

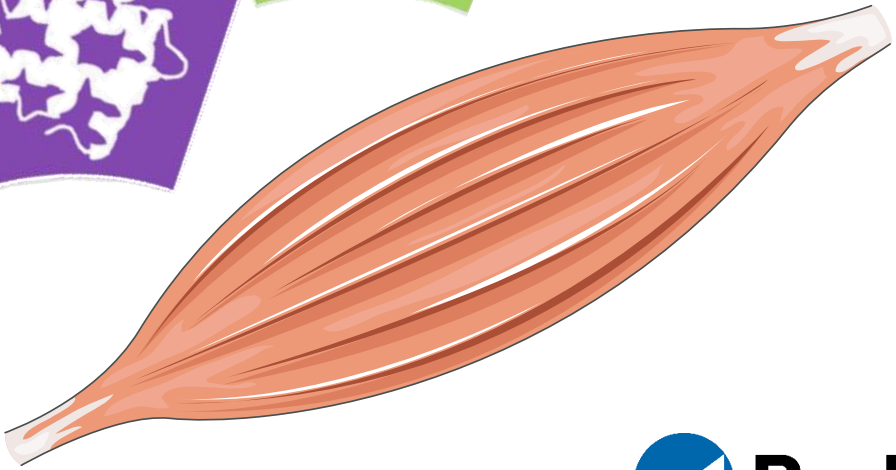
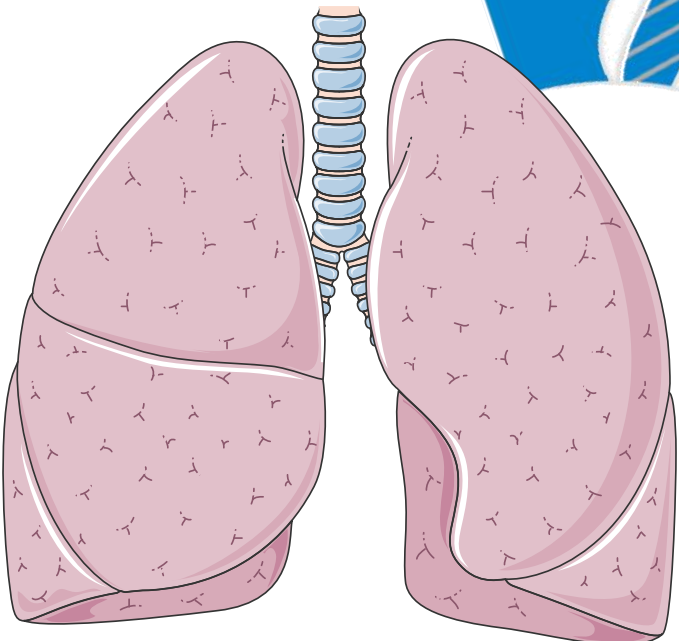
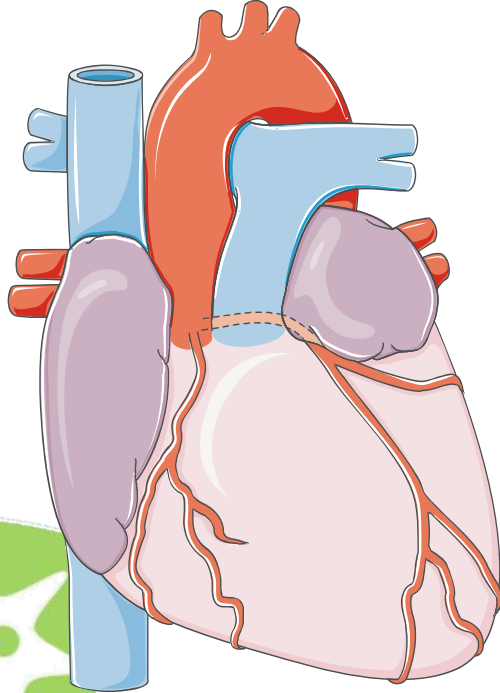
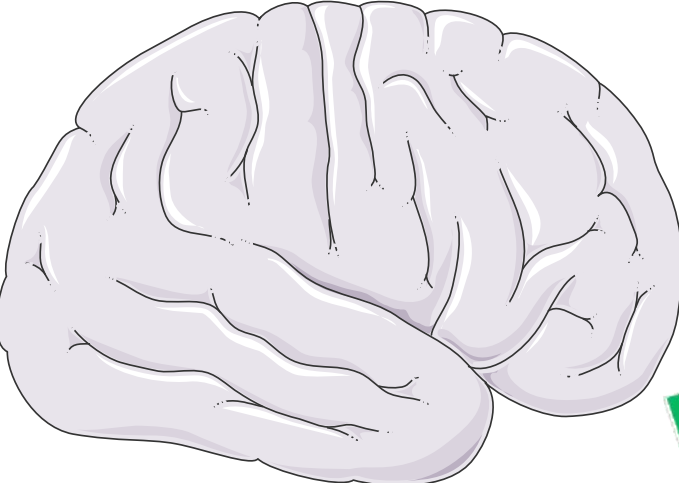
I've got biospecimens... now what?

John Newman, MD, PhD
Buck Institute for Research on Aging
UCSF Division of Geriatrics

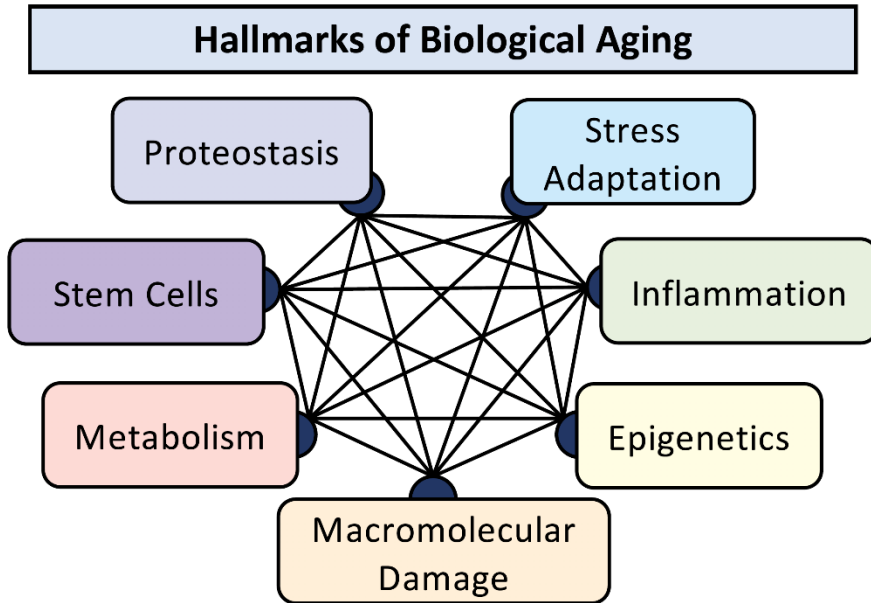


Live better longer.

Hallmarks of Aging



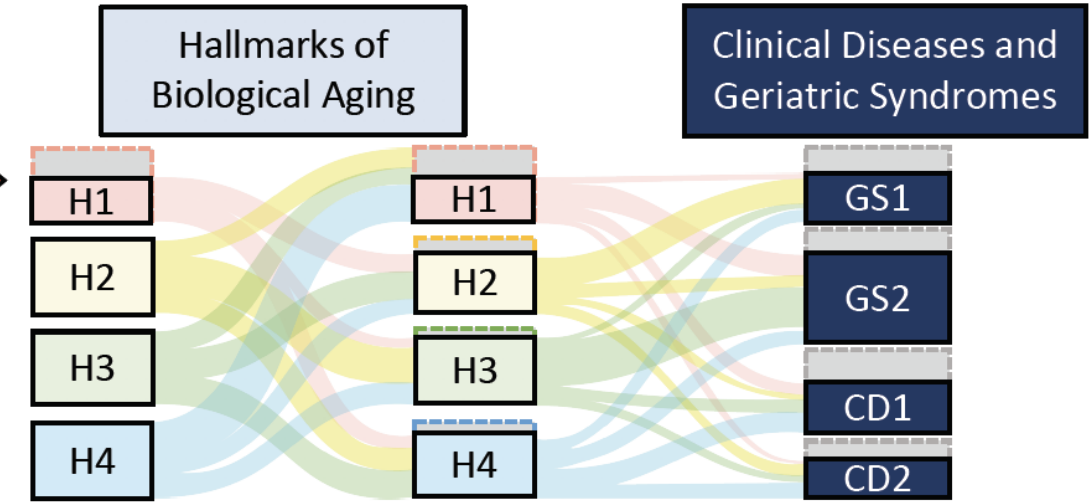
Biological Hallmarks of Aging



Targeting of Shared Hallmark(s) of Aging Can Improve Functional Domains, CDs, and GSs

Targeting one Hallmark Reduces:

- Effects of that Hallmark
- Effects of other Hallmarks
- Overall severity of CDs and GSs



How biospecimens can help

1. Age vs. aging biology
2. Pathophysiological mechanisms
3. Prediction and risk
4. Precision therapies

Delirium after Hip Fractures



Sara LaHue, MD
UCSF Neurohospitalist
2021 GEMSSTAR

Hip Fracture
>65 yo

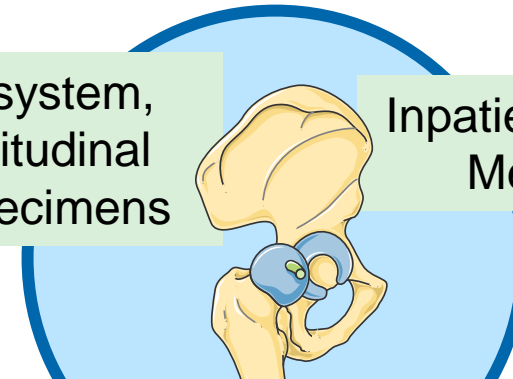
Geroscience Biomarkers
AD/Tau Biomarkers



Delirium
Long-term Cognition
Functional Recovery

Multisystem,
Longitudinal
Biospecimens

Inpatient Delirium
Measures



Long-Term
Cognitive/Functional
Outcomes

Scott Bauer, MD
UCSF Internal Medicine
2021 Beeson
Geroscience in LUTS

1. Age vs Aging Biology

Is the effect of age in X mediated by biological aging?



Biomarkers broadly representative of aging biology:
epigenetic clocks, senescent cell burden, panels,
composite clinical labs, telomeres?
Compare to AD biomarkers

2. Pathophysiological mechanisms

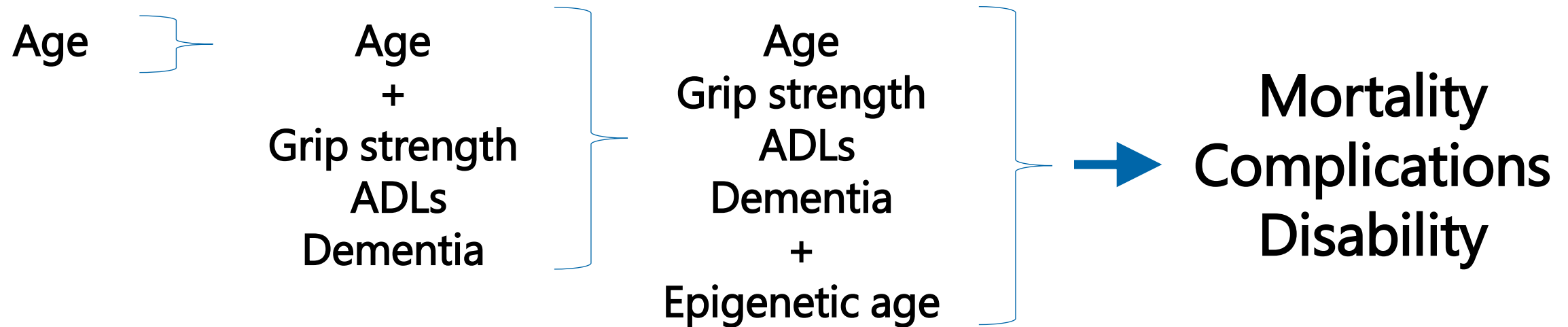
Which mechanisms of aging
drive X problem?



Pathway-specific, maybe tissue-specific biomarkers,
e.g. **senescent cell burden, SASP in blood**

3. Prediction and risk

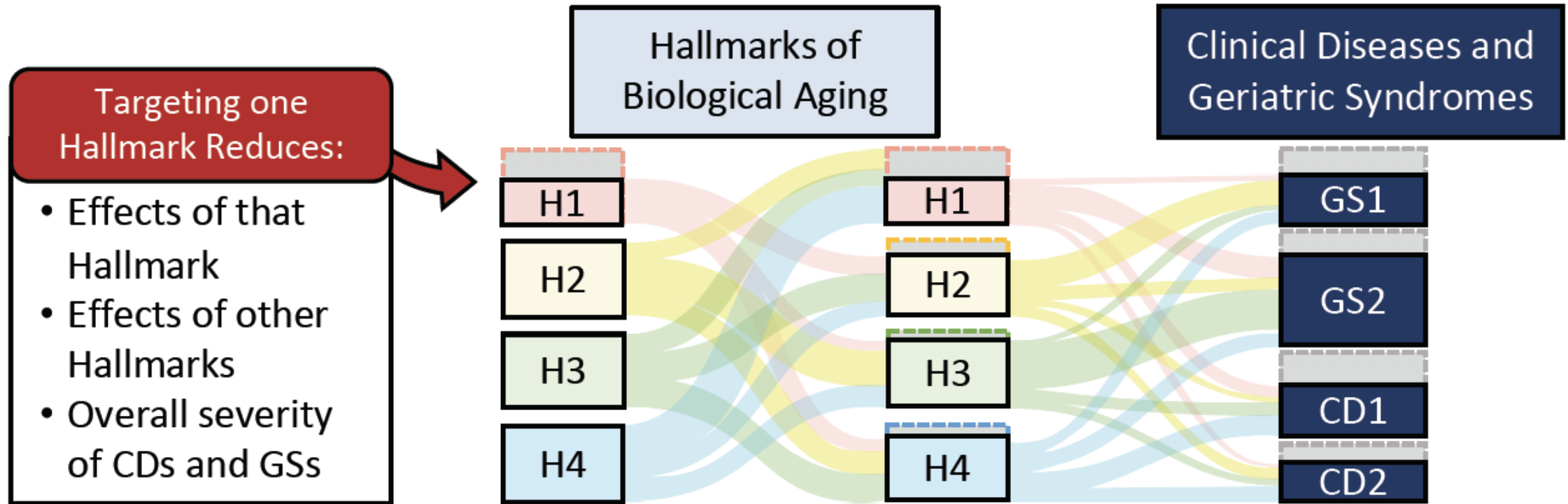
Can biomarkers improve age-related risk prediction?



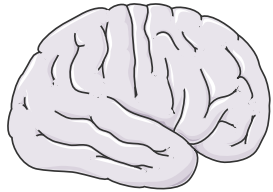
Biological analogues of physiological age clinical measurements (frailty indices, ADLs/IADLs, etc)

4. Precision therapies

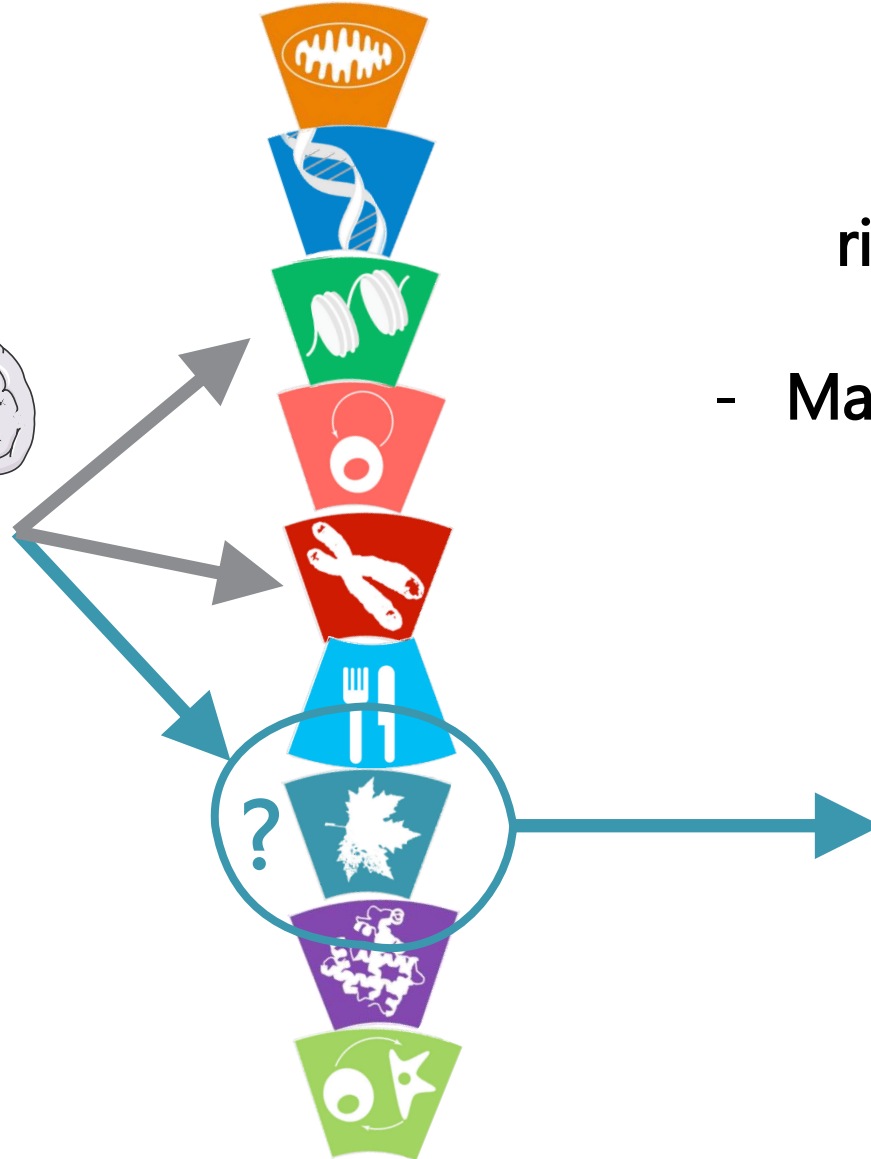
E. Targeting of Shared Hallmark(s) of Aging Can Improve Functional Domains, CDs, and GSs



4. Precision therapies



Delirium-Aging
risk stratification



- Aging is heterogenous;
risk mechanisms may be too:
- Identify personal risks
 - Match risks with targeted therapies

Mechanism-
targeted therapy

National Geroscience Networks



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Special Issue: Moving Geroscience into Uncharted Waters: Perspective

Strategies and Challenges in Clinical Trials Targeting Human Aging

John C. Newman,^{1,*} Sofiya Milman,^{2,3,*} Shahrukh K. Hashmi,⁴ Steve N. Austad,⁵ James L. Kirkland,⁶ Jeffrey B. Halter⁷, and Nir Barzilai^{2,3}

Special Issue: Moving Geroscience into Uncharted Waters: Perspective

Frameworks for Proof-of-Concept Clinical Trials of Interventions That Target Fundamental Aging Processes

Jamie Justice,^{1,*} Jordan D. Miller,^{2,3,4,*} John C. Newman,^{5,*} Shahrukh K. Hashmi,⁶ Jeffrey Halter,⁷ Steve N. Austad,⁸ Nir Barzilai,^{9,10} and James L. Kirkland^{3,4}

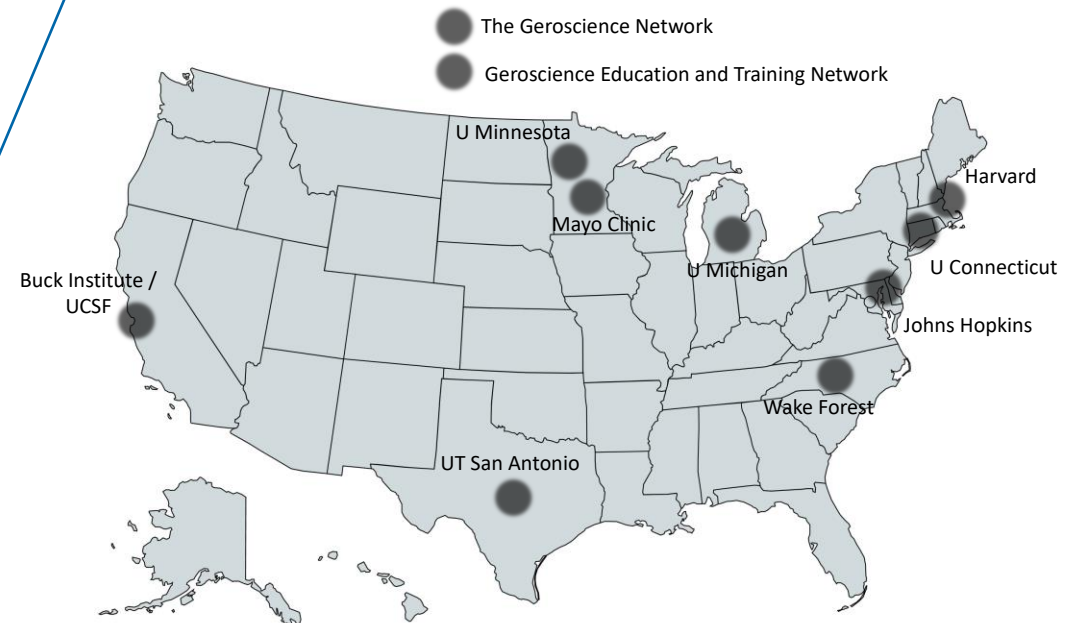
Journal of the
American Geriatrics Society



Creating the Next Generation of Translational Geroscientists

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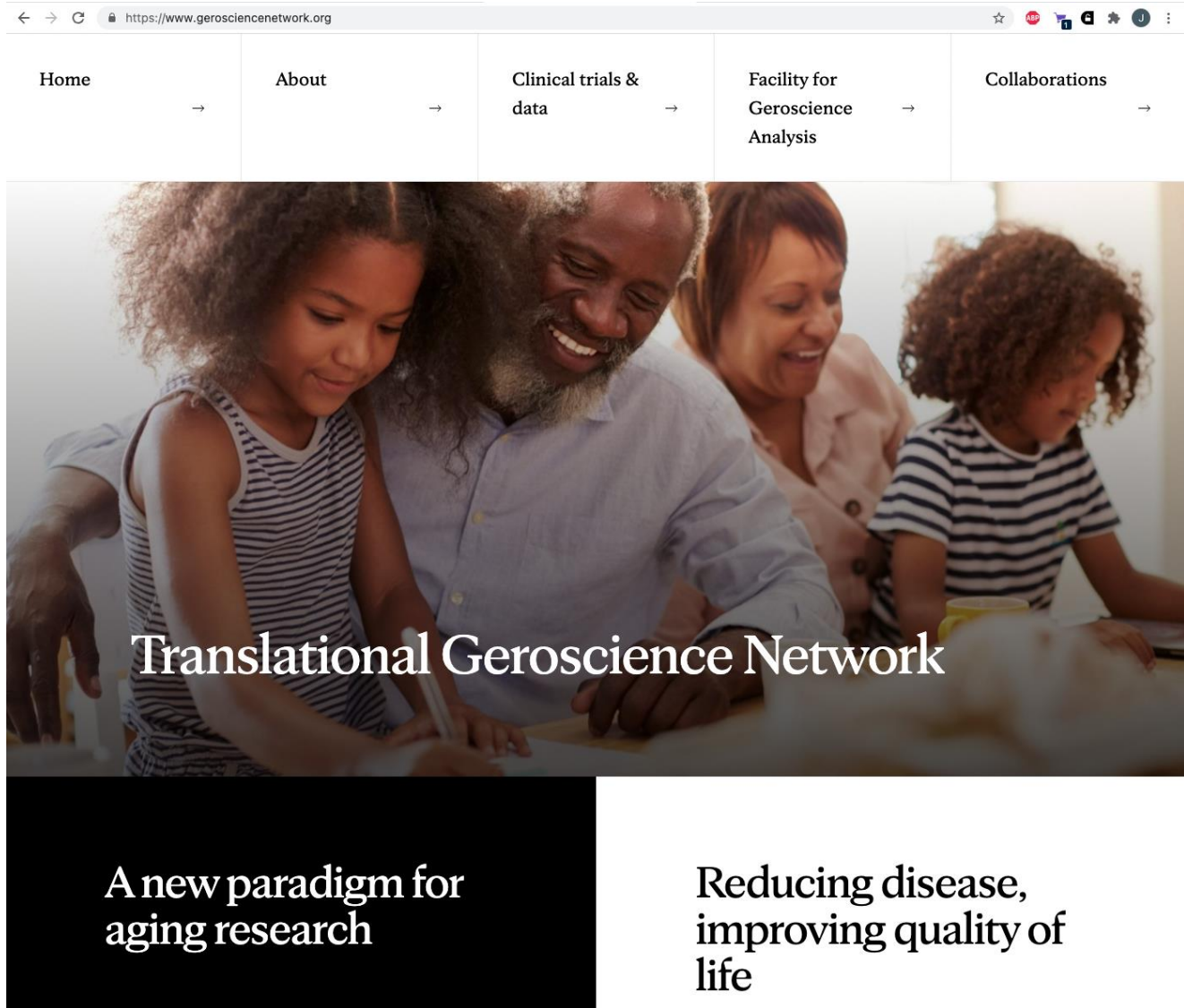
NIA The Geroscience Network NIA Geroscience Education & Training Network



Translational Geroscience Network



<https://www.gerosciencenetwork.org/>



Home → About → Clinical trials & data → Facility for Geroscience Analysis → Collaborations →

Translational Geroscience Network

A new paradigm for aging research

Reducing disease, improving quality of life

Facility for Geroscience Analysis

Facility for Geroscience Analysis

The Translational Geroscience Network has created a Facility for Geroscience Analysis (FGA) at Mayo Clinic to provide fee-based services to network members at costs competitive with those of external providers.

This specialized facility selects, optimizes and validates ancillary measures of fundamental aging processes to be assayed across all trials, with a view to establishing reference and advanced analytical capabilities to serve as a national resource.

The FGA plans to expand to include other laboratories across and beyond the network to facilitate and incorporating assays of key basic aging mechanisms in addition to senescence.

FGA Assays

Available Assays

Request a Quote

Sample Shipment to FGA

Documentation

Contact the FGA

	Generate Data	Specimen	Technique
Senescence Associated bGal Analysis	% of positive cells	- Fat tissue	- bGAL staining
Inflammation and SASP factors in blood and urine	Cytokine Concentraion	- Plasma/Serum/Urine	- Immunoassays
P16 INK4a positive T lymphocytes	CD3+ p16+ ratio of mRNA	- Whole blood - RNA in Trizol	- Positive selection and negative selection + RNA - RNA ext/cDNA and PCR
NAD and NAD metabolites Analysis	NAD Level in pBMC, cells, and tissue	- Whole blood* - Tissue - Isolated PBMC	- Fluorescent Enzymatic - Measurement
IHC Staining for Senescence and Inflammatory Markers p16, p21,CD68**	Content of positive cells	- Wet Tissue - Parafin Block - Unstained Slides	- embedding, cutting, immunohistochemistry - cutting, immunohistochemistry - immunohistochemistry
miRNA in Plasma		- Plasma	- PCR
Cell free Mitochondrial and Genomic DNA in blood	mitDNA in plasma	- Plasma	- PCR

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Thank you!

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American Federation for
Aging Research

BHB Therapeutics, Ltd

Glenn Foundation

Hillblom Foundation

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Live better longer.