

Seeking Alzheimer's Disease Clues in Aging Brains, Basic Science



Greg Samanez-Larkin, PhD, Psychology & Neuroscience, studies the effects of aging on the brain's ability to make decisions. Contrary to popular belief, he notes, "The aging brain is fantastically adaptive."

Until it isn't. Devastating illnesses such as Alzheimer's disease (AD) and other aging-brain disorders rob people of memories and decision-making abilities—of who they are. The Alzheimer's Association estimates that 5.7 million Americans were living with AD in 2018, 96 percent of whom are older than 65.

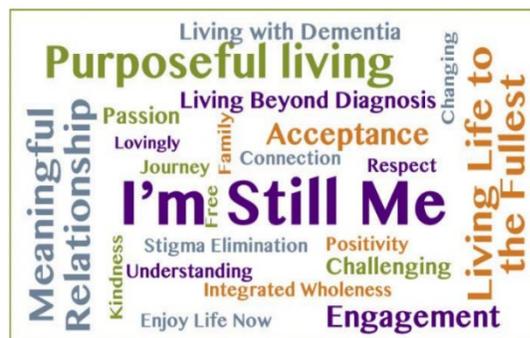
'On Our Mind: Brain Health Know-how'

Complex issues such as Alzheimer's require interdisciplinary, innovative solutions. DIBS encourages such solutions by connecting diverse faculty through seed-grant funding, seminars and symposia, fellowships, and outreach opportunities such as the 2019 Reunion Weekend panel, "On Our Minds: Brain Health Know-how." Samanez-Larkin and colleagues from the DIBS Faculty Network participated.

Carol A. Colton, PhD, Neurology, discussed deciphering underlying metabolic causes of Alzheimer's. She is looking at how body's immune system may be involved, an exciting approach that may lead to effective therapeutics.

'I'm Still Me'

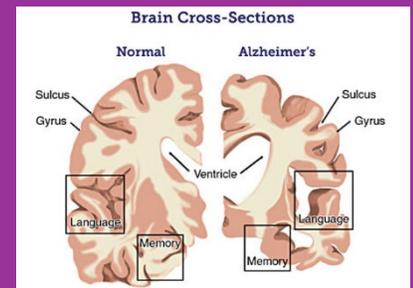
Eleanor McConnell, PhD, RN, School of Nursing, studies how to improve the quality of life for people with AD, in their daily environments, and reduce stigma. "As abilities become more limited, environmental factors become more influential," she says. Simple changes in lighting, noise level, and communication style can make an enormous difference to those struggling with Alzheimer's.



Though the three researchers come from different disciplines, Psychology & Neuroscience, Neurology, and Nursing, they are able to connect and share valuable information and perspectives through DIBS.

'We are trying to bring everyone together to work on issues such as Alzheimer's.'

—Greg Samanez-Larkin, PhD
Psychology & Neuroscience
2019 Alumni Reunion
Weekend



Signs & Symptoms of AD

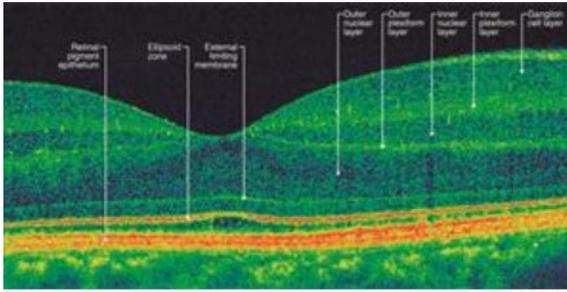
- Memory loss, especially of recent events, names, places and other new information
- Confusion about time and place
- Struggling to complete familiar tasks such as brushing one's teeth
- Trouble finding appropriate words, for example in a sentence
- Difficulties in judging situations
- Changes in mood and personality

—Alzheimer's Foundation

Seed Grants Support Alzheimer's, Other Vital Research

DIBS awards seed-grant funding through two programs: Incubator Awards and Germinator Awards. Incubator Awards provide seed funding to support collaborative brain science research for projects of exceptional innovation and broad significance to the field; Germinator Awards, new for 2018-2019, are designed to support smaller, targeted requests that would facilitate new research and lead to new external funding.

Non-invasive ways to diagnose early Alzheimer's remain elusive. One promising strategy: Imaging of the retina, an extension of the brain, which



Optical coherence tomography, a non-invasive imaging technique, allows researchers to examine the retina. (Image courtesy of the American Academy of Ophthalmology.)

already is being used to diagnose early signs of multiple sclerosis.

An extraordinary team of scientists from Neurology, Ophthalmology, Biomedical Engineering, Psychiatry & Behavioral Sciences, and Medicine (Geriatrics) received an Incubator Award to study, "Novel Retinal Imaging Biomarkers in Early Alzheimer's Disease." Their research results, appearing in PLOS One, provided valuable new data on this topic.

Philanthropy Funds Young Alzheimer's Researchers

Vital funding from donors is helping DIBS identify and support some of the newest researchers in the field of Alzheimer's. The Karen L. Wrenn Trust, which DIBS administers, is named for Duke alumna Karen L. Wrenn, who died of Alzheimer's. Each three-year fellowship provides \$40,000 per year to a Duke PhD student who is actively working on innovative research focused on Alzheimer's.

The inaugural three-year fellowship, awarded in 2017, went to **Yixin Ma**, a PhD graduate student in the Duke Medical Physics Program. Her research is focused on identifying neuroimaging biomarkers for disease detection at the very early stage. She hopes to develop innovative ultrahigh-resolution diffusion MRI methods to detect and characterize early microstructural brain changes associated with AD.



The second Fellowship, announced in 2019, was awarded to **Will Huffman**, a Biomedical Engineering PhD student in the Pratt School of Engineering. He plans to develop strategies to prevent cognitive decline following surgery, a condition for which Alzheimer's patients are particularly at risk, and which can accelerate the progression of the disease. The non-invasive, ultrasound-based strategy involves stimulating the vagus nerve and thereby reducing inflammation in the brain.



The Wrenn Fund also makes it possible for young researchers to travel to conferences, sharing their data and learning from others who study Alzheimer's.



DIBS supports early-stage funding designed to encourage innovation and collaboration.

Between 2013 & 2017, DIBS Incubator Awards showed a 6-to-1 return on dollars invested.

Help DIBS Expand Alzheimer's Research Opportunities!

Help us make it possible for more faculty and students to conduct innovative research to solve real-world problems such as Alzheimer's Disease.

To support research opportunities at DIBS, please contact:

Shannon L. Reavis
Senior Program Director
Duke Office of Major Gifts
Strategic Initiatives
919.613.8894 (o); 336.817.6119 (c)
shannon.reavis@duke.edu

December 2019