



Alzheimer's Disease and Dementia Research Center (ADRC)

First Year Impact Report



Emma Eccles Jones College of Education & Human Services
Alzheimer's Disease & Dementia Research Center
UtahStateUniversity.

Our Purpose and Mission

The Alzheimer's and Dementia Research Center (ADRC) at Utah State University is a state-funded center committed to research and support for the rapidly growing number of adults in Utah who are diagnosed with Alzheimer's disease and other forms of dementia, as well as those who care for them. Our mission is to build a collaborative research infrastructure where individuals throughout the state of Utah can be involved and informed in dementia research, learn more about best practices in dementia care, and find resources for emotional and practical support. The center engages with multiple research institutions across the state and is guided by the principles and needs outlined in the *Utah Alzheimer's Disease and Related Dementias State Plan*.

A Message from ADRC Director, Beth Fauth

The first year of the Alzheimer's Disease and Dementia Research Center has ended, and we are excited to have initiated many activities that target the research goals of the *Utah Alzheimer's Disease and Related Dementias State Plan*. Importantly, this funding encouraged researchers in related areas to pivot their studies to dementia. Fresh ideas, novel scientific approaches, and collaboration across disciplines is necessary to better understand the complex processes of these underlying diseases. Funding for the center also accelerated work conducted by researchers who have been studying dementia for decades. We supported undergraduate and graduate student researchers in dementia research – an essential process in developing future scientists in this field. We deeply appreciate the support from the state of Utah to continue this work in the future: to better understand the prevention of cognitive decline, to treat diseases like Alzheimer's, to optimize well-being for those living with dementia, and to support their family members providing care.



A handwritten signature in black ink, appearing to read 'E. Fauth'.

Dr. Elizabeth Fauth, Director

Funding & Research Developments

Since July 1, 2022

The ADRC has distributed \$375K to support dementia research, funding:

- **9 pilot studies** relating to cognition and dementia across multiple disciplines
 - *Developing pain management for people with dementia and their caregivers living in rural areas*
 - *Researching the effects of hearing aid use on cognition in older adults with hearing loss (see p4)*
 - *Examining the impact of amyloid plaques (found in Alzheimer's) on retina and heart cells*
 - *Testing a drug to improve sleep cycle disruptions and cognition in mice with Alzheimer's pathology*
 - *Assessing a self-guided, online Acceptance and Commitment Therapy program for dementia caregivers*
 - *Studying changes in numerical and mathematical abilities due to aging and dementia*
 - *Examining neural communication, early Alzheimer's pathology, and connexin blockers in mice (see p4)*
 - *Classifying samples from the Cache County Study on Memory in Aging to inform future genetic analyses*
 - *Increasing diversity in the Cache County Study on Memory in Aging through recruiting Native Hawaiian and Pacific Islander participants*
- Enrollment in Hanover Grant Academy mentorship program for **3 faculty affiliates**
- Assistantships and research support for **5 graduate students**
- The purchase of **2 pieces of high-end laboratory equipment**

Faculty affiliates of the ADRC have pursued federal grant funding:

- **Received: 1** significant federal grant on caregiver stress and health awarded by the National Institute of Health (see p3)
- **Under review: 1** grant on caregiver support and **1** grant on statewide dementia support for rural areas

Additional Research Developments

- **1 postdoctoral research fellow** hired
- **1 faculty fellowship** awarded
- **10 research presentations** given by faculty experts to national scientific societies, Utah non-profit organizations, and state stakeholders in aging and/or dementia
- **15 faculty** actively affiliated with the ADRC
- **7 articles published** by faculty affiliates in scientific journals

Innovative Study on Caregiver Stress and Health Funded by the National Institute of Aging

In May 2023, Dr. Yin Liu, faculty affiliate of the ADRC and associate professor of Human Development and Family Studies, was awarded a prestigious K01 award from the National Institute of Aging, part of the National Institutes of Health (NIH).

Liu has first-hand experience in the difficulties of caring for a loved one with dementia. Liu's grandfather had Alzheimer's disease, and after her mother could no longer provide care for him, Liu stepped in to fill the need herself. This personal experience showed Liu how vital it is to provide support to family caregivers, and her research is now dedicated to learning how the stresses of caregiving impact health.



With the ultimate goal of finding evidence-based methods of reducing stress for caregivers of individuals with dementia, Liu studies stress through biomarkers—measurable, biological indications of stress that the body produces in response to daily challenges. Liu's NIH grant will allow her to continue her research through the collection of hair samples, a novel and non-invasive approach for gathering physiological data from caregivers. By assessing the samples for cortisol, a hormone produced in the body in response to stress, Liu will be able to objectively measure caregiver's stress levels and examine how cortisol relates to overall cognitive health and important health factors such as sleep quality.

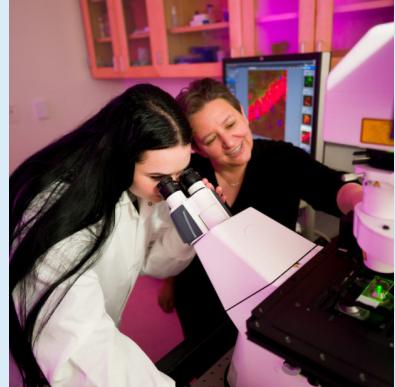
Dr. Shawn Whiteman, Associate Dean for Research and Innovation in the USU Emma Eccles Jones College of Education and Human Services, spoke to the significance of Liu's award and her study. *"The K01 award is a prestigious honor for an early-career researcher,"* he said. *"The NIH's investment in Dr. Liu's development is indicative of her productivity as a researcher, as well as the impact of her work in the field of dementia caregiver research."*

The K01 is a Mentored Research Scientist Award through which the NIH recognizes outstanding early-career scientists. In addition to funding the continuation of her research, Liu's 5-year award will offer opportunities to share her findings and collaborate with other dementia researchers at Utah State University and across the nation. The ADRC is proud to affiliate with Dr. Liu as she advances the field of dementia caregiver research.

Ongoing Research Funded by the ADRC

Dr. Mona Buhusi, associate professor of Psychology at USU, examines how brain cells communicate and how this communication is altered in Alzheimer's disease and normal aging. Using mice that carry specific gene mutations, Buhusi's lab studies the brain pathology and cognitive impairments seen in human Alzheimer's disease.

In the lab, researchers examine how factors such as age and cognitive decline impact the mice's ability to swim through a maze efficiently. Buhusi's research has shown that certain drugs can impact the ability of older mice to learn and remember mazes. Through these trials, Buhusi and her research team hope to contribute to the identification of ways to slow down Alzheimer's disease and preserve cognitive abilities for a longer period of time.



Dr. Naveen Nagaraj, assistant professor in Communicative Disorders and Deaf Education at USU, is studying the effect of hearing aid use on cognition in older adults with hearing loss. Age-related hearing loss is recognized as a risk factor for dementia. While prior studies have suggested that hearing aids are beneficial because they improve social engagement and, in turn, indirectly improve cognition, Nagaraj is testing if hearing aids benefit brain activity more directly.

To assess the cognitive and neurophysiological benefits of hearing aids, Nagaraj and his team are using functional near-infrared spectroscopy to assess changes in neural connectivity between different parts of the brain as a result of wearing hearing aids. The project has strong potential for guiding future research and practice in this area.



*In October of 2022, the ADRC hosted a photography exhibit entitled “**Faces of Dementia.**” Stories told through photographs featured individuals and their caregivers living with dementia. We are grateful to all the families who participated in this exhibit and to the photographer, **Maria Ellen Huebner**. The exhibit is available online for everyone to experience. To view, [click](#) to visit our website.*

Cover: Tina cares for her mother, Pok Yo | **Pictured above:** Leonard cares for his wife, Nadine

Get Involved with the ADRC

Contact Us: 435-797-1772 | adrc@usu.edu | cehs.usu.edu/adrc

Join us in our ongoing mission to research dementia and related disorders, provide service with community partners, and train a dementia competent workforce. Our primary goals are to provide additional resources for caregivers and support through research opportunities.

- If you're interested in participating in research or volunteering with the center, contact us to see what opportunities are currently available.
- Keep up to date with the latest from the ADRC. Email us or visit our website to subscribe to our newsletter.
- Your donations matter! If you'd like to contribute to the ADRC's mission of outreach and research, visit cehs.usu.edu/giving or click the QR code below, and select ADRC as the donation designation.
- Have you or your loved ones have been impacted by Alzheimer's disease or dementia? We want to hear from you. Send your story to adrc@usu.edu.



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