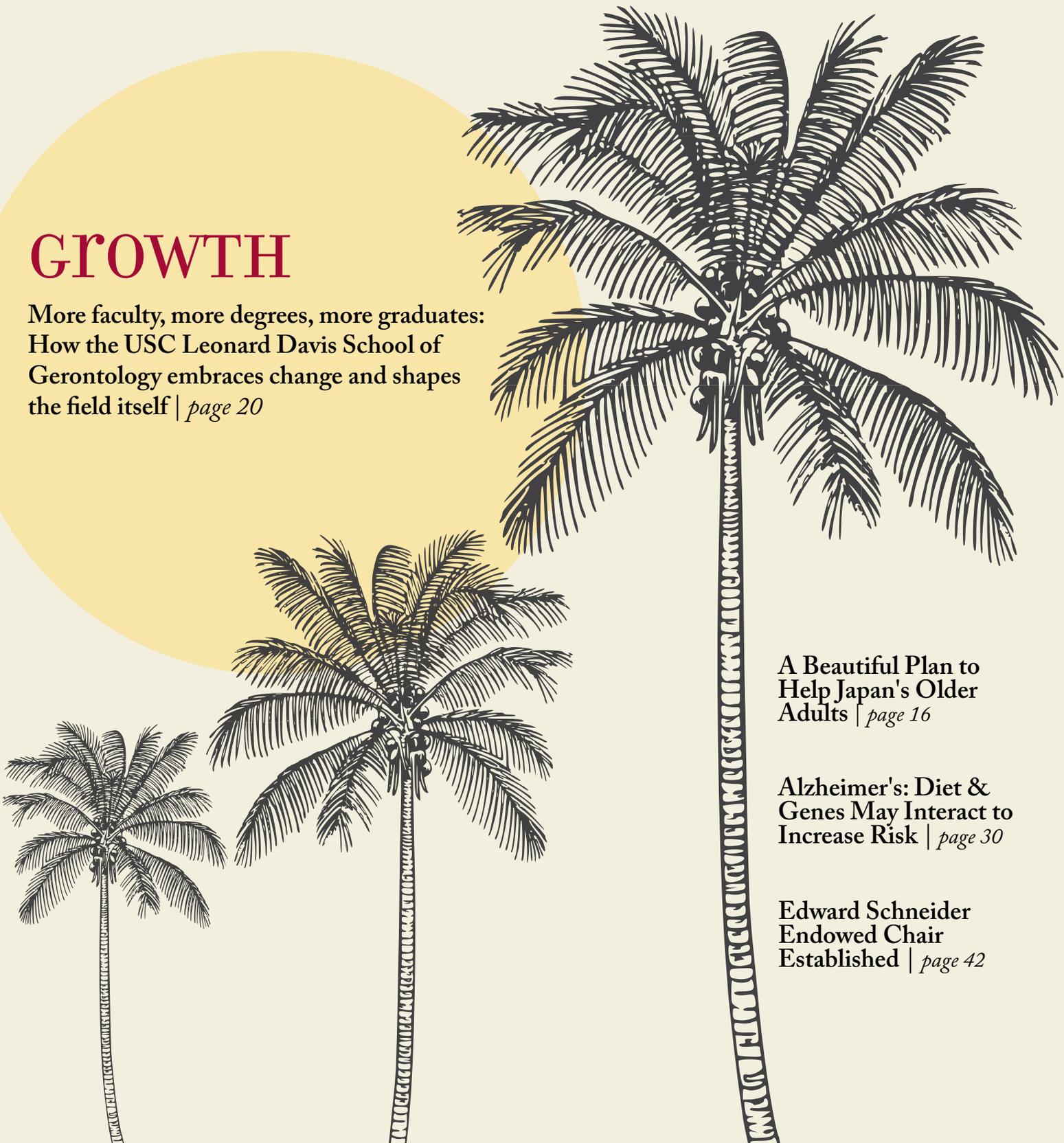


GROWTH

More faculty, more degrees, more graduates:
How the USC Leonard Davis School of
Gerontology embraces change and shapes
the field itself | *page 20*



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VITALITY

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MISSION STATEMENT

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



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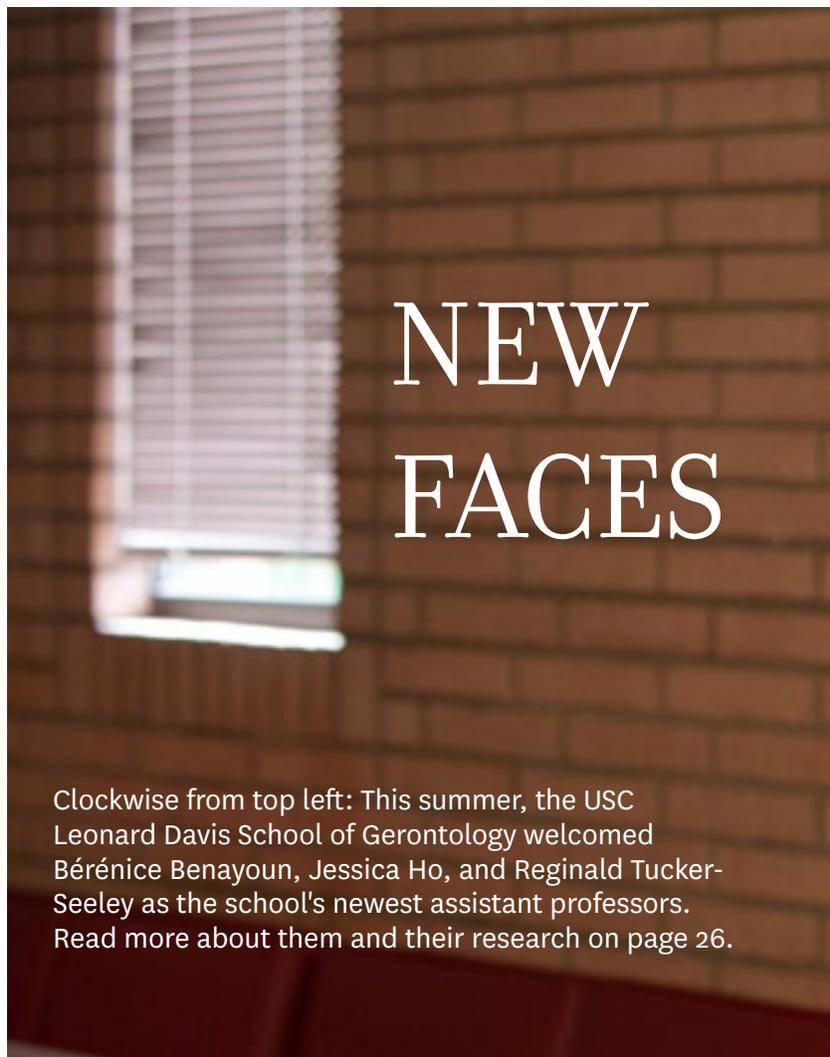
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NEW FACES

Clockwise from top left: This summer, the USC Leonard Davis School of Gerontology welcomed Bérénice Benayoun, Jessica Ho, and Reginald Tucker-Seeley as the school's newest assistant professors. Read more about them and their research on page 26.





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

Welcome to the Fall 2017 Issue of *Vitality*! The new school year has only just begun and already our school is marking some major milestones that positively impact the student experience here at USC and are also helping to shape the future of gerontology globally.

For starters, we welcomed our largest class of students ever. 207 new students are starting their journey as gerontologists in our nine degree programs. Three new assistant professors also joined us over the summer, bringing with them unique perspectives and research questions that help solidify our status as the leaders in gerontology education and research on aging across the life course.

As you read this issue, you'll meet alumna Phyllis Meltzer, who earned her PhD at age 58 and has not stopped working since. Her fearlessness and sense of humor provide a recipe for personal and professional flourishing. You'll also find out more about courses exploring age-friendly applications for technologies such as virtual reality, big data, genetic screening, and more. And in addition, you'll learn about our latest research and the inaugural Lifespan Health Summit, which kicks off our leadership of a university-wide initiative focused on improving lifespan health and wellness.

These are just some of the reasons why this issue is focused on growth!

One of our new faculty members, Assistant Professor Reginald Tucker-Seeley, was just named the inaugural chair holder of the Edward L. Schneider Chair of Gerontology. The chair dedication and installation event was a special day acknowledging Dean Emeritus Ed Schneider's innumerable contributions to the school and expressing gratitude for the generosity of the Leonard and Sophie Davis Fund and other supporters who make our research and scholarships possible.

We are excited to be branching out in so many important directions and look forward to seeing how the results of our growth can promote good health and well-being for people of all ages.

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

Six anti-aging foods you should try

(*Consumer Reports*, March 22, 2017)

“Inflammation is the nail in the coffin of conditions like heart disease, rheumatoid arthritis, inflammatory bowel disease, type 2 diabetes, cancer, and more.”

– *Master of Science in Nutrition, Healthspan, and Longevity Program Director Carin Kreutzer*

The ‘best’ places to move in retirement? They’re all over the map

(*New York Times*, May 5, 2017)

“We’re not suggesting anyone move to a different place. Aging Americans increasingly are inclined to continue to work, stay engaged and active, and live lives driven by purpose. We’re evaluating a series of characteristics that are likely to help enable that kind of life.”

– *Distinguished Scholar in Residence and Milken Institute Center for the Future of Aging Chair Paul Irving*

Caring for a loved one? Care for yourself, too

(*Sacramento Bee*, May 25, 2017)

“People tend to think [caregiving is] something temporary, like a sprint, and then it turns into a marathon... Then you burn out.”

– *USC Family Caregiver Support Center Director Donna Benton*

Meet a home contractor who helps older people age in place

(*NPR All Things Considered*, May 31, 2017)

"When you can't ski anymore, you don't golf anymore, your friends aren't around anymore, and your kids have grown up and they've gone, the only familiar thing in a person's life is their home."

– *Leon Watts III '76, MAG '17*

5 questions you should ask your dad

(*Real Simple Magazine*, June 2017)

“Research tells us that exercise is the most powerful tool to prevent many diseases, including Alzheimer’s... Another thing that can add happiness and years to your life? Strong family relationships. A stroll can help there, too.”

– *Dean Pinchas Cohen*

Unhealthy diet fuels Alzheimer’s

(*KABC-TV*, June 13, 2017)

“Your genes have a big role in what happens to you, but so does your environment and your modifiable lifestyle factors. How much you exercise becomes important, and what you eat becomes important.”

– *Professor Christian Pike*

Six myths about elder abuse

(*Forbes*, June 15, 2017)

“[Possible negative consequences for victims reporting abuse] is a huge fear that people have. It’s kind of in the ozone that if you report and they come in and investigate and find out you’re vulnerable, then you get a one-way ticket to a facility.”

– *Professor Kate Wilber*

Brain-training games don’t really train brains, a new study suggests

(*Washington Post*, July 10, 2017)

Professor Mara Mather explained that a University of Pennsylvania study showing little benefit from brain-training games may have missed subtle effects that aren’t measurable within 10 weeks, but she also noted that older brains are also less plastic.

Can Different Forms of Fasting Make You Healthier?

(*Wall Street Journal*, April 11, 2017)

“Most chronic diets, and I suspect intermittent fasting, also cause a reduction in lean body mass. **During the [Fasting-Mimicking Diet], muscle mass is temporarily reduced, but after refeeding it returns to normal levels—but lost fat does not return.**”

– *Professor Valter Longo*

To learn to care for elderly, students move into retirement home (STAT, April 28, 2017)

“When you live in a spot like this, you are continually reminded that you are at the end of your life. [The USC Leonard Davis student residents] remind us that there is a future.”

– Kingsley Manor resident
Joan Biddlecomb

Chimpanzees are first animal shown to develop telltale markers of Alzheimer’s disease

(Scientific American, August 1, 2017)

University Professor Caleb Finch noted that humans have evolved several versions of the APOE gene, one of which—APOE4—makes a person more likely to develop Alzheimer’s. It is possible that evolution selected for the “bad” version of APOE in people because it protects them from something else, such as a parasite, he added.

Nearly 1 in 5 hospice patients discharged while still alive

(NPR Morning Edition, August 11, 2017)

“Individuals that are going in for these very brief health issues are coming out, and then they’re being readmitted to those [same] hospices.”

– Associate Professor Susan Enguidanos

EXPERT COMMENTARY

Opinion columns by USC Leonard Davis faculty members



Caroline Cicero:
Is it time to put the brakes on older drivers?
(Forbes, March 8)

“With increased longevity and growing numbers of older people, attention to age-friendly signage, traffic signals and street design is a must. Safer driving lies in a combination of local and state policies, technology improvements, greater self-assessment by drivers, and increased awareness from family members and health care providers.”

Cleopatra Abdou:
What moms really need this Mother’s Day
(Medium, May 12)



“Ensuring that every mother has the five types of social support that she needs to flourish makes every day Mother’s Day. When mothers flourish, children flourish; and when families flourish, societies flourish.”



Paul Irving:
Cities must tackle longevity inequality
(Forbes, June 22)

“As we aspire to create great cities for successful aging, it’s time to tackle longevity inequality. More research is needed to help us fully understand its causes, and unacceptable conditions must change... Closing the gap and enabling long, healthy, purposeful lives for all will take leadership and caring communities that are ready to make up for lost time.”

Edward Schneider:
Seven things pediatrics can teach us about aging well
(Next Avenue, July 21)



“Pediatricians operate on the principle that it is never too early to begin healthy habits. But it is also never too late. Start taking some of these baby steps today. They can make a big difference in your health and wellness, no matter how old or young you are.”

Fall Prevention Awareness Day 2017: Fall Prevention Center of Excellence Seeks to Increase Safety In and Out of the Home

- Falls are the number one cause of death from an injury among people age 65 and older.
- It is estimated that one in four older adults falls each year.
- Research has shown that many fall risks can be reduced through an assessment by a health professional, physical activity, and changes to the home and community environment.

New resources from the Fall Prevention Center of Excellence (FPCE) at the USC Leonard Davis School of Gerontology inform professionals and consumers about ways to make homes and communities safer.

EXPERTISE ON THE WEB & ON THE STREET

For Fall Prevention Awareness Day on September 22, 2017, FPCE expert Emily Nabors took a walk outside live on Facebook, along with Kathleen Cameron, the Director of the National Council on Aging's National Falls Prevention Resource Center to highlight ways to prevent falls when out and about.

The Facebook Live event followed a Twitter chat led by NCOA on September 14. The USC Leonard Davis School tweeted answers to discussion questions along with participants from the Department of Health and Human Services Administration for Community Living, the Centers for Disease Control and Prevention Injury Center, the American Occupational Therapy Association, and several other aging and safety organizations.

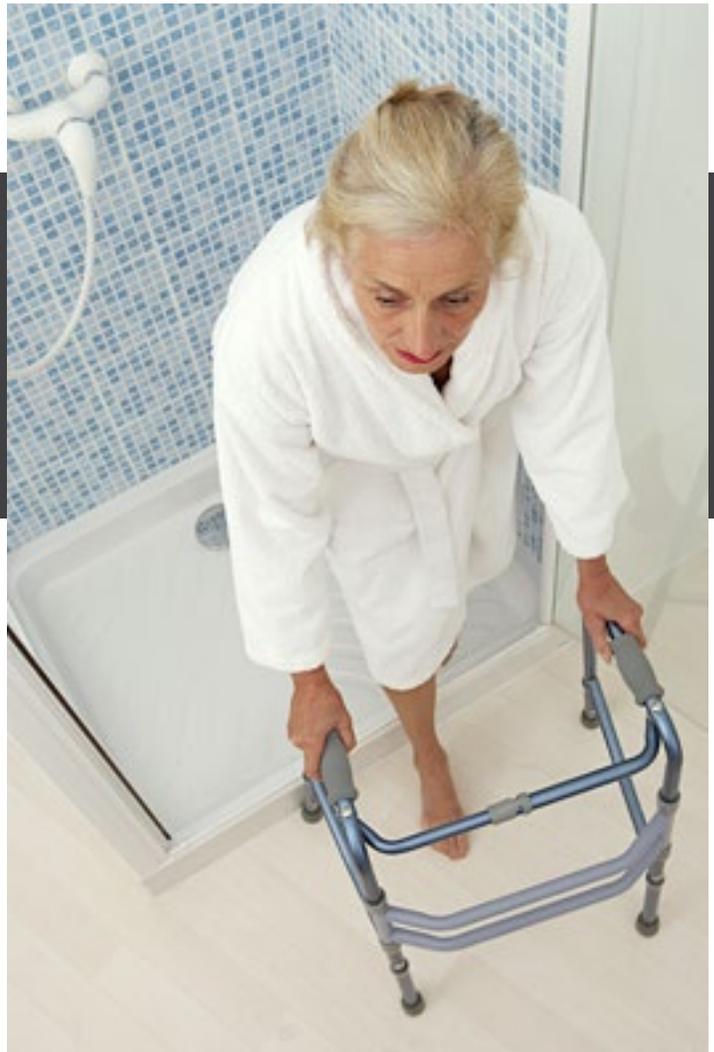
OFFERING SOLUTIONS ONLINE

Home modifications are a key part of reducing fall risk.

FPCE collaborated with NCOA to launch a list of home assessment tools for professionals and consumers, including information on how to help pay for needed upgrades. Visit stopfalls.org to learn more.

FPCE's newly-created Lifetime Home website demonstrates how home modification and universal design features can support independent living by featuring photos from actual homes. Learn more at lifetimehome.org.

For over a decade, USC's Leonard Davis School's online Executive Certificate in Home Modification Program has trained nearly 1000 professionals working in creating supportive housing environments for older adults. Find more information at homemods.org.



EMPOWERING WITH EDUCATION: NEW RESEARCH SHOWS RESULTS

A collaboration between the USC Leonard Davis School and The Hartford Center for Mature Market Excellence found that nearly **90 PERCENT** of homeowners made home modifications, including fall prevention-friendly improvements, following receipt of educational materials about universal design.



How to Live a Longer, Healthier Life

USC Leonard Davis School Dean Pinchas Cohen takes part in a panel discussing genetics, lifestyle, and disease risks.

Will you live to a healthy 100?

The answer lies in your genetics, your lifestyle, and your ability to live a life free of those illnesses that come along as a consequence of aging.

That was the take away from a so-named panel at the 2017 Milken Institute Global Conference, where USC Leonard Davis School of Gerontology Dean Pinchas Cohen joined a Nobel Laureate, the director of the National Institutes of Health, and other leaders in the field to present both sophisticated science and simple solutions aimed at extending healthy years of life.

Citing studies of smoking centenarians, fraying telomere tips, umbilical cord plasma infusions, and mitochondrial mutations, the experts explained how research targeting the biology of aging can provide the opportunity to prevent or delay those age-related illnesses that most people die of, including cancer, heart disease, diabetes, and Alzheimer's disease.

From individual cells to individual therapies, USC Leonard Davis School Dean Cohen believes the potential for longer, healthier lives lies in personalization.

"Different people age in different ways. We can't just apply a one-size fits all approach," he said. "There are 20 different drugs that slightly increase life span in mice and probably will be in humans."

The consensus was that the field of aging research is still young and that more customization of treatments, more combinations of approaches, and more comprehension of how we age will lead to better outcomes for everyone.

"We are just on the cusp of doing extraordinary things," said Nobel Laureate Elizabeth Blackburn.

"Different people age in different ways. We can't just apply a one-size-fits-all approach."

Above (left to right): Nir Barzilai, director of the Institute for Aging Research at the Albert Einstein College of Medicine; Salk Institute President and Nobel Laureate Elizabeth Blackburn; National Institutes of Health Director Francis Collins; Palo Alto Investors Managing Partner and President Joon Yun; and Dean Pinchas Cohen.

USC LEONARD DAVIS PROFESSOR RECOGNIZED BY AMERICAN AGING ASSOCIATION & ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

Two recent awards both recognize a world-renowned faculty member of the USC Leonard Davis School of Gerontology for a lifetime of scientific achievement.

Professor Kelvin J. A. Davies received the Denham Harman Award for Lifetime Achievement in Research from the American Aging Association (AGE) on June 11, 2017. Davies, who holds the James E. Birren Chair in Gerontology, is vice dean of the USC Leonard Davis School and professor of molecular and computational biology in the USC Dornsife College of Letters, Arts, and Sciences Biological Sciences Department.

Deeply involved in research into free radicals, oxidative stress, redox regulation, and aging, Davies is the founding editor-in-chief of the journal *Free Radical Biology and Medicine*. His many contributions to science include pioneering the study of protein oxidation and proteolysis during oxidative stress, as well as gene expression during stress adaptation. In particular, he has been defining the pathways and mechanisms by which adaptive homeostasis—the body's ability to maintain balance in its many systems under stress—declines with age. This decline predisposes the elderly to stress-related diseases and frailty.

The Denham Harman Award is AGE's highest honor, given only in years when an outstanding candidate is nominated to the Board of Councilors. Established in 1978, the award was named in honor of Dr. Denham Harman, a co-founder of AGE, and is a lifetime achievement award given by AGE to researchers who have made outstanding contributions to aging science over the course of their careers. The



accolade was presented during AGE's annual meeting in New York, where Davies presented his Denham Harman Award Lecture, "From the Oxygen Paradox to Adaptive Homeostasis: the Ruminations of an Aging Free Radical."

Davies thanked all of his past and present undergraduate students, graduate students, post-doctoral fellows, and faculty collaborators for their contributions to his success.

"One does not make discoveries in chemistry, biology, or medicine alone," Davies said. "First one stands on the shoulders of previous scientific giants, and then one walks hand-in-hand with one's students and colleagues. It's a privileged way to live one's life."

This spring, Davies was also elected as a Fellow of the Royal College of Physicians of Edinburgh, Scotland on April 28, 2017. The Royal College promotes the education and training of physicians and medical scientists and is one of the three organizations that sets the specialty training standards for physicians in the United Kingdom; Davies is a dual citizen of the UK and US. The Royal College organizes events, courses, training, and research throughout the UK and the world and includes 12,000 members in 91 countries worldwide, of whom only a small fraction are elevated to Fellows status. He will travel to Edinburgh in March 2018 for the induction ceremony.

Of his election to fellowship in the Royal College, Davies said he was "pleased as punch by the great honor being bestowed upon me."

Above (L-R): Richard Faragher, PhD, FAAA (AGE President); Davies; and Janko Nikolich-Zugich, MD, PhD (AGE Chair)



MARIA HENKE RECEIVES STAFF AWARD

Congratulations to USC Leonard Davis School of Gerontology Senior Associate Dean Maria Henke, who received the June 2017 USC Staff Assembly award. Henke, seen here with Staff Assembly President Jeff de Caen and Staff Club President Wade Thompson-Harper, was honored for her strong leadership and vision.

Photo courtesy USC Employee Communications

EILEEN CRIMMINS SIGNS NATIONAL ACADEMY OF SCIENCES REGISTRY

Eileen Crimmins, University Professor and USC Leonard Davis School of Gerontology AARP Professor of Gerontology, was introduced to the National Academy of Sciences and signed the Registry of Membership during a ceremony on April 29, 2017. Crimmins was elected to the National Academy of Sciences in 2016 in recognition of her scientific impact and leadership.

“Her election to the National Academy of Sciences is a richly deserved honor, and it is a privilege to have her as a colleague at the Leonard Davis School,” said USC Leonard Davis School Dean Pinchas Cohen.

A USC faculty member since 1982, Crimmins credited the university and USC Leonard Davis in particular for providing an exemplary environment for her scholarship. “Any success I’ve had is due to my career here at USC and specifically the USC Leonard Davis School, which has been a multidisciplinary and forward-thinking environment,” she said.



USC LEONARD DAVIS SCHOOL INNOVATORS HONORED BY USC STEVENS CENTER

The USC Stevens Center for Innovation honored four USC Leonard Davis School of Gerontology scientists during the launch event for the USC Chapter of the National Academy of Inventors (NAI) on May 3, 2017.

USC Leonard Davis School Edna Jones Professor of Gerontology Valter Longo, Research Assistant Professor Min Wei, Postdoctoral Scholar Roberta Buono, and Research Laboratory Technician Sebastian Brandhorst received the first-ever USC Stevens Center for Innovation Commercialization Awards.

The USC Leonard Davis School team was recognized for their work developing a fasting-mimicking diet designed to encourage stress resistance and stem cell regeneration. The patented diet has been commercialized as ProLon, a prepackaged five-day meal kit. In recent years, animal studies and human pilot trials have indicated cycles of the short-term diet could potentially lower risk factors for diseases, sensitize cancer cells to chemotherapy, and more.

“We are very happy to have been able to make a series of discoveries that resulted in issued patents, particularly since they represent some of the first patents related to dietary restriction and disease treatment,” Longo said.

Buono described the award as a “big honor.”

“It’s always satisfying when your work is recognized,” said Buono, a research associate in the Longo laboratory. “I thank Professor Valter Longo, who gave me the opportunity to join his lab two years ago, and all of the group members.”



Clockwise from top left: Research Associate Sebastian Brandhorst and Postdoctoral Scholar Roberta Buono with their awards, Professor Valter Longo, Research Assistant Professor Min Wei

UNIVERSITY AWARDS

Order of Arete

Laura Corrales-Diaz Pomatto
Yongjie Yon

Emma Josephine Bradley Bovard Award

Christina Deirmenjian

Discovery Scholar Prize Finalist

Christina Deirmenjian
Ivette Ortiz

USC LEONARD DAVIS SCHOOL AWARDS

Heinz Osterburg Prize

Yongjie Yon

Undergraduate Student Award

Christina Deirmenjian

Honorable Mention: Krystle Irvine

Master's Student Award

Shivanti Kariyawasam

PhD Student Award

Laura Corrales-Diaz Pomatto

Teaching Assistant Award

Yujun Zhu

Teaching Award

Associate Professor Susan Enguidanos

CONGRATULATIONS TO THE CLASS OF 2017!

The USC Leonard Davis School of Gerontology celebrated the achievements of its largest graduating class ever during the school's 2017 Commencement Ceremony on May 12 in Tutor Hall on the USC campus.

The event also honored the very first graduates from the school's two newest programs, the Master of Science in Nutrition, Healthspan, and Longevity and the Doctor of Philosophy in Biology of Aging.



Keynote speaker Peter Mullin, founding chairman of Mullin Barens Sanford Financial and member of the USC Leonard Davis School Board of Councilors, spoke to students about the opportunities that come from an aging population and the importance of not overlooking the wisdom of older adults.

"The Silver Tsunami is a treasure trove," of knowledge and talent, Mullin said. "You graduates are at the fulcrum of the tsunami... You have a huge opportunity to work with an overlooked treasure chest."

Student speaker Christina Deirmenjian, vice president of the Student Gerontology Association, spoke about the long-lasting influence the school has on its students not only in imparting the responsibility to fight for the needs and rights of older people but also in helping students form lifelong friendships.

"The school's greatest strength is our bond as students," Deirmenjian said. "We will not leave USC behind; USC will leave with us."



*Shivanti Kariyawasam,
Leon Watts III,
Anna Nguyen*



The record-breaking Class of 2017

USC LEONARD DAVIS STUDENT RESEARCHERS HONORED DURING USC UNDERGRADUATE SYMPOSIUM

Five undergraduate researchers from USC Leonard Davis School of Gerontology laboratories were recognized for their scientific achievement during the 2017 USC Undergraduate Symposium for Scholarly and Creative Work on April 12.

Sponsored by the Office of the Provost, the symposium provides undergraduates with the unique opportunity to exhibit and share examples of their significant research and creativity with the university community and features research in arts, humanities, social sciences, life sciences, physical sciences, math, and engineering. Students present work in a variety of ways, such as through poster/panel sessions, art exhibits, and electronic media. With \$1000 first prizes and \$500 second prizes in each category, the event awards over \$15,000 in prizes each year.

“There was a record number of USC students from across campus presenting their work at this symposium,” said symposium awardee and USC Student Gerontology Association President Sarah Wong. “It speaks to the caliber of these students’ presentations and the merit of their research.”

WINNING RESEARCHERS FROM USC LEONARD DAVIS SCHOOL LABORATORIES:

Category: Life Sciences I

2nd Prize – Richard Johnson ’18
Biochemistry major, Caleb Finch lab

Honorable Mention – Shyam Hassan ’19
Human Development and Aging major, Sean Curran lab

Category: Life Sciences II

1st Prize – Sang Wun (Erick) Jung ’18
Biological Sciences major, David Lee lab

Category: Social Sciences II

2nd Prize – Hannah Nordberg ’17
Psychology major, Mara Mather lab

Special Awards – American Physiological Society

1st Prize – Sarah Wong ’18
Human Development and Aging major, Kelvin Davies lab

Honorable Mention – Sang Wun (Erick) Jung ’18
Biological Sciences major, David Lee lab

USC LEONARD DAVIS STUDENT GERONTOLOGY ASSOCIATION RECEIVES TOMMY AWARD

The USC Student Gerontology Association earned a Tommy Award, the student organization and leadership prize bestowed by the USC Campus Activities department, for its first-ever Research Forum, an event designed to showcase student research and encourage dialogue between prospective research assistants and current undergraduate, master’s, and doctoral students and postdoctoral fellows.

The intramural meeting won in the Collaborative Program category in recognition of its success in bringing together researchers from a variety of labs and academic programs within the USC Leonard



Davis School of Gerontology.

“The Research Forum was created from my desire to share research opportunities with other students,” said SGA President and USC Leonard Davis School senior Sarah Wong. “Having impactful research mentors in my life, in particular Drs. Kelvin Davies, Patrick Sun, and Laura Corrales-Diaz Pomatto, motivated me to create a student-focused event drawing on the experiences of the doctoral and postdoctoral scholars of the Davis School and also allowing for dialogue between the different labs to take place.”

The February event opened with

a poster competition, with student presenters representing the various social science and biology labs at the Leonard Davis School and Ph.D. students and postdoctoral fellows acting as judges and delivering direct feedback to the student presenters, a valuable feature that Wong notes is not available in most academic research conferences.

“We intended this event to not only engage prospective research assistants at a peer-level with the student presenters, but to also prime our student researchers for larger-scale events and future conferences,” she said.

This Course Provides Ingredients for Healthy Eating Habits

College years are a critical time for imparting nutritional know-how, says faculty member Cary Kreutzer.

Until recently, USC senior Steve Park didn't know beans about beans. But thanks to a legume lesson during a recent class field trip through the aisles of a local supermarket, the lifespan health major at the USC Leonard Davis School of Gerontology has ditched the can and learned, with some trial and error, to prepare them on his own.

"My first time, I was eating essentially raw beans and didn't know what was wrong," said Park, who figured out that he forgot to soak them overnight. "But choosing to cook my own beans has made me more conscious about my eating habits because I'm actually taking the time to cook my meals."

Providing students like Park with confidence in the kitchen, awareness of how to read food labels, and tools to make informed buying decisions is why supermarket shopping is on the syllabus of Gero 411, the physiology, nutrition and aging course Assistant Instructional Professor Cary Kreutzer teaches at the USC Leonard Davis School.

"Some students are coming from homes where meals were purchased and prepared for them, and they



were not part of the shopping or cooking process," said Kreutzer, a registered dietitian who is also the director of the Leonard Davis School's Master of Science in Nutrition, Healthspan and Longevity program.

She says she started taking undergrads to grocery stores to address this gap in knowledge and to show them that are easy ways to cut food costs and establish healthy habits.

"Studies show you don't have to spend more to eat healthy," said Kreutzer, who points students to affordable options like the bagged beans—which Park purchased—along with frozen vegetables, mixed nuts, and canned tuna. "If you are eating too many meals and snacks out, it is probably costing you in terms of your nutrition and your bank account."

A diet high in fruits and vegetables is one of the most important factors in preventing many diseases that are associated with aging, such as cancer, diabetes, and Alzheimer's disease. Kreutzer hopes that providing information

about nutritious options and critical thinking skills to evaluate choices can help improve their health over the long term.

"Some young people feel invincible and don't necessarily think about downsides of a diet based on pizza and nachos," Kreutzer said. "You can still enjoy those foods from time to time, but it's important to be an informed consumer when it comes to what you eat."

Kreutzer and her graduate nutrition students provide instruction on how to navigate aisles filled with a seemingly endless array of choices and ingredients, taking time to compare the claims and contents of everything from cereal boxes to yogurt containers to granola bars.

"By going to the market, I was able to apply what I learned in class to actively differentiate healthy products and also learn some of the marketing techniques that companies use to make their products seem a lot healthier than they actually are," Park said.



Assistant Instructional Professor Cary Kreutzer (left) discusses healthy meal options with her Gero 411 students.

Gero 411

is offered in the fall and spring semesters, and Kreutzer hopes to expand her outings to include additional student groups from across campus. In the meantime, we can all learn something from her top tips for becoming more supermarket savvy:

Shop the Perimeter

This is where you will usually find fresh fruits and vegetables, proteins, and dairy products, which can all have place in a healthy diet. U.S. dietary guidelines recommends eating two cups of fruit and 2.5 cups of vegetables a day. However, most children and adults fall short of this. So, consider buying an apple or banana on your way out of the store next time.



Look Beyond the Labels

Food marketers want you to choose their products and often include misleading information in their packaging. For example, touting a food as fat-free does not mean it is automatically healthy or lower in calories. Take the time to look at the ingredients listed in the small print and make your decisions based on what is actually in the container, not what the claims may be.



Don't Shop Hungry

We are scavengers, and when we are hungry and want to eat, we will reach for whatever food is available. Even worse, when we are stressed our hormones kick in, and we seek comfort foods typically high in sugar, salt and fat such as fried chicken or ice cream. Shopping on a full stomach helps ensure you will buy what you need rather than what looks good at the time.



Serving Size Matters

You can have too much of a good thing. Even with so-called healthy foods, like nuts and avocados, it is important to keep track of your calories and fat intake. Be sure to pay attention to the recommended serving size, which in the case of some dense cereals like granolas could be as little as 5 tablespoons. In the case of Oreos, the serving size is three, not the whole package!



Frozen is Just as Good as Fresh

Frozen foods have the same nutritional value as their fresh counterparts. They won't go bad if you don't eat them right away, and they can cost less, too. Frozen fruits can be a great addition to a homemade smoothie, especially if you don't have ice.



Join a Loyalty Program

It bears repeating that being healthy doesn't need to cost more. Students can take advantage of savings offered by stores by joining loyalty programs or even cutting coupons. Just be sure to buy only items you need, not just what is on sale.



Buy in Bulk

This is another cost saver because it allows you to pack your own snacks instead of paying for unnecessary packaging. A large bag of carrots can be divided into daily servings. And you can get creative—make your own trail mix with different kinds of nuts and dried fruit.



Be Your Own Barista

Invest in an insulated mug and make your coffee or tea at home. You'll know what you're drinking—some chain-cafe drinks have more calories than a meal and more sugar than a milkshake—and you can keep the spare change.

- Orli Belman



A Beautiful Plan to Help Japan's Older Adults

USC Leonard Davis School of Gerontology teams with Tokyo's Yamano Beauty College to teach students how to better meet the needs of older clients.

From the dramatic hairdos and makeup made famous through a centuries-old culture to the fashion-forward stylings of today, Japan has long been a world leader in beauty trends.

As part of what's being called a super-aging society, the Yamano Beauty College in Japan is leading another movement as well.

Through a partnership with the USC Leonard Davis School of Gerontology, the college is preparing aspiring beauticians to meet the needs of Japan's older adults. From health screenings to house calls, this collaboration recognizes the prominent role beauty school students will play in caring for aging clients in Japan, the country with the world's oldest population.

USC Leonard Davis School Dean Pinchas Cohen recently addressed nearly 1,000 students and guests about 21st-century trends in the science and study of aging. Students at the Yamano Beauty College strive to support the aging population of Japan, where more than 1 in 4 people are over 65—and 1 in 3 are expected to be over that age by the year 2050.

Beauty is for All Ages

Mike Yamano, 81, whose parents founded the Yamano beauty school in 1934, initiated the six-year-old partnership with USC Leonard Davis, a global leader in gerontology research and education. The school's curriculum, unique for a beauty school in Japan and arguably anywhere in the world, offers a broad introduction to the health, social and economic aspects of aging in society. The Yamano Beauty College also provides a health and welfare course that includes instruction in practical matters like the operation of a wheelchair and how to wash and cut a bed-bound client's hair.

"Nobody in Japan paid attention to the needs of older adults until we started our wellness course and our program with the USC Leonard Davis School of Gerontology," said Yamano, an advocate for linking aging and aesthetics. "Beauty is for all ages, and I believe that when you look better, you feel better, too."

Explanations for the importance of beauty service providers include a notion that stems from ancient Japanese beliefs that hairstyles contained magical meanings and that hair itself was somehow divine. Others cite the cultural value of a quality called *omontenashi*, which loosely translates to hospitality but implies a level of gratitude, service, and attention that goes beyond common customer service.

Japan's premium beauty and personal care market size exceeds \$12 billion, which despite the country's relatively small population makes it larger than any country besides the United States, according to statistics from their Ministry of Finance.

A Model for Learning

Through a self-paced online course, USC delivers 60 hours of specialized training to vocational and junior college students at the Yamano College. So far, 2,600 students have taken the course, with another 400 or so soon expected to earn their certificates of completion.

"We are very proud of our partnership with the Yamano Beauty College and the ways it helps prepare students to support an aging client base," Cohen said. "Thanks to Mike Yamano's vision, we now have a model for bringing gerontology awareness and education to service providers who are increasingly working with older adults."

USC Leonard Davis also provides educational materials to other industries that serve growing numbers of older clients, including in areas of financial planning and home renovations. The aim is to increase awareness of aging and empathy among service providers who may already have long-term, trusted relationships with their clients.

"Through our collaboration with the Yamano Beauty

College, we are arming an already-existing workforce with specialized knowledge and education that can help them provide additional support to older adults they see regularly and may know quite well," said Maria Henke, senior associate dean at USC Leonard Davis and a key author of the custom gerontology curriculum. "We know this can apply to many other sectors as well."

Permanent Waves and a Personal Approach

The Yamano Beauty College was founded in 1934 by Aiko Yamano, an innovator who opened her first salon at 16 and brought the first permanent wave machine to Japan. Her husband helped set up the country's beauty association and the rigorous national system for training and licensing students.

Today the college has more than 210,000 graduates and remains a family affair. It is now run by Jane Aiko Yamano, granddaughter of the founders and daughter of Mike Yamano, who served as chancellor before Jane. The school retains its legacy as an institution known to encourage experimentation while also honoring Japan's past, with instruction in the Japanese cultural arts of kimono wrapping and flower arranging.

"As a result of taking the course, I now want to do a job in the future in which I can connect gerontology and cosmetology together," said second-year student Kazuki Fujimoto.

Classmate Yuga Fujimoto said she agrees and looks forward to helping her older clients look and feel better.

"By learning gerontology, we can offer not only technical services, but also design and fashion suggestions," she said.

For many older adults, that personal connection may provide the biggest boost of all.

- Orli Belman



Delivering Punchlines & Life Lessons

*A passion
for learning
and laughter
propels
alumna Phyllis
Meltzer's work
and giving.*



As she takes the stage at a Hollywood comedy club for her first-ever stand-up routine, Phyllis Meltzer MSG '92, PhD '97—or Dr. Phyllis as she introduces herself—is the definition of vibrancy. Her colorful act, an amusing array of anecdotes about adapting to life as an older adult—“I used to be 64,” the petite performer tells the crowd—presents a rosy but realistic outlook on aging.

“I try to be positive and hopeful with my humor,” Meltzer says. “We all experience changes as we grow older. Being able to laugh at them shows courage and acceptance.”

A THEME OF PLAYFULNESS

Watch a video of this 2007 show—the culmination of a class she enrolled in near age 70 because of a lifelong pull to perform—and see Meltzer commanding the stage in a three-piece pink pantsuit that is several shades brighter than the dyed-fuchsia locks Cindy Lauper sported when she burst on the scene to announce that girls just want to have fun.

It is a sentiment with which Meltzer, who earned her master's degree at the USC Leonard Davis School of Gerontology and her doctorate at the USC Mrs. T.H. Chan Division of Occupational Science and Occupational Therapy certainly agrees.

“I made people laugh and just had a wonderful time,” she says. **View her set at tinyurl.com/MeltzerComedy**

WEAVING A WAY FORWARD

Like the irrepressible Lauper, Meltzer's varied career path, which includes stints as a professor, artist, businesswoman, and now comedian, stands out for its embrace of joy and change, all literally communicated through a rainbow of hues and threaded together with a consistent desire to help others learn.

In fact, in addition to sewing as a hobby, Meltzer is perhaps best known professionally for her creation of a kit called the Self Discovery Tapestry, an interactive life review instrument that directs participants to color on paper in specific patterns as a way to help them gain insights into their life events and coping styles. The tool became so popular for assisting adults in transition—it's been used by older women, university students, and even prison inmates—that Meltzer spent close to 15 years running a company to publish it.

A LOVE OF LEARNING

Meltzer began work on the tapestry, which applies gerontology-based lifespan theories to occupational science concepts, during her graduate work at USC. She also brought her own life experience to the task, including insights gained raising three children and working as a speech therapist, substitute teacher, museum educator, and university professor both in Southern California and in Washington, D.C., two regions where her husband of 58 years, Joseph Meltzer,

who earned a Phd from UCLA, had a long career in aerospace engineering. Phyllis Meltzer also has a bachelor's degree from UCLA and a master's in adult learning from Virginia Tech. She was 58 years old when she graduated with her doctorate from USC. She then joined the UCLA medical school faculty as a visiting professor.

“I never think it is too late for learning,” Meltzer says.

But she emphasizes that the joy of education comes from the effort and accomplishment, not from the grades. Meltzer says she's not sure she ever earned an A during all her studies, and that is just fine with her.

“I think we all have a need for growth, for stimulation and for novelty, she said. “For me, the novelty is doing something new, something challenging. That is what drives me.”

“We all experience changes as we grow older. Being able to laugh at them shows courage and acceptance.”

LENDING A HAND

Meltzer is also driven to help others. The recent establishment of the Drs. Joseph and Phyllis Meltzer Endowed Scholarship Fund in Gerontology, made possible by a gift to the USC Leonard Davis School from the Meltzers, illustrates her commitment to both gaining knowledge and giving back.

“A degree in gerontology provides a vast knowledge base that can be applied in many ways,” she says. “That is the value for me, and I look forward to seeing how students helped by this scholarship will put it to use.”

ADAPTING TO CHANGE

In many ways, it seems Meltzer has spent her entire working life focused on helping people through transition points. That is what she continues to do both on stage and as a multi-hyphenate individual—as in, did you hear the one about the gerontologist-occupational therapist-museum educator-business owner-professor-quilter-wife-mother-grandmother-stand-up comedian?

Phyllis Meltzer is all these things. But, of course, she's no joke.

Instead, she's a true teacher for how to live a fulfilling life. And as she continues to perform, most recently at the International Association of Gerontology and Geriatrics World Congress in San Francisco, she's imparting valuable teachings to the rest of us.

“Don't be afraid to change direction,” Meltzer says, echoing the formula for success she learned in her 2007 stand-up class. “The punchline, and the payoff, lies in delivering surprise endings.”

It is a lesson for comedy, for careers and for life.

- Orli Belman

GROWTH

How the USC
Leonard Davis
School of
Gerontology
embraces
change —
and shapes the
field itself.



Nearly 20 years into the 21st century—and several decades into the massive demographic shift leading older adults to outnumber the young in nearly every nation—the growing importance and visibility of the gerontology field is now all but impossible to ignore.

Having foreseen the field's increasing necessity and prominence, the USC Leonard Davis School of Gerontology has proactively encouraged growth in several areas to meet the ever-increasing need for aging knowledge and train the gerontologists of the future.

“One of the most enduring successes of the last century is the extension of human life expectancy, due largely in part to advances in medicine, science and public health,” says USC Provost Michael Quick. “The exceptional strength of USC, and the USC Leonard Davis School of Gerontology in particular, in research related to aging across the lifespan gives us the power to adapt to and respond to the myriad changes and challenges posed by a significantly older population.”

Expanding Academic Offerings and Alumni Influence

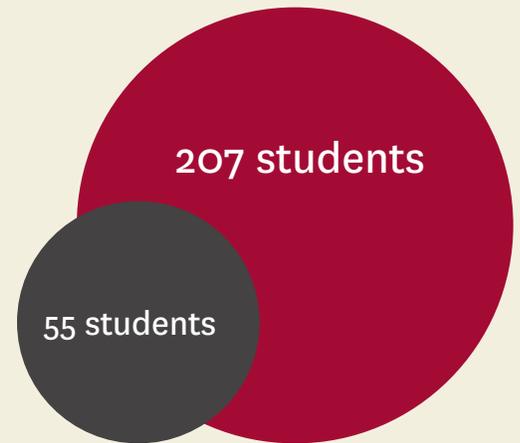
Since the first class of 55 students entered the USC Leonard Davis School in 1975, the school's academic offerings have expanded to prepare gerontologists to address the increasing variety of needs faced by a growing population of older adults. The school has never hesitated to act as an educational trailblazer, from creating the world's first PhD in Gerontology program to offering the first accredited online gerontology degrees.

The 2016–2017 academic year was an especially momentous one for the USC Leonard Davis School. The school again graduated its largest class ever with 172 new alumni.

“It's a sign we're doing something right,” said USC Leonard Davis School Dean Pinchas Cohen during the May 2017 commencement ceremony. “It's representative of the growing recognition of our field and the importance of gerontology.”

The graduates included the first cohort of the groundbreaking Master of Science in Nutrition, Healthspan, and Longevity program. In addition, the school celebrated Laura Corrales-Diaz Pomatto, the very first graduate of its pioneering PhD in the Biology of Aging program, a collaboration with the Buck Institute for Research on Aging.

As these new graduates go out into the field, they have the ability to network and collaborate with more than 2000 of their fellow alumni, many of whom have established themselves as leaders in all facets of gerontology. From alumni who have gone on to be health care providers, researchers, and educators to those who shape aging policy, industry, and services for older adults, USC Leonard Davis alumni have spread the influence of the school throughout the nation and around the world.



The USC Leonard Davis School first welcomed 55 students in the fall of 1975. Since then, the incoming class size has almost quadrupled—207 students arrived at the school during the 2017 academic year.



With the recent addition of the Master of Science in Nutrition, Healthspan, and Longevity and the PhD in the Biology of Aging, the USC Leonard Davis School now offers nine degree programs.

Developing the Leadership Team Within the School

Besides preparing graduates to become leaders in the field, the school has also welcomed faculty members into new leadership roles within the school.

Associate Professor Sean Curran now serves as the school's assistant dean for research. He's already led recruitments for faculty members specializing in biology, and he hopes to enhance productivity, training opportunities, and other resources available to research faculty, he says.

In addition, Curran is "excited to coordinate Provost Quick's Ensuring Lifespan Health Initiative and Lifespan Health Summit" under the initiative's steering committee chair and USC Leonard Davis School Dean Pinchas Cohen, he says.

Professor Mara Mather has been named the school's assistant dean for faculty. "My position entails supporting the associate dean and dean in efforts to recruit, retain and support development of gerontology faculty," Mather says.

"We had an especially successful past year in terms of recruitment," she adds. "My goals for the coming year are to continue recruitment efforts and help support faculty development, especially for junior faculty."

Associate Professor Susan Enguidanos serves as the diversity and inclusion liaison for the USC Leonard Davis School.

"Leading the diversity and inclusion efforts is a natural extension of my research; my investigations have focused on understanding disparities and promoting inclusion and equitable access to quality care for diverse seriously ill patients," Enguidanos says. "I'm excited to be working with such a committed and enthusiastic committee to increase both diversity and inclusion throughout all aspects of the Leonard Davis School of Gerontology. In achieving these goals, we will bring greater richness and representation in all aspects of our school as well as increase the diversity of our future gerontologist workforce."



(Left to right) Mara Mather, Sean Curran, & Susan Enguidanos



Assistant Professors Bérénice Benayoun, Jessica Ho, Andrei Irimia, and Reginald Tucker-Seeley arrived at USC in 2017, bringing the total number of tenured/tenure-track faculty at the USC Leonard Davis School to 21.

Growing The Faculty—And USC’s Study Of Lifespan Health

Earlier this year, four new assistant professors joined the faculty of the USC Leonard Davis School of Gerontology, bringing with them exciting research that adds new facets to the school’s research profile. Read more about Andrei Irimia’s use of big data to tackle brain injuries on page 32, and meet Jessica Ho, Bérénice Benayoun, and Reginald Tucker-Seeley on page 26.

From brain injury and epigenetics to demography and financial well-being, the wide variety of their research aims is reflective of how the scope of gerontology has grown as the population has aged. Aging knowledge is applicable at every point in the lifespan—and researchers from every unit at USC are a testament to that.

“The scope of the Ensuring Lifespan Health initiative is to change the way we approach the study of lifespan health,” Curran says. “USC has the most comprehensive study of lifespan health; every school and institute has researchers studying facets of lifespan health. We have an incredible opportunity to grow and synergize our research in innovative ways by working with our colleagues across the university.”

The USC Leonard Davis School of Gerontology and the university as a whole are well poised to tackle the “wicked problem” of helping individuals age in a healthier and more fulfilling way, says Dean Cohen.

“Since our school’s founding in 1975, we’ve worked diligently to anticipate and respond to the challenges and opportunities presented by our aging population,” he says. “We continue to grow our faculty and the scope of our research, work with collaborators throughout and outside of USC in new and exciting ways, and prepare our talented students to address tomorrow’s issues involving health and well-being across the lifespan.”

– Beth Newcomb

Summit at USC Leonard Davis Kicks Off New Provost’s Initiative on Ensuring Lifespan Health

On October 11 and 12, researchers studying facets of lifespan health from throughout USC and from other institutions will gather at the USC Leonard Davis School of Gerontology for the first-ever USC Lifespan Health Summit.

“The Lifespan Health Summit promises to be a groundbreaking event featuring research from throughout the university,” said USC Provost and Vice President for Academic Affairs Michael Quick. “I am excited to hear about new avenues of collaborative research stemming from this event.”

Along with gerontology, researchers from several USC schools and departments—from medicine, pharmacy, engineering, and social work to public policy, liberal arts, religious life, and communication—will present their research involving lifespan health at the summit. In addition, other presenters hail from Children’s Hospital Los Angeles, UCLA, the Buck Institute for Research on Aging, UC Irvine, the Scripps Research Institute, and University of Wisconsin-Milwaukee.

The event is designed to spur ideas and make connections that turn into exciting convergent research, says summit organizer and USC Leonard Davis Associate Professor Sean Curran.

“We look forward to finding innovative ways to work across disciplines and find new approaches to aging and lifespan science,” Curran says. “USC has so much to offer in terms of aging research, and we can be greater than the sum of our parts.”

For more information on the Ensuring Lifespan Health initiative, visit provost.usc.edu/initiatives/wicked-problems/ensuring-lifespan-health.

To learn more about the Lifespan Health Summit, visit gero.usc.edu/lifespan-health-summit.

SPACE AGE

Students from four schools come together to chart an Age-Friendly L.A.

A new course is putting gerontology on the map, literally. Which bus stops have benches? What is my emergency evacuation plan? Where are free flu shots being offered?



Students in the new Age-Friendly L.A. Practicum are seeking to provide answers to these questions and more in the hopes of making Los Angeles a better place to grow old. Using interactive maps and digital stories they are developing a website and mobile app to tell layered stories about aging in Los Angeles. The semester-long Wicked Problems Practicum asks students from diverse disciplines to take on a challenging societal issue. In this case, students from the USC Leonard Davis School of Gerontology, the Keck School of Medicine of USC, the USC Sol Price School of Public Policy, and the Spatial Sciences Institute at the USC Dornsife College of Letters, Arts, and Sciences are portraying lifespan aging, health, and social policy problems using graphic and visual representations that policy makers, professionals, and researchers can understand and use.

“We are training the next generation of leaders to think holistically about how cities can best meet the needs of their diverse aging populations,” said Caroline Cicero, an instructional assistant professor at the Leonard Davis School who leads the course along with Spatial Sciences Institute Associate Professor Jennifer Swift.

Students aren’t just helping design a more livable city. They are actually providing directions for just how to get there. Currently, few geographic visual representations, or geovisualizations, of the requirements for elder-friendly communities are available to community groups, researchers, and stakeholders. The hope is that this class will change that.

“We can harness the power of maps and geography to tell the stories of the needs of older adults in Los Angeles,” said Swift.

Participating faculty also include Annie Nguyen from the Keck School of Medicine, Darren Ruddell from the Spatial Sciences Institute, Tridib Banerjee from the Price School, and Jennifer Ailshire from the Leonard Davis School.

This course is part of two efforts underway to help prepare for a rapidly aging society. USC Leonard Davis School Dean Pinchas Cohen is leading Provost Michael Quick’s university-wide Wicked Problems initiative, Ensuring Lifespan Health, and the USC Leonard Davis School is a partner in Mayor Garcetti’s Purposeful Aging Los Angeles, a multi-agency drive to make Los Angeles the most age-friendly city in the world.

- Orli Belman

Expanding Perspectives

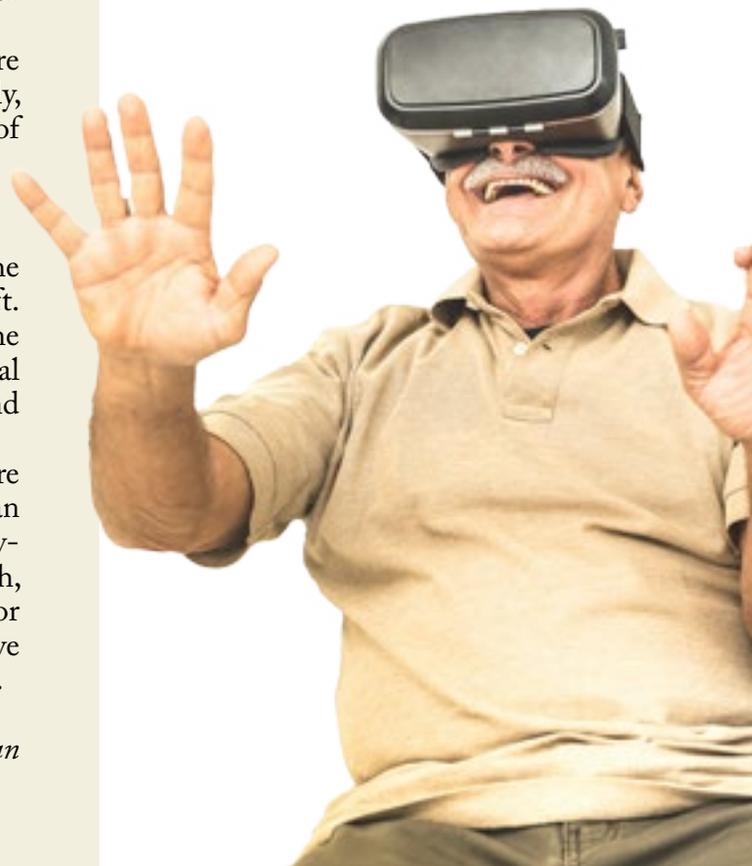
Three USC Leonard Davis School courses use emerging technologies to provide new views of aging.

VIRTUAL REALITY RISES

Students explore real world uses for this emerging technology

It may not snow in Los Angeles, and certainly not indoors, but that did not stop USC Leonard Davis School of Gerontology students from leading a group of older adult volunteers down a thrilling mountain ski run as part of a pilot course called Virtual Reality for Older Adults.

“The idea behind the ski slope was to see if this newly available technology can provide older adults with an entertaining outdoor sport experience



GETTING PERSONAL

Students use their own DNA to uncover health secrets beyond their ancestry

Some students in the USC Leonard Davis School Master of Science in Nutrition, Healthspan and Longevity program are studying themselves—collecting and entering their own genetic data from 23andMe into a SNP (single nucleotide polymorphisms) database called Promethease,

which they in turn use to search for different genetic information, including risk factors for specific diseases.

Program director Cary Kreutzer said the need to study the role of genetics in Alzheimer's disease and dementia sparked the idea.

"We know there are [markers] that may indicate risk for Alzheimer's and dementia," she said. "Just because you have it doesn't mean you'll absolutely have Alzheimer's, but a pretty significant number of people with Alzheimer's seem to have the [markers]."

Kreutzer cautions her students about taking the information literally.

"It's not an exact science," she said. "It's not telling

you what you're going to die from and it's not telling you what diseases you'll get. It's telling you where you have risk."

Dietitians or physicians could one day use data like the students are collecting to act preventively, being on the lookout for neurological changes or implementing a diet that could ward off disease. And Kreutzer's students are contributing to that understanding - five of them recently presented their research at the International Society of Nutrigenetics and Nutrigenomics conference, which was co-sponsored by the USC Leonard Davis School and featured the latest discoveries in genetics and genomics, the microbiome and nutrition.

"If I see I have a lot of indicators for Type 2 diabetes, I might alter my diet now so in the future, when I'm 50 or 60, I'll reduce my chance for Type 2 diabetes," said Dina Ben-Nissan MSNHL '16. "Everything that we do is different... We're studying things beyond what the textbooks say."

- Joanna Clay

and help encourage them to be active, even if they can't leave their homes," said Leonard Davis School Master of Science in Gerontology student Yunxuan Ma, who created the scenario for a class assignment.

As part of a USC Chan Division of Occupational Science and Occupational Therapy fall prevention

study, students also developed virtual reality experiences that could be used to analyze distractions and reactions as older adults walk across the street.

Commercial companies are already selling virtual reality applications to address social isolation, dementia, and balance. Studies have shown that certain experiences can help people manage pain, treat phobias, regain physical function, and reduce anxiety.

"It is important to have evidence-based tools to improve quality of life for older adults, and virtual reality is a promising medium to explore," said Aaron Hagedorn, an instructional assistant professor at the USC Leonard Davis School of Gerontology who co-led the new class along with instructor Elie Gindi.

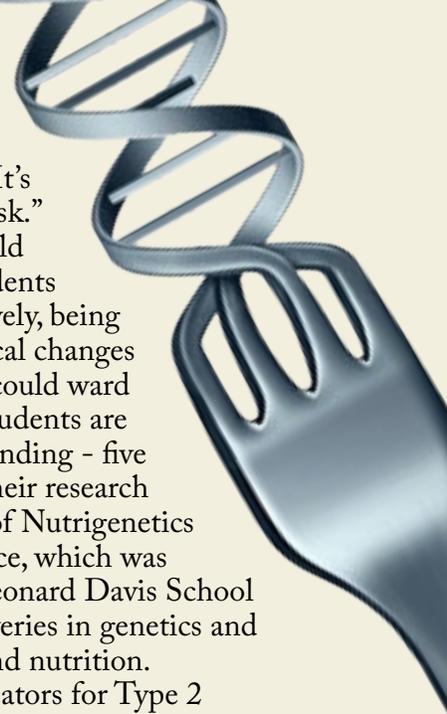
The course also featured guest lectures from professional game developers and interactive media instructors from the USC School of Cinematic Arts.

85-year-old class volunteer Elaine Herman tried virtual reality for first time and sees some potential uses for delivering exercises and experiences, provided the weight and clarity of the headsets can be tailored for older adults.

With research and development of virtual reality technologies increasing for all ages, her sentiment also sums up the state of this nascent field.

"It can provide a preview of coming attractions," she said.

- Orli Belman



New Faculty Bring Exciting Research to USC Leonard Davis School



This summer, three new assistant professors joined the faculty of the USC Leonard Davis School of Gerontology. Learn about the big questions that drive their work and how they made their way into the field of aging research.

UNDERSTANDING WHAT SHORTENS U.S. LIFESPANS

Jessica Ho has a question: Why do Americans live shorter lives, on average, than people living in other high-income countries such as Japan, Sweden, and Germany?

“This is a fascinating and complex question, and there is no easy answer,” says the USC Leonard Davis School of Gerontology assistant professor. “Unpacking the reasons for our life expectancy disadvantage involves factors that affect health and well-being across the life course, from birth through old age, and it involves many dimensions of life.”

Ho’s research in demography and sociology explores how various aspects of U.S. life—from the extent of commuting in the U.S. and related car accidents to violence and the U.S. health care system—have impacted death rates and lifespans. She also studies the impacts of the drug overdose epidemic, including how overdoses contribute to educational inequalities in mortality and whether the epidemic has had unanticipated impacts on seniors’ access to painkillers.

Ho’s research has found one major reason why Americans have shorter average lifespans: more people in the U.S. die before age 50 than in other countries.

“Previously, much of the discussion revolved around health conditions at the older ages and whether the health care system could be responsible for our life expectancy shortfall,” she says. “My research has demonstrated that a substantial fraction of the U.S. life expectancy shortfall—about two-thirds for men and two-fifths for women—is due to premature mortality at ages below 50.”

At those younger ages, much of the life expectancy shortfall is due to causes of death such as drug overdose, homicide, and motor vehicle accidents, which are strongly socially patterned, Ho says. This suggests that enduring social and contextual factors play a key role in the U.S. life expectancy disadvantage.

“I’ve had a longstanding interest in how levels of health and disease shape societies—for example, how incredibly high levels of mortality and infectious diseases would have impacted daily life in pre-industrial times,” she says. “I was introduced to the field of demography during my sophomore year at the University of Pennsylvania, when I took a Health of Populations course with [Professor of Sociology] Samuel Preston, who is one of the foremost scholars of demography.

“My reaction to taking his class was something along the lines of, ‘You can do this for a living? Sign me up!’”

– Beth Newcomb

Jessica Ho

EXPLORING THE POWER OF EPIGENETICS

Bérénice Benayoun, assistant professor at the USC Leonard Davis School of Gerontology, explores the role of epigenetics—the ways that genes turn “off” or “on”—in the process of aging, and she hopes her findings could eventually help delay frailty and prolong healthy life.

“Very little is known about how the epigenome is remodeled and how this remodeling could actually influence the aging process,” Benayoun says. “What’s really cool about epigenetics is that the modifications are reversible. Once we understand what goes wrong, we could possibly reverse it. The absolute ideal would be that we’re one day able to rejuvenate the genome and thus rejuvenate the organism.”

Benayoun, a native of Paris, France, was interested in genetics and epigenetics from a young age. During her undergraduate biology program at École Normale Supérieure in Paris, a mentor recognized her interests and referred her to Northwestern University Professor Richard Morimoto, a molecular biologist, for a three-month summer internship in his laboratory in 2005.

Working with Klaus Richter, then a postdoctoral fellow in Morimoto’s lab, Benayoun spent the summer researching the impact of a Forkhead box (FOX) gene, which is responsible for creating proteins that bind to DNA and control gene activity, in the worm species *C. elegans* on protein homeostasis. With a deep survey of the literature on the role of FOX genes, Benayoun learned about their link to the regulation of aging process. Her interest in pursuing aging biology research was sparked in earnest. She returned to Paris and pursued a master’s degree with a major in aging biology.

Following her PhD, Benayoun completed a postdoctoral fellowship at Stanford University with Anne Brunet, professor of genetics and co-director of the Paul F. Glenn Laboratories for the Biology of Aging. Benayoun had become familiar with Brunet’s work in epigenetics and aging after her undergraduate internship at Northwestern and was thrilled to join her team. Building on her PhD research about the regulation of menopause, her postdoctoral research findings in the evolution and genetic architecture of male and female lifespan further piqued her curiosity about not only the epigenetic factors affecting aging but also how epigenetics and aging differ between the sexes.

“Something I’m very interested in is to try to understand what makes aging different between females and males. We know there are a lot of

differences: women are in better health than men on average before menopause, but afterward women are less healthy and get more neurodegeneration and osteoporosis,” she explains. “If we could understand all this and bring the healthier state of the female epigenome to men and preserve it in women, it could be instrumental in treating aging... The dream would be to reduce the period of life where people are frail and diminished.”

Benayoun’s research shares commonalities with that of her senior faculty mentor, Professor Christian Pike, an expert in sex hormones and their roles in aging, and she looks forward to collaborating with both her USC Leonard Davis School

colleagues and other researchers throughout USC.

“I’m excited and a bit terrified to join USC,” she laughs. “It sounds like it’s going to be an amazing environment.”

– Beth Newcomb



Bérénice Benayoun

DISCERNING HOW WEALTH AFFECTS HEALTH AND WELL-BEING

“Money can’t buy happiness”, according to the popular proverb, but the way people feel about their financial situation and how they behave regarding their money can have profound effects on health and well-being, says new USC Leonard Davis School of Gerontology Assistant Professor Reginald Tucker-Seeley.

His current research focuses on financial well-being across the cancer continuum, from prevention to end-of-life care. In this work, he goes beyond capturing socioeconomic circumstances using traditional measures of socioeconomic status, such as income and education, and attempts to discern how an individual’s financial situation affects their physical and mental health and behaviors.

“Financial well-being describes how socioeconomic status is actually lived,” Tucker-Seeley says. “For instance, you and I could report the same income on a survey, but we may live that income very differently.”

Tucker-Seeley describes the three main domains in his model for measuring financial well-being: material, or the resources one has; psychosocial, or how one feels about those resources; and behavioral, or how an individual uses those resources. The multifaceted concept has already shown its potential to provide deeper insights for intervention and policy development, he adds.

“Even after we control for traditional measures of socioeconomic status like income and education in our statistical models, we still see a significant association over and above the traditional measures of socioeconomic status. That’s telling us that indicators of financial well-being are robust correlates of health,” he says. “Measures of financial well-being help us better clarify socioeconomic intervention targets. We can be more precise about the area we’re defining, measuring and intervening.”

Another possible advantage: study participants may be more likely to answer financial well-being questions than traditional income questions, Tucker-Seeley adds.

“People may not tell you how much they make,

but surprisingly we have found that they will tell you if they’re having problems paying their bills, if they are worried about their financial situation, or if they are satisfied with their current financial resources,” he says.

After receiving his bachelor’s degree in accounting from the University of Tulsa in Oklahoma, Tucker-Seeley’s career began in the finance department of a managed health care company in St. Louis and then as an internal auditor at Saint Louis University. However, an undergraduate study-abroad experience at London’s Richmond College sparked an interest in the social sciences that stuck with him, and he began pursuing a master’s degree in counseling and family therapy part-time while working at Saint Louis University.

Eventually, he returned to being a full-time student, but during his clinical internship at the Washington University Student Health and Counseling Service, he realized that being a practicing therapist also wasn’t his calling. Luckily, around that time he happened to read an article on the bio-psycho-social approach to health written by a professor in the Department of Social and Behavioral Sciences at Harvard’s T.H. Chan School of Public Health. The article helped Tucker-Seeley realize that he wanted to conduct research on the social factors that influence health outcomes.

Pursuing what has turned out to be his true calling, Tucker-Seeley completed both a master’s degree and doctorate at the Harvard School of Public Health. After that, he completed a postdoctoral fellowship in cancer prevention and control at the Dana-Farber Cancer Institute and Harvard School of Public Health. He later received a joint appointment at both institutions as assistant professor of social and behavioral sciences.

“If you look back at my journey, it may look a bit planned—the fact that I’m interested in financial issues and well-being and psychosocial issues, and I have a background in accounting and mental health—but at the time, it was not a planned journey,” Tucker-Seeley says.

– Beth Newcomb

Dr. Tucker-Seeley Goes to *Washington*

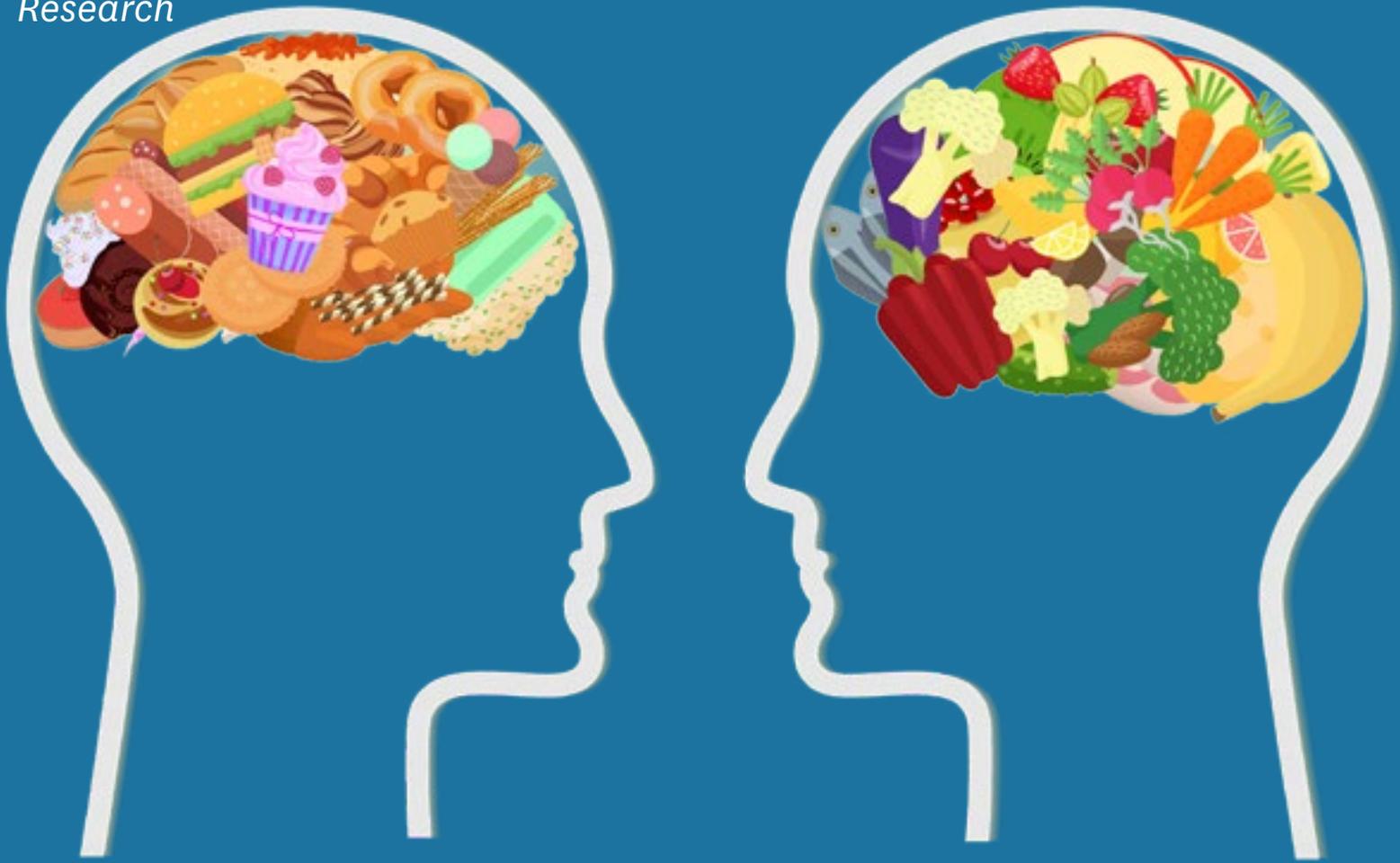


Along with continuing his work on financial well-being at USC, Assistant Professor Reginald Tucker-Seeley will also have the opportunity to apply his knowledge in the federal policymaking environment as one of the 2017-18 Robert Wood Johnson Foundation Health Policy Fellows. Beginning in September 2017, he will spend four months in Washington, D.C. taking part in a health policy “boot camp” to learn about the federal health policymaking process and then spend another eight months working with a congressional or executive office and providing expertise on health policy issues. He will then return to USC for the second year of the fellowship to complete a related research project.

“Learning how federal health policy gets made was an incredibly attractive part of this fellowship,” Tucker-Seeley says. “Since I’m interested in how health policy affects different racial/ethnic and socioeconomic groups, I’m especially looking forward to seeing how policies addressing health disparities are created.”

In addition, Tucker-Seeley was recently named the first holder of the new Edward L. Schneider Chair in Gerontology at the USC Leonard Davis School, which was founded to advance the study of health economics and older adults. Read more about the Schneider chair on page 42.

Reginald Tucker-Seeley



Poor diet, plus Alzheimer's gene, may fuel the disease

Could a healthy diet spare people who have an Alzheimer's gene from developing the disease? USC researchers suggest the issue deserves more study

A diet high in cholesterol, fat, and sugar may influence the development of Alzheimer's disease in people who carry the ApoE4 gene, a leading risk factor for the memory-erasing disease, a USC Leonard Davis School of Gerontology study indicates.

The study on mice, published June 12, 2017 in the journal *eNeuro*, explores the association between obesity and Alzheimer's, both of which are associated with inflammation and both of which affect millions of people.

For the study, researchers at the USC Leonard Davis School

compared the effects of a poor diet on groups of mice that either had the Alzheimer's-associated ApoE4 gene or the relatively benign variant of the gene, ApoE3. After eating an unhealthy diet, the mice with the ApoE4 gene showed more Alzheimer's plaques—a marker for inflammation—in their brains, but those with ApoE3 did not.

"Part of what the results are saying is that risk doesn't affect everybody the same, and that's true for most risk factors," said Christian Pike, the lead author of the study and a USC Leonard Davis professor. "Your genes have a big role in what

happens to you, but so does your environment and your modifiable lifestyle factors. How much you exercise becomes important and what you eat becomes important."

RISING HEALTH CARE CRISIS

Alzheimer's and obesity are among the intractable problems that USC researchers in multiple disciplines are seeking to unravel.

Both are widespread and costly. An estimated 5.4 million Americans have Alzheimer's, which costs an estimated \$286 billion a year. The USC Schaeffer Center for Health Policy and Economics predicts the

number of U.S. patients diagnosed with Alzheimer's will more than double to 9.1 million in the next 35 years. By then, total care costs will top \$1.5 trillion.

An estimated 72 million American adults are obese—representing about 30 percent of the nation's adult population, according to the Centers for Disease Control and Prevention. Annual health care costs for obesity in the United States range between \$147 billion to \$210 billion.

As a research institution devoted to promoting lifelong health, USC has more than 70 researchers across a range of disciplines examining the health, societal and political effects and implications of the disease. In the past decade, the National Institute on Aging has nearly doubled its investment in USC research. The investments include an Alzheimer's Disease Research Center.

THE ALZHEIMER'S-OBESITY LINK

ApoE4 and ApoE3 are two variants of a gene that codes for a protein, apolipoprotein E, which binds fats and cholesterol to transport them to the body's lymphatic and circulatory systems and to the brain. The ApoE4 variant is linked to increased inflammation, Alzheimer's and cardiovascular disease.

ApoE3, which does not increase risk for the disease, is much more common variant, appearing in an estimated 70 to 75 percent of the population. ApoE4 appears in about 10 to 15 percent of the population.

Science has shown that Alzheimer's affects more women than men. Having one copy of ApoE4 quadruples women's risk for developing the disease. But having two copies of ApoE4 is an issue for men and women, raising their risk for the disease by a factor of 10.

Still, some people with ApoE3 and ApoE4 never develop Alzheimer's. Knowing this, Pike wanted to explore whether obesity and diet, in the presence of either gene, would affect the disease's development.

UNHEALTHY VS. HEALTHY DIET

For 12 weeks, a group of mice with ApoE4 were placed on a control diet that was 10 percent fat and 7 percent

sucrose, while another group of mice with ApoE4 ate a Western diet that was of 45 percent fat and 17 percent sucrose. A similar test was run on mice with ApoE3.

On the unhealthy diet, both the mice with ApoE4 and those with ApoE3 gained weight and became pre-diabetic. But most significantly, those with ApoE4 on the unhealthy diet quickly developed the signature plaques that obstruct cognition and memory.

However, Alzheimer's symptoms did not worsen for the ApoE3 mice that ate a Western diet.

"What happens to you in life is a combination of the genes that you have, the environment and behaviors, such as diet," Pike said. "Our thinking is that the risk of Alzheimer's associated with obesity is going to be regulated to some degree by the genes that we have."

The results in the mice indicate a relationship between diet and the growth of plaques and other signs of brain inflammation for mice with ApoE4.

Pike said further study is needed to understand the relationship between the two. Research already has shown that even a brief spate of poor diet can inflame glia, the brain cells responsible for immunity response.

"That means there are probably components directly in the diet, and one of those are fatty acids, like palmitic acid, that trigger inflammation because they can go in and directly affect glia," Pike said. "But that may be just one inflammation-related component of Alzheimer's disease."

"There's probably a variety of different signals that affect the brain," he added. "People even suggest that signals coming from the gut—the microbiome—are influential."

Pike noted that women and men with risk factors for Alzheimer's may also respond differently to the effects of diet—an issue worth additional exploration, he said.

The study was co-written by Alexandra Moser, a PhD student in the USC Neuroscience Graduate Program.

Ninety percent of the study was supported by National Institutes of Health grant AG034103. The five-year \$1.6 million grant was awarded in 2011. Ten percent of the study was covered by another NIH grant, AG051521. That five-year \$3 million grant was awarded in 2015. Both grants cover several research studies.

- Emily Gersema



Christian Pike

BRAIN INJURY

Understanding and Preventing the Long-Term Complications

After a traumatic brain injury, when do the first indications of possible long-term complications—including dementia—appear, and is it possible to stave them off?

A five-year R01 grant from the National Institute of Neurological Disorders and Stroke totaling more than \$1.5 million will support one facet of brain injury research through 2021. The project will examine the effects and prognoses of small bleeds, or microhemorrhages, in the brain following traumatic brain injury in older adults.

“We want to understand whether these microhemorrhages are benign or whether they can cause serious problems for patients down the line,” said Andrei Irimia, an assistant professor at the USC Leonard Davis School of Gerontology who uses sophisticated neuroimaging techniques to understand the effects of brain injuries and improve the quality of life of sufferers, especially older adults.

Only 2 percent of R01 grants go to researchers under the age of 35 such as Irimia. He said the grant reflects not only the increase in attention paid to the topic of brain injury itself but also the National Institutes of Health’s interest in supporting precision medicine research. Traumatic brain injury is a challenge that demands a personalized approach, he noted.

“No two TBIs are the same — they vary from patient to patient,” he said. “It’s difficult to study at the population level.”

HARNESSING BIG DATA FOR BRAIN HEALTH

Despite the extreme variability of traumatic brain injury, Irimia hopes to discover widely applicable insights for diagnosing and treating these injuries early as part of a collaboration formed during a new data science mentorship program.



Andrei Irimia

The Data Science Rotations for Advancing Discovery program, or RoAD-Trip, facilitates partnerships between a junior biomedical scientist and a senior data scientist and funds two-week scientific rotations, during which the researchers work on a focused joint project involving the application of data science to biomedical research. The program is administered by the National Institutes of Health Big Data to Knowledge Training Coordinating Center.

Irimia has been collaborating with neuroinformatics expert David Kennedy, professor of psychiatry at the University of Massachusetts Medical School. Kennedy has been training him to apply data science, cloud computing and machine-learning techniques to his neuroimaging work in hopes of identifying abnormal patterns in brain activity that indicate possible future complications of traumatic brain injury.

WIRELESS SENSORS

The two have also collaborated with Nanshu Lu, an assistant professor of aerospace engineering and engineering mechanics at the University of Texas at Austin, who studies the potential of wearable wireless sensors—akin to electronic stickers or temporary tattoos—that could one day provide constant brain activity data to physicians even when a patient is recovering at home.

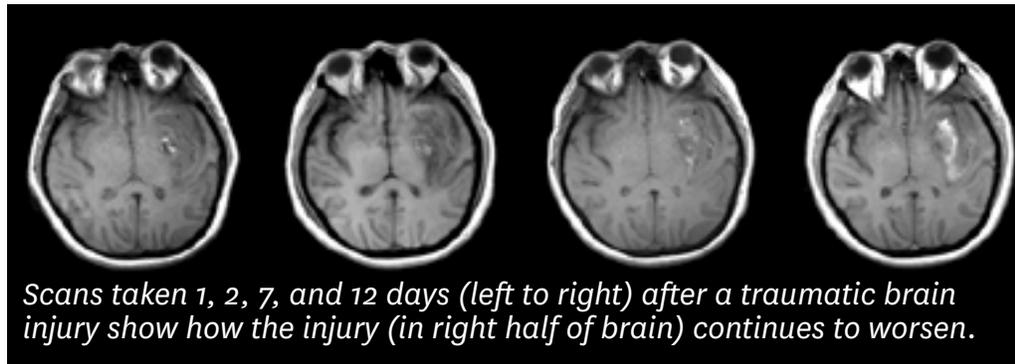
The team's eventual goal is to give physicians the ability to send mild traumatic brain injury patients home after an emergency room visit while still monitoring them remotely via easy-to-wear sensors, instead of either keeping an otherwise symptomless patient in the hospital for scans or running the risk of not catching a traumatic brain injury complication early enough. The sensors would transmit brain activity data to the computing cloud, which would analyze the patterns and alert the patient and medical team if abnormal brain activity is sensed, Irimia said.

The potential for remote monitoring and early intervention will be especially important for the older adult population, he added. As the percentage of the population over age 65 gets higher, traumatic brain injury cases are increasing, and many of those seniors living alone don't have someone who could report complications early enough for potential treatments to be effective.

"About 80 percent of TBIs are mild, and the patient's brain scan in the hospital won't necessarily reflect the injury's true severity. However, patients can develop complications even weeks after their release, and by the time a neurological or psychological problem reveals itself in behavior or personality changes, it may be

too late to fully treat it," he explained. "Right now, we have no way to monitor someone unless they are in a hospital and wired up. If we had a way for clinicians to remotely observe patients after their discharge and spot brain activity abnormalities as soon as they first occur, patients could undergo treatment earlier and the risk for serious problems could be reduced."

"Patients can develop complications even weeks after their release, and by the time a neurological or psychological problem reveals itself... it may be too late to fully treat it."



Scans taken 1, 2, 7, and 12 days (left to right) after a traumatic brain injury show how the injury (in right half of brain) continues to worsen.

BRAIN INJURY IN OLDER ADULTS

Older adults face particularly high risks from traumatic brain injury, Irimia said; it's more common in older adults than any other age group except for infants. A brain injury is also most likely to result in death when it affects a person over the age of 65, with falls being the most common cause for traumatic brain injury in older adults.

Other research shows that insults to the brain can contribute to neurodegeneration but affect individuals differently at different ages, with older people often needing more challenging treatment and not being able to recover as much as younger people, he added.

In addition, current research indicates that even when the brain injury happens in young adulthood, there is an increased risk for neurological and psychological problems decades later when the patient becomes an older adult.

Compounding the issue is the risk of stroke, which primarily affects older people but involves many of the same injury-related phenomena as traumatic brain injury. The older adult population has been relatively neglected in regard to brain injury research, Irimia noted, and individuals over 65 often need different and more challenging treatment.

"Aging with a TBI is very poorly understood," he said.

-Beth Newcomb



Not All Perpetrators of Elder Abuse are the Same

Research from the USC Leonard Davis School and Stanford finds that caregivers make up the largest group of abusers and suggests targeted interventions might help reduce cases.

While many people might assume that those who abuse and neglect older adults are all bad people who should be separated from victims and face criminal penalties, a study from USC Leonard Davis School of Gerontology and Stanford University offers a more nuanced view of abusers and how to address abuse.

The research shows that elder abuse perpetrators fall into distinct subtypes which should be treated differently if the goal is to keep older adults safe and to improve their quality of life, explained the study's lead author Marguerite DeLiema PhD'15.

"This study was in response to assumptions in the elder abuse literature that tended to treat all abusers the same instead of looking at what behaviors were linked to what forms of abuse," said DeLiema, who worked on the study during her PhD in Gerontology program at the USC Davis School and is now a postdoctoral researcher at Stanford University.

FOUR TYPES OF ABUSERS

Using a statistical method that classifies individuals into groups based on their shared characteristics and behaviors, the researchers found that there were four unique profiles of abusers—descriptively labeled "caregiver," "temperamental," "dependent caregiver," and "dangerous"—each associated with a different set of risk factors.

Contrary to how many expect typical abusers to behave, DeLiema and her co-authors found that "caregivers" were the largest group of abusers, making up 37 percent of the sample, and provided high levels of functional and emotional support. More than 90 percent of them helped with personal care needs like driving the elder to doctor's appointments and running errands.

On the opposite end of the spectrum were "dangerous" abusers: 83 percent had a history of trouble with the law, 88 percent had drinking problems, and nearly all were emotionally draining, according to the victim. These abusers comprised nearly a quarter of the sample.

There was also a "temperamental" group who were characterized as emotionally draining with volatile tempers. The smallest subtype (7 percent) were described as "dependent caregivers" who provided emotional support but were characteristically irresponsible, had trouble keeping a job, and were financially dependent on the victim.

The data for the study came from older adults who were interviewed by Adult Protective Services (APS) workers in the Chicago area following a report of alleged mistreatment. When APS workers evaluated

the older person, they asked about the alleged abuser's characteristics: alcohol abuse, financial dependency, volatility, and trouble keeping a job. They also asked about positive characteristics: providing emotional support and the extent that the abuser took care of the older adult's personal care needs. The research team looked to see whether these positive and negative attributes were more common in some abusers than others, and how the abuser subtypes related to different forms of elder mistreatment.

The study, published online on March 8, 2017 in *The Journals of Gerontology, Series B: Psychological and Social Sciences*, reported that these abuser profiles are associated with different forms of elder abuse.

"The most dangerous category of abusers were the ones most likely to be physically and emotionally abusive," DeLiema said, "whereas those who were providing some emotional support were largely responsible for financial exploitation and neglect."

HOPE FOR TARGETED ABUSE PREVENTION

DeLiema and her co-authors suggest that caregiver support interventions may reduce the risk of abuse by abusers who are already providing care to the older person and who do not have volatile tempers. This may include education about minimum standards of care, proper financial management and fiduciary practices, or referral to caregiver support services. Reducing the abuser's reliance on the older person may be coupled with long-term services and supports to enhance the elder's ability to live independent of the abuser in the community.

In thinking about elder abuse, members of the public often fall into two camps: those who view perpetrators of elder abuse as criminal misanthropes who deserve punishment versus those who view them as overburdened caregivers who need support. However, it turns out that both are true, and there's even more nuance to the story, said USC Leonard Davis School Research Assistant Professor Zach Gassoumis, a coauthor on the paper.

"This research project has enabled us for the first time to tease apart the different categories of perpetrators using advanced statistical techniques," Gassoumis said. "This gives us new fodder in the fight against abuse and justification to cater different interventions to the different types of perpetrators or potential perpetrators."

More work is still needed in this area, DeLiema

"Our results suggest that rather than continuing to rely on a one-size-fits-all approach to addressing these cases, it's better to apply targeted interventions that respond to specific abuser profiles and their behaviors."

said. She pointed out that although these profiles are consistent with what practitioners have reported from the field, the subtypes are based on victims' assessments of their abusers and are therefore subjective. The researchers hope that early identification of potential risk profiles will lead to more safety and security for vulnerable adults.

"Our results suggest that rather than continuing to rely on a one-size-fits-all approach to addressing these cases, it's better to apply targeted interventions that respond to specific abuser profiles and their behaviors," she said.

The identification of various types of perpetrators using advanced statistical techniques is an exciting and timely step forward for the field of elder abuse, Gassoumis added. With recent trends toward developing evidence-based elder abuse prevention programs, the USC Center for Elder Mistreatment—a partnership between the USC Leonard Davis School of Gerontology and the Department of Family Medicine within the Keck School of Medicine of USC—is currently working with the National Institute of Justice and Kaiser Permanente to develop an elder abuse prevention program targeting caregivers.

"Our work with Dr. DeLiema reveals that well-intentioned caregivers may make up a large number of perpetrators of abuse, underscoring the need for this type of a prevention program," Gassoumis said. "Elder abuse perpetrators are a diverse group who would benefit from a variety of interventions to help stop abuse and prevent it from occurring in the first place."

The study was supported by the National Institute on Aging (grant number T32AG000037). Development and testing of the Elder Abuse Decision Support System was supported by the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice (grant number 2011-IJ-CX-0014).

Older island-dwelling Puerto Ricans in better health than older adults in mainland U.S.

Findings from a USC gerontology study show that Puerto Ricans were less likely to report limitations in their activities.

Older Puerto Ricans living on the island appear to be in better shape health-wise than older adults in the mainland United States, according to a study by the USC Leonard Davis School of Gerontology.

Catherine Pérez, a doctoral candidate in gerontology, compared data from the 2002 Puerto Rican Elderly Health Conditions Project (PREHCO) and the 2002 Health and Retirement Study in the U.S. She was surprised, she said, by the findings, which showed that island-dwelling Puerto Ricans had a lower disease burden, were less likely to report limitations in their activities of daily living, and were less likely to report poor self-rated health compared to non-Hispanic whites in the



The health advantage appears to be enjoyed primarily by island-dwelling men.

mainland U.S. Disease burden includes all costs and impacts of having a disease, from the loss of quality of life or loss of years to the financial cost of management.

“The reason I’m surprised is because cumulative disadvantage theory would suggest that Puerto Rico’s structural location within the U.S., which includes federal funding shortfalls in Medicare and Medicaid, is associated with a deficit of resources to help Puerto Rican elderly,” Pérez said.

She explained that such funding shortfalls may impede access to nursing homes and assisted living communities, access to nutritional resources, and access to crucial health care resources to increase quality of life.

However, several possible factors may be responsible for the unexpected health advantages. Participants in the Puerto Rican study sample had nearly universal health coverage, with 98 percent of respondents reporting they had either private insurance or were insured by a federal government health insurance program, such as Medicaid or Medicare. Access to medical, dental, and hospital care for poor and underserved populations, including the elderly, had increased following passage of Puerto Rican health care reform in 1993, Pérez noted.

“The older island Puerto Ricans in the PREHCO sample were born between 1895 and 1942 at the time of interview, meaning that these respondents grew up during a period where Puerto Rico experienced vast economic and social transformation,” Pérez said. “Particularly after World War II, Puerto Rico was seen as a ‘success story’ with its impressive economic growth and the significant raising of domestic living standards.... The major structural, social, and economic transformations of the Puerto Rican island contribute to positive changes in health statuses.”

In addition, other preliminary evidence suggests that Puerto Rican seniors living on the island have better health statuses than some older Puerto Rican adults living in the mainland U.S., Pérez said.

ADVANTAGE: ISLAND-DWELLING MEN

“Data from the Behavioral Risk Factor Surveillance System show that mainland Puerto Ricans residing in New York are at higher risk for cardiometabolic syndrome, have a higher prevalence of diabetes compared to island-dwelling Puerto Ricans and non-Hispanic whites in the tristate area, and have lower rates of insurance, which has an impact on health,”

“The major structural, social and economic transformations of the Puerto Rican island contribute to positive changes in health statuses.”

Pérez explained.

However, the health advantage appears to be enjoyed primarily by island-dwelling men. Pérez’s analysis compared the health of island-dwelling men to women on the island and found that women were more likely to report high blood pressure, heart disease, diabetes and poor self-rated health. Challenges faced by Puerto Rican women may be similar to those responsible for sex disparities in health across the world, including disadvantaged social and economic positions in relation to men.

The article noted that Puerto Rican women on the island have historically been overrepresented among low-income earners. In addition, prior research has shown that island Puerto Rican women are more affected by obesity and more often perceive poverty, food insecurity, lack of access to quality education and unsafe neighborhood environments as significant life stressors.

The island’s population, which like much of the rest of the world is rapidly becoming older on average, will likely face new challenges to its health care infrastructure in the near future due to the burden of chronic diseases such as high blood pressure and diabetes, Pérez said. She added that these looming problems may have played a role in the island’s recent non-binding vote to seek U.S. statehood.

“Puerto Ricans who voted for non-binding statehood are telling the federal government that they want to claim their equal rights and benefits as U.S. citizens,” she said. “With Puerto Rico as a state, they would gain two seats in the U.S. Senate and five seats in the House of Representatives, which will allow Puerto Rican delegates to participate in and vote on legislation that affects the island.”

“Aging in Puerto Rico: A Comparison of Health Status Among Island Puerto Rican and Mainland U.S. Older Adults” was co-authored by USC Davis Assistant Professor Jennifer Ailshire; it was published online in the *Journal of Aging and Health* on June 9, 2017. The research was supported by the National Institute on Aging under award number R00AG039528 to Ailshire and the NIA Multidisciplinary Training Grant award in Gerontology under award number T32AG0037.

– Beth Newcomb



SUPPORT FRIENDS AND FAMILY —BUT LET THEM HELP YOU, TOO

Ever feel like you're constantly helping friends or family members solve their problems but don't get the same help in return? Or do you think you ask too much of loved ones and don't return the favor often enough?

Either way, receiving and giving social support are important and need to be kept in balance, according to a study led by USC Leonard Davis School of Gerontology PhD candidate Diana Wang.

Independently, receiving social support and giving it to others have each been associated with better psychological well-being, but until now, very little research has compared both forms of support in relation to well-being across the lifespan, Wang said. Her research suggests that an imbalance between giving and receiving support can result in negative psychological effects, but those associations vary depending on age.

Wang examined national data from more than 1,200 participants in the Study of Midlife in the United States who were surveyed about their perceptions of the support they give to and receive from spouses, other family members, and friends, as well as measures of psychological distress.

Support given to others was measured by reports from participants about how much their friends, family members, or spouses rely on them in a crisis or open up to them about personal worries, or vice versa for support received from others.

HIGH ANXIETY?

Wang found higher levels of perceived stress and symptoms of depression or anxiety in those who report social support imbalances in either direction. Problems can arise when an individual is “underbenefiting” by giving more support than they receive, or “overbenefiting” by receiving more support than they give to others, she said, though underbenefiting appears to be more detrimental.

The study also reported that younger and middle-aged adults appear to feel more distressed about those imbalances than older adults do, possibly due to the idea of older adults having a greater “support bank.”

“One hypothesis may be that older adults are less distressed with either form of imbalance because they can rationalize that they have a history of ‘support payments’ to or from their network members that alleviate the imbalance,” Wang said.

Another finding that Wang found especially interesting was that overbenefiting from the support of friends didn't seem to cause distress when compared to overbenefiting from the support of spouses or other family members.

INFLUENCE ON HEALTH

Wang plans to continue her research on the pathways through which social relationships influence health. She is studying whether recalling support-giving memories will lead to healthier physiological responses to stress, measured by heart rate and cortisol, and will examine how the effects of support-giving may vary depending on whether people feel that they are in imbalanced relationships.

“By understanding the contexts in which social support can benefit people's health and how it changes throughout the lifespan, I hope that my work can inform the design of psychosocial interventions and opportunities for engagement in later life,” she said.

The article “The psychological costs of social support imbalance: Variation across relationship context and age” appeared online in the *Journal of Health Psychology* in February 2017 and was co-authored by Tara Gruenewald of California State University, Long Beach. The study was supported by the National Institute on Aging (grant T32 AG000037).

– Beth Newcomb

Scholarship Supports Study of Peptide with Anti-Aging Potential

The tiny protein MOTS-c may have the potential to stave off frailty and maintain muscle mass, says second-year PhD in Biology of Aging student and Glenn/AFAR Scholarship recipient Joseph Reynolds.

A unique peptide could have potent anti-aging properties, and researchers want to know how the effects might vary with age, said USC Leonard Davis School of Gerontology PhD in Biology of Aging student Joseph Reynolds.

The peptide MOTS-c—which is encoded in the energy-providing mitochondria of cells rather than in a cell’s nucleus—and its effects on metabolism were first described in 2015 by Reynolds’ mentor, USC Leonard Davis School Assistant Professor David Lee. MOTS-c appears to mimic the effects of exercise when given to mice, increasing insulin sensitivity and preventing obesity even when the animals eat a high-fat diet.

Further research has indicated that mice who receive injections of MOTS-c maintain more lean muscle mass, build up less body fat, and perform better on tests of physical function. The treated mice voluntarily run faster and for nearly twice as long on a treadmill compared to mice who don't receive the peptide, Reynolds said.

“We now want to get more information on the cellular pathways that explain why MOTS-c improves physical performance in mice,” Reynolds said.

An important aspect of the project’s next phase will be examining how the effects and mechanisms of MOTS-c treatment vary between mice of different ages, he said; current research has only been performed in mice of similar ages.

If the positive early results eventually make their way into human medicine, Reynolds said his hope is that MOTS-c treatment could help stave off physical declines in aging humans.

“Our hope is that this could one day prevent frailty in older adults, help them maintain muscle mass, and perhaps even decrease their risk of falling,” he explained.

Reynolds’ newest research will be supported by the 2017 Glenn Foundation for Medical Research/American

Federation for Aging Research Scholarship, which provides \$5000 for a three- to six-month research project into biomedical aspects of aging. According to the AFAR website, the program gives students the chance to learn more about aging research and better understand the challenges involved in improving the quality of life for older people.

- Beth Newcomb



Joseph Reynolds



Carly Roman

NSF Graduate Research Fellowship Examines the Benefits of Helping Others

USC Leonard Davis School of Gerontology PhD in Gerontology student Carly Roman is one of 2017's record-breaking 24 National Science Foundation research fellows from USC.

The highly competitive fellowship provides three years of stipend and tuition support, which enables recipients to focus on conducting research, and also gives opportunities for valuable networking and skill development, Roman said.

"The NSF's generous stipend will provide me with protected time to focus on coursework and conducting original research on generativity and purpose in older adults," she said. "The NSF network will allow me to further develop my professional and research skills while sharing my research and scientific understanding of gerontology with the broader community."

Roman's research focuses on the idea of generativity, the feeling of contributing to another person's well-being. High levels of generativity have been linked to positive physical and mental health outcomes, but the

concept has been largely studied in relation to older individuals directing care and concern only toward younger generations, a shortcoming that Roman wants to address.

"Originally, generativity was conceptualized as people in mid-life leaving a positive legacy and lasting impact on younger generations, so definitions and measurements usually emphasize older people helping younger people. However, I think this definition is a little limiting because people can probably still be considered generative if they are directing care and concern toward someone their own age," she said. "If this research shows that providing support to peers increases generativity and well-being as much as providing support to younger generations, we can expand the scope of generativity research to include peer generativity and investigate generativity and well-being benefits for younger people helping older people as well."

In addition to exploring feelings of generativity

“By answering these questions, we can better inform research, interventions, and programs that allow older adults to be generative... This also allows society to benefit from older adults’ care and concern for others and hopefully can fundamentally shift peoples’ perceptions of older adults to view them as meaningful, contributing members of society.”

between people of the same generation, Roman will also research how generativity may be different across various racial, ethnic, or socioeconomic groups. She said she hopes it can be translated into a broader study that further investigates the underlying mechanisms of the relationship between giving advice to others of all ages and increased generativity and well-being.

“By answering these questions, we can better inform research, interventions, and programs that allow older adults to be generative,” Roman said. “This also allows society to benefit from older adults’ care and concern for others and hopefully can fundamentally shift peoples’ perceptions of older adults to view them as meaningful, contributing members of society.”

- *Beth Newcomb*

GERONTOLOGY RESEARCHERS EARN PRESTIGIOUS FELLOWSHIPS AND GRANTS

This year, several USC Leonard Davis School of Gerontology PhD in Gerontology students and post-doctoral fellows have received high-profile support for their promising research:

- Postdoctoral fellow **Christopher Beam** received a grant from the Alzheimer’s Association that will support his investigation into how social isolation influences a person’s risk for developing Alzheimer’s disease.
- PhD in Gerontology candidate **Kelly Durbin** received a two-year National Institute on Aging F31 predoctoral fellowship to investigate how the locus coeruleus, a small but highly interconnected structure in the brain, influences cognitive functioning across the adult lifespan.
- Postdoctoral fellow **Briana Kennedy** received a three-year National Institute on Aging F32 postdoctoral fellowship to investigate how arousal-induced attention mechanisms may change with age and Alzheimer’s disease.
- PhD in Gerontology candidate **Catherine Pérez** received an R36 research dissertation award from the National Institute on Aging to study how the measurement and reporting of hypertension and diabetes vary between different Hispanic populations.
- PhD in Biology of Aging student **Joseph Reynolds’** work on the mitochondrial peptide MOTS-c, which has the potential to fight obesity and frailty, will be supported by the 2017 Glenn Foundation for Medical Research/ American Federation for Aging Research Scholarship.
- PhD in Gerontology candidate **Jennifer Robinette** received a K99 Pathway to Independence award from the National Institute on Aging to explore how neighborhood stressors such as crime, disorder, and decay interact with genes and aging to affect health.
- PhD in Biology of Aging student **Kenneth Wilson** received an F31 grant from the National Institute on Aging to study how genetic variants associated with nutrient response regulate longevity and health.

USC Leonard Davis School of Gerontology Announces Edward L. Schneider Endowed Chair

The gift honoring the school's dean emeritus comes from a matching grant challenge issued by the Leonard and Sophie Davis Fund. Assistant Professor Reginald Tucker-Seeley is named the inaugural chair holder.

A \$1.5 million challenge grant from the Leonard and Sophie Davis Fund has established the Edward L. Schneider Chair in Gerontology at the USC Leonard Davis School to advance the study of health economics and older adults.

The endowed chair honors Dean Emeritus Edward L. Schneider, a professor of gerontology at the USC Leonard Davis School and at the Keck School of Medicine of USC, who is a nationally recognized expert on healthy aging and elder care. Schneider served as dean of the USC Leonard Davis School from 1986 to 2004.

He was previously the deputy director of the National Institute on Aging of the National Institutes of Health and also played a crucial role in the creation of the Buck Institute for Research on Aging in Novato, Calif.

USC Leonard Davis Dean Pinchas Cohen hosted a dedication and installation ceremony at the Gilmore Adobe on Monday, September 18, 2017 that was attended by Leonard and Sophie Davis Fund President Alan Davis, a USC alumnus

and the son of the school's namesake; his wife Mary Lou Dauray; and USC Leonard Davis School leaders, faculty, board members, supporters, and friends.

"This generous gift made possible by the Leonard and Sophie Davis Fund enables us to tackle the economic challenges around providing health care to the growing numbers of aging Americans," Cohen said. "Furthermore, it recognizes the many contributions Dean Emeritus Edward L. Schneider has made to the field of gerontology, to USC, and to improving the lives of so many older adults."

The Leonard and Sophie Davis Fund challenged the USC Leonard Davis School to match their gift to create the Edward L. Schneider Chair in Gerontology, with the goal of enabling the school to recruit a world-renowned scholar in the economics of aging. The Auen Foundation, the H.N. and Frances C. Berger Foundation, several members of the Colyear family, Richard and Adrienne Matros, Keith Renken, Sharon Tedesco, Shari and Robert Thorell, and Ruth Ziegler provided capstone gifts to complete the challenge.

"I see my father's passion for improving the lives of older adults in Ed Schneider and his tireless teaching and service on behalf of aging Americans," said Alan Davis. "The Leonard and Sophie Davis Fund is pleased to be able to recognize Ed's many contributions with this new chair in his name."

"I am honored that the Leonard and Sophie Davis Fund has endowed a chair in my name," Schneider said. "I am very pleased that Reginald Tucker-Seeley will be installed as the inaugural chair holder.

In both his science and service, he is a wonderful exemplar of what it means to be a gerontologist."

Assistant Professor Reginald Tucker-Seeley recently joined the USC Leonard Davis School faculty from Harvard University and the Dana-Farber Cancer Institute, where he was an assistant professor of social and behavioral sciences. Tucker-Seeley's research focuses on the social determinants of health and attempts to discern how an individual's financial circumstances affect their physical and mental health and behaviors across the life course. Tucker-Seeley is spending the



Alan Davis, Mary Lou Dauray, Pinchas Cohen, Shari Thorell, Kelvin Davies, & Edward Schneider (seated)



Reginald Tucker-Seeley & Edward Schneider

2017-2018 academic year in Washington, D.C. at the National Academy of Medicine as a Robert Wood Johnson Foundation Health Policy Fellow.

"I am extremely grateful to the Leonard and Sophie Davis Fund and all of the matching gift donors for recognizing the need for research to understand the various pathways through which financial resources can impact health and healthy aging, and to Ed Schneider for his pioneering work in the field of gerontology," Tucker-Seeley said. "It is an honor to be the inaugural holder of this chair, and I am excited to continue working to advance research in this area at USC."

As a symbolic gift to honor the dedication and installation of the Edward L. Schneider Chair, Tucker-Seeley, Mary Lou Dauray, and Alan Davis were presented with special cherrywood replicas of an iconic Eames-designed chair. Schneider received a full-sized personalized captain's rocking chair, inscribed with the words, "You can finally sit down", along with an invitation to do just that.

The fulfillment of the endowed chair marked the completion of a larger Leonard and Sophie Davis Fund challenge grant, which helped the school realize \$10 million in new endowment gifts. The event also recognized the Leonard and Sophie Davis Fund's support of the renovation of the school's new student lounge, the creation of the Sophie Davis Art Gallery, and many student and faculty awards.

The Campaign for USC is an unprecedented fundraising effort to advance USC's academic priorities and expand its positive impact on the community and world. When launched in 2011, the campaign had the largest fundraising goal ever announced in higher education — \$6 billion. After exceeding its goal nearly 18 months ahead of schedule, the campaign continues to draw unparalleled support for the university's mission and has been extended through 2021.

- Orli Belman

USC LEONARD DAVIS SCHOOL STUDENT LOUNGE OFFICIALLY DEDICATED

The USC Leonard Davis School of Gerontology hosted an official dedication ceremony for the school's recently renovated student lounge, located on the first floor of the Ethel Percy Andrus Gerontology Center, on September 18, 2017.

The renovations, supported by the Leonard and Sophie Davis Fund, were dedicated to Dean Emeritus Edward L. Schneider and the 2002 Board of Councilors, including the "Four Musketeers" Will Carr, Michael Lombardi, Keith Renken, and Shari Thorell.

Alan Davis, president of the Leonard and Sophie Davis Fund and son of school namesake Leonard Davis, praised the school's progress and growth.

"My father's vision was that the school would have 50 students...The Leonard Davis School of Gerontology is now thriving beyond my father's wildest dreams," Davis said.



Above: (left to right) Leah Buturain Schneider, Edward Schneider, Mary Lou Dauray, Margaret Carr, Pinchas Cohen, Shari Thorell, Alan Davis, & Will Carr (seated).

Below: Lexi Maggelet '20, Mary Lou Dauray, Alan Davis, Pinchas Cohen, & Vale Cardenas MASM '18.

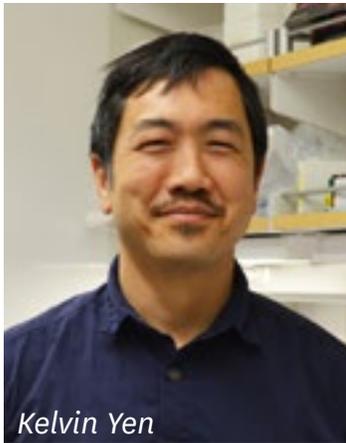


USC Leonard Davis School Faculty Win Grants to Explore New Ways to Improve Health

2017 Hanson-Thorell awards continue legacy of supporting promising research directions.

USC Leonard Davis School of Gerontology Research Associate Professor Donna Benton and Research Assistant Professor Kelvin Yen have been named the 2017 recipients of the Hanson-Thorell Family Research Scholarships, awards that support junior faculty members as they explore new avenues of research.

Benton and Yen will each receive \$25,000 in funding for one-year pilot projects looking to expand services for unpaid caregivers and explore the role of a mitochondrial peptide. The awards are designed to promote innovative social and life science research, especially projects that have the potential to be converted into major grants.



Kelvin Yen

Benton's research goal is to develop an intervention program for older and isolated family caregivers in Los Angeles County. Her pilot project will increase data about existing services and identify solutions that providers feel would best meet the needs of this high-risk population.



Donna Benton

"Studies demonstrate that caregivers have significant health problems compared to non-caregivers, yet minimal attention has been paid about how to identify and support the most vulnerable members

of this group," said Benton, who also directs the USC Family Caregiver Support Center. "This award allows us to begin to find proven ways to help the individuals providing unpaid and unassisted care to their family members."

Yen's grant will seek to better understand humanin, a mitochondrial-derived peptide that has been found to play a role in a number of age-related diseases, including Alzheimer's disease and cancer. Yen, and the

Cohen Lab team he is part of, have genetically modified a roundworm to over-express humanin. As a result of this increase, the worm has increased its lifespan by 10 percent. Yen's research will examine how humanin affects healthspan and the mechanism by which it accomplished this.

"This grant will help propel my mitochondrial research and allow me to start translating these discoveries into higher organisms," Yen said. "I am honored to receive the Hanson-Thorell award and for the opportunity it offers in exploring how this new research area might eventually help people live longer, healthier lives."

One of the Hanson-Thorell awards is supported by an endowment set up by former USC Leonard Davis School Board of Councilors Chair Al Hanson that was designed to give junior faculty a start. The second is funded by his daughter, current Board Chair Shari Thorell, and her husband Bob.

"All of our family believes in investing in people who have amazing ideas for new directions in research which have wonderful potential to make a difference in the field," said Shari Thorell. "I love the fact that my dad's original intent of investing in promising researchers continues to be so successful and that the Davis School faculty continues to lead the way in seeking to improve how we live and age."

Shari and Bob's two sons, Kirk and Keith, and their wives alternate service on the award selection committee. Past recipients have gone on to secure additional funding in areas including understanding the role diet and genetics in the aging process and preventing disparities in health care settings.

"My wife, Brooke, and I are honored to have a role in continuing to fulfill my grandfather's vision of supporting researchers in the Leonard Davis School," said Kirk Thorell. "It was exciting to see the volume of award applications and fascinating to read the innovative ideas of the school's faculty. We are also thrilled that, with my parent's support, we had the opportunity to support both the biological and social sciences as research in both areas is essential to all of our futures."

- Orli Belman



SWING FOR HEALTHY AGING



The USC Leonard Davis School of Gerontology held the annual Rod Dedeaux Memorial Golf Classic at Old Ranch Country Club in Seal Beach on May 15, 2017. More than 150 friends and supporters participated in the event and recognized the event's honoree, the Honorable Richard J. Riordan, former mayor of Los Angeles.

Players enjoyed a shotgun scramble tournament and a variety of contests throughout the day. In the evening, guests attended a silent auction and cocktail reception prior to dinner, which honored Mayor Riordan and announced the tournament winners. The golf tournament, named for USC "Coach of the Century" Rod Dedeaux, raises scholarship funds for USC Leonard Davis School students. Proceeds from this year's tournament established the Richard J. Riordan Endowed Scholarship in Gerontology.



Counterclockwise from top: the putting green contest; Dean Pinchas Cohen & Mayor Richard Riordan; Mary Lin Dedeaux, Patrick Dedeaux, Michele Dedeaux Engemann, & Anthony Dedeaux; Dean Pinchas Cohen & Loren Shook; Patricia Will, Shari Thorell, & Mei-Lee Ney.



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Artwork courtesy Mary Lou Dauray

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EVENTS

11-12 OCTOBER 2017

Inaugural USC Lifespan Health Summit
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How do we extend human health, from disease prevention and treatments to broad efforts to promote public health? What efforts in policy can prepare us for a changing society where aging and living longer are quickly becoming new norms? These questions and more will be jointly addressed by a cross-disciplinary team of leaders at USC. For more information, visit gero.usc.edu/lifespan-health-summit.

4 NOVEMBER 2017

Homecoming 2017
USC CAMPUS

Spend the day on campus, reconnect with old friends and classmates, see the Trojan Marching Band, and cheer on the Men of Troy in this annual tradition! See more information about this year's events at alumni.usc.edu/homecoming.

9-11 FEBRUARY 2018

Senior Living Executive Course 2018
USC LEONARD DAVIS SCHOOL

The Senior Living Executive Course, presented by the USC Leonard Davis School in partnership with the USC Marshall School of Business, is designed to provide aging services professionals a collaborative educational experience in strategy development, leadership, and the science of aging. Learn more and register at gero.usc.edu/slec.

16-18 MARCH 2018

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