Healthy Brain Aging Initiative
A UC DAVIS BIG IDEA
Imagine a world where aging brings growing, not diminishing, mental vitality. Imagine a future in which no one will ever know the helplessness of watching an elderly parent struggle with cognitive decline—or need to worry about their own brain health as they age. Cognitive and behavioral impairments are complex public health, social and economic problems that demand a bold response. UC Davis has a vision to radically change how both science and society view brain aging—a paradigm shift to study cognitive health across the lifespan, and a cultural shift toward a positive, proactive focus on improving brain health at every age.

Breaking down traditional barriers between research and practice, and uniting our strengths in neuroscience across the university, the Healthy Brain Aging Initiative will advance novel approaches to optimize brain health from birth—dramatically improving brain aging for those of us getting older now, and shifting the trajectory of brain aging for the next generation.

**A Big Challenge, A Big Vision**

**A Big Opportunity**

UC Davis’ Big Ideas are forward-thinking, interdisciplinary programs and projects that build upon the strengths of the university to positively impact the world for generations to come.

Through the Healthy Brain Aging Initiative, UC Davis seeks to partner with visionary philanthropists to realize a future in which everyone has a chance to have a healthy brain and a healthy mind.
Millions of Americans struggle with the realities of impaired cognitive and mental health, from the irreversible and degenerative effects of Alzheimer’s disease, to the hallucinations associated with Parkinson’s disease, to Huntington’s disease and other common causes of dementia—an umbrella term for a set of symptoms associated with impaired thinking and memory. Millions more will face declining brain health in the next century as our population ages. Indeed, the prevalence of dementia increases dramatically with age, from 5 percent of those aged 71-79 years to 37 percent of those aged 90 and older.

The loss of brain health commonly associated with aging can be devastating, on a personal and societal level alike. While medical science has made great strides in reducing stroke, heart disease and cancer-related mortality, the number of individuals affected by cognitive and mental health problems is steadily increasing.

Surrounding these aging individuals are supportive families who devote time, energy and other resources to caring for their loved ones. Beyond the personal toll on patients and their families, deteriorating cognitive and mental health also represents a substantial challenge to our healthcare system and to society’s safety-net programs. For example, total annual payments for health care, long-term care and hospice care for people with Alzheimer’s disease and other types of dementia are projected to increase from $236 billion in 2016 to more than $1 trillion in 2050. And, of course, there is the incalculable loss to society of a healthy, engaged and contributing senior population.

In today’s information-driven society, brain health is more essential than ever to managing complex tasks and living productive, fulfilling lives. Maintaining cognitive health throughout life has powerful benefits, making it possible to preserve our critical faculties as we age—even if brain diseases such as stroke and Alzheimer’s should develop. Achieving and maintaining mental health equally impact our lifelong abilities to function in society. In fact, emerging research finds close associations between cognitive and mental health after birth and as we age.
UC Davis researchers are working on multiple fronts to improve health across the lifespan, to enable people to enjoy active, engaged lives well into their later years. Through the Healthy Brain Aging initiative, we will convene this work around brain health to maximize its impact for people of every age.

For example, Assistant Professor Oanh Meyer’s mother Anh Le arrived in the United States in 1975 as a Vietnam War refugee. While achieving her dream of raising a family, the trauma of her young years took a toll: now 81 and suffering from dementia and possibly Alzheimer’s disease, Anh Le is haunted by imagined threats from soldiers—a problem compounded by her reluctance to seek care, rooted in a long-held mistrust of authority figures.

Cultural trauma, language barriers, and lack of awareness among Vietnamese Americans make coping with dementia extremely difficult both for patients and the family members caring for them.

“Most of them are immigrants who came around the time of the war,” Meyer said. “They are getting to the age where they are developing dementia, and many of them don’t know what it is. They think it’s a normal part of aging. It’s very isolating.”

This is why Meyer, an assistant professor in the Department of Neurology at the UC Davis Alzheimer’s Disease Center, devoted herself to finding the best ways to support them.

Her recent study, published in the journal Dementia, explores an intervention she and her colleagues developed to help reduce the stress and enhance the health of people who care for their loved ones suffering from dementia and Alzheimer’s. The intervention includes culturally sensitive education about the diseases, how to get appropriate medical care, stress management techniques, and strategies to better anticipate and manage the behaviors of loved ones living with dementia.

Meyer’s efforts are one example of translational research at UC Davis to remove the significant hurdles to care that patients from under-resourced groups often face, including low socio-economic status, poor health, language barriers and mistrust of the medical community. Studies currently underway focus on the Hispanic, African-American and Asian-American communities.

When combined with the innovative basic research being done at the Center for Neuroscience and other multidisciplinary centers, our experts are making exciting discoveries toward the development of new therapies and proactive interventions aimed at changing the course of brain aging for the next generation.
It is estimated that by 2050 there will be more people over the age of 65 than under the age of 15. Much is known about the pathology of the many brain diseases of aging, but very little is known about why some of our cognitive abilities begin to diminish when we are as young as 20, or why impaired mental health is so prominent in our society. Even less is known about the relationship between cognitive and mental health.

UC Davis is exceptionally poised to seize this pivotal moment for translational brain science by establishing the Healthy Brain Aging Initiative. A global leader in brain-related research, clinical care and education, with more than 150 faculty labs focused on neuroscience, UC Davis brings tremendous breadth and depth of scholarly expertise to this endeavor.

This initiative will benefit from collaborations with diverse faculty across the colleges, schools and units, including the Center for Neuroscience, the Center for Mind and Brain, the MIND Institute, the Behavioral Health Center of Excellence, the Genome Center, the Primate Center, the Ragle Human Nutritional Center, the Clinical Translational Science Center, the Alzheimer's Disease Center and the Imaging Research Center.

By bringing together experts across the disciplines—from immunology, genetics and nutrition; to neuroscience, psychology, psychiatry and sociology; to biomedical engineering, human ecology and economics—this initiative will catalyze discovery and implement therapies that change the way we think about brain health and change the course of brain aging for the next generation.

This is a singular opportunity to accelerate research through multidisciplinary collaboration across basic and translational brain science. Private support for this initiative will play a vital role in advancing this groundbreaking work—translating discoveries from lab bench to bedside to community into solutions that enhance cognitive health and quality of life for people around the world.
Transforming Brain Aging for the Next Generation

The key to sustaining brain health is to disrupt the trajectory of aging by promoting resilience throughout the lifespan and preventing dementia and disease as we age. That sounds obvious, but it is not the focus of most brain aging programs.

In fact, there is an enormous gap in knowledge about how the brain typically ages. Most research focuses on studying brain development or the function of aged brains, but there is almost nothing known about how brains change as they undergo typical aging.

If we could understand why some brains retain their cells and circuits into very advanced age, while others deteriorate much earlier, we could identify better strategies for promoting resilience.

The first step is to develop new approaches to identify the initial changes in the brain that lead to early cognitive decline and later to dementia. Next, we need to develop new ways to prevent these changes from progressing in order to improve quality of life and postpone or even prevent dementia.

We are beginning to understand the remarkable biological processes involved in developing important abilities such as language during childhood. Plasticity—the brain's ability to grow and modify its circuits—is critical to this process. The possibility of bringing back plasticity later in life could lead to transformative therapies to improve brain health. New insights into the relationship between behavioral and cognitive brain systems are also redefining how we view brain health within an increasingly complex society.
Moreover, the development of leading-edge, non-invasive technologies to measure brain structure and function is significantly advancing translational research by enhancing our capacity to study various disease pathologies before symptoms occur. As we uncover more risk factors for early brain aging as a result, developing interventions to modify risk and create resilience will be crucial.

The increasing diversity of our population brings additional complexity to studies of brain health. We need to account for a large array of genetic, developmental, nutritional, sociocultural and environmental disease factors in varying combinations for each person. These factors go beyond simple biological measures to include societal differences associated with disparities in brain health risk factors and outcomes. For these reasons, we will also emphasize outreach to communities where issues of cognitive and mental health have been historically unaddressed and are less likely to be reached by current health outreach measures. This initiative will further seek to accelerate targeted interventions for diverse populations to create even more significant health benefits at the societal level.

Moving forward, we will promote a new kind of team science in order to make the discoveries that will improve the lives of our aging population and change the future for the next generation. Broadly, we are initiating new programs to support the **people, places and projects** that will drive groundbreaking interventions in the field.
Advancing the Healthy Brain Aging Initiative starts with expanding our world-class faculty through competitive faculty professorships to give our professors and clinicians protected time to develop an interdisciplinary focus.

A critical focus of this initiative will be on training the next generation of leaders to excel in team science—from undergraduate and graduate students to postdocs and junior faculty. Trainee fellowships will allow students at all levels to work across laboratories and scales. We will develop innovative programs to train students and postdocs across boundaries, with a focus on bridging disciplines across the sciences and to the clinic. At the same time, we will arm program graduates with basic neuroscience skills and exposure to clinical challenges—equipping them to address critical public health issues related to brain aging. This is a vision for training at its most innovative and entrepreneurial.
We expect this initiative to be a potent incubator for expertise, ideas and innovations to drive new discoveries in the science of brain development and aging that translate to game-changing early interventions and treatments to optimize cognitive and mental health across the lifespan. This will be accomplished, in part, by providing space and resources that will allow us to co-locate clinicians with experts in the fields of neuroscience, engineering, psychology, physics and computer science to accelerate discoveries that improve lives.

These new places will include incubator space to enhance interactions with entrepreneurs and start-ups to speed the translation of cutting-edge research into tangible, impactful therapies and technologies. We will also establish clinical treatment centers across the greater Sacramento area, as well as providing telemedicine support for doctors and patients outside the region to ensure that our cutting-edge clinical care and expertise benefit everyone who needs them. Collectively, these resources will amplify our ability to prevent, delay or minimize the effects of cognitive decline.

PLACES

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Building Innovation and Collaboration Hubs to Break New Ground in Brain Health

- Support a world-class hub for innovation, discovery and team science
- Create resources that encourage collaboration and promote interactions from bench to bedside
- Foster incubator spaces to drive innovation at the nexus of research and discovery through dynamic engagement with entrepreneurs and start-up ventures
Based on interdisciplinary, collaborative research, we will advance projects that ask and answer questions in an unprecedented, integrated manner to accelerate discoveries and achieve an impact much more rapidly than traditional approaches.

Integrative grants will promote research collaboration across areas, while innovative technology grants will promote collaboration between neuroscientists, clinicians, engineers and computer scientists to develop new interventions to promote research and improve lives. Pilot research grants will catalyze the development of novel ideas, research directions or high-risk, high-impact technologies that would otherwise not be developed through traditional funding mechanisms. Finally, translation grants will help turn discoveries made in the lab, clinic and community into products that will improve the lives of aging individuals—now and for generations to come.

PROJECTS

Incubating Ideas and Innovations to Foster Brain Health at Every Age

- Spur projects at the cutting edge of brain science by supporting pilot programs in research and technology development
- Sponsor impactful programs that change how the public views brain aging by funding a signature outreach initiative
- Speed the translation of discoveries into products that enhance brain wellness by endowing faculty impact grants
An Invitation

Philanthropy has always been key to the university’s success in moving great ideas forward. With your partnership, the Healthy Brain Aging Initiative will position UC Davis at the forefront of brain health research, clinical care, education and outreach. Together, we will shift the paradigm for understanding brain aging across the lifespan and empower people to build resilience and brain health at every stage of life.

Thank you for your consideration of this exciting Big Idea. We look forward to discussing how your philanthropic goals may be achieved through this transformative initiative.

For more information please contact:

Jennifer Marsteen  
Director of Development, Neurosciences and Urologic Surgery  
UC Davis Health  
Office: (916) 734-9448  
Cell: (916) 730-9807  
Email: jjmarsteen@ucdavis.edu

Jennifer Scott  
Director of Development, Neuroscience and Mental Health Programs  
University of California, Davis  
UC Davis Health  
Office: (530) 752-5304  
Cell: (530) 601-3380  
Email: jescott@ucdavis.edu
Ways of Giving

We respect that, for each donor who wishes to provide significant philanthropic support, there are personal, financial and gift planning aspects to consider. We will work with you to realize your philanthropic vision and develop the gift plan that best meets your needs. At your request, we can also work with your tax and financial advisors. Following are various gift types and their associated benefits. You may wish to consider a mix of gift types to help you achieve both your philanthropic and financial objectives.

**Cash Gifts**
- Are the simplest and most popular giving method
- Are tax deductible in the year they are given

**Gifts of Securities**
- Include stocks, mutual funds and bonds
- Avoid capital gains taxes
- Provide an income tax deduction for the full fair market value of long-term, appreciated securities

**Gifts of Real Property**
- Include land, farms, personal residences, and rental or commercial property
- Avoid capital gains tax on appreciated assets
- Provide an income tax deduction for the full fair market value of long-term, appreciated property
- Eliminate property expenses and taxes
- Can provide continued use for life through a retained life estate gift

**Bequests and Living Trusts**
- Establish the UC Davis Foundation as a beneficiary of your estate
- Provide an estate tax deduction equal to the value of the gift
- Offer flexibility by allowing you to provide for family first

**Retirement Plan Gifts**
- For current gifts, utilize the IRA Charitable Rollover provision (for donors aged 70½ and older)
- Name the UC Davis Foundation as a beneficiary
- Eliminate income tax on the plan distributions
- Preserve the plan’s full value for gift purposes

**Life Income Gifts**
- Include charitable remainder trusts and gift annuities
- Provide potential tax savings on income, estate and capital gains
- Generate income for you and/or your loved ones for a fixed period of time or until your passing
- Distribute the remaining assets to the UC Davis Foundation