

WRAP Update

Newsletter of the Wisconsin Registry for Alzheimer's Prevention

INFO SESSIONS ARE BACK

WRAP is very pleased to offer in person information sessions for our research participants this spring.

At these events, faculty and researchers from UW–Madison Alzheimer's disease research programs travel to multiple locations in the state to share resources and updates from WRAP and all of our Alzheimer's disease research programs.

This is an opportunity for our team to share more information about research, answer your questions, and better explain how very important the contributions of research participants are to science.

More details and event invitations will be mailed to WRAP participants. Event details will also be posted on the WRAP website prior to the events. Until then, please save the dates. We hope you can join us at an Info Session near you!

Spring 2023 Info Sessions

- April 25 - Neenah
- April 29 - Milwaukee
- May 2 - Madison West
- May 6 - Madison East
- May 9 - La Crosse



WRAP participants are impacting brain science worldwide

By Sterling Johnson, PhD, Principal Investigator, WRAP Study

I am excited to share news from our team and a few recent examples of how your participation in WRAP is contributing to truly significant findings in the field.

In a recent partnership with a study in Sweden, we combined data to study protein levels in blood with results of PET scans, discovering a protein blood marker, p-tau217, that changes over time the same way it does in PET scans. Another blood marker, p-tau231, begins to rise even when brain scans show low amyloid.

In another study, scientists at Harvard University used data from WRAP participants to find interesting relationships between tau in the brain and age of menopause. In Spain, investigators compared WRAP data to a Barcelona cohort and found very similar results, validating these findings. And at UC San Francisco, investigators are comparing WRAP tau PET imaging to tau patterns in the brains of retired professional athletes with chronic traumatic encephalopathy (CTE). These are just a few of many examples of how WRAP is contributing to important discoveries thanks to our research participants. Thank you!

I wanted to give you an update about an item that has been in the news. This fall, you may have heard news about the drug lecanemab. A clinical trial sponsored by two pharmaceutical companies found the drug reduced amyloid levels and slowed

cognitive decline by 27 percent in the study's participants. We'll learn more about that study in the next few months, when its findings are published. Currently, investigators around the globe are already studying lecanemab, including in the AHEAD study at UW–Madison.

While we do not yet know more about that drug, we do know WRAP has helped move science to a place where such findings

are possible. Our study is uniquely positioned to identify brain changes in people who do not have noticeable cognitive changes. We have a unique look at how biomarkers progress, especially brain proteins amyloid and tau, which are the hallmark signs of Alzheimer's disease.

These brain proteins are identifiable through PET imaging. Read further to learn more about how PET scan visits work, how crucial they are to our study, and more study news. On behalf of everyone at WRAP, thank you! Stay in touch with us by visiting our website wrap.wisc.edu. 🌀



Sterling Johnson, PhD,
Principal Investigator,
WRAP Study



Wisconsin Registry
for Alzheimer's Prevention
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

News Briefs

Breaking the Silence

The 9th Annual Breaking the Silence: Addressing Dementia in Communities of Color will return April 21, 2023. The Wisconsin Alzheimer's Institute Regional Milwaukee Office hosts this annual event in recognition of Minority Health Month, bringing together regional and national experts in research, caregiving, and health equity. Find details at wai.wisc.edu/milwaukee.

Staff Retreat

Members from WRAP and the Brain Biomarker lab had an opportunity to meet together for a staff retreat in October 2022. The fun day included team building, planning, and setting strategies for future work. Here's a few snapshots from the event.



WRAP participant data in action

Today, more than 20 years after its inception, the Wisconsin Registry for Alzheimer's Prevention (WRAP) includes more than 1,700 research participants, many of whom return every other year to contribute to the study. Each year, UW–Madison researchers publish dozens of research papers utilizing data contributed by WRAP participants. These are a few recent examples.

Average 20 years of PET-detectable amyloid at dementia onset

Researchers analyzed imaging data from WRAP and Wisconsin ADRC Clinical Core and observed that in those with evidence of amyloid plaques, amyloid had been present for an average of 20.5 years at the time a key assessment indicated onset of mild dementia. While it is generally understood that amyloid precedes Alzheimer's disease by decades, a greater understanding of this timeline may increase diagnostic accuracy and opportunity for intervention, planning, and care. WRAP and several UW–Madison researchers published this finding, including Alex Birdsill, Sterling Johnson, Rebecca Langhough Koscik, Erin Jonaitis, and Claire Erickson.

Title: "Trajectory of clinical symptoms in relation to amyloid chronicity"

Journal: *Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring*

Tracking the course of disease

A paper published by Tobey Betthausen, PhD, and colleagues analyzed data from WRAP and two other registries to track the course of disease over time. By modeling amyloid accumulation and controlling for multiple individual variables, Betthausen, et al. were able to track

onset age and model the progression of amyloid. The findings provide a way to estimate the time symptoms may develop and investigate the role of amyloid and other factors that influence timing of clinical impairment of Alzheimer's disease.

Title: "Multi-method investigation of factors influencing amyloid onset and impairment in three cohorts"

Journal: *Brain*

Lifestyle and health factors

Analyzing data from WRAP, Karly Cody and colleagues published a study on the association of lifestyle health with cognition and amyloid accumulation. Lifestyle health was measured using the Lifestyle for Brain Health (LIBRA), a composite score of 11 dementia risk and protective health factors that can be targeted for intervention and primary care prevention. Risk factors included obesity, physical inactivity, smoking, depression, high blood pressure, diabetes, high cholesterol, heart disease, and kidney disease. Protective factors included low-to-moderate alcohol use and high cognitive activity. They found a healthier overall lifestyle, as indexed by the LIBRA score, is important for general cognition throughout mid-and-late life, but may not impact early Alzheimer's disease-related cognitive decline or amyloid accumulation.

Title: "Associations of the Lifestyle for Brain Health index with longitudinal cognition and brain amyloid beta in clinically unimpaired adults: Findings from the Wisconsin Registry for Alzheimer's Prevention"

Journal: *Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring*

Read more about these studies by searching their titles at pubmed.gov.



Science breakdown: What's a PET?

Positron Emission Tomography, or PET, is a medical imaging technique scientists use to create a detailed picture of what is happening in the body at a cellular level. Alzheimer's disease researchers at UW–Madison have been using PET scans in WRAP since 2009 to identify changes in the brain that are early indicators of Alzheimer's disease.

PET scans provide tremendous clarity with regard to who has early brain changes that may eventually lead to Alzheimer's dementia, and what risk and protective factors might hasten or slow down its symptoms progression. These scans allow us to get a better understanding about how and when disease starts and progresses; and they help researchers determine effectiveness of therapies. What we are learning from these scans in our research today will make its way into doctors' offices in the future.

Scheduling a PET visit

A PET study visit occurs over two days. This year, our team has increased space, staffing and equipment to allow

us to offer more PET scan appointments. That means if you tried to book a PET in the past and convenient timing was not available for you, please try again!

When a participant undergoes these scans, we are able to give them an analysis of their current brain health. A member of our medical services team reviews each scan and completes a brain health report card for the participant. The report card includes data about risk and protective health factors relevant to their individual brain health. They also receive an image of their current MRI scan and the scans are stored in their study files.

PET scans are so important to our science that we celebrate when we are able to complete one.

WRAP PI Sterling Johnson said, "Any PET scan is a victory for our program. Regardless of the study, the data is extremely helpful for all of us." 🌀

Photos: Scenes from a PET scan at a research study visit.

Open Studies

PREDICT-3

WRAP participants are invited to enroll in PREDICT-3. The study is open to people ages 45 to 89, with or without memory concerns, to undergo brain imaging scans. The goal is to examine biological markers found in PET and MRI images to determine how far in advance symptoms of Alzheimer's disease begin, how changes happen over time, and how they relate to memory, thinking, genetics, health and lifestyle factors; with the eventual goal to improve our ability to diagnose Alzheimer's disease.

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AA-FAIM

African-Americans Fighting Alzheimer's in Midlife is a sub-study in partnership with WRAP, held in response to African American participants who wanted information on increasing wellness. Study participation includes answering questions about daily life and health, a visit to UW Hospital or Milwaukee Aurora for a standard WRAP visit, optional lumbar puncture or MRI and post-study visit to discuss findings, a payment for your time, and follow-up visits every two years.

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REMINDER



Wisconsin Brain Donor Program
Wisconsin Alzheimer's Disease Research Center
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

All participants of WRAP and their biological parents are invited to join the Wisconsin Brain Donor Program.

For more information, to update your registration, or to become a future brain donor, please contact us.

Office phone: (608) 265-4000

Researcher Spotlight

Leonardo Rivera-Rivera, PhD

Dr. Rivera-Rivera has worked with WRAP for nearly ten years, first as a graduate student and now as a neuroscientist working in the lab of WRAP PI Sterling Johnson. Rivera-Rivera recently attended a International Society for Magnetic Resonance in Medicine conference in Rome, where he received a first place abstract award for a poster on neurofluids. While there, he took time to chat with us about working with WRAP and his appreciation for study participants

Q: Can you describe a recent publication you worked on using WRAP data?

Some of our recent work indicates the brain's vascular health is often deteriorated in the presence of Alzheimer's diseases proteins. This suggests Alzheimer's disease might damage our cerebrovasculature, or a damaged cerebrovasculature might contribute to Alzheimer's disease. These are key questions we are working to understand, as they would provide insights into potential Alzheimer's disease therapies.

Q: Did anything surprise you about these findings?

I'm always surprised with the speed of the progress we are making at characterizing brain health. We heavily depend on non-invasive biomarkers that we can acquire in a relatively short amount of time. These are very small vessels, and the fact we can "see" and measure the blood moving through them is very exciting. Particularly in this recent study, Alzheimer's disease and cerebrovascular disease have long been accepted as distinct, separate pathways to developing dementia. However, there might be some interactions at work!

Q: What comes next?

With the help of our participants that return to provide valuable biomarkers, we are working to better understand how cerebrovascular health in the context of Alzheimer's disease can help us explain the heterogeneity observed in both pre-clinical and clinical cognitive outcomes. I will also continue to work towards improving MRI technologies to better characterize brain health.



Leonardo Rivera-Rivera, PhD, Neuroimaging Scientist

Q: After years of working in Alzheimer's disease research, have you changed any of your personal behaviors based on things you've learned?

I try to maintain a mostly healthy lifestyle without making life too boring. For me, that means physical exercise, a balanced diet and getting enough sleep (when possible)! I also enjoy quality time with friends and family, and work on trying to learn new skills I have little or no experience with.

Q: Anything else you'd like to share with WRAP participants?

Yes, we are so fortunate to have your participation in WRAP. Words cannot describe how important your help is. Thank you for your commitment to the fight to conquer Alzheimer's disease. We truly could not do it without you! And finally, thank you for your perseverance returning to the study visits. Please continue to do so. You are making an enormous impact on the field of Alzheimer's and dementia, and on the life of many people.

WRAP Update

A newsletter of the Wisconsin Registry for Alzheimer's Prevention (WRAP). WRAP is conducted at the University of Wisconsin School of Medicine and Public Health.

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AA-FAiM

African-Americans Facing Alzheimer's in Midlife

A WRAP sub-study with an opportunity to learn health information, join wellness programs and participate in research.

Study visits offered in Milwaukee or Madison.

To find out more, please call:

(608) 264-3365
or (608) 264-2970