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# VITALITY

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## MISSION STATEMENT

The USC Leonard Davis School of Gerontology is devoted to improving the lives of older persons through education and research.

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# USCDavis

Leonard Davis School of Gerontology

## AN EXERCISE IN EMPATHY

Students in GERO 505, "Behavioral and Social Consequences of Design and Environment," experienced age-related impairments firsthand on January 21, 2016 as part of a presentation by Heather Wanket RN, a health promotion nurse and gerontologist with SCAN Health Plan. The students wore earplugs simulating hearing loss, glasses mimicking various vision problems, and gloves and wraps that reduced dexterity and mobility akin to arthritis and stroke. Wanket also presented information on how to communicate with, understand, and help older adults facing various impairments, including vision loss, hearing loss, limited mobility, and cognitive decline. ▶



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“Californians Can Now  
Decide When They Die”

by Susan Enguidanos and  
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# DEAN'S MESSAGE

Welcome to the Spring 2016 issue of *Vitality* magazine! This issue of *Vitality* highlights research and education taking place at the USC Leonard Davis School of Gerontology on the many ways that our nutrition affects our aging.

From helping defend us against cellular damage to lowering our risk of Alzheimer's, Davis School faculty members are identifying how a healthy diet affects our body not just in the short term but further along in our lifespan as well; learn more about their promising research in our cover story. Cary Kreutzer, director of our Master of Science in Nutrition, Healthspan, and Longevity program, also shares information on how to encourage good nutrition habits that last in this issue's "Healthy Aging Tips" column.

These insights and future findings will offer incredible opportunities to empower individuals to see past popular misinformation and fads and make a real impact on their long-term health with personalized aging guidance and evidence-based lifestyle choices. If you're interested in learning more about nutrition research and other scientific investigation taking place at the Davis School, you're invited to our "What's Hot in Aging Research: Nutrition, Genomics, and Longevity" conference on April 18, 2016, which will include insightful presentations from several Davis School experts. You can find more information about the event on page 35.

This issue also shares additional Davis School news and achievements, including award-winning research presentations by two PhD in Gerontology students; several prestigious faculty honors; new research on topics from Alzheimer's to stereotyping in health care; and an exciting new study abroad opportunity in Israel for students looking for an international perspective on aging psychology.

This spring, we also take time to remember and celebrate the life of James E. "Jim" Birren, a world-renowned gerontology pioneer and the founding dean of the Davis School of Gerontology, who passed away on January 15, 2016 at the age of 97. His vision for the school and for the field of gerontology as a whole proved to be transformative, and his legacy lives on in the continued success of our school and its graduates.

True to Jim's vision, the Davis School of Gerontology community—from students and alumni to faculty, staff, and friends of the school—is an amazing group that is changing the field and improving lives in many ways. I look forward to seeing all of you around the school and at upcoming events throughout the year.

Fight On!



Pinchas Cohen, M.D.  
Dean, USC Leonard Davis School of Gerontology  
Executive Director, Ethel Percy Andrus Gerontology Center  
Holder, William and Sylvia Kugel Dean's Chair in Gerontology

# KELVIN DAVIES

## ELECTED TO THE ACADEMIA EUROPAEA



Professor Kelvin J. A. Davies of the USC Leonard Davis School of Gerontology and Dornsife College of Letters, Arts, and Sciences has been elected as a Fellow of the Academy of Europe (Academia Europaea), the premier academic body of the entire European continent.

Membership in the Academy is limited to only 2,600 scholars at any one time, 54 of whom currently are winners of the Nobel Prize. Only 45 new initiates are inducted each year, and election to Fellowship is an honor that recognizes the very highest levels of outstanding international scholarship. The Academia Europaea is a pan-European organization of the most prominent, eminent, and influential European scholars and is unique amongst European academies in providing a broad assembly of excellence from across the entire continent, with members drawn from a population of almost 750 million people.

Davies was born and raised in London, England and is a dual citizen of Great Britain and the U.S. Educated at London and Liverpool Universities, the University of Wisconsin, Harvard University, and the University of California at Berkeley, he was previously a faculty member at Harvard University and Harvard Medical School. Before moving to USC in 1996, Davies was Chairman of the Department of Biochemistry & Molecular Biology at the Albany Medical College, where he was also professor of Molecular Medicine. At USC, Davies serves as James E. Birren Professor and Dean of Faculty and Research at the Davis

School, Director of the Ethel Percy Andrus Gerontology Center, and Director of the USC Free Radical Institute. He is also Professor of Molecular & Computational Biology in the USC Dornsife Department of Biological Sciences.

“I am deeply grateful to the wonderful mentors who helped guide me on the path of discovery; to the colleagues and collaborators who so expanded my horizons; and to the students, post-doctoral fellows, and senior scientists who have worked in my lab over the years, and to whom this honour really belongs,” Davies said. “I hope to be an active member of the Academy and to give back at least some of what was given to me.”

Deeply involved in research into free radicals, oxidative stress, redox regulation, and aging, Davies is the founding editor-in-chief of the field’s premier scientific journal, *Free Radical Biology & Medicine*. He pioneered the study of protein oxidation and proteolysis during oxidative stress and gene expression during stress adaptation and uncovered the role of free radicals in mitochondrial adaptation to exercise. He also discovered the mechanism by which an entire class of chemotherapeutic drugs functions in the body and discovered five stress genes including RCAN1, which regulates calcineurin and whose misregulation contributes to Alzheimer’s disease, Down syndrome, and Huntington’s disease. He developed the phrase “Adaptive Homeostasis” to describe the ability to increase (or decrease) the body’s range of defensive capacities through signal transduction pathways that control the expression of key genes for vital protective enzymes like the proteasome and the mitochondrial Lon protease. In particular, he has been defining the pathways and mechanisms by which adaptive homeostasis declines with age, predisposing the elderly to stress-related diseases and frailty.

Davies is past president of the Society for Free Radical Biology & Medicine and the International Society for Free Radical Research. He has been awarded seven honorary doctoral degrees and professorships from European, American, and Asian Universities. He has won numerous medals, prizes, distinguished/lifetime scientific achievement awards, and mentoring awards and has been elected a Fellow of eight national/international scientific societies including the Royal Institution, the Royal Society of Medicine, the Royal Society of Biology, and the Royal Society of Chemistry. Davies was knighted as a Chevalier de l’Ordre National du Mérite de France (Knight of the National Order of Merit of France) in 2012 by French President Nicolas Sarkozy for his services to science, humanity, and international cooperation. ■



# REMEMBERING GERONTOLOGY PIONEER JAMES E. BIRREN

Professor Emeritus James E. “Jim” Birren, the founding dean of the USC Leonard Davis School of Gerontology and an aging research pioneer considered by many to be the father of modern gerontology, passed away on January 15, 2016 at the age of 97.

“Everyone at the Davis School of Gerontology owes so much to Jim Birren and his vision for the field of gerontology,” said USC Davis Dean Pinchas Cohen. “His passion and dedication paved the way for our continued leadership and innovation in the study of aging, and our graduates’ success in improving the lives of older adults everywhere is part of his enormous legacy.”

Born April 4, 1918 in Chicago, Birren received a bachelor’s degree in education from Chicago Teachers College (now Chicago State University). He completed a master’s degree and a Ph.D. in psychology at Northwestern University, receiving his doctorate in 1947 following his service in the United States Navy.

In his naval service, he participated in research at the Naval Medical Research Institute in Bethesda, Maryland. It was during this time he met physiologist and gerontology pioneer Nathan Shock, who was forming the U.S. Public Health Service’s inaugural gerontology research unit in Baltimore and asked Birren to join him after he completed his doctorate. During three years in the Baltimore research unit, Birren studied the differences in young and older subjects; his research questions ranged from variations in visual dark adaptation to intelligence and behavior speed.

Following his work at the U.S. Public Health Service, he relocated to the National Institute of Mental Health, where he founded the Institute’s

Section on Aging and established its multidisciplinary view of aging. In 1964, he also launched the research programs in aging at the National Institute of Child Health and Human Development, the precursor of the National Institute on Aging. It was then that USC President Norman Topping successfully recruited Birren to come to Los Angeles in 1965 and establish the university’s program in gerontology.

As the gerontology program’s first director, he immediately began to secure grants and recruit faculty and students across numerous fields, leading to the dramatic growth of the program. He oversaw the fundraising and construction of the Ethel Percy Andrus Gerontology Center, which was dedicated in 1973 and remains the home of the Davis School.

In addition to the Andrus Center’s support of aging research, Birren saw the need for an institution to educate individuals who wished to create and deliver services to the elderly. It was with this vision that he led the planning and creation of the USC Leonard Davis School of Gerontology, the first and largest school of gerontology in the world. The Davis School opened in 1975 and was named with an endowment gift from American Association of Retired Persons (now AARP) President Leonard Davis.

Birren was appointed the school’s inaugural dean, a position he held until 1989. Throughout his deanship at the Davis School, he cemented the school’s role as an educational pioneer in gerontology, establishing the gerontology field’s first master of arts and doctor of philosophy degrees. He also remained a prolific researcher, studying cognitive changes in relation to aging, publishing

more than 250 papers, and authoring and editing several of the field’s most important books.

Outside of the school, he held numerous other professional leadership roles, including co-founder of the California Council on Gerontology and Geriatrics. Among the dozens of high honors he received from his colleagues are the Gerontological Society of America Award for Meritorious Research, the Ollie Randall award from the National Council on Aging, induction into the American Society on Aging Hall of Fame, the American Psychological Association Award for Distinguished Scientific Contributions, and the USC Associates Faculty Award. He received honorary doctorates from the University of Gothenburg, Sweden; Northwestern University; and St. Thomas University, Canada.

In 1989, he moved to the University of California, Los Angeles, where he remained as the Associate Director of the UCLA Center on Aging until he retired in 2003. He also became a senior distinguished research faculty member at California State University, Fullerton. However, he never lost his appreciation for USC, and he returned to the Davis School in 2006 to teach guided autobiography, a subject he researched and championed for more than 30 years. At his 90th birthday party in 2008, he and his wife Betty announced the Birren Endowed Fund for Autobiographical Studies, which they established with a gift of \$100,000 to the Davis School.

He was preceded in death by his wife, Betty Birren (née Solomon). He is survived by his daughter, Barbara Birren Rowland, and his sons, Jeffrey Birren and Bruce Birren. ■

# AGHE HONORS DAVIS SCHOOL FACULTY MEMBERS



Dean Pinchas Cohen



Professor Elizabeth Zelinski



Lecturer Greg Bearce

Three USC Leonard Davis School of Gerontology faculty members have been named recipients of prestigious awards given by the Association for Gerontology in Higher Education (AGHE) and will be honored at the group's annual meeting in Long Beach March 3-6.

Davis School Dean Pinchas Cohen, executive director of the Ethel Percy Andrus Gerontology Center and holder of the William and Sylvia Kugel Dean's Chair in Gerontology, is the 2016 recipient of the Administrative Leadership Award. According to the AGHE website, the award honors administrators who have made exceptional efforts in support of gerontology or geriatrics education and have "gone the extra mile" to support gerontology or geriatrics education on campus.

"I am grateful and humbled to be recognized in this fashion by AGHE," Dean Cohen said. "I am immensely thankful for our creative and hardworking faculty, our dedicated staff, and our incredible students and alumni—they are the people who have made the Davis School's continued success possible."

Davis School Associate Dean Maria Henke, who nominated Cohen for the award, said that his leadership of the school comes at a critical time of many changes and opportunities for the school and for the field of gerontology.

"Since he became dean of the Davis School in 2012, his leadership has shaped the school—already a landmark

institution in the gerontology field—into an even more dynamic force for discovery and innovation as the world faces unprecedented aging-related changes," Henke wrote in her nomination letter.

Davis School Vice Dean, Ethel Percy Andrus Gerontology Center Director, and James E. Birren Chair in Gerontology Kelvin Davies also wrote a letter supporting Cohen's nomination, praising his ability to recruit new faculty members and start new research and educational initiatives.

"It is truly remarkable how much Dean Cohen has achieved in his first three years at USC," Davies said. "The faculty have been revitalized by both junior and senior hires in key areas, important facilities have been renovated or newly installed, and vital support staff have been hired. This has all been accompanied by multiple new programs and initiatives that have either been his inventions or the result of faculty/staff teams he established to explore cutting-edge new directions."

The association also recognized Elizabeth Zelinski, holder of the Rita and Edward Polusky Chair in Education and Aging and professor of gerontology and psychology, with the Distinguished Faculty Honor. The award recognizes exemplary and innovative teaching, and the honoree is invited to present a highlighted teaching workshop at the annual AGHE meeting.

Several current and former students of Zelinski wrote in support of her nomination, including Davis School Research Associate Deanah Kim Zak.

"She is a kind, caring, and hard-working advisor and teacher, and she has had a great impact in my life as a student and as a person," Zak said. "It is evident in everything she does that her priority is her students and their success, both in the classroom and in their research. An important aspect of Dr. Zelinski's interactions with students is her profound interest in her students' work and research interests, and she provides just the right amount of structure yet tries to cultivate independent thinking in her students."

Lisa Brinkmann, a 2012 USC Master of Science in Gerontology graduate and executive director of the Marin Villages senior community in Marin County, Calif., recalled how Zelinski made gerontology knowledge approachable and applicable for her.

"I am an 'older' student of gerontology, having enrolled in the program after a 30 year career in business; Dr. Zelinski added a perspective to my education upon which I still reflect," Brinkmann said. "She has a wealth of knowledge and experience that surpasses most, yet she was able to relate to the students in a very personable manner. She demonstrated the importance of technology and innovation and exposed students to real life examples of how concepts can be applied and their impact in our society."

Zelinski described receiving the award as a "tremendous honor."

"I had caring and inspiring teachers during my graduate training, and I really

tried to emulate their approach. Aging has been my passion for many years, so it's not difficult to share the enthusiasm," she said. "I have often told people that I have the best job in the world, helping students develop into professionals. And I never have to say goodbye to them, only farewell, as we see each other at gerontology events on a regular basis!"

Greg Bearce, lecturer for the Master of Aging Services Management program, was named the recipient of the 2016 Part-Time Faculty Recognition. The senior vice president and chief operations manager at American Baptist Homes of the West, is a talented and committed educator who brings a wealth of real-world aging services experience to the classroom, Henke said.

"His expert business perspective is immeasurably valuable for our students, and even with his busy professional schedule he spends a great deal of time helping with their career development beyond the classroom," she said. ■

# SEAN CURRAN

## RECEIVES BUSSE RESEARCH AWARD

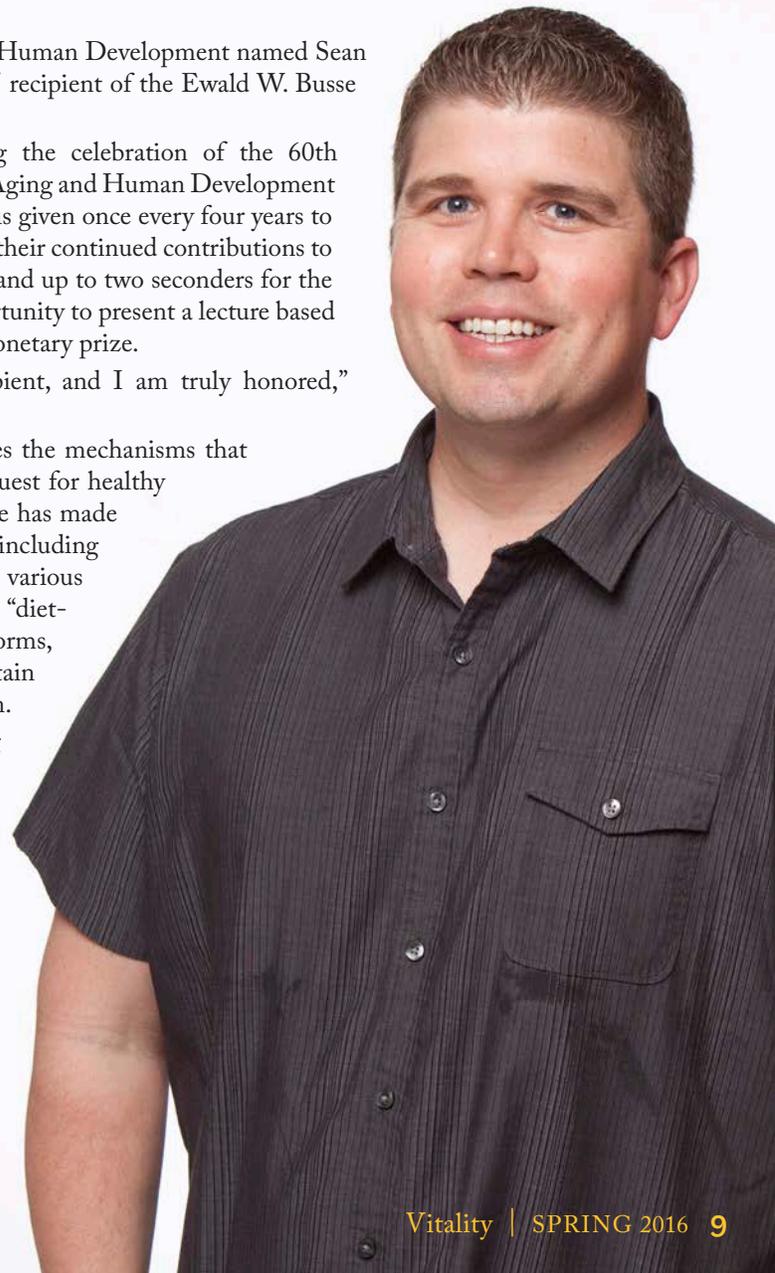
The Duke University Center for the Study of Aging and Human Development named Sean Curran of the USC Davis School of Gerontology the 2015 recipient of the Ewald W. Busse Research Award in the Biomedical Sciences category.

Assistant Professor Curran received the award during the celebration of the 60th anniversary of the Duke University Center for the Study of Aging and Human Development in Durham, NC on September 25, 2015. The Busse Award is given once every four years to recognize late junior or mid-career scientists and encourage their continued contributions to aging research; the award application requires a nominator and up to two seconders for the candidate. This year's award provided Curran with the opportunity to present a lecture based on his research at the 60th anniversary ceremonies and a monetary prize.

"I was surprised when I was told that I was the recipient, and I am truly honored," Curran said.

Curran, who joined the Davis School in 2010, researches the mechanisms that balance cellular metabolism with stress adaptation in the quest for healthy aging. In just five years as a tenure-track faculty member, he has made several exciting advancements in the biology of aging, including groundbreaking work on how specific genes interact with various diets to increase or decrease lifespan, otherwise known as "diet-gene pairs." His work has also combined results from worms, mice, and human cells, highlighting how the actions of certain cellular pathways have been conserved throughout evolution.

"The hope is that our studies will impact our understanding of the aging process. We study this in the whole organism by assessing how healthy individuals are at later stages in life. As a parallel approach, we are assessing how our genetic and molecular manipulations impact the occurrence and severity of age-related diseases such as diabetes, cancer, and muscle degeneration," Curran said of his research. "Most, if not all, of the genes and pathways that we have studied are remarkably conserved from simple single-cell organisms to humans. As such, we have made a major shift to using human cell culture and mouse models." ■



# USC DAVIS STUDENT RESEARCHERS HONORED AT GSA ANNUAL MEETING

USC Davis School PhD in Gerontology students Catherine Pérez and Jeanine Yonashiro-Cho received awards for their research during the 2015 Gerontological Society of America (GSA) Annual Scientific Meeting held November 18-22 in Orlando, Fla.

Pérez won both the Minority Issues in Gerontology Student Poster Award and the Emerging Scholar and Professional Organization (ESPO) Poster Award for her poster “Looking Beyond the Hispanic Paradox: Health Differences by Hispanic Ethnicity.” Pérez’s research, conducted with USC Davis Assistant Professor Jennifer Ailshire, examines the deeper facts behind the so-called “Hispanic Paradox”—the idea, based on broad statistics, that health among Hispanics is comparable to or better than that of whites despite Hispanics’ relative socioeconomic disadvantage. The study highlights ethnic differences in disease burden based on language and nativity status, suggesting that the Hispanic paradox does not apply to all Hispanics.

The practice of combining Hispanic groups may hide disadvantages experienced by particular groups by averaging them together, Pérez said. Her GSA poster presentation focused

on two significant findings from the research: Hispanics who took their interview in Spanish had a higher disease burden compared to those who took the interview in English, and island-born Puerto Ricans had higher disease burden compared to their U.S.-born counterparts.

“With the goal of unpacking Hispanic diversity, I feel the most important take away from this project is that conclusions regarding the Hispanic paradox can lead to inaccurate information about the ethnic groups that exist within the overall Hispanic population,” Pérez said. “Researchers who are interested in studying the Hispanic population should disaggregate the Hispanic category in an attempt to be mindful of the various experiences, sociopolitical histories, and cultural factors of individuals from different countries of origin, or which ethnicity they identify with.”

Yonashiro-Cho’s presentation about her elder abuse research, “Characteristics of Intentional Injuries among Older Adults Presenting to Hospital Emergency Departments 2001-2010,” earned the SRPP section’s Outstanding Student Poster award during the conference. Though there is an increasing amount of scientific literature regarding elder abuse, few studies have used population-wide data to examine characteristics of abuse-related injuries seen by health care practitioners. Yonashiro-Cho’s study used 2001-2010 National Electronic Injury Surveillance System data, identifying patient and injury characteristics associated with intentional and unintentional incidents among patients age 65 and older seen in emergency departments.

A few of her findings included increased likelihood of injuries being intentional in men versus women, in younger versus older seniors, and in members of racial or ethnic minorities versus whites. Injuries to the head, face, and upper torso were more likely to be intentional than unintentional or of unknown cause, and contusions, abrasions, lacerations, and puncture wounds were also more likely to be intentional injuries versus

unintentional or unknown intent.

Yonashiro-Cho said that the need for providers to recognize abuse is stark. The most recent national estimates say one in 10 older adults has experienced abuse within the past year, with over 90 percent of these cases never being reported to a legal or social services agency, she explained.

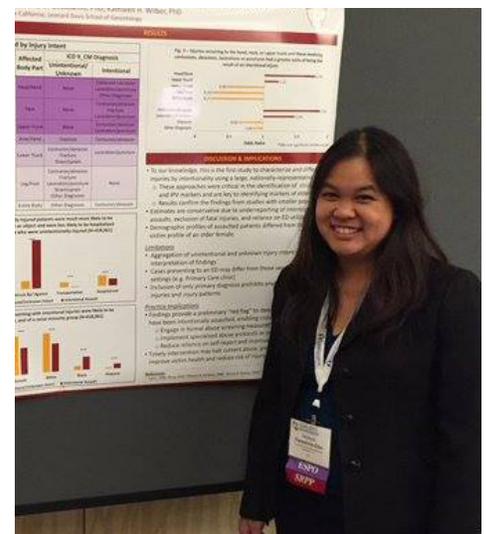
“Our research provides some insight that may help practitioners better recognize when an injury might have occurred through abuse, whether or not an older adult ever reports it as abuse,” she said. “This is especially critical in older adult populations because unlike younger victims, elderly victims may be physically or cognitively unable to report the abuse and might otherwise never receive any support or intervention.

Yonashiro-Cho said she plans to continue exploring the issue of elder abuse and hopes to identify additional ways to quickly and accurately recognize abuse and its effects.

“I’m so honored to be recognized by the SRPP section and so blessed and thankful for to work with Drs. Kathleen Wilber and Zachary Gassoumis. I am also very excited for the opportunity to share this research with others who might not otherwise stop to think about elder abuse or neglect,” Yonashiro-Cho said. “I would love to continue looking at forensic markers of abuse and to continue developing tools which practitioners, family members, and friends can use to assess whether an older adult might have been physically abused or assaulted. Additionally, I hope to begin looking at the health consequences of abuse to identify how experiencing an assault might influence the long-term health of older adults.” ■



Catherine Pérez



Jeanine Yonashiro-Cho

# USC FAMILY CAREGIVER SUPPORT CENTER CELEBRATES NEW ROSEMEAD FACILITY

BY RAPHE MARGOLIN MASM '16

On Friday, October 23, 2015, the sun was shining brightly on the USC Family Caregiver Support Center satellite office in Rosemead, and life also became a bit brighter for the area's many caregivers as the center celebrated its grand opening.

Rosemead Chamber of Commerce's Executive Director and CEO Helen Hua led off the festivities as she discussed the importance of supporting caregivers and how the facility benefitted the community. Assemblyman and Trojan Ed Chau, representing the 49th assembly district, spoke of his personal connection to this project. He explained the challenges he faced as his father's caregiver over the last few years of his life and the support available as he helps care for his elderly mother.

Representatives from County Supervisor Hilda Solis, Congresswoman Judy Chu, and Senator Ed Hernandez office spoke about this wonderful addition to the community. CC DeGraff of the California Mission Inn assisted living facility discussed how thankful they were to provide a location for this worthy cause.

"One out of four Americans is caring for some family member informally," said USC Davis School of Gerontology faculty member and geropsychologist Donna Benton, director of the USC Family Caregiver Support Center. She indicated the importance of having such centers across Los Angeles County, noting that "If the caregiver goes down, then you have two people who are going to be sick."

David W. Chan, who said he has been a caregiver for his father, Tony T. Chan, since 2003, explained how important it was for him to find the caregiver support group. As the eldest and only single child, he is expected to care for his father the majority of the time. Another caregiver and Rosemead resident, Cheryl Monteleone, spoke about how she has been caring for her mother for the past three years. She expressed enthusiasm for the support she will receive and the opportunity to socialize with other caregivers.

Since 1989, the USC Family Caregiver Support Center at the Davis School has placed a high priority on providing support across the continuum of caregiving, including diagnosis, prognosis, services that help maintain the care recipient's independence and abilities, and helping caregivers care for themselves and manage their own well-being. Supportive services include information, assessment, individual consultations, respite, education, and training. For more information, please visit [fscgero.org](http://fscgero.org). ■



FCSC and Davis School staff celebrated the new facility's grand opening with local officials.

## ZEKENIM RECEPTION CELEBRATES ART INSPIRED BY SENIORS' STORIES



Art inspired by the lives of Jewish older adults was celebrated at the Zekenim reception held in the USC Davis School courtyard on October 13, 2015.

Zekenim, an intergenerational art program designed to illuminate the life stories of Los Angeles' Jewish elders, guides older adults in sharing and sketching pivotal experiences from their life stories. Thematic analysis of the life stories by a research team, led by USC Davis assistant professor and lead project investigator Tara Gruenewald, serves as the basis for art created by young adults.

The program is supported by the Jewish Community Foundation of Los Angeles and the Davis School Creativity and Aging Initiative. To learn more, visit [zekenim.org](http://zekenim.org). ■

# USC DAVIS SCHOOL TO LAUNCH PSYCHOLOGY OF AGING COURSE IN ISRAEL

Later this spring, students will have a new opportunity to study key gerontology topics in one of the world's most interesting places to study aging: Israel.

The result of a newly launched educational partnership between the Davis School and the Interdisciplinary Center in Herzliya, Israel (IDC Herzliya), the program's inaugural course will be "The Psychology of Aging" (GERO 320) and will be open to both undergraduate and graduate students from USC and IDC. The three-week course, held at USC during the first week and in Herzliya during the second and third weeks, will be taught by aging psychology expert and USC Davis Professor Mara Mather.

During the course, students will learn about the cognitive, personality, adaptive, and social processes taking place throughout the adult lifespan as well as current gerontology theory and research. Several guest lecturers from Israel's gerontology, psychology, and neuroscience communities will also present material throughout the course.

Israel provides a unique venue for the study of aging, Mather said. While its population is relatively young compared to many other developed countries, it is aging more rapidly than many of its counterparts. Thus, Israel can serve as an important example for other nations working to adapt to the "silver tsunami," or the outnumbering of young people by older adults that is projected to affect nearly every country in the coming decades. Also, members of Israel's older generation have experienced the country's founding, several waves of immigration, and other major events affecting health and well-being throughout their life histories.

"Jewish tradition provides another fascinating layer to the context of aging in Israel, as it considers old age a virtue and a blessing in contrast to the negative attitudes prevalent in many developed countries," Mather added.

Helping the world's aging population lead not only longer but healthier lives is one of the biggest problems of the 21st century and is a key issue for USC, said Davis School Dean Pinchas Cohen. The Davis School's efforts in Israel will eventually include not only summer courses but also scientific collaboration involving faculty members and postdoctoral researchers from USC and universities throughout Israel.

"USC is known globally as a leader in gerontology; this course in Israel will build upon the Davis School's growing global aging efforts in countries such as Italy, China, Singapore, and others," Cohen said. "Participation in the course will lend itself to transformational experiences not only in the classroom but in the field."

The course will take place May 16-June 3, 2016. Students interested in signing up for the course can contact USC Davis School Admission Counselor Sade Ojuola at (213) 740-1728 or [ajuola@usc.edu](mailto:ajuola@usc.edu). ■

*The course, which will start in May and be taught by USC psychology of aging expert Mara Mather, is the first of a set of programs created by the Davis School and IDC Herzliya.*



# INTERNSHIP INSIGHTS: ST. BARNABAS SENIOR SERVICES

BY RAPHE MARGOLIN MASM '16

Internships can help USC Davis School of Gerontology students obtain experience and improve their resumes, but they are about much more than that.

“We strive to place students in internships that match their future goals and professional aspirations,” says Anna Quyen Nguyen, USC Davis School director of internship training.

One such site where interns have been placed is St. Barnabas Senior Services (SBSS). SBSS, which opened its doors in 1908 in Los Angeles, is a nonprofit and nonsectarian organization that has been recognized for its innovative programs. Its locations include two multipurpose centers in Mid-City Los Angeles and Hollywood, with a third location in Echo Park set to open in March 2016.

SBSS provides dozens of direct services to its clients, including legal and financial guidance, help with meeting health and home care needs, and more. SBSS serves more than 1200 meals to older adults Monday through Friday at 12 congregate nutrition sites throughout the county—providing not only traditional American-style meals but also serving traditional Chinese and Korean cuisine. Other SBSS offerings include two cyber cafés, where seniors can utilize computers and take classes. Older adults can also participate in creative ways to encourage physical activity, including exercise classes, and take adult learning classes on a variety of subjects.

Interns at SBSS can be responsible for a variety of activities and projects, says SBSS Civic Engagement Coordinator Brandi Orton. Previous interns have led projects related to case management for older adults, program evaluation, community outreach and marketing, fundraising, event planning, advocacy for aging issues, and more.

In addition to providing excellent opportunities for USC students, SBSS has formed a partnership with USC, the Increasing Stability Through Evaluation and Practice Program (InStep). InStep’s aims to reduce the risk of falls and test how effective a general exercise class is for seniors with history of falling. These and additional programs provide Trojans the opportunity to get work experience while making a difference in the lives of the aging population. Students can benefit from their internships at SBSS in many ways, from getting a firsthand look into the lives of economically vulnerable and culturally diverse older adults in Los Angeles County to honing their time management and project management skills, Orton adds.

Interns have gained vast experience and made invaluable business contacts while working at SBSS, and a number of USC student interns have gone on to work at SBSS full-time after graduation. Currently, Bachelor of Science in Human Development and Aging student Rita Chakrian is interning at SBSS’ advocacy arm, the Los Angeles Aging Advocacy Coalition, and helping with preparation for their annual conference.

Individuals who have been hired by SBSS possess qualities such as the ability to work independently, good communication skills, good attitude, strong work ethic/sense of accountability, ability to be a good team player, and strong leadership skills, said SBSS President & CEO Rigo J. Saborio MSG '94.

“SBSS is experiencing growth in both direct services and in administrative, organization-wide leadership positions,” Saborio said. “Consequently, there are opportunities for interns to get hired into full-time positions with a chance to make an immediate impact.”

A fellow Trojan, Saborio says his USC Davis School of Gerontology education has been extremely valuable for his work at SBSS.

“The coursework prepared me to analyze and navigate the political, public, and fiscal policy environment; to support and lead staff through enthusiasm and goodwill; to embrace the challenges and opportunities of fundraising; and to understand the aging process and issues facing the vulnerable older adult community we serve,” he says.

St. Barnabas Senior Services provides many opportunities for students as well as numerous services to the community. Please check out their website at [www.sbslla.org](http://www.sbslla.org) to see all that St. Barnabas Senior Services has to offer! ■

*SBSS offers many services to older adults at multiple locations, including help with basic needs and health care access; arts, computer, and exercise classes; and financial and legal guidance.*



# NUTRITION & AGING

According to the popular adage, “we are what we eat.” Faculty members of the USC Leonard Davis School of Gerontology are adding a new dimension to this piece of common wisdom—what we eat not only determines what we are but also how we age.

Basic and translational research taking place at the USC Davis School is uncovering the numerous and often surprising ways that what, when, and how much we eat affects the aging process and the risks of aging-related illnesses. And with access to top faculty members, their latest discoveries, and unmatched opportunities for real-world learning experiences, Davis School graduates are poised to serve the community and bring state-of-the-art, evidence-based nutritional knowledge to those who need it most.

## DIET AND DNA WORKING TOGETHER

Pinchas Cohen, Davis School dean and Ethel Percy Andrus Gerontology Center executive director, is a pioneer of and advocate for “personalized aging,” the concept of taking individual characteristics into account when identifying challenges to and providing recommendations for maximal longevity. An especially promising facet of personalized aging is the emerging discipline of “nutrigenomics,” or the study of how our dietary factors interacts with our genes, he says.

“Providing personalized guidance based on genomics could make a huge difference in both our society’s perception of aging and the huge costs of age-related disease that we collectively bear,” Cohen says. “For instance, someone with a high genetic risk of diabetes should probably adopt a low carb diet, while a person with high risk for coronary disease will benefit from a Mediterranean diet. Similarly, an individual with a genetic makeup that predisposes for cancer may reduce their risk of contracting it by eating a low-protein diet.”

Scientists at the Davis School are discovering nutrigenomics insights in interesting ways—at first glance, one wouldn’t think that humans would have much in common with the tiny worm species *C. elegans*. However, these millimeter-long worms that prefer to dine on bacteria have the potential to help us determine how our own genes affect the ways in which our bodies respond to particular diets, says Assistant Professor Sean Curran.

“The genes that we study [in *C. elegans*] are found in you and me,” Curran says. “They have the same functions, which are likely important as they have been conserved over evolutionary time. We are testing this hypothesis now by moving our efforts into human cell culture and mouse models.”

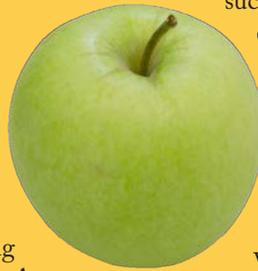
Curran and his team are working to identify “diet-gene pairs,” or instances where a specific gene’s function depends on the content of an organism’s diet. In 2014, the team identified a collection of genes that allow an organism to adapt to different diets. The study also showed that when the genes were deactivated, even minor tweaks to diets led to premature aging and death.

“The function of these genes are important on particular diets and nutrients but not on others. The discovery of such pairs reinforces and provides experimental evidence that the ‘one-size-fits-all’ approaches to diet are not the best approach for health,” Curran says. “This discovery is just the beginning, but is representative of a genetic defect that can be corrected by a simple change in diet choice. With a more complete picture of what our genetic makeup is, we will be more effective and defining what types of food—quantity and quality—we should be eating. This personalized approach to diet and medicine is important for promoting healthspan.”

## DEFENSIVE DINING

Beyond fueling our daily lives, the nutrients in our diet interact with our genes to protect against cellular damage, says Professor Kelvin Davies. He is the vice dean and James E. Birren Chair in Gerontology at the Davis School and leads research into how certain genetic pathways control the levels of highly reactive chemicals in our bodies as director of the USC Free Radical Institute.

Due to their structure at the atomic level, certain chemicals produced in the body react with the oxygen we breathe, and with foods we eat, to produce highly reactive oxygen free radicals, and other reactive oxygen species such as the superoxide radical, hydrogen peroxide, and the hydroxyl radical. Thus, although oxygen is necessary for life, it can also cause oxidative stress, which produces cellular damage and genetic mutations. Davies coined the term “The Oxygen Paradox” and wrote a book with the same title in the 1990s to describe this phenomenon.



Today, oxygen free radicals are often targeted as a health villain by marketers touting antioxidant “superfoods,” dietary supplements, and the like.

However, thinking of free radicals and similar chemicals as solely harmful is misguided, and eliminating them from our bodies entirely isn't possible. Some of these highly reactive molecules have important roles within the body, such as defending against bacterial and fungal infections. We're exposed to free radicals and other highly reactive compounds not only via chemical reactions caused by environmental sources—ultraviolet radiation, pollution, medications, and more—but also through our cells' normal conversion of food to energy. Much in the same way that a car engine isn't perfectly efficient and releases byproducts as it partially converts fuel to energy, the “engines” of our cells, or mitochondria, convert most of our food into energy but produce a small amount of free radicals as byproducts of the process, Davies explains.

“Life is chemistry; there is no way to maintain human life without free radicals,” he says. “They are a totally natural part of our very existence.”

The key is keeping their levels in a healthy balance, or maintaining “nucleophilic tone,” and a good diet rich in fresh fruits and vegetables is indeed important for this, Davies says. But instead of antioxidants in our diet scavenging for free radicals to directly neutralize them, the evidence now points to nutrients protecting cells in a more indirect way. Paradoxically, certain nutrients that are weak oxidants themselves activate signaling pathways in our genes, which then produce enzymes that combat oxidative stress and remove damaged proteins.

Davies calls this self-defense mechanism “parahormesis,” and Davies and his team have extensively studied one of the main genetic signaling pathways responsible for it, Nrf2. The Nrf2 pathway is found throughout the animal kingdom, from fruit flies and worms to mice and humans, and plays a large role in “adaptive homeostasis”—a phrase coined by Davies to describe how the body's protective and regulatory mechanisms aren't totally static but can instead be significantly induced or diminished.

“What we're finding is that in aging and senescence, Nrf2 responsiveness declines, and older people are less able to upregulate all of these protective systems than younger people,” Davies says. “As we age, adaptive homeostasis declines significantly. I sometimes like to think of this phenomenon as a molecular corollary of the observation that the ability to cope with emotional, social, and psychological stress often appears to decline with age.”



## THE BRAIN ON THE WESTERN DIET

How does what we eat affect our chances of being diagnosed with common age-related diseases?

Professor Christian Pike and his research team are uncovering the surprising connections between the typically high-fat and high-sugar Western diet, obesity, and Alzheimer's disease. Obesity in middle life is associated with a twofold increase in the risk for Alzheimer's in later life, he says.

“This suggests that somehow, obesity is driving the early phase of the disease,” Pike says.

Obesity's link to inflammation may be the culprit. Obesity increases inflammation body-wide as macrophages infiltrate adipose tissue and drive inflammation. And in mice fed a high-fat diet, cells in the brain called microglia are more activated, secreting higher amounts of inflammation-promoting cytokine proteins. Neuroinflammation is a risk factor for Alzheimer's, and creating a more pro-inflammatory state can drive early phases of the disease, Pike says.

Risks from lifestyle factors can interact with genetic risks, he adds, and two variants of one gene, apolipoprotein-E (APOE)-3 and -4, are of particular interest. Having APOE-4 instead of APOE-3 is the most common genetic risk factor for Alzheimer's; APOE-4 drives inflammation and has a direct effect on the disease.

“Factors that drive inflammation may act cooperatively, so for instance someone who has APOE-4 and is obese may be at higher risk than someone with only one or the other,” Pike explains.

Currently, Pike and his team are studying the health effects, including inflammation and cognition, of a regular diet versus those of a Western-style diet on mice that have been genetically engineered to have APOE-3, APOE-4, or a mutation that induces Alzheimer's-like effects.

“So far, it does look like there is a significant relationship between genes and environment such that APOE-4 might be a particular problem with a high-fat diet,” Pike says. He and his team are also investigating whether various interventions that reduce inflammation by different mechanisms can prevent or treat Alzheimer's symptoms.

## STAYING HUNGRY AND HEALTHY

Valter Longo, the Edna M. Jones Professor of Gerontology and Biological Sciences at the Davis School and director of the USC Longevity Institute, has studied the impact of diet on health and lifespan for more than 20 years. His years of research have led him to advise people

who eat a typical Western diet to cut back on protein, eat a lot of plant-based food, and don't fear being hungry at times.

Longo and his team have extensively studied the effects of different amounts of protein on cancer, diabetes, Alzheimer's disease, cardiovascular disease, and more. In mice, low-protein diets slowed the progression of cancer, boosted stem cell regeneration and immune system function, reduced inflammatory disease, slowed bone density loss, and even prevented the onset of Alzheimer's disease symptoms through the diet's interaction with a set of genes called growth hormone and insulin-like growth factor 1, or IGF-1, he says.

"There's a lot of evidence that a high level of dietary protein is associated with high levels of IGF-1 and other factors, and both are associated with high levels of cancer, overall mortality, and cardiovascular disease," Longo explains.

Longo and his team have also studied how a periodic low-protein diet that mimics the effects of fasting can help humans. One recent study showed how eating a fasting-mimicking diet—pre-portioned foods with a specific nutritional composition that amounted to about half of one's normal daily calories—for only five days per month decreased risk factors for aging, diabetes, cardiovascular disease, and cancer with no major side effects.

Another set of mouse studies already supported by small clinical trials showed how the low-protein fasting diet helped make cancer treatment more comfortable and effective. Fasting not only made the cancer cells more vulnerable to kinase inhibitors—cancer drugs with lower toxicity than traditional chemotherapy—and helped the immune system to regenerate and protect healthy cells.

"It's a really remarkable intervention; it doesn't really do anything on its own, but it tells your body what to do," Longo says of the fasting-mimicking diet. "The body has the dormant ability to do all kinds of things, including fight cancer, boost the immune system, and protect cells from toxicity."

The human body is the product of billions of years of evolution, he adds, and for the large majority of that time, organisms spent much more of their time without access to food than with food readily available—unlike humans in today's developed world.

Longo, who is beginning to work with the U.S. Food and Drug Administration on bringing the diet to more patients, hopes that the fasting-mimicking diet will soon become part of a more patient-friendly standard of care. He also hopes that nutrition guidelines will become more evidence-based in general, he says.

"A lot of nutrition research has no clinical or epidemiological basis," Longo says. "Doctors need to have a package that says 'here's all the data, this is what the best recommendations are,' and our lab has taken leadership in doing that."

## TRAINING TOMORROW'S EXPERTS

The Davis School's newest master's program is connecting talented students with the latest nutrition knowledge and empowering them to help others live healthier lives, no matter what stage of life they're in.

The Master of Science in Nutrition, Healthspan, and Longevity (MSNHL) program, led by Assistant Instructional Professor Cary Kreutzer, welcomed its first students in the fall of 2014. This innovative coordinated program prepares students for a career in nutrition and dietetics; graduates are eligible to take the Commission of Dietetics Registration exam and receive the Registered Dietitian Nutritionist (RDN) credential upon passing. The MSNHL program's home in the Davis School and its emphasis on how nutrition impacts longevity gives students a special understanding of how dietary guidance can be tailored for an individual's stage of life and any health challenges they may be facing, Kreutzer says.

"Before enrolling in the program students complete many prerequisite courses including biochemistry and microbiology so that once enrolled they build on this foundation looking more deeply at nutrition and how it affects our body's aging process," Kreutzer says. "Added to this foundation students learn about the body systems and how medicine and nutrition must work together to prevent or treat chronic diseases. USC Davis School of Gerontology faculty members augment the didactic experience through teaching, guest lectures, and providing accessibility to research and colloquium speakers."

She explains that students also complete an internship consisting of 1200 hours of supervised practice with registered dietitians, nutrition educators, food service managers, and other health care professionals. These experiences prepare students to bring their nutrition expertise into many different settings, including hospitals and assisted living facilities, university and other institutional foodservice settings, scientific research, private dietetics practice, and public advocacy.

Community agencies serving older adults, USC campus resources, and community programs with strong ties to the USC network have been instrumental in placing students into intern rotations. Likewise, these same resources along with the USC Career Center will support the students upon graduation to find employment, Kreutzer adds. ■



# LONG-LIVED SMOKERS PROVIDE INSIGHTS INTO GENETICS OF RESILIENCE



Morgan Levine PhD '15

A study written by USC 2015 PhD in Gerontology graduate Morgan Levine and University and AARP Professor of Gerontology Eileen Crimmins used a unique sample of exceptionally long-lived smokers to identify genetic factors that help older people survive environmental stressors.

Before looking at genetic differences, the research team determined that the group of long-lived smokers did not have higher death rates compared to those 80 and older who had never smoked. In addition, the nonsmokers and long-lived smokers also had similar health measures, including inflammation, blood pressure, and immune function.

“Smokers 80 and older had similar physiological function as non-smokers of the same age group,” Crimmins said. “However, smokers who died younger than 80 were, on average, in worse health than their non-smoking counterparts. The comparisons support the case that while smoking leads to very poor outcomes in general, a select set of people appear to not be affected adversely by their smoking.”

The study then used data from the Health and Retirement Study (HRS) which is a large nationally representative sample of older Americans to determine what genetic factors distinguished smokers who were age 80 or older from their counterparts who had never smoked and the younger group of smokers using a genome-wide association approach. The results revealed that smokers who surpassed age 80 despite heavy exposure to the environmental stressors of smoking had a number of distinctive genetic markers that may help minimize or reverse the damage caused by smoking.

“Aging is an extremely complex process, and I think we are only beginning to uncover some of the mechanisms that regulate it,” Levine—now a postdoctoral fellow at the University of California, Los Angeles—explained to the *Washington Post* for a September 10, 2015 article on the study. “However, it also happens to be the biggest risk factor for most of the diseases that people suffer and die from... The more we know about why we age, the more equipped we will be to intervene.”

Using the information that identified the resilience-increasing genetic variants, the research team was able to develop a genetic risk score to predict health outcomes for a general population. The score was not only able to predict whether someone was likely to survive to an older age but also determine their relative risk for cancer—individuals with the protective gene variants were at a much lower risk.

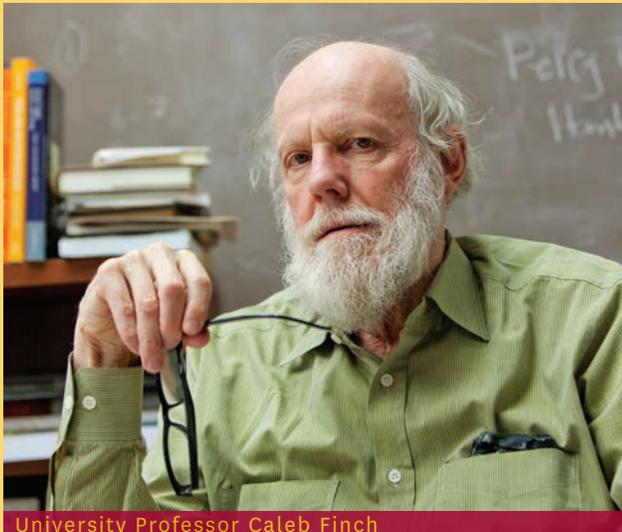
“Obviously, no one should use their genetics as an excuse to continue smoking,” Crimmins said. “However, if individuals can identify health issues to which they might be more or less susceptible due to their genes, the knowledge could empower them to make more informed and personalized healthcare and lifestyle decisions.”

The article was published September 9, 2015 in *Journals of Gerontology, Series A: Biological Sciences & Medical Sciences*. The research was supported by National Institute on Aging (NIA) grants P30AG017265 and T32AG0037. The HRS is supported by NIA (U01AG009740) and the Social Security Administration. ■



University Professor Eileen Crimmins

# MEN WITH ALZHEIMER'S GENE AT RISK OF BRAIN BLEEDING, STUDY FINDS



University Professor Caleb Finch

A common genetic variation linked to Alzheimer's disease greatly raises the likelihood of tiny brain bleeds in some men, scientists have found.

These "microbleeds" leave small points of damage throughout the brain and contribute to memory loss.

The study led by USC Davis School of Gerontology scientists reveals that the gene variant, ApoE-4, has different effects on men and women diagnosed with mild cognitive impairment or Alzheimer's. The research further underscores the significance of ApoE-4 (apolipoprotein E-4) in Alzheimer's, building upon prior studies indicating the disease has sex-based differences that may affect treatment approaches.

"It's important to study sex-based differences in Alzheimer's because women live longer than men, and, as this study shows, the disease can affect them differently," said corresponding author Caleb Finch, University Professor at the USC Davis School and the USC Dornsife College of Letters, Arts, and Sciences.

## MEMORY LOSS

The finding is especially striking since prior research indicated that Alzheimer's disease was more troublesome for women. Women with ApoE-4 are almost twice more likely than men to be diagnosed with the disease. Also,

women suffer worse memory loss than men for a given load of plaques and tangles of proteins—the classic Alzheimer's markers.

USC studies have found ApoE-4 can be an aggravating factor even for non-Alzheimer's patients; ApoE-4 is well known for worsening the effects of traumatic brain injury.

The latest study, which involved research on mice and on humans, also provides new evidence that Alzheimer's is unique to humans.

"Most diseases can be studied in lab animals without introducing human genes," Finch said. "That is not the case for Alzheimer's."

Even mice and apes that have some factors or symptoms associated with the disease do not suffer the same cognitive impairments and neuron losses that Alzheimer's patients do, the scientists noted. The likely difference that spares animals from this brain-wasting disease is that animals do not have multiple genetic variants of ApoE – lipid-carrying proteins produced by the liver and the brain.

Humans have three variants, including ApoE-4, the most common Alzheimer's risk gene, while chimpanzees, their closest relative, have only one type of ApoE. The ApoE proteins transport cholesterol and other fats through the bloodstream. ApoE-4 carriers tend to have higher cholesterol.

## STUDY DETAILS

Clinical scientists on Finch's team examined brain scans of 658 subjects, aged 48 to 91 years old, in the United States and Canada, who are part of the Alzheimer's Disease Neuroimaging Initiative. Of those subjects, 402 had mild cognitive impairment, 90 had early-stage Alzheimer's disease and 166 were cognitively normal.

The ongoing study in the Karolinska Institute Dementia Study in Sweden also analyzed the scans of 448 other subjects, aged 36 to 88 years old. Of those, 152 had mild cognitive impairment, 152 had Alzheimer's, and 144 were cognitively normal.

The researchers found that ApoE-4-carrying men with mild cognitive impairment or Alzheimer's disease suffered twice as many microbleeds in their brains as women with similar diagnoses.

Microbleeds differ from stroke in size and impact, Finch

said. Stroke is a macro event that usually occurs on one side of the brain and its effect is usually immediate. Microbleeds occur anywhere in the brain over time, with cumulative effect.

The research team had also studied the effects of ApoE-4 in mice, but found female mice—not males—with ApoE-4 were more likely to suffer microbleeds. The female mice also were more likely to have higher brain amyloid levels (plaque)—similar to the effects that women suffer with the disease.

However, the results “did not appear to generalize to human AD (Alzheimer’s Disease),” the scientists wrote.

### NEXT STEPS

Based on the findings, Finch said researchers must now see if they can reduce the microbleeds using sex steroids. Because of Alzheimer’s differing effects on men and women, they may consider other changes in treatment, too.

“We may need different therapeutic strategies for ApoE-4-carrying men who are Alzheimer’s patients than for women,” he said.

USC researchers in multiple disciplines are dedicated to studying Alzheimer’s, including its health, political, economic and social implications. Efforts to understand it and find new and more precise treatments are much more pressing as the baby boomer generation ages. The USC Schaeffer Center for

Health Policy and Economics predicts the number of U.S. patients diagnosed with Alzheimer’s will more than double to 9.1 million in 35 years. Total care costs then will top \$1.5 trillion.

Finch, who founded the USC Alzheimer’s Disease Research Center in 1984 and has studied the disease for more than 30 years, said it is difficult to untangle all of the factors that may contribute to Alzheimer’s.

“The basic cause of slow-spreading neuron death is still unknown,” he said.

The study was published online on October 19, 2015 in *Neurobiology of Aging*.

Other authors included USC Davis scientists Mafalda Cacciottolo, Amy Christensen, Alexandra Moser, Jiahui Liu, Christian Pike and Todd Morgan; Egor Dolzhenko of the Department of Molecular and Computational Biology at USC Dornsife; Patrick Sullivan of Duke University’s Department of Medicine; Andreas Charidimou of Harvard Medical School and Massachusetts General Hospital Stroke Research Center; Lars-Olaf Wahlund, Maria Kristofferson Wiberg and Sara Shams at the Karolinska institute; and Gloria Chia-Yi Chiang at Weill Cornell Medical College. ■



# PROCREATION TRUMPS SURVIVAL—EVEN ON A CELLULAR LEVEL



Red dye marks lipids in the soma of a normal worm (L), and in the germline of a worm under stress (R).

A newly discovered biological mechanism channels a mother’s available energy—in the form of fat—straight to the reproductive system during stressful times, protecting future offspring at the cost of the mother’s health.

Davis School of Gerontology Assistant Professor Sean Curran observed the phenomenon in the worm species *C. elegans*, but the cellular mechanisms associated with it also exist in humans, raising the possibility that we may share this trait as well.

When an organism is exposed to external stresses such as famine, a protein that protects cells called SKN-1 is activated. In addition to stress resistance, activation of SKN-1 also drives the reallocation of lipids from the organism’s soma, or body cells, to its germline, or reproductive system, Curran found. Once there, the fats fuel the development of oocytes, or egg cells, making successful reproduction easier; however, the animal itself faces a higher likelihood of a shortened lifespan. (Most *C. elegans* are hermaphrodites—Curran is still exploring whether the phenomenon also occurs with the male portion of the worm’s reproductive system.)

When the organism again obtains nutrients, the presence of omega-3 and -6 fatty acids stop the travel of fats into the reproductive cells, bringing the animal’s ability to resist environmental stressors back to normal.

“SKN-1 plays essential roles in survival to stress at all stages in life; however, SKN-1 activation mutants are not long-lived. This is incredibly surprising and confusing at the same time since these animals should be stress resistant,” said Curran, assistant professor with joint appointments at the USC Davis School of Gerontology and the USC Dornsife College of Letters, Arts and Sciences. “Our study shows that the reason constitutively active SKN-1 doesn’t confer longevity is because of the movement of lipids from the soma to the germline to promote the necessity of reproduction.”

Curran is the senior author of a study on the mechanism, which was published in *Proceedings of the National Academy of Sciences* on November 30, 2015. His collaborators include researchers from USC, Baylor College of Medicine, and Massachusetts General Hospital. The researchers looked at stored fat molecules within the worms visually by staining cells and biochemically with gas chromatography and mass spectrometry. The animals underwent stress from starvation and calorie restriction as well as oxidative stress from hydrogen peroxide exposure.

Oxidative stresses – an overload of reactive oxygen molecules that has been associated with cancer – can also trigger the activation of SKN-1. Since all organisms that require oxygen have to respond to oxidative stress, an understanding of how oxidative stress responses impact reproduction and vice versa is likely to yield more insights into how survival and reproduction balance against each other depending on resource availability, Curran says.

“This is particularly important in the wild, where resource availability is highly variable, and unlike in the laboratory, animals in nature must constantly assess possible risk and future reward,” he explains.

Curran is subsequently exploring the signaling mechanisms underlying this fat reallocation and the environmental triggers of the response. Since everything his team has found so far that regulates SKN-1 in worms has also been identified in humans and the balance of somatic resistance and reproduction is important for all organisms, the findings could have implications for reproductive success in older humans, he says.

Support for this work was provided by the National Institutes of Health (Grant T32AG000037 to first author and Molecular Biology PhD student Dana Lynn, R00AG032308 and R01 GM109028 to Curran), the American Heart Association (Curran), an Ellison New Scholar Award (Curran), and the American Federation for Aging Research (Curran). ■

# CPR: NOT ALWAYS A LIFESAVER, BUT IT PLAYS ONE ON TV



Jaclyn Portanova (left) and Associate Professor Susan Enguidanos

If you think that performing CPR on a person whose heart has stopped is a surefire way to save their life, you may be watching too much TV.

A study by University of Southern California Davis School of Gerontology researchers revealed that popular medical dramas *Grey's Anatomy* and *House* show cardiopulmonary resuscitation (CPR) successfully saving a “patient’s” life in nearly 70 percent of the scenes in which it was depicted. Half of the fictional patients who received CPR made enough of a recovery to eventually leave the hospital.

That’s almost double the actual immediate survival rate of less than 37 percent and four times the real long-term survival rate of roughly 13 percent, said senior author and Davis School Associate Professor Susan Enguidanos, an expert in end-of-life care.

“Most people have no knowledge of actual CPR survival and thus make medical care decisions for themselves and family members based on inaccurate assumptions,” Enguidanos said.

In episodes of both shows that aired during 2010 and 2011, 46 separate depictions of CPR—whether involving chest compressions or defibrillation—were analyzed by the research team. Investigators recorded not only whether the patients lived or died but also the cause of cardiac arrest and the apparent backgrounds and ages of those receiving CPR.

In addition to inaccurate survival rates, the depictions show CPR mostly being performed on adults age 18 to 65, when in reality more than 60 percent of CPR recipients are older adults over 65, Enguidanos said. Also, trauma was behind nearly 40 percent of the CPR instances in the shows, even though traumatic injury cases only account for 2 percent of all CPR usage in real life.

When comparing these results to a similar study conducted in 1996, accuracy rates of television CPR depictions appear to not be improving. And though they seem like harmless entertainment, widespread inaccuracies in medical dramas could have real-life consequences.

Nearly 42 percent of older adults say that most of their health knowledge comes from TV, according to previous studies, and many are likely basing their care preferences on inaccurate ideas of what risks they face and how survivable a heart attack is, Enguidanos said.

Compounding the issue is the fact that the shows also largely fail to depict advance care planning and conversations about end-of-life choices. Among 91 episodes analyzed, only five patients and/or their families discussed care preferences with their doctors.

“The findings from this study emphasize the need for improved physician-patient communication and discussions around advance care planning decisions, such as CPR,” said Jaclyn Portanova, Davis School Ph.D. in Gerontology student and first author of the study. “Without these discussions, patients may rely on misinformation from TV in their decision-making.”

The study was co-authored by Bachelor of Science in Human Development and Aging student Krystle Irvine and Master of Science in Gerontology student Jae Yoon Yi. It appeared online in the journal *Resuscitation* on August 18, 2015. ■



# WHY DO WE REMEMBER —OR FORGET— THE DETAILS?



Professor Mara Mather

When someone is walking down the street and is startled by a car accident, what determines whether they clearly remember the details of what they were doing prior to the crash clearly?

Paradoxically, such alarming or exciting moments—known as “emotionally arousing” events—can either impair or enhance memories of the moments surrounding them. With the car crash example, this can result in fuzzy memories for some witnesses and vivid recollections for others.

A new model of how chemicals in the brain work during these moments, proposed by a University of Southern California-led research team, makes sense of this paradox, illustrating that it all comes down to whether the witness is actively paying attention to other stimuli something prior to the event.

In the car crash example, this means that the witness who is most likely to accurately remember the details of what they were doing prior to the crash would be the person actively paying attention to some train of thought, activity, or part of their surroundings as they traveled down the street. Conversely, the person idly walking without paying any particular attention to anything might have little memory of what they were specifically thinking or doing prior to the accident.

When someone is focusing on a task or piece of information, neuron cells in their brain release the neurotransmitter glutamate, a chemical that passes across the gaps, or synapses, between the cells in order to transfer nerve impulses through the brain. Paying more attention to something means releasing more glutamate in the specific applicable region of the brain.

According to the proposed model, glutamate molecules interact with norepinephrine, a hormone that’s the precursor to adrenaline and is released during emotionally arousing events. When released into the same region of the brain, norepinephrine and glutamate enter into a positive feedback loop, with each chemical increasing the release of the other.

This results in “hot spots” of improved processing and better

memory for information to which attention is being paid. Conversely, less processing power is given to background information that’s not being focused on, said Mara Mather, USC Leonard Davis School of Gerontology professor and first author of the paper.

The culmination of nearly a decade’s work, including reviews of literature and studies of how human subjects’ memories were affected by emotionally arousing images or noises, the model is called Glutamate Amplifies Noradrenergic Effects, or GANE. It not only explains the paradox on why memory can be impaired or enhanced in emotionally arousing situations but also shines light on how



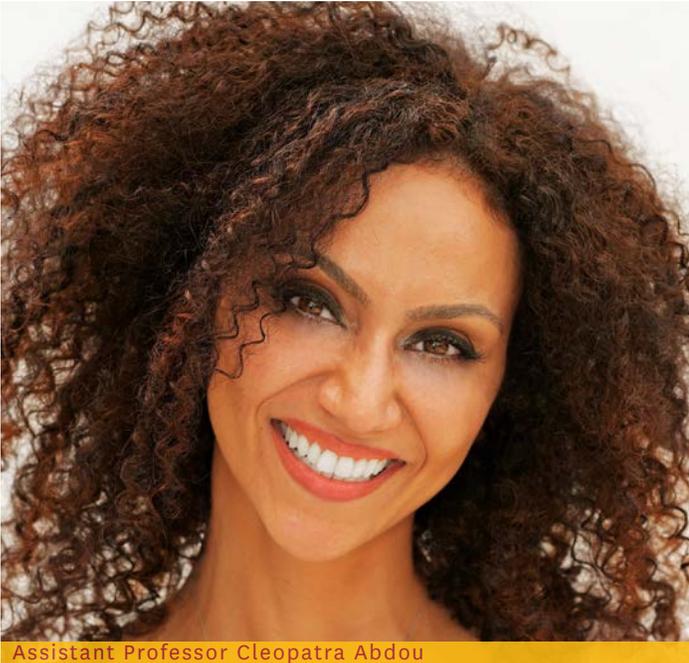
a region of the brain called the locus coeruleus influences attention and memory.

The locus coeruleus region of the brainstem produces most of the brain's norepinephrine and plays a role in attention and memory as well as cognitive control and stress. It's also suspected of being involved in memory-robbing diseases such as Alzheimer's, Mather added.

"[The locus coeruleus] is like a mixing table at a recording studio that's increasing the volume on what matters, but turning other things down at the same time," Mather said. "It's modulating how active something is; it can control what signal you get from each of the many things that are processed by the brain simultaneously."

The study, "Norepinephrine ignites local hot spots of neuronal excitation: How arousal amplifies selectivity in perception and memory," first appeared online in *Behavioral and Brain Sciences* in July 2015. Mather's coauthors include USC PhD in Neuroscience student David Clewett; Michiko Sakaki, Senior Research Fellow at the University of Reading; and Professor Emeritus Carolyn W. Harley of the Memorial University of Newfoundland. Their research was supported by National Institute on Aging grant RO1AG025340. ■

# HOW STEREO



Assistant Professor Cleopatra Abdou

Warning: Stereotypes may be harmful to patients' health.

A national study led by a USC researcher found people who encountered the threat of being judged by negative stereotypes related to weight, age, race, gender, or social class in health care settings reported experiencing adverse health effects.

The researchers found those people were more likely to have hypertension, to be depressed, and to rate their own health more poorly. They were also more distrustful of their doctors, felt dissatisfied with their care, and were less likely to use highly accessible preventive care such as the flu vaccine.

“Healthcare stereotype threat” stems from common stereotypes about unhealthy lifestyle choices or inferior intelligence that may be perpetuated, often unintentionally, by health care professionals or even by public health campaigns.

## MIXED MESSAGES

Although health messages are intended to raise awareness of health issues or trends that may affect specific communities, one implication of this study is that these messages can backfire, said lead author Cleopatra Abdou, an assistant professor at the USC Davis School of Gerontology and Department of Psychology at the USC Dornsife College of Letters, Arts and Sciences.

“An unintended byproduct of public health campaigns is that they often communicate and reinforce negative stereotypes

about certain groups of people,” Abdou said. “As a result, they may inadvertently increase experiences of what we call ‘healthcare stereotype threat,’ which can affect health care efficacy and even prompt some patients to avoid care altogether.”

As examples of the negative health effects of health-related stereotypes, Abdou cited campaigns about reproductive health in African-American women and other women of color, sexual health in the LGBTQ community, depression among women, and cognitive deficits in older adults.

Such messages can reinforce and magnify the negative lens through which these groups of people are commonly viewed in society, she said.

“It’s not that there aren’t real health concerns in specific communities that we need to do more—much more—to address, but how we communicate about these concerns is key,” Abdou said.

Abdou’s healthcare stereotype threat research is groundbreaking. Abdou, with her collaborator, Dr. Adam Fingerhut, of Loyola Marymount University, is the first person to empirically demonstrate the existence of healthcare stereotype threat. Their first experiment documenting the phenomenon of healthcare stereotype threat examined the health consequences of negative stereotypes of African-American women’s reproductive health in a virtual healthcare setting.

As the authors expected, the first-of-its-kind study found that women who strongly identified as African-American experienced more anxiety than all other women (i.e., African-American women in the control condition and white women in both the experimental and control conditions) in a virtual healthcare setting when primed with negative stereotypes of African-American women’s reproductive health. Abdou and Fingerhut are now studying healthcare stereotype threat in diverse populations and with respect to diverse health outcomes, finding that its effects are far-reaching.

## STUDY DETAILS

Abdou and her team surveyed an estimated 1,500 people ages 50 and older as part of the U.S. Health and Retirement Study.

More than 17 percent of the respondents said they felt vulnerable to prejudice with regard to racial or ethnic identity, gender, socioeconomic status, weight, or age in health care settings. People who felt threatened based on several identities were worse off, health-wise, than people who felt threatened based on just one identity.

Abdou said the challenge now is to find ways to inform all people, including people at heightened risk, about how to live healthier, happier, and longer lives while also minimizing the experience and effects of health care stereotype threat.

# TYPES HURT

“It’s time for us to implement policies that enhance medical school training in cultural competency and increase the diversity of our physicians and broader health care workforce,” Abdou said. “Hospitals and other health care institutions with inclusive policies which welcome diversity and celebrate tolerance, both symbolically and explicitly, hold great promise for reducing health care stereotype threat and the short- and long-term health disparities that we are now learning result from it.”

More than half the study’s respondents were women, and most respondents—82 percent—were white. Abdou also said the study focused on people who reported having seen a doctor sometime within the two years before the study. She noted that because

of these limitations, healthcare stereotype threats were probably underreported by the sample of subjects. Such stereotype threats are probably experienced by young people, too, not just by people who are aging, Abdou said.

The study was published online on October 20, 2015 in the *American Journal of Preventive Medicine*. The study co-authors were Adam Fingerhut of Loyola Marymount University in Los Angeles, James Jackson of the University of Michigan, and Felicia Wheaton of the USC Davis School of Gerontology.

The research was funded by the National Institutes of Health, the Woodrow Wilson National Fellowship Foundation, and a Hanson-Thorell Family Research Award. ■





## NEW RESEARCH ADVANCES DEFINITION OF PERSON-CENTERED CARE

Putting people at the center of their own health care may seem intuitive, but it is an approach that is not widely practiced in the medical community. An interprofessional panel of eldercare experts convened by the American Geriatrics Society (AGS), in collaboration with the University of Southern California and with support from The SCAN Foundation, recently released findings from a research project to better define “person-centered care” and its key elements. This innovative approach to health care puts individual values and preferences at the heart of care decisions, measuring

success by attention to people’s health and life goals. Research findings, an expert panel statement, and a special commentary published in the *Journal of the American Geriatrics Society* add clarity to the characteristics of person-centered care, which has lacked a cohesive definition even as its prominence in research and health policy is growing.

“For too long, our medical system has focused on treatment of illnesses rather than on care of a person with illnesses,” explained Principal Investigator Laura Mosqueda, chair of the Department of Family Medicine at the Keck School



Foundation. “This concept shifts the success vision of health care on the things that matter most to people—how they are living every day with complex needs and achieving their personal goals. Person-centered care defines quality and value beyond technical measures of care toward dignity, respect of personal choices, and life outcomes achieved.”

As outlined by the AGS expert panel, a person-centered approach begins by gathering specific information about a person’s preferences in light of health circumstances, with input from family members and other caregivers if the person wishes. Added to a comprehensive health and functional assessment, this information is used to help a person shape and articulate his or her health and life goals. These goals are driven first and foremost by how a person wants to function and what he or she envisions for future well-being.

To arrive at its definition, the expert panel reviewed research conducted by Mosqueda; Alexis M. Coulourides Kogan, Keck School of Medicine of USC postdoctoral research associate and graduate of the USC Davis School of Gerontology; and Kathleen Wilber, USC Davis School Mary Pickford Professor of Gerontology, including a comprehensive literature review supplemented by interviews with leaders of community-based healthcare and social service organizations that reported providing person-centered care for older adults. From this work, researchers observed that:

- Organizations often define and operationalize person-centered care in unique ways. For some, it is focused on creating “individualized plans” to meet client and family needs. For others, it reflects the belief that person-centered care is “not just a program but a culture...embedded in practice and mission-driven.”
- Even in light of their differences, organizations employing person-centered care remain strongly committed to the approach in more than just words. It requires, as several interviewees noted, significant time and resources, but the effects extend across the health system: “Staff are able to build trust and a relationship with clients, clients get better, staff feel good about client outcomes,” one respondent observed.

“This research will help healthcare professionals and older adults understand both how and why success entails fidelity to certain key elements of person-centered approaches,” noted AGS President Steven R. Counsell. “The findings highlighted in the four companion papers—the literature review on person-centered care, report on qualitative research findings, expert panel statement defining person-centered care and its essential elements, and special commentary by The SCAN Foundation—help to advance person-centered care as a field. We’re confident this work will help health systems and providers implement person-centered practices with the goal of improving care quality for all, especially older adults with complex health needs.”

The articles, published online in the *Journal of the American Geriatrics Society*, are free and offer open access at [GeriatricsCareOnline.org](http://GeriatricsCareOnline.org), the online home for AGS resources and publications. ■

*Text courtesy of the American Geriatrics Society.*

of Medicine of USC and professor of family medicine and gerontology. “The values espoused in person-centered care remind us of the importance of eliciting and acting on our patients’ preferences and goals. We now have a clearer vision of how to translate the aspiration of person-centered care into a reality.”

“Person-centered care is essential for older adults with chronic health conditions and functional limitations who need well-coordinated, team-based care,” added Bruce A. Chernof, President and Chief Executive Officer of The SCAN

# MAKING HEALTH AND NUTRITION CHANGES THAT LAST

By Cary Kreutzer EdD, MPH, RD  
Assistant Instructional Professor  
Director, MS in Nutrition, Healthspan, and Longevity

Aristotle defined the highest level of well-being as *eudaimonia*, a Greek word that translates to the highest level of happiness or human flourishing. We can all relate this to our own quest for longevity, to improve our health, eat better, get more sleep, and exercise more. So why is it that one in three people who established a health-related New Year's resolution have already abandoned their goals after a day, week or month have passed?

Psychologists would tell us that we lack the supports needed to make changes or that our goal was too large to reach. Dietitians would tell us that we changed our diet so drastically that we were unable to make such large changes. Neurologists would tell us that the power within our brain that tempts us to take just one more bite, or the body's internal biological mechanisms that want us to take one more bite to assure we have stored nutrition in preparation for a famine.



## DID YOU KNOW?

A study published in the *American Journal of Preventive Medicine* showed that dieters who kept a record of their eating and attended support groups lost more weight than those who did not.

### DIET AND ACTIVITY TRACKING APPS AND RESOURCES\*

MyPlate.org/SuperTracker

FitDay.com

LiveStrong.com

CalorieKing.com

*\*The USC Davis School does not officially endorse any of the mentioned resources. Talk with your doctor before starting any diet or exercise plan.*

Unfortunately, we have food on every corner to tempt us, and we no longer need to prepare for a famine. So what strategies can we use to increase our chances of keeping that New Year's resolution once and for all?

### 1. FIND A PARTNER OR MENTOR.

The ability to sustain change is improved if we have a support system that will stay the course with us, support our successes, and coach us if we fail.

### 2. KEEP A FOOD/ACTIVITY LOG TO IDENTIFY YOUR BEHAVIORS AND DAILY ROUTINES.

We are all creatures of habit; we become set in our ways and don't realize actions that may sabotage our good behaviors. For example, walking by a snack machine triggers our daily routine to purchase a snack. From the food/activity log we can become aware of our behaviors (good or bad) and set small goals for change.

### 3. SET SMALL GOALS THAT ARE ATTAINABLE, TIME-DEFINED, AND SPECIFIC.

Most failures are the result of setting goals that are too difficult to reach. For example, a goal of riding a bike every day for an hour is not going to be reached if you have not ridden a bike in over a year. A better step would be to identify a day of the week on which you will ride your bike for 20 minutes to start. Put the goal in your calendar so you have a reminder. Increase the time and frequency in small increments. Goals should be something you want to do and feel you can sustain.

### 4. START WITH SIMPLE CHANGES FIRST.

Reserve your big challenges for last. For example, if you derive great pleasure from eating out for breakfast every Sunday morning, continue this tradition while you work on other easier changes first.

### 5. CHANGE YOUR ENVIRONMENT.

What do you have in your cupboards at home or drawers at work? Slowly replace the empty-nutrient foods with healthy, nutrient-dense foods such as nuts, raisins, fruits and vegetables, baked (instead of fried) chips, or whole-grain (versus processed) crackers. If the food is not there, the temptation is less likely.

### 6. CELEBRATE SMALL SUCCESSES.

While the weight may not come off, the fact that you are exercising more, making healthier food choices, and have improved overall happiness (*eudaimonia*) is something to celebrate!

### 7. THE ULTIMATE GOAL: REPLACE UNHEALTHY HABITS WITH NEW ROUTINES.

This is called behavior level maintenance, whereby we have actions or behaviors that become part of our daily routine without thought given to the behavior. ■

# SHIVANTI KARIYAWASAM MSG'16



USC Davis School of Gerontology student Shivanti Kariyawasam says being around older adults “makes me feel happy,” and she hopes to use her gerontology education to return the favor and help older adults increase their well-being.

Kariyawasam will graduate in 2016 with both her Bachelor of Science in Human Development and Aging (Health Science Track) and her Master of Science in Gerontology as part of the Davis School’s progressive degree option. Kariyawasam’s beloved grandmother, who lived with her as she grew up in Cerritos, Calif., was a big part of what led her to gerontology, she says.

“I was very close to my grandma growing up,” she explains. “I used to always talk about her during meetings with my high school guidance counselor. One day, one of my teachers asked me if I had ever heard of gerontology, and mentioned that USC had a program for it.”

Even before she got to college, Kariyawasam and her family faced difficult decisions that she would go on to learn more about in her gerontology studies. While she was in high school, a medical issue forced Kariyawasam and her parents to make tough decisions about whether her grandmother could safely remain at home.

“My parents were considering putting her in a home, but I was very against it; she was like my best friend! My parents decided to keep her at home on weekends,” she remembers. “I thought, ‘If my family is having this predicament, I’m pretty sure other families are going through the same thing.’”

As Kariyawasam began exploring gerontology more, she volunteered at facilities for intellectually disabled adults and seniors. Greatly enjoying the time she spent helping older adults with art projects and other activities, she says she realized that gerontology’s all-encompassing nature could indulge her many interests, from biology and psychology to international relations and history. When she applied to college, the USC Davis School stood out as a place where she could combine her interests in the social science and physical science aspects of aging—and it was also a school where she could remain close enough to see her grandma every weekend.

“My grandma prayed every day from December to March until I got my acceptance letter,” Kariyawasam says.

At USC, she’s taken advantage of many unique learning and leadership opportunities. Since her sophomore year, she’s worked in the laboratory of Davis School Assistant Professor Tara Gruenewald, which has given her the chance to further explore the connections between biology and psychology. With Gruenewald’s guidance, she was able to conduct and present independent research as an undergraduate.

“[Gruenewald] has exposed me to lots of different things that I wouldn’t have encountered from just my classes. I have developed more critical thinking skills, and learned to apply what I’ve learned in my gerontology classes.” Kariyawasam says.

When Associate Dean Maria Henke asked students to revitalize the Davis School’s Student Gerontology Association (SGA), Kariyawasam took the opportunity to shape the group into a community-building force within the school. She is currently president of SGA and has helped develop successful career and networking activities, service opportunities, and social events for the student body.

“I saw SGA as a way to make sure that after leaving the school students still feel like they’re part of the Davis School family,” she says.

After graduation, Kariyawasam hopes to attend professional school and eventually work in a healthcare setting helping geriatric patients. She encourages future Davis School students to seize the unique opportunities that the school provides, from its small size and caring faculty members to its many research and service opportunities.

“Take advantage of being able to talk to your professors, especially as an undergrad,” she emphasizes. “Constantly look for opportunities to learn, and listen to any advice they give you.”

Knowledge about aging is valuable for everyone, even those who are not gerontology majors, Kariyawasam adds.

“I think everyone can benefit from taking a gerontology class,” she says. “You’ll have knowledge of a necessary subject, although unknown to most people. It will give you a greater understanding of the world.” ■

# MARNIE KHAW '96, MAG '15



Marnie Khaw with one of Austin Live|Work's tiny homes

Marnie Khaw graduated from USC in 1996 with a Bachelor of Science degree in Business Management, but she “felt the tug to be in the gerontology field” throughout her program, she says.

“I knew I wanted to study gerontology every time I walked passed the Gerontology School,” she recalls. “I did not trust my instinct then, but now I am back finishing my master’s degree.”

Khaw, who just completed her online Master of Arts in Gerontology in the fall of 2015, saw firsthand many of the challenges faced by older adults and their caregivers when she was just a teen.

“My immediate family lived in the same house with my paternal grandparents. When my grandmother fell ill, she wanted me to be her caregiver, so during my late teens I took care of her until she passed away,” she says. “Growing up, I was well acquainted with the gamut of experiences, from being a caregiver to finally learning about the field.”

Following her bachelor’s program, Khaw worked as a financial analyst before venturing into engineering. As an engineer, she began taking gerontology courses in San Jose, Calif. and volunteered as part of the California Long-Term Care Ombudsman Program, making regular visits to assisted living

communities, nursing homes, and residential care homes.

As a volunteer ombudsman, “I felt I made a difference as an advocate for residents,” she says, and she then decided to return to USC for her master’s in gerontology.

“Through USC’s valuable connections, I had the opportunity to intern with one of the top companies in the senior living space, Front Porch. I had access to everyone from the executive director and maintenance department to the residents,” she says. “Through my internship connection, I was able to shadow the executive director at Casa de Mañana for a class project. It was an invaluable experience learning firsthand how a high-end luxury retirement community functioned.”

Khaw recently moved from La Jolla, Calif. to Austin, Texas, where she is merging her business experience with her gerontology expertise to co-found a startup called Austin Live|Work ([www.austinelivework.com](http://www.austinelivework.com)).

“We are building a startup ecosystem where entrepreneurs can live, work, and learn while immersing themselves in land development and housing projects,” she says. “There will be an important gerontological role in this startup as we scale and build additional community sites. Intergenerational and non-institutional living will be part of the design so that older adults can live in direct contact with student-entrepreneurs.”

“Our hope is that the inherent excitement and sense of purpose students feel when creating startups will raise quality of life for all ages. We also want to create opportunities for older adults to mentor their valuable life experience to students,” Khaw adds.

One of the newest entrepreneurial opportunities is in the emerging tiny house industry. Because spaces are being reserved at Austin Live|Work’s 10 acres faster than they can be built, tiny houses on wheels are being utilized instead of standard houses or apartments.

“Tiny houses offer several advantages for communities,” she says. “They attract volunteers and entrepreneurs interested in sustainable land development. Providing a platform for them we feel is the answer to building well-functioning intergenerational communities.”

Khaw says that once Austin Live|Work gets fully off the ground, she would like to continue working in the assisted living industry and spend more time studying the housing and community challenges faced by older adults, with an emphasis on market solutions that provide more freedom and choices.

“An important takeaway I’ve learned at USC is that people thrive when they know they have choices,” she says. ■

## ASSISTANT PROFESSOR JENNIFER AILSHIRE

As an undergraduate student studying sociology at Arizona State University, Jennifer Ailshire took her first course in demography—the statistical study of populations and how they change—and her fascination with the subject has shaped her career ever since.

“One of the things I love about demography is that it’s both backward and forward looking—demographers pay as much attention to the historical forces that have shaped population dynamics as they do to thinking about what populations will look like in the future,” she says.

Ailshire researched demographic and social factors related to obesity during her doctoral program in sociology at the University of Michigan, and in 2009 she came to Los Angeles to join the USC/UCLA Center on Biodemography and Public Health as a National Institute on Aging postdoctoral fellow. Today, as an assistant professor at the USC Leonard Davis School of Gerontology, she uses her demography expertise to understand the changes and challenges faced by aging societies.

“The rapid decline in mortality over the past 100 to 200 years is undoubtedly one of our greatest achievements, allowing us to live longer, healthier, and more productive lives. But declining mortality, along with some other population dynamics, presents us with a new challenge for the future: adapting to an increasingly older population,” she says. “The growing aging population presents us with both challenges and opportunities, and how we meet this challenge may very well be our next great accomplishment.”

Today’s older adults are different from their predecessors in many ways, Ailshire explains. For instance, most Baby Boomers now expect to spend their golden years healthy, engaged, and living independently in their communities, and as a result there is a growing population “aging in place” in primarily urban areas throughout the U.S.

“The challenge I’ve set for myself and my team is to gain a better understanding of how well these communities accommodate aging-in-place. Our first step is identifying the community resources that support aging well and the social and physical hazards that prevent people from maintaining optimal health and well-being,” she says. “Unfortunately, minorities and those with fewer socioeconomic resources tend to live in places with fewer resources and more hazards, and my research suggests this may contribute to the large health disparities we observe in the aging adult population. My ultimate goal is to develop recommendations for health care providers and community planners for maximizing the potential for aging in place.”

Of particular interest to Ailshire is the relationship between air pollution and cognitive function in older adults. Preliminary findings from one study indicate that stroke survivors living in high-pollution areas have worse cognitive function than stroke survivors living in low-pollution areas. In another study, she found that the link between higher pollution and cognition problems is stronger in people with less education, while highly educated adults can retain their cognitive function even while residing in high pollution environments.

Ailshire also studies how health and functioning change over time in people who live exceptionally long lives, surviving into their 90s or even beyond the 100-year mark.

“This is a small group of people, but it is the most rapidly growing population in the U.S. and is providing new opportunities for understanding the determinants of long, healthy lives,” she says. “What we learn from the exceptionally long-lived will inform social scientific and biomedical research on health and longevity throughout the life course.”

As a faculty member, Ailshire says she greatly appreciates the unique research environment and opportunities at the Davis School.

“We have a true multidisciplinary environment that provides all the tools necessary to answer the big questions about aging and the life course,” she says. “I’m so pleased to be a part of this vibrant intellectual community of scholars and students with interests ranging from the micro (biochemistry) to the meso (neighborhoods and families) to the macro (health and aging policy) factors that shape health and aging over the life course.” ■





Dean Pinchas Cohen and wife Wing-Sze Cheung, AARP President Jeannine English, USC Provost Michael Quick, and Board of Councilors member Alan Davis.

# USC DAVIS SCHOOL CELEBRATES 40 YEARS

USC Leonard Davis School of Gerontology alumni, faculty members, and friends commemorated the school's 40th anniversary during a celebration held September 24, 2015 at the SLS Hotel in Beverly Hills, Calif. Presenters included USC Provost Michael Quick, AARP President Jeannine English, and Alan Davis, Board of Councilors member and son of Davis School namesake Leonard Davis. ■



USC Provost Michael Quick discussed the school's impact.



Board of Councilors Chair Shari Thorell and husband Bob Thorell.



Information Technology Director May Ng, Dean Pinchas Cohen, Davis School supporter Rita Liu, and Associate Dean Maria Henke.



Board of Councilors member Alan Davis and wife Mary Lou Dauray.



Dr. Li Li Xu, Chair of the National Rongxiang Xu Foundation, presented Dean Pinchas Cohen with a gift for the Davis School.



Davis School Dean Pinchas Cohen, Board of Councilors member Patricia Will, and Dean Emeritus and Professor Edward Schneider.



The USC Song Girls join Mary Lin Dedeaux, Alex Engemann, Derek Pippert, and Michele Engemann on the links.

## SUPPORTING THE DAVIS SCHOOL ONE SWING AT A TIME

Friends of the USC Leonard Davis School of Gerontology hit the links in support of the school at the Virginia Country Club in Long Beach, Calif. on November 23, 2015.

The 2015 “Swing for Healthy Aging” Rod Dedeaux Memorial Golf Classic honored Patricia Will, USC Davis Board of Councilors member and founder and president of Belmont Village LP. Along with the shotgun-scamble tournament, the day’s festivities also included a putting contest, a performance by the USC Song Girls, and a silent auction. Proceeds from the event support the Keith Renken Scholars program, which provides scholarship funds for USC Davis students. ■



Jason Price, Jason Dopoulos, John Lorenzo, and Isaac Hagerman pose with the USC Song Girls.

# CALIFORNIANS CAN NOW DECIDE WHEN THEY DIE

By Associate Professor Susan Enguidanos PhD, MPH and Annie Rahman, PhD

On October 5, 2015, after considerable soul searching, Governor Jerry Brown signed a bill that legalizes physician-assisted suicide (PAS) in California, making California the fifth state to pass such a law.

Under the End of Life Options Act, which takes effect this year, terminally ill California residents with cognitive capacity to make their own decisions and physical ability to take their own medications may request a prescription for life-ending drugs from their attending physician. The California law is similar to Oregon's Death with Dignity Act, which was enacted in 1997 as the nation's first PAS law. Under the California law, patients must make a written request witnessed by two individuals (only one may be related to the patient) and confirmed by a consulting physician. If a patient shows signs of mental illness or the attending physician suspects the patient is depressed or mentally ill, the physician must first refer the patient for a mental health assessment.

In a statement to the California Assembly, Governor Brown noted that the PAS measure is "not an ordinary bill because it deals with life and death." As such, there are concerns about its use and misconceptions about its intent.

PAS is not intended as a substitute for good medical care at end of life, such as palliative and hospice care. In Oregon, the vast majority of those dying under PAS—upwards of 90 percent—were enrolled in hospice care. Thus, while PAS is not a substitute for palliative and hospice care, it may be sought by some of these patients.



Susan Enguidanos

Another concern is that individuals will seek PAS to escape uncontrolled pain. PAS is not

intended as a substitute for poor pain control. Numerous studies have shown that palliative and hospice services help reduce and control pain for seriously and terminally ill patients. Pain and symptom care, generally provided by a palliative care physician, should be sought as a first resort. In Oregon, the most common reasons individuals elect PAS are loss of autonomy (91.5%), poor quality of life (88.7%), and loss of dignity (79.3%). Uncontrolled pain rarely results in PAS requests.

Also of concern is that older or disabled terminally ill patients will be coerced into requesting PAS. To prevent such abuse, the law requires a physician to determine that the patient has made the decision of his or her own free will.

How many patients may elect PAS? Oregon's experience may be instructive. In the 18 years since Oregon enacted its Death with Dignity Act, fewer than 1,000 adults have died using PAS, accounting for less than one percent of all deaths in Oregon during that period.

California's PAS law passed after several earlier attempts dating to 1992 failed. The bill gained momentum from the highly publicized account of Brittany Maynard, a 29-year-old Bay Area woman with terminal brain cancer, who relocated to Oregon to take advantage of that state's PAS law. The bill also benefited from the California Medical Association's decision to not oppose PAS, making it the only state medical association to adopt a neutral stance. Proponents of PAS believe California's new law will prompt other states to enact similar measures. According to Compassion & Choices, a PAS advocacy group, 26 states are now considering aid-in-dying legislation. ■



Annie Rahman

# What's Hot in Aging Research at USC

## *Nutrition, Genomics, and Longevity*

*Monday, April 18, 2016*

*8:30am - 3:30pm*

*USC Leonard Davis School of Gerontology*

### *Presenters Include:*

Pinchas Cohen MD, USC Davis School Dean

Valter Longo PhD

Roseann Mulligan DDS, MS

Bill Gifford, author of *Spring Chicken: Stay Young  
Forever (or Die Trying)*

Jeff Weston, Vi Living Executive Chef

Jennifer Ailshire PhD

David Lee PhD

Carin Kreutzer EdD, MPH, RDN

Jon Pynoos PhD

Amy Christensen PhD

**Please RSVP at: [www.usc.edu/esvp](http://www.usc.edu/esvp)  
(code: aging)**

\$35 Registration Fee

Includes Lunch and Parking

\$65 for Continuing Education Credits  
(4.5 hours) approved for MFT, LCSWs,  
NHAP, and RCFE

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## UPCOMING EVENTS

### MARCH 20-24

#### ASA Aging in America Conference *Washington, D.C.*

Learn more about the USC Davis School at the ASA Aging in America Conference! Conference attendees can stop by Davis School booths #307 and #309 in the exhibit hall. You're also invited to network with Davis School faculty members and graduates at an evening gathering on Tuesday, March 22 at 9:00 PM at the Lebanese Taverna, 2641 Connecticut Ave NW, Washington, D.C. 20008. To RSVP, contact Saemy Son at [saemson@usc.edu](mailto:saemson@usc.edu) or (213) 740-1728. Register for the conference at [www.asaging.org/aia](http://www.asaging.org/aia).

### APRIL 15

#### 2016 USC Davis School Student Alumni Dinner: "All that Glitters is Gold"

##### *USC University Park Campus*

All alumni are invited this year's Roaring Twenties-themed alumni dinner! To RSVP, contact Natalie Kaiser at [nkaiser@usc.edu](mailto:nkaiser@usc.edu).

### APRIL 18

#### What's Hot in Aging Research: Nutrition, Genomics, & Longevity

##### *USC University Park Campus*

Learn about the latest research from USC Davis School faculty members! 4.5 units of continuing education will be available for attendees. Visit [gero.usc.edu/USCAgingResearch](http://gero.usc.edu/USCAgingResearch) for more information; to RSVP, visit [www.usc.edu/esvp](http://www.usc.edu/esvp) (code: "aging").

### MAY 2-4

#### LeadingAge California Annual Conference & Exposition *Palm Springs, California*

As you enjoy the LeadingAge California Annual Conference, visit the USC Davis School at booth 206! To register for the conference, visit [www.aging.org](http://www.aging.org).

### MAY 9-12

#### Argentum Senior Living Executive Conference *Denver, Colorado*

During four days of executive-level education, professional networking, and discussion about the most critical issues in the industry, visit the USC Davis School at booth 317! To register for the conference, visit [argentumconference.org](http://argentumconference.org).

### MAY 13

#### Davis School Commencement Ceremony *USC University Park Campus*

Following the main USC commencement ceremony, the Davis School celebration will take place in the Tutor Campus Center Ballroom at 11:00 AM with a reception to be held immediately afterward. For more information, please call (213) 740-5156.