

**THE
PREVAIL
LAB**

Dementia Prevention Program



EMORY UNIVERSITY.

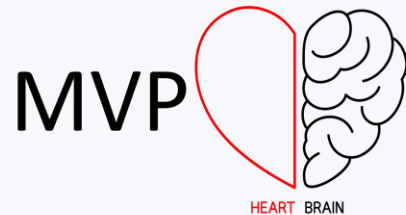
**Thank you for helping
make this research
possible**

Heart Health, Brain Health, Stress, and Aging

**Brittany Butts, PhD
PI: MVP and CARDI**

What are MVP and CARDI?

- We study adults with cardiovascular disease or cardiovascular risk factors.
- Across related studies, we look at vascular health, biomarkers, cognitive testing, stress, and lived experience.



Vascular Measures

Blood Pressure
Pulse Wave Velocity

Biomarkers

AD biomarkers
Inflammation
Vascular

Cognitive Tests

Memory
Language
Executive Function

Stress and Life Context

Perceived Stress
Neighborhood

BIG PICTURE

Why study heart health and brain health together?

What affects the heart can also affect the brain.

- Cardiovascular risk and inflammation may contribute to changes in brain-related biomarkers and cognition.
- The goal is to identify risk earlier, while prevention may still help.
- This is especially important in groups that may face higher cardiovascular or stress-related burden.

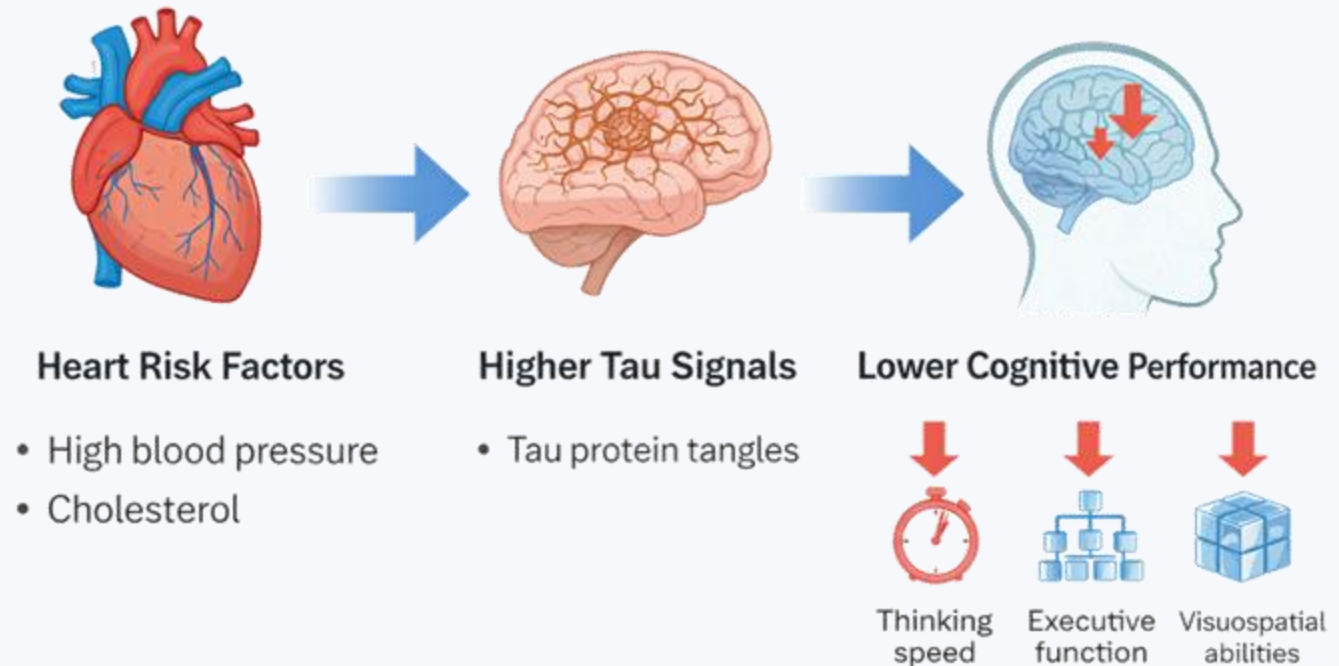


ONGOING WORK

Early finding: more cardiovascular burden, more brain risk signals

Heart health and brain risk were linked in these preliminary analyses.

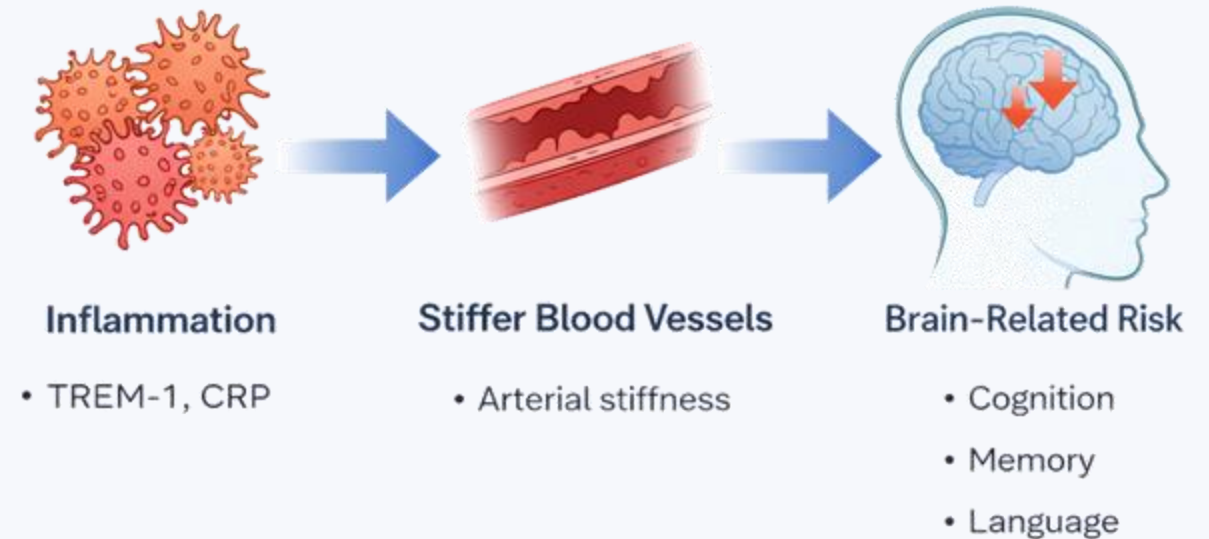
- Greater cardiovascular burden was linked with higher tau blood markers.
- Higher diastolic blood pressure was linked with lower global cognition.
- Differences were also seen in thinking speed, executive function, and visuospatial abilities.



ONGOING WORK

Early finding: inflammation may be part of the pathway

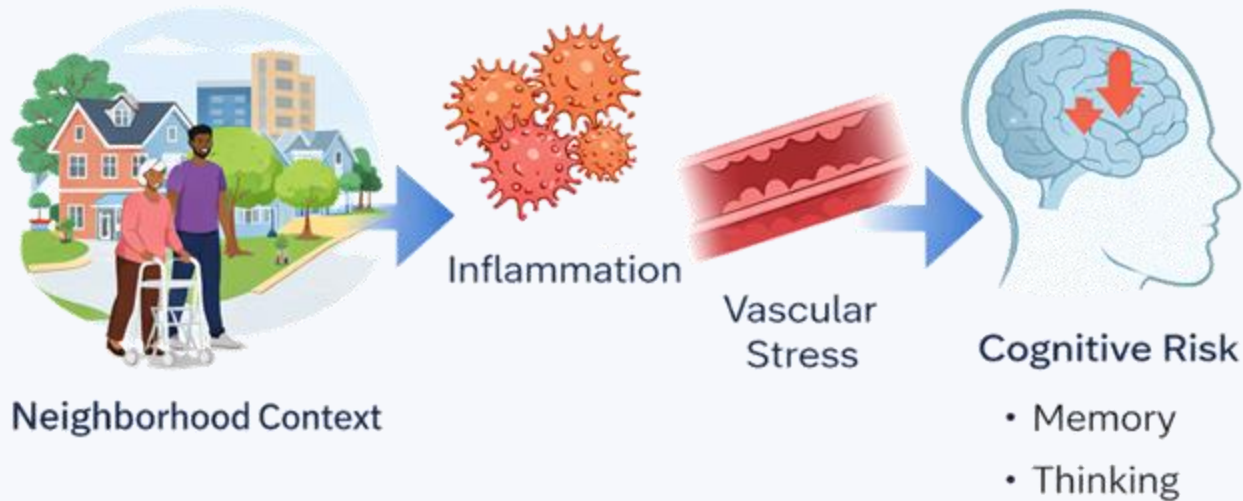
- Higher inflammatory markers were linked with greater arterial stiffness.
- Across studies, higher inflammation was linked with lower performance in some memory, language, visuospatial, and processing-speed tasks.
- This suggests inflammation may help connect vascular risk and brain risk.



ONGOING WORK

Early finding: neighborhood conditions matter too

The surrounding environment may shape biological and cognitive risk.

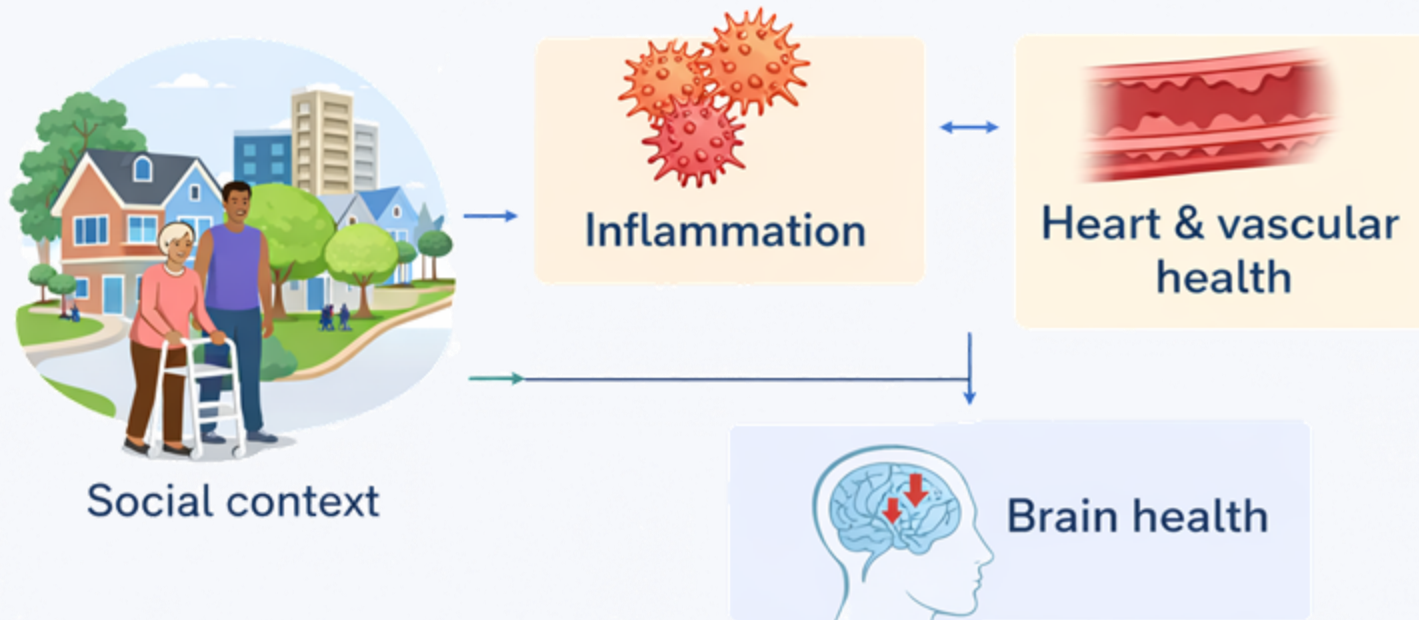


- Greater neighborhood disadvantage was linked with higher inflammation.
- It was also linked with lower MoCA scores.
- It was linked with higher t-tau, a marker related to neurodegeneration.

ONGOING WORK

What these early results suggest

Heart health, inflammation, social context, and brain health appear to be connected.



- These are early signals, but they point in a consistent direction.
- The long-term goal is earlier and more equitable prevention.

NEXT STEPS

What comes next in this research

- Baseline results are just the beginning.
- Following people over time will help show whether these early signals matter for later outcomes.



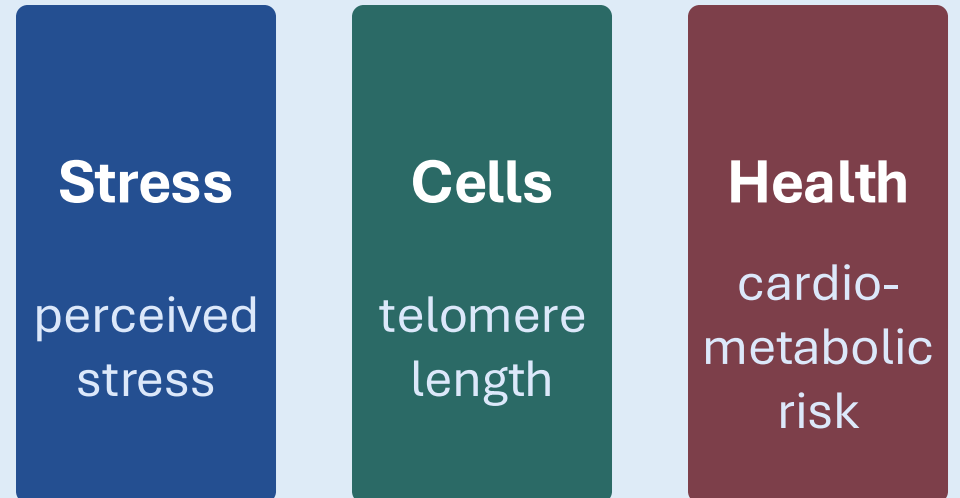
A related published study

Clinical Research
Coordinator,
Jordan Watson



Stress can affect health all the way down to our cells

How are stress, mental health, cellular aging, and cardiometabolic risk related in family caregivers of persons living with dementia?



<https://www.cbsnews.com/atlanta/news/caregiving-may-speed-up-cellular-aging-emory-research-finds/>

Relationship between cellular aging, perceived stress, and cardiometabolic disease risk in Black family caregivers of persons with dementia

Watson, J., Buchi, E., Higgins, M. K., Glasgow, G. S. B., Trammell, A. R., Herring, C., Wharton, W., Gary, R. A., Hepburn, K., Dunbar, S. B., & Butts, B. (2025). Relationship between cellular aging, perceived stress, and cardiometabolic disease risk in Black family caregivers of persons with dementia. *Alzheimer's & dementia : the journal of the Alzheimer's Association*, 21(7), e70518. <https://doi.org/10.1002/alz.70518>

What are telomeres?

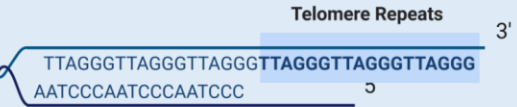
- Telomeres are protective caps at the ends of chromosomes.
- They tend to shorten with aging and repeated cell division.
- Shorter telomeres can reflect greater biological wear and tear.

Telomere Shortening and Health

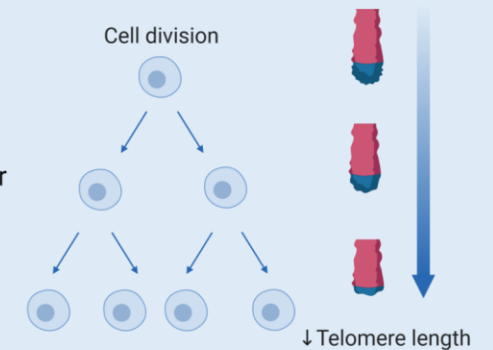
Chromosome (DNA)



Telomeres are like the plastic tips on shoelaces, protecting the ends of our DNA so it does not get damaged when cells divide.



Each time our cells make new cells, the protective ends of our DNA get a little shorter.

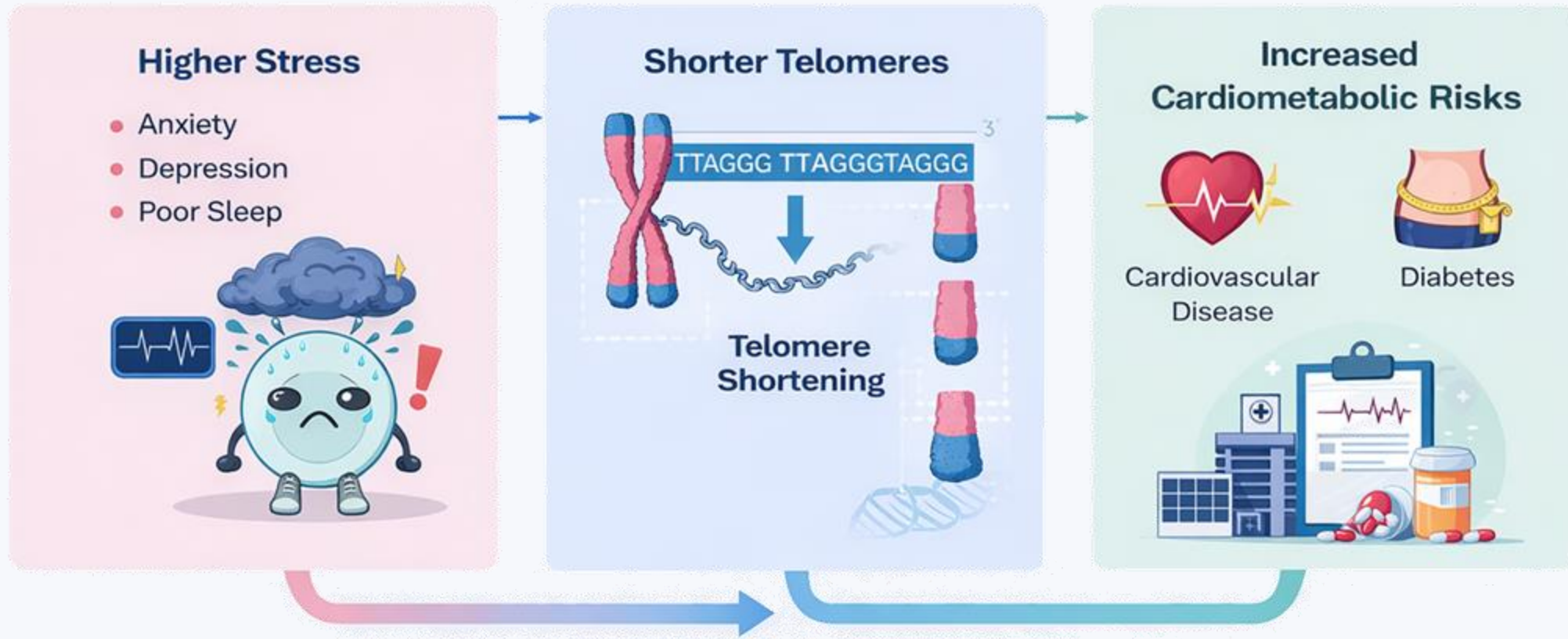


When telomeres get too short, cells can stop dividing or die and no longer do their jobs well.

Over time, this can cause swelling and irritation inside the body (inflammation) and raise the risk for health problems like heart disease and stroke.



What the telomere study found



Stress leads to telomere shortening, which in turn increases the risk of cardiometabolic diseases.

CLOSING

Why this matters

Main take-home points

- Stress, cardiovascular health, inflammation, and brain health are deeply connected.
- Earlier prevention may need to address both biology and lived experience.
- Your participation is helping move this work toward better, more equitable prevention.

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