

# CLIN-STAR WEBINAR



## *Applying Frailty Research to the Clinical World: Four Case Studies*

April 19, 2022  
1-2pm ET (10-11am PT)

**Co-Sponsor:**



**Presenters:**



Abdulla A.  
Damluji, MD, PhD



Jennifer Lai, MD,  
MBA

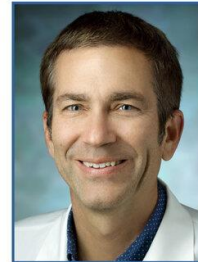


Megan J. Huisingsh-  
Scheetz, MD



Mara McAdams  
DeMarco, PhD

**Moderators:**



Jeremy D.  
Walston, MD



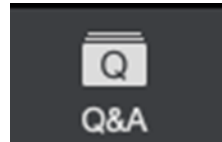
Sara E. Espinoza,  
MD, MSc

# *A few housekeeping items...*

➤ All lines are muted

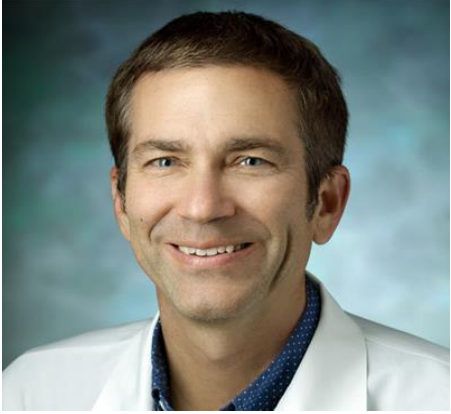
➤ Have a question?

Enter in the Q&A box at the bottom  
of screen



➤ Rolling—we will be recording...





**Jeremy D. Walston, MD; Johns Hopkins University**

**Raymond and Anna Lublin Professor of Geriatric  
Medicine and Gerontology**

**Director, Johns Hopkins Human Aging Project**

**Multiple PI of Clin-STAR, Chair of Research Core**

**Co-PI of the Frailty-Focused Johns Hopkins Older  
American Independence Center**



***A NATIONAL PLATFORM TO ADVANCE  
AGING RESEARCH  
ACROSS SPECIALTIES AND DISCIPLINES***

**INITIATIVES on Website** <https://clin-star.org/>

- **Research Database**
- **Pilot Grants** *connecting early career and senior investigators from different disciplines and institutions*
- **Special Interest Groups**
- **Mentoring Office Hours**
- **Webinars, Peer Support, Outreach Funds**
- **Funding, Research, and Career Development Resources**



## **WEBINAR OBJECTIVES:**

- **Learn about frailty, its importance in clinical practice, and how research in this field has evolved over the past decades**
- **Appreciate the importance for patient care that frailty be better integrated into treatment and care plans of older adults.**
- **Learn from four clinician-investigators how they've applied frailty principles in their transdisciplinary work.**





# Older Adults Want to Prevent Frailty and Preserve Resiliency

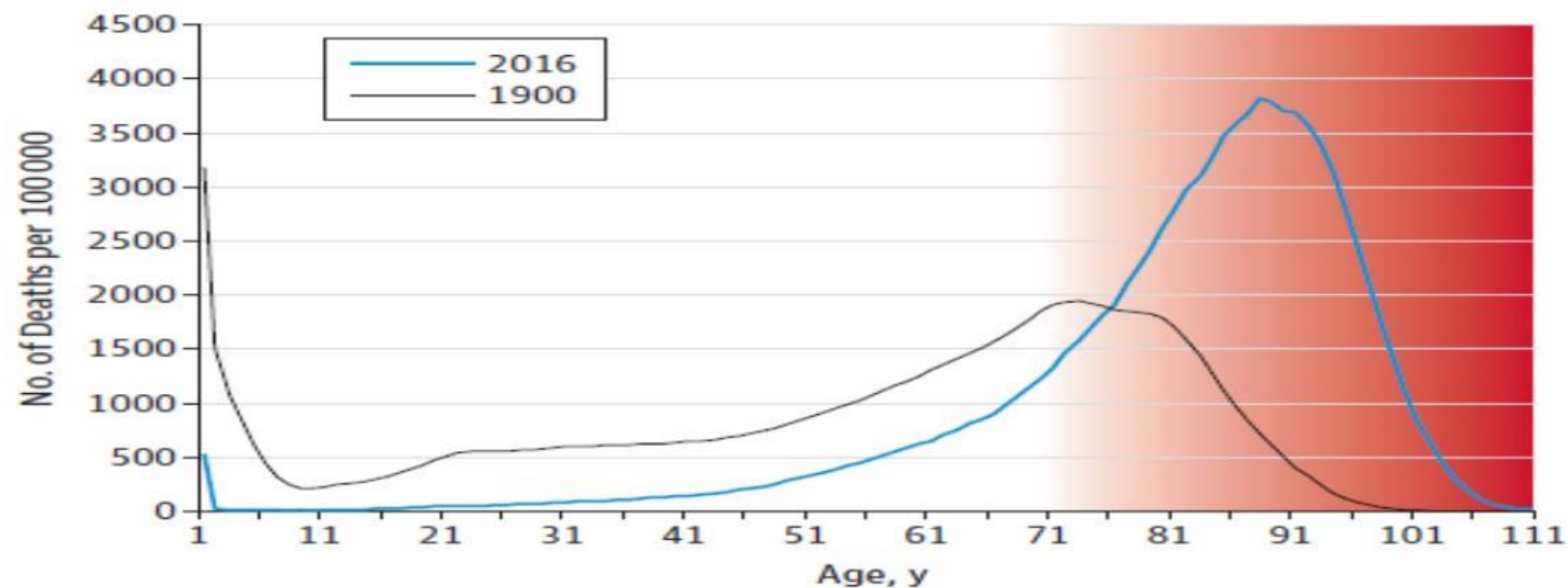
- High energy levels
- Good health
- Live independently
- Clear thinking
- Enjoyable social contacts and meaningful activities



# Goals for Frailty and Resiliency Research

- Prevent iatrogenic complications in the most vulnerable subset of older adults
- Promote resiliency, function, cognition and quality of life in older adults
- Reduce frailty and the accumulation of chronic disease states

**Figure. Age Distribution of Life Table Deaths for Women in the United States, per 100 000 People, 1900 and 2016**

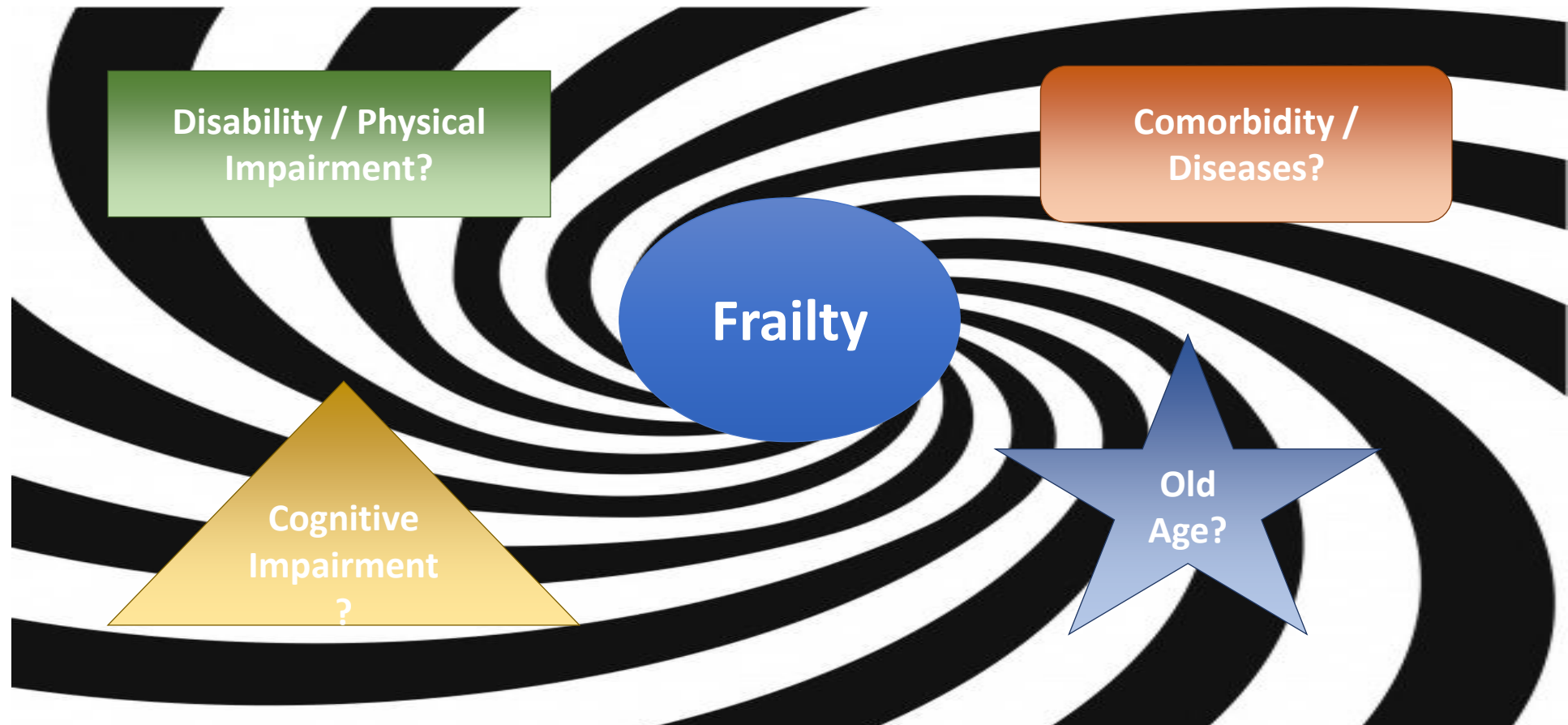


The red zone represents a period in life when the risk of frailty and disability begins to increase rapidly. The goal of aging science is to delay and compress the red zone, which may extend healthy life. Sources: 1900 data from Bell and Miller<sup>1</sup>; 2016 data from Human Mortality Database.<sup>2</sup>

**Source: Olshansky SJ. From Lifespan to Healthspan. *JAMA*. Published online September 17, 2018. doi:10.1001/jama.2018.12621**

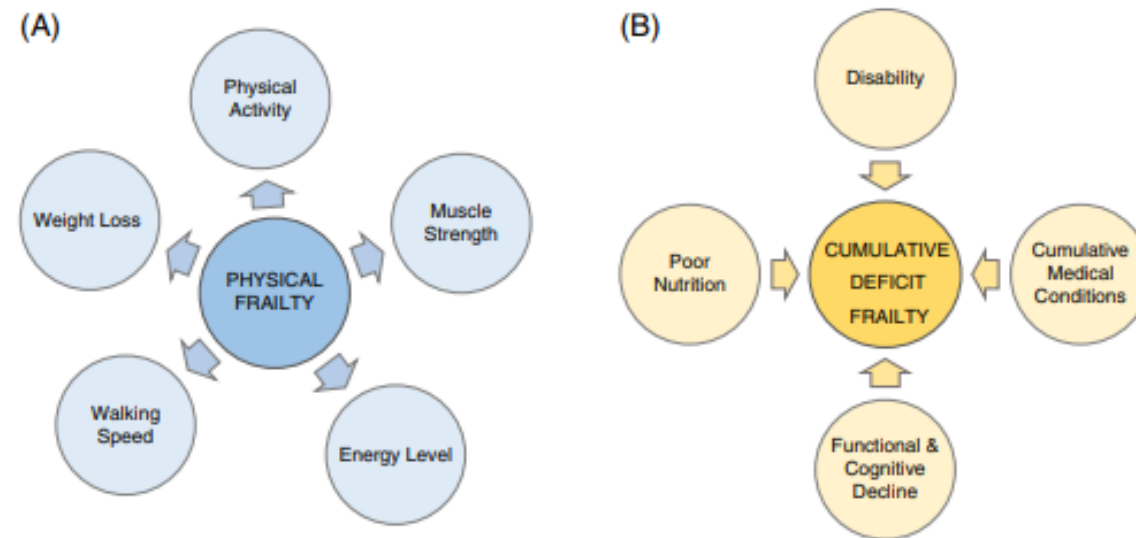


# Conceptualizing Frailty:



# Conceptualizing frailty: different measurements

- No agreed upon operational definition of frailty; many assessment instruments developed<sup>6</sup>



**Figure 1.** Representation of conceptual framework of two major theories on frailty. (A) Physical frailty, also termed phenotypic or syndromic frailty, is hypothesized to have a specific age-related biological basis that drives the appearance of signs and symptoms (outward pointing arrows). (B) Cumulative deficit frailty is hypothesized to be driven by cumulative nonspecific health, functional, psychological, and cognitive deficits (inward pointing arrows). Both concepts of frailty predict vulnerability to adverse outcomes and have led to multiple derivative frailty detection tools.

# Physical Frailty Vs. Frailty Index Measures

- Frailty Index captures comorbidity and can be easily developed in electronic medical record by adding together conditions
- Can be used in non-ambulatory and hospitalized patients
- Good at finding those at high risk of pending mortality
- Not always clear that there is any specific intervention that is common across populations

# Physical Frailty Vs. Frailty Index Measures

- Frailty phenotype is best captured in ambulatory populations, not during acute illnesses
- Good at finding those at high risk of mortality and other adverse health outcomes
- Needs specific measurements of grip strength and walking speed which may be difficult to obtain in some settings
- Hypothesized to have deep biological basis involve multisystemic decline
- Biology may allow the development of more specific diagnostic, preventive, and treatment strategies

# Is Physical Frailty also a Platform for Other Geriatric Syndromes?

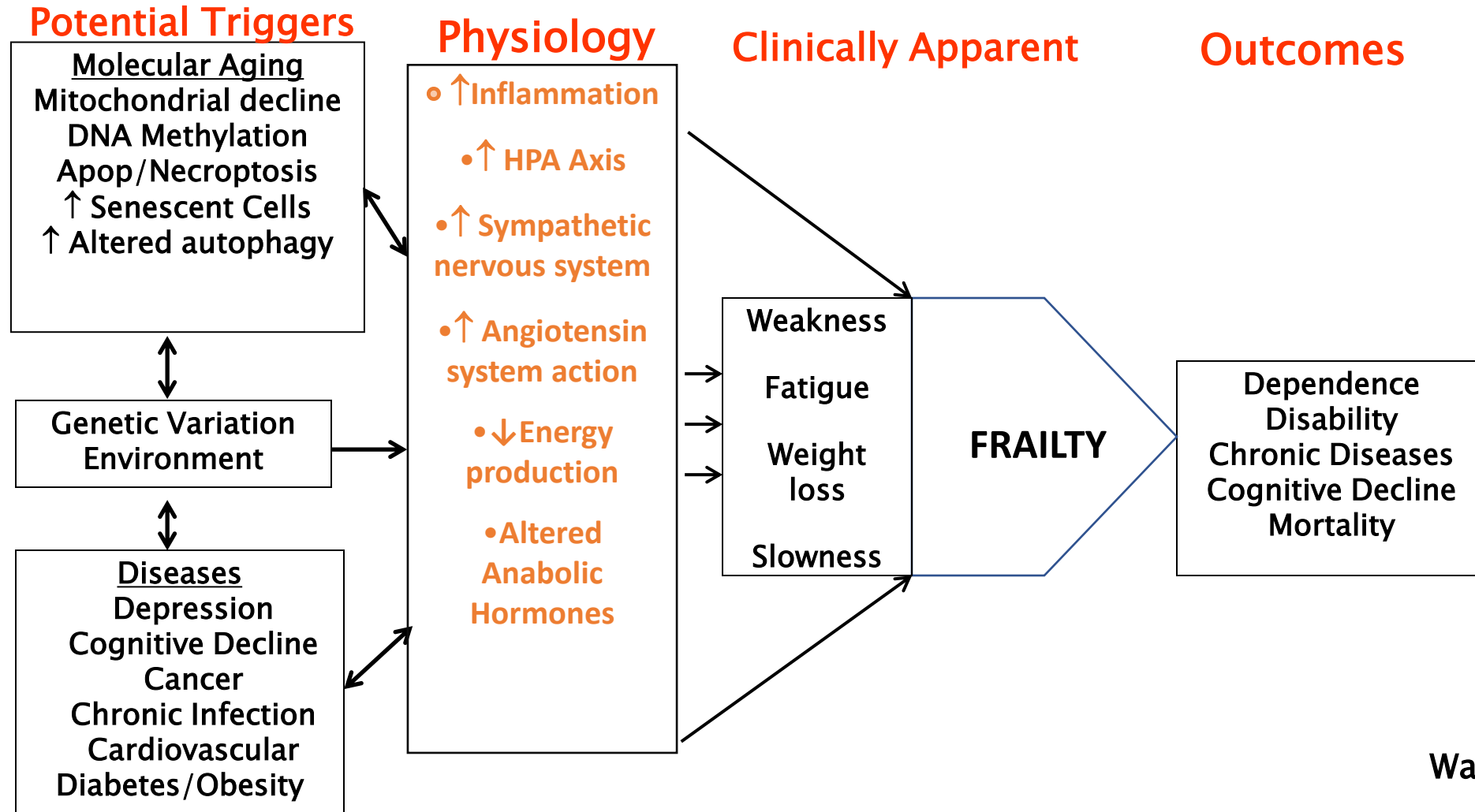
- Common biological change drives geriatric syndromes and functional and cognitive declines
- Physical frailty, Falls, Delirium, Incontinence, Sarcopenia
- Mild cognitive impairment, accumulating and accelerating chronic disease states



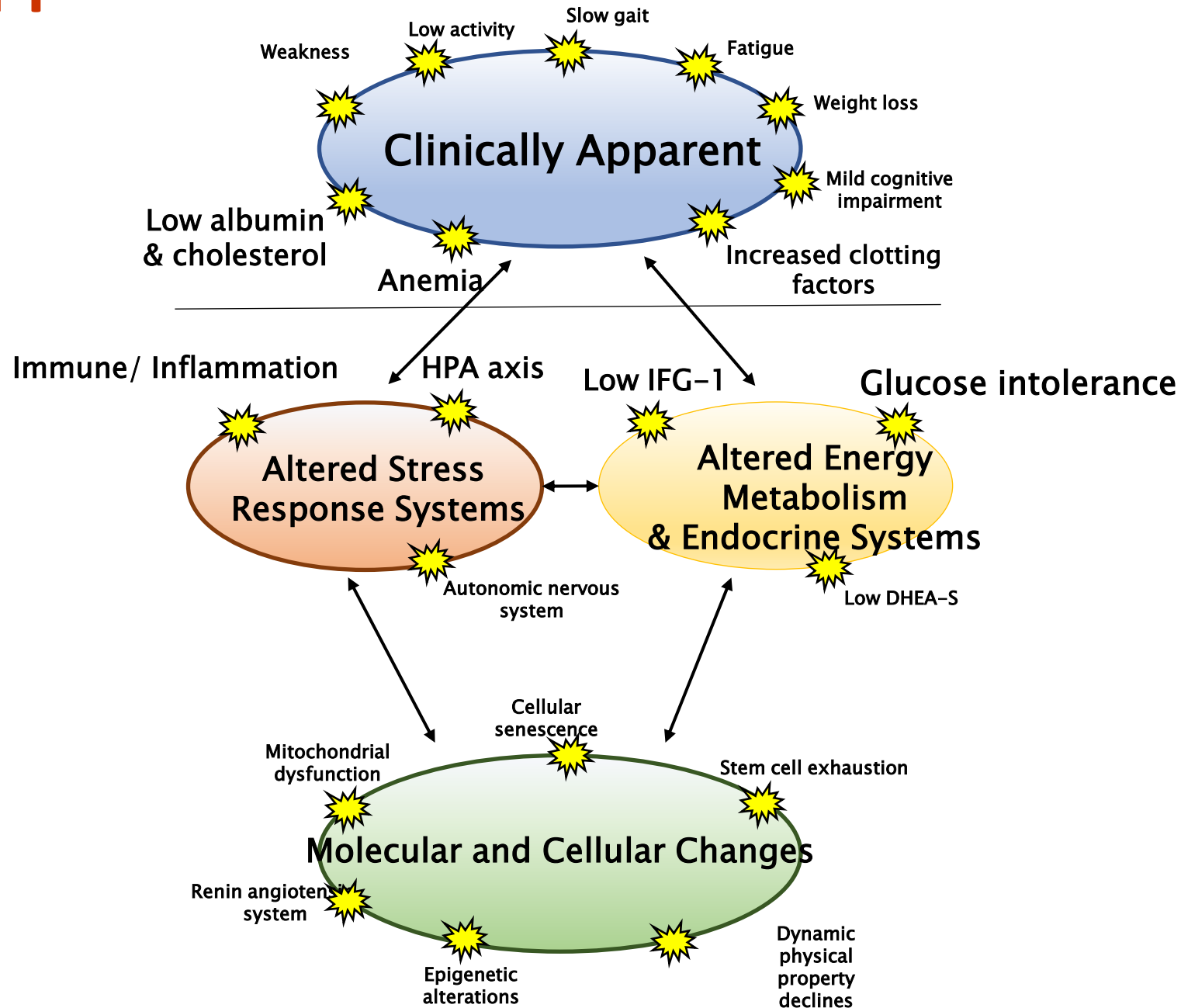
# Physical Frailty as Biologic Construct

- Age-related changes in multiple molecular physiological systems provide a platform for vulnerability
- Persists for years before manifesting in clinical signs or symptoms
- Same systems hypothesized to impact resiliency to stressors

# Complex Pathway to Frailty and Adverse Outcomes in Human Subjects



# Clinically Apparent vs. Invisible





**Mara McAdams DeMarco, PhD**

**Associate Professor and Associate Vice Chair for  
Research**

**Department of Surgery**

**New York University**





**Megan Huisingsh-Scheetz, MD, MPH**

**Assistant Professor**

**Associate Director, Aging Research Program**

**Co-Director, Successful Aging and Frailty Evaluation  
(SAFE) Clinic**

**Section of Geriatrics and Palliative Medicine**

**The University of Chicago**







**Abdulla A. Damluji, MD, PhD, MPH**

**Associate Professor of Medicine  
Johns Hopkins University School of Medicine  
Director, Inova Center of Outcomes Research**





**Sara E. Espinoza, MD**

**Professor of Medicine**

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**Co-Director, San Antonio Claude D. Pepper Older  
Americans Independence Center**

**UT Health San Antonio**

**Director, San Antonio GRECC**

**Co-Chair, Clin-STAR Leadership Core**



# RESOURCES

## JOHNS HOPKINS UNIVERSITY

<https://frailtyscience.org/>

<https://coah.jhu.edu/research-programs-and-resources/frailty-and-resiliency/>

<https://www.johnshopkinssolutions.com/solution/frailty/>

**Frailty Science** - A state-of-the-art online resource for researchers and clinicians on frailty-related science and how it might impact health and wellness for older adults. Our goal is to improve the understanding of how frailty develops, how to best assess it, and how to best treat and prevent frailty-related decline. <https://frailtyscience.org/>

**Frailty Assessment Calculator** - A standardized, evidenced-based method to assess frailty across clinical and research settings (free trial and licenses available) <https://www.johnshopkinssolutions.com/purchasefrailty/>

**Geriatric Research Instrument Library (GRIL)** - A web-based repository of information and resources about measurement instruments commonly used in gerontological research. Researchers can use GRIL to identify, compare and select instruments for their research investigations. <https://www.peppercenter.org/public/gril.cfm>

**NIA Research Resources** - Use the NIA Research Resources database to find NIA-supported scientific resources, datasets, informatics resources, and more. Search by keyword, resource type, or NIA Division or IRP. <https://www.nia.nih.gov/research/resources>

**NIA Clinical Research Study Investigators' Toolbox** - This is a web-based informational repository for investigators and staff involved in clinical research. The Toolbox contains templates, sample forms, guidelines, regulations and informational materials to assist investigators in the development and conduct of high-quality clinical research studies. <https://www.nia.nih.gov/research/clinical-research-study-investigators-toolbox>

**Research Algorithms & Statistical Programs (GRASP)** - A curated list of statistical analysis programs useful to biostatisticians engaged in studies of human aging. <https://www.peppercenter.org/public/grasp.cfm>

**Recruiting Older Adults into Research (ROAR) Toolkit** - This toolkit can be used to encourage older adults and their family caregivers, including underrepresented populations, to consider participating in research. <https://www.nia.nih.gov/health/recruiting-older-adults-research-roar-toolkit>

**Research Fundamentals: Preparing You to Successfully Contribute to Research** - Free comprehensive training from PCORI offers different ways to learn about the health research process and be involved in patient-centered outcomes research. <https://www.pcori.org/engagement/research-fundamentals>

# DATABASE

[database.clin-star.org](http://database.clin-star.org)

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