

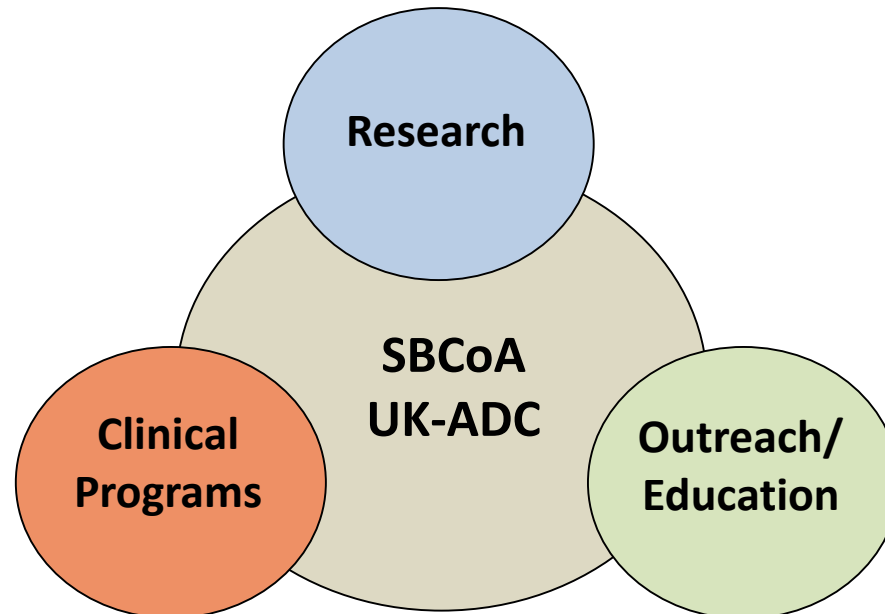


3 June 2019

Research at
Sanders-Brown
Center on Aging

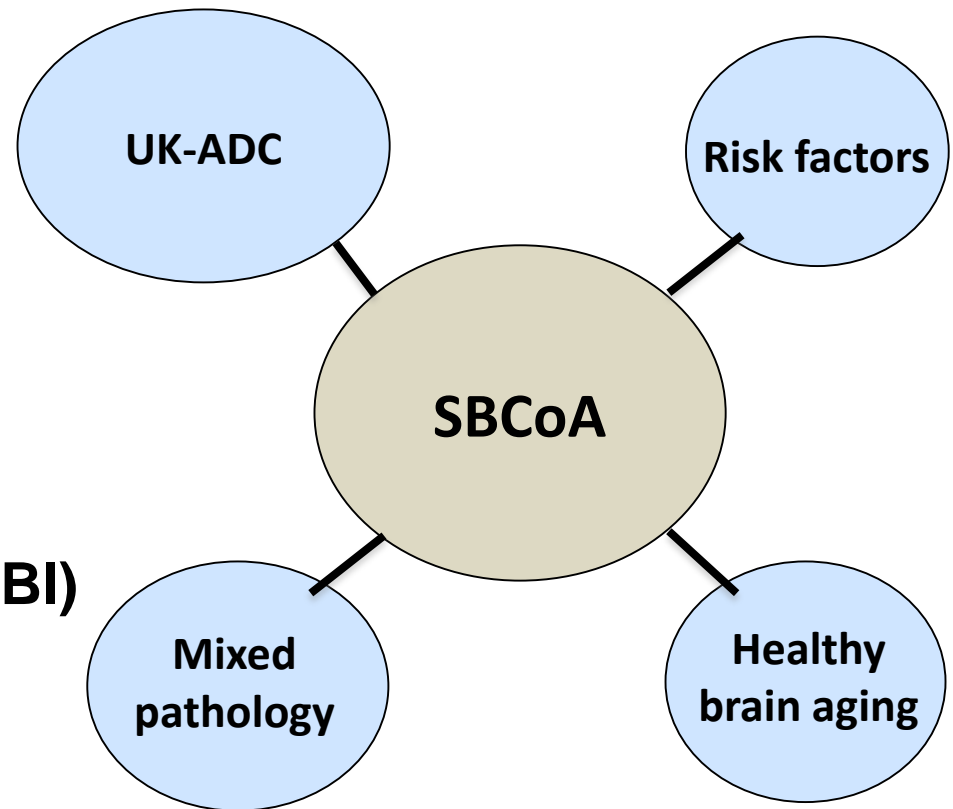
Mission

- Our mission is to improve the health of the elderly in Kentucky and beyond through **research** dedicated to understanding the aging process and age-related brain diseases, and **outreach/education** and **clinical programs** that promote healthy brain aging



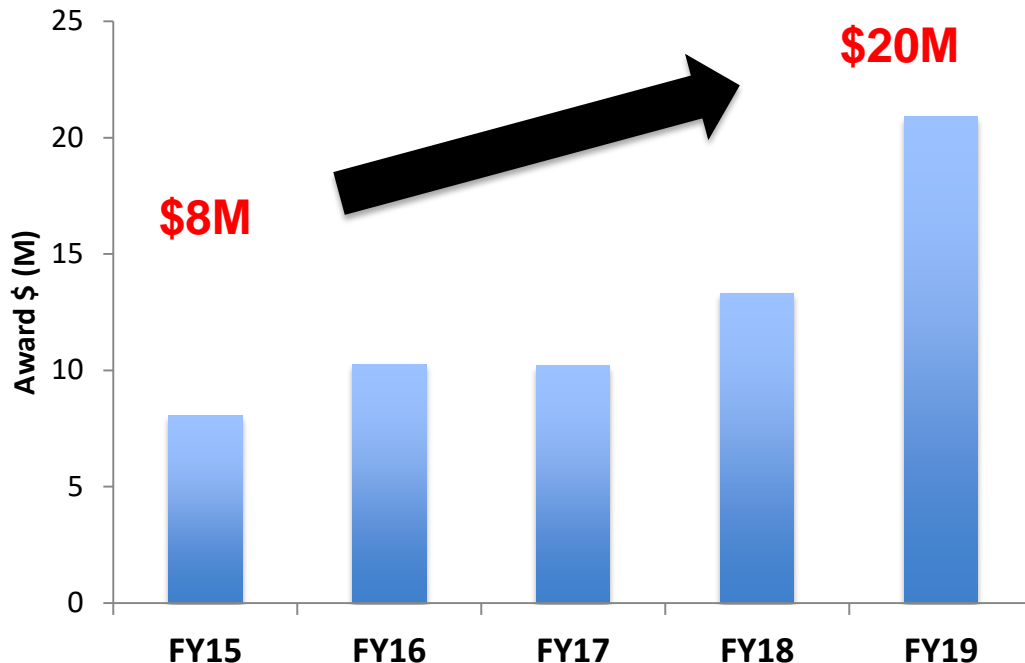
SBCoA Research Areas

- **Alzheimer's disease and related dementias**
- **Mixed pathology**
- **Healthy brain aging**
- **Risk factors**
 - **Down syndrome (DS)**
 - **Vascular co-morbidities**
 - including stroke
 - **Traumatic brain injury (TBI)**
 - **Inflammation**
 - **Genetics, lifestyle**



Research at SBCoA is Growing

Grants & Contracts Awarded



260% increase in research funding in 5 years

For FY19, this funding was to 16 faculty

Helping other units on campus



AD/ADRD supplements:

- Alan Daugherty- Cardiovascular
- Matt Gentry- Metabolism
- Daret St Clair- Cancer
- Olivier Thibault- Diabetes

Example: a UK-ADC Pilot Research Project

Visual Arts Education improves self-esteem for persons with dementia and reduces caregiver burden: A randomized controlled trial

Allan G Richards and Ann C Tietyen
University of Kentucky, Lexington, KY, USA

Gregory A Jicha, Shoshana H Bardach ,
Frederick A Schmitt, David W Fardo ,
Richard J Kryscio and Erin L Abner
Sanders-Brown Center on Aging, University of Kentucky, Lexington,
KY, USA

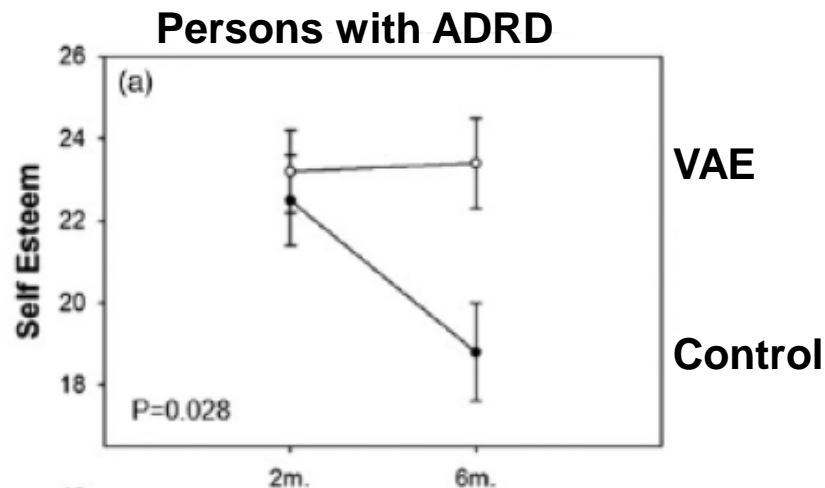
Dementia
0(0) 1-13
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DOI: 10.1177/1471301218769071
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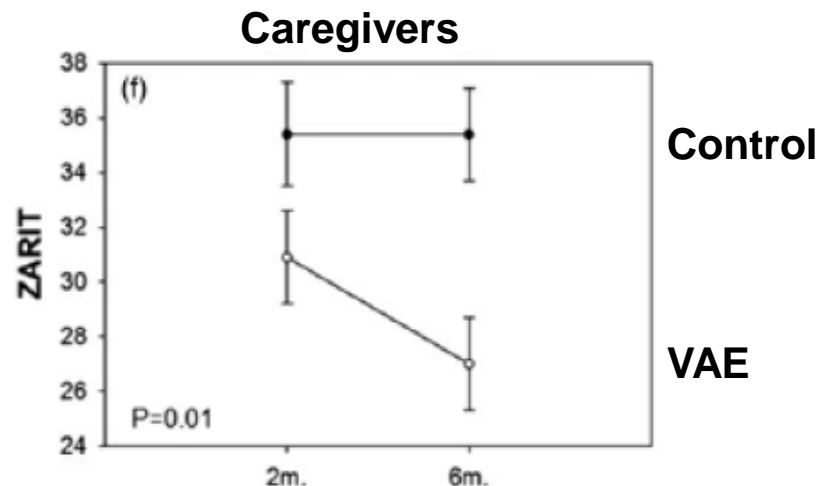

Ann Tietyen, MS and Allan Richards, PhD

Partnership: College of Fine Arts
and SBCoA/UK-ADC investigators

Patient Self-Esteem Maintained



Caregiver Burden Reduced



Visual Arts Education Pilot Research Project

“It is so difficult for someone with [Alzheimer’s] to have the confidence to do anything, especially new things. With the help, guidance, encouragement, love, and understanding of Allan and Ann, and the support of the others in the class, it became easier for all of them to once again succeed in something.”



“To see the joy and hear the laughter and see the accomplishments from all the participants, especially my husband, was worth our 4-hour round trip drive to Lexington every week.”



Plans:

NIH R01 grant application being developed by Ms. Tietyen/Dr. Richards.

UK-ADC Data Core providing advice on study design and grant preparation.

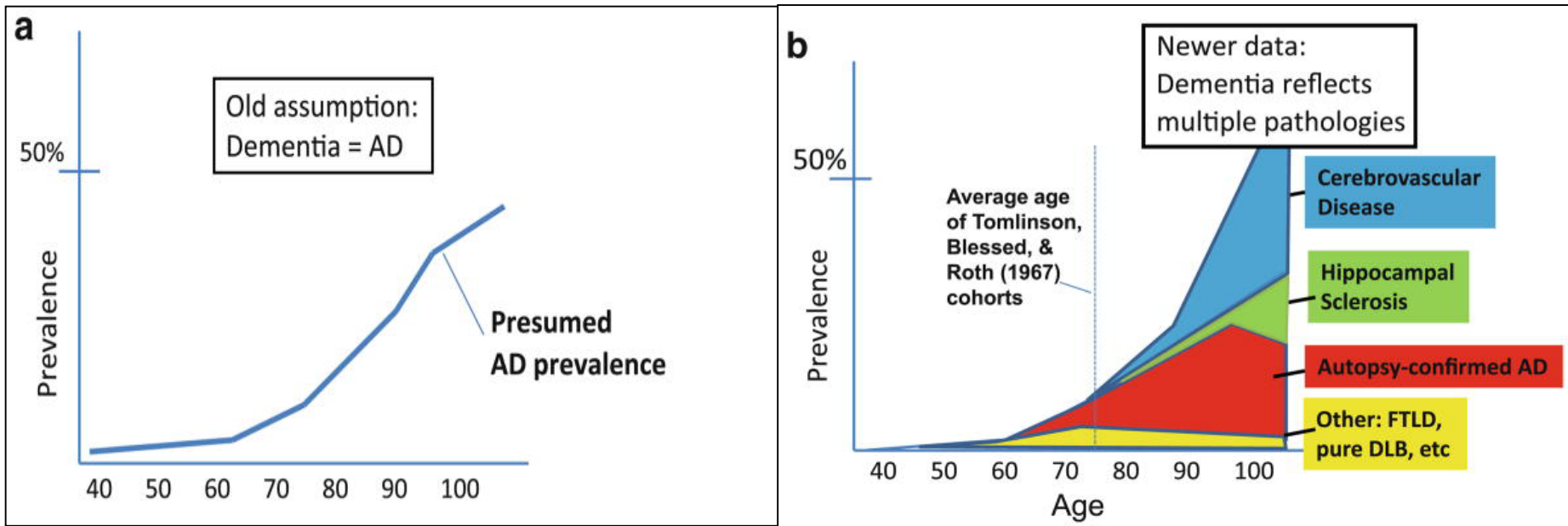
Example: Research on Late Life AD Mimics



Nelson

Dementia is not always AD.

In the elderly, there are mixed pathologies and common AD mimics that increase dramatically with age.



Example: Research on MCI-CVD & Biomarkers of VCID

MCI-CVD = Mild Cognitive Impairment due to Cerebrovascular Disease

VCID = Vascular contributions to Cognitive Impairment and Dementia

Leverage existing ADC data/biospecimens

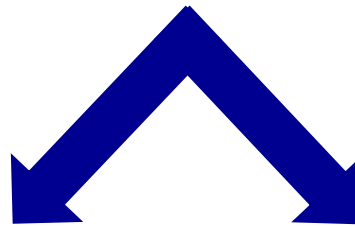


Develop new collaborative grants; e.g.,

R01 NR14189 Jicha, Nelson, Moser: Early detection and prevention of MCI due to CVD

R01 NS079637 Wilcock: Vascular breakdown in AD with CVD

R01 NS097722 Wilcock, Norris: Neurovascular astrocyte dysfunction in VCID



Build transdisciplinary partnerships for new large NIH awards to develop biomarkers of AD and vascular dementia

**P30 AG028383 Wilcock/
Van Eldik: UK-ADC
Biomarker Core**

UH2/UH3 NS100606 Wilcock/Jicha: Small vessel disease biomarkers in a longitudinally-followed “stroke-belt” cohort (MARK-VCID).

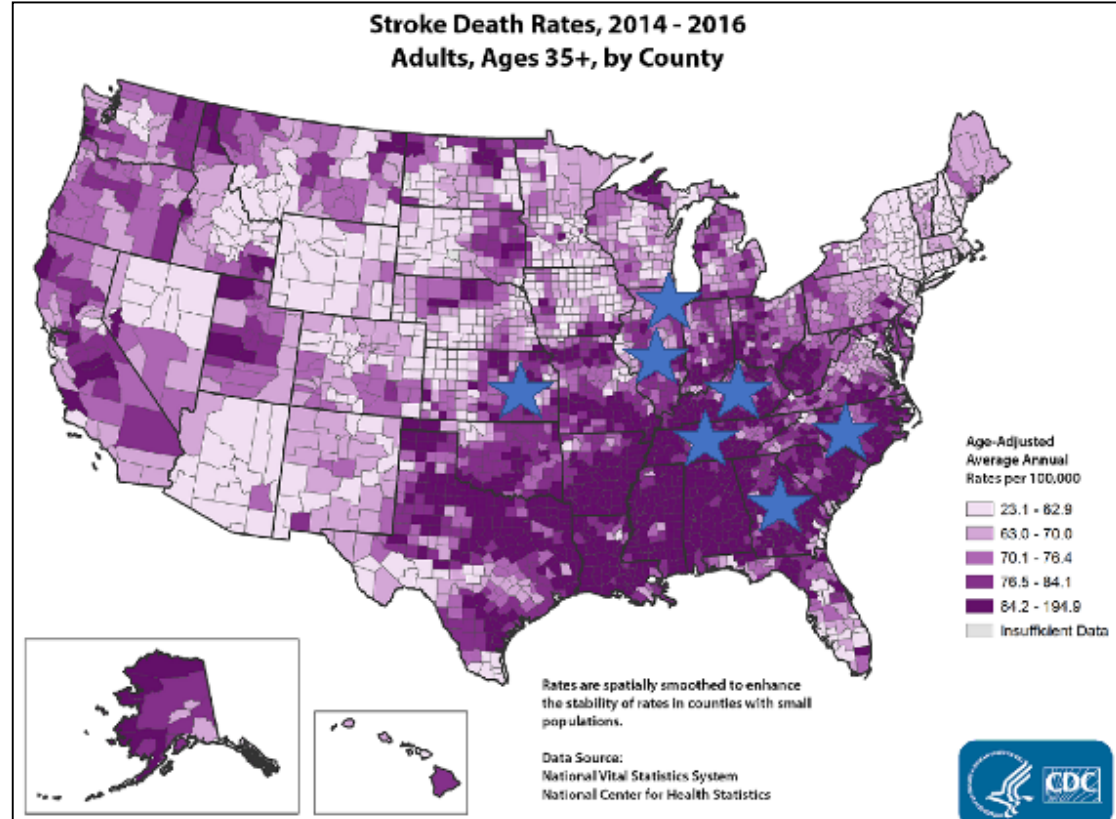
MCI-CVD and Biomarkers of VCID

U19 Consortium \$39M Application Submitted with UK as Coordinating Center

Index-Stroke Characteristics, Heritability, Epidemiology, Mechanisms, and Influences of Alzheimer pathology in the development of post-stroke Dementia: *The ISCHEMIA-D Study*

Multiple partners (Rush, Indiana, Univ Kansas, Vanderbilt, Emory, Duke, UT Memphis).

Critically important for Kentucky, a major “stroke-belt” state with high mortality

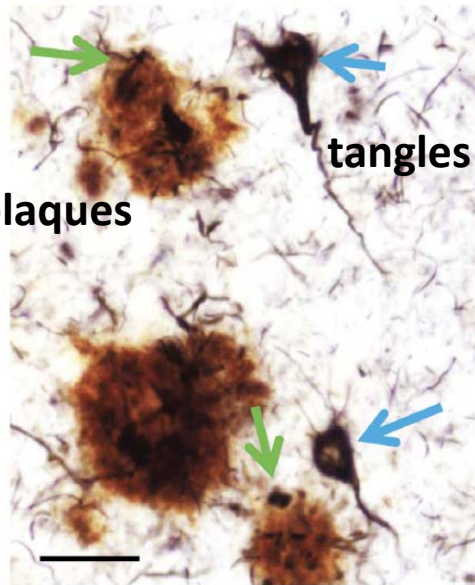


Example: Research on LATE

LATE: Limbic-predominant age-related TDP-43 encephalopathy

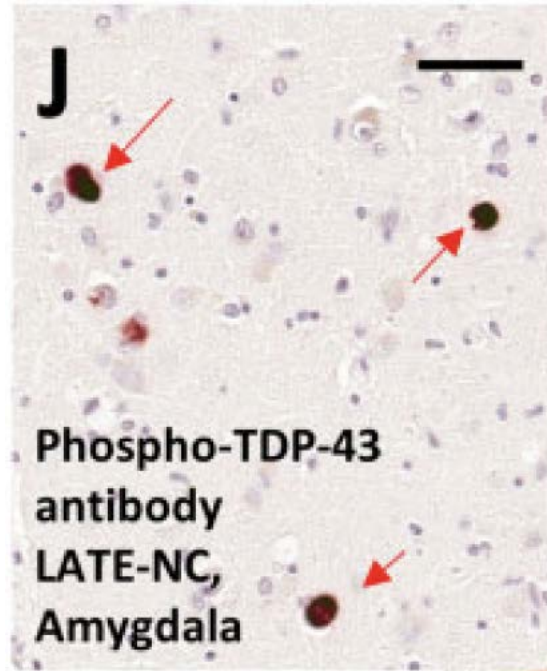
TDP-43 deposits, not AD plaques and tangles.

AD



Immunohistochemistry:
A β (brown) and Tau (black)

LATE



TDP-43 pathology is seen in ALS, FTD, but LATE is ~100x more common.

TDP-43 deposits are also in different parts of the brain compared to AD.

20-50% of people >80yo will have LATE brain changes, and prevalence increases with age.

But no one had defined it before now.

Very important for therapy: targeting the right disease

A precision medicine approach to the treatment of Alzheimer's & related dementia

Where the dementia field is now

Where Sanders-Brown will take the dementia field

One-size fits-all medicine

Stratified medicine

Precision medicine



Stratification

Patients are grouped by:
Disease
Subtypes
Demographics
Clinical features
Biomarkers



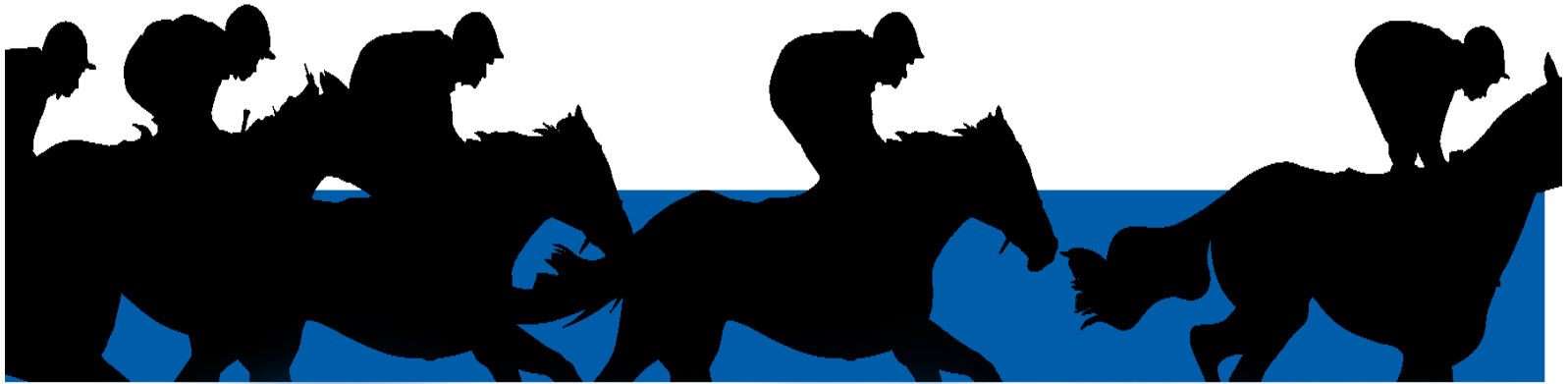
Personalisation

Patient individual:
Preferences,
Clinical features
Medication history
Environment
Behaviours & habits
Biomarker



Precision medicine





Racing to defeat dementia

UK Sanders-Brown
Center on Aging

