

The American Association of Pharmaceutical Scientists
& USC Student Chapter proudly presents



DISEASE-DRIVEN AGING

Friday, August 19 2016, 8AM-6PM

Radisson Hotel,
Los Angeles Midtown at USC

www.movingtargets.la

USC School of Pharmacy



SCHEDULE OF EVENTS

WELCOME

8:00 am Breakfast and Registration

8:45 am AAPS-USC Student Chair Address

Ishan Patil

PhD Candidate, Molecular Pharmacology
and Toxicology
USC School of Pharmacy

09:00 am Dean of Graduate Affairs' Address

Annie Wong-Beringer, PharmD

Associate Dean for Graduate Affairs
USC School of Pharmacy

09:10 am Moving Targets Keynote Address-
Geroscience: Preventing rather than curing

Felipe Sierra, PhD

Director of Aging Biology
National Institute on Aging (NIA), NIH

SESSION I:

METABOLIC DISORDERS AND AGING

Session Chairs: Joshua Chen and Alick Tan
PhD Students, USC School of Pharmacy

09:50 am Bioenergetic Health and Personalized Medicine

Victor Darley-Usmar, PhD

Professor, Dept. of Pathology
University of Alabama at Birmingham

10:25 am Using Insulin to Maintain Cognitive Function in Aging

Olivier Thibault, PhD

Dept. of Pharmacology and Nutritional Sciences
University of Kentucky

SCHEDULE OF EVENTS

11:00 am Poster Presentation and Coffee Break

12:00 pm Group Photo

12:15 pm Networking Lunch

SESSION II: AGING WITH HIV

Session Chair: Maira Soto
PhD Candidate, USC School of Pharmacy

01:15 pm **The Epigenetics of HIV-Infection, Treatment and Aging**
Beth Jamieson, PhD
Professor, Dept. of Medicine
University of California, Los Angeles

SESSION III: AGING ACCELERATION IN CANCER

Session Chairs: Jordan Despanie and Rebecca Lim
PhD Students, USC School of Pharmacy

01:50 pm **How Senescent Cells Contribute to Aging and Disease**
Jan van Deursen, PhD
Professor, Dept. of Pediatric and Adolescent Medicine
Mayo Clinic

02:25 pm **Biologic Frailty: Exploring T-cell Senescence in Multiple Myeloma**
Christin Burd, PhD
Assistant Professor, Dept. of Molecular Genetics and Cancer Biology
Ohio State University

03:00 pm Coffee Break

SCHEDULE OF EVENTS

SESSION IV:

TARGETING SIGNALING IN AGING

Session Chairs: Santosh Peddi and Yvette Wang
PhD Students, USC School of Pharmacy

03:20 pm Rapamycin: The First Anti-Aging Drug?

Arlan Richardson, PhD
Professor, Dept. of Geriatric Medicine
University of Oklahoma Health Science Center

03:55 pm Mitochondrial-Derived Peptides and their Roles in Aging

Pinchas Cohen, MD
Dean, Leonard Davis School of Gerontology
University of Southern California

04:30 pm AAPS Address

Kate Chutuape
Public Outreach Manager
AAPS

04:45 pm MiORA Address

Ozlem Equils, MD
Founder
MiORA Foundation

04:55 pm Speaker Panel Discussion

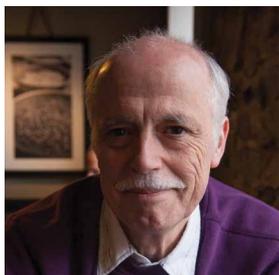
Chaired by Felipe Sierra, PhD
Director of Aging Biology
National Institute on Aging (NIA), NIH

05:25 pm Young Investigator Poster Awards

Presented by Enrique Cadenas, PhD
Professor, Pharmacology and Pharmaceutical Sciences
USC School of Pharmacy

05:40 pm Closing Remarks and Reception

KEYNOTE SPEAKER



Felipe Sierra, PhD

Director of Aging Biology
National Institute on Aging (NIA)
National Institutes of Health (NIH)

Felipe Sierra, PhD. is the Director of the Division of Aging Biology at the National Institute on Aging, NIH. Trained as a biochemist in his native Chile, he obtained a PhD in Biochemistry and Molecular Biology from the University of Florida in 1983. After a postdoc at the University of Geneva, he worked in industry (at Nestlé, still in Switzerland) for the next 5 years. At this stage he developed his interest in the biology of aging, an interest that brought him back to Academia (and to the United States), as an Assistant Professor at the Medical College of Pennsylvania, and later as an Associate Professor at the Lankenau Institute for Medical Research in Pennsylvania. This last position was shared with a primary appointment at the University of Chile in Santiago. Four years after initiating this arrangement, Dr. Sierra relocated again to the US, this time as a Program Director within the Division of Aging Biology, NIA. He became the Director of this unit in April 2006.

Dr. Sierra is also the founder and coordinator of the trans-NIH Geroscience Interest Group (GSIG). The group spans the entire NIH, and is built on the fact that aging is the major risk factor for most chronic age-related diseases – Alzheimer's, cardiovascular disease, cancer, and more – and thus understanding the basic biology of aging is central to our ability to address these diseases. In 2013 and 2014 he received NIH Director's Awards for this effort.

GUEST SPEAKER



Victor Darley-USmar, PhD

Professor, Dept. of Pathology
University of Alabama at Birmingham

Victor Darley-USmar received his Ph.D. at the University of Essex in England and then moved to the University of Oregon as a Post-Doctoral Fellow to pursue his interests in the structure and function of mitochondrial proteins in human disease. After a period as a lecturer in Japan and ten years as a Research Scientist in Burroughs Wellcome in London he joined UAB to establish his own research group in the Department of Pathology in 1995. He has received multiple awards for training and mentoring and served as the Associate Dean for Post-Doctoral Education and the Pathology Graduate Program Director. He established the UAB Center for Free Radical Biology from 2006-2015 as an international center for research in redox biology. In his role of Vice-Chair for Research he brings his experience in the commercial sector and career development programs to the strategic management of departmental research and faculty development. In his own research program he has been instrumental in defining how redox biology modifies mitochondrial function in pathology and in recognition of these achievements was awarded a Lifetime Achievement Award by the Society for Free Radical Biology and Medicine in 2012. At UAB his contribution to research in mitochondrial pathology was recognized by his appointment as the Foundation Faculty for the "Endowed Professorship in Mitochondrial Medicine and Pathology". He is now developing a program to apply measures of bioenergetic health to personalized medicine. He was a recent recipient of the prestigious "Creativity is a Decision" and "Blue Sky" awards from UAB for the Bioenergetic Health Index concept. He has been continuously funded by NIH for 20 years and has published over 300 articles with an H factor of 90.

GUEST SPEAKER



Olivier Thibault, PhD

Dept. of Pharmacology and Nutritional Sciences
University of Kentucky

Dr. Olivier Thibault is a Professor in the Department of Pharmacology and Nutritional Science at the University of Kentucky. His life-long pursuit has been to study neuroscience of learning and memory in young and aged animals, and he realized early on that most labs interested in brain processes and diabetes only studied the phenomenon in immature animals. His lab has helped elucidate several mechanisms underlying cognitive aging, and he is therefore uniquely positioned to address important questions about how changes in peripheral metabolism affect cognition with aging. Because of the sustained growth in the aging population, implementing strategies that maintain healthy cognitive function will tremendously benefit this segment of the population, and by extension, reduce the incidence of age-related neurodegenerative diseases. His work is translationally relevant and clinically-oriented with a primary goal of developing interventions which promote healthy brain aging (e.g., facilitating brain insulin receptor signaling by overexpressing human truncated beta subunit of the insulin receptor in a novel animal model). Ultimately, his research is aimed at improving neurological outcomes in diabetes by identifying mechanisms and potential strategies (novel ligands/treatments) that may counteract cognitive decline in aging and Alzheimer's disease.

GUEST SPEAKER



Beth Jamieson, PhD

Professor, Dept. of Medicine
University of California, Los Angeles

As an immunologist, Dr. Beth D. Jamieson has spent over 30 years researching the pathogenesis of chronic viral infections such as HIV-1. After earning her B.S. in Psychobiology at the University of Southern California, she transferred to UCLA to study the pathogenesis of lymphocytic choriomeningitis virus with Dr. Rafi Ahmed. Her dissertation explored the relationship between T-cell responses, viral clearance and the persistence of T-cell immunity. As a Post-Doctoral Fellow, she trained with Jerome A. Zack working with the earliest humanized mouse model of HIV pathogenesis. She then joined the faculty in the David Geffen School of Medicine at UCLA in 1994 and went on to characterize the capacity of the adult human thymus to contribute to T-cell reconstitution in HIV-1 infected individuals treated with antiretroviral therapies. In 2000, Dr. Jamieson became the Director of the UCLA Flow Cytometry Core Facility and an investigator with Multi-Center AIDS Cohort Study (MACS). Her current research focuses on the relationship between the impact of HIV-1-infection and aging on the human immune system. She, and her collaborators, were the first to demonstrate that premature aging of the T-cell compartment is associated with faster progression to AIDS, and that untreated HIV-1-infection accelerates aging of the immune system at the epigenetic level by approximately 14 years.

GUEST SPEAKER



Jan van Deursen, PhD

Professor, Dept. of Pediatric and
Adolescent Medicine
Mayo Clinic

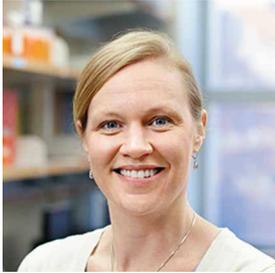
Dr. van Deursen received his Ph.D. in Cell Biology at the University of Nijmegen and is currently a Professor of Pediatrics and Adolescent Medicine and Chair and Professor of Biochemistry and Molecular Biology. He is the Vita Valley Professor of Cellular Senescence and Director of the Senescence Program in the Robert and Arlene Kogod Center on Aging.

The aging related work of the van Deursen lab focuses on the progeroid gene *BubR1*, which encodes a core component of the mitotic checkpoint whose level of expression markedly declines with aging. About 10 years ago, the lab discovered that *BubR1* hypomorphic mice that begin life with low amounts of the mitotic checkpoint protein *BubR1* protein die early and develop multiple progeroid and age-related disorders. Shortly thereafter, others demonstrated that loss of function mutations in *BubR1* cause mosaic-variegated aneuploidy, a human syndrome that is characterized by aneuploidy, cancer predisposition and several progeroid traits. These observations led to the idea that depletion of *BubR1* with age is a key determinant of longevity and age-related disorders. His lab went on to test this hypothesis using *BubR1* transgenic mice in which age-related decline of *BubR1* is prevented. These mice are resistant to tumorigenesis, have an extended lifespan and delayed age-related decline in several tissues and organs important to human health in the absence of any overt negative side effects. These findings identify *BubR1* and its regulator(s) as therapeutic targets for treatment of a broad spectrum of human cancers and key age-related disorders that dictate health and lifespan.

GUEST SPEAKER

In addition, using the BubR1 progeroid model, the van Deursen lab was the first to show an in vivo link between p16-induced cellular senescence and the development of age-related pathologies. Then, in collaboration with several laboratories in the Kogod Center on Aging, including the Kirkland and the LeBrasseur labs, his lab went on to show that clearance of p16-positive senescent cells from BubR1 progeroid mice delays the onset of age-related disease, further confirming the causal link between senescence and aging and demonstrating that removal of senescent cells can prevent or delay tissue dysfunction and extend healthspan.

GUEST SPEAKER



Christin Burd, PhD

Assistant Professor, Dept. of Molecular Genetics and Cancer Biology
Ohio State University

Christin Burd, Ph.D. is an Assistant Professor in the Departments of Molecular Genetics and Cancer Biology and Genetics at The Ohio State University James Comprehensive Cancer Center. Using genetically engineered mouse models and patient-derived samples, her lab aims to understand the connections between cancer and aging. One protein linking these two processes is the tumor suppressor, p16INK4a. To study p16INK4a, Dr. Burd has developed luminescent reporters of endogenous p16INK4a transcription in mice and examined the consequences of autologous hematopoietic stem cell transplantation on human T cell p16INK4a levels. Her ongoing research is focused on determining the correlation between geriatric assessment measures and p16INK4a in multiple myeloma patients.

GUEST SPEAKER



Arlan Richardson, PhD

Professor, Dept. of Geriatric Medicine
University of Oklahoma Health Science
CenterV

Arlan Richardson, PhD, earned his Ph.D. in biochemistry from Oklahoma State University and for the past 40 years has devoted his profession to aging research. He is the Founding Director of the Barshop Institute for Longevity and Aging Studies at the University of Texas Health Science Center at San Antonio and is currently Professor of Geriatric Medicine and the Donald W. Reynolds Endowed Chair of Aging Research at OUHSC and Senior VA Career Scientist at the OKC VA medical Center. Dr. Richardson has mentored and directed the research of more than 50 Ph.D. graduate students, postdoctoral fellows, and junior faculty and is the author of more than 240 peer-reviewed scientific publications. His leadership roles include serving as president of both the Gerontological Society of America and the American Aging Association. Among his honors and awards for his scientific contributions are the Gerontological Society of America's Robert W. Kleemeier Award, the Lord Cohen Medal for Services to Gerontology from British Society for Research on Ageing, the Harman Research Award for research contributions in the field of aging and dietary restriction from the American Aging Association and the Irving S. Wright Award of Distinction from the American Federation for Aging Research. In addition, Dr. Richardson served on the Board of Scientific Counselors at the National Institute on Aging from 2002 to 2007, and he was a member of the National Advisory Council on Aging from 2010 to 2013.

GUEST SPEAKER



Pinchas Cohen, MD

Dean, Leonard Davis School of Gerontology
University of Southern California

Pinchas Cohen is the Dean of the USC Leonard Davis School of Gerontology, Executive Director of the Ethel Percy Andrus Gerontology Center, and holder of the William and Sylvia Kugel Dean's Chair in Gerontology. He has received numerous awards for his research, including a National Institute of Aging "EUREKA" Award, the National Institutes of Health Director Transformative RO1 Grant, and the Glenn Award for Research in Biological Mechanisms of Aging. Cohen is president of the Growth Hormone Society and has served on the Endocrine Society Steering Committee. He sits on multiple NIH study sections and on several editorial boards. Cohen has published over 300 papers in top scientific journals focusing on aging, Alzheimer's, cancer, diabetes, growth hormone, IGF-biology, and the emerging science of mitochondrial-derived peptides, which he discovered. He holds several patents for novel peptides and is the cofounder of CohBar, a biotechnology company developing mitochondrial peptides for diabetes.

AAPS-USC BOARD MEMBERS

Ishan Patil | Chair

Ishan is a graduate student in the Molecular Pharmacology and Toxicology program. He completed his Bachelor's degree in Pharmacy at Pune University in India in 2012 before joining Dr. Enrique Cadenas's lab at USC, where he is currently studying the interaction between metabolism and inflammation in the aging brain.

Samy Habib | Vice Chair

Samy is a first year student in the Regulatory Science Program at USC. He earned his B.S. degree in pharmacy and M.S. degree in pharmaceutical chemistry from the German University in Cairo.

Pooja Vaikari | Treasurer

Pooja Vaikari received her Master's degree in Molecular Microbiology and Immunology from the Keck School of Medicine at USC in 2014 and is currently a first year Ph.D. student in the Molecular Pharmacology and Toxicology program. She joined Dr. Hou-da Alachkar's lab this year, and is studying therapeutic targets for Acute Myeloid Leukemia.

Benjamin Frey | Secretary

Benjamin Frey is a graduate researcher in the Ulmer lab currently investigating integrin subunits and their role in clotting. He graduated from the University of Missouri in 2015 and started at USC in the same year at the Keck School of Medicine.

Xianhui (Sharon) Chen | Social Chair

Xianhui Chen is a first year Ph.D student in the department of Pharmacology and Pharmaceutical Sciences at USC. She received her Bachelor's in Pharmacy in 2013 and Master's degree in Pharmaceutics in 2015 from Peking University. Xianhui joined Dr. Pin Wang's lab where she is conducting research on CAR-Engineered NK Cells with Surface-Conjugated Synthetic Nanoparticles for Targeted Cancer Therapy.

Larry Rodriguez | Communications Chair

Larry Rodriguez is a first year PhD student in the Pharmacology and Pharmaceutical Science program. In 2013, he was an Ecological Genomics fellow at Kansas State University. In 2014, he was inducted into the ACS Scholars Program. He has earned BSc degrees in Chemistry, Biology, and Biochemistry from Kansas State University (2015). He is interested in studying structure activity relationships in proteins, as well as antibody engineering.

J. Andrew MacKay, PhD | Faculty Advisor

Dr. MacKay received his BS in Chemical Engineering and Biology from MIT in 1999 after which he joined the Bioengineering department at UCSF-Berkeley in 2000. Upon completing his PhD in 2005, he joined the Biomedical Engineering department at Duke University, where he earned a postdoctoral fellowship. He is currently an Assistant Professor at USC since 2009.



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