

# Fighting Alzheimers in African-American Communities

## *The African-American Brain Health Initiative - Integrating Research with Community Engagement*

The close relationship between Rutgers University and Newark's African-American communities is providing unique insights into Alzheimer's disease and benefiting those at the highest risk for developing it.

Mark Gluck, a Professor of Neuroscience, at the Center for Molecular and Behavioral Neuroscience, part of the Graduate School-Newark, said African-Americans are twice as likely as white Americans to get the disease.

"The good news is that it is probably not destiny," Gluck told a gathering of community members in Newark last year. "In Africa, the rates of Alzheimer's are no greater than they are here. So, it's something specific to the African-American community here in the United States. The good news is that this health disparity is most likely due to modifiable lifestyle, diet and behavioral factors."

Gluck explained that researchers know that a sedentary lifestyle, an inadequate diet and poor sleep habits interact with genetics to determine who will get Alzheimer's, a form of dementia responsible for memory loss and poor decision-making. But it's not clear which factor is the most important and how they are interrelated, he said.

Professor Gluck works with two postdoctoral scholars, Ashlee Shaw and Neha Sinha, as well as several graduate students from multiple departments across Rutgers, and many undergraduates (including several who grew up in Newark) to conduct research on aging and Alzheimer's disease in Newark's African-American communities. Their work is part of the African-American Brain Health Initiative: A University-Community Partnership (AABHI), which Gluck co-directs (since 2006) with Assistant Chancellor Diane Hill ([www.brainhealth.rutgers.edu](http://www.brainhealth.rutgers.edu)). Hill provides a critical link to the local community organizations, and their leaders, from which the research participants are recruited.

"We want to build, here in Newark, a nationally-renowned federally-funded center of excellence for the study of brain health, aging and Alzheimer's disease in African-Americans," Gluck said at a community meeting in which African-American leaders mingled with the researchers.



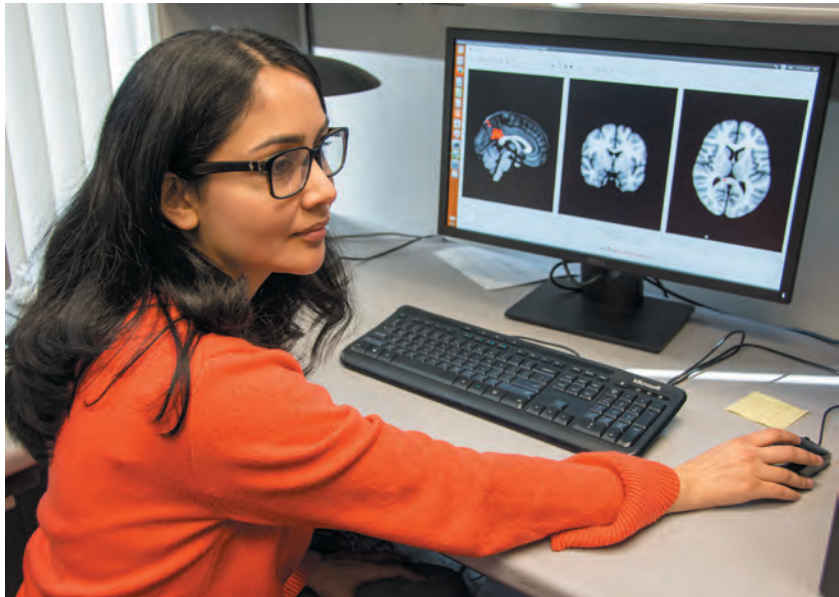
Zumba Class, St James AME Church, Newark, NJ

One of the project's two studies is just now entering its second year. The U.S. Department of Health and Human Services is providing \$1 million over five years for the research team to determine whether twice-weekly dance-based exercise classes can improve brain function and memory and, ultimately, reduce risk for Alzheimer's disease in African-Americans who are ages 55 and older.

The university is offering 20 weeks of free classes at senior centers and churches to see if regular attendance will improve brain health. The mental skills of willing participants are assessed before and after the five months and their brains are scanned. Participants are free to continue to take classes after the research phase is over.

So far, the team has found evidence of improved learning from trial and error for participants who are regularly taking the exercise classes. This type of learning is controlled by the striatum, the part of the brain that rapidly degenerates when a person has Parkinson's disease, which is another form of dementia. The team's hypothesis is that the brain improves because of the need to learn new dance routines in every class, explained postdoctoral fellow, Ashlee Shaw, who oversees the exercise research.

A second study, funded by the National Institutes of Health's National Institute of Aging, is examining the brain health of African-Americans ages 65 and older over five years. For this study, Rutgers is partnering with the University of California at Irvine and its Alzheimer's Disease Research Center, one of 33 National Centers of Excellence in Alzheimer's Research.



Neha Sinha, AABHI Post-Doctoral Fellow

The Rutgers longitudinal study has already enrolled 130 women and 17 men, and the goal is to add 120 more residents each year. The researchers want to increase the participation of men, and are hoping to enroll at least one man for every two women in the coming year. To expand recruitment of older African-American men, the AABHI sponsors a variety of outreach programs in the community including working with local church men's ministries, community barbers, and organizing an annual classic car show and men's brain health fair.

At a recent meeting in the Gluck laboratory, members of the team spoke excitedly about the impact they are having in the community.

The dance-based exercise classes are necessary because many barriers to

better health exist for older adults in urban areas, said Shaw, whose step-grandfather suffered from Alzheimer's. She cites deteriorating sidewalks and the perception of unsafe neighborhoods, which make it difficult for residents to walk as a form of exercise. She said those with lower incomes often work more than one job, or engage in shift-work, which can make it difficult to establish a regular exercise routine.

"We find that our participants are well educated about the risks of Alzheimer's and want to reduce that risk, but we need to remove obstacles to make it easier for them to do that," she said.

"The reason for holding the classes in senior centers and churches is because they are easy to access, and welcoming to the community at large. The gym can be very intimidating if you're not used to

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Ashlee Shaw, AABHI Post-Doctoral Fellow

going all the time, and it can also be expensive, which is another barrier to regular exercise.”

Gluck told the team how the Senate Appropriations Committee approved a \$414 million increase in Alzheimer’s and dementia research in the federal budget for fiscal year 2018. Shaw thinks the increased spending will save money in the long-term.

“The money that’s being allocated for the Alzheimer’s program is a fraction of what they would spend on those with the disease,” she said.

Neha Sinha, another postdoctoral scholar who oversees the brain imaging component of the research, said the brain scans are already producing interesting results. She said that researchers have found that the medial temporal lobe, which is the earliest known location in the brain affected by Alzheimer’s, shows a hyper-synchronization within its sub-regions. This possibly reflects reduced network flexibility, implying that the neural pathways are so heavily connected that they cannot accommodate any new information, she said.

“Those who go through the exercise classes, their brains are rewiring to become more like a younger person’s brain,” said Gluck who practices what he preaches by biking, sea kayaking and skiing regularly.

Diane Hill, Assistant Chancellor for University-Community partnerships, said her role is to build the relationships with the community. Hill, whose mother had Alzheimer’s, is excited about the impact the university is having. She feels that a lot is at stake.

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Diane Hill, Assistant Chancellor for University Community Partnerships.

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L-R: Dr. Mark Gluck, Professor, AABHI Director, Dr. Diane Hill, Asst. Chancellor, OUCP

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