

BEACON NEWS

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Edited by: Alyssa L. Harris



Photo credit: Steve Zylus

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WELCOME!

Dear Friend,

Welcome to the first issue of the BEACoN Newsletter. Thank you for your interest in participation in our research studies. Our ultimate goal is to understand how Alzheimer's disease affects the aging brain and to develop strategies to prevent or treat this devastating illness. You are our partner on this journey. We cannot do it without you!



We want you to be the first to know of any exciting discoveries that can shape our understanding of Alzheimer's disease. If there's anything you would like to see in this newsletter, please let us know at beacon@uci.edu.

Michael A. Yassa, Ph.D.
Director, BEACoN Collaboratory

BEACoN 2.0 - \$13M Grant Funded!

We are pleased to announce that the BEACoN Study has been renewed for another five years by the National Institute on Aging (NIA), receiving an additional \$13 million in funding, bringing the total project funding to close to \$20 million.

BEACoN 2.0 specifically focuses on cerebrovascular injury and dysfunction (CVID). You have probably heard before that heart health is important for brain health. Even in the absence of severe heart disease or major strokes, the brain's vascular supply is vulnerable to the aging process.

CVID is more commonly found in Black and Hispanic older adults and could help explain the increased prevalence of AD in these groups. BEACoN 2.0 focuses recruitment on the Hispanic/Latino and Black communities in Southern California to understand this increased risk.

The study will include new in-person and at-home assessments, MRI and PET scans, blood draw, physical and functional assessments as well, digital cognitive tests as well as paper-and-pencil tests of memory and thinking. All of our testing tools are also available in Spanish. ¡Se habla español!



Can I Participate?

Absolutely! See page 7 for more information on eligibility criteria and how to participate in the study.



What is BEACoN?

Alzheimer's disease is a major public health concern impacting 650,000 people over the age of 65 in California alone. As our population ages, the prevalence continues to increase, which makes it all the more crucial for us to develop better means to diagnose and treat the disease in its earliest stages. Additionally, marginalized communities will suffer a higher burden of Alzheimer's disease because of higher risk factors including rates of diabetes and vascular disease, socioeconomic factors, racism and discrimination, as well as reduced access to, and use of health services. Understanding the disease is critical, but developing an understanding of how different risk factors interact to affect different groups and result in higher disease burden is also fundamentally important. In the BEACoN Collaboratory at UC Irvine, our research studies seek to do just that.

BEACoN (Biomarker Exploration for Aging, Cognition and Neurodegeneration) is an interdisciplinary research program at UC Irvine that partners with the local communities in Southern California to better understand the mechanisms of Alzheimer's disease in its earliest stages. We would like to understand what factors put certain individuals at risk more than others. These research data will be used to improve future therapeutic interventions and inform prevention strategies.

BEACoN is fundamentally about team science and bringing diverse expertise to address the major public health challenge that is Alzheimer's disease. This includes expertise from the community and from study participants.

New Investigators Join BEACoN Team



Dr. William Shankle

Dr. Shankle is a board-certified neurologist and founder of the Shankle Clinic in Newport Beach, specializing in the management and treatment of Alzheimer's disease and other age-related neurological and neurodegenerative conditions. Dr. Shankle is a research fellow in Cognitive Science at UCI and is working with the BEACoN team to provide **quantitative MRI evaluations**, advise on clinical concerns, and collaborate on computational analysis of imaging and behavioral data.



Dr. Elizabeth Thomas

Dr. Thomas is a molecular biologist and Operations Director of the Interdisciplinary Institute for Salivary Bioscience Research (IISBR) at UCI. She is a research professor in the Translational Neuroscience Laboratory. Her research program uses a variety of **human biospecimens**, including post-mortem brain tissue, whole blood, saliva and serum, with techniques ranging from immunoassays to DNA methylation studies. She is working with the BEACoN team to build a fluid biomarker core for the project, focusing on inflammatory factors in Alzheimer's disease.



Dr. Brian Hitt

Dr. Hitt is a board-certified neurologist with UCI Health who specializes in caring for patients with memory disorders. He is assisting with participant consent and answering questions about PET procedures. He is interested in examining the **inflammatory pathologies** of Alzheimer's disease and is working with the team on novel blood-based biomarkers. Dr. Hitt is also passionate about speaking to the community about Alzheimer's disease and has spoken at a number of our recruitment events.



Dr. Judith Kroll

Dr. Kroll is a Distinguished Professor in UCI's School of Education and a renowned authority in the field of Cognitive Science. Her research concerns the way that bilinguals juggle the presence of two languages in one mind and brain. Her work aims to discover how **bilingualism in older adults** can serve to protect the aging brain from Alzheimer's disease. Dr. Kroll is collaborating with the BEACoN to add investigations of bilingualism, particularly in Spanish-speaking study participants.

Get to Know the BEACoN Staff



Liv McMillan, Director of Operations

I manage study logistics for BEACoN and other related research studies. I've been in this role for about 6 years now. Previously, I worked in UCI's Department of Psychiatry coordinating clinical imaging trials. This will be my 20th year at UCI, and I feel so fortunate to spend my days with this amazing team and our wonderful participants working on such exciting research.

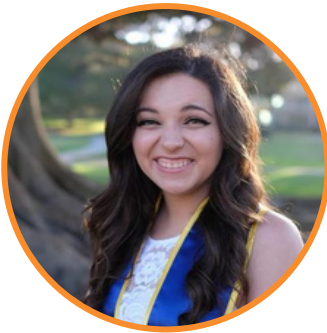
Yuritza Escalante, Study Coordinator

I am actively involved in recruitment of community participants. My favorite part about this study is hearing the stories of people who come from different backgrounds and how they became interested in Alzheimer's research. I look forward to offering this study in Spanish as it will allow us to better connect with the Latino community, which I carry close to my heart being a member of this community myself.



Alyssa Harris, Study Coordinator

I am in charge of recruitment, scheduling, and visits for the BEACoN study. Getting to spend time with my participants has always been my favorite part of the job, and is something I continue to enjoy years later. As someone with Hispanic heritage, I look forward to working with the Spanish-speaking community in our study and to serving and providing resources for underserved populations.



Novelle Meza, Study Coordinator

I am very proud to be working with BEACoN participants and making sure we meet all their needs. Through my experience in nonprofit work I learned to value the connections I make with the community. I am honored to work with diverse communities as we push for more inclusive research protocols. As a Latina woman I am excited to work closely with the Latino/e community in OC and offer educational opportunities for all.



Nandita Tuteja, Study Coordinator

I recently joined the BEACoN research team, after spending the last two years working on collecting MRI scans and assisting with other projects. I had the opportunity to closely observe research conducted on older adults by administering neuropsychological tests and brain MRI scans, which piqued my interest in neuropsychology and neuroimaging. I aspire to become a clinical psychologist in the future.



Community-Engaged Research

There is an urgent need for current and future health research to proactively and meaningfully partner with **Hispanic/Latine and Black communities** to increase their access to and participation in clinical research. This requires a genuine commitment to understanding the impact of systemic and structural discrimination and bias, cultural barriers to participation, as well as community needs and priorities.

BEACoN's community-engaged work began by translating all of our recruitment and assessment tools into **Spanish**, including a Spanish-language version of our website. We hired several Spanish-speaking clinical research staff, who have been instrumental in building true partnerships with individuals and organizations in the community. We partnered with local nonprofits that support the Hispanic/Latine community to **build relationships** and enhance trust between researchers and individuals who are historically excluded from research studies. We also expanded our reach by participating in senior health fairs and disseminating information about Alzheimer's disease risks and prevention as well as clinical research opportunities.

Engagement with local government, community leaders and media figures is also crucial. We connected with former mayor of Santa Ana, Vicente Sarmiento, whose office shared information about our studies on their social media platform. Novelle Meza, a BEACoN study team member, joined a Facebook live podcast with Dr. Ana Nogales, President of the Association for Latino Mental Health Awareness in Los Angeles & Orange County, where they discussed Alzheimer's disease in the Latine community and increased awareness both of the disease as well as research resources.

These are just some of the activities that we have been involved in as part of our community-engaged research approach. We are now planning wellness panels in the community and building more partnerships with local advocacy groups. Our goals over the coming year include hiring Spanish-speaking community leaders to join a **Stakeholder Board** to advise on our strategies and build a referral network for research participants, as well as investing in the community to improve patient advocacy and access to healthcare resources.



We recently attended the Golden Futures Expos in Anaheim and Long Beach as well as the Black History Month Unity Fair in Anaheim to share our study with attendees. Keep an eye out for our next events!

BEACoN
University of California, Irvine

Memory Research Study at UC Irvine

Study Title: **BB and PET biomarkers for cognitive decline in older adults**

The BEACoN Biomarker Evaluation on Aging, Cognition, and Neurodegeneration group will be looking for healthy adults aged 65 and older to participate in this study, looking at the factors that underlie changes in thinking and memory with increasing age. We will test the availability of BB, PET, and cognitive testing in detecting subtle changes in the brain that precede cognitive decline.

The study involves:

- 1. A blood test at the UC campus, each lasting up to 3 hours.
- 2. Assessment of memory and thinking.
- 3. A PET brain scan and a PET brain scan done once a year.
- 4. The return to participate in a longitudinal education study that involves 1. cognitive testing and 2. PET brain scans done once a year.

If you would like more information, or would like to do a brief online or in-person screening to determine your eligibility for this study, please contact the study staff at:

Research@uci.edu or call (949) 824-0904

UCI TRANSLATIONAL NEUROSCIENCE LABORATORY

Our Latest Research Discoveries

Cerebrovascular pathology may lead to brain tissue loss and memory problems in the elderly

Work led by BEACoN doctoral student **Batool Rizvi** recently showed that "white matter hyperintensities", a measure of cerebrovascular injury and dysfunction, are associated with smaller volume of the hippocampus and the perirhinal cortex. These are brain regions that are important for memory. She also showed that these measures are associated with memory loss, potentially paving the path to a better understanding of how vascular factors contribute to the earliest stages of Alzheimer's disease. This study was published in *Neuroimage: Clinical*.

Better sleep is associated with higher brain network "integration" and better overnight recall of emotional memories

Doctoral student **Miranda Chappel-Farley** recently discovered that better sleep was associated with higher brain network "integration", a measure of information flow. She also demonstrated that this higher level of integration predicts how well they remembered emotional information overnight. This exciting new work suggests network integration may be a key mechanism by which sleep, a modifiable risk factor, can influence our memory function. She presented this work at the *Advances in Sleep and Circadian Science* conference and her first-author manuscript is now under review.



Amyloid and tau pathologies linked to memory's susceptibility to interference through different subregions of the hippocampus

Postdoctoral fellow **Dr. Jenna Adams**, in collaboration with lab alum **Dr. Freddie Márquez** (now at UCSD), recently demonstrated that amyloid and tau (biomarkers of Alzheimer's disease) are associated with retroactive interference, a measure of how susceptible memories are to disruption. They additionally showed that this relationship could be linked with amyloid and tau's effects on different parts of the hippocampus, suggesting a more complex view of how pathology leads to cognitive decline. Their study was published in *Alzheimer's and Dementia: Diagnosis, Assessment, & Disease Monitoring*". Above is a picture of Batool passing on the "Paper Pony" to Jenna.

This is a time-honored tradition whereby lab members engage in a friendly ritual to recognize a tremendous accomplishment and to keep each other motivated. Pictured here is the original pony, which is now thirteen years old!



For copies of our research publications, please email us at beacon@uci.edu.

How to Participate in BEACoN 2.0

About the Study

We are looking for healthy English or Spanish-speaking adults aged 60+ to participate in our BEACoN study examining factors that underlie changes in thinking and memory that are frequent with increasing age.

The study involves 3 visits to the UCI campus in Irvine and 2 visits to UCI Health's brand new PET facility in Costa Mesa. Each visit will last 3-4 hours. Procedures include assessments of memory and thinking, computerized tasks, 1 MRI brain scan, 1 Amyloid PET scan, and 1 Tau PET scan, take home assessments, vitals, and physical and functional assessments.

How Do I Enroll?

- If you have never participated in BEACoN, please reach out to our study staff at beacon@uci.edu to discuss your eligibility.
- If you are currently enrolled in the BEACoN study, you automatically qualify for BEACoN 2.0! Please call or email us to discuss your participation. BEACoN 2.0 procedures begin as early as 6 months after your last BEACoN visit.



**Compensation
Up to \$700**



Eligibility Criteria:

- 1 Aged 60 or older
- 2 Fluent in English or Spanish
- 3 Normal cognition (no memory-related diagnosis)
- 4 General good health (no conditions or diseases expected to interfere with the study)
- 5 No MRI or PET contraindications

¡ Se habla Español !

Tips for a Healthy Brain



Exercise Regularly

Studies have shown that daily moderate physical activity (e.g. brisk walking) protects the brain from cognitive decline.



Reduce Stress

Stress makes the brain vulnerable to inflammation and interferes with the brain's ability to build new connections.



Eat Healthy Meals

The Mediterranean diet which is high in good fats, leafy vegetables, and protein from fish sources is associated with healthy longevity.



Stay Mentally Active

Keeping your brain active especially after retirement is critical. Reading, playing brain games, and taking on new challenges keeps the brain fit.



Get Adequate Sleep

Sleep loss is associated with increased risk for Alzheimer's disease. Both sleep quality and quantity are important for brain health.



Socialize with Others

Maintaining an active social network protects the brain from decline. Social isolation is one of the biggest risk factors for Alzheimer's disease.



(949)824-0904



beacon@uci.edu



1400 Biological Sciences III
Irvine, CA 92697-4550

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