

Pathways to Healthy Aging in African Americans:

*A University-Community Research Study linking
Neuroscience, Neurology, Gerontology, and Public Health*

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www.brainhealth.Rutgers.edu

March 25, 2021

Minority Association of Pre-Health Students, Rutgers University

Pathways to Healthy Aging in African Americans

1. **Alzheimer's Disease and African Americans**
2. **Rutgers *Aging & Brain Health Alliance***
3. **Community Engagement in Greater Newark**
4. **Aging and Brain Health Research**
5. **Future Directions**

Pathways to Healthy Aging in African Americans

- ➔ **1. Alzheimer's Disease and African Americans**
 - (a). *What is Alzheimer's Disease?*
 - (b). *Why are African Americans at high risk?*
- 2. Rutgers *Aging & Brain Health Alliance*
- 3. Community Engagement in Greater Newark
- 4. Aging and Brain Health Research
- 5. Future Directions

1a. What is Alzheimer's Disease?

A disease that destroys our brain, and gets worse over time.

Early Symptoms: Repeating oneself; Difficulty finding words; Getting lost often.

When these symptoms are so bad they prevent someone from living independently, we say they have "*dementia*".

What Happens to the Brain During Alzheimer's?

- Brain cells (“*neurons*”) die – you lose computing power.
- Connections between neurons breakdown – different parts of the brain no longer work together.
- As neurons die, the brain shrinks and big gaps of space start to appear.



Healthy Brain

We can see this using Magnetic Resonance Imaging “MRI”

What Happens to the Brain During Alzheimer's?

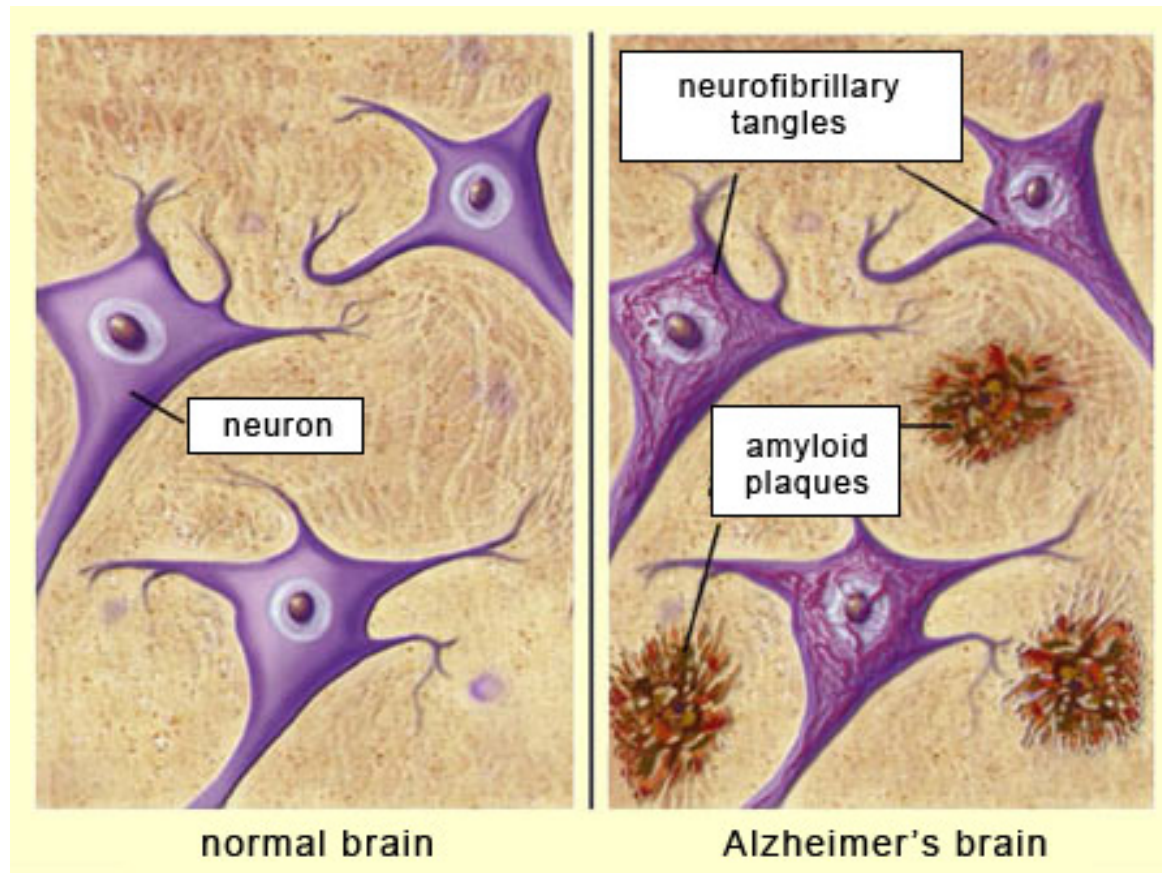
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Alzheimer's Brain

We can see this using Magnetic Resonance Imaging “MRI”

What Happens to the Brain Cells?



We can now (2020) test for these from blood samples

Why Do Some People Get Alzheimer's?

1. **GENETICS.** Some genes you inherit increase (or decrease) your risk for Alzheimer's.
2. **LIFESTYLE.** Risk factors include: **Obesity, Diabetes, Hypertension** (high blood pressure), **Poor Sleep, Being Sedentary** (lack of physical activity or exercise).



Your life choices matter for your brain health!

1b. Why are African Americans at High Risk?

African Americans have over **twice** the risk.

More likely to have severe symptoms.

We do **not** fully understand the reason for this health disparity.

There is a lack of data on the brain changes that occur across the lifespan in older African Americans.

Good news: Probably mostly due to lifestyle.

Things you can change: Fitness, Sleep, Diet

Part 1. Interim Summary

Alzheimer's disease causes dementia, loss of ability to learn and think clearly.

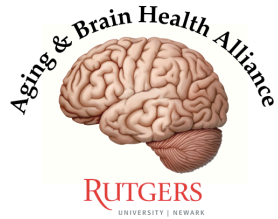
As the disease progresses, neurons die, the brain shrinks, and toxic junk and refuse accumulate around the neurons.

There are genetic, lifestyle, behavioral, and environmental contributors to risk for Alzheimer's disease.

We do not yet understand why African Americans have over twice the rate of Alzheimer's disease, but lifestyle and behaviors are probably a significant factor.

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1. Alzheimer's Disease and African Americans
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Dual Missions

1. Community Engagement:

Promote brain health and Alzheimer's prevention for older African Americans in the greater Newark area.

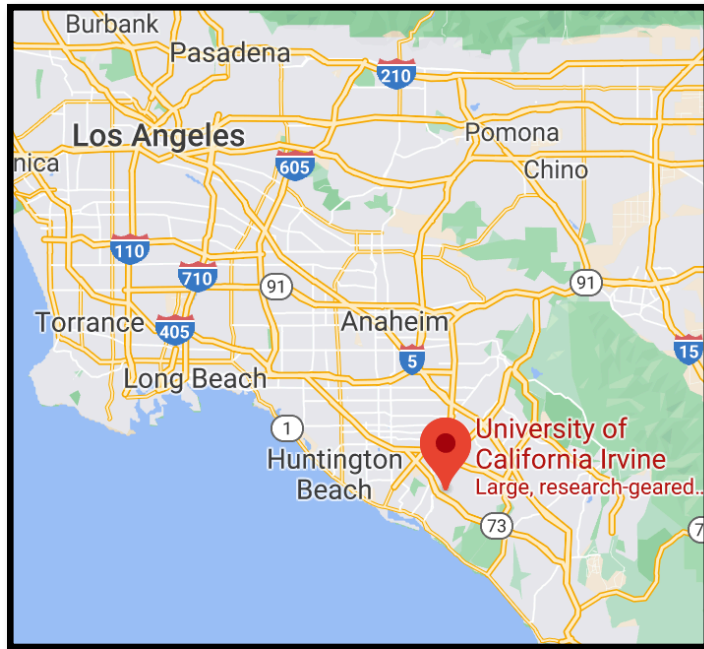
2. Brain Health Research:

In Newark, build a national center of excellence for research and training on community-engaged approaches to aging and Alzheimer's disease in African Americans.



- **15 years** of university-community partnerships promoting healthy aging.
- **University** participants include faculty and students from Neuroscience, Neurology, Public Health, Immunology, and Kinesiology.
- **Community members** are from churches, senior centers, public and federally-assisted housing.

External Collaborations



**UC, Irvine,
California**



**University of Gothenburg,
SWEDEN**

Part 2. Interim Summary

Linking community engagement to brain health research enhances both missions.

Multiple units within Rutgers University furthers our teaching, scholarship, and community service goals.

Newark is now recognized internationally as a center for research on *Pathways to Healthy Aging in African Americans*.

In summer 2022 we will host a national conference: “*Risk and Resilience to Alzheimer’s Disease in African Americans*”

Pathways to Healthy Aging in African Americans

1. Alzheimer's Disease and African Americans
2. Rutgers *Aging & Brain Health Alliance*
- 3. **Community Engagement in Greater Newark**
 - (a). *Key Strategies for Engagement and Recruitment*
 - (b). *Our Community Engagement Team*
 - (c). *Overview of Programs*
 - (d). *Community Stakeholders Board*

3a. Key Strategies for Engagement and Recruitment

- (1). Build trust through **long-term relationships** that bring value to community.
- (2). Formalize community involvement through *Community Stakeholders Board*.
- (3). Disseminate health information through **trusted community leaders**.
- (4). Recruit older **men** through targeted efforts.
- (5). Cultivate **research participants as ambassadors** for recruitment.
- (6). Engage community members to communicate importance of **biomarkers**.
- (7). **Share scientific results** with community so they see impact of their role.

3b. Our Community Engagement Team



Rev. Glenn Wilson
Pastor, Pilgrim Baptist Church. ABHA Director of Church Relations



Delores Hammonds
Community Brain Health Educator & Research Assistant



Glenda Wrights
ABHA Director of Public and Subsidized Housing Relations



Rev. Vivian Cook
Community Brain Health Educator for Exceptional African American SuperAgers



Lisa Charles
Community Fitness and Wellness Research Coordinator



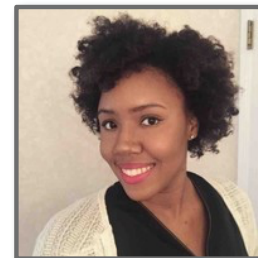
Benjamin Johnson
Community Engagement Assistant for Men's Outreach



Alicia Codrington
Immunology PhD Candidate, Rutgers. NJ Medical School. Community Immune Health and COVID-19 Educator



Mildred Evans
Community Engagement Assistant



Christina Yarborough
Community Research and Engagement Assistant



Catherine Willis
Community Engagement Specialist

3c. Overview of Programs

For 15 years, Rutgers University-Newark has worked with community partners to improve brain health and reduce Alzheimer's disease in older African Americans.



Community Brain Health Programs



The Newark Housing Authority
Rutgers Aging & Brain Health Alliance
NJ Department of Health's Office of Minority and Multicultural Health
Celebrate **MINORITY HEALTH MONTH**

Aging Smart:

How to Keep Your Brain Healthy, Stay Sharp, and Avoid Alzheimer's Disease

Thursday, April 30th, 2020

10am- 1pm,

Free Delicious and Healthy Luncheon & Brain Health Gifts

Clubhouse Community Center,

205 Spruce Street, Newark, NJ

Community Brain Health Educators will show you how to take control of your brain health, improve your memory, stay mentally sharp, and avoid Alzheimer's Disease. African Americans are more than twice as likely as other groups to get Alzheimer's – but that does not have to be your fate if you take care of your health and your mind. Learn the **SIX STEPS TO BRAIN HEALTH**.

RSVPs ARE REQUIRED. ATTENDANCE LIMITED TO FIRST 100 PEOPLE.

Contact Lisa Haber-Chalom at the Rutgers Aging & Brain Health Alliance:

(973) 353-3674, or email LHChalom@Rutgers.edu

www.brainhealth.rutgers.edu

Six Steps to a Better Memory & Reducing Risk For Alzheimer's

1. Exercise regularly.
2. Challenge your brain.
3. Manage stress.
4. Get a good night's sleep.
5. Socialize with others.
6. Eat a healthy diet.

Community Brain Health Literature: 8 Page Pamphlet

Distributed widely and at all our events

Brain Health & Aging

*Six Steps to a Better Memory
and Reducing Your Risk for
Alzheimer's Disease*



RUTGERS
UNIVERSITY | NEWARK

www.brainhealth.rutgers.edu

(973) 353-3673

Mark A. Gluck, PhD

Professor of Neuroscience

Exceptional African American SuperAgers



Tuesday, February 25, 2020

Clubhouse Community Center. 205 Spruce St., Newark, NJ,

Celebrating Black History Month

Honoring Exceptional African American SuperAgers

Program

Introduction: Professor Mark A. Gluck, Director of the *Aging & Brain Health Alliance*

Convocational Prayer: Reverend Dr. Glenn Wilson, *Pilgrim Baptist Church*

Award Presentations & Speeches by Featured SuperAger Awardees:



Rev. Vivian Cook Newark, NJ (1939) <i>Franklin-St. John's UM, Newark</i>	Catherine F. Willis New London, CT (1939) <i>St. Mark AME, East Orange</i>	Lillian McDonald Kingston, NY (1937) <i>Peaceful Zion Baptist, East Orange</i>	Peggy Koon Orange, NJ (1939) <i>New Hope Baptist, East Orange</i>	Sarah Slaughter Sumter, SC (1935) <i>St. James AME, Newark</i>
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Each will tell us about their life histories, their habits and advice for keeping mentally sharp, and their experiences as a Very Important Participant (VIP) in the Rutgers University-Newark study of *Pathways to Healthy Aging in African Americans*.

Audience Q&A about Healthy Aging and the SuperAgers Study:

A Brain-Healthy Buffet Luncheon

- For those ages 80 and above with superior cognitive ability.
- We honor (and study) these “long-distance memory athletes”



Men's Brain Health Programs

A SPECIAL EVENT FOR MEN

Tuesday, December 10th, 2019
11am-1:30pm

How to Turbocharge Your Brain & Build a Superhero-Strong Memory:
Presentation and Free Luncheon



Clubhouse Community Center
205 Spruce St., Newark, NJ

in partnership with the
Newark Housing Authority,
Urban Healthcare Initiative Program,
Men's Ministries of Messiah Baptist Church
and Pilgrim Baptist Church,
and Rutgers University-Newark



Free luncheon with presentations on how men can keep their heart and brain strong through their 60s, 70, 80s, 90s, and beyond. Learn how to become a paid participant in studies of healthy aging, fitness, and brain health in African Americans, sponsored by the *National Institutes of Health*. Hear about the new *Greater Newark Men's Ministry Coalition*, with free monthly Saturday morning breakfasts.

Free gifts for all to help boost your brain power.

RSVPs REQUIRED. ATTENDANCE LIMITED TO FIRST 50 PEOPLE

Contact Lisa Haber-Chalom at Rutgers University-Newark's Aging & Brain Health Alliance at (973) 353-3674, or email LHChalom@rutgers.edu.
www.brainhealth.rutgers.edu

The Messiah Baptist Church Men's Ministry, Mt. Olive Baptist Church, Solid Rock Baptist Church, Urban Healthcare Initiative Program, and the Aging & Brain Health Alliance at Rutgers University-Newark, invite you:

Saturday, October 12th, 2019
12pm - 2:30pm

**3rd Annual Free Classic Car Show,
Bar-B-Que, and Men's Health Fair**



**Promoting Awareness of Alzheimer's Disease,
Heart Health, and Sexual Health for Men**

at Messiah Baptist Church, 13-17 Oak Street, East Orange, NJ

FREE & OPEN TO PUBLIC (Parking available). See fabulous cars and enjoy a free BBQ lunch. Raffle drawing for free gifts from local businesses. Representatives from community medical and health organizations will provide free advice and guidance for men to improve brain health, heart health, and sexual health. NOTE: *In case of rain, event will take place inside the Fellowship Hall.*

With Support from the NIH's National Institute on Aging and the NJ Department of Health

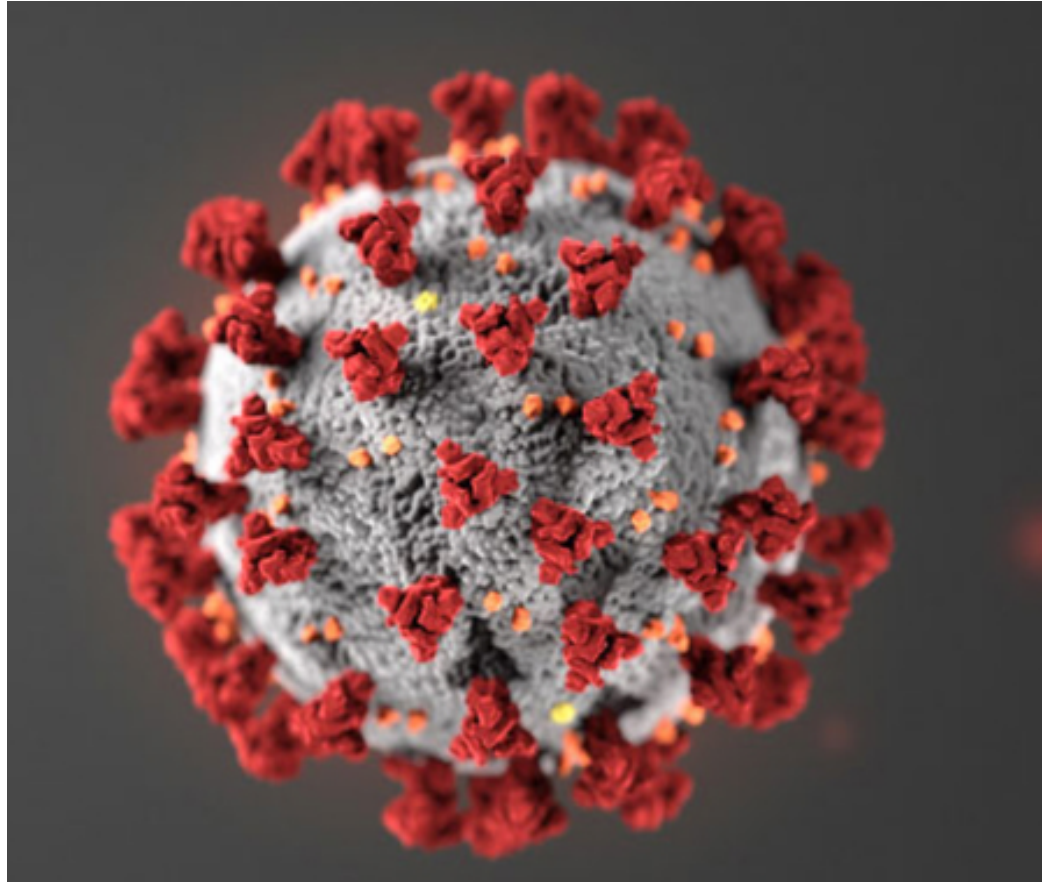
For more information, contact the co-organizers:
Kelvin Roberson, UHIP and Messiah Baptist Church Men's Ministry: kelvinroberson@yahoo.com
Mark Gluck, Rutgers University-Newark: gluck@rutgers.edu

Video from 2017 event: brainhealth.rutgers.edu/videos

Foundation for New Jersey



Four Covid-Era Virtual Health Programs



By Zoom or Phone

1. Exercise Classes

RUTGERS
NEWARK



Free Virtual Exercise and Wellness Programs for African-American Seniors:

Join us from home using the internet or your phone



Offered by Lisa Charles, CEO of Embrace Your Fitness, and the Exercise and Fitness Research Coordinator for the *Aging & Brain Health Alliance*. Get daily health and wellness information by email or text (including updates on protecting yourself from COVID-19), plus

Exercise classes on **Wednesdays, 10am – 10:45am**

Wellness workshops on **Fridays, 10am – 10:45am.**

You can participate using video (Zoom) or phone.

Free for seniors from Newark, Irvington, and East Orange. For information on how to join, contact the *Aging & Brain Health Alliance* at **(973) 353-3674** and leave a voice-mail message with your name, age, and phone number.

Or email us at **brainfitness@rutgers.edu**

www.brainhealth.rutgers.edu

With Support from the NJ Dept. of Health, Office of Minority and Multicultural Health

By Zoom or Phone

1. Exercise Classes
2. Understanding Covid-19



Understanding Viruses, Immunity, and Vaccines:

Simple and Clear Answers to Ten Questions about COVID-19

A Free ZOOM Presentation Hosted by:

Pilgrim Baptist Church of Newark



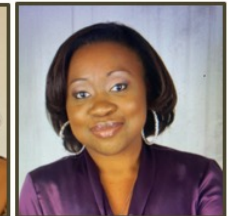
Rev. Glenn Wilson
*Pastor, Pilgrim
Baptist Church*



Dr. Mark Gluck
*Professor,
Rutgers-Newark*



Delores Hammonds
*Rutgers Brain
Health Educator &
COVID-19 Survivor*



Alicia Codrington
*Immunology PhD
Candidate, Rutgers.
NJ Medical School*

Wednesday, October 7th
5pm - 5:45pm

How to Join Us?

<https://rutgers.zoom.us/j/95514505819> or join by phone: (646) 558-8656

Meeting ID: 955 1450 5819 Password: 264808

www.brainhealth.rutgers.edu

By Zoom or Phone

1. Exercise Classes
2. Understanding Covid-19



Newark Area Pastors Speak about African Americans and the COVID-19 Vaccines

We asked eight Newark area Pastors to share with us what they are telling their congregation, and their own families, about the COVID-19 vaccines.



Rev. Maria Crompton,
Elmwood Church, East Orange



Rev. Dana Owens
Messiah Baptist Church, East Orange



Rev. Paul Martin, Esq.,
Saint Mark AME Church, East Orange



Rev. Bryant Ali
New Psalmist Worship Center, Newark



Rev. Dr. Glenn Wilson, Sr.,
Pilgrim Baptist Church, Newark



Rev. James Bailey, III,
Vineyard Baptist Church, Newark



Rev. Robert L. Cole, Jr.,
Holy Temple UFWB Church, Newark



Rev. Jacqueline Robinson
The Power of Prayer Bridging
the Gap Ministries, Inc., Newark

A 10-minute video created by:
Dr. Mark Gluck and Rev. Dr. Glenn Wilson, Sr.

With support from:
The NIH, National Institute on Aging

Available for viewing online at
www.brainhealth.rutgers.edu/pastors



The Neuroscience of Bible Study

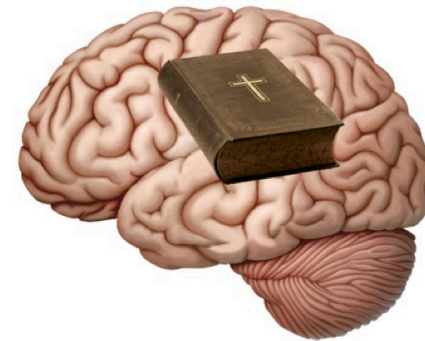
Ten Practical Tips from Brain Science for Memorizing Scripture

By Zoom or Phone

1. Exercise Classes
2. Understanding Covid-19
3. Bible Study & the Brain

Dr. Mark A. Gluck
Professor of Neuroscience,
Rutgers University—Newark
Director,
Rutgers Aging & Brain Health Alliance

Reverend Dr. Glenn Wilson, Sr.
Pastor,
Pilgrim Baptist Church of Newark
Director of Church Relations,
Rutgers Aging & Brain Health Alliance



1. Think About Meaning
2. Start Small
3. Use Memory Shortcuts
4. Create Visual Images
5. Write it Down
6. Test Yourself
7. Walk and Rehearse
8. Say it Out Loud
9. Set it to Music
10. Sleep on it

Four Covid-Era Virtual Health Programs

By Zoom or Phone

1. Exercise Classes
2. Understanding Covid-19
3. Bible Study & the Brain
4. Aging Smart

Aging Smart:
*How to Keep Your Brain
Healthy, Stay Sharp,
and Avoid Alzheimer's
Disease*

3d. Community Stakeholders Board

**Both I and Community Leaders
Sign a Community Stakeholders
Board Mission Statement/M.O.U.**

**Insures full transparency:
Everyone knows what to expect,
and what is expected of them.**



Mission Statement and Memorandum of Understanding for the *Aging & Brain Health Alliance* Community Stakeholders Board

The *Aging & Brain Health Alliance* is composed of community-based organizations in Greater Newark, New Jersey, allied together to promote: (1) quality aging for community members, (2) Alzheimer's disease awareness and dementia risk reduction through brain-healthy habits and lifestyle choices, (3) a better understanding of why African Americans experience high rates of Alzheimer's disease, and what can be done to reduce this health inequity, and (4) community-engaged research—with national impact—on aging, brain health, and Alzheimer's disease prevention.

All member organizations of the *Alliance* are represented on our **Community Stakeholders Board**, through which they have a voice in determining the direction, priorities, and activities of the *Alliance* ensuring that our programming meets community needs, interests, and concerns. We chose the term "Stakeholders" to emphasize that all the organizations represented are actively engaged in contributing to the *Alliance's* missions and activities, each with a vested stake in our collective success and impact. Every partner organization has a seat at the table. These include churches and other faith-based organizations, senior centers, public and subsidized housing management and tenant organizations, local governmental agencies, health and aging-related non-profit organizations, and Rutgers University.

As Director of the *Aging and Brain Health Alliance* I am personally committed to ensuring that we uphold the following seven principles: (1) safeguard the health and well-being of participants in both our research and community activities as our top priority; (2) seek and incorporate community input into our planning for future research and community programming, as well as ongoing studies and programs; (3) offer complete transparency to our partner organizations, including sharing copies of all submitted and funded grant proposals, approved research protocols, published papers, and preliminary results; (4) use our financial resources to hire local-community members (especially older residents), purchase from local businesses, provide financial support to community organizations to sustain their own budgets and missions, and support community-wide programming that promotes the health of local seniors; (5) leverage our research activities to offer science training and career advancement to community youth; (6) compensate participants in our research studies fairly and adequately; and (7) share our fundraising experience and grantmanship skills with our partner organizations to help them raise money for their own missions and goals.

From each of our constituent *Alliance* partners, we ask that you: (1) participate in our periodic stakeholder meetings; (2) communicate the availability of our programs and research studies to the members of your organization, (3) host our brain-health awareness programming at your site and advertise these events to your members, (4) provide feedback and guidance on how our programming and research studies can better address your members' needs, (5) stay informed about aging, brain health, and Alzheimer's disease (through continuing education programming that we will provide), and (6) serve on sub-committees which oversee specific research studies and community events.

Mark A. Gluck, *Professor of Neuroscience and Public Health*, Rutgers University-Newark
Director, *Aging & Brain Health Alliance*

Please email completed form to gluck@rutgers.edu or send by mail to *Aging & Brain Health Alliance*, 197 University Ave., Newark, NJ 07102

Partner Organization: _____ Address: _____
Street: _____
City: _____ State: _____ Zip Code: _____
Represented by: _____ Email: _____
Title: _____
SIGNATURE: _____ Date (MM/DD/YYYY): _____

In a Jointly-Signed M.O.U., We Commit To:

- (1). Safeguard the health and well-being of participants as our top priority;**
- (2). Seek and incorporate community input into our planning for future research and community programming.**
- (3). Offer complete transparency, including sharing copies of all grant proposals, approved research protocols, papers, and results;**

In a Jointly-Signed M.O.U., We Commit To:

- (4). Use our financial resources to hire local** community members (*especially older residents*), purchase from local businesses, provide financial support to community organizations, and support community-wide programming that promotes the health of local seniors;
- (5). Offer science training and career advancement to community youth;**
- (6). Compensate participants** fairly and adequately;
- (7). Share our fundraising experience and grantsmanship skills** with our partner organizations to help them raise money for their missions.

Of Our Community Partners, We Ask:

- (1). **Participate** in board meetings (*with brain-healthy food*);
- (2). **Host** brain-health education programs at your site for your members;
- (3). **Communicate** research opportunities to your members;
- (4). Provide us with **feedback** and **guidance** on how programming and research can best serve their members;
- (5). Stay **informed** about brain health and aging (*we offer educational programs for partners' leadership*)
- (6). Consider opportunities to participate in **planning** community events.

Part 3. Interim Summary

With appropriate community engagement, older African Americans will enroll in research on aging and brain health.

A community engagement team with deep understanding of the community is essential.

Regular programming brings value to the community, builds trust and familiarity with the research team.

A *Community Stakeholders Board* and written M.O.U gives partners a voice and establishes a commitment to transparency.

Pathways to Healthy Aging in African Americans

1. Alzheimer's Disease and African Americans
2. Rutgers *Aging & Brain Health Alliance*
3. Community Engagement in Greater Newark
- ➔ 4. **Aging and Brain Health Research**

Pathways to Healthy Aging in African Americans

A University-Community Collaboration



- **Since 2015, enrolled over 400 local older African Americans from Greater Newark. Over 300 into longitudinal study.**
- **Funded by the National Institutes of Health (NIH), US Office of Minority Health, New Jersey Department of Health's *Office of Minority and Multicultural Health*.**

Who is Eligible to Participate?

- You identify as *African American* or *Black* (regardless of where you or your parents were born)
- Age 60 or older.
- Speak English fluently.

Note: We do not enroll people who already have dementia or serious memory impairments. We study **healthy aging and how to prevent Alzheimer's.**

How Do We Protect Everyone from COVID-19?

- **All participants must be fully vaccinated: two weeks since last dose. (*We can help those seeking vaccinations*).**
- **We give participants a COVID-19 infection test prior to starting. We only move forward if test is negative.**
- **All Rutgers research staff are fully vaccinated.**
- **We do our main testing off-campus in a large well ventilated church fellowship hall, with private parking.**
- **Everyone wears masks and observes maximal possible distancing during testing.**

What Do Research Participants Do?

- **DAY 1: 30 minutes. (NJ Medical School):** **Saliva** for genetics and current Covid infection status. **Blood test** for brain health, immune health, and diabetes.
- **DAY 2: 2.5 hours (Pilgrim Baptist Church):** Health, fitness, and lifestyle assessments.
- **Day 3: 1.5 hours (Rutgers-Newark).** MRI Brain Imaging.
- **Plus optional week of home sleep monitoring.**
- **Earn up to \$200 plus transportation allowance.**
- **REPEAT:** *Return every two years (every year once 80+).*

Know Your Rights as a Research Participant

- **Results are private, confidential, and anonymous. Your name will never be used or made public.**
- **Participation is voluntary; stop anytime without penalty.**
- **All research reviewed and approved by community members for safety.**

Individual Health Benefits

With permission, we provide copies of the brain imaging (and some other health tests) to a participant's doctor.

– very useful as “baseline” information to help doctors monitor health and treat patients if they have decline in future.

If on future visits (2, 4, or 6 years from initial enrollment), participants show signs of possible dementia, Rutgers will pay for participants to get a clinical dementia assessment.

Community Benefits from Research Participation

- 1. Understanding how African Americans age.**
- 2. Reduce high rate and costs of Alzheimer's Disease in African Americans.**
- 3. Provide training opportunities for young scientists and health professionals from the community.**

What Skills do our Student Interns Learn?

- 1. Administer cognitive, health, and fitness assessments.**
- 2. Run functional MRI brain imaging scans.**
- 3. Summarize and present research papers at lab meetings.**
- 4. Present posters at scientific and academic conferences.**
- 5. Apply for federal and private research grants.**
- 6. Manage relationships with community leaders.**
- 7. Teach community health education programs.**
- 8. Participate in interdisciplinary collaborations.**

With MRI: Creating an Important Database on Brain Changes in Older African Americans as They Age



*Deacon Francis Dixon of
The New Hope Baptist
Church.*

Post-Covid: Resume Optional Exercise Studies

- One hour of exercise, 3x week, in community setting.
 - Led by certified instructor.
 - Last six months.
 - Compare all brain and health assessments before vs. after.
- **GOAL:** For older African Americans, how do different forms of exercise improve brain health and memory in different people?



A view of our

Cardio-Dance Exercise

Feel free to stand up and join in...



What Have We Discovered So Far?

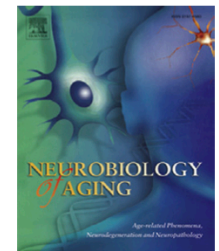
www.brainhealth.rutgers.edu/publications/



Contents lists available at [ScienceDirect](#)

Neurobiology of Aging

journal homepage: www.elsevier.com/locate/neuaging



APOE ϵ 4 status in healthy older African Americans is associated with deficits in pattern separation and hippocampal hyperactivation



Neha Sinha^{a,*}, Chelsie N. Berg^a, Nicholas J. Tustison^{b,c}, Ashlee Shaw^a, Diane Hill^d, Michael A. Yassa^b, Mark A. Gluck^{a,*}

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^b Department of Neurobiology and Behavior, Center for the Neurobiology of Learning and Memory, University of California, Irvine, CA, USA

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WILEY

RESEARCH ARTICLE

ABCA7 risk variant in healthy older African Americans is associated with a functionally isolated entorhinal cortex mediating deficient generalization of prior discrimination training

Neha Sinha¹  | Zachariah M. Reagh² | Nicholas J. Tustison^{3,4} | Chelsie N. Berg¹ |
Ashlee Shaw¹ | Catherine E. Myers^{5,6} | Diane Hill⁷ | Michael A. Yassa⁴  | Mark A. Gluck¹



The Effects of APOE and ABCA7 on Cognitive Function and Alzheimer's Disease Risk in African Americans: A Focused Mini Review

*Chelsie N. Berg**, *Neha Sinha* and *Mark A. Gluck**

Center for Molecular and Behavioral Neuroscience, Rutgers University-Newark, Newark, NJ, United States



ABCA7 Risk Genotype Diminishes the Neuroprotective Value of Aerobic Fitness in Healthy Older African Americans

Chelsie N. Berg^{†}, Neha Sinha[†] and Mark A. Gluck^{*}*

Center for Molecular and Behavioral Neuroscience, Rutgers University-Newark, Newark, NJ, United States

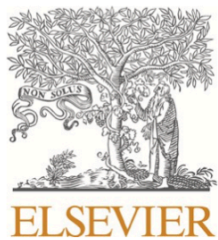
ABCA7 Genotype Moderates the Effect of Aerobic Exercise Intervention on Generalization of Prior Learning in Healthy Older African Americans

Neha Sinha^{a,*}, Chelsie N. Berg^a, Ashlee Shaw^b and Mark A. Gluck^{a,*}

^a*Center for Molecular and Behavioral Neuroscience, Rutgers University-Newark, Newark, NJ, USA*

^b*Office of Programs for Access and Inclusion, Princeton University, Princeton, NJ, USA*

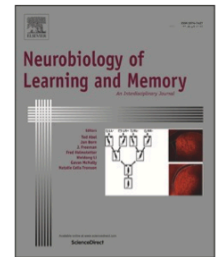
Neurobiology of Learning and Memory 177 (2021) 107340



Contents lists available at [ScienceDirect](#)

Neurobiology of Learning and Memory

journal homepage: www.elsevier.com/locate/ynlme



Increased dynamic flexibility in the medial temporal lobe network following an exercise intervention mediates generalization of prior learning

Neha Sinha ^{a,*}, Chelsie N. Berg ^a, Michael A. Yassa ^b, Mark A. Gluck ^{a,*}

^a Center for Molecular and Behavioral Neuroscience, Rutgers University-Newark, NJ, USA

^b Center for the Neurobiology of Learning and Memory, Department of Neurobiology and Behavior, University of California, Irvine, CA, USA



PHYS ED

How Exercise Enhances Aging Brains

Sedentary, older adults who took aerobic dance classes twice a week showed improvements in brain areas critical for memory and thinking.



Externally-Funded Research Raised Over \$7 Million Dollars Since 2015

\$1,000,000	2015-20	NJ DOH	Improving Mental Health and Physical Activity in Older African Americans in Newark: A State-University-Church Partnership
\$582,800	2016-17	NIH/NIA	Pathways to Brain Health for African Americans: A Community-Based Participatory Research Study
\$150,000	2018-21	NJ DOH	Reducing Obesity in Older African Americans Through Community-Based Nutrition and Exercise.
\$3,594,241	2018-23	NIH/NIA	Risk Factors for Future Cognitive Decline and Alzheimer's Disease in Older African Americans
\$359,081	2018-20	NIH/NIA	Life Course Socioeconomic Status and Risk for Alzheimer's Disease among African American Older Adults in Newark (w/E. Greenfield, School of Social Work)
\$238,630	2019-20	NIH/NIA	Exceptional Cognitive Aging: Neuropsychologic, Anatomic and Pathologic Correlates (subcontract from Northwestern Univ.)
\$60,680	2019-20	NIH/NIA	Expanding Sleep Assessments in Older African Americans to Include Objective Quantitative Measures of Sleep Quality and Sleep Architecture
\$261,571	2020-22	NIH/NIA	Minority Postdoctoral Fellowship Supplement: Altered Medial Temporal Lobe Network Dynamics During Encoding and Mnemonic Discrimination: A Possible Early Marker for Alzheimer's Disease

\$7,181,832 Total Awarded 2015-2020

Part 4. Interim Summary

We now have over 300 African Americans from greater Newark, ages 60 and above, enrolled as participants in our longitudinal study; they return every two years.

The current testing protocol includes multiple layers of protection from COVID-19 infection for both staff and participants, and includes three visits. Participants earn up to \$200.

Participation results in both individual health benefits and benefits to the community.

Six recent scientific publications. Coverage in *The New York Times*.

Since 2015, we have raised over \$7 million dollars in funding.

Pathways to Healthy Aging in African Americans

1. Alzheimer's Disease and African Americans
2. Rutgers *Aging & Brain Health Alliance*
3. Community Engagement in Greater Newark
4. Aging and Brain Health Research
- ➔ 5. **Future Directions**

Enrollment Targets

By enrolling 120 new participants a year, we can increase the *Pathways* cohort to 1,000 older African Americans by the year 2025

Five Year Research Plans: 9 Key Questions

1. How do **individual differences** in health and lifestyle affect risk for cognitive decline and Alzheimer's disease in older African Americans?
2. Which aspects of cognition and brain function can be improved through regular **exercise**, and which kind of exercise is best?
3. How does **sleep** affect risk for Alzheimer's disease and how does early Alzheimer's disease affect sleep?
4. What can we learn about successful aging from "**Exceptional African-American SuperAgers**" with superior cognitive abilities comparable to others thirty years younger?

Five Year Research Plans: 9 Key Questions

5. For those who were infected during the **COVID-19** pandemic, what are the long-term consequences for their brain health and risk for Alzheimer's disease?
6. How do changes in **immunological health** across the lifespan, especially decline of immune cell function, relate to the risk and progression of Alzheimer's disease?
7. How does a history of long-term **alcohol abuse** affect risk for cognitive decline and Alzheimer's disease?

Five Year Research Plans: 9 Key Questions

8. Can safe non-invasive forms of **brain stimulation**—either through sensory stimulation or trans-cranial alternating current—enhance the brain's 40Hz gamma waves, and lead to improved cognition and reduced risk for, or progression of, Alzheimer's disease?
9. What are the facilitators and barriers to **older African Americans participating** in aging and brain health research?

Thank you.

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