

Contact: Jim Herlihy, Senior Marketing & Communications Director
(720) 699-9286 or jherlihy@alz.org

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Colorado funding for three innovative Alzheimer's research projects

Cutting-edge research that will explore gender differences in susceptibility to Alzheimer's, a potential treatment for dementia-damaged nerve cell networks, and a reproducible 3D brain model that will advance studies for a cure are the subjects of three new research projects being underwritten by the Colorado Chapter of the Alzheimer's Association.

On the heels of a \$1.1 million investment in seven research projects on four continents in 2018, the board of directors of the Colorado Chapter has invested an additional \$500,000 in three new projects – all being conducted by promising young researchers or scientists experienced in other fields who are bringing new expertise and perspectives to Alzheimer's research.

"This is an exciting announcement for two reasons," said Amelia Schafer, executive director of the Colorado Chapter of the Alzheimer's Association. "First, is the enormous potential that each of these projects represents. These are new avenues of research that offer great promise."

Local funding making research possible

The announcement also is unique, Schafer said, because the Colorado Chapter is one of only a handful of Alzheimer's Association chapters around the country that is directly funding original research with locally-raised funds.

"The Colorado Chapter board is extremely proud of our funding initiative," said Tom O'Donnell, chairman of the Colorado Chapter board and managing partner at Holland & Hart LLP. "The substantial investment we have made in leading-edge research in the past year has the potential to make a very real difference in the fight against Alzheimer's disease. That's why we're here...to find a cure for a disease that affects nearly 50 million people around the world, including 73,000 here in Colorado."

Following are details on the three newly-funded research projects:

- **Gender differences in Alzheimer's and gut bacteria.** Dr. Hemraj Dodiya of University of Chicago has done research on bacteria living in the gut – collectively known as the "microbiome" – which suggests they may play a key role in how a person's immune system functions. People with higher levels of beta-amyloid in their brain (a hallmark of Alzheimer's) tend to have higher levels of bacteria in their gut that cause harmful inflammation. Studies suggest that men and women have different bacteria in their gut, and women account for nearly two-thirds of Alzheimer's cases. Dr. Dodiya will study whether gut bacteria in male mice, which is thought to be helpful in maintaining their cognitive health, can affect immune cells in the brains of female mice, offering potential treatment approaches that could be applicable for human subjects.

- **A 3D model of the human brain to enhance research.** Much of the research to find a cure for Alzheimer's is based on testing in mice, which does not automatically translate to human subjects. Dr. Catherine Verfaillie of Katholieke Universiteit Leuven in Belgium is looking to apply genetic and technological advances to create an engineered, three-dimensional brain-like structure that mimics many of the properties of living human brains. This tool has the potential to offer a viable, cost-effective option for many types of dementia studies. It is expected that this model will be better at predicting a drug's effectiveness in living humans.
- **Protein for the brain to restore brain synapses.** KIBRA is a protein associated with human memory, and it has been identified as being important to synaptic function. Past studies show that people with Alzheimer's dementia sometimes have low levels of KIBRA in their brains. Dr. Grant Kauwe of the Buck Institute for Research on Aging in Novato, CA, will study how abnormal tau proteins can form toxic tangles that damage nerve cells, and whether increasing the amount of KIBRA or PICK1 (another protein found in the brain) can improve synapse function and memory, potentially leading to new therapies designed to protect nerve cell networks in people with Alzheimer's.

The studies will be funded for the coming two years, at which time the results will be evaluated to determine if the research warrants enhanced funding from the National Institutes of Health (NIH).

The Colorado Chapter of the Alzheimer's Association provides information as well as educational programs and services at no charge to all Colorado families in addition to raising funds to find a cure for the sixth-leading cause of death for people in the United States. To learn more, go to www.alz.org/co or call the Association's free 24/7 Helpline at 800-272-3900.

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The Alzheimer's Association Colorado Chapter is the premier source of information and support for the more than 73,000 Coloradans with Alzheimer's disease, their families and caregivers. Through its statewide network of offices, the Alzheimer's Association offers education, counseling, support groups and a 24-hour Helpline at no cost to families. In addition, contributions help fund advancements in research to prevent, treat and eventually conquer this disease. The Alzheimer's Association advocates for those living with Alzheimer's and their families on related legislative issues, and with health and long-term care providers. For information call the Alzheimer's Association 24/7 bilingual Helpline at 800-272-3900, or visit www.alz.org/walk.

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