University of Wisconsin School of Medicine and Public Health: Alzheimer's study renewal grant to focus on biomarkers of the disease

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MADISON, Wis. – The Wisconsin Registry for Alzheimer's Prevention (WRAP) has been awarded a five-year, $19 million renewal grant from the National Institutes of Health to enable in-depth study of molecular hallmarks of the disease in the brain and spinal fluid.

The additional funding will expand capacity for in-depth tests for biomarkers that serve as early signals of potential future disease. Structures called amyloid plaques and neurofibrillary tangles build up in the brain tissue of people with Alzheimer's disease. WRAP researchers can determine the levels of plaques and tangles by collecting specialized brain images or studying the cerebrospinal fluid obtained with a lumbar puncture. By measuring changes in the amount of amyloid and tau biomarkers in the brain and cerebrospinal fluid, scientists hope to answer questions like how early in life plaques and tangles show up, how well do they predict future cognitive symptoms, and what can be done to lower one's levels.

“Alzheimer’s Disease may begin decades before its symptoms are evident. We still don’t know why some people get the disease and others do not, but the WRAP study is on the path to answer these questions and these new early-detection tests are critical,” said Sterling Johnson, professor of medicine at the University of Wisconsin School of Medicine and Public Health and principal investigator of WRAP. “This study looks at multiple facets of our participants’ brain health including their genetics, health history and lifestyle such as diet, sleep, mood, and physical activity. This new funding is critical to our future success.”

“Ten years ago, we didn’t have the tools to diagnose Alzheimer’s disease with precision and confidence because we had limited ability to detect exactly what was happening in the brain as the disease established and progressed,” Johnson said. “Now we have clear methods for detecting the pathological features in the brain. With these tools we’re focused on identifying how to prevent or reduce those features.”

WRAP, which began in 2001, is the largest family history study of Alzheimer’s disease in the world. Approximately 1,580 volunteer participants, 73 percent of whom have a parental history of the disease, visit every two years to answer questions about lifestyle factors such as diet, fitness and stress; have vital signs measured; participate in cognitive testing; and undergo brain scans and spinal fluid donations on an optional basis.

When the study began, the average participant age was 53 years, and all were cognitively healthy. Sixteen years later the average age of participants is 65, and about 20 percent now show signs of amyloid in their brain.

WRAP is looking for more participants from historically underrepresented racial and ethnic groups such as individuals of Hispanic, African-American, and/or Native American heritage to understand why Alzheimer’s disease often occurs at higher rates in populations of color in the U.S. than among non-Hispanic whites.

WRAP data are also shared with 16 other ongoing Alzheimer’s studies at the University of Wisconsin School of Medicine and Public Health, and datasets are available upon request to other researchers from all over the world.

“This is a team science effort and the WRAP study has resulted in a constellation of linked studies looking at things like how stress or microbes in the gut can accelerate or affect disease progression. We’re discovering so much,” said Dr. Johnson.

For more information, call 1-800-417-4169 for the Madison site, 414-219-7911 for the Milwaukee site, or 1-800-362-5454, ext. 27187 for the La Crosse site. Or visithttp://www.wai.wisc.edu/research/wrapfaq.html.