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& Chair | *page 36***

VITALITY

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MISSION STATEMENT

The USC Davis School promotes healthy aging for individuals, communities and societies through leadership and innovation in research, education and practice.



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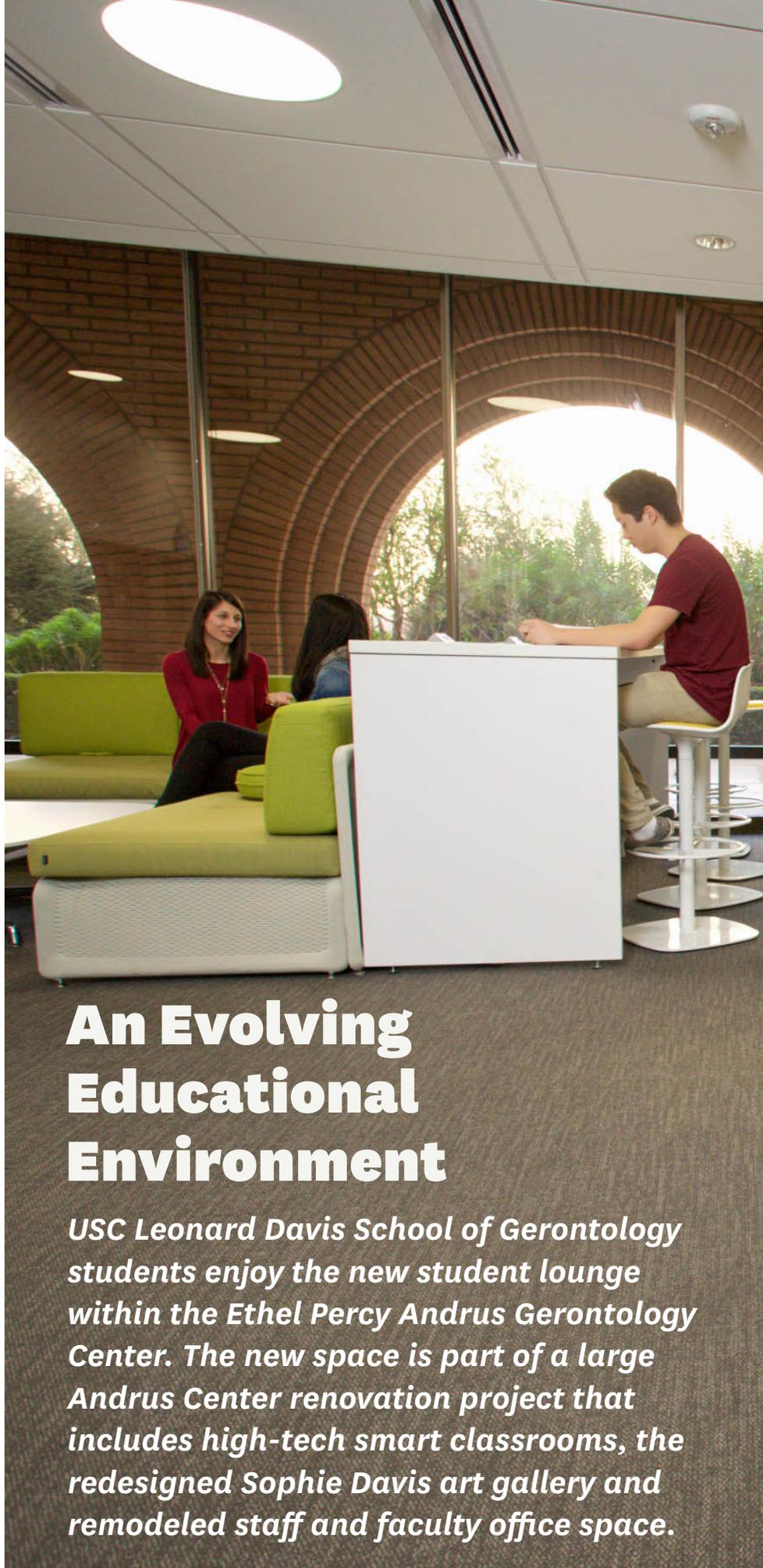
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An Evolving Educational Environment

USC Leonard Davis School of Gerontology students enjoy the new student lounge within the Ethel Percy Andrus Gerontology Center. The new space is part of a large Andrus Center renovation project that includes high-tech smart classrooms, the redesigned Sophie Davis art gallery and remodeled staff and faculty office space.



Dean's Message

SPRING 2017

Dear members of the USC Leonard Davis School of Gerontology community,

Welcome to the Spring 2017 issue of *Vitality*! In this issue, we discuss how all aspects of our environment—from the features within our homes to the air quality throughout our communities—affects how healthfully we age.

Along with other exciting science news from USC Davis School faculty and students in this issue, our cover story explores research on how higher levels of air pollution correlate with greater risks for Alzheimer's disease and related dementia. University Professor Caleb Finch, Assistant Professor Jennifer Ailshire and their colleagues both here at USC and across the nation have studied how an individual's place of residence, their genetics, their previous illnesses and the unique stressors in their neighborhood affect their dementia risk—with enormous potential implications for health and public policy.

As we consider how our environment affects our health and well-being, we also look inside the home and examine the things we use and interact with every day. In this issue, read about how Master of Arts in Gerontology student Leon Watts III helped make one older Angeleno's home safer and easier to navigate and how inspiring 92-year-old product designer Barbara Beskind spoke to USC Davis School students about innovating with older adults in mind. We also celebrate the age-friendly product designs created by students for both the Morton Kesten Universal Design Competition and the first-ever Brighten Award for Entrepreneurial Gerontology.

As dean, it's very important to me that the USC Davis School itself be an environment that is conducive to learning and discovery, physical and mental well-being and, of course, healthy aging. In addition to several renovation projects designed to provide students with a state-of-



the-art educational environment, we've recently introduced a new school wellness initiative for all students, faculty and staff members. Each Wednesday afternoon, instructor Wayne Lehrer leads a yoga and mindfulness class that provides a valuable opportunity to unwind and exercise—and puts our knowledge about aging well into practice—right here in the school.

Fight On!

Pinchas Cohen MD
Dean, USC Leonard Davis School of Gerontology
Holder, William and Sylvia Kugel Dean's Chair in Gerontology



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In the MEDIA



"This debt crisis is not just about students, it's about parents as well. It paints a dismal picture and we're only at the beginning of this trend."

CNBC

The next victim of the student debt crisis: Mom and Dad | Dec 27, 2016

Assistant Professor Jennifer Ailshire spoke to CNBC about her study of Baby Boomers taking on student loans for their children. Published December 6, 2016 in *Journals of Gerontology: Social Sciences*, the study showed that the parents who take on the greatest college debt repayments tend to be those who are black, have two children 17 or older with college-related debt, have a college degree themselves and are upper-middle income or high income earners. The average debt was around \$21,000, while high-income parents repay an estimated \$30,000 in college debt on their child's behalf.

Thirteen percent of U.S. parents around age 50 reported in a national survey that they were paying off college loans on behalf of their children, according to the study. Middle-aged adults and seniors hold about \$400 billion in college debt—and a quarter of that is from loans borrowed to pay for their children's tuition. The trend could have serious impacts for older people, including delayed retirement.

Read more: tinyurl.com/AilshireCNBC



UNIVISION

Searching For Ways To Improve a Caregiver's Health and Lifestyle | Oct 29, 2016

Anabel Diaz, Program Manager for the USC Family Caregiver Support Center, spoke about center's 2016 Caregivers Are Learning More (CALM) Conference, which provided informative presentations, a resource fair, stress relief strategies and support for caregivers. Watch (in Spanish): tinyurl.com/DiazCALM

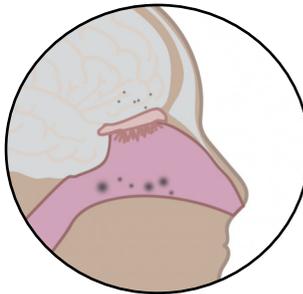
THE WALL STREET JOURNAL

How to Get the Benefits of Fasting with Less Deprivation | Feb 18, 2017

Read more: tinyurl.com/LongoWSJ

"[The fasting-mimicking diet] goes after the aging process by reducing markers and risk factors for disease."

- Professor Valter Longo



THE NEW YORK TIMES

Pollution Leads to Greater Risk of Dementia Among Older Women, Study Says | Feb 4, 2017

Read more: tinyurl.com/FinchNYT

"Although the link between air pollution and Alzheimer's disease is a new scientific frontier, we now have evidence that air pollution, like tobacco, is dangerous to the aging brain."

- University Professor Caleb Finch

FORBES

Why More Firms Should Adopt The Facebook Bereavement Policy | Feb 19, 2017

Read more: tinyurl.com/WilberForbes

"Extending bereavement support acknowledges a family member's need for time to recover and regroup."

- Professor Kate Wilber



NEXT AVENUE

Are Robotic Pets as Good as Real Ones for Older Adults? | Dec 7, 2016

Read more: tinyurl.com/ZelinskiNextAve

"Supplementing pet interactions—whether real or robotic—with human interaction is also important."

- Professor Elizabeth Zelinski



BUZZFEED

Experts Say the Presidential Candidates Will Probably Live a Long Time Because They're Rich and Well Educated | Sep 12, 2016

Read more: tinyurl.com/CrimminsBuzzfeed

"Education and income level are more predictive of longevity than any one medical risk factor... For someone aged 70 with a college education, the likelihood of surviving to age 75 is 91 percent for men and 94 percent for women."

- University Professor Eileen Crimmins

PAUL IRVING NAMED ONE OF 2016'S "INFLUENCERS IN AGING"



USC Leonard Davis School of Gerontology Distinguished Scholar in Residence and Milken Institute Center for the Future of Aging Chair

Paul Irving has been named a **2016 Influencer in Aging** by Next Avenue.

Also among this year's honorees: Los Angeles Mayor and Purposeful Aging LA partner Eric Garcetti; Bank of America Merrill Lynch Head of Global Wealth & Retirement Solutions Andy Sieg, who partnered with the USC Davis School to create a longevity training program for human resources and benefit plan professionals; and author, retirement expert and USC Davis lecturer Helen Dennis. Learn more about the honorees at nextavenue.org/showcase/influencers-aging-2016.

NEXT AVENUE/FORBES

The Power And Potential Of Purposeful Aging | Dec 19, 2016

Read more: tinyurl.com/IrvingForbes

"Faced with widespread division, we can find unity in our evolving demography. We all share a stake in aging..."

- Distinguished Scholar in Residence Paul Irving

CHICAGO TRIBUNE

With incidents increasing, what's being done to prevent falls? | Nov 22, 2016

Read more: tinyurl.com/PynoosCT

"There are simple things people can do in their own homes, which is where older people tend to spend most of their time."

- Professor Jon Pynoos



NBC

Color me Bad? Scientist Calls Negative Stereotypes a "Threat" to Black Health | Dec 1, 2016

Read more: tinyurl.com/AbdouNBC

"If people avoid seeking health care because they are mistrustful of physicians... HIV and AIDS is not going to be detected in a timely manner."

- Assistant Professor Cleopatra Abdou

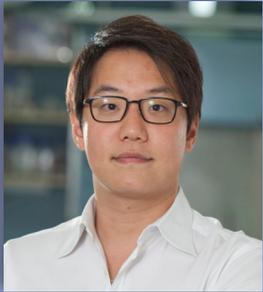


"Seniors want to see themselves onscreen. I think we're missing out on some really great stories."

Instructional Assistant Professor Caroline Cicero spoke at "Over Sixty, Underrepresented," a panel discussion presented by the USC Annenberg School for Communication and Journalism and Humana on February 16.

Discussion highlights: twitter.com/hashtag/AgeOnScreen.

Upcoming Investigations: **THREE NEW AWARDS TACKLE TOUGH QUESTIONS IN AGING**



**Assistant Professor
David Lee:**

What role do mitochondria play in aging?

Supported by a \$100,000 Junior Faculty Grant from the American Federation for Aging Research (AFAR), Lee hopes to determine the age-dependent impact of MOTS-c, a protein encoded in the mitochondrial genome, a smaller set of genes separate from the larger genome in a cell's nucleus.

"Mitochondrial signaling has emerged as a key regulator of aging, but the signals that have been described to date are not encoded in the mitochondrial genome," Lee said. "This coordination requires communication, and some of the messengers may be encoded in the mitochondrial genome—we are trying to explore the mitochondrial genome to see how the two communicate and how that will influence the regulation of aging."

Learn more: tinyurl.com/DavidLeeAFAR



**Associate Professor
Susan Enguidanos:**

What's the best way to provide palliative care?

A research team led by Enguidanos aims to improve quality of life for seriously ill patients and their caregivers with a \$5 million funding award approved by the Patient-Centered Outcomes Research Institute (PCORI) to compare the effectiveness of two types of palliative care, clinic-based primary care versus home-based care. Researchers from the Keck School of Medicine of USC, the University of California San Francisco and the USC Davis School have partnered with Blue Shield of California for this study.

"This is a promising opportunity to extend care that seriously ill patients and their caregivers both need and want to a setting they prefer," Enguidanos said.

Learn more: tinyurl.com/EnguidanosPCORI



**Professor
Christian Pike:**

Why do more women than men get Alzheimer's?

Pike's newest project will specifically examine the gene for apolipoprotein E-4 (APOE4), a primary genetic risk factor for Alzheimer's that disproportionately increases the risk for the disease in women versus men. The new study is supported by a \$250,000 Sex and Gender in Alzheimer's (SAGA) research grant from the Alzheimer's Association.

"Men and women are affected by Alzheimer's disease differently, both in terms of disease development and progression," he said. "Understanding the underlying bases of these differences should be useful in determining whether we need to view prevention and treatment differently depending upon gender."

Learn more: tinyurl.com/ChristianPikeSAGA

A SCIENTIST AND MENTOR

Professor Kelvin Davies, USC Davis School Vice Dean and holder of the James E. Birren Chair in Gerontology, received the Hiram J. Friedsam Mentorship Award from the Association for Gerontology in Higher Education. The award, which recognizes individuals who have contributed to gerontological education through excellence in mentorship to students, faculty, and administrators, was presented at the AGHE Annual Meeting on March 11, 2017.

Davies was also named the 2016 recipient of the Sir Trevor Slater Award and Gold Medal of the International Society for Free Radical Research. An internationally celebrated expert in free radical biology, he received his award on November 19, 2016 during the joint Biennial International Congress of SFRR International and the Society for Redox Biology and Medicine in San Francisco, Calif.

DAVIES LAB RESEARCHERS RECEIVE AWARDS

Several researchers in Davies' laboratory have recently been recognized for research achievement with travel and research support awards:

- Students Sarah Wong, junior in human development and aging, and Mayme Cline, senior in biomedical engineering, received travel awards from the USC Student Government (USG) to attend the 23rd Annual Meeting of the Society of Free Radical Biology and Medicine (SFRBM).
- PhD in Biology of Aging candidate Laura Corrales-Diaz Pomatto was awarded a Minority Travel Award for the 2017 American Society for Cell Biology meeting as well as an honorable mention for the Rockwell Dennis Hunt Scholastic Award, which provides \$1000 in research support.
- Post-doctoral researcher Vicent Bonet-Costa received a USC-sponsored Post-Doctoral Travel Award to attend the 2017 SFRBM Meeting.

"I am so proud of the undergraduate, graduate and post-doctoral students in my laboratory group," Davies said. "They exemplify the very best traits of inquisitiveness, enthusiasm, and diligence that are fundamental hallmarks of all successful scientists."

HONORS AND AWARDS

ALUMNUS BRIAN KASKIE PHD '98 RECEIVES PRESTIGIOUS AGING POLICY FELLOWSHIP

USC Leonard Davis School of Gerontology alumnus Brian Kaskie PhD '98, a professor of health policy at the University of Iowa, is a 2016-2017 Health Policy and Aging Fellow, serving on the Majority Staff of the U.S. Senate Special Committee on Aging in Washington D.C.

USC Davis School alumni Dawn Alley PhD '06 and Gretchen Alkema PhD '07 are former recipients of this prestigious fellowship.

Kaskie focuses on the intersection between public policies and older Americans. His recent research looks at factors that contribute to elder suicide, state level adoption of Medicaid elderly waivers and public oversight of skilled nursing and assisted living facilities.

"From my time at the USC Davis School I've worked to address the challenges presented by the continued aging of our American population," said Kaskie. "Being here in D.C. allows me to be part of the national conversation. Now, I can sit with someone in their office and say, before you draft that legislation, let me tell you a story."

The program is made possible via the support of The Atlantic Philanthropies and the John A. Hartford Foundation.



Professor Kelvin Davies and student Sarah Wong



Kaskie is serving as a Health and Aging Policy Fellow for Senator Susan M. Collins (R-Maine).

PHD CANDIDATE YONGJIE YON BRINGS POLICY EXPERTISE TO WORLD HEALTH ORGANIZATION

USC Davis PhD in Gerontology candidate Yongjie Yon is making a global impact in the fight to protect vulnerable older adults. As a technical officer for the World Health Organization's Regional Office for Europe in Denmark, Yon performs policy analysis and contributes to the development of evidence-based guidance regarding violence and injury prevention and healthy aging.

"Working in the WHO European Office has widely expanded my views and perspectives in responding to the regional and global challenges of population aging," Yon said. "The diverse doctoral program at USC has prepared me well for an international career on aging and has made me a better researcher and critical thinker."

Yon has conducted extensive research on elder abuse with his mentor, USC Davis School Mary Pickford Foundation Professor of Gerontology Kate Wilber. Since the start of his doctoral program in 2013, Yon has published eight papers, written one book chapter and co-authored a book. He is also a member of the editorial board for the *Journal of Elder Abuse & Neglect*. During his PhD candidacy, Yon completed a six-month internship for the WHO in Geneva, where he contributed to the World Report on Ageing and Health and developed his doctoral dissertation on elder abuse. He has also served as a James Martin visiting student fellow with the Institute of Population Ageing at the University of Oxford as well as a research associate for the International Longevity Center in Brazil.

Photo (left to right)
Dr. John Beard, WHO Director of Ageing and Life Course; Dr. Kathy Greenlee, former Assistant Secretary in the U.S. Department of Health and Human Services and Assistant Secretary for Aging; Yongjie Yon





In addition to leading two USC Davis School courses overseas, world-famous longevity expert Valter Longo recently received international honors for his research on diet and aging:

2016 FRIEDRICH MERZ GUEST PROFESSORSHIP

The Merz Guest Professorship appoints an especially well-reputed scientist from the field of pharmaceuticals or human medicine to the University of Frankfurt each year. Longo's duties as guest professor included taking part in a public forum on fasting and aging and discussing his research at a cancer metabolism symposium in November 2016.

"The purpose of our guest professorship is to further cutting-edge research and promote the exchange between science and business on an international level," explained Philip Burchard, CEO of Merz. "In Valter Longo, we have appointed an acclaimed gerontologist who has done outstanding work on the subject of health in old age."

2016 BOERHAAVE LECTURE

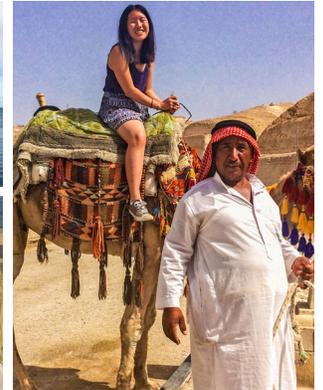
Longo received the honor of presenting the 2016 Boerhaave Lecture from the Dutch Society for Research on Aging (DuSRA).

The DuSRA encourages biomedical aging research and its integration in humans and animal models and promotes cooperation between basic and clinical research. Longo spoke about his research on fasting and aging October 24, 2016.

SUMMER STUDY ABROAD COURSES PROVIDE NEW PERSPECTIVES AND LEARNING EXPERIENCES

This summer, USC Davis School students and students from across the university will embark on amazing international learning experiences and explore many different facets of aging. Courses are open to both full-time USC students and outside individuals (requires enrolling as a limited-status student).

Want to learn more? Contact Sara Robinson at sararobi@usc.edu.



Longevity and Death Among Ancient and Modern European Populations

May 15 – June 6, 2017
Italy

This course, led by USC Davis School Associate Professor Susan Enguidanos, explores the discoveries of ancient humans and bodies that have been preserved to illuminate the connection between diet, health and disease. The class will travel through Italy and explore the role of religion and culture in determining and defining death practices, ceremonies and other customs.

Psychology of Adult Development

May 22 - June 9, 2017
Herzliya, Israel

This course, led by USC Davis School Professor Mara Mather and presented in conjunction with IDC Herzliya, examines how psychologists study thinking, memory, emotions, personality and behavior and how people change throughout the adult lifespan. Students will learn about research and theory bearing on cognitive, personality, adaptive and social processes throughout the adult life span.

Nutrition, Genes, Longevity and Diseases

May 16 - June 9, 2017
Genoa, Italy

This course examines the role of nutrition and genes and their impact on longevity and diseases, particularly diseases related to aging. It provides the opportunity to learn directly from internationally renowned expert and USC Davis School Professor Valter Longo, gain a global perspective on genetics and cultural attitudes toward aging and experience a month-long immersion in the Mediterranean lifestyle.

Food, Culture, Disease and Longevity in Italy and the Mediterranean

June 12-29, 2017
Florence, Italy

This brand new course, led by USC Davis School Professor and USC Longevity Institute Director Valter Longo, examines the history of food in the Mediterranean from the Roman times to the present with references to the rich historical, political, economic, social and artistic past of the peninsula.

STEVIE TU'IKOLOVATU TAKES ROSE BOWL HONORS, BUT HAS BIGGER PICTURE IN MIND

This year's Rose Bowl victory was a fitting final bow for USC's Stevie Tu'ikolovatu, who racked up tackle after tackle and earned the game's defensive MVP award.

Trojan fans may want to credit Tu'ikolovatu's late grandfather for inspiring his determined and dedicated performance.

Family patriarch Sonasi Po'uha instilled the importance of practice, whistling from the stands for more drills, more running and more repetitions than any of his coaches.

"I think about him when we have hard practices or hard games and my body is sore," Tu'ikolovatu said earlier in the season. "The stuff he put me through was much crazier than what we are doing now, so it helps me mentally get through anything."

The results can be seen in the tackles, blocks and pressure the 6-foot-1, 320-pound lineman applies to opposing teams. Tu'ikolovatu earned praise all season for being a mentor and anchor for USC's defense.

RESPECT FOR ELDERS

But Po'uha also imparted another practice that's big in his native Tonga and remains a major part of Tu'ikolovatu's life today:



respect for elders. When Po'uha was diagnosed with terminal cancer in 2009, family members moved in with him, sharing traditions such as feasting on pigs they had roasted in the backyard. Po'uha spent his final months at home, surrounded and celebrated by his loved ones.

"We were able to act as his hospice nurses, and it was a time that my family and I really enjoyed," said Tu'ikolovatu, who adds that he actually prefers to be around an older crowd. "I like to learn from them. I think they have a lot of wisdom to share."

Tu'ikolovatu graduated with a bachelor's degree in sociology from the University of Utah in 2016. Still eligible to play football for another year, he transferred to USC; for the football, sure, but also for the opportunity to earn a master's degree from the USC Leonard Davis School of Gerontology.

At USC Davis, he's learning about social policy and societal trends. In one class he was shocked to learn that falls are the leading cause of death and injury among adults over 65 in the United States. In another, he was surprised to discover that most Americans die in hospitals, not at home like his grandfather.

"At some point in life everyone is going to reach the same struggles as they age."

BLENDING ACADEMICS & ATHLETICS

Tu'ikolovatu hopes to head to the NFL after graduation and eventually wants to blend his academic and athletic experience to help people age healthfully. Down the road, he and his wife would like to open care facilities so that older adults can have a better quality of life.

Some of his younger teammates joked that he was studying aging because he was the oldest person on the team. But like his grandfather, Tu'ikolovatu's chosen subject has now become a source of inspiration.

"At some point in life everyone is going to reach the same struggles as they age," he said. "I tell everyone, the more you know, the better off you'll be." ■ O.B.

photo: USC/John McGillen

BLIND AT 92, BARBARA BESKIND IS NOT YOUR TYPICAL PRODUCT DESIGNER

Silicon Valley Celebrity Visits USC Davis School

If it weren't for her "sticks," it would be hard for Barbara Beskind to walk.

She personalized the two ski poles—which she bought at Costco for \$30—wrapping the handles with flannel and duct tape to prevent blisters. To differentiate between right and left poles, she also put markers on the top that she can feel.

There's even a flashlight mounted to one of the poles.

Legally blind at the age of 92, Beskind might not look like your typical Silicon Valley product designer, but she sure acts like one.

On January 25, Beskind, of the design firm IDEO, gave students at the USC Leonard Davis School of Gerontology tips on designing for an aging population — and specifically people like her who deal with vision loss.

"I came here today to show you the view from the inside," she said. "Good designs are meant for everybody."

FINDING ANSWERS

Beskind has become somewhat of a celebrity in terms of designing for an aging population. She's been a guest on NBC's *Today Show* and NPR and has spoken at the White House. She started her fellowship at IDEO in 2013 at the age of 89.

She contacted the firm after hearing IDEO founder David Kelley talking on *60 Minutes* about the diversity of experience on his teams.

"To me, it makes a lot of sense that people like her should be involved in not only product development but in all kinds of finding solutions for the elderly—



it's housing, transportation—that's where we get our answers," said Katja Emcke, a student pursuing a master's in gerontology.

Beskind told the students how she gets around in the world. She was diagnosed with macular degeneration in 1998 but didn't lose most of her vision until 2012.

Besides tweaking the sticks, Beskind puts little bumps on her products. She puts them on lipstick tubes, pill boxes—nearly everything—to orient the object. She makes sure to vary things by size, texture and color, telling the story of a time she put a white lamp on a white table, which took her weeks to find again.

DESIGNING WOMAN

Beskind has solved problems since she was a child. She remembers making her own hobbyhorse out of two old tires at age 8.

"I learned a lot about gravity because I fell off so many times," she said. "That was my first exposure to designing."

Beskind always wanted to be an engineer, but a guidance counselor told her that engineering schools wouldn't accept a woman. She then joined the Army, where she served for 20 years, retiring as a major in 1966. She was trained in occupational therapy—a blessing, she said, because of the knowledge it gave her while working with people.

She had a private practice in New Jersey for children with learning disorders and holds a patent for a device that helps children maintain balance.

Instructional Assistant Professor Aaron Hagedorn, who invited Beskind, hopes innovative minds like hers



UNIVERSAL DESIGN COMPETITION WINNERS

A desire to enable his grandparents prepare their own meals motivated Lamar Pi to design MODU, a customizable tray and accessory set that attaches to walkers or wheelchairs to give people with limited mobility a stable work surface and accessible storage space.

“They’re unable to stand up for long periods of time and transporting objects around the home is a challenge,” said Pi, an industrial design student at San Francisco State University, of his otherwise-active grandma and grandpa.

The portable prototype earned first place and a \$1500 prize in the USC Davis School Morton Kesten Universal Design competition, which challenges students across the country to come up with products or spaces that can help people of all ages and abilities to live comfortably at home. The yearly competition and the biannual USC Davis School Morton Kesten Summit address the needs of individuals aging in place and are endowed by a family member in memory of the late Morton Kesten.

Employing principles of universal design in the form of wider doorways, pull-out cabinet shelves, varied countertop heights and more can help people remain at home as they age, says Jon Pynoos, UPS Foundation Professor of Gerontology, Policy and Planning at the USC Davis School and one of the competition’s judges.

“The majority of homes were not built with people of all ages, sizes, and abilities in mind,” said Pynoos. “Universal design features and products can play a critical role in the ability of all individuals to conduct their daily activities, age in their homes, and avoid institutional settings.”

Zoe Logan of NYU earned second place and \$1000 for *Handled!*, a set of assistive kitchen tools. Third place and a \$500 prize was awarded to a team of students from Mount Ida College for *grip.ABLE*, a smartphone case and handle for individuals with dexterity challenges.

Contest judges also included Mary Lou Dauray, environmental artist and advocate for inclusive spaces and universal design; Adley Chan, assistant professor in the USC Mrs. T.H. Chan Division of Occupational Sciences and Occupational Therapy and Jordana Maisel, director of research activities at the University at Buffalo Center for Inclusive Design and Environmental Access.

can make industry respond to a growing market.

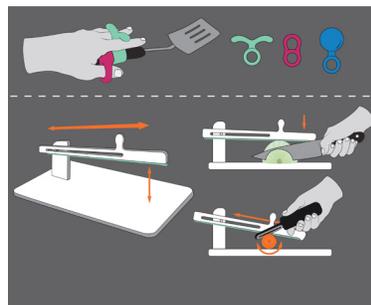
“Because there isn’t an existing infrastructure, businesses don’t generally consider people like Barbara as a target customer,” Hagedorn said. “But with the aging of the population, there are ever-growing numbers of people like Barbara.”

People over the age of 65 will amount to 20 percent of the population by 2029, according to estimates from the U.S. Census Bureau.

NO SLOWING DOWN

Turning 93 in February, Beskind isn’t slowing down. She has a hearing aid conference coming up at Stanford University and she reports to IDEO every quarter, traveling to both the Palo Alto and San Francisco offices to give presentations.

“If I see ways ... that we can be of value to those in the aging or low-vision populations—I feel that’s my duty,” she said. “I never want to stop.”



Top to Bottom: MODU by Lamar Pi, *Handled!* by Zoe Logan, *grip.ABLE* by students from Mount Ida College

■ J.C.

■ O.B.

KESTEN SUMMIT: SMALL CHANGES HELP MAKE HOMES SAFER



Mary Lou Dauray and
Professor Jon Pynoos

With a few simple home modifications, older adults can prevent accidents, reduce health and long term care costs, facilitate caregiving and support independent living, said USC Davis School Professor Jon Pynoos. He spoke at the 2016 USC Morton Kesten Summit, a gathering of national experts addressing the needs of individuals aging in place.

Pynoos is also director of the National Resource Center on Supportive Housing and Home Modification and co-director of the Fall Prevention Center of Excellence.

KEEP IT SIMPLE

Ten thousand adults are turning 65 every day, and their overwhelming preference is to age in the comfort of their home, which means renovations are needed to stay safe and live well. Extensive home modifications have an average cost of up to \$1,300, but Pynoos said that older adults and caregivers can start smaller, such as:

- Installing railings to both sides of interior stairways
- Installing grab bars in the shower
- Purchasing a raised toilet seat with side bars for support
- Improving lighting around the house (stairs, pathways, porches, doorways, closets)
- Installing ramps wherever steps are located

MAKING CHANGES PART OF THE CONVERSATION

While the cost of making modifications is proven to be significantly lower than potential medical costs due to accidents in the home, the majority of older adults and caregivers struggle with making adjustments to their homes for various reasons. Many are unable to do it themselves, others can't afford to make improvements or feel contractors are untrustworthy, some don't know how to make changes and some consider railings and ramps unattractive, said Pynoos. To resolve some of these issues, he recommends changes and adjustments to programs and policies to improve aging in place for all older adults.

In a study conducted with The Hartford Insurance Company, USC provided educational materials about modifications for aging in place to older policyholders with severe damage to their kitchens and bathrooms.

"Sure enough, a lot of them made changes," Pynoos said. "With good educational materials, we can make a difference."

The bi-annual Morton Kesten Summit and associated Universal Design Competition are endowed by a family member in memory of the late Morton Kesten. Other presenters at the summit included USC Davis Assistant Professor Jennifer Ailshire; Kathleen Cameron, National Falls Prevention Resource Center; Jordana Maisel, Center for Inclusive Design and Environmental Access, SUNY Buffalo; Gretchen Alkema, SCAN Foundation; Gretchen Swanson, Heart of Ida; Carrie Graham, UC Berkeley School of Public Health and Social Welfare and UC San Francisco Institute for Health and Aging; Grant Baldwin, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; Lisa D'Ambrosio, MIT AgeLab; and Fernando Torres-Gil, UCLA Luskin School of Public Affairs. ■ A.M.D

Before he replaced the wall-to-wall carpeting with wood floors in 89-year-old widower Irving Anderson's Hancock Park home, Leon Watts III took pictures. He captured the location of every piece of furniture in the house and recorded the placement of each of Anderson's late wife's collection of miniature enamel boxes so he could put them back in the exact same place.

"With older clients it is important to make sure that changes are not more disruptive than they need to be," said Watts. "You want to make sure to maintain the familiar and sentimental things that bring them comfort."

It is this attention to detail that makes Watts a sought-after specialist to oversee home renovation projects. After serving in the U. S. Air Force and studying public administration at USC, he started his company, Guardian Home Services, in 1979 to offer busy executive-level homeowners concierge services for home maintenance and other personal needs. Anderson initially hired him as a manager to oversee general construction jobs.

As Anderson and his other clients grew older, Watts stepped in to handle age-friendly home modifications, pulling up carpeting to prevent tripping, adding bathroom grab bars to create stability and widening doorways to allow better access. As a longtime trusted presence—he calls himself a personal advocate—in their lives, Watts is even enlisted to help with banking issues, cable bills, grocery shopping, doctor's appointments and family disputes.

At the age of 63, Watts enrolled in the USC Leonard Davis School of Gerontology, home of the nationally recognized Fall Prevention Center of Excellence, to earn his master of arts degree in gerontology.

"As I got more involved in helping my clients with their lives, I could see that I needed a little more academic research support to go along with my experience," he said. "Getting my degree in gerontology has also helped me see gaps that need to be addressed and how to fill those gaps. And now that I am older, it is helping me understand what I need to plan for down the line."

Like a reported 87 percent of seniors, Anderson wants to stay in his home as long as possible. More than 30 years after they started working together, Watts recently convinced him to replace his original porcelain tub with a state-of-the-art walk-in version to make bathing easier and safer.

Watts graduates in May, 41 years after earning his bachelor's degree at USC. He'd like to combine his wisdom gleaned from the field and the classroom and expand the scope of his business to one where he can advise agencies on policies and best practices to make communities safer for seniors.



LEON WATTS LOOKS OUT FOR SENIORS

The USC Davis master's student has built a business on trust and advocacy

Anderson says that Watts' assistance in so many small ways has added up to make a big impact on his life. He believes Watts' degree in gerontology and hands-on experience can benefit many more people.

"When we encounter the time of need, he can foresee it and he is there to either stand behind us or represent us," he said. "I think there is a time in life everyone should have a personal advocate."

Watch a video on how Watts has helped Anderson age in place at tinyurl.com/LeonWatts.

"When we encounter the time of need, he can foresee it and he is there to either stand behind us or represent us."

■ O.B.



PRACTICE

SPRING 2017 VITALITY 15



Members of the CEO panel discussion (left to right): Loren Shook, Silverado Senior Living; Patricia Will, Belmont Village; Bob Kramer, NIC; Andy Kohlberg, Kisco Senior Living; and Jack Callison, Enlivant Senior Living.

HOW BOOMERS WILL TRANSFORM SENIOR LIVING

Experts at USC Senior Living Executive Course forecast major changes ahead.

This is not your grandmother's retirement home.

That was the message delivered to approximately 60 senior housing professionals at the third annual Senior Living Executive Course led by the USC Leonard Davis School of Gerontology and Marshall School of Business February 24-26.

The three-day professional development course provided expert insights on the latest issues related to the business, law, science, education and future of aging, with an emphasis on how to meet the emerging housing, health and well-being needs of close to 80 million baby boomers.

"The senior living sector is expanding rapidly to meet the current and future needs of an aging nation," said Davis School Professor and Dean Emeritus Edward L. Schneider. "The USC Leonard Davis School and the USC Marshall School are addressing this challenge by organizing courses to assist the leadership of this industry."

Davis School Dean Pinchas Cohen spoke about the potential of personalized aging—empowering people to use their genetic data to promote their own health and wellness. Marshall School Professor Greg Patton provided the executives with principals to enhance communication, interpersonal and leadership skills. Cynthia Hutchins MA '13, director of financial gerontology at Bank of America Merrill Lynch, discussed the financial implications of aging.

A pressing topic was how residential communities must meet the unique needs of the aging baby-boom generation, which include an increasing demand for exercise classes, specialty food bistros and multi-family housing options. This is part of a larger trend that considers how the physical design of a space can enhance residents' safety and well-being, particularly for those with Alzheimer's disease or other memory impairments.

"You've got to take the nursing home out of the nursing home," said Loren Shook, founder and CEO of Silverado Senior Living and a member of the USC Davis School Board of Councilors. He advised attendees to hire good architects, remove nursing stations and add wellness rooms.

"We are in a period of disruption," said Bob Kramer, CEO of the National Investment Center for Seniors and Housing Care (NIC), who noted that many traditional skilled nursing facilities are closing while other senior living options, including assisted living communities—which aim to meet individuals' evolving care needs with limited disruption to their living environments—are near full capacity, with demand only expected to grow.

Panelists predicted a rise in technology-enabled care, such as telemedicine consultations to increase access to specialists and app-enabled businesses that deliver health services to people in their homes. They also acknowledged challenges around how to train and maintain the needed workforce required to help provide care, cleaning and other essential services for a growing aging population.

While looking ahead to an era of change, the experts reinforced the message that working in senior living has never been about business as usual.

"As leaders we come by this profession because it is personal," said Patricia Will, founder and CEO of Belmont Village and a member of the USC Davis School Board of Councilors. "We all share a passion for how to make aging better."

Co-lead sponsors of the 2017 Senior Living Executive Course were the American Seniors Housing Association, Argentum, HCP and NIC. Additional support was provided by Welltower, Direct Supply, LTCreit, MatrixCare and Silverado.

■ O.B.

A young woman with dark hair, wearing a bright red long-sleeved shirt and dark pants, stands on the left side of the frame. She is looking down and holding the right hand of an elderly man. The man is seated in a wheelchair on the right side of the frame, wearing a grey zip-up sweater, a dark flat cap, and glasses. He is looking towards the woman. The background is an outdoor setting with trees, a table and chairs, and a brick building. A semi-transparent grey box with white text is overlaid on the right side of the image.

**KINGSLEY MANOR
DELIVERS LESSONS
AND FRIENDSHIPS
FOR LIFE**



On a clear day, the view from the rooftop patio of Kingsley Manor extends from the Pacific Ocean to beyond the downtown skyline. The ivy-covered brick walls of this four-acre Hollywood estate hold a gym, a movie theater and an elegant dining room that serves three hot meals a day. This regal residence is an unlikely location for free student housing, particularly since it is a retirement community.

In a pioneering collaboration with the USC Davis School that began in 1984, at least 60 USC Davis students have called Kingsley Manor home, earning room and board in exchange for two days of service each week. They teach yoga and languages, lead group game sessions and art classes and provide smiles and support when needed.

“It is good to have youth around,” said 85-year-old Barbara Rosenbaum.

Studies suggest that she is right; intergenerational programs have been linked to stabilizing cognitive decline, improving moods and decreasing pain. In addition, participation in social activities, like those the students lead, has been credited with improving seniors’ physical and mental health.

The students benefit too. They say having seniors as roommates has brought them wisdom, friendships and daily reminders that abilities, not disabilities, should define older adults. This is a lesson that student Yuting Guan learned when a woman who could not see well requested some computer assistance.

“It turned out she knew more than me,” she said of the resident who ran two websites and had worked as a technology expert. “She taught me to connect the hard drive and told me which programs to quit.”

A few similar residential programs have recently begun in places like Ohio, Spain and the Netherlands, but Kingsley Manor’s is believed to be the only one specifically for gerontology students and is designed to help train future leaders in the field.

Shaun Rushforth MS '08 is one of those leaders. He lived in Kingsley Manor a decade ago and is now the executive director. He says his experience as a resident makes him a more empathic administrator.

“I don’t know what it is like to be an 84-year-old man,” he said. “But I do know what it is like to live in a retirement community.”





“It is like I have 200-plus grandparents, but I also have 200 friends,” says Natalie Waldon, a Master of Aging Services Management student (with Marvin Drucker on page 17). Martha Chung and other residents, (top and center left of opposite page) stretch with Waldon during her chair yoga class. Waldon also launched Zumba lessons at the request of a former professional dancer.

Much more than meal time: executive director and USC Davis alumnus **Shaun Rushforth MS '08** shares a laugh with Blossom Oshen and Char Allen (above).

Master of Science in Gerontology student **Yuting Guan** (with resident Polly Richards top right and alone opposite page bottom left) graduated from medical school in her native China. She says living at Kingsley Manor has expanded her professional and personal world view about the importance of gerontology.

Master of Science in Gerontology student **Sai Raj Kappari** in his apartment at Kingsley Manor (bottom left) and leading a gin rummy game (center left). Kappari also teaches meditation and computer classes that are attended by residents over 90 and 100 years old but says he is the one learning from them. **“This has changed my life.”**

■ O.B.

USC CONVENES TASK FORCE TO IMPROVE LIFE FOR CALIFORNIA'S CAREGIVERS



Cheryl Brown made a promise to her mother.

“My mother said, ‘don’t you put me in a nursing home. Don’t you do that to me,’” said Brown, who cared for her mother at home after she suffered a stroke.

Brown actually became a family caregiver at age 12, when she helped to care for her grandmother, and has continued in that role since her husband Hardy was diagnosed with amyotrophic lateral sclerosis (ALS) in 2002.

She is one of California’s estimated 4.5 million caregivers, providing long-term unpaid care to allow those with a functional disability or cognitive impairment to age at home. She was also a state assemblymember from San Bernardino and chair of the Committee on Aging and Long-Term Care.

Brown worked to turn her pledge to her mother into policy. She turned to the USC Leonard Davis School of Gerontology, a leader in exploring issues around caregiving and aging at home, for help.

In 2015, she sponsored a resolution that established the California Task Force on Family Caregiving. The

USC Davis School, with funding from AARP and the Archstone Foundation, is supporting the work of the 12-member assembly and senate-appointed team by providing substantive information and administrative assistance.

“We want to continue to have California be an exemplar and to develop innovative ways of addressing caregiving needs, which are only going to increase with the aging of the population,” said Kate Wilber, Mary Pickford Foundation Professor of Gerontology at the USC Davis School.

Working with Wilber’s team, the task force will deliver a report in July 2018, providing the legislature with recommendations on how improve services and support for family caregivers.

“I think it is going to change a lot of systems and add to them to make it sure that a caregiver will be able to not just exist, but thrive,” Brown said at the taskforce’s kickoff meeting on October 20, 2016 at the USC Davis School.

Brown also noted that budgets for caregiving support services have been cut and that California caregivers are providing the

state with close to \$50 million dollars of free labor—which often comes at a cost to caregivers.

“Many times the caregiver gets sick and dies before the person they are caring for,” she said.

California’s task force is part of a growing recognition that caregivers, who are indeed at higher risk for major diseases and depression, need care themselves. In 2016, the National Academies of Sciences, Engineering and Medicine issued a report recommending developing a national strategy to address caregivers’ health, economic security and overall well-being. Called *Families Caring for an Aging America*, it states that around 20 million people nationwide are providing some sort of support—from assisting with bathing and dressing to managing complex medications and providing constant supervision—to an older parent, spouse, friend or neighbor.

USC Davis School Research Associate Professor Donna Benton, member and recently appointed chair of the state task force, is also the director of the USC Family Caregiver Support Center,



Task force members with former State Assemblymember Cheryl Brown (4th from right)



**DONNA BENTON
NAMED CHAIR OF
CALIFORNIA TASK
FORCE ON FAMILY
CAREGIVING**

USC Davis School Research Associate Professor Donna Benton has been appointed chair of the California Task Force on Family Caregiving. Benton, who is also the director of the USC Family Caregiver Support Center/Los Angeles Caregiver Resource Center, is a senate appointee to the state task force, which was established to examine issues relative to the challenges faced by family caregivers and opportunities to improve caregiver support, review the current network, services and supports available to caregivers and make policy recommendations to the legislature.

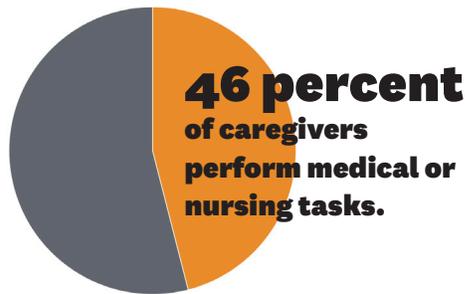
Benton has over 30 years of experience in working with families and the community, to help improve services and support to persons with dementia. She has served as a commissioner on the California Commission on Aging and served as chair of the legislative sub-committee for many years. She completed her graduate training in clinical psychology at the California School of Professional Psychology and was a geropsychological postdoctoral fellow at USC/Rancho Los Amigos Medical Center.

■ O.B.

California has **4.5 million** family caregivers, the most out of all U.S. states.



Caring for a loved one with dementia costs more than **\$10,000 a year** out of pocket on average.



Source: AARP

which provides direct support to individual caregivers. Benton says a large challenge is getting people to recognize that they are actually caregivers.

“A lot of people just take on this role as part of what they think family members are expected to do for one another,” she said. “If you don’t think you are a caregiver, you are not going to ask for help.”

Brown agrees that increasing awareness is key. As someone who has been a caregiver since she was young, she was excited to see USC Davis students helping out as part of the task force team and believes they can be part of the solution as well.

“It is inspiring to see young people involved,” she said.

NUTRITIONAL GUIDANCE OFTEN MISSING FROM SUBSTANCE ABUSE TREATMENT

Even as more than 21 million Americans struggle with substance abuse issues, many addiction recovery programs overlook how nutritional support can increase treatment safety and success.

Maria Schellenberger, a student in the USC Leonard Davis School of Gerontology Master of Science in Nutrition, Healthspan and Longevity program, said patients in recovery often face very high risks for malnutrition, eating disorders and dramatic weight changes, among other challenges.

"By including an RDN in the treatment plan, clients can address their nutritional concerns throughout treatment."

"Many clients enter treatment with significant malnutrition and micronutrient deficiencies," she said of the nutritional problems that often accompany drug abuse. "For example, opiates decrease gastrointestinal motility and often clients experience severe constipation, whereas other drugs may cause bouts of diarrhea. Alcoholism is often accompanied by severe micronutrient deficiencies, including thiamine and other B vitamins,"

Schellenberger and her mentor, fellow USC alumnus and founder of Nutrition in Recovery David Wiss, recently wrote an article on the need for dietetic support during addiction recovery for the Behavioral Health Nutrition newsletter of the Academy of Nutrition and Dietetics.

"Depending on the degree of malnutrition, it is important to supplement appropriately to avoid complications such as refeeding syndrome. As clients progress in their treatment and improve their overall health, focus should be shifted toward teaching about

Patients in recovery face the risks of malnutrition, dramatic weight changes and eating disorders, says USC Davis School MSNHL student Maria Schellenberger.



nutrition and cooking skills to enable continued proper nutrition post-rehab," Schellenberger said.

In addition to the nutrient deficiencies faced by patients actively using drugs, the recovery process itself can present patients with other barriers to establishing a healthy diet, she noted.

"Often, nutrition is overlooked, and facilities provide unlimited access to foods that are highly palatable, such as refined sugars and fried foods," Schellenberger said. "In the long term, this is a great disservice to clients as they are not receiving proper nutrition to replace their likely inadequate storages. This can also lead to excessive weight gain, causing distress to many clients."

GOOD MEAL PLANS

Having a registered dietician nutritionist (RDN) available to create healthful meal plans as well as provide education and counseling would allow clients to gain skills they will use after rehab; however, there are currently only a few studies addressing nutrition guidance and the role it plays in substance abuse interventions, she added. Her preliminary research indicates that both funding and beliefs about the need for nutrition guidance in recovery contribute to this shortfall in services available to individuals in treatment.

"Many facilities are not-for-profit and feel that they are unable to budget for an RDN for services," she said. "The second most common barrier I have found is the perceived 'lack of need' for an RDN. Many counselors I have spoken with feel that the main concern is helping their clients achieve sobriety, and they do not see how nutrition has an impact on their recovery. If RDNs are to increase their presence in substance use disorder treatment facilities, we will have to prove that we are integral members of the treatment team."

Early evidence suggests that treating either eating disorders or substance use disorders, instead of addressing both at the same time, often has poor outcomes due to complex interactions between the two.



TRAILBLAZING GRADUATE

In December 2016, Amylee Amos graduated with a Master of Science degree in Nutrition, Healthspan and Longevity, the first such degree conferred by the USC Leonard Davis School of Gerontology.

Amos entered the program with an extensive background in the commercial food industry, holding top management positions in London, Las Vegas and Los Angeles. In addition to her business experience, Amos has advocated for the nutrition needs of the food insecure, serving as a volunteer nutrition director of the Greater West Hollywood Food Coalition.

Amos was the first student in her class to pass the Commission on Dietetic Registration exam and is now a Registered Dietitian. She will open a private nutrition practice, the Amos Institute, in Los Angeles.

“I’m incredibly grateful for the outstanding education and training she received through the Nutrition, Healthspan and Longevity coordinated program,” Amos said.

MSNHL Students Provide Nutrition Counseling at Care Harbor LA 2017

The Care Harbor free clinic, provided each year to Los Angeles residents, offers medical, dental, vision and preventive care to hundreds of uninsured, underinsured and at-risk individuals who lack access to healthcare.

The 2017 event was held at The Reef Exposition Hall January 20-22. The USC Davis School Master of Science in Nutrition, Healthspan and Longevity program sent 12 students and one faculty member, providing 150 hours of service over three days. They counseled nearly 100 individuals, who received nutrition education regarding diabetes, hypertension, obesity and general health.

RDNs are uniquely equipped to address the complex combination of issues faced by patients who are both recovering from addiction and dealing with nutritional problems, Schellenberger said. RDN educational programs, such as the Master of Science in Nutrition, Healthspan and Longevity program at the USC Davis School, teach students to address issues of malnutrition, micronutrient deficiencies and eating disorder behavior as well as how to modify meal plans to assist with weight gain or weight loss and to provide proper nutrition.

“Many individuals with substance abuse problems have had little education about nutrition and often lack the skills necessary to purchase and prepare healthy meals for themselves. By including an RDN in the treatment plan, clients can address their nutritional concerns throughout treatment,” she said. “Ideally, an RDN will be able to help minimize immediate issues in early recovery [e.g. malnutrition or gastrointestinal distress] and slowly educate clients to prepare their own meals once they are no longer in a treatment facility. This long-term support is necessary to bring about lasting changes.”

■ B.N.

IS OVERREACTING TO DNA DAMAGE A POSSIBLE ROOT CAUSE OF AGING?

Harvard scientist David Sinclair delivers the 2017 Kesten Memorial Lecture.



How cells react to DNA damage may be a root cause of the aging process instead of random mutations in DNA itself, said renowned researcher David Sinclair.

Sinclair, co-director of the Paul F. Glenn Center for the Biology of Aging and professor in the Department of Genetics at Harvard Medical School, discussed the hypothesis during the Esther and Isadore Kesten Memorial Lecture on February 16, 2017. The Kesten lectureship is an annual honor that enables the USC Davis School to recognize prominent scholars in fields related to aging and invite them to USC to discuss their work.

"The reason I've devoted my whole adult life to this topic is because I think we can do better to understand aging and the body's defense against it," Sinclair said.

Sinclair's "Relocalization of Chromatin Modifiers" hypothesis of aging centers on SIRT1, one of a group of small proteins called sirtuins. SIRT1 proteins regulate the expression of genes by attaching to their locations within chromosomes, but the proteins can detach and travel to other parts of the genome to repair DNA damage.

"The root cause of aging may have little to do with mutations and more to do with the epigenome."

As SIRT1 moves away from its gene site to repair damage, the gene's expression changes. In young, healthy cells, SIRT1 returns to its original location and resets the gene's expression, but in older cells, the protein may not return to its original location, and gene expression remains changed. This breakdown in the efficiency of DNA repair and resulting expression changes may be behind the aging process, even when there are no other harmful random mutations in the DNA itself, Sinclair said.

"The root cause of aging may have little to do with mutations and more to do with the epigenome," the system in which proteins such as SIRT1 turn genes "off" or "on," he explained.

With this in mind, Sinclair's team has begun looking at ways to slow the increase of SIRT1 relocation with age. One potential drug target is nicotinamide adenine dinucleotide (NAD+), a cofactor of SIRT1 that declines with age.

Early research has been promising: in one study, mice that received a precursor to NAD+ in their drinking water displayed improved physical function and endurance. It's a result that Sinclair wants to eventually provide patients facing frailty in older age.

"People could spend less time in the nursing home and more time outside of it with their families," he said.

The Esther and Isadore Kesten Memorial Lecture was established in 1973 by Alan Davis, son of Sophie and Leonard Davis, in memory of his grandparents. The endowed lectureship allows the USC Davis School to annually honor an individual whose research has contributed significantly to understanding the aging process.

■ B.N.



Aging and the *Environment*



USC Davis School researchers work to understand how the air we breathe affects how healthfully we age

By Zen Vuong and Beth Newcomb

While the skyline has gotten clearer in recent decades, the haze of smog is still a near-constant presence in Los Angeles. And as populations around the world simultaneously grow older and become more centered in urban areas, the challenge of how air pollution affects human health and aging is coming into clear focus.

Researchers at the USC Leonard Davis School of Gerontology study the specific ways that pollution exposure affects how healthfully we age via collaborations with colleagues throughout USC and across the nation.

AIR POLLUTION AND THE AGING BRAIN

The latest USC-led research on air pollution and aging indicates the tiny particles that pollute the air—the ubiquitous type that mainly comes from power plants and automobiles—may increase the chance of dementia, including Alzheimer’s disease.

Scientists and engineers found that older women who live in places with fine particulate matter exceeding the U.S. Environmental Protection Agency’s standard are 81 percent more at risk for global cognitive decline and 92 percent more likely to develop dementia, including Alzheimer’s.

If their findings hold up in the general population, air pollution could be responsible for about 21 percent of dementia cases, according to the study.

“Microscopic particles generated by fossil fuels get into our body directly through the nose into the brain,” said University Professor Caleb Finch, ARCO/William F. Kieschnick Chair in the Neurobiology of Aging at the USC Leonard Davis School of Gerontology and co-senior author of the study. “Cells in the brain treat these particles as invaders and react with inflammatory responses, which over the course of time, appear to exacerbate and promote Alzheimer’s disease. Although the link between air pollution and Alzheimer’s disease is a new scientific frontier, we now have evidence that air pollution, like tobacco, is dangerous to the aging brain.”

The adverse effects were stronger in women who had the APOE4 gene, a genetic variation that increases the risk for Alzheimer’s.

“Our study—the first of its kind conducted in the U.S.—provides the inaugural scientific evidence of a critical Alzheimer’s risk gene possibly interacting with air particles to accelerate brain aging,” said Jiu-Chuan Chen, co-senior author of the study and an associate professor of preventive medicine at the Keck School of Medicine of USC. “The experimental data showed that exposure of mice to air particles collected on the edge of USC damaged neurons in the hippocampus, the memory center that is vulnerable to both brain aging and Alzheimer’s disease.”

“We now have evidence that air pollution, like tobacco, is dangerous to the aging brain.”





Assistant Professor Jennifer Ailshire



University Professor Caleb Finch

Their study, published in January 2017 in the *Nature* journal *Translational Psychiatry*, adds to an emerging body of research from around the world that links air pollution to dementia. The offending pollutants—known as PM_{2.5}—are fine, inhalable particles with diameters 2.5 micrometers or smaller. A human hair is about 70 micrometers in diameter, 30 times larger than PM_{2.5}.

The research was a collaboration between the USC Davis School, the Keck School of Medicine and the USC Viterbi School of Engineering. In 2010, Finch and Chen developed the AirPollBrain Network and have now recruited 20 USC faculty into this new research area.

COMBINING HUMAN DATA & LAB EXPERIMENTS

The researchers analyzed data of 3,647 65- to 79-year-old women from the Women’s Health Initiative Memory Study (WHIMS). These women lived across 48 states and did not have dementia when they enrolled.

The researchers adjusted for potential bias associated with geographic region, race or ethnic background, education, socioeconomic status, lifestyle and medical conditions.

Constantinos Sioutas, the Fred Champion Professor of Civil and Environmental Engineering at USC Viterbi, invented the technology to collect air particles for controlled exposure of mouse models.

USC scientists chronically exposed female mice carrying the APOE4 gene to nano-sized air pollution for 15 weeks. Compared to the control group, mice predisposed to Alzheimer’s disease accumulated as much as 60 percent more amyloid plaque, the toxic clusters of protein fragments that further the progression of Alzheimer’s.

“Our state-of-the-art aerosol technologies, called particle concentrators, essentially take the air of a typical urban area and convert it to the air of a freeway or a heavily polluted city like Beijing,” said Sioutas, co-author of the study. “We then use these samples to test exposure and assess adverse neuro-developmental or neuro-degenerative health effects.”

Worldwide, nearly 48 million people suffer from dementia, and there are 7.7 million new cases every year, according to the World Health Organization.

“Our study has global implications as pollution knows no borders,” Finch said.

USC researchers and others in this field said more research is needed to confirm a causal relationship and to understand how air pollution enters and harms the brain. Accurate pollution monitors are important for this task.

**2017 WHAT'S HOT IN
AGING RESEARCH AT USC:**

**Aging and the
Environment**

**Wednesday, April 19, 2017,
8:30AM – 4:00PM**

Join USC scientists for an informative symposium on how our environment can affect our health and aging. Speakers include:

Caleb Finch, USC Davis School Professor

“Mal-convergent Smokes: Petroleum and Tobacco”

Mafalda Caciottolo, USC Davis School Postdoctoral Scholar

“Air Pollution and APOE Alleles in Rodents”

Jennifer Ailshire, USC Davis School Assistant Professor

“Air Pollution and Cognitive Function among Older Adults: Identifying Vulnerable Populations”

Joseph Saenz, USC Davis School Postdoctoral Scholar

“Indoor Air Pollution and Cognitive Function among Older Adults in Mexico”

Scott Fruin, Keck School of Medicine of USC Assistant Professor

“Air Pollution Exposure in Los Angeles”

Geraldine Knatz, Price School of Policy and Viterbi School of Engineering Professor

“Air Pollution from Port-Related Sources: Reducing Emissions and Cleaning the Air”

Please RSVP at www.usc.edu/esvp (code: aging). Registration fee of \$50 includes lunch and parking. For questions, please call (213) 740-5156.

Less than one-third of all counties in the United States have ozone or particle pollution monitors, according to the American Lung Association. Ambient monitoring data from the EPA are critical for scientists conducting research on air pollution and public health, Chen said.

“We analyzed data of high PM2.5 levels using standards the EPA set in 2012,” Chen said. “We don’t know whether the lower PM2.5 levels of recent years have provided a safe margin for older Americans, especially those at risk for dementia.”

Six of the top 10 most PM2.5-polluted cities in the nation are in California, including Los Angeles, Long Beach and Fresno, according to the American Lung Association.

Yet certain areas have seen cleaner air in recent decades. Reducing PM2.5 in the air we breathe coincides with fewer cases of dementia, the researchers pointed out, referencing the data of others.

THE INSIDIOUS EFFECTS OF PM2.5

“Many studies have suggested that early life adversities may carry into later life and affect brain aging,” Chen said. “If this is true, then maybe long-term exposure to air pollution that starts a downward spiral of neurodegenerative change in the brain could begin much earlier and rev up in later life.”

In other studies, Chen and his colleagues linked long-term exposure to high PM2.5 levels to smaller gray and white matter volumes in important areas such as the frontal lobe, which carries out thinking, decision-making and planning.

For every 3.5 micrograms of PM2.5 per cubic meter of air, white matter (insulated nerve fibers that connect different brain regions) decreased by 6 cubic centimeters, according to one earlier study.

The new study in *Translational Psychiatry* examined only women and female mice. Future studies will include both sexes to evaluate generalizability to men as well as examine how PM2.5 interacts with cigarettes and other pollutants.

OTHER FACTORS INFLUENCE POLLUTION'S EFFECTS

Even with important steps taken to decrease air pollution in recent decades, there are serious health effects connected to auto exhaust and other pollutants in the air we breathe, especially for older adults.

Six of the top 10 most polluted cities in the nation are in California, including Los Angeles, Long Beach and Fresno.

Air pollution can worsen existing heart disease, lung disease, diabetes and more in older people, said USC Davis School Professor Jennifer Ailshire. Her latest research, published in the journal *Social Science and Medicine* in November 2016, also supports the assertion that living in a high-pollution environment can contribute to an increased risk of cognitive problems.

Ailshire, who studies health disparities and how neighborhood and social factors affect health, explained that the relationship between pollution and brain problems in older people appears to be influenced by several factors.

“Previous studies have shown that the aging brain is more vulnerable



to stress, and the effects of air pollution on cognition appear to be more pronounced in neighborhoods with more stressors, such as crime, disorder and decay,” she said.

In addition, individuals who had other health problems that impacted the brain, such as stroke, had a higher risk of more pronounced cognitive losses when faced with air pollution than their peers without brain health issues.

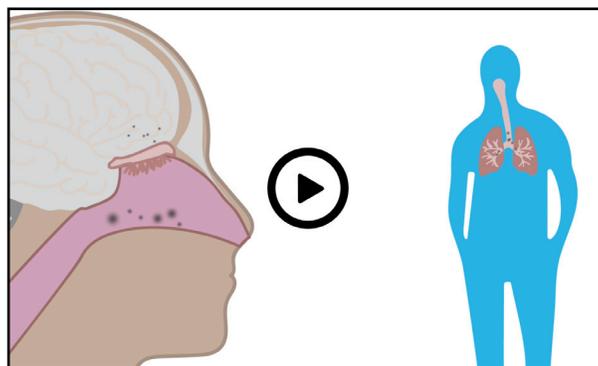
Conversely, higher levels of education seem to protect older adults from cognitive losses connected to pollution. Even with the same level of pollution exposure, individuals with more education performed dramatically better on brain function tests, Ailshire said. The idea that education can protect against cognitive problems later in life is known as “cognitive reserve” and is an example of how socioeconomic factors can influence health at older ages.

LOWERING RISKS FOR OLDER ANGELENOS

Los Angeles, while having made great strides in managing air pollution in the last few decades, still has some of the nation’s highest amounts of fine particulate matter on average.

This adds a new layer to the discussion of helping older adults age in place healthfully, Ailshire said. Even if a home is itself designed to help residents remain independent as they age, living in a neighborhood with

heavy exposure to air pollution could exacerbate health problems and lead to declines in physical and mental function.



LEARN MORE: watch a video on how air pollution affects the brain at tinyurl.com/ADRDSmog.

Along with making the home environment itself safe and usable, “I recommend getting in the habit of checking the Air Quality Index, or AQI, everyday along with the weather,” she said, citing the information available at the Environmental Protection Agency’s AirNow site (www.airnow.gov). “It’s probably a good idea for older adults with health issues to reduce or avoid outdoor activity on poor air quality days.”

In the longer term, Finch said he is hopeful that scientific findings will continue to inform policy changes such as those that have led to Los Angeles’ air quality improvements. He noted that recent research led by Keck School of Medicine investigators has shown improvement in children’s lung function in conjunction with the declines in pollution in Southern California, illustrating how cleaner air can mean significant health benefits throughout the lifespan.

“I am optimistic because of documented progress in LA and elsewhere in decreasing levels of PM2.5 and ozone in last two decades,” Finch said. “We in academia must communicate more of this evidence for public support and policy promoting green energy and fuel efficiency.” ■

FASTING-MIMICKING DIET REDUCES DISEASE RISK FACTORS IN HUMANS, REVERSES DIABETES IN MICE

What if you could lose weight and reduce your risk of life-threatening disease without any changes in what you eat other than a five-day special diet once every few months?

Cycles of a short-term diet designed to imitate the effects of water-only fasting appear to reduce risk factors for several diseases and may even reverse diabetes, according to new studies led by USC Leonard Davis School of Gerontology Professor Valter Longo.

DETERRING DIABETES

The fasting-like diet promotes the growth of new insulin-producing pancreatic cells that reduce symptoms of Type 1 and Type 2 diabetes in mice, according to a study on mice and human cells published February 23 in the journal *Cell* and led by Longo, director of the Longevity Institute at the USC Davis School.

By activating the regeneration of pancreatic cells, the researchers were able to rescue mice from late-stage Type 1 and Type 2 diabetes. The study showed a remarkable reversal of both types of diabetes in mice placed on the fasting-mimicking diet for four days each week. They regained healthy insulin production, reduced insulin resistance and demonstrated more stable levels of blood glucose. This was the case even for mice in the later stages of the disease.

The diet cycles switched on genes in the adult mice that are normally active only in the

developing pancreases of fetal mice. The genes set off production of a protein, neurogenin-3 (Ngn3), thus generating new, healthy insulin-producing beta cells. Longo and his team also examined pancreatic cell cultures from human donors and found that, in cells from Type 1 diabetes patients, fasting conditions also increased expression of the Ngn3 protein and accelerated insulin production.

These findings, along with promising findings from an early clinical study, warrant a larger trial on the use of the fasting-mimicking diet to treat human diabetes patients to help them produce normal levels of insulin while improving insulin function, Longo noted.

“Hopefully, people with diabetes could one day be treated with an FDA-approved fasting-mimicking diet for a few days each month and gain control over their insulin production and blood sugar,” he said.

A PROMISING PHASE II CLINICAL STUDY

Another recent study, published by Longo in *Science Translational Medicine* on February 15, demonstrated that the fasting-mimicking diet reduced risk factors for cancer, diabetes, heart disease and other age-related diseases in 71 adults placed on three cycles of the fasting-mimicking diet.

Study participants on the special diet were required to eat food products supplied by the nutrition company L-Nutra during the fasting periods of five days each month. The diet, which was designed to mimic the results of a water-only fast, allowed for participants to consume between 750 and 1,100 calories per day. The meals for the fast-mimicking diet contained precise proportions of proteins, fats and carbohydrates.

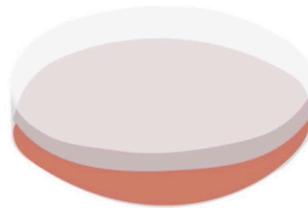
The phase II trial demonstrated a host of benefits from the regimen. The diet reduced

“This study provides evidence that people can experience significant health benefits through a periodic, fasting-mimicking diet that is designed to act on the aging process.”

cardiovascular risk factors, including blood pressure and signs of inflammation (measured by C-reactive protein levels), as well as fasting glucose and reduced levels of IGF-1, a hormone that affects metabolism. It also shrank waistlines by one to two inches on average and resulted in an average loss of six pounds in both total body fat and trunk fat but not in muscle mass.

Sanjeeve Kumar of the Keck School of Medicine of USC; Omer Yilmaz of the Koch Institute at MIT; Julie Sneddon of the University of California, San Francisco and Laura Perin of the Saban Research Institute. The study was funded by the National Institutes of Health/National Institute on Aging (grants AG20642, AGO25135 and P01 AGO34906) to Longo.

A fasting-mimicking diet was shown to reverse diabetes in mice, restart insulin production in human cells, and reduce disease risk factors in human patients. Watch a video on the FMD at tinyurl.com/FMDvideo



“This study provides evidence that people can experience significant health benefits through a periodic, fasting-mimicking diet that is designed to act on the aging process,” Longo said. “Prior studies have indicated a range of health benefits in mice, but this is the first randomized clinical trial with enough participants to demonstrate that the diet is feasible, effective and safe for humans.”

The *Science Translational Medicine* study was funded by the USC Edna M. Jones Chair in Gerontology fund, as well as through a National Institutes of Health grant to co-author Wendy Mack at the Keck School of Medicine of USC, through the Southern California Clinical and Translational Science Institute. Study co-authors from USC Davis were Min Wei and Sebastian Brandhorst (lead co-authors) and Mahshid Shelehchi, Hamed Mirzaei, Chia Wei Cheng, Julia Budniak, Esra Guen, Stefano Di Biase, Pinchas Cohen and Todd Morgan. Others were Tanya Dorff of USC Norris Comprehensive Cancer Center; Kurt Hong of the Keck School of Medicine; Andreas Michalsen of Charité University Medical Center in Germany; and Alessandro Laviano at IFOM, the FIRC Institute of Molecular Oncology.

Lead authors of the *Cell* article were Chia-Wei Cheng and Roberta Buono of USC Davis and Valentina Villani of the Saban Research Institute. Other co-authors were Min Wei and Dean Pinchas Cohen of USC Davis;

Longo is the founder of and has an ownership interest in L-Nutra; the company’s food products are used in the human studies of the fasting-mimicking diet. Longo’s interest in L-Nutra has been disclosed and managed per USC’s conflicts of interest policies. USC has an ownership interest in L-Nutra and the potential to receive royalty payments from L-Nutra. USC’s financial interest in the company has been disclosed and managed under USC’s institutional conflict of interest policies.

Note to our readers from study leader Valter Longo: In regard to our recent studies on diabetes, DO NOT try to apply any type of fasting mimicking diet (FMD) to treat either type 1 or type 2 diabetes either on your own or with the help of a doctor. The combination of the FMD and insulin or other drugs could increase the risk of severe complications, including the possibility of death. Although the use of the FMD to treat either type 1 or 2 diabetes is promising, it must be tested and proven safe and effective for human use in FDA-approved clinical trials.

■ B.N., E.G.

PhD in Gerontology candidate Lauren Brown



Can Telomeres Shed Light on Racial Disparities in Aging?

Surprising race- and gender-based differences in telomeres—the chains of repeating molecules that protect the ends of chromosomes from damage—show that the structures’ relationship to age and health outcomes is more complex than originally thought, according to a USC-led study.

In the search for a reliable aging biomarker, or a way to directly measure how an individual is physiologically or biologically aging, much attention has been focused on telomeres, said Lauren Brown, PhD in Gerontology candidate at the USC Leonard Davis School of Gerontology. She explained that some aging researchers first thought that telomeres might be a single, all-encompassing indicator of aging, with the chains getting shorter over time and in response to environmental or social stressors.

“We wanted to know if this really was a valid measure of aging at the population level that took into account social or environmental factors that might speed up the aging process,” she said, “or if differences in telomere length improved our understanding of the pervasive problem of racial and ethnic health disparities.”

Brown authored an article examining the differences in telomere length between older adults of different genders and races, which was published online in the *Journal of Aging and Health* in July 2016, and presented her research at the Gerontological Society of America’s Annual Scientific Meeting in November 2016. The study used information from the 2008 U.S. Health and Retirement Study and included data from more than 5000 white, black and Hispanic adults over age 54.

Longer telomere length has been thought to reflect better health and a younger biological age, but the analysis yielded surprising findings. Brown and colleagues found that white older adults had the shortest telomeres on average while black older adults had the longest. Thus, telomere length itself didn’t seem to explain racial or ethnic disparities in aging, since white populations had shorter telomeres yet have longer average lifespans and better health outcomes relative to black populations, even after controlling for socioeconomic factors and education, Brown said.

The findings indicate that telomere length itself isn’t the powerful all-encapsulating aging biomarker that researchers once hypothesized it was, Brown said.

In a follow-up study, “telomere length itself didn’t appear to be a good predictor for health outcomes, especially in people of color,” she said. “[Shorter telomeres] might be a better indicator of aging in white populations but aren’t necessarily the end-all-be-all indicator of biological age across diverse populations of older adults.”

However, she added that she hopes to further examine telomeres, including how they change over time, and their relationship to health outcomes. One possible explanation for the findings might be that while black and Hispanic individuals may have longer telomeres on average across the life course, their rate of telomere shortening could be greater than that of whites, reflecting accelerated aging and worse health outcomes associated with minority populations.

“Once we obtain longitudinal data, we can see if people of color are starting with longer telomeres but experiencing faster telomere shortening,” Brown said. “Faster shortening could be a factor in aging-related health outcomes as well as a symptom of environment and social stresses that characterize the lives of people of color and contribute to accelerated aging.”

At the 2016 GSA Meeting, Brown chaired and presented her telomere research during a symposium, “How Do Biomarkers Inform Our Understanding of Race and Ethnic Differences in Health?,” on the wider subject of applying biomarkers to health

disparities between different populations. Within this symposium, Brown and colleagues made the argument that the recent emergence of biomarkers in longitudinal, nationally representative and diverse samples of older adults presents an opportunity to better characterize differences in health by race or ethnicity.

“It’s important that we understand what we are measuring when we collect biomarkers of aging and that we are not just capturing the aging process in one group of people,” Brown said. “Good biomarkers of aging should advance our understanding of the aging process and recognize differences in health across racially and ethnically diverse populations.”

As researchers’ understanding of the complexities of telomere biology continue to deepen, in future analyses Brown plans to use genetic ancestry to account for this potential heritability difference in telomere length that may be contributing to these surprising race/ethnic

The findings indicate that telomere length itself isn’t the powerful, all-encapsulating aging biomarker that researchers once thought it might be.

differences in telomere length in older ages. This may also help better isolate the social or environmental factors that cause accelerated aging and faster telomere shortening that would be expected among racially and ethnically diverse populations, she said.

Meanwhile, researchers are still on the hunt for a single biomarker of aging that is a better marker of the aging process than chronological age and can identify individuals at increased risk of disease, disability, and accelerated aging in late life.

“For now, the hunt continues, since absolute telomere length has proven not to be a consistent measure of age-related declines among racially and ethnically diverse older adults,” Brown said.

“One of the real pleasures of working with emerging scholars is that they often have a fresh take on long-standing challenges in research,” said USC Davis Assistant Professor Jennifer Ailshire, Brown’s mentor and co-author on the telomere studies. “Lauren’s work is helping us to think about whether and how biomarkers of aging can provide insights into enduring racial and ethnic disparities in health and aging.”

■ B.N.

USC DAVIS PHD STUDENTS PRESENT AT GSA ANNUAL SCIENTIFIC MEETING 2016

Discussing their work with colleagues from across the nation, several USC Davis PhD in Gerontology students presented research and chaired symposia at the November 2016 meeting in New Orleans, Louisiana. Highlights included:

•**Stephen Frochen** presented a poster, “Elder Disability in the U.S.: Opportunities for Person-Environment Fit.”

•**Mollie Grossman** presented a poster, “Expected and Achieved Generative Contributions and Cognitive-Emotional Well-Being.”

•**Elizabeth Hagood** presented a paper, “The What Versus Why of Generativity: Do Actions or Motivations More Strongly Predict Memory?” during a paper session on mental health and well-being.

•**Deborah Hoe** presented a poster “Associations Between Religious Attendance and End-of-Life Care Preferences.”

•**Hyewon Kang** presented a paper, “The Prevalence of Shingles among Older Adults in the US” in a symposium directed at new research around chronic disease.

•**Kylie Meyer** presented a poster, “Caregiver Resource Center Data.”



•**Catherine Perez** chaired the “Health Among Latinos in the Americas” symposium, during which she shared her work comparing the health of aging Puerto Ricans to U.S. populations. She also discussed how undiagnosed diseases in Hispanic residents of New York City may misleadingly give the population an apparent health advantage during the symposium on biomarkers and racial disparities chaired by **Lauren Brown**.

•**Carly Roman** presented a poster, “Dear Anna and Al: Giving Advice Increases Older Adults’ Subjective Well-Being.”

•**Hyunju Shim** presented a paper on the characteristics of older adults who use technology and the types of technology they use.

•**Diana Wang** took part in two presentations, “Examining Age Differences in Links Between Support Imbalance, Emotional Well-Being and Sleep Quality” and “Life Course Socioeconomic Status Adversity and Mortality in Middle and Older Adulthood.”

•**Yongjie Yon** presented a poster on the systematic review and meta-analysis of elder abuse prevalence studies from around the world.



•**Jeanine Yonashiro-Cho** served as chair of the “Detection and Reporting of Elder Abuse and Neglect: New Insights From Emerging Professionals” symposium, discussed her analysis of clinical perspectives on elder abuse detection, and chaired a paper session discussing ageism and Adult Protective Services research.

•**Yuan Zhang** presented a paper, “Do Biomarkers Explain Black-White Differences in Mortality at Older Ages?” which addressed whether biomarkers can be used to better understand the gap in mortality between blacks and whites at older ages in the symposium on biomarkers and racial disparities chaired by **Lauren Brown**.

RESEARCH



As the newest assistant professor at the USC Leonard Davis School of Gerontology, Andrei Irimia's goal is to use the power of pictures—specifically, images acquired using cutting-edge neuroimaging techniques—to uncover how the anatomy and function of the brain changes as a person ages subsequent to experiencing brain injuries.

After studying computer science and mathematics and then earning a PhD in biophysics from Vanderbilt University in 2007, Irimia first came to California in 2008 as a postdoctoral scholar conducting research in the Multimodal Imaging Laboratory at the University of California, San Diego. In 2010, a second postdoctoral fellowship brought him to the Laboratory of Neuro Imaging at the University of California, Los Angeles before he first joined the USC faculty in 2013.

At UCLA, in collaboration with colleagues, he developed the connectogram, a uniquely visual approach to the mapping of the human connectome—the ways in which the neurons of the brain connect to one another.

“A picture is worth a thousand words;” that’s true in science as well,” Irimia says. “As a neuroimaging researcher, I’m interested in visualization tools, which can allow us to explore the very complicated architecture of the brain. [The connectogram] allows one to map the circuitry of the brain in a systematic fashion.”

Prior to his arrival at the USC Davis School in February 2017, he was an assistant professor of research at the USC Mark and Mary Stevens Neuroimaging and Informatics Institute. His current research focuses on the study of neurodegeneration in older adults caused by brain injury, including traumatic brain injury, intracerebral hemorrhage and stroke. Of particular interest to Irimia is how concussions affect the neurological and psychiatric health of older people.

“The goal of my research is to use neuroimaging to understand these effects and improve the quality of life of aging adults who are victims of brain injury,” he says.

Illustrating the seriousness of the issue, Irimia explains that a traumatic brain injury, or TBI, is most likely to result in death when it affects a person over the age of 65, with falls being the most common cause for TBI in older adults. Other research shows that insults to the brain can contribute to degeneration but affect individuals differently at different ages, with

prevent or lessen its aftereffects.

“Imaging techniques and connectomics could revolutionize and personalize brain treatment once we understand how age, sex, unique brain circuitry and genetics affect risk and which treatments will work,” he says. “Neuroimaging is well poised to uncover this information.”

Andrei Irimia

older people not able to recover as much as younger people, he adds. Compounding the issue is the risk of stroke, which primarily affects older people but which involves many of the same injury-related phenomena as TBI.

However, even TBIs experienced in early life have now been linked to increased risk of cognitive impairment in later life. In recent years, more attention has been paid to the emerging links between brain injury and Alzheimer’s disease and other dementias, Irimia says.

“There is tremendous need for further research in this area because it is a condition that has not been properly addressed,” he says. “Brain injuries are not only causing symptoms that last for weeks to months; problems are showing up years and even decades later. But right now, the immediate brain changes are not well understood because patients with minor injuries usually leave the hospital quickly.”

Irimia hopes that improving standards of care for brain injuries—as well as the fact that more people now know to go to the hospital for even a minor brain injury—will help to better address brain injury and

“A picture is worth a thousand words; that’s true in science as well.”

Left: Irimia developed the connectogram, a uniquely visual approach to the mapping of the human connectome—the ways in which the neurons of the brain connect to one another.

■ B.N.

KEVIN XU ENDOWS LAB AND CHAIR AT USC DAVIS SCHOOL

A large gift from biotech entrepreneur Kevin Xu '11 has established the Rongxiang Xu Regenerative Life Science Lab and the Kevin Xu Chair in Gerontology at the USC Leonard Davis School of Gerontology.

USC Davis School Dean Pinchas Cohen announced the gift at a dedication and installation ceremony at Town and Gown on December 12, 2016 that was attended by elected officials, USC administrators and Davis School faculty, staff and students.

Xu's gift ranks among the USC Davis School's largest endowed gifts and will support the school in its mission to promote healthy aging for individuals, communities and societies through leadership and innovation in research, education and practice.

"Kevin and his late father Rongxiang Xu have demonstrated a commitment to leveraging scientific discoveries to improve the quality of life for current and future generations," Cohen said. "This generous gift will have an immediate impact in allowing us to advance research and innovation toward this shared goal."

Rongxiang Xu was a trained surgeon who specialized in developing novel wound therapy treatments. His research in tissue repair and regeneration led to multiple U.S. patents and the growth of the multi-national company, MEBO International. Kevin Xu is CEO of the company.

Cohen presented Dr. Li Li, Rongxiang Xu's widow and Kevin's mother, with the Dean's Medallion—the highest honor the school can bestow on partners and supporters—for her instrumental role in recognizing and enabling the USC Davis School's research in aging across the lifespan. Li, who began her career in pediatrics, is chair and president of the Rongxiang Xu Foundation.

"My parents' example inspired me to help others. What they gave me was more than a piece of advice—it was a way to live. Human life is the most valuable commodity, and our highest standard is humanity's well-being," said Kevin Xu. "As our global population ages, I am proud to support the USC Davis School as they make research breakthroughs and train the next generation of gerontology leaders and entrepreneurs."

This gift is part of continued USC Davis School support from the Xu family, including an earlier pledge from Xu and his wife, Leah Yang MA'13, establishing the Brighten



Congressman Ted Lieu, Dean Pinchas Cohen, Kevin Xu and Congresswoman Judy Chu



Dean Pinchas Cohen and Dean's Medallion recipient Dr. Li Li



Dean Pinchas Cohen, Kevin Xu, George Shannon, and Dr. Li Li

Award for Entrepreneurial Gerontology.

As part of the installation ceremony, Cohen presented Xu and USC Davis School Professor George Shannon with miniature replica chairs to symbolize the establishment of the newly named chair position. Shannon, who earned his PhD in gerontology from the Davis School after a three-decade acting career, has been named the inaugural holder of the chair and will serve as the director of the newly named lab. His current work aims to promote physical, spiritual and mental well-being among people of all ages.

“I am honored to be appointed to this position,” said Shannon, who taught Xu when he was a student at USC. “The Rongxiang Xu Lab, Kevin Xu Chair and Brighten Award are intergenerational testaments to the importance of the field of gerontology and USC’s leadership in the field.”

During the ceremony, USC Davis School Vice Dean Kelvin Davies introduced elected officials, who presented Xu with certificates of recognition from the United States Congress and the State of California. The elected officials honoring Xu included Congressman Ted Lieu, Congresswoman Judy Chu, California Treasurer John Chiang, California Assemblyman-elect Phillip Chen, former Mayor and current Yorba Linda City Councilmember Craig Young and Diamond Bar Mayor Jimmy Lin.

■ O.B.



In 2014, David Markovich chalked up a tingling sensation in his legs and pain in his lower back to nothing more than signs of being tired. But in a matter of hours, he lost the ability to walk. It wasn’t due to an accident or injury but rather a rare condition called acute transverse myelitis, a neurological disorder caused by inflammation in sections of the spinal cord. While the temporary condition became an unexpected obstacle, his experience provided an insight to the challenges older adults and people with disabilities encounter daily.

Markovich, now pursuing masters degrees in gerontology and health administration through a joint program between the USC Leonard Davis School of Gerontology and the USC Price School of Public Policy, used his experience to submit an innovative product idea for the USC Davis School’s inaugural Brighten Award for Entrepreneurial Gerontology competition. His concept, the ShowerBalance System, won the contest’s \$20,000 grant award to develop his product to help improve the lives of older adults and their families.

Markovich’s life was disrupted in April 2014, and he described spending the next five months trying to recover from his paralysis with the help of great physicians and physical therapy.

“I was frustrated by the fact that it was very difficult for me to take a shower,” said Markovich. “When I first started gaining movement and feeling back, I would use something in the bathroom to hold myself up.”

FROM INSIGHTS TO PRODUCT

Preparing to enter the Brighten

Award for Entrepreneurial Gerontology competition, Markovich reflected on the most difficult challenges he faced during his experience and immediately thought of the shower. His insight led him to create the ShowerBalance System, a portable device made to provide standing support primarily in the shower but adaptable to other areas of the home.

Compared to his device, Markovich says other products addressing these issues only provide single-sided support and are not adjustable for other members in a household. The ShowerBalance System is currently pending patent approval. Markovich hopes with the grant funding he’ll be able to start work right away, under the supervision of his faculty advisor George Shannon, holder of the Kevin Xu Chair in Gerontology at the USC Davis School.

“This product offers exactly the kind of innovation we hoped to inspire with the Brighten Award,” said Kevin Xu ‘11, who established the competition with his wife Leah Yang MA’13. “We look forward to seeing how the ShowerBalance System and other entrepreneurial products and services can redefine the future of aging.”

The USC Davis School Brighten Award for Entrepreneurial Gerontology was established by Kevin Xu ‘11 and his wife, Leah Yang MA’13, named in honor of their son and designed to inspire and support students from the USC Davis School to innovate new and emerging products and services to improve the lives of older persons and their families.

Above: George Shannon, David Markovich and Kevin Xu

■ A.M.D.

SCHOLARSHIP LUNCHEON BRINGS TOGETHER STUDENTS AND SUPPORTERS

Donors, students, faculty and members of the Board of Councilors gathered to celebrate the growing success of the USC Leonard Davis School of Gerontology during the 2016 scholarship luncheon on October 26.

While years had passed since the last scholarship gathering, Dean Pinchas Cohen shared how scholarship supporters advocated to bring back the special event for the opportunity to meet the students whom their donations are helping.

“Over 75 percent of our students receive some sort of scholarship support, without which they couldn’t come here and study. These scholarships are incredibly important for us and for our students and we all want to say thank you,” Cohen said.

Students and speakers highlighted some of the school’s endeavors and achievements made possible by the support of donors, such as the ongoing renovations to the school and the many resources available to continue the Leonard Davis School mission of improving the quality of life for people across their lifespans.

“Your gifts and philanthropic support are the backbone to what makes us a freestanding school of gerontology, the only one in the world, and without your help we wouldn’t be able to do it,” Cohen said.

Keith Renken, member of the USC Davis School Board of Councilors and a scholarship supporter, said he has been involved with the school for 20 years and was proud of its achievements.

“These are outstanding individuals who are going to make a difference,” Renken said.

■ A.M.D.



A GRANDFATHER’S MEMORY FUELS PASSION FOR GERONTOLOGY

Leonard Davis School Endowed Scholarship recipient Nikki Windisch shares her path to a future in geriatrics

Determined to enroll as a pre-med student at USC, Nikki Windisch walked through campus five years ago on Discover Day certain her future was in Health Promotion and Disease Prevention at the Keck School of Medicine.

But as she headed to the parking lot, she noticed an information session on the Leonard Davis School of Gerontology was about to begin.

“About five minutes in, I was sold. The opportunity to be a part of a smaller school that is the first and best school of gerontology in the country... is priceless,” Windisch said.

While Nikki’s choice to attend USC was influenced by the multiple alumni in her family, including her parents, her desire to pursue a career in medicine stemmed from an emotional connection to the university.

When she was three years old, Windisch accompanied her mother as she received treatment for Hodgkin’s Lymphoma at the USC Norris Comprehensive Cancer Center. With the support and excellent care from her doctors, Windisch’s mother is now 11-years cancer-free.

Windisch’s determination to seek a career in geriatric medicine was guided by her *Opa* (grandfather), who was diagnosed with Alzheimer’s Disease when she was in high school.

During her time as an undergraduate, Windisch said she benefitted from the various opportunities the school has to offer, participating in research, collaborating with members of the Student Gerontology Association, learning from brilliant professors and working with a population close to her heart.

Windisch is now completing her Master of Science in Gerontology and is preparing to apply to medical school next June. Additionally, she is completing an internship with the National Center on Elder Abuse.

Receiving the Leonard Davis School Endowed Scholarship allows Windisch to take full advantage of the opportunities and resources the school has to offer. She said she is thankful for the donors’ generosity because without it, passionate and committed students like her would not be provided the same opportunities to make a difference.

“As gerontology students, we’re connected to the very best in the field, we learn from our mentors and we get to make ourselves known. The school of gerontology is made up of so many smart and caring students who, just like me, have amazing stories about why they chose to dedicate their lives to this field,” Windisch said.

■ A.M.D.



"I'm proud to follow in my mother's tradition of giving back to USC."

AMY KING DUNDON-BERCHTOLD, WITH HER HUSBAND, JIM BERCHTOLD

What Will Your Trojan Legacy Be?

Amy King Dundon-Berchtold '72 made a gift through her estate, and from donations of real estate holdings, toward the endowment of the University Club of USC—which was renamed in her honor. Amy's gift was especially meaningful because the historic Trojan meeting place is located in the building named for her late mother, Joyce King Stoops EdD '66, and late stepfather, Emery Stoops PhD '41.

To create your Trojan legacy, contact the USC Office of Gift Planning at (213) 740-2682 or giftplanning@usc.edu and visit us online at www.usc.edu/giftplanning.

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UPCOMING EVENTS

19 APRIL 2017 | 8:30AM - 4:00PM

What's Hot in Aging Research at USC: Aging and the Environment
USC LEONARD DAVIS SCHOOL

This year's research symposium discusses how the environment—from pollution in the air to the services in a neighborhood—affects how well individuals and populations age.

More information: gero.usc.edu/uscagingresearch

12 MAY 2017

USC Commencement

Congratulations to the Class of 2017! Following the main university ceremony at 8:00AM, the USC Davis School ceremony will begin at 11:00AM in the Ronald Tutor Campus Center.

More information: commencement.usc.edu

15 MAY 2017 | 9:30AM - 9:00PM

Swing for Healthy Aging: Rod Dedeaux Memorial Golf Classic
OLD RANCH COUNTRY CLUB, SEAL BEACH, CA

This year's golf tournament celebrates the Honorable Richard Riordan, former mayor of Los Angeles, and supports the new Richard J. Riordan Endowed Scholarship in Gerontology.

More information: gero.usc.edu/swingforaging

25 JULY 2017 | 9:00PM - 11:00PM

USC Davis School Reception at IAGG 2017
SAN FRANCISCO, CA

Headed to the IAGG World Congress of Gerontology and Geriatrics? Join other USC Davis School alumni, faculty and students for a reception during the conference!

More information: leeallis@usc.edu