

Kumar B. Rajan, PhD

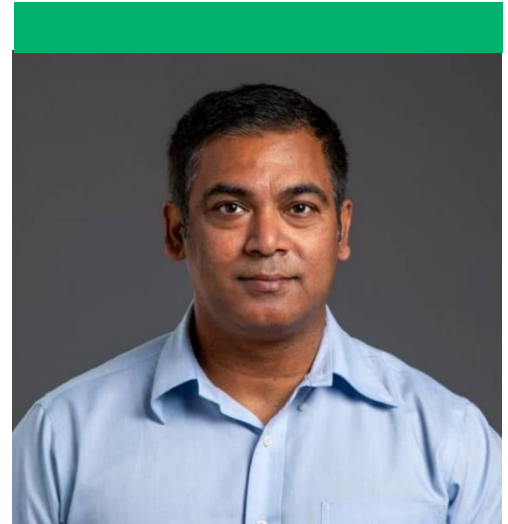
The John and Alice Sabl Professor of Alzheimer's Disease and Neurological Sciences Research

Advancement of Medicine

Over the past year, my work has focused on the complex intersection of social environment, genetics and biology to better understand how we can prevent Alzheimer's disease and promote healthy aging. As the director of the Rush Institute for Healthy Aging, my goal is to translate data into meaningful strategies that improve health care for all communities.

Our research team has made significant strides in identifying the "invisible" factors that contribute to dementia risk:

- **The "where you live" factor:** We published a seminal study in *Neurology* using the Social Vulnerability Index. We found that social factors — such as local income levels, education and housing quality — are directly linked to an increased risk of Alzheimer's disease. This work helps health care providers look beyond individual biology to the community level for prevention.
- **Precision in biomarkers:** We conducted critical research on blood-based biomarkers (like t-tau and NfL) that can detect brain changes early. A key finding this year was that common conditions like kidney function can alter these biomarker levels, meaning doctors must account for a patient's overall health when interpreting tests for dementia.
- **Genetic susceptibility:** We explored how the APOE4 gene interacts with blood markers to accelerate memory loss, providing a clearer picture of why certain individuals may experience faster cognitive decline than others.
- **Heart-brain connection:** We continued to validate that "Life's Simple 7"—a set of heart health goals, including diet and exercise, significantly reduces neurodegenerative markers in the blood, reinforcing the idea that "what is good for the heart is good for the brain."





My work advocates for a shift toward health equity in clinical practice. By quantifying the impact of social vulnerabilities, we are helping to redefine risk assessment to include community-level data, improve the accuracy of new blood-based diagnostic tools for Alzheimer's and inform public health programs aimed at reducing disparities in minority populations.

Research

These funds allowed me to maintain the specialized research team necessary to publish high-impact findings in journals such as *JAMA Psychiatry*, *Neurology*, and *Alzheimer's & Dementia* throughout 2025. Support from the professorship underpinned our ability to conduct coordinated, multicenter analyses across 10 different cohorts to evaluate how timescale choices impact our understanding of cognitive aging. And we successfully developed and validated a harmonized memory score, creating a standardized metric that allows researchers to combine data from different list-learning tasks across various study sites.

By providing stable resources for infrastructure and personnel, the Sabl Professorship ensures the continued leadership of complex, multicenter studies such as:

- **The Diverse VCID Study:** Examining white matter injury across Black, Latino and White backgrounds
- **The MIND Trial:** A 3-year randomized controlled trial evaluating dietary interventions on global cognition
- **The Chicago Health and Aging Project:** Sustaining one of the nation's longest-running longitudinal studies on cognitive aging

I continue to serve as the principal investigator for the Chicago Health and Aging Project and a population-based study of older Hispanic adults, one of the nation's most respected longitudinal studies on cognitive aging. My research was featured in the 2025 National Institutes of Health, or NIH, Alzheimer's Disease and Related Dementias Research Progress Report, highlighting our contributions to identifying new biomarkers and understanding vascular contributions to dementia.



Grants

The Sabl Professorship has been a critical catalyst for securing and sustaining a robust external funding portfolio, which currently exceeds \$30 million in active NIH funding. These endowed funds provide the necessary flexibility to bridge federal funding gaps and launch high-risk, high-reward pilot studies that serve as the foundation for major grant applications.

The endowment supported the preliminary work and clinical infrastructure required for the submission of several major grants, including a new **R21 focused on medication use and Alzheimer's disease and related dementias, or ADRD, risk.**

While **several P30** and **multiple R01** applications received strong scores, federal administrative shifts have temporarily placed these applications on hold; the endowed funds allow the research team to remain fully operational during this interim period.

Community Outreach and Education

The professorship supports my role in mentoring junior faculty and trainees. In 2025, this resulted in several first-author publications by early-career investigators on topics ranging from subjective memory complaints to the protective effects of social networks.

We have sustained our deep engagement with the Chicago community, specifically focusing on the longitudinal health of Black and White older adults to identify modifiable risk factors like social isolation and diet. The funds also continue to support our pilot work for the **ADVANCE Center for Aging Demography** and our international collaborations.

Accomplishment Highlights

- Authored and co-authored more than 20 peer-reviewed articles in 2025 and early 2026 in premier medical journals, including *Neurology*, *JAMA Psychiatry*, *JAMA Network Open*, and *Alzheimer's & Dementia*
- Served as chair and panelist on multiple NIH and National Institute on Aging review committees, providing expert oversight for national research agendas on aging, medication use and dementia risk.



- Served as lead or co-author on more than 10 presentations at the Alzheimer’s Association International Conferences, focusing on the intersection of vascular health, hearing loss and social determinants
- Research on the Social Vulnerability Index and community-dwelling older adults was featured in national news outlets and professional news journals, including the National Academy of Neurology news

The Year Ahead: 2026 and Beyond

In the year ahead, my scholarship and leadership will focus on expanding our research into underserved populations and refining the clinical precision of Alzheimer’s diagnostics. Building on our significant achievements from 2025, my primary priorities include:

- **Launching the Kankakee Aging Project:** We plan to submit a \$10 million R01 grant in June to launch a longitudinal pilot study in the Kankakee, Illinois, area to investigate neurodegeneration biomarkers in underserved rural populations. This study aims to expand our understanding of how geographic isolation, limited health care access and socioeconomic status influence cognitive aging.
- **Expanding the PORCH Cohort:** We are prioritizing the renewal of an R01 grant to expand the Parent Offspring Resilience and Cognitive Health, or PORCH, Study cohort to 1,100 participants. This expansion will allow us to study intergenerational cognitive resilience and midlife ADRD pathogenesis and utilize advanced neuroimaging and blood-based biomarkers to track disease risk across multiple follow-up assessments.
- **Improving clinical biomarker precision:** Following our research identifying how systemic health impacts brain data, a major clinical goal is to develop protocols that account for comorbidities — specifically, kidney function — when interpreting biomarkers like NfL and total tau. This will ensure that new blood-based diagnostic tools are accurate for all patients, regardless of their overall health profile.
- **Scaling the ADVANCE Center & SVI interventions:** We will officially launch new initiatives through the proposed ADVANCE Center for Aging Demography. A core focus will be translating our findings on the Social Vulnerability Index, or SVI, into community-level



interventions that target the accelerated cognitive decline observed in highly vulnerable areas.

- **Enhancing global engagement and mentorship:** I will continue to lead efforts in the Diverse VCID Study, prospectively examining white matter injury across Black/African, Latino/Hispanic, and non-Hispanic White backgrounds. We are deepening partnerships with minority-serving institutions and international consortia to ensure our findings represent the true diversity of the aging population. I also remain dedicated to fostering the next generation of researchers and supporting early-career investigators in the high-impact dissemination of their work on social networks, loneliness and cognitive health.

With Gratitude

I am profoundly grateful for the John and Alice Sabl Endowed Professorship, which remains the cornerstone of my team's efforts to solve the complexities of cognitive aging. This past year, your support was instrumental in our work to identify how social environments directly influence Alzheimer's risk and launch new research to help underserved rural populations.

By investing in this professorship, you are enabling us to pursue health equity and ensure that scientific breakthroughs — from new blood-based biomarkers to community-level interventions — reach those who need them most. **Thank you for your visionary partnership and for helping us build a more informed and healthier future for all.**