

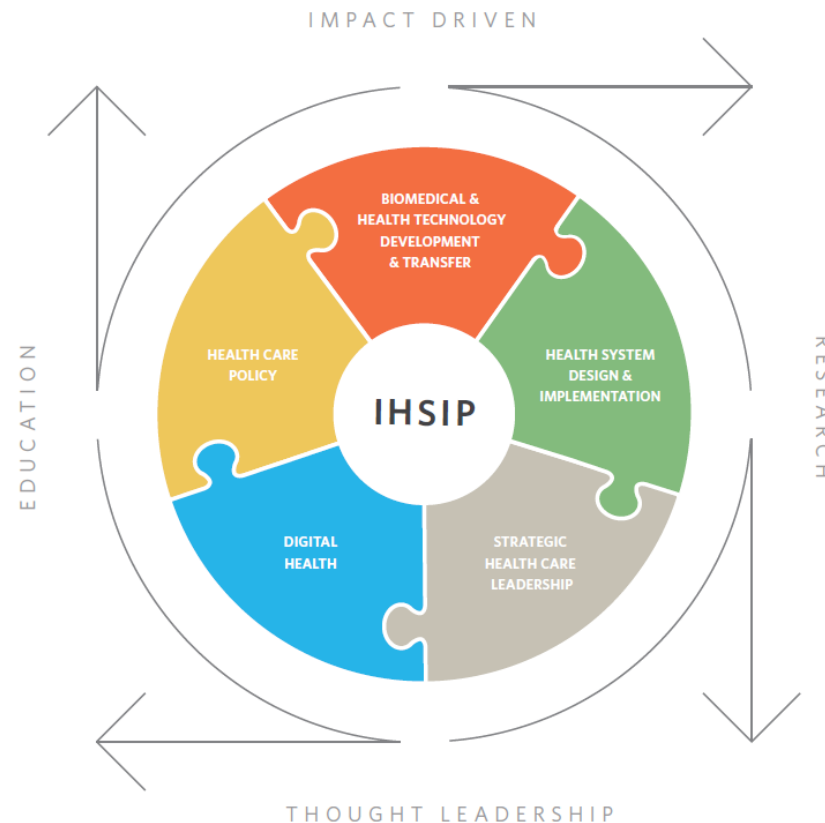
Challenges and Opportunities for an Aging Society: New Directions in Medicine, Health Care, and Social Policy

February 27, 2018

Jonathan Woodson

Director, Institute for Health System Innovation & Policy;

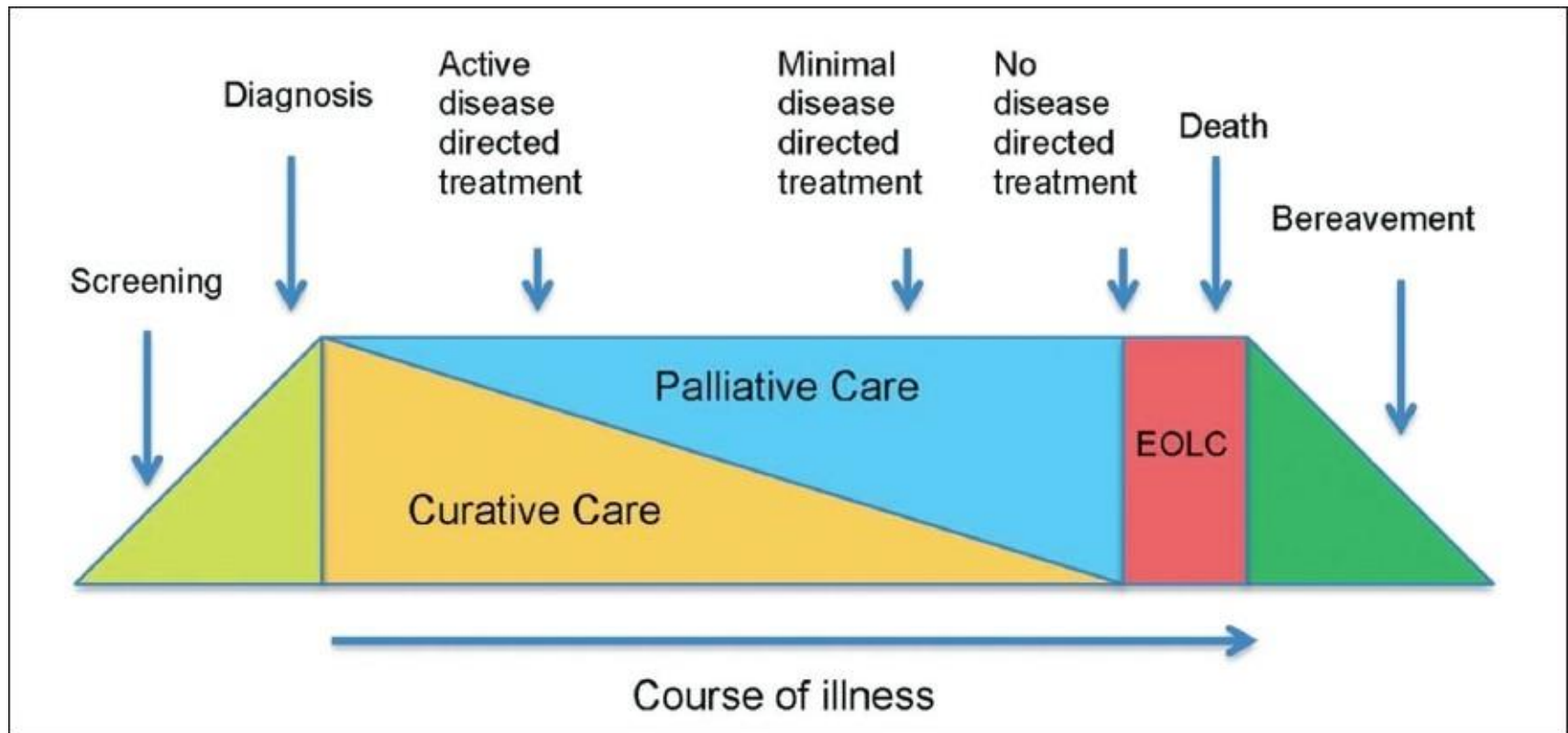
Larz Anderson Professor & Professor of the Practice, Questrom School of Business



Suzanne Mitchell

*Assistant Professor
Family Medicine and Palliative Care, MED*

Serious Illness and End of Life Care



Serious Illness and Vulnerable Populations

- **SIMCAT**

Addressing Unmet Social Need in Serious Illness Management

- **Anxiety Management in Serious Illness**

Role of CBT

- **Peer v Professional Advance Care Planning**

Engaging the Disability Community in Advance Care Planning

Andrew Budson

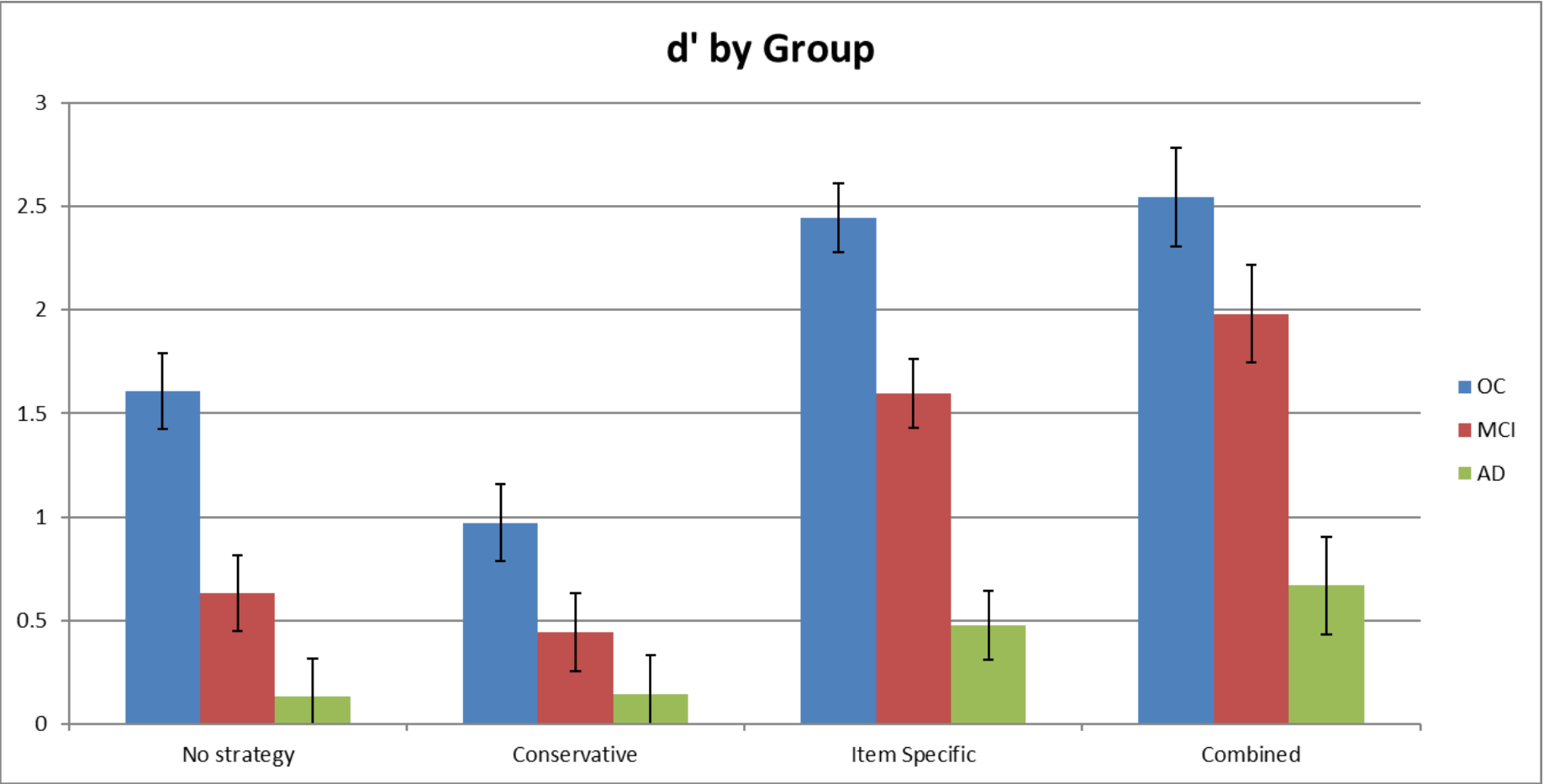
*Chief, Cognitive & Behavioral Neurology & Associate Chief,
Staff for Education, VA, Boston Healthcare System;
Associate Director & Education Core Leader, BU Alzheimer's Disease Center;
Professor, Neurology, MED;
Lecturer in Neurology, Harvard Medical School*

Improving memory in Alzheimer's disease, mild cognitive impairment & healthy older adults

Chris Malone, Andrew Budson, & others

- 16 per group. Ages 55-85, mean 76 years. Education mean 16 years. 67% Male (VA population)
- MMSE, OC 28.0, MCI 27.8, AD 24.4
- Delayed recall 10 words: OC 6.8, MCI 3.6, AD 1.4.
- Categorized word list paradigm. Study: sparrow, eagle, hawk, dove...
Test: sparrow, *robin*

No Strategy	Item-Specific Encoding Study: What is one unique or personal characteristic of this item...?
Conservative Responding Test: Only say OLD if you are certain...	Combination Strategy Uses both the item-specific encoding and conservative responding instructions.



Kate Silbaugh

*Professor of Law and
Law Alumni Scholar,
LAW*

Households, Families, and Design

When does Law Impede Better Living Arrangements?

- **Households, Families, and Churn**

- We should encourage policy that promotes and preserves proximity among family members

- **Rise in Multigenerational Living**

- Partly due to rising housing costs and weaker job opportunities for young adults
- Partly a rebound from the post-WWII decline in multigenerational households
- Post-war decline was a housing policy product, influenced by lending and zoning
- Nuclear family households are not more normative than multigenerational households

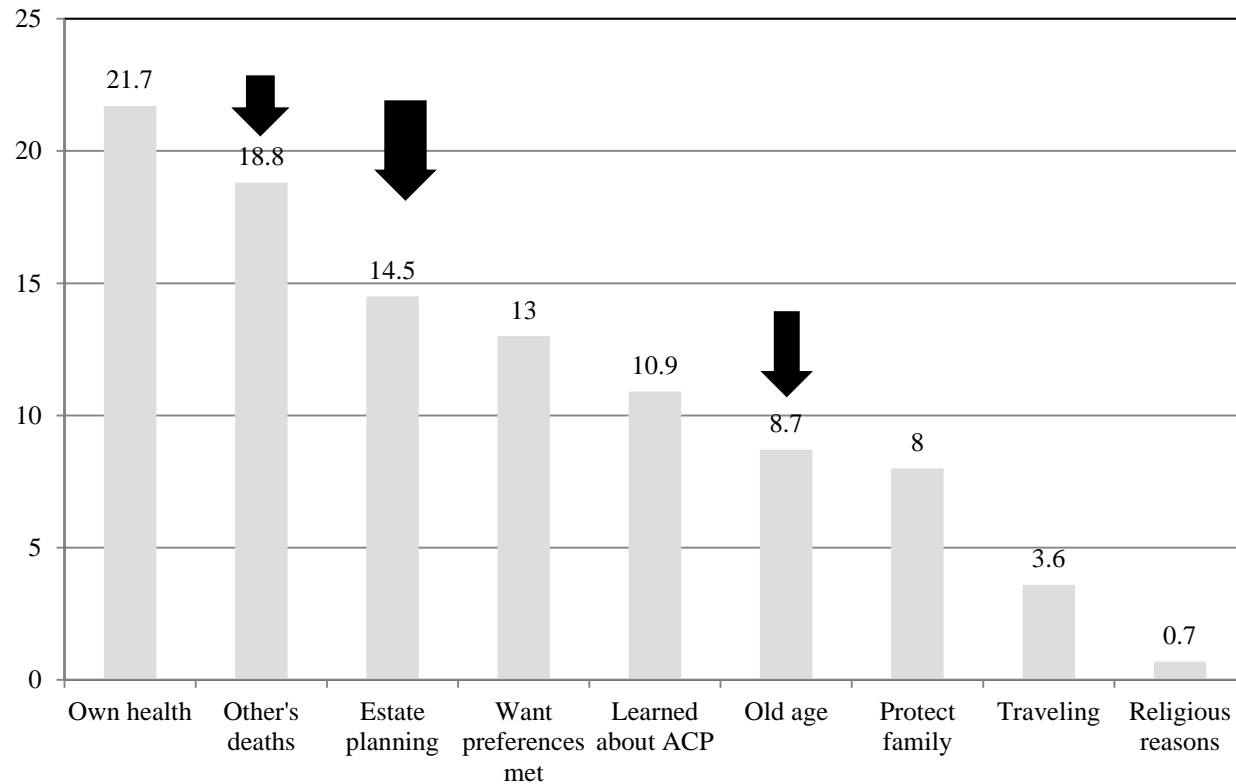
- **Zoning should Facilitate Multigenerational Housing**

- The challenge of the single family home: mismatched to needs
- Accessory Dwelling Units
- Attached micro-units and flexible unit size: inflexible unit size drives household membership
- Section 8 housing policy around linked individuals and households

Deborah Carr

*Professor
Sociology, CAS*

Why did you complete a living will/appoint a DPAHC ? (n=138)



Source: New Jersey End-of-Life Study (D. Carr, PI)

Open-Ended Interviews Shed Light on Survey Data

- **Loved ones' deaths provide a lesson in what *not* to do.**
 - “ my brother had a stroke . . . and now he has a feeding tube and catheter and normally he wouldn't want that. ”
 - “ my husband's mom had Alzheimer's and that initiated our planning. I saw what she was going through. She didn't have a living will and was in such a bad state...”
- **ACP protects dying older adults' family members...**
 - “Us kids knew who it [DPAHC] was so there was no bickering or issue.”
 - “You have to make a decision and you have to do it rather quickly. If people are wishy-washy about it, the living will takes that away; at least it did for me.”
- **...especially in complex or conflicted families.**
 - “We had both been married before and had children. His oldest son felt that maybe he should make decisions for his dad instead of myself.”
 - “My father was unable to make the decision to pull life support, which fell to me. [I knew] it was the right thing to do, not letting her live like that, but my brothers wanted her alive. It helped that one person was responsible for the decision.”

Sources: NJEOL and Wisconsin Study of Families and Loss (WISTFL, D. Carr, PI)

Alice Cronin-Golomb

Professor

Psychological & Brain Sciences, CAS;

Director, Vision & Cognition Laboratory and Center for Clinical Biopsychology

Parkinson's Disease

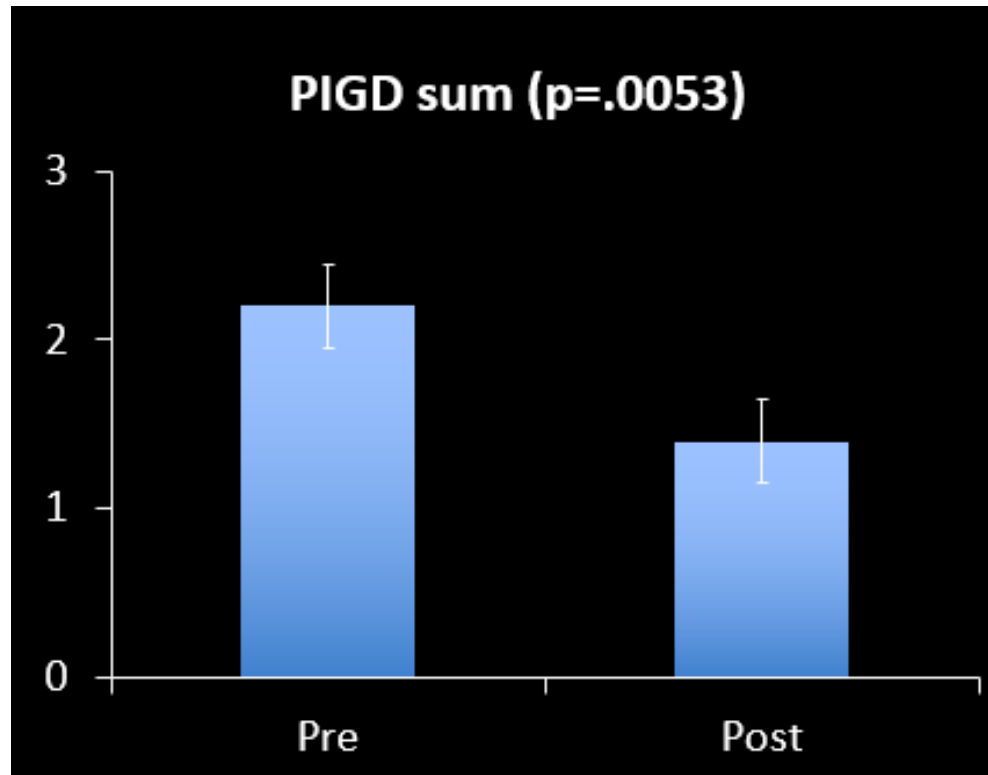
1) Problems

- Loss of automaticity in walking and cognition, reliance on external cues
- Dual-tasking (cognitive-motor)

2) Strategy

- Train **ATTENTION** to improve lots of different aspects of PD (cognition, motor)

Far-transfer motor: Gait and postural control



10 persons with PD improved on postural instability and gait dysfunction (not on tremor) post-training. The beneficial effect of training was restricted to aspects of motor function that are modified by attention.

- Unified Parkinson's Disease Rating Scale, motor exam, section Postural Instability and Gait Dysfunction (PIGD) (mean score)

Teaching old dogs new tricks:

Recent research on health effects of caregiving and depression

Lisa Fredman

*Professor and Director of Faculty Development
Epidemiology, SPH*

Health effects of caregiving:

- 34.2 million caregivers to persons ≥ 50 years (NAC, 2015)
 - Caregivers are more stressed than non-caregivers
 - Stress theory: caregiving \rightarrow worse health outcomes
- Caregivers have *lower* mortality and *better* functioning than non-caregivers

Healthy Caregiver Hypothesis:



(Fredman et al, 2015)

- We are examining this theory using different methods and datasets

Health effects of depression

- 11% of adults aged ≥ 70 report depression (Steffens et al, 2009)
 - Depressed adults have higher risk of impaired functioning, cognitive decline, and mortality in some studies
- Low Positive Affect, *not* high Negative Affect, accounts for health effects
- In older community-dwelling women we found:
 - High Positive Affect → better survival + functioning than Low Positive Affect; no difference between Depressed and Low Positive Affect
 - High Positive Affect → lower risk of weight loss
 - Implications for interventions to increase Positive Affect
- In conclusion: our research results are not teaching old dogs new tricks, but are a new twist on old saws about aging

Does oral health matter?

Is the mouth connected to the body?

Raul I. Garcia, DMD

Professor and Chair,

Health Policy & Health Services Research, SDM

Center for Research to Evaluate & Eliminate Dental Disparities

President (2017-2018), American Association for Dental Research

Is the mouth connected to the body?

“Oral health-related quality of life”

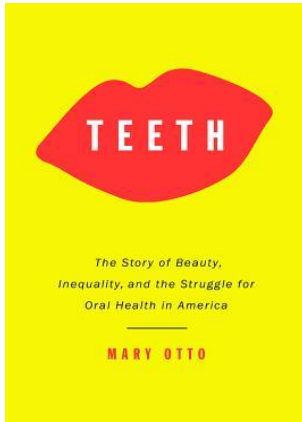
Kressin N, et al. A New Brief Measure of Oral Quality of Life. *Prev Chronic Dis* 2008;5(2).
http://www.cdc.gov/pcd/issues/2008/apr/pdf/06_0147.pdf

Oral infection/inflammation and systemic health outcomes



Bottom line? *The Relationship between Periodontal Interventions and Healthcare Costs and Utilization.* Nasseh K et al., *Health Econ* 2017;26:519.

Is the mouth connected to the body?



The Story of Beauty, Inequality, and the Struggle for Oral Health in America

Mary Otto, 2017 New Press.

How Dental Inequality Hurts Americans

The New York Times, February 19, 2018

Oral health care is NOT covered by Medicare!

Judith G. Gonyea

*Professor and Associate Dean of Research
School of Social Work*

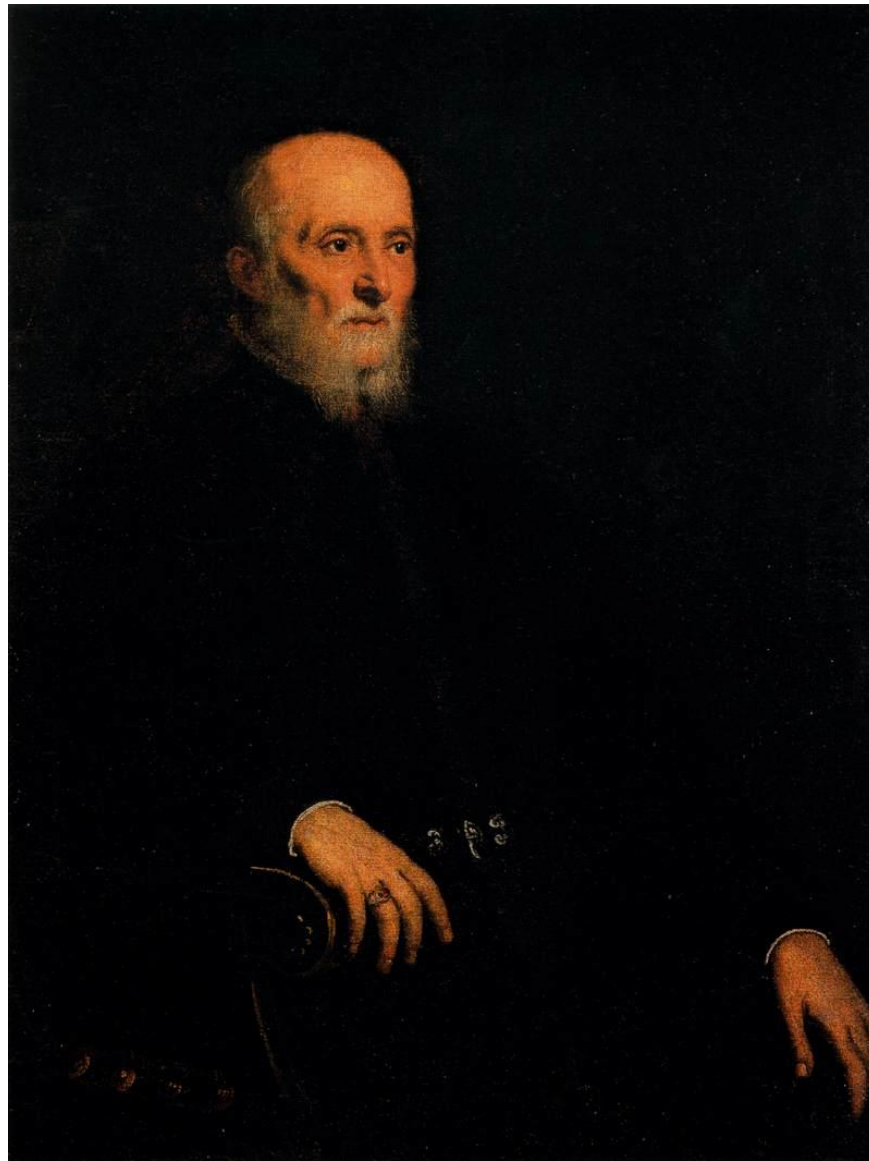
What I Do in Four Minutes (Or “MY ELEVATOR TALK in Four Floors”)

- My research focuses largely on older marginalized and/or disadvantaged populations with the goal of reducing disparities. I use an intersectionality lens to explore how individuals’ multiple social identities (e.g., gender, race, social class) shape their aging experiences. I also bring a feminist perspective to my work; I engage in quantitative and qualitative methods of inquiry. There are 2 main streams to my research.
- The 1st focuses on aging & the intertwining of individuals’ & families’ lives. I am interested in how changes in families’ structures, roles and norms are impacting multigenerational relations & caregiving. For ex., how our cultural norms of the “good mother” & the “good daughter” influence adult daughters’ feelings of “caregiver guilt” & psychological well-being.
- I also look at the intersection of culture, illness, mental health & stigma. For ex., this led to a RCT of a Spanish language, culturally tailored CBT intervention to help Latino Alzheimer’s families manage & cope with the disease’s neuropsychiatric symptoms.
- My work extends to policy analysis. For ex, the ways in which women’s much greater rates of temporary or earlier exits from the paid labor force for caregiving (e.g., child, parent) contribute to their greater economic vulnerability in old age.

- The 2nd stream focuses on the intersection of health and environment, particularly around the themes of neighborhood, housing and homelessness. Much of this work has focused on the role of social capital on health behaviors and outcomes.
- 1 set of these studies focus on older, lower-income residents of urban subsidized housing and the much greater prevalence of clinically-relevant depression in these communities. For ex., I've explored the relationship between perceptions of neighborhood safety and depression and the mediating effects of loneliness and sense of community belonging.
- A 2nd set of my studies examines the growing problem of older homelessness. For ex., I'm currently engaged in a project, "Falling through the Cracks: Policy and Program Gaps Experienced by Older Homeless Women"—which has a particular focus on women in their 50s—often referred to as "tweeners"—as they are too young to be eligible for old-age benefits but also not parenting and thus lack access to many family safety net programs.
- Finally, I am interested in the global age-friendly communities movement—which focuses on the interrelationship between cities' built environments and social environments and the promotion of healthy aging.

Christopher Martin

*Professor
English, CAS*





Joanne M. Murabito

Associate Professor

Medicine, Section of General Internal Medicine, MED

Goal: Identify Factors Associated with Longevity & Healthy Aging

Setting: Framingham Heart Study: Multi-generational Family Study

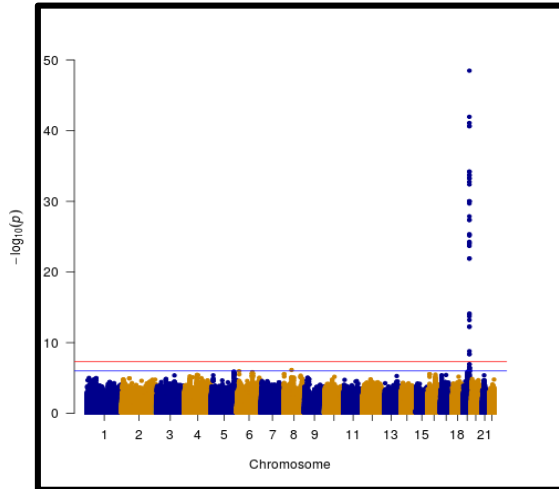


Repeated exams over adulthood capturing all domains of aging



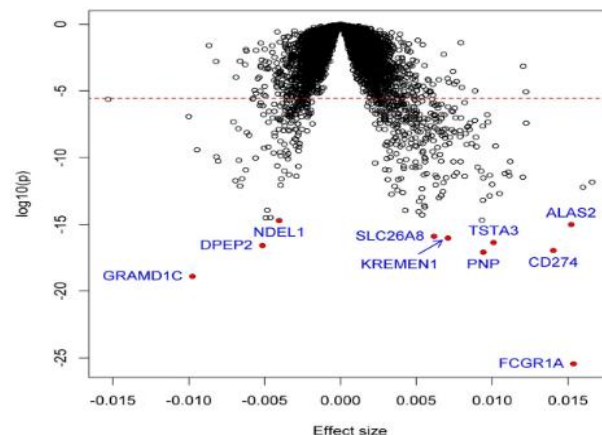
Multi-omics Approach to Biology of Healthy Aging

Genetics



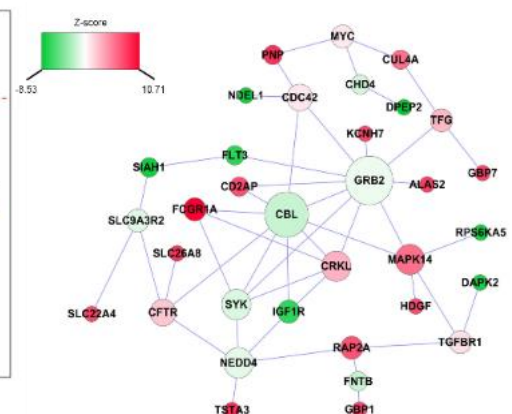
GWAS Human Longevity

Epigenetics



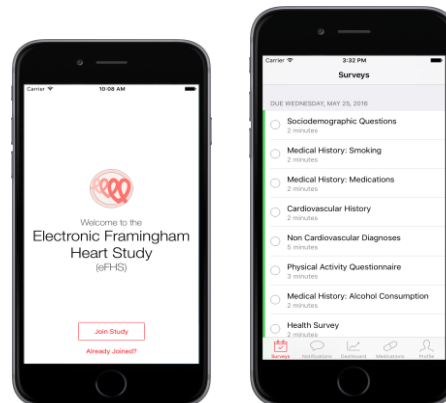
Gene Expression

Metabolomics



Mhealth and digital devices in the community: Novel phenotyping & Interventions to Improve Health

- Assess digital connectedness
- Behavioral Economics Framingham Incentive Trial to Increase Physical Activity –BE FIT RCT
- eFHS: custom mobile app paired with wireless devices





Marie Saint-Hilaire

*Professor
Neurology, MED;
Director, Parkinson's Disease and Movement Disorder Center
APDA Advanced Center of Research*

Unmet Needs in Parkinson's Disease

1. Biomarker

PPMI, BioFind, MicroRNA, Calcium Signaling Pathways

2. Disease Modification

Parkinson Study Group, Inosine, Isradipine, Biogen (BIIB054)

3. Cognition and Other Non-Motor Symptoms

Social Self-Management, Vision and Cognition Laboratory

4. Gait, Freezing, Falls

Center of Neurorehabilitation

5. Health Disparities

BU Neurology

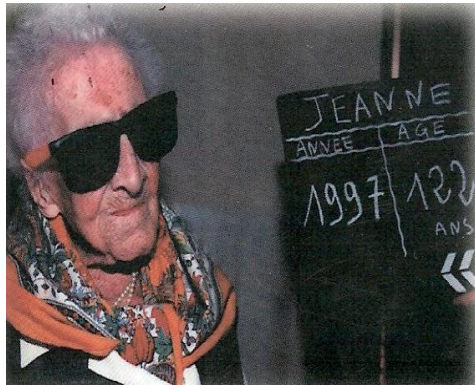


Centenarians: The Longer They Live, The Healthier They Have Been

Paola Sebastiani

*Professor
Biostatistics, SPH*

Madame Calment



– age 122



– age 116



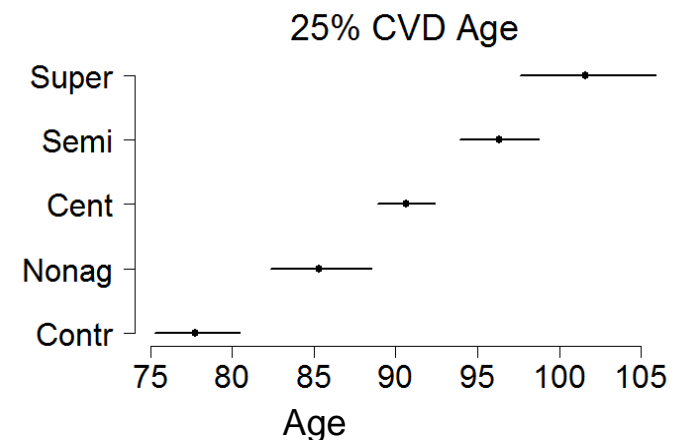
– age 119



– age 99

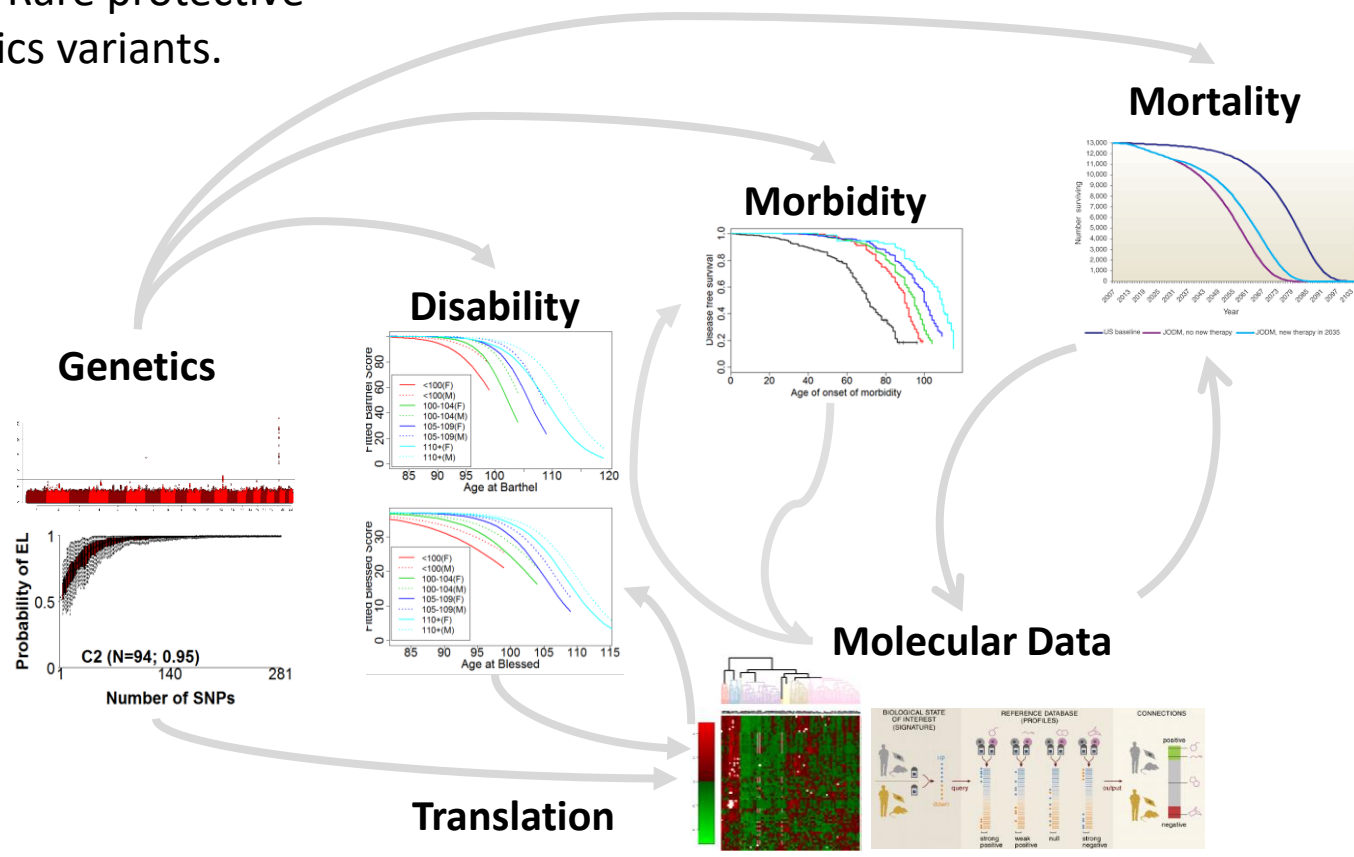
We studied almost 2,000 centenarians from the New England Centenarian Study, directed by Dr. Thomas Perls, and showed that centenarians delayed substantially the onset of disability and morbidity (compression of morbidity).

[Andersen, Sebastiani et al, 2012. *J Geron.*]



Questions: How? What is in it for us?

How? Rare protective genetics variants.



What is it in for us?

John Snyder

*Professor
Chemistry, CAS*

The Curcumin Project: ISE2

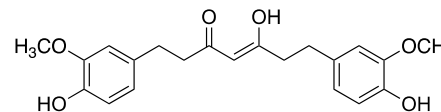
Lucia Pastorino, Neuroscience

John Snyder, Chemistry



Goal - Bring meaningful, interdisciplinary research projects into the undergraduate laboratory curriculum

The Focus – Alzheimer's Disease



Strategy – Take a pharma approach, isolate a natural product & synthesize analogues in the organic chem lab, then carry out Alzheimer related bioassays in the neuro/bio lab

Bioactivities – (1) APP – Processing – inhibition of plaque formation
(2) Binding to plaques – diagnosis and disaggregation
(3) Impact on neuronal cultures

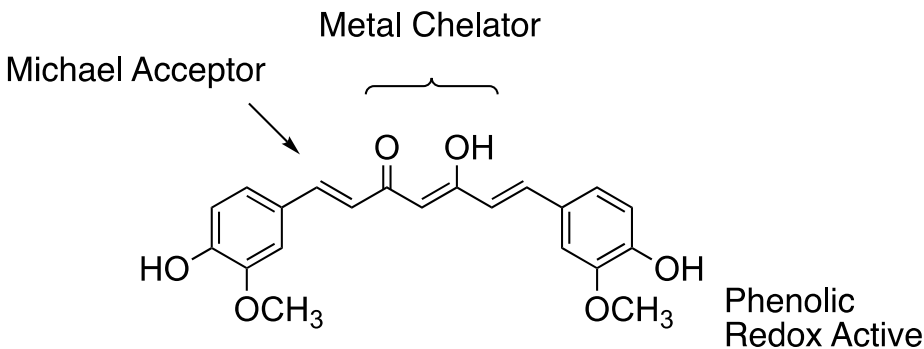
Continuous SAR – One year informs the next year's synthetic design –
Small Molecule Library Development

Outcome: Scientific & Educational

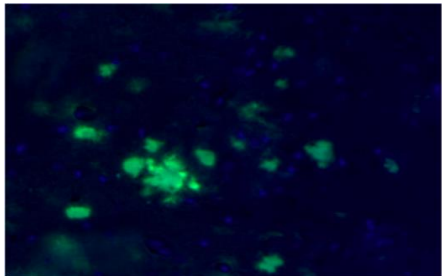
APP Processing – Curcumin reduces “bad cleavage” ~30%

Plaque Binding– Curcumin binds well

ISE2 Small Molecule Library
Now has 14 Compounds



Extended π -System - Forms Aggregates



The Biology of Sarcopenia and Frailty

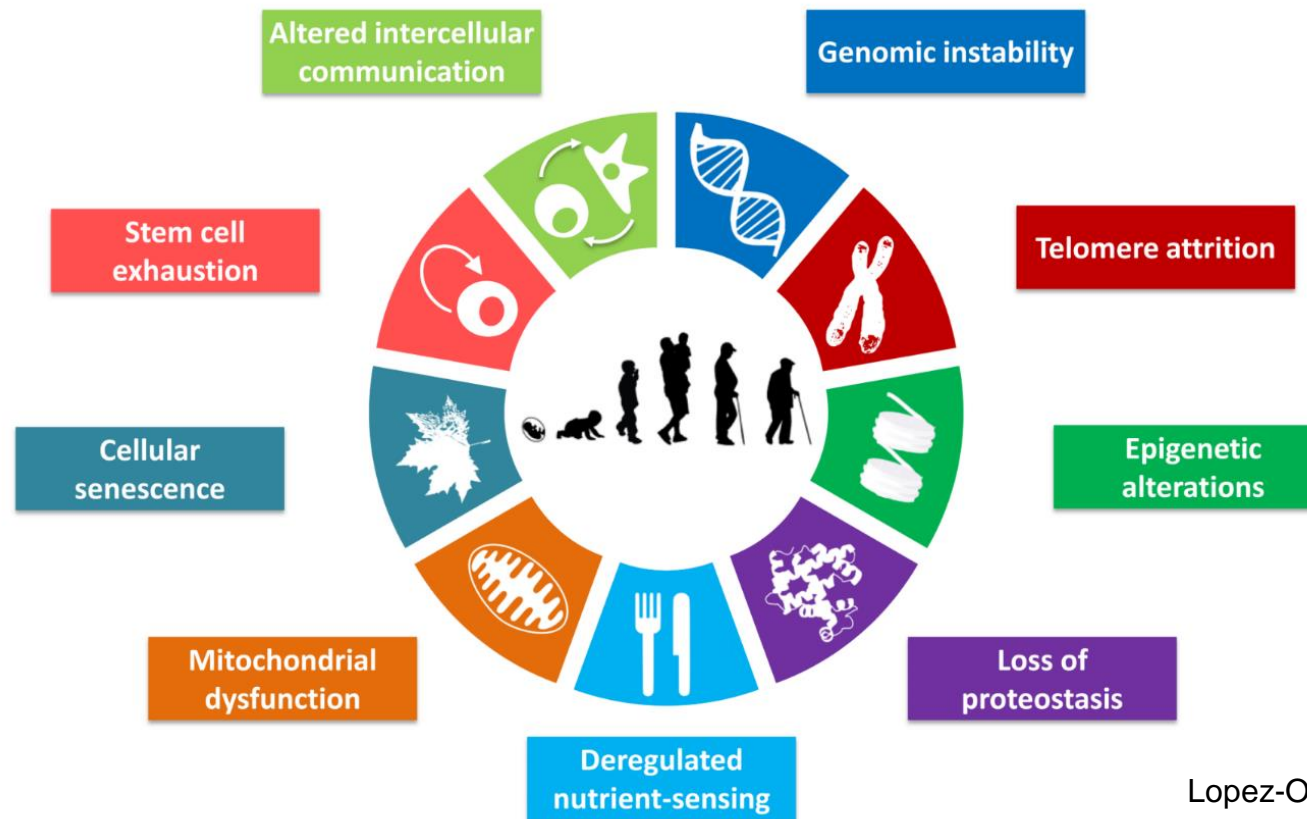


LaDora V. Thompson

*Travis M. Roy Professor and Chair
Physical Therapy & Athletic Training, SAR*

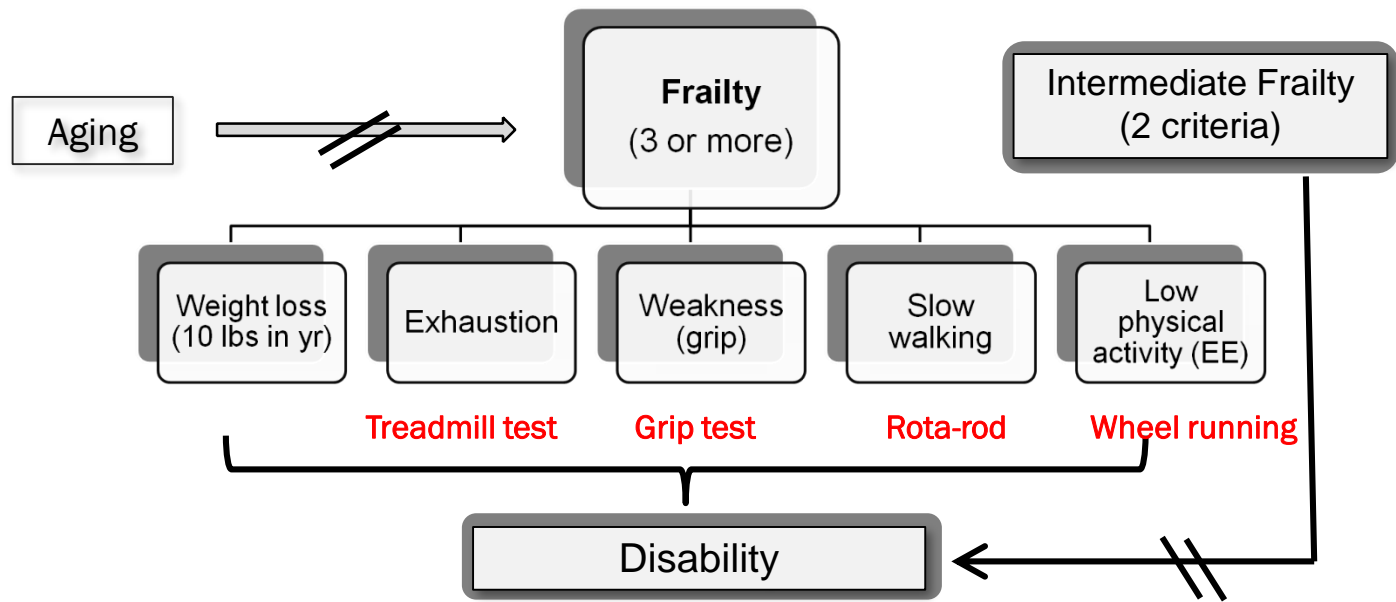
Hallmarks of Aging and Sarcopenia

Discover Biomarkers

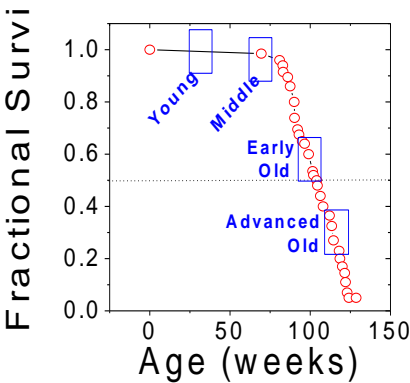


Lopez-Olin et al., 2014

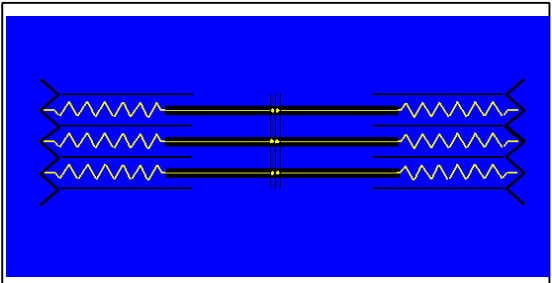
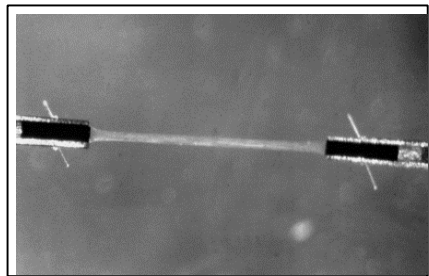
Preclinical Mouse Model



Approaches



Muscle, cell, & protein function



BRAIN AGING BEYOND GENES, LIFESTYLE & STATINS

Jennifer Weuve

*Associate Professor
Epidemiology, SPH*

BRAIN AGING

Non-“lifestyle,” non-genetic,
ground-shifting risk factors

ENVIRONMENTAL EPIDEMIOLOGY

Air pollution,
Heavy metals,
PCBs

Are study designs and
analyses giving us the wrong
answers on cognitive aging?

METHODS

BRAIN AGING

Non-“lifestyle,” non-genetic,
ground-shifting risk factors



Racial disparities: fostered by education? narrowing?



Exposure to **air pollution:** cognitive decline, olfactory path



Education: robustness, strategy for intervention

Occupation: traits, unemployment

Psychological **trauma**

Exposure to **lead**