The following projects were financially supported by the MADC Pilot Project Program

**Henry L. Paulson, MD, PhD**
Lucile Groff Professor
Department of Neurology
Director, Michigan Alzheimer’s Disease Center
Director, UMind (U-M Initiative on Neurodegenerative Diseases)

“Exploring molecular mechanisms of Alzheimer’s disease”
My laboratory is exploring how cells in the brain eliminate abnormal proteins that accumulate in Alzheimer’s disease and related dementias. We recently identified certain “protein quality control” enzymes that we believe help brain cells recognize beta-amyloid and tau, the key disease proteins in AD, and clear them from the brain. We are taking advantage of mouse models we recently developed to test our ideas about the importance of these enzymes in age-related dementia. This work complements Dr. Gestwicki’s studies exploring additional quality control proteins in dementia. Together, we hope to identify potential therapeutic targets.

**Jason Gestwicki, PhD**
Director, Center for Chemical Genomics, Life Sciences Institute
Associate Professor, Department of Pathology
Associate Professor of Biological Chemistry

“Toward therapy for degenerative brain disease through chemistry”
When proteins are made in our bodies, quality control systems ensure that any damaged proteins are removed. However, in Alzheimer’s disease and other dementias, brain cells seem to allow damaged proteins to remain. Then, these damaged proteins accumulate and contribute to disease. The Gestwicki laboratory is exploring how brain cells tell the difference between normal and damaged protein. They are especially interested in “molecular chaperones”, which are important components of the quality control system. In collaboration with the Paulson group, this work is identifying new ways to potentially help the brain distinguish “good” proteins from “bad”.
Roger Albin, MD
Anne B. Young Collegiate Professor of Neurology,
University of Michigan
Chief, Neuroscience Research, VAAAHS GRECC

“Advanced imaging in dementia: toward better accuracy in diagnosis”
We are exploring novel imaging methods to improve initial diagnosis of dementing illnesses. Our work involves comparison of a new MRI-based method with an established imaging method using Positron Emission Tomography (PET). Our goal is to develop an easily used MRI method for accurate diagnosis of dementias.

Cathleen Connell, PhD
Professor, Health Behavior & Health Education
Associate Director, Center for Managing Chronic Disease

“Dementia support networks: role of companion animals”
The goal of this project is to explore the role that pets play in the support network of families affected by Mild Cognitive Impairment or a dementing illness. To accomplish this goal, we are conducting a mailed survey of pet owners who are caring for a family member with dementia. In addition, we are conducting focus group interviews with participants who attend mild memory loss support groups. With this information, we hope to learn new ways to support relationships with pets via intervention and community-based services and programs.
"Relative influence of biomarkers on clinical outcomes among different stages of Alzheimer disease process"

The goal of this project is to identify sequence (or order) of pathologic events which occurs during the development of Alzheimer’s disease (AD). Identifying the precise sequence of pathological events is very important for developing medications which slow down the progress of AD. Based on this research, two journal publications are currently under review. We are finding that vascular diseases add additional burden on brain function, in which clinical symptoms might show up earlier if you have diseases such as diabetes, hypertension, and small infarcts in the brain.