UC DAVIS HEALTH

SUMMER 2019 · VOL 15 / NO 3

A publication for alumni, donors, faculty and friends of UC Davis Health

California's new top doc

Nadine Burke Harris (M.D., '01) is the Golden State's first-ever surgeon general

A lifespan approach to autism and Alzheimer's

In Photos: School of Medicine Alumni Weekend

Connecting you to world-class cancer care close to home.

Innovative treatments, teamwork and an indomitable spirit saved Rudy Cuellar's life. Imagine what comprehensive care can do for you.

Every day our oncologists break down barriers, uncover new treatments and improve lives in new ways — and we're honored to offer their expertise and innovations right here at home for inland Northern California.

With expert leaders in innovative cancer care, the very best in diagnosis and treatment options, and a team committed to supporting you on your journey to recovery, you'll always have a partner in your care at UC Davis Comprehensive Cancer Center and through the UC Davis Cancer Care Network. To learn more, visit **cancer.ucdavis.edu** or **cancercarenetwork.ucdavis.edu**.

UCDAVIS HEALTH | COMPREHENSIVE CANCER CENTER

SUMMER 2019 ▪ VOL 15 / NO 3

A publication for alumni, donors, faculty and friends of UC Davis Health

in this issue

18
ALUM IS CALIFORNIA'S FIRST SURGEON GENERAL

Nadine Burke Harris (M.D., '01) has made it her life's work to underscore the lasting health damage that can follow episodes of toxic childhood stress. As California's inaugural surgeon general, she's calling on fellow providers and policymakers to help her drive transformative change.

22–37
AVERTING A PUBLIC HEALTH 'TSUNAMI'

UC Davis has launched formal, long-term research projects around both neurodevelopmental disorders and dementia. Both initiatives revolve around two core themes: addressing the entire lifespan, and harnessing leading-edge technology along the way.

22 *A lifespan approach to autism*
30 *A lifespan approach to Alzheimer's*

38–43
IN PICTURES: SCHOOL OF MEDICINE ALUMNI WEEKEND

Recap Alumni Weekend events and learn about the 2018 Alumni Award recipients.

12 *First postpartum drug*
13 *First total-body PET*

departments

Vice Chancellor's note 2
In brief 3
Noteworthy 12
In memoriam 44

Class notes will return next issue

Averting a public health tsunami

Nearly *everyone in America, including myself, is intimately connected to someone with Alzheimer's or dementia. With 1 in 10 adults over 65 affected, everybody has somebody — a mother, a grandparent, a friend's parent or a friend.*

It's the same with autism spectrum disorder. After a sharp rise, the prevalence now stands at 1 in 59 children. So every family is likely to know another facing the condition.

A tsunami is racing toward health care and the world's societies — and it is us.

The number of Americans 65 and older with Alzheimer's dementia is projected to more than double by 2050, for example, with associated costs rising to $1.1 trillion. And in the next decade a half-million teens with autism will enter adulthood — and stand to lose many support services — as care costs exceed $400 billion.

Meanwhile, the emotional costs are unquantifiable.

At UC Davis Health we understand the gravity of the challenge, and believe that we can and must play a major role in helping to stem these tides.

We are already home to two internationally known neuroscience centers — the MIND Institute for neurodevelopmental disorders, and our Alzheimer's Disease Center — that have played historic roles in advancing knowledge, prevention, diagnosis and treatment. Now we need to scale up the reach of their work to assist even more families.

To help do so, UC Davis has launched formal, long-term research projects around both dementia and neurodevelopmental disorders. They're among a series of initiatives we call "Big Ideas" — forward-thinking, interdisciplinary programs designed to positively impact the world for generations.

The Autism, Community and Technology initiative and the Healthy Brain Aging initiative both revolve around two core themes: changing paradigms to intervene across the entire lifespan, and harnessing leading-edge technology to help do so. In the case of autism, that means using digital and telehealth to assist families in their own communities, including more adults. In regard to dementia, it means heading damage off at the pass in childhood and middle age through neuroimaging-driven insights.

I can speak personally to the wisdom of the lifespan approach. My story, like many, includes some denial about the onset of dementia symptoms among loved ones. We tend to reflexively disregard small signs, then slightly larger ones. We don't want to acknowledge that irreparable damage has come.

But there are things that can be done, especially if we start early — and often before we see any signs at all. We tend to think of Alzheimer's as an end-of-life disease that "just appears," but the reality is we can work on prevention starting very young.

Health systems can aid this effort by making brain health a stronger part of preventive care. Our future is whole-person care that includes foundation-building during youth, followed by susceptibility detection, active prevention, early diagnosis and supportive treatment across adulthood.

We have a long road ahead and many questions to answer. How do we get information about brain health out to people? How do we popularize it, make it part of population health?

The battles with Alzheimer's and autism are difficult. But not long ago, we couldn't go to the moon, stop cancer, or control AIDS. There's no reason we can't make the same progress here.

David Lubarsky, M.D., M.B.A.
Vice Chancellor of Human Health Sciences
Chief Executive Officer, UC Davis Health

#9 in America for primary care training

Schools of medicine and nursing listed among nation's best

The UC Davis School of Medicine continued its rise this year as one of the nation's top medical schools, improving from 10th to 9th for primary care in *U.S. News & World Report's* 2020 graduate school rankings. Primary care has been the most popular career path at the school since its founding 50 years ago, and more than half of the Class of 2019 chose primary care residencies at Match Day this year. UC Davis also ranked or tied for 13th in both family medicine and obstetrics and gynecology.

The School of Medicine also ranked 30th for research — up from 39th last year, and UC Davis' most significant gain in the new rankings.

The master's degree nursing programs at the Betty Irene Moore School of Nursing at UC Davis tied for 46th with two other programs. *U.S. News* has ranked the fast-growing nursing school among the nation's best since its first year eligible for inclusion in the survey.

TOP 20

10 departments among for NIH research funding

The UC Davis School of Medicine continued its medical research leadership in 2018, with 10 departments ranking in the top 20 — including three in the top 10 — for research funding from the National Institutes of Health (NIH). The annual rankings by the nonprofit Blue Ridge Institute for Medical Research are a recognized measure of research excellence.

The school also maintained its ranking among the nation's top 30 NIH-funded institutions with $178 million in 2018, as compared to $120 million in 2014 and $41 million in 2001.

UC Davis Health and its MIND Institute also ranked first in the U.S. for NIH autism research funding in 2017, with more than $18 million in grants. UC Davis Health's Alzheimer's Disease Center received one of the nation's largest NIH grants for Alzheimer's research that year, a $14.7 million award to study Alzheimer's and cerebrovascular injury in Hispanics.

UC Davis School of Medicine departments in Top 20 for NIH funding in 2018:

Emergency Medicine, **7th**
Public Health, **7th**
Dermatology, **10th**
Surgery, **11th**
Anatomy/Cell Biology, **12th**
Microbiology/Immunology, **15th**
Psychiatry, **15th**
Biochemistry, **16th**
Neurology, **16th**
Pharmacology, **18th**

New deans for Schools of Medicine and Nursing

Chancellor Gary S. May has appointed new leaders for UC Davis Health's nationally ranked medical and nursing schools. Allison Brashear, M.D., M.B.A., chair of neurology at Wake Forest School of Medicine, is the new dean of the UC Davis School of Medicine. Stephen J. Cavanagh, R.N., Ph.D., M.P.A., FRSPH, FInstLM, F.A.A.N., dean of the College of Nursing at the University of Massachusetts Amherst, is the new dean of the Betty Irene Moore School of Nursing at UC Davis.

Cavanagh and Brashear start on July 22, and will work jointly to develop models around integrated care delivery and advanced practice for both disciplines.

ALLISON BRASHEAR – *School of Medicine*

Brashear is an internationally known researcher on movement disorders, including dystonia and spasticity, and has headed multicenter trials leading to Food and Drug Administration approval of three medications. She holds an endowed chair at Wake Forest and an M.B.A. in health-sector management from Duke University, and also remains an active clinician.

"Allison has proven to be an excellent executive physician with expertise in health policy, hospital-clinical integration, and academic and research excellence," said David Lubarsky, UC Davis Health's vice chancellor and CEO. "She's also a lifelong champion of inclusion and patient-centered care."

Brashear earned her M.D. and performed her neurology residency at the Indiana University School of Medicine. She has completed the Harvard School of Public Health Leadership program for physicians, the Executive Leadership in Academic Medicine program for female leaders, and been named an Association of American Medical Colleges Council of Deans fellow.

She currently serves on the American Board of Psychiatry and Neurology, and the National Institute of Neurological Disorders and Stroke study section on career development. She has served on the boards of the American Academy of Neurology and the American Neurological Association.

Lars Berglund, vice dean of research, has been serving as interim dean since 2017.

STEPHEN J. CAVANAGH – *School of Nursing*

Cavanagh has published more than 40 journal articles and generated millions in external funding to develop nursing practice arrangements, support diversity, and increase the nursing workforce. He brings extensive experience in collaborating to create innovative new forms of interprofessional education, and has researched the nature of innovation within nursing's unique regulatory framework.

"Stephen has proven experience and a demonstrated passion for developing a workforce that is both prepared and positioned to serve people where and when they need it," said David Lubarsky, UC Davis Health's vice chancellor and CEO. "His perspectives will complement my vision for where we need to grow capacity at UC Davis Health, and how team-based education and practice can build the workforce of the future."

Cavanagh has been a Robert Wood Johnson Foundation Executive Nurse Fellow, a Johnson & Johnson/UCLA Health Management Fellow, and a Penn-Macy Fellow, and was elected to the nominating committee for the American Association of Colleges of Nursing.

He earned a Ph.D. from the University of Texas at Austin and an M.P.A. and M.S. in Health Care Management from the University of La Verne, and completed an Executive Certificate in Strategy and Innovation from MIT.

Debbie Ward, clinical professor, has been serving as the interim dean since 2018.

KALES NAMED CHAIR OF PSYCHIATRY AND BEHAVIORAL SCIENCES

Helen Kales, M.D., an internationally recognized geriatric psychiatrist, has been named chair and the Joe Tupin Endowed Chair of the Department of Psychiatry and Behavioral Sciences in the UC Davis School of Medicine. Kales joins UC Davis from the University of Michigan, where she was founding director of the Program for Positive Aging, director of the Section of Geriatric Psychiatry, and associate director for Mental Health and Aging Research at The Geriatrics Center. Her research focuses on late-life depression care, mood disorders and the neuropsychiatric symptoms of dementia.

OLSON NAMED ASSOCIATE DEAN FOR CURRICULUM AND MEDICAL EDUCATION

Kristin Olson, M.D., associate professor of pathology and laboratory medicine and a thought leader in medical education, has been named the new associate dean for curriculum and medical education at UC Davis School of Medicine. Olson oversees the design, implementation and evaluation of the medical school's curriculum, serves as a liaison to enhance institutional support for educational programs and grants, and participates in national organizations that advance innovation and scholarship in medical education.

Meyers named president of Association for Clinical and Translational Science

Frederick Meyers, M.D., M.A.C.P., director of the UC Davis Center for Precision Medicine & Data Sciences and professor of internal medicine in the Division of Hematology-Oncology, has been named president of the Association for Clinical and Translational Science (ACTS). The association fosters research, education, advocacy and mentoring in translational science — a broad area of scientific inquiry that ranges from basic discoveries with implications for human health to community-based epidemiologic and health-services studies.

UC Davis hosts one of the inaugural Clinical and Translational Science Centers (CTSC) supported by the National Center for Advancing Translational Sciences (NCATS). Meyers currently serves as the UC Davis CTSC's director of research education and training programs, and is a member of its oversight and governance committee.

Mental health award and national assignments for disparities expert

Sergio Aguilar-Gaxiola, M.D., Ph.D., professor of internal medicine and founding director of the UC Davis Center for Reducing Health Disparities, has been named a "California Champion of Mental Health" by Mental Health California, and recognized with the nonprofit organization's Research & Health Disparities Award. An expert on behavioral health in ethnically diverse populations, Aguilar-Gaxiola has focused on developing innovative solutions to improve access to culturally and linguistically proficient mental health services in underserved communities. More recently, Aguilar-Gaxiola has been appointed to the National Advisory Council of Substance Abuse and Mental Health Services Administration (SAMHSA) — an agency within the U.S. Department of Health and Human Services — and tapped to join the steering committee of the National Academy of Medicine (NAM).

YELLOWLEES IS FIRST CHIEF WELLNESS OFFICER

To help enhance the connection between patient care and the health and wellness of care providers, **Peter Yellowlees, M.B.B.S., M.D.,** has been appointed UC Davis Health's first Chief Wellness Officer.

The longtime UC Davis psychiatry professor is charged with helping to foster wellness and reduce burnout, and will oversee efforts that range from guiding physical well-being and emotional health to streamlining the number of mundane chores that can overwhelm physicians, nurses and other providers. Yellowlees has considerable academic and leadership experience in health care wellness and has published seven books, including last year's *Physician Suicide: Cases and Commentaries*. A follow-up, *Physician Wellbeing: Cases and Commentaries,* will be published this year.

Five faculty named Global Highly Cited Researchers

Five UC Davis Health researchers — including three from the MIND Institute — were named in the 2018 Highly Cited Researchers List. The annual compilation includes scientists whose citation records position them in the

top one percent in their fields.

IRVA HERTZ-PICCIOTTO, M.P.H., PH.D., environmental epidemiologist and director of the UC Davis Environmental Health Sciences Center. Hertz-Picciotto's research includes environmental causes for autism.

HEIKE WULFF, M.S., PH.D., pharmacologist and medicinal chemist. Wulff's research includes ion channel modulators for potential treatment of autoimmune, cardiovascular and neurological diseases.

CAMERON CARTER, M.D., professor and director of the UC Davis Center for Neuroscience and Behavioral Health Center of Excellence. Carter's research includes innovative therapies for cognitive disability in schizophrenia and other brain disorders.

SALLY ROGERS, PH.D., professor. Rogers' research includes early developmental processes and early autism interventions such as the Early Start Denver Model.

SALLY OZONOFF, PH.D., endowed professor and vice chair of research in the Department of Psychiatry and Behavioral Sciences. Ozonoff's research includes young children with autism, infant diagnosis, and recurrence risk.

Nickens scholarship for addressing health inequities

Third-year medical student **Tyler Carcamo** was one of five nationwide to receive the prestigious Herbert W. Nickens Medical Student Scholarship from the Association of American Medical Colleges (AAMC) this winter for his leadership efforts in addressing educational, societal and health care needs of racial and ethnic minorities. Carcamo has volunteered at the student-run Imani Clinic in Sacramento's underserved Oak Park neighborhood, served in a leadership role for the Student National Medical Association, and organized regional conferences for the MiMentor program. UC Davis has produced seven Nickens recipients since 2008.

SUTCLIFFE PRESIDENT-ELECT OF WORLD MOLECULAR IMAGING SOCIETY

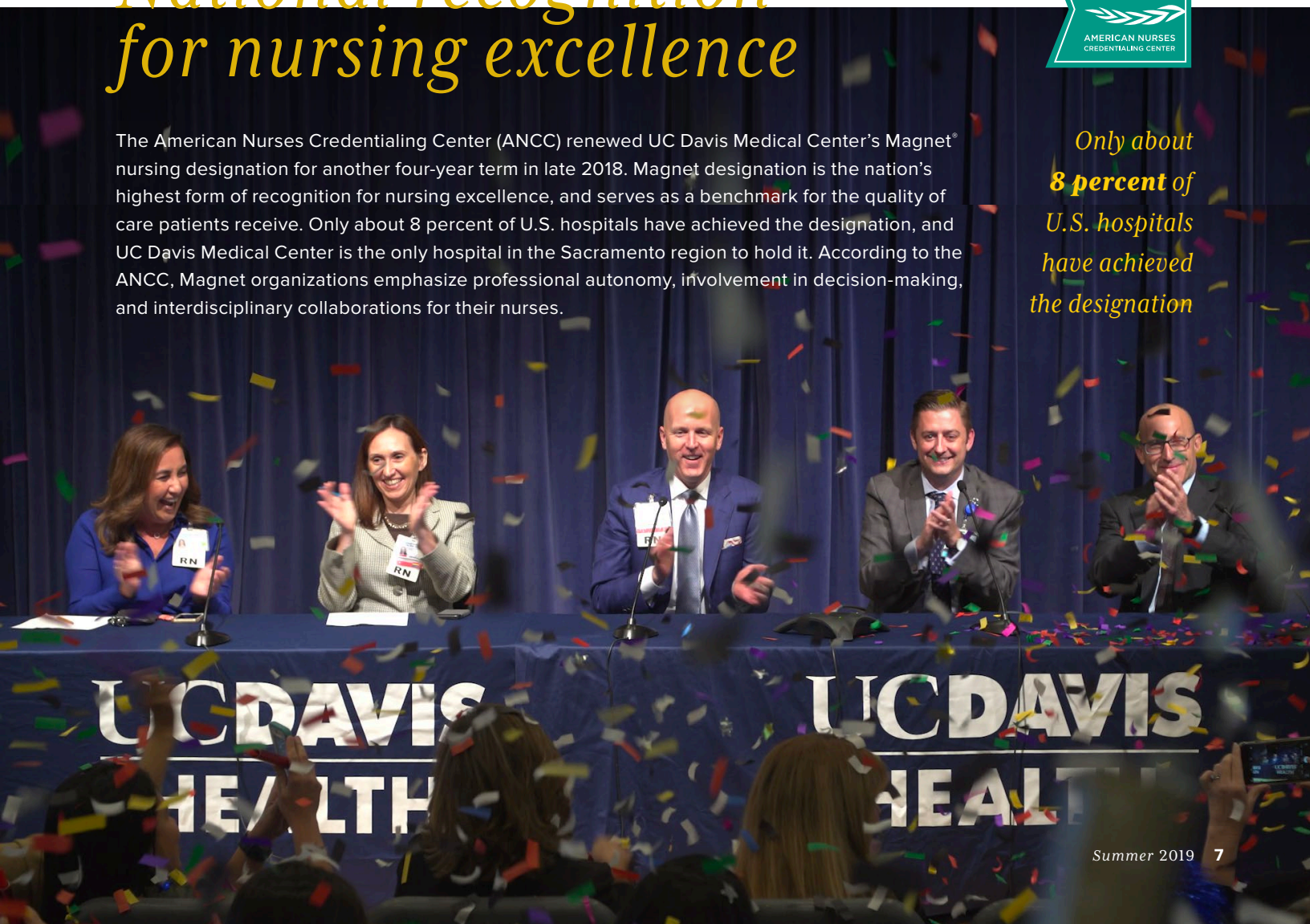
Julie Sutcliffe, Ph.D., professor of internal medicine and biomedical engineering, is president-elect of the World Molecular Imaging Society. Sutcliffe's work in the field has enabled development of target-specific molecular imaging agents, which have been approved by the FDA for investigational use and are being used successfully in the clinical setting at UC Davis Medical Center.

National recognition for nursing excellence

MAGNET RECOGNIZED
AMERICAN NURSES CREDENTIALING CENTER

The American Nurses Credentialing Center (ANCC) renewed UC Davis Medical Center's Magnet® nursing designation for another four-year term in late 2018. Magnet designation is the nation's highest form of recognition for nursing excellence, and serves as a benchmark for the quality of care patients receive. Only about 8 percent of U.S. hospitals have achieved the designation, and UC Davis Medical Center is the only hospital in the Sacramento region to hold it. According to the ANCC, Magnet organizations emphasize professional autonomy, involvement in decision-making, and interdisciplinary collaborations for their nurses.

*Only about **8 percent** of U.S. hospitals have achieved the designation*

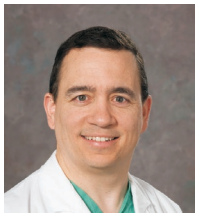


Statewide tobacco initiative for safety-net health systems

UC Davis Health tobacco researcher and physician **Elisa Tong, M.D.**, is leading a statewide effort to help safety-net health care systems guide patients who use tobacco — including Medi-Cal recipients and others at high risk — to cessation resources. Launched last fall, the five-year statewide CA Quits project is a $6 million award from the California Tobacco Control Program. CA Quits builds on UC Quits, another project led by Tong that enabled all five UC Health systems to build and share modifications for tobacco assessment and treatment into the electronic medical record and workflows. Seventeen percent of adult Medi-Cal members and 11 percent of Californians are smokers.

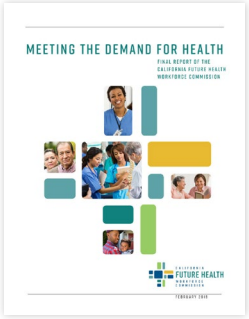
Elisa Tong, M.D.

Galante selected to academy of master surgeon educators



UC Davis Health trauma chief **Joseph Galante, M.D., FACS**, has been appointed an associate member of the new Academy of Master Surgeon Educators of the American College of Surgeons (ACS). At UC Davis Galante leads one of the nation's most highly regarded medical education programs in trauma surgery, which focuses on using military medical technology in civilian practice, trauma resuscitation, and disaster response. As the Sacramento region's inaugural academy member, Galante will work closely with the ACS Division of Education.

NURSE SCIENTIST PART OF PLAN TO ADDRESS HEALTH WORKER SHORTAGES



Heather M. Young, Ph.D., R.N., F.A.A.N., dean emerita of the Betty Irene Moore School of Nursing at UC Davis, served on a commission that unveiled new recommendations for addressing California's projected shortages of providers for primary care, psychiatry, and care for underserved communities. After nearly two years of study, in February the California Future Health Workforce Commission released *Meeting the Demand for Health*, a report on the future of California's health workforce. The commission was co-chaired by UC President Janet Napolitano and included 24 prominent California health, policy, workforce development and education leaders.

Calendar

August 2

MIND Summer Institute on Neurodevelopmental Disorders. For physicians, nurses, speech-language pathologists, educators, mental health professionals and behavior analysts. UC Davis Conference Center, Davis. Info at **530-747-3827** or **rawinters@ucdavis.edu**

August 24

Proficiency With POCUS Helps You Focus. The latest developments in point-of-care ultrasound for anesthesiologists and pain medicine physicians involved with the perioperative care of surgical patients. Embassy Suites Hotel, Sacramento. Info at **916-734-5359** or **bojuan@ucdavis.edu**

September 21–22

Essentials of Primary Care Pain Management Conference 2019. For primary care clinicians interested in recent scientific data and current clinic practice regarding pain management. Education Building, UC Davis Sacramento campus. Info at 916-734-5352 or **cmereg@ucdavis.edu**

SHAIKH ELECTED TO AMERICAN ACADEMY OF PEDIATRICS QUALITY BOARD

Ulfat Shaikh, M.D., M.P.H., M.S., professor of pediatrics and director of health care quality at UC Davis School of Medicine, has been elected to serve a three-year term on the American Academy of Pediatrics' Executive Committee of the Council on Quality Improvement and Patient Safety. The panel contributes to AAP's quality improvement agenda by establishing workgroups focused on education, evidence, measurement, patient safety, and implementation that currently encompass more than 200 members.

JAMES BEARD AWARD FOR SUSTAINABILITY

UC Davis Medical Center has become the first hospital in the nation, and the first Sacramento venue, to earn designation as a James Beard Foundation "Smart Catch Leader." The sustainable seafood education platform encourages chefs and restaurants to serve seafood fished or farmed in environmentally responsible ways. The health system also participates in the Cool Food Pledge program (part of the Health Care Without Harm effort), and over the past year has also doubled its local and sustainable purchasing percentages for seafood, as well as produce, meats and dry goods.

MORE THAN 150 PHYSICIANS NAMED LOCAL 'TOP DOCS'

Illustration by Hans Bennewitz

157 UC Davis Health physicians across more than 60 adult and pediatric specialties were listed among the region's best doctors in the December issue of *Sacramento Magazine*. The physicians practice in more than 60 specialty areas, including 21 pediatric subspecialties. The annual list is compiled by Professional Research Services based on peer-review surveys, which ask physicians from various health systems to nominate colleagues they deem best in their given specialties.

Fellows program honors founding nursing school dean

Heather M. Young

Terri Harvath

A $1.7 million grant from the Gordon and Betty Moore Foundation, founders of the Betty Irene Moore School of Nursing at UC Davis, has established the **Heather M. Young** Fellowship Program. The fellowship establishes multiyear grants designed to advance the field of gerontological nursing and care for older adults by emerging scholars from various disciplines. The fellowship reflects the spirit and scholarship of Young, the school's founding dean and a nationally recognized expert in gerontological nursing and healthy aging. Young and Executive Associate Dean **Terri Harvath, Ph.D., R.N., F.A.A.N.**, were recently announced as new fellows of the Gerontological Society of America (GSA), the nation's largest inter-disciplinary organization devoted to the field of aging.

UC DAVIS MEDICAL CENTER NAMED A TOP HOSPITAL FOR LATINOS

Latino Leaders Magazine recognized UC Davis Medical Center as one of the nation's 20 top hospitals for Latinos for 2018, pointing to a pair of innovative School of Medicine initiatives. The publication highlighted the collaboration between UC Davis Health and The Permanente Medical Group to launch the Prep Médico program, designed to enhance the diversity in the physician workforce in Northern California. It also called attention to the Transforming Education and Community Health (TEACH) program, a primary care track for residents interested in caring for the medically underserved.

October 21

Neurology Update 2019 for the Primary Care Provider. For primary care physicians, pharmacists, physician assistants, nurses, and nurse practitioners. UC Davis Conference Center, Davis. Info at **events@ucdavis.edu**

November 2–3

39th Annual Update in Gastroenterology and Hepatology for the Primary Care Provider. A look at dysphagia, Barrett's esophagus, proton pump inhibitors, colon cancer screening, liver diseases and IBS for primary care clinicians. Monterey Plaza Hotel and Spa, Monterey. Info at **events@ucdavis.edu**

Events are in Sacramento unless otherwise noted. For more information about upcoming educational courses, please visit **health.ucdavis.edu/cme**. Or contact the Office of Continuing Medical Education at **916-734-5352** or **cmereg@ucdavis.edu**.

Note: Before making travel arrangements, please call the Office of Continuing Medical Education at **916-734-5352** to confirm there are no changes to dates or locations printed in this calendar.

Notable quotes

"All these new people are coming. It used to be a dozen people in the country — now there are a dozen people in my building."

Emergency medicine professor and violence researcher **Garen Wintemute, M.D., M.P.H.**, in a *New York Times* article on an increase in gun violence research nationwide, due to concern about mass shootings.

"... in all cases we can scan better, faster or with less radiation dose, or some combination of these."

Biomedical engineering professor **Simon Cherry, Ph.D.**, in a *New Atlas* article on EXPLORER, the world's first scanner that can capture a 3-D picture of the whole body at once.

"At the heart of it, I'm just an ER doctor."

Aimee Moulin, M.D., associate professor of emergency medicine, speaking to *Vox* about a novel opioid addiction treatment program she helped to establish in UC Davis Medical Center's emergency department.

"The two systems talk to each other in ways that we didn't realize they did."

Judy Van de Water, Ph.D., neuroimmunologist and director of the UC Davis Center for Children's Environmental Health, in a *Spectrum* article on how preterm exposures during pregnancy could shape a child's odds of developing autism.

"In terms of taking care of a massive burn, it's not only the initial care; it's the weeks and months of skin grafts and dealing with sepsis."

Chief of Burn Surgery **David Greenhalgh, M.D.**, in a *New York Times* article focused on the recovery of burn patients in the aftermath of the historically destructive Camp Fire.

"A major part of my job is getting people to understand that promoting self-care and looking out for yourself is a good thing, and helps your patients."

Psychiatry professor **Peter Yellowlees, M.D., M.B.B.S.**, in a *Modern Healthcare* article on chief wellness officers and their role in preventing clinician burnout at health systems. Yellowlees was the inaugural appointee to the position at UC Davis Health this winter.

A summary of recent findings in clinical, translational and basic-science research at UC Davis

Body of Knowledge

Fear of psychiatric hospitalization is one of the primary reasons that older men — an age and gender group at high risk for ending their own lives — don't talk about suicide with their physicians, UC Davis Health researchers reported in the journal *Patient Education and Counseling*. The finding emerged as part of a pre-launch stakeholder assessment of MAPS, a UC Davis-created intervention.

A major replication study has confirmed effectiveness of the Early Start Denver Model, a novel autism early intervention co-developed by UC Davis Health researchers and used worldwide. Published in the *Journal of the American Academy of Child and Adolescent Psychiatry*, the multi-site randomized trial found that children receiving the therapy at home for an average of 15 hours per week **made significantly greater language gains than kids in community interventions**.

A first-of-its-kind study led by UC Davis Health has uncovered dramatic differences in the brains of Hispanics with dementia compared with those of non-Hispanic whites and African-Americans. Published in the *Journal of Alzheimer's Disease*, the study found **Hispanics were much more likely to have cerebrovascular disease**. Hispanics and African-Americans were also more likely to have mixed pathologies.

High-risk younger siblings of children with autism are less likely to be diagnosed with autism spectrum disorder, have significantly lower symptom severity, and higher cognitive scores **if their mothers take maternal prenatal vitamins during the first month of pregnancy**, according to novel UC Davis Health research published in *JAMA Psychiatry*. If replicated, the results imply genetic susceptibility could potentially be overcome by prenatal multivitamins.

A national research team has derived and validated a new protocol for emergency departments that can determine **which infants with fevers are at low risk of significant bacterial infections**. The findings published in *JAMA Pediatrics* have important implications for selecting invasive care such as spinal taps, antibiotics or hospitalizations.

Later-born siblings of children with autism spectrum disorder (ASD) or attention-deficit/hyperactivity disorder (ADHD) are **at elevated risk to develop both disorders**, according to UC Davis Health research in *JAMA Pediatrics*. Authors suggested that families with a diagnosed child may wish to monitor younger siblings for symptoms of both conditions.

UC Davis research contributes to the first drug approved for postpartum depression

Project scientist Dorota Zolkowska and Professor Michael Rogawski.

Key contributor Michael Rogawski also leads the University of California's drug discovery incubator

In a hopeful harbinger of things to come, the new leader of the University of California's drug discovery incubator also served as a key contributor to the development of the first drug treatment specifically approved for postpartum depression.

In March Sage Therapeutics announced U.S. Food and Drug Administration approval of its product, Zulresso™ (brexanolone) injection, for the treatment of postpartum depression in women. Initial development of an intravenous formulation of allopregnanolone (also known as brexanolone) and first-in-human clinical studies were conducted by Michael Rogawski, M.D., Ph.D., a professor in UC Davis' neurology and pharmacology departments and former neurology chair.

In October, Rogawski became principal investigator for the University of California Drug Discovery Consortium, a group of researchers across five UC campuses working to translate basic-science discoveries into new therapies that could benefit people worldwide.

For the new postpartum drug treatment, Rogawski and colleagues used laboratory and clinical research to investigate the neuroactive steroid allopregnanolone as a potential therapeutic agent for neurological diseases. UC granted rights to Sage Therapeutics, including licenses to certain patent rights, for commercial use.

The naturally occurring neuroactive steroid is derived from the female sex hormone progesterone. Levels rise dramatically as pregnancy progresses, but begin to decrease in late pregnancy and then fall precipitously during the day or two after giving birth.

"I reasoned that allopregnanolone levels might also fall, and I hypothesized that the withdrawal of this endogenous antidepressant substance could trigger depression for some women," Rogawski said.

> *Large companies are doing less in the way of early-stage research, which means they're more interested in products that have undergone some degree of early-stage development.*
>
> MICHAEL ROGAWSKI

Rogawski also continues to contribute his expertise through the UC Drug Discovery Consortium, launched by five UC campuses in 2017 as a response to the evolving drug discovery and development landscape — and the view that UC is well-positioned to help create treatments for important unmet medical needs.

"The pharmaceutical industry has been changing dramatically in recent years," Rogawski said. "... Large companies are doing less in the way of early-stage research, which means they are more interested in products that have undergone some degree of early-stage development."

In April the consortium announced its first partnership, an agreement with Astellas Pharma that provides seed funding for early-stage drug discovery research.

The world's first **total-body PET scanner** *will be operational this year at UC Davis*

EXPLORER, the world's first medical imaging scanner that can capture a 3-D picture of the whole human body at once, now resides in leased space on Sacramento's Folsom Boulevard and is slated to become operational for research and patient care this fall.

The brainchild of UC Davis scientists Simon Cherry, Ph.D., and Ramsey Badawi, Ph.D., EXPLORER is a combined positron emission tomography (PET) and X-ray computed tomography (CT) scanner. Because it captures radiation far more efficiently than other scanners, EXPLORER can produce an image in as little as one second and, over time, produce movies that track specially tagged drugs as they move around the body.

The developers expect the technology will have countless applications — from improving diagnostics and tracking disease progression to researching new drug therapies — and ultimately a profound impact on clinical research and care.

"I don't think it will be long before we see a number of EXPLORER systems around the world," said Cherry, a distinguished professor in the UC Davis Department of Biomedical Engineering. "But that depends on demonstrating the benefits of the system, both clinically and for research.

"Now, our focus turns to planning the studies that will demonstrate how EXPLORER will benefit our patients and contribute to our knowledge of the whole human body in health and disease."

EXPLORER project leaders Simon Cherry and Ramsey Badawi.

Badawi and Cherry first conceptualized a total-body scanner 13 years ago, and received boosts from a $1.5 million National Cancer Institute grant in 2011 and a $15.5 million National Institutes of Health grant in 2015. EXPLORER was developed in partnership with Shanghai-based United Imaging Healthcare (UIH), which built the system based on its latest technology platform and will eventually manufacture the devices for market.

EXPLORER is bigger, stronger, faster... and potentially safer

The first human scans circulated widely online this winter, stunning radiologists and other imaging experts worldwide. The FDA approved the technology in December.

THE BENEFITS OF EXPLORER

- Higher-quality diagnostic PET scans than ever possible
- Scans up to 40 times faster than current PET, and/or with radiation dose up to 40 times less than PET (useful for repeat scans and pediatric studies)
- Whole-body scan in as little as 20 to 30 seconds
- For first time, can evaluate activity in all organs and tissues simultaneously

Drug and alcohol counselor Tommie Trevino in the UC Davis emergency department

On the front lines of the opioid epidemic, a new approach gains the spotlight

A MODEL ER-BASED TREATMENT PROGRAM AT UC DAVIS IS EXPANDING TO OTHER HOSPITALS

An emergency room-based addiction treatment program at UC Davis Medical Center is gaining interest as a contributory solution to America's opioid epidemic, both from the national news media and other California health systems.

As part of a series about promising policy responses to the opioid crisis, the national news website Vox published an extensive article this January exploring ER addiction treatment programs at UC Davis Medical Center, Marshall Medical Center and other select hospitals. The 4,700-word piece was part of an ongoing series that the news site says aims to "put a bigger spotlight on the policies that work," and appeared in a section of the publication made possible by The Rockefeller Foundation.

This spring, physicians and substance abuse counselors from more than 20 California hospitals also attended an intensive training at UC Davis Health about how to establish programs that rapidly increase access to 24/7 treatment for substance use disorders.

UC Davis Health's own program identifies opioid-addicted patients in the ED and starts them on buprenorphine, an oral schedule III opioid medication that significantly reduces withdrawal symptoms. Once stabilized, patients receive a "warm handoff" to a certified drug and alcohol counselor who knows local rehabilitation programs and can customize treatment plans.

Opioid use disorder affects more than **2 million** *Americans*

At the time of publication, 86 percent of patients treated in UC Davis Medical Center's ED for opiate use disorder were engaged in outpatient treatment after discharge.

"We've started looking at addiction as a disease that is treatable, rather than a death sentence or moral failing," said Aimee Moulin, an associate professor of emergency medicine. Moulin, immediate past president of California's American College of Emergency Physicians chapter, was the brainchild of the UC Davis Health program with Debra Kahn, an associate clinical professor of psychiatry and behavioral sciences.

Moulin co-led the March training workshop for fellow health systems, hosted by California Bridge and part of the Substance Abuse Navigator (SUN) program. It trains physicians on best practices for prescribing buprenorphine, teaches the medical model of addiction to reduce stigma around addiction, and helps foster working relationships with addiction treatment facilities.

Aimee Moulin

Debra Kahn

» **Learn more**

'Despite an opioid crisis, most ERs don't offer addiction treatment. California is changing that.'

Vox, January 19

A novel partnership to increase Medi-Cal primary and specialty care services

UC Davis Health and Sacramento County are working to create a national model for medically underserved populations

As part of their united goal to improve access to community-based patient care, Sacramento County and UC Davis Health leaders have created a partnership to expand primary care services for up to thousands of additional Medi-Cal patients at the Sacramento County Primary Care Center, and to add onsite specialty care at the facility.

UC Davis Health physicians, nurse practitioners, medical residents and graduate students already offered primary and mental health care at the county's center in Sacramento's underserved Oak Park neighborhood, and the new partnership announced in January adds more primary care and women's health providers. Specialists such as cardiologists, ophthalmologists and neurologists will also be added as needed with approval from the U.S. Health Resources and Services Administration (HRSA).

We're excited to work with the county to create new models for providing high-quality, affordable health services to everyone who needs them.

DAVID LUBARSKY, CEO OF UC DAVIS HEALTH

Once those specialty services are approved, the center — a Federally Qualified Health Center (FQHC) funded by HRSA to provide care for medically underserved populations — could become a national model.

"As an academic medical system, UC Davis Health has important responsibilities to meet the health care needs of the community and advance health care delivery in our region — and our partnership at Sacramento County Primary Care Center has an important role in helping us fulfill those commitments," said David Lubarsky, CEO of UC Davis Health. "We're excited to work with the county to create new models for providing high-quality, affordable health services to everyone who needs them."

With its location across the street from UC Davis Health's Sacramento campus, the center will provide a conveniently-located medical home for enrollees in Health Net Community Solutions. Established in October, the UC Davis-Health Net program ensures coverage and access to primary and specialty care for as many as 5,000 Medi-Cal patients. The center also provides a referral location for UC Davis Medical Center emergency room patients who need consistent follow-up care.

The center has always been open to anyone who needs care — regardless of insurance status or ability to pay — but has been underutilized since Covered California increased insurance access, said Peter Beilenson, director of the county's Department of Health Services. At the same time, UC Davis Health has continued to seek new sites to fulfill its missions of serving the Medi-Cal population and training new health care providers.

"The expanded partnership is a win-win-win for Sacramento County, for UC Davis Health and, most importantly, for patients who need access to ongoing, well-coordinated and high-quality health care," Beilenson said.

» **Learn more**
Lubarsky and Beilenson discussed the new partnership on Capital Public Radio's "Insight" program on Feb. 4.
Listen at www.capradio.org/news/insight

Heart repair without surgery for tiny preemies

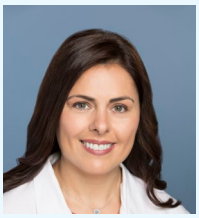
Frank Ing
Chief of pediatric cardiology

Sacramento families now have an alternative to surgery for patent ductus arteriosus (PDA), a condition that affects 20 to 60 percent of all preemies. **Frank F. Ing, M.D., FACC, FSCAI**, our chief of pediatric cardiology, has introduced capabilities to perform PDA closure in the cardiac catheterization lab for preemies as small as 600 grams. The approach reduces risks and only requires general anesthetic.

First in California for two new robotic surgery systems

UC Davis Health has greatly expanded options for minimally invasive procedures with the arrival of new single-incision and spinal robotic surgery systems.

In April the health system became the first in California, and the second on the West Coast, to welcome the new da Vinci SP system. The unique technology allows surgeons to complete procedures such as prostate or tonsil removal through one small incision.



Bahareh Nejad
Medical director of robotic surgery

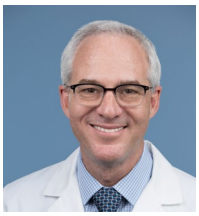
UC Davis will also be the West Coast's first academic health system to use another robotic system known as ExcelsiusGPS, designed exclusively to treat spinal conditions such as degenerative disc disease. The compact system links a mechanical arm with medical imaging and precise navigation capabilities.

More than 20 UC Davis Health surgeons and teams can now use robotic systems to treat a variety of conditions, from hepatobiliary and gastrointestinal problems to head-and-neck disorders.

New Children's Surgery Center open

Young surgery patients throughout the region can now benefit from our new and improved UC Davis Children's Surgery Center. Opened last fall, the 20,000-square-foot facility includes seven larger and more effectively designed operating rooms, an advanced fleet of surgical equipment, and 24 pre- and post-op bays. The blend of technology and child-friendly design complements our expertise as the West Coast's first — and to date California's only — American College of Surgeons-designated level I Children's Surgery Center. UC Davis Children's Hospital also operates the Central Valley's only pediatric emergency department and its only ACS-verified level I pediatric trauma center.

NEW TCAR CAROTID TREATMENT REDUCES STROKE RISK



Matthew Mell
Chief of vascular surgery

Transcarotid artery revascularization (TCAR) is the newest approach to treating complex carotid artery disease offered at UC Davis Vascular Center, one of the region's first providers to make it available to patients. According to center director and Chief of Vascular Surgery **Matthew Mell, M.D., M.S.**, the new technology offers three major benefits over traditional carotid procedures: stents travel less distance; loosened material travels away from the brain to larger, lower extremity vessels; and the treatment takes up to half the time of traditional procedures.

New regional **partnerships**

Cancer help for Camp Fire victims

UC Davis Health and Adventist Health have opened joint cancer care center in Butte County, providing access for patients who lost their care location when October's historic Camp Fire forced the closure of the Adventist Health Feather River Cancer Center. Patients can now draw on medical oncology and eventually chemotherapy services at a new Adventist Health Cancer Care Center in North Chico, including access to clinical trials and tumor board insights from the National Cancer Institute-designated UC Davis Comprehensive Cancer Center. Some 120 patients have been traveling 46 miles each way since the fire for chemotherapy at Adventist Health Rideout Cancer Center in Marysville, an existing member of the UC Davis Health Cancer Care Network.

Partnership brings level II NICU to Lodi

An affiliation with Adventist Health announced last year is expanding pediatric and neonatal care services at Adventist Health Lodi Memorial, and creating a level II Neonatal Intensive Care Unit (NICU) facility at that hospital to treat preemies that need extra support from UC Davis Health specialists. The professional services agreement brings UC Davis physicians and nurses to Lodi and establishes a 24/7 instant connection to UC Davis Medical Center's pediatric emergency department. The arrangement is designed to increase the level of care available locally while decreasing the need for transfers to UC Davis, home to a level IV NICU for the highest-acuity cases.

Plumas District Hospital named Rural Center of Excellence

UC Davis Health has named Plumas District Hospital as its newest Rural Center of Excellence. The special designation recognizes the Quincy-based health provider as a training site for UC Davis medical students and for its emphasis on quality clinical care, especially in areas such as maternity services, medical training and performance improvement. UC Davis established its Rural Centers of Excellence program to help advance care delivery for patients in rural areas, and to create pathways that encourage more physicians to practice there. Designation requires a hospital to be accredited by the Joint Commission (or the equivalent) and meet rigorous criteria for clinical care, education, training and research.

Using telementoring to eradicate hepatitis C

Through a telementoring program called ECHO-plus, UC Davis Health liver disease specialists are training primary care providers in rural and suburban Northern California to provide the latest treatments for hepatitis C patients in their communities. The program links UC Davis gastroenterology and hepatology specialists with local physicians via video-conferencing, in order to share information on direct-acting anti-viral medications, online clinical support tools, and opportunities for ongoing telephone consults. ECHO-plus is a collaboration of UCSF and UC Davis based on the Project ECHO model of medical education, intended to increase specialty care access for complex conditions and deliver it where patients live.

New pediatric tele-physiatry program for rural children

Northern California children with cerebral palsy, spina bifida, spinal cord injuries and other physical disabilities now have access to UC Davis physical medicine and rehabilitation physicians, thanks to a new telehealth program. Funded by a $2 million, five-year grant from the Agency for Healthcare Research and Quality, the new School-Based Tele-Physiatry Assistance for Rehabilitative and Therapeutic Services (STARS) program serves children who receive support through California Children's Services' Medical Therapy Program. The new telehealth program provides physical therapy, occupational therapy, and durable medical equipment to children with neurological or musculoskeletal disorders at designated school-based Medical Therapy Units.

California's first surgeon general

Nadine Burke Harris (M.D., '01) has made it her life's work to underscore the lasting health damage that can follow episodes of toxic childhood stress. As California's inaugural surgeon general, she's calling on fellow providers and policymakers to help her drive transformative change.

When Gavin Newsom became California's 40th governor in January, he appointed an influential UC Davis alumna to do something drastic — persuade an entire state to realize the lifelong health consequences caused by childhood adversity.

He couldn't have found a more passionate or experienced advocate than Nadine Burke Harris, a 2001 graduate of the UC Davis School of Medicine. The San Francisco-based pediatrician has made a career of educating physicians, teachers, parents, children, social workers, politicians, YouTube audiences — everyone, really — about Adverse Childhood Experiences, or ACEs.

Almost everything we know about ACEs comes from a landmark 1998 study by the U.S. Centers for Disease Control and Prevention and Kaiser Permanente, passages of which Burke Harris frequently cites. The study connected the dots between challenging or unfortunate things that happen to kids — such as being raised by a parent who abuses alcohol — and serious health risks later in life, like heart disease.

Now, as the Golden State's first-ever surgeon general, Burke Harris is tasked with urging policymakers at every level of government, and leaders across California, to join her battle against ACEs and toxic childhood stress. Her goal: to heal children's brains and bodies before they become adults.

Here is an edited interview with Burke Harris several weeks after she was sworn in as surgeon general.

You've been appointed to this amazing and unique position. Was this a natural, next step in your career?

I don't know that anyone ever imagines being appointed the first-ever surgeon general for the state of California. That said, now that I'm in the role, it does feel like a natural next step. I've been in the role of clinician, researcher and advocate. It's been a real exciting journey, and this is like a dream come true.

What would you like to achieve in this new role?

When we think about iconic surgeons general, we think about physicians whose role is to help the public understand not just the things that evidence shows us are good for our health — eat right, exercise, don't smoke, all that great stuff — but also to focus on the areas of the public health crises that most people don't know about. I believe strongly that the issues of Adverse Childhood Experiences and toxic stress are the public health crises of our day, and we have an opportunity to achieve transformative change in terms of outcomes. I will be working very hard in that area to not only support implementation of universal screening for Adverse Childhood Experiences, but also advance the science around toxic stress.

How much of that is doable?

I'm ambitious, I think there's a lot we can do. We have a governor who ran on a child health and well-being platform, who recognizes the importance of this issue. I think there's actually quite a bit that can be done. Especially since, keep in mind, the state of California passed a law to require that all individuals on Medicaid — children and adults — be screened for Adverse Childhood Experiences, and that law is set to be implemented in January 2020. There's a tremendous amount of work to be done, but California is already leading the way on this issue and I think that's only going to continue.

How many people have been exposed to ACEs?

The most recent number in California is 61.7 percent have experienced at least one Adverse Childhood Experience; 16.7 percent have experienced four or more. That's actually the 2014 data. The 2017 data sadly shows that that number has bumped up a little bit, but that data is still under analysis.

Why should these numbers matter to Californians?

The implications are really profound. What we see is that there's a really close relationship between Adverse Childhood Experiences and the most serious and expensive health conditions that are facing Californians today. That's 16.7 percent of Californians who see twice the risk of heart disease, more than twice the risk of cancer, two and a half times the risk of stroke, triple the risk of chronic lung disease, four and a half times the risk of depression, 30 times the risk of suicide. We also see six times the risk of incarceration, double the risk of asthma in children. It's a big deal — this is the definition of a public health crisis.

What did you learn from UC Davis School of Medcine?

I have to say, I loved UC Davis. It's really where I learned how to be a community physician. I very much learned how to listen to my patients, which is what cued me into observing this pattern: My patients who were having the worst health outcomes were also the ones who had the greatest doses of adversity in their childhood. I was also the co-director of the Imani Clinic, which was a student-run

The lifelong effects of toxic childhood stress

Adverse Childhood Experiences (ACEs) is the term used to describe all types of abuse, neglect and other potentially traumatic experiences that occur to people under the age of 18.

Nearly 17 percent of Californians have experienced four or more ACEs. Compared to a baseline, they can encounter roughly:

- Twice the risk of heart disease
- More than twice the risk of cancer
- Two and a half times the risk of stroke
- Triple the risk of chronic lung disease
- Four and a half times the risk of depression
- 30 times the risk of suicide
- Six times the risk of incarceration
- Double the risk of asthma in children

THE 10 ACES

ABUSE: PHYSICAL ▪ EMOTIONAL ▪ SEXUAL

NEGLECT: PHYSICAL ▪ EMOTIONAL

HOUSEHOLD DYSFUNCTION: PARENTAL MENTAL ILLNESS ▪ INCARCERATED RELATIVE ▪ MOTHER TREATED VIOLENTLY HOUSEHOLD SUBSTANCE ABUSE ▪ NOT BEING RAISED BY BOTH BIOLOGICAL PARENTS

It's really important for every clinician, especially in primary care, to recognize that some of the conditions they are treating are oftentimes manifestations of stress-related disease — and there's a lot we can do in terms of advancing (treatment).

NADINE BURKE HARRIS (M.D., '01), CALIFORNIA SURGEON GENERAL

health center, so I spent my Saturdays caring for uninsured or underinsured patients.

I had this incredible experience of really connecting with vulnerable communities and doing my best, working and fighting to try to improve their health. It really got me to see and listen and experience firsthand the challenges and struggles a person experiences, and how that has a dramatic effect on an individual's health. That was a formative experience for me.

Who were some of the more influential people you recall from medical school?

There were a number. Dr. Doug Gross was one of my early professors, and what I learned from him is that he just took so much tremendous joy in the work he did; he loved science, he loved medicine, he loved teaching, and made it a lot of fun to learn.

Dr. Faith Fitzgerald was also influential. When I was getting ready to apply to public health school and contemplating applying to Harvard, I was nervous like any student and worried about whether I would get in. She just looked at me and said, "You know what? There's no way to know how you are going to finish in a race unless you know who else is running, so just get out there and run your best. Better to have tried and failed than not have tried at all." She was just awesome. She's the type of professor that just completely inspired her students, not only with the standard of excellence that she held as a clinician, but for the way she encouraged me personally and helped to allay some of my anxieties.

What can the UC Davis School of Medicine and Betty Irene Moore School of Nursing at UC Davis do to support your agenda?

The students at UC Davis actually pushed to include training on Adverse Childhood Experiences and toxic stress as part of their curriculum. I think every member of the scientific and medical community is currently caring for patients who have an overactive stress response that may be disrupting their health. There's not one of us who is not seeing patients who are experiencing toxic stress.

All of us in the medical community have an opportunity to be a part of advancing clinical practice, advancing research, advancing science and supporting trauma-informed systems and practices. Our students have experienced ACEs, our colleagues have experienced ACEs, so bringing some of these trauma-informed and trauma-sensitive practices into our workplace, into our teaching, into our ways of practicing, is critical.

It's really important for every clinician, especially in primary care, to recognize that some of the conditions they are treating are oftentimes manifestations of stress-related disease — and there's a lot we can do in terms of advancing the protocols for treating stress-related disease in primary care.

» **Nadine Burke Harris** received the UC Davis School of Medicine Alumni Association's 2018 Transformational Leadership Award during an Alumni Weekend ceremony last October.
See page 35

Nadine Burke Harris

Education

- B.A., Integrative Biology, UC Berkeley, 1996
- M.D., UC Davis School of Medicine, 2001
- M.P.H., Harvard University School of Public Health, 2002
- Pediatrics Residency, Stanford University, 2002-05

Résumé highlights

- Pediatrician and medical director, Bayview Child Health Center, San Francisco, April 2007
- Founder and CEO, Center for Youth Wellness, San Francisco, 2012
- Heinz Award for the Human Condition, The Heinz Foundation, October 2016
- Surgeon General, state of California, February 2019

TEDMED talk

- "How childhood trauma affects health across a lifetime." September 2014, 5+ million views

Book author

- *The Deepest Well: Healing the Long-Term Effects of Childhood Adversity*

  2018 National Health Information Awards, Silver Award

Physician toolkit

- Developed the Center for Youth Wellness Adverse Childhood Experiences Questionnaire (ACE-Q) and User Guide as a screening tool and protocol for pediatric care providers

Alumni honors

- Recipient of the UC Davis School of Medicine Alumni Association's 2018 Transformational Leadership Award (see alumni section)

Surgeon general

- Took oath of office Feb. 11, 2019

Extending care to all families affected by autism

A new initiative led by the UC Davis MIND Institute aims to make evidence-based interventions more widely available for the millions living with autism spectrum disorder — including the half-million U.S. adolescents poised to plunge off a 'services cliff,' and the adults who are already at the bottom.

One in 59 children nationwide is currently diagnosed with autism spectrum disorder or ASD, almost triple the number at the turn of the millennium. Yet many of today's more effective evidence-based treatments aren't yet widely available to families who need them.

Meanwhile, over the next decade about half a million teens on the spectrum will transition into adulthood — where a sudden drop in institutional support, widely known as the "services cliff," presents another glaring social problem.

That's because most school-based educational interventions cease at age 21 or 22, and many adults may not qualify for further assistance. But autism remains a lifelong condition, and statistics show that many adults with it will be unable to find meaningful employment, live independently or form lasting friendships. Many will entertain thoughts of suicide.

Overall, the economic cost of caring for Americans with autism — some $268 billion in 2015 — will rise to $461 billion by 2025 without more-effective interventions and lifespan support, according to the nonprofit Autism Speaks.

"Everyone knows someone affected by autism, and it's time for us as a society to take responsibility for the growing number of families in need of quality care," said Leonard Abbeduto, Ph.D., director of the UC Davis MIND Institute and Tsakopoulos-Vismara Endowed Chair in the UC Davis School of Medicine's Department of Psychiatry and Behavioral Sciences.

Taking a lifespan approach

With those challenges in mind, Abbeduto and other leaders at the MIND Institute — known as one of the world's leading neurodevelopmental research, clinical, educational centers — are launching a new effort to pioneer a first-of-its-kind lifespan approach to autism.

The goal is to assist individuals and families with ASD across age groups, geography and socioeconomic factors. The long-term project is one of several formal "Big Idea" initiatives at UC Davis—

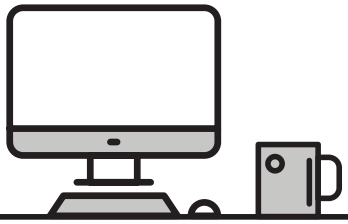
Autism challenges across the lifespan

CHILDHOOD
Studies in California show access to ASD services varies along geographic, racial, ethnic and economic divides.

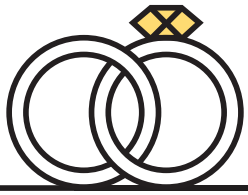
SCHOOL YEARS
In one nationally representative survey, 1 in 10 kids with severe autism weren't seeing medical specialists at all. Half weren't using behavioral interventions.

THE 'SERVICES CLIFF'
Support under the Individuals With Disabilities Education Act begins to wane around graduation.

ADULT EMPLOYMENT
An estimated 1 in 4 to 1 in 5 adults with autism is unemployed.



LOVE AND MARRIAGE
About half of adults with autism live with a family member. An estimated 5 percent of adults with autism have ever been married.



LIFELONG HEALTH
Autism-associated health problems such as depression, epilepsy, and schizophrenia extend across the lifespan.

20 years of **discovery**

Since its founding in 1998, the MIND Institute has achieved international recognition as a leader in research and innovative treatment approaches for neurodevelopmental disorders. MIND Institute faculty members have:

- **Helped to identify the biological bases** of neurodevelopmental disorders
- **Discovered biomarkers for autism**, including larger brains in some infants
- **Identified genetic and environmental factors** that increase risk, including the mother's health
- Elucidated the **critical role of the immune system** in autism
- Developed and helped implement educational and behavioral interventions — such as the **Early Start Denver Model** — and innovative technologies
- Advanced **treatments for fragile X syndrome**, the most common cause of inherited intellectual impairment
- Identified related but previously unrecognized disorders, including **primary ovarian insufficiency** and **fragile X-associated tremor/ataxia syndrome (FXTAS)**
- Led some of the **first and largest studies of their kinds**, such as CHARGE, MARBLES, and the Autism Phenome Project
- Shown that California's autism increase is **not solely due to better diagnosis** or diagnostic substitution
- Developed widely used assays to **characterize and track disorders**, and their responsiveness to new therapeutics

a series of forward-thinking, interdisciplinary programs prioritized because of their potential to transform the world for generations to come.

In the case of neurodevelopmental disorders, the Autism, Community and Technology Big Idea aims to create widespread change by uniting two distinct, yet overlapping areas of growth. The first thrust aims to develop and scale up evidence-based interventions — making them available to more people through innovation in affordable support technologies, widened community partnerships, and enhanced training for health providers, families, teachers, employers and families.

The second thrust will develop new ways of helping adults with ASD to gain meaningful inclusion in the community. Helping them to participate in the educational, employment, and social experiences of adulthood will require better understanding of their needs, MIND Institute experts say, and tailored support delivered in new and expansive ways.

Making evidence-based approaches accessible

The initiative is designed to build on existing research and clinical care at the MIND Institute — which recently celebrated its 20th anniversary (see sidebar, this page) — and to leverage UC Davis' unique strengths in neuroscience, engineering, education and social sciences. UC Davis Health runs one of the nation's largest telehealth services, for example.

The MIND Institute itself directly serves more than 6,000 patients per year for diagnosis, treatment and education around autism, fragile X syndrome, ADHD, and other neurodevelopmental disorders. It's also known internationally for research on causes and innovative treatments. In 2017, it ranked first in the

Zoe Eiselt, 19, and father Kurt at the MIND Institute. Zoe dreams of college, getting married, having a family and traveling.

nation for autism research funding from the National Institutes of Health, and last year three faculty members appeared in a global list of researchers in the top 1 percent by citations in their fields.

One of these faculty members was Sally Rogers, co-creator of the Early Start Denver Model or ESDM — a renowned early intervention with strong evidence about effectiveness in improving language, cognition and social skills of children with autism as young as 18 months. Unlike many traditional behavioral interventions, ESDM involves therapists but also heavy emphasis on everyday interactions with parents and others as well.

> We're working to create technologies that will take MIND Institute expertise and extend its reach to impact families everywhere.
>
> LEONARD ABBEDUTO, MIND INSTITUTE DIRECTOR

An ongoing clinical study is already evaluating the effectiveness of ESDM video training for parents of children with ASD, and the Big Idea aims to expand similar efforts to bring therapies to families — inexpensively and equitably — through apps, virtual reality, or even smart homes (see sidebar).

"For example, families in rural areas may not be able to see experts without traveling long distances. That creates a financial burden — or a practical one, for children with challenging behaviors — and can delay treatment," Abbeduto said. "We're working to create technologies that will take MIND Institute expertise and extend its reach to impact families everywhere."

Embracing a forgotten population

As a means of proactively reducing future suffering, many autism studies and interventions understandably target infants, children and adolescents. About 1 percent of autism research funding is currently focused on adulthood and aging, according to a 2017 report from the Interagency Autism Coordinating Committee. But at the same time, adults with ASD face a multitude of challenges around factors like social communication, behavior and ASD-related physical health conditions.

Abbeduto and colleagues such as MIND Institute researchers Marjorie Solomon and Robin Hansen already have efforts underway to help — for instance, a 20-week intervention focused on preparing for independence, and a large new NIH study on successful transitions from high school (itself made possible with charitable seed funding from a committed family). The Big Idea aims to support more such activity.

"There is a tremendous need nationally for research about how to best support adults with neurodevelopmental disorders and their families — to improve their quality of life and their independence," Abbeduto said. "We want to be leaders in this area, and agents of change."

» Help improve quality of life for individuals living with autism and their families

To advance the Autism, Community and Technology initiative, UC Davis seeks to partner with donors, corporations and foundations to:

- Create an innovation hub for new technology development, clinical care and research
- Support partnership grants that foster participation of self-advocates, family members and diverse community providers
- Establish an endowed chair and several endowed faculty positions to recruit thought leaders

Big IDEAS

bigideas.ucdavis.edu

To learn more, please contact Elizabeth McBride, senior director of development, at **ekmcbride@ucdavis.edu** *or* **916-703-0221**.

UC Davis MIND Institute researchers are already working on a variety of projects that

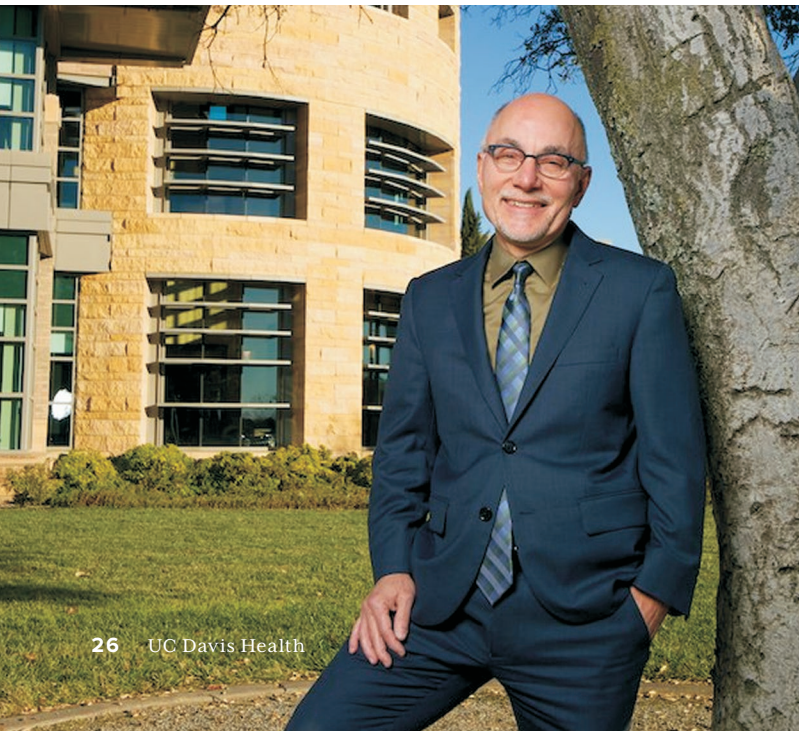
help adults with ASD to live better lives

Understanding successful transitions to independence

MIND Institute researchers received a five-year, $3.1 million NIH grant to research youth with fragile X syndrome as they progress from high school to adult life. The condition, also known as FXS, is the most common cause of inherited intellectual disability and the leading single-gene cause of autism.

MIND Institute Director Leonard Abbeduto is leading the study, which aims to better understand what makes transitions to independence more or less successful. By investigating the school and home experiences, skills, and challenges of adolescents with FXS, Abbeduto hopes to help parents and teachers learn to facilitate smoother transitions.

Leonard Abbeduto, MIND Institute Director



"We think that language and literacy skills upon completion of high school will play an important role in employment, socialization, leisure and housing outcomes for young adults with FXS," said Abbeduto, who received the American Psychological Association's 2017 Edgar A. Doll Award for career contributions to understanding intellectual or developmental disabilities. "If we can demonstrate that relationship, I think we'll have a strong case for schools to increase the intensity of speech and language therapies and literacy education."

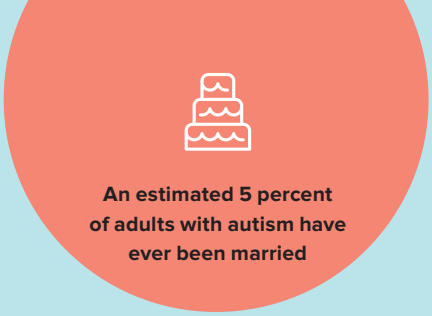
Support from a committed family

A $100,000 gift from the Canel family helped to establish the MIND Institute's Program for Transition into Adult Life, and allowed Abbeduto to conduct pilot research to secure the NIH grant. Some of the program's aims include:

- Designing service coordination models that help families create individualized "life plans"
- Identifying innovative programs in post-secondary education, vocational training, employment and housing, and barriers to access
- Creating a national clearinghouse for information about adult transitions
- Advocating for policy changes that bring promising approaches to scale

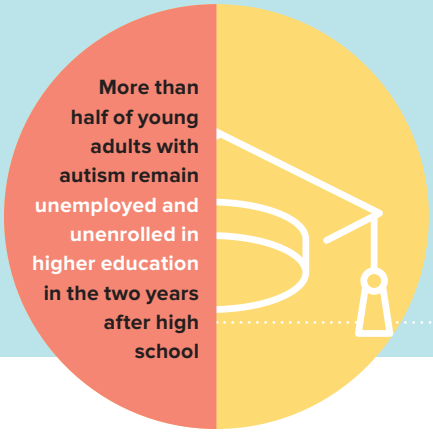
adults with autism

Adult life — with its bosses, coworkers, roommates and romantic partners — can be tough enough. Then add the hallmark social and executive-function challenges of autism spectrum disorder.



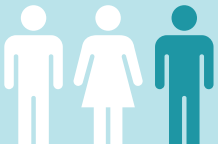
Depression affects an estimated 26 percent of adults with autism **3 times the U.S. average**

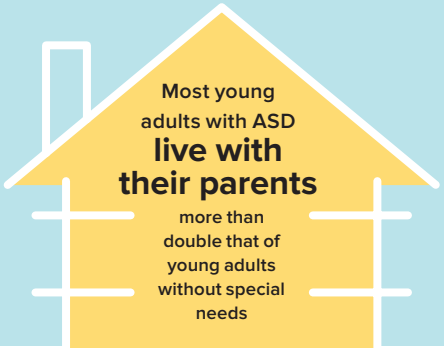
Many young adults with autism **don't receive any health care** for years after they stop seeing a pediatrician



An estimated one in four to one in five is **unemployed**

As many as **one-third** have epilepsy





A special intervention program for young adults


Marjorie Solomon

Researcher Marjorie Solomon, the MIND Institute's Oates Family Endowed Chair in Life Span Development in Autism, is leading development of a special intervention program to help young adults with ASD transition more effectively to adult life.

Known as the Acquiring Career, Coping, Executive-Control and Social Skills (ACCESS) program, the 20-week curriculum is based on interventions used in adults with schizophrenia, who have similar problems adapting to adulthood.

ACCESS employs a combination of cognitive behavioral and social skills group-therapy techniques, with modules around key areas such as planning, workplace communication, stress coping, goal setting, problem solving and self-advocacy.

Small trials suggest ACCESS creates improvements in global adaptive functioning, communication, self-direction and self-determination. Solomon and colleagues eventually hope to publish a manual for an intervention that could be widely used anywhere. The curriculum also incorporates insights from colleagues at UCLA.

"Although it's never too early to help people with autism develop the adaptive, social, vocational and self-determination skills they'll need in adult life, some of these skills may need to be relearned at key transition periods," Solomon told Spectrum News last year. "Many of our participants had been members of our child and adolescent social-skills groups, but they needed to learn to adapt the skills for adult contexts."

A center for community partnerships


Robin Hansen

The MIND Institute is home to one of California's three federally designated Centers for Excellence in Developmental Disabilities. Known as CEDDs for short, the centers serve as links between universities and communities to maximize independence, productivity and inclusion of people with developmental disabilities.

MIND Institute faculty member Robin Hansen founded and leads the UC Davis center, which operates through advocacy, community partnerships, interdisciplinary training, and translation of research into practical applications. Examples:

- CEDD works to expand access to appropriate assistive technology or "AT" — tools such as tablets, visual schedules and video modeling that can help people with autism communicate and plan. The center offers educational and inspirational videos, and helped a local nonprofit launch an AT training center.
- The center provides more than 100 training opportunities each year for service providers, students, professionals and family members.
- The center's Northern California Business Advisory Council promotes partnerships with local businesses and helps to guide workforce-development programs.
- A (philanthropy-funded) supported decision-making project helps people with disabilities choose trusted people to assist with legal decisions about their lives.

Leveraging technology and partnerships to help more families with autism

MIND Institute researchers are studying how emerging technologies can bring evidence-based therapies, educational programs and support systems for autism "to scale." Using that technology can simultaneously create a treasure trove of new data, helping research efforts even more.

Virtual reality

UC Davis researchers are testing virtual reality to deliver proven exposure therapy and habituation learning techniques to highly distractible children, such as those with ADHD. VR headsets are broadly available and growing more inexpensive, creating opportunity for widespread use.

Video games

MIND Institute researchers are leading several studies that explore whether scientifically designed games can improve the hyperactivity of ADHD or the limited spatiotemporal cognition common in neurodevelopmental disorders. Digital games could be powerful-yet-inexpensive treatments that are easily accessible and reach more children.

In one example, a recent UC Davis-led study found that large-scale in-home cognitive interventions using computer memory training games are feasible — and may be beneficial — for kids with fragile X syndrome.

Virtual support groups

Virtual support groups can connect people with autism or their families to additional social skills workshops, helping them move to independence and easing some of the burden on caregivers.

Telehealth

MIND Institute researchers are using telehealth to teach and coach parents in their own homes about language learning support for children with fragile X syndrome. The utility of combining such distance-delivered interventions with medications is currently being tested in a large multi-university NIH study.

For community hospital clinicians who care for kids with ASD, the institute's ECHO® Autism Teleconferencing Program offers one-on-one telementoring with UC Davis specialists and CME credit.

Program development is underway for a telehealth model that will train rural physicians in evidence-based screening and identification procedures for ASD, and provide ongoing consultation for challenging cases.

Assistive communication technologies

The MIND Institute supports a variety of education, training and research activities around existing and emerging assistive technologies, such as behavioral and scheduling aids for mobile devices.

Since a third of people with ASD are nonverbal or very limited verbally, one emphasis is "augmentative and alternative communication," or the use of personalized approaches and devices to increase communication ability. Methods can range from picture cards, to voice output devices that play prerecorded messages, to eye-gaze trackers indexed to messaging.

Distance education

Virtual classes, conferences and workshops can help train parents, providers, teachers and administrators. The MIND Institute helps operate the California Early Start Support Network, a collaborative project that uses regular videoconferencing to train and support practitioners providing early intervention services.

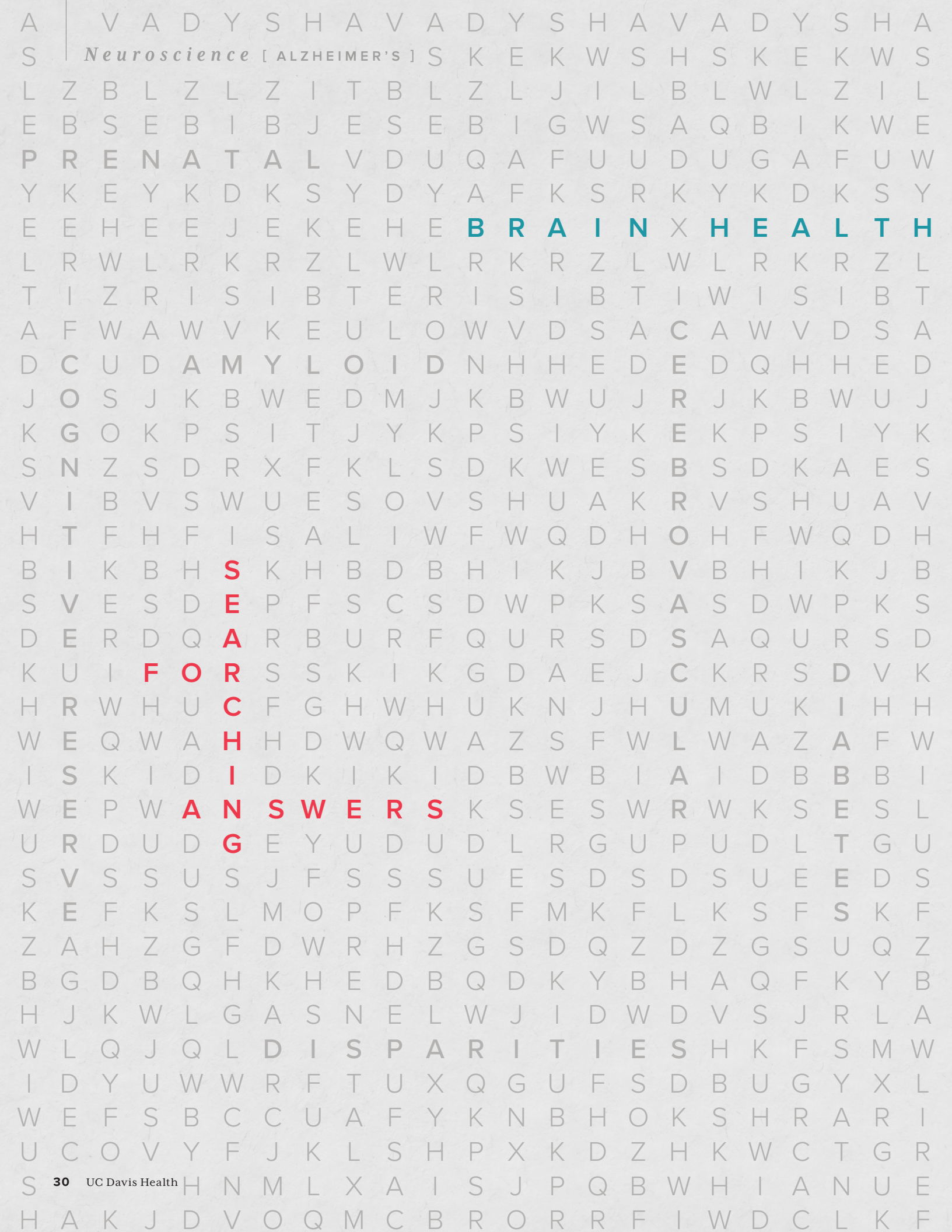
The institute's CEDD also develops free online training programs, such as the Autism Distance Education Parent Training (ADEPT) series designed to help enhance independence and community integration. The 10-lesson interactive online learning module provides parents with tools and training to more effectively teach functional skills to their child with ASD, using applied behavior analysis techniques.

Policy development

The MIND Institute facilitated the creation of the California Autism Professional Training and Information Network, a group of more than 350 professionals that developed the interagency collaborations needed to carry out a statewide plan for improving youth services.

Smart homes

Technologies integrated into the home might provide prompts when it's time for medication, grooming, work or a meal. Autism experts partnering with engineers could also utilize robotics to realize new ways of providing therapies and medications.


PRENATAL
BRAINHEALTH
AMYLOID
SEARCH
FORD
ANSWERS
DISPARITIES

I S A J O U R N E Y

THAT BEGINS AT BIRTH. HERE'S WHAT YOU (AND YOUR PATIENTS AND LOVED ONES) **CAN DO ABOUT IT.**

Brain health is both a biological issue and a social one — *and something that should be addressed across the lifespan, says the longtime leader of UC Davis Health's NIH-designated Alzheimer's Disease Center. A new university initiative aims to continue the center's tradition of novel and actionable findings about dementia prevention, detection and intervention.*

By Charles DeCarli, M.D.
Director, UC Davis Alzheimer's Disease Center

Every end has a beginning.

Just like you don't wake up one morning to heart failure, you don't suddenly hit dementia. It's a lifetime of rugged beating that leads to both.

As individuals and a society, we focus on heart health, bone health, cancer prevention… but we don't often focus on building the strongest brains that we can have, and then maintaining them properly.

Yet if we can reduce dementia risk, we should. And our own research, along with science around the field, is showing that we probably can — and in several ways.

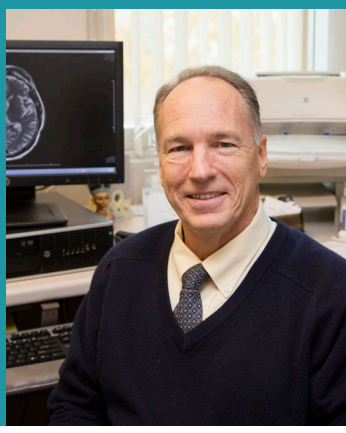
It's very important to modify or treat the disease when it presents, of course, but we shouldn't think we can't do anything before that. When we talk about dementia as an end-of-life disease, something that's often missed is that it's a journey — with a beginning, a growth, and an end.

This is a description of that path, and things we've learned along the way. >>

NOVEL NEUROIMAGING INVESTIGATIONS BY CHARLES DECARLI AND COLLEAGUES HAVE SIGNIFICANTLY ADVANCED UNDERSTANDING ABOUT THE HEALTHY AGING BRAIN AND THE CHANGES ASSOCIATED WITH VASCULAR AND ALZHEIMER'S DEMENTIAS.

Charles DeCarli, M.D.

- Professor of Neurology
- Director, UC Davis Alzheimer's Disease Center
- Director, UC Davis Imaging of Dementia and Aging (IDeA) laboratory
- Victor and Genevieve Orsi Endowed Chair in Alzheimer's Research
- J. Allyn Taylor International Prize in Medicine, "Imaging of the aging brain," 2010
- Editor-in-Chief, *Alzheimer Disease and Associated Disorders*, 2007–2014



NO. 1}

BUILDING A **STRONG** FOUNDATION

Research shows that long-term brain health begins before birth. Prenatal and developmental health factors are incredibly important in helping the brain develop to its fullest potential.

This means brain health is a biological issue, but also a social one. I read recently that a fifth of U.S. children live in families with incomes below the federal poverty threshold. A quarter of American kids live with a solo parent — mostly solo mothers, a third of which are living in poverty.

These factors can make it a real challenge to provide enriched education for children, at a time when a focus on early development is very critical. For instance, there may be less opportunity for quality stimulation if parents often delegate care to someone else due to work demands. So, early childhood support becomes a social determinant for brain health, just as it is for a range of health issues.

Prenatal and developmental health factors are incredibly important in helping the brain develop to its **fullest potential.**

To give their kids the best health care for their brains, I believe parents need to be positioned to:

- READ to them every night, and get them to read.
- Have family time and traditions. There is sufficient research to suggest that (social) connectedness is really, really important to the developing brain. Kids that are alone for long periods of time can disconnect, and be at greater risk later in life.
- The brain health foundation doesn't end there. The evidence is piling up, from our own studies and those of colleagues, that body health begets brain health. Adult health behaviors are a beam or pillar. And this is another area where we, again, can hit some big roadblocks on the path to even the most fundamental protective actions. Take high blood pressure as a perfect example: about 1 in 5 U.S. adults with hypertension still don't know that they have it, whether for lack of access to care, nutritional information, healthy food, or other reasons. The result is that people move into older age and they haven't maintained their brain health. And then unfortunately, they're ripe for trouble.

SNAPSHOT:

Related UC Davis Research

EXPERIENCES AT EVERY STAGE CONTRIBUTE TO COGNITIVE ABILITIES IN OLD AGE

A large study by UC Davis and Canadian researchers found that specific life experiences, such as **level of reading attainment and intellectually stimulating activities**, are predictive of the rate of late-life cognitive decline.

Published in the American Psychological Association's journal *Neuropsychology*, the 2014 study was one of the first comprehensive examinations of the multiple influences of **varied demographic factors early in life**, and their relationship to cognitive aging.

In this particular study, researchers also found that early life experiences — such as **childhood socioeconomic status and literacy** — may have greater influence on cognitive impairment risk than such demographic characteristics as race and ethnicity.

"This study is unusual in that it examines how many different life experiences affect cognitive decline in late life… " said co-author Dan Mungas, professor of neurology and an associate director of the UC Davis Alzheimer's Disease Center.

"It suggests that intellectual stimulation throughout the lifespan can reduce cognitive decline in old age."

NO. 2}

LIFE LEARNING TO **COMBAT** BRAIN AGING

(NO MATTER WHAT YOUR FOUNDATION WAS)

There are certain parts of our brains that shrink by almost a third before age 65 due to normal aging. One of the things we're trying to do through our brain aging initiative here is better understand this. There's already good evidence there are certain things that we can do to promote neuroplasticity — the brain's ability to be flexible and remodel itself in response to stimuli and insults.

Maintaining brain health through life is similar to maintaining heart health

First, we're not designed to sit still. Research shows that increased exercise prompts the release of a hormone (brain drive neurotrophic factor) that repairs the brain at the molecular level. This can become particularly important as we age and we often quit exercising. We've published data showing that even modest exercise, like walking 10 to 20 minutes a day, can be sufficient to improve brain health.

There's some evidence that what we eat changes the gut biome, and this also affects our brain in addition to any other vascular or metabolic damage from our diet. Either way, we're not designed to eat fast-food hamburgers, and then take supplements to compensate. Taking fish oil if you're eating processed beef is not going to help you. You have to fundamentally change your diet.

What we think is that we need to move to more fish (particularly fatty fish like salmon), and more vegetables, legumes and unprocessed grains. The so-called Mediterranean diet. The biggest problem — and another reason why brain health becomes a social issue — is that cost of food tends to rise.

Nearly as important as cardiovascular exercise is the idea of habitual exercise for the brain — developing a life of learning

Trying new hobbies, learning languages, jumping into creative endeavors, engaging socially — these and similar new experiences have all been shown to have strong impacts on brain health.

What seems to be crucial is continued learning. It's more than repeatedly playing a brain game or two until it becomes rote — it's playing new games, putting your brain into a mode of learning that secretes the brain repair hormone. I like to say it's when your head is hurting a little — you're thinking things you haven't before, making new connections. Even when you're out of your comfort zone and you say, "Ugh, I hate this." That's when your brain is stretching. You're not just punching the clock, so to speak.

What we think is that there's a brain reserve, a cognitive reserve, which can be influenced or built up by the complexity of our activities. We do find that highly educated and accomplished people have less risk. When and if they get disease, the onset is delayed, and when it does appear the progression is steeper. The pathology exists but the brain is also more organized, so the person does well further into the disease, and then tends to decline precipitously at the end.

If you think of quality of life as an ability to engage in and enjoy life over a period of time, a steeper decline can actually reduce length of suffering — the theory of "compression of morbidity."

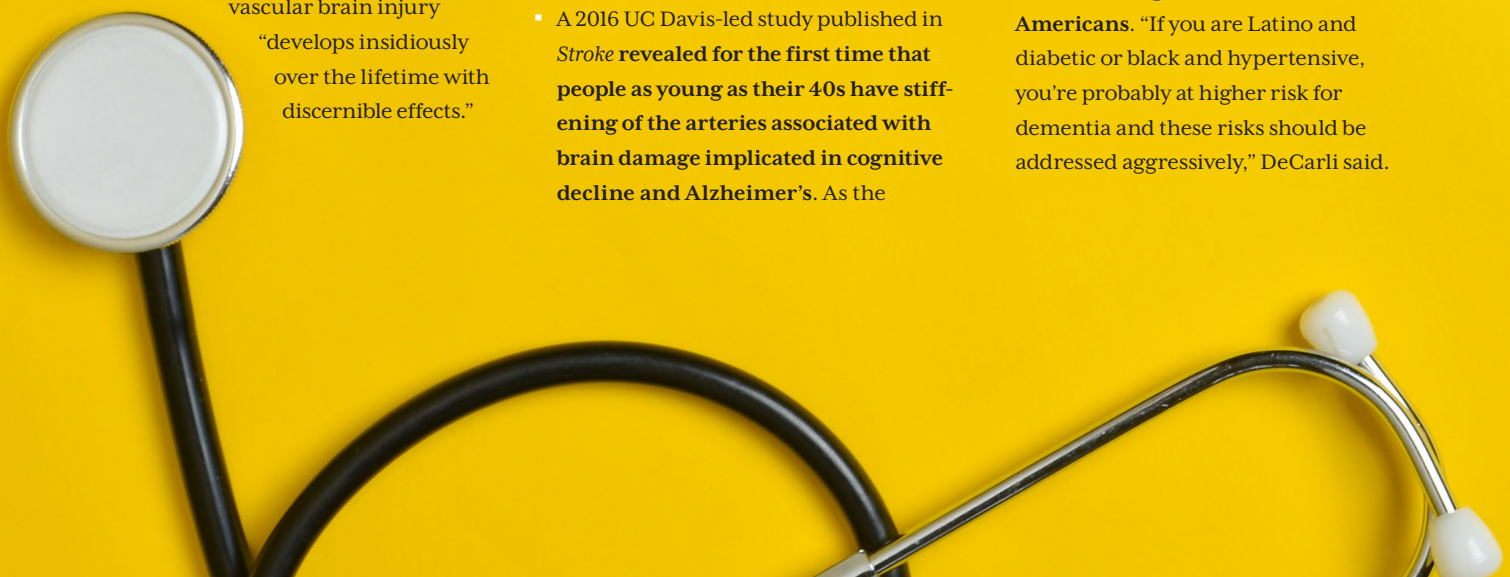
SNAPSHOT:

Related UC Davis Research

DEMENTIA-RELATED BRAIN DAMAGE BEGINS IN EARLY MIDDLE AGE

UC Davis researchers have unearthed novel insights about the intersection of dementia and cardiovascular disease — including several drawing on the legendary Framingham Heart Study. Some highlights:

- A 2011 UC Davis-led analysis published in *Neurology* found that **high blood pressure, diabetes, obesity and smoking in middle age can cause vascular damage, decreased brain volume and cognitive decline** later in life. The study gave evidence "that identifying these risk factors early in middle age could be useful in screening people at risk of dementia, and in encouraging them to make lifestyle changes before it's too late," DeCarli said.
- A year later, another UC Davis-led analysis published in *The Lancet Neurology* was the **first to demonstrate structural damage to the brains of adults in young middle age as a result of high blood pressure**. The study found accelerated brain aging among hypertensive and prehypertensive people in their 40s — suggesting vascular brain injury "develops insidiously over the lifetime with discernible effects."
- A 2013 UC Davis-led study published in *JAMA Neurology* enhanced the known relationship between high cholesterol and increased Alzheimer's risk, becoming the **first to specifically link higher cholesterol to deposits of amyloid plaque** — a hallmark of Alzheimer's — in living humans.
- The same year, a UC Davis study of diabetic dementia patients published in *Annals of Neurology* was the **first to provide clear evidence that amylin, a protein secreted with insulin, accumulates in the same manner as amyloid plaques**. "If we're smart about treatment of pre-diabetes, a condition that promotes increased amylin secretion, we might be able to reduce risk of complications, including Alzheimer's and dementia," said co-author Florin Despa.
- A 2016 UC Davis-led study published in *Stroke* **revealed for the first time that people as young as their 40s have stiffening of the arteries associated with brain damage implicated in cognitive decline and Alzheimer's**. As the earliest manifestation of systolic hypertension, arterial stiffness "may actually be a better measure of vascular health, and should be identified, treated and monitored throughout the lifespan," said lead author Pauline Maillard.
- A UC Davis researcher leading the largest epidemiological study of women's reproductive history and dementia shared results last year suggesting that **reproductive events signaling different estrogen exposures may play a role in modulating dementia risk**. Rachel Whitmer found correlations between dementia and number of children, number of miscarriages, age at first period, age at natural menopause, and total reproductive years.
- A first-of-its-kind UC Davis study published this spring in the *Journal of Alzheimer's Disease* **uncovered dramatic differences in the brains of Hispanics with a dementia diagnosis compared with non-Hispanic whites and African Americans**. "If you are Latino and diabetic or black and hypertensive, you're probably at higher risk for dementia and these risks should be addressed aggressively," DeCarli said.



NO. 3}

SENIOR YEARS — AND WHEN DISEASE **STARTS**

At a certain age, many people feel they don't have to exercise anymore. But continued exercise can help your brain. Again, we have some data that we published that suggests that even moderate amounts, such as walking 10 to 20 minutes a day, is sufficient to change things—even at advanced age.

I think a lot of people forget to keep doing the small things day in and day out that can add up and make a difference, like parking farther from the restaurant, or choosing the stairs over the elevator. One of my favorite brain health faux pas is seeing people drive between stores at the mall, instead of walking.

And what can we do when dementia has begun to take hold?

I think we have to think about novel ways to help people compensate, and that's one of the things we're doing here at UC Davis Health. You may not be able to build up the disease resistance anymore once you've entered significant cognitive decline, but you can work to compensate for it.

For example, I suspect the average 65-year-old doesn't have a daily calendar. Life has slowed and they don't think that they need it. But if you have memory impairment, a simple daily calendar can help quite substantially. Again, small changes can add up to make a big difference.

» **Fueling brain research to make a difference**
UC Davis Health's Healthy Brain Aging initiative seeks to advance novel approaches to optimize brain health from birth. UC Davis looks to partner with donors, corporations and foundations to accomplish the following:

- Create a state-of-the-art hub for collaborative neuroscience research
- Jumpstart novel brain research ideas and high-risk, high-reward technologies
- Establish new interdisciplinary positions for faculty thought leaders
- Create innovative training programs to transform graduate and postdoctoral research

To learn more about the initiative, please contact Jennifer Marsteen, director of development, at **jjmarsteen@ucdavis.edu** *or* **916-734-9448**.

Big IDEAS

bigideas.ucdavis.edu

SNAPSHOT:

Related UC Davis Research

PATHWAYS TO EARLY DETECTION — AND INTERVENTION

Testing interventions

- A $4.7 million federal grant is helping UC Davis researchers conduct a **first-of-its-kind study to determine if vitamin D supplementation in the elderly can effectively help prevent cognitive decline, and whether the association is stronger among underserved populations**. A 2015 UC Davis-Rutgers study found vitamin D insufficiency among the elderly highly correlated with accelerated cognitive decline and impaired performance, particularly in domains with Alzheimer's disease and dementia. The effect was "substantial," with individuals with low vitamin D declining at a rate three times faster than those with adequate levels. More than half of Caucasians tested had low vitamin D, and 70 percent of African Americans and Hispanics.

  Because vitamin D status is easily treatable, "if supplementation improves cognitive outcomes, this could have a large impact on public health, especially among Latinos and African Americans," said lead investigator John Olichney, clinical core co-leader for the UC Davis Alzheimer's Disease Center.

- A $4.9 million state grant will help the center's East Bay location **test a lifestyle intervention designed to treat older adults with strong risk factors** for Type 2 diabetes and associated cognitive decline. "We're looking at fitness versus diet and seeing if one is better than the other for specific people," said David Johnson, director of the East Bay office. "There are reasons to think that blacks and whites might respond differently to the different parts of the diabetes program. Finding the answers would allow us to tailor interventions to meet the specific needs of our patients better."

  African Americans are at greatest risk for cognitive decline and Alzheimer's, most likely due to variations in lifestyle and health.

Clues for early detection

- A 2013 UC Davis study published in *JAMA Neurology* suggested that **degeneration of the fornix, a small, wishbone-shaped structure deep inside the brain, may provide the earliest clues to future cognitive decline**. "This could be a very early and useful marker for future incipient decline," said lead author Evan Fletcher.

- A $5.4 million federal grant is helping researchers at UC Davis and UC San Diego study how **electrical pulses called event-related brain potentials (ERPs) might help detect the earliest stages of cognitive problems in pre-clinical Alzheimer's**. Detecting brain function changes with greater accuracy could improve clinical trials across the Alzheimer's spectrum, Olichney said.

In pictures

School of Medicine Alumni Weekend 2018

We hope *the following photos of our Alumni Weekend and of our 2018 School of Medicine (SOM) Alumni Award recipients will not only make you smile, but will inspire you to participate in the life of UC Davis School of Medicine in ways you maybe haven't considered before.*

You can use our School of Medicine Alumni Association (SOMAA) website to stay informed and participate in the life of your medical alma mater. In addition to the info on the homepage, visit **health.ucdavis.edu/medalumni** to:

- Submit a class note to share your latest news and let your classmates and friends know what you're up to.
  » Click ***Connect***
- Nominate fellow alumni for our annual Alumni Awards.
  » Click ***Awards***
- Express your willingness to be a resource to our students.
  » Click ***Volunteer***
- Learn more about the SOMAA and our Board of Directors
  » Click ***About Us***
- Indicate your interest in serving the SOMAA in a leadership role.
  » Click ***Volunteer***
- Keep abreast of upcoming SOM alumni events.
  » Click ***Events***
- Update your contact info when anything changes!
  » Click ***Connect***
- Give a gift to the SOMAA Scholarship or the SOM Annual Fund.
  » Click ***Give***
- Provide feedback and ideas so we can better serve SOM alumni.
  » Click ***Contact Us***

We want — *we need* — your input in order to build a truly great alumni network and a strong alumni association.

Tell us how we can better engage you, keep you informed, and motivate you to find the time to be an active part of the UC Davis medical alumni community.

If you're willing to share your thoughts in person or by phone, please be in touch at mlfarrell@ucdavis.edu or 916-734-9408. We'd love to have a conversation.

And don't forget that **Alumni Weekend 2019 is Oct. 25–26, 2019 — a milestone reunion celebration** for the classes of 1974, 1979, 1984, 1989, 1994, 1999, 2004, 2009 and 2014

Doug Gross (M.D., '90)
President
UC Davis School of Medicine Alumni Association

M.L. Farrell
Director
Alumni Engagement
916-734-9408
mlfarrell@ucdavis.edu

1 Nadine Burke Harris (M.D., '01), California's first-ever surgeon general, receives the School of Medicine Alumni Association's Transformational Leadership Award from UC Davis Chancellor Gary S. May and School of Medicine Interim Dean Lars Berglund.

2 Alumni take a walking tour of UC Davis Health's growing Sacramento campus. UC Davis' new Aggie Square technology and innovation hub project is planned for a portion.

3 MIND Institute Director Len Abbeduto explains a new initiative to extend services to children with autism and other neurodevelopmental disorders (see p. 22).

4 Roy Shaked (M.D., '91) and his wife Alisa Bromberg.

1

2

3

4

1 Reminiscing with (R to L, this frame only): Russ Buchanan, Kevin Bowman, Suriti Kundu (all M.D.,'93) and Kevin's wife Lynn Bowman.

2 Jesse Dominguez (B.S. '82, M.D. '88) shares insights with current students at the weekend's traditional mentoring lunch.

3 Medical students Pope Rodnoi and Simran Sandhu, alumna Janwyn Funamara (M.D., '76), and incoming student Pyoung Penelope Kim-Lim.

4 Joe Gantan, Amy Culver, Estela Hernandez and other members of the Class of 1998 reminisce over yearbooks.

1 Class of ’76 members Bill DeWolf, Art Chen and George Palma catch up.

2 Members of the Class of 1976 reminiscing at their reunion class catch-up session. Reunion rooms included screens and laptops for photo sharing.

3 Ben Rodgers (M.D., ’98) sharing a laugh with current students at the annual mentorship lunch.

4 Paula Brentlinger and Cheryl Tamasovich (both M.D., ’83) celebrate their 35th class reunion.

UC Davis Cal Aggie Alumni Association Awards

Go into every new encounter—whether it's with an individual, patient or a community — with an open mind and a willingness to listen, rather than with ready-made solutions.

JIM CREIGHTON

2018 Emil M. Mrak International Award

JIM CREIGHTON (M.D., '87)

Cross-cultural ambassador and international family medicine physician Jim Creighton has served as an influential leader in improving health in underserved countries around the world. Creighton has worked extensively as a regional medical officer for the Peace Corps and has served as the country director for the Centers for Disease Control and Prevention in Lesotho, Africa. He previously directed the CDC Southern Africa Regional Aids Program, an initiative to reduce HIV/AIDS-related mortality and improve capacity to deliver services.

Creighton currently lives in Rwanda, where his film company Akagera Productions educates local populations on health and social issues through programming such as his TV series *Mutoni*.

2018 Distinguished Achievement Award

HEATHER M. YOUNG PH.D., R.N., F.A.A.N., (B.S., '81)

Nationally recognized in gerontological nursing and rural health care, Heather M. Young has been a nurse leader, educator and scientist for over 30 years. Her expertise has played an instrumental role in shaping large-scale clinical telehealth, connected-care and gerontology research, and the nurse leaders of tomorrow.

Over the past decade Young served as founding dean of the innovative Betty Irene Moore School of Nursing at UC Davis — overseeing its growth to encompass five graduate-degree programs, millions in research funding, and a ranking among the nation's top 25 percent of master's-degree nursing programs. She was also a co-founder of the Home Alone Alliance and is a co-champion for UC Davis' Healthy Aging in a Digital World initiative.

When we focus on what matters most and collaborate well, **we can accomplish so much more** *than we could ever manage alone."*

HEATHER M. YOUNG

UC Davis School of Medicine Alumni Association Awards

2018 Transformational Leadership Award

NADINE BURKE HARRIS (M.D., '01)

Recently appointed as California's first-ever Surgeon General, Nadine Burke Harris has played a leading role in shaping how society responds to childhood trauma as a health issue. For more than a decade she's investigated the connection between adverse childhood traumas, toxic stress and the lifelong illnesses they produce — and then galvanized efforts to boost awareness and responses.

Burke Harris founded the nonprofit Center for Youth Wellness in San Francisco, an initiative that treats toxic stress in children through wellness, behavioral health and nutrition services. She's also led the Bay Area Research Consortium on Toxic Stress and Health, and served as an advisor for the American Academy of Pediatrics National Advisory Board for Screening and other childhood health initiatives. *See feature p. 18.*

2018 Distinguished Alumni Award

LARS OSTERBERG (M.D., '91)

As a Stanford associate professor, Lars Osterberg's innovative teaching and enriching lessons on social justice and respectful medicine have been widely recognized among undergraduates, medical students and residents. The internist spearheads the Teaching and Mentoring Academy and the Educators-4-CARE program at Stanford Medicine, where he nurtures the clinical and professional skills of prospective physicians.

Osterberg is a longtime leader in enhancing care access for vulnerable populations as well. He currently practices at the VA Palo Alto Health Care System and volunteers at a student-run transitional clinic where he served as medical director for 20 years. Osterberg also cofounded Opportunity Health Partners, a nonprofit dedicated to the Peninsula's homeless.

2018 Humanitarian Award Recipient

RANDALL STENSON (M.D., '72)

Psychiatrist Randall Stenson has devoted more than 40 years to addiction medicine, mental health and community outreach. He began his career as a clinical faculty member, educating future psychiatrists and developing rotations in community mental health and addiction medicine. In 2009, he founded the Comprehensive Opiate Recovery Experience (CORE) medical clinic, one of the only methadone clinics in California that offers psychiatric care and treatment for opioid addiction. Stenson has assisted more than 850 patients, and he continues to be an advocate for those with addiction.

Ben Rich,

EMERITUS PROFESSOR AND FORMER ALUMNI ASSOCIATION ENDOWED CHAIR OF BIOETHICS AT THE UC DAVIS SCHOOL OF MEDICINE, passed away at his Sacramento home in September at 71. He penned a popular bioethics column in this publication for many years before his retirement.

After receiving his law degree in 1973 from Washington University in St. Louis, Rich served as an administrative law judge, counsel to academic health centers, and general counsel for the University of Colorado system, where he also earned a Ph.D. in philosophy.

He began to consider a second career as a university professor in the 1980s, after taking interest in bioethics while teaching health law at Colorado. He joined UC Davis in 2000 and became director of the bioethics program in 2007, where he was known for his strong sense of social justice.

Rich's special interests included the legal and ethical aspects of the physician-patient relationship, end-of-life care, and pain management. He shared expertise with lawmakers and served on national advisory committees, helping to guide complex decisions and shape practices to benefit patients.

Along the way, Rich was a cherished colleague whose door was always open to students and colleagues seeking advice. He is survived by his wife Kathleen.

Aaron Bair,

FORMER PROFESSOR OF EMERGENCY MEDICINE, ASSOCIATE DEAN OF CONTINUING MEDICAL EDUCATION, AND DIRECTOR OF THE CENTER FOR VIRTUAL CARE, passed away in New Orleans last November at 52.

Bair, a longtime UC Davis Aggie — from medical school through his residency and career — suffered from a challenging autoimmune condition for more than 30 years. He took early retirement in 2016 and had traveled to Louisiana in hopes of a liver transplant.

Bair was instrumental in several key initiatives, and served as medical director of UC Davis Health's Center for Health and Technology and Solano County's emergency medical services while continuing his clinical work.

He authored numerous publications and taught advanced airway management skills to thousands of clinicians over the years, indirectly leading to countless lives saved. He also founded UC Davis' Medical Simulation Fellowship Program, providing unparalleled training opportunities for clinicians.

Bair was highly regarded — and perhaps best known — for teaching and mentoring countless students, staff, visiting scholars and faculty. His approachable, down-to-earth manner made him a trusted colleague and friend to many. He is survived by his daughter Kelsey, son Daniel, and wife Yali.

UC DAVIS HEALTH MAGAZINE

UC DAVIS HEALTH magazine is published by the Department of Public Affairs and Marketing. For more information about UC Davis Health, visit our website at **health.ucdavis.edu** or contact the Public Affairs Department at **916-734-9040**, **hs-publicaffairs@ucdavis.edu** or 4900 Broadway, Suite 1200, Sacramento, CA 95820

#9852

UC DAVIS HEALTH
MAGAZINE

Public Affairs and Marketing
4900 Broadway, Suite 1200
Sacramento, CA 95820

Address service requested

NON-PROFIT ORG
US POSTAGE
PAID
Davis, CA
Permit No. 3

A helping paw at a scary time

Cancer patient Bill Aubuchon draws comfort from new friend Huggie, UC Davis Health's first-ever facility dog. The 2-year-old Labrador retriever supports children receiving treatments in the UC Davis Comprehensive Cancer Center's pediatric infusion center, where he works with his foster mom and child life specialist Jenny Belke to reduce fear, stress and anxiety. "When you're not feeling well, caring for something else can help take the focus off of your pain," said Diana Sundberg, UC Davis Health's child life and creative arts therapy manager. "Children have the ability to build relationships with dogs, which can provide a sense of familiarity and comfort when they're in the hospital."

This image by photographer Lisa Butterworth was one of three from UC Davis selected for inclusion in the biennial Children's Hospitals Photo Exhibit, the result of a national competition administered by the Children's Hospital Association. View the online exhibit at www.childrenshospitals.org/photos.