UC San Diego
HEALTH SCIENCES

SHILEY-MARCOS ALZHEIMER'S DISEASE RESEARCH CENTER

THE IMPACT OF YOUR GIVING | 2024

CELEBRATING 40 YEARS

PHILANTHROPIC IMPACT ON OUR ALZHEIMER'S RESEARCH COMMUNITY

DONOR PROFILE

Maureen Herwood found SMADRC while searching for a place that would offer support, hope and guidance on navigating the disease that eventually took her husband, Perry. The couple's generous estate gift to support Lewy body dementia (LBD) research at SMADRC is poised to advance our understanding of an treatment options for this complex neurodegenerative disease. LBD has received relatively little NIH research funding and is complex to study, intersecting with both Alzheimer's and Parkinson's diseases. We have a cadre of talented, dedicated researchers able to develop novel approaches that are likely to successfully support large-scale grant funding.

Maureen's support also generously sustains SMADRC's quality-of-life programs that are free to the public without any obligation to participate in research. These programs aim to enhance the well-being of individuals affected by dementia and their caregivers by providing valuable resources, support networks and educational opportunities. They promote community engagement and awareness while directly benefiting those impacted by dementia. "No two journeys are alike," said Maureen. "That's one thing I learned in group. The ups and downs were at different levels, but we were all swimming upstream together, and that really helped me."

Maureen's philanthropic vision empowers individuals and families affected by dementia to navigate their journey with greater resilience.

"When you are in the role of living with it, sometimes you lose sight of what is going on, and so, having friends that I trusted and professionals that I believed in really guided me."

MAUREEN HERWOOD

A MESSAGE FROM THE DIRECTOR

As we celebrate the 20th anniversary of our naming as the Shiley-Marcos Alzheimer's Disease Research (SMADRC), thanks to the generosity of Donald and Darlene Shiley, and 40 years of continuous funding from the National Institute on Aging (NIA), I am immensely grateful and proud of our remarkable journey. *Your unwavering support has helped to accelerate our achievements as we make progress in Alzheimer's disease research.*

This year, we have witnessed breakthroughs in the field, marked by major advances toward a blood test for Alzheimer's and the FDA approval of an additional antibody treatment for the disease. These advancements are a testament to the relentless dedication of our researchers and the invaluable contributions of our clinical trial participants. As we look ahead, we remain committed to pursuing innovative therapies that will transform the lives of those affected by this life-changing disease.

I am also pleased to announce the renewal of our NIA funding, which will allow us to pursue new and exciting research directions while continuing our collaborative cores and expanding our team. Continued funding underscores the importance of state-of-the-art biomarkers and advanced research infrastructure. Our position at the forefront of Alzheimer's research requires ongoing and thoughtful investment in new technologies and programs that facilitate novel research.

Philanthropy enables us to offer training programs and mentorship opportunities, crucial components in preparing young scientists to tackle future challenges in Alzheimer's disease and Alzheimer's disease-related dementias (AD/ADRD) research. Investing in the SMADRC and Jack McKeown Scholarship funds sustains a pipeline of talented researchers. Your generosity is pivotal in recruiting and nurturing these future leaders, ensuring UC San Diego Health remains at the leading edge of AD/ADRD research. Indeed, there is so much more that needs to be done to mitigate the suffering brought by these diseases.

Endowed positions provide the stability and resources to attract top talent and foster groundbreaking research. Your support will ensure that we continue to lead the way in AD/ADRD research and treatment for years to come. Every gift, regardless of scale, makes a difference to advance the many facets of our research mission.

On behalf of the entire team at SMADRC, I extend my deepest gratitude for your continued support. Together, we are making strides toward a future without Alzheimer's disease.

With heartfelt appreciation,

James Brewer, MD, PhD
Director, Shiley-Marcos Alzheimer's Disease Research Center

EMERGING SCHOLAR

DAVID COUGHLIN, MD

David Coughlin, MD, specializes in disorders such as Parkinson's disease, atypical Parkinsonian syndromes (progressive supranuclear palsy, multiple systems atrophy, and corticobasal syndrome) essential tremor and LBD. As an assistant professor in the Department of Neurosciences at UC San Diego, he mentors medical students and residents and co-directs the movement disorders fellowship program at the School of Medicine, shaping the next generation of neurologists. Dr. Coughlin also helps to direct the Neuropathology Core, which manages the brain donation program and helps to distribute tissue from our brain bank to support researchers from around the world.

Dr. Coughlin's research focuses on neurodegenerative diseases. He employs advanced immunostaining methods and digital image analysis to better quantify the neuropathological accumulation of proteins, such as alpha-synuclein, tau and amyloid-beta. He is the recipient of a SMADRC Development Project award. The seed funding made possible by your donations allowed the collection of pilot data to support his success in obtaining a five-year career development award from the NIH.

One of Dr. Coughlin's studies is a spinal fluid test that can detect the biological changes associated with Parkinson's disease and LBD before clinical symptoms are present and may even be able to able to differentiate between different types and stages of disease.

Our research is profoundly dependent upon remarkable gifts of brain donations made by individuals and families impacted by Alzheimer's. But there is an urgent need to understand the full spectrum of dementia-related conditions. Brain donations from people affected by LBD, progressive supranuclear palsy, Parkinson's and other related dementias are equally crucial, as they enable comparative studies that can reveal distinct and shared mechanisms, bringing us closer to breakthroughs in treatment and prevention.

Additionally, support to modernize the brain bank by developing a digital image library of immunostained slides will create an enduring resource for investigators and a platform for future artificial intelligence and machine-learning applications. Resources needed would include a part-time technician to scan previously stained slides using our Zeiss Axio Scan at the Center for Advanced Laboratory Management and funding for data storage and management, likely through the San Diego Supercomputer Center.

CAPTAIN HIGH

ADVANCING SCIENCE THROUGH SERVICE

Captain Leslie High has been driven to help people his entire life. He spent 29 years in the United States Coast Guard as an aviator and supervisor of all training commands. Since retiring, he has continued to help others by participating in research as a healthy control subject in more than 200 studies over the past 40 years. High started his journey with SMADRC in 1984, the center's inaugural year. He has dedicated a tremendous amount of time helping researchers advance science in the area of Alzheimer's disease and continues to participate to this day at the age of 100. In fact, as a centenarian, he is highly sought after by researchers who study brain aging and has donated skin cells for cell models that can be used to study dementia in a dish on three separate occasions over the past 15 years.

High is a trailblazer. He was married to the love of his life, Carol, for 66 years and 66 days. In 2005, Carol was diagnosed with Alzheimer's disease. High's experience with SMADRC prepared him for their new journey — he understood the progression of the disease and the changes his wife was going to experience. High saw his caregiver role as a gift from God: "Carol had taken care of me for over 60 years; it was my turn to take the same great care of her." He was able to care for her at home for all but 11 days of her illness.

RESEARCH HIGHLIGHTS

THE ADRC BIOMARKER CORE

Alzheimer's disease and Alzheimer's disease-related dementias present a substantial challenge due to their complex set of mechanisms and the need for accurate and early diagnosis and monitoring. Traditional assessment methods are not sensitive or specific enough for early detection, nor do they allow fine-grained monitor disease progression. Through its Biomarker Core, the Shiley-Marcos Alzheimer's Disease Research Center aims to obtain sensitive and quantitative information about the brain using cerebrospinal fluid (CSF) and blood and brain imaging tests. The work of two of its co-leaders, Douglas Galasko, MD, and Emilie Reas, PhD, is highlighted here.

Dr. Galasko focuses on the development and validation of fluid biomarkers. CSF bathes the brain and for decades was the primary source for discovery of biomarkers. More recently, many of the proteins measured in CSF that aid in diagnosis and disease monitoring are measurable in the blood.

Douglas Galasko, MD

Through collaboration and research, Dr. Galasko and his colleagues have demonstrated the utility of the core Alzheimer biomarkers, including forms of amyloid beta (Aβ) and tau proteins. These biomarkers reflect key pathological hallmarks of Alzheimer's and show changes in CSF and blood years before the onset of symptoms. The CSF biomarkers distinguish Alzheimer's from other dementias and healthy aging. Dr. Galasko's studies have highlighted their role in predicting disease progression and response to therapeutic interventions. A continuing challenge is to develop a wider panel of biomarkers that can measure processes in the brain that occur when 1) nerve cells and their synapses become damaged, and 2) specialized cells in the brain, called glial cells, show inflammation-related changes. Dr. Galasko has been instrumental in validating novel biomarkers for synaptic integrity, analyzing microRNA in CSF and helping to characterize immune cells in CSF.

Recently, his research advanced the development of blood-based biomarkers, which offer noninvasive and more accessible alternatives to CSF. The goal is to develop reliable assays capable of detecting AD pathology with high sensitivity and specificity, revolutionizing early diagnosis and therapeutic development. He has contributed research to improve assay methodologies, enhance their clinical applicability, and standardize them across research settings. Dr. Galasko's contributions to fluid biomarker research in ADRD are supported by your philanthropy, which funds equipment to measure biomarkers as well as ultracold freezers to store CSF and blood specimens.

Emilie Reas, PhD

Dr. Reas has explored novel methodologies for early detection and monitoring of cognitive decline. She has been involved in developing and validating brain imaging biomarkers as potential indicators of preclinical stages of ADRD. Her approach integrates neuroimaging, genetic analysis and cognitive testing to reveal the complex interplay between brain structure, function and cognitive outcomes.

Dr. Reas also studies how vascular health affects brain aging and dementia risk. Her findings highlight the importance of managing hypertension and diabetes to preserve cognitive function and reduce the likelihood of developing dementia. Most recently, she has been using sensitive MRI measures to assess how the integrity of the blood-brain barrier may contribute to the progression in Alzheimer's disease and has found that blood-brain barrier dysfunction may

be a very early step in the disease's cascade related to genetic risk factors. Emerging results from her research also suggest that the effects of blood-brain barrier breakdown on memory decline and neurodegeneration may be exacerbated by long COVID in those at higher risk for Alzheimer's disease.

In an upcoming project, Dr. Reas will integrate her novel neuroimaging techniques into real-world clinical settings to better understand the risk factors for, and long-term consequences of, the newly approved anti-amyloid antibody therapies. She is also looking for seed funding to gather tau PET brain imaging on participants who have blood-brain barrier imaging so that she can apply for a larger grant to investigate these biomarkers.

CELEBRATING FOUR DECADES OF PARTNERSHIP

We are grateful for the vital role that donors play in advancing Alzheimer's and dementia research. Your unwavering generosity has been instrumental in translating early insights into meaningful progress, offering hope for patients and families.

As a global leader in Alzheimer's research, pivotal discoveries have reshaped our understanding of neurodegenerative diseases. This extraordinary journey began with the vision of Robert Katzman, MD, backed by early donor investments such as the Florence Riford Endowment, which supported key studies revealing the biological underpinnings of Alzheimer's disease. Through sustained private support, landmark achievements such as the isolation of the Aβ protein by George Glenner, MD, a major diagnostic marker for Alzheimer's disease, became possible.

Generations of philanthropy, including the transformative contributions from Darlene Shiley and her late husband, Donald, have significantly expanded our research capabilities. Endowed chairs and new facilities have enabled leading-edge clinical trials and therapeutic development.

Darlene Shiley

Your generosity empowers us to accelerate scientific discovery and explore novel avenues. As we look toward the future, we are deeply grateful for the enduring partnership with our community of donors. Your contributions fuel scientific breakthroughs in pursuit of a world where Alzheimer's disease is no longer a reality.

THANK YOU

We are deeply grateful to you for partnering with us to reach significant milestones over the past 40 years. Philanthropy and scientific research work in tandem to accomplish our shared goal of delivering new therapeutics to people with Alzheimer's disease and related dementias.

Join us in driving the next 40 years of discovery!

Scan the QR code to make a gift.

To make a gift by check, make your check payable to UC San Diego Foundation with a note in the memo that specifies the gift is for the Shiley-Marcos Alzheimer's Disease Research Center. Mail to:

Betsy Collins
UC San Diego Health Sciences Advancement
Attn: Shiley-Marcos ADRC | Fund E2140
9500 Gilman Drive # 0937 | La Jolla, CA 92093

We can offer several planned gift options that allow you the flexibility to add to a current gift or create a new one, now or later. For information on supporting the SMADRC through estate giving — including donating real estate, transferring appreciated securities, or designating a contribution in a living trust — please contact:

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