART SIEGEL
Emeritus Faculty
2015 Archie Bleyer AYA Trailblazer Award – Critical Mass

PAUL THOMPSON
Professor of Ophthalmology
2016 Harry Stack Sullivan Award – Johns Hopkins School of Medicine/Sheppard-Pratt Health Systems

INTERNAL AWARDS

PAULA CANNON
Professor of Molecular Microbiology & Immunology
Audrey E. Streedain Regenerative Medicine Initiative Award

SHOHREH FARZAN
Assistant Professor of Preventive Medicine
Provost’s Assistant Professor Fellowship Award

DONALD FEINSTEIN
Emeritus Professor of Medicine
Distinguished Faculty Award, Keck School of Medicine

JUSTIN ICHIDA
Assistant Professor of Stem Cell Biology & Regenerative Medicine
Audrey E. Streedain Regenerative Medicine Initiative Award

RAM KUMAR SUBRAMANYAN
Assistant Professor of Surgery
Audrey E. Streedain Regenerative Medicine Initiative Award

Link to past issues:
http://keck.usc.edu/Research/News_and_Breakthroughs/Keck_Quarterly_Research_Newsletter.aspx