

A photograph of an elderly couple embracing in a field at sunset. The woman is on the left, wearing a denim jacket, and the man is on the right, wearing a light blue shirt. They are both smiling and looking towards the right. The background shows rolling green hills and a bright sun setting behind a ridge, creating a warm, golden light.

Healthy and Successful Aging:

CU Alzheimer's and Cognition Center Research

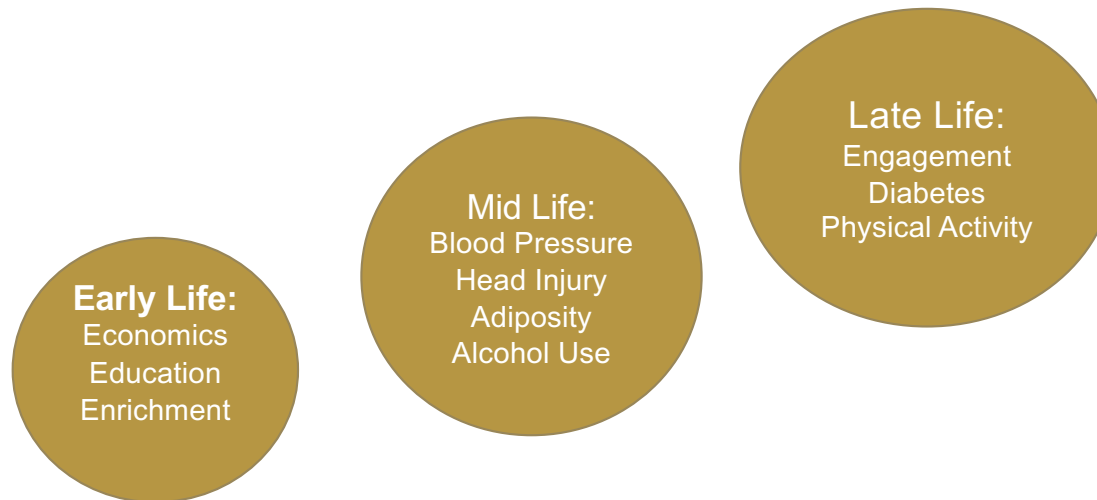
Brianne Bettcher, PhD



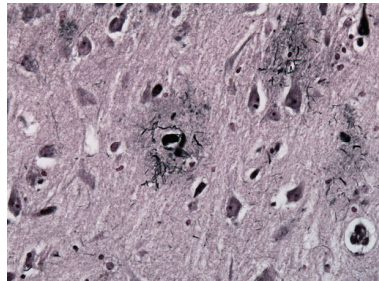
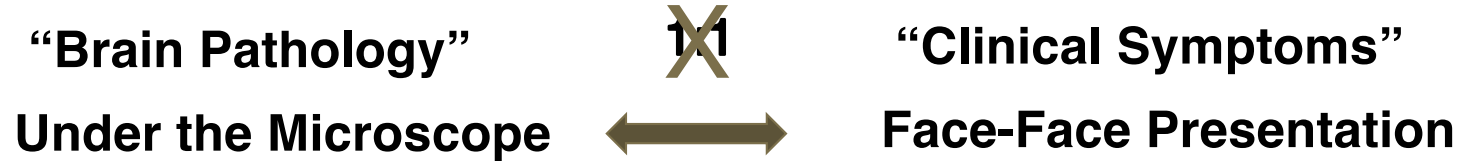
Alzheimer's and Cognition Center
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

Modifiable Risk and Healthy Aging: Prevention

- 2020 Report from Lancet on Dementia Prevention:
 - Modifying risk factors might prevent or delay up to **40%** of dementias.



Normal Aging and Alzheimer's Disease



Alzheimer's Disease Dementia

Clinically Normal, No Symptoms

CU Alzheimer's and Cognition Center

- **Mission**

- To discover effective early diagnostics, preventions, treatments, and ultimately cures for Alzheimer's disease and neurodegenerative disorders

- **How do we do this?**

- A team approach that emphasizes both research and clinical care
- Connect with the community through educational events and support programs

- **What do we have to offer?**

- Clinical Care
 - Memory Disorders Clinic located at UCHealth Central Park Medical Center
- Clinical Trials and Observational Studies
- Laboratory Research



**Healthy Brain Aging
Starts Here.**

- **Memory Disorders Clinic**

- 7 behavioral neurologists
- 1 neuropsychologist
- 1 clinical fellow
- 2 advanced practice providers
- 1 nurse
- 2,500+ patient visits/year

- **Healthy Aging Research Studies**

- Bio-AD
- ImTAB
- LIIA
- Sleep Studies
- Conversational Speech Analysis Study

- **Center Accomplishments in the past year**

- Over 45 publications in top medical and scientific journals
- Over 60 presentations at professional conferences and community education events
- 10 National Institute of Health grants funded with help from the Center

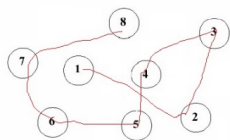


CUACC Healthy Aging Studies: Risk, Prevention and Early Detection

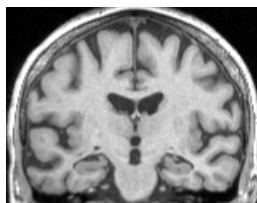
Fluid
Biomarkers



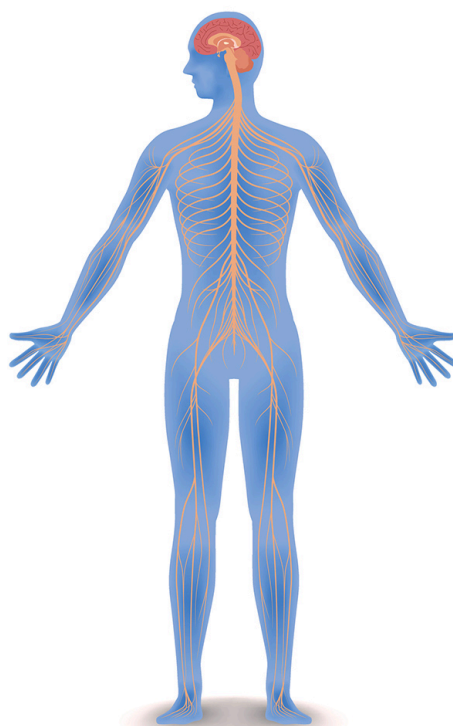
Cognition



Brain
Structure



Health
Screens



Immune System and Aging

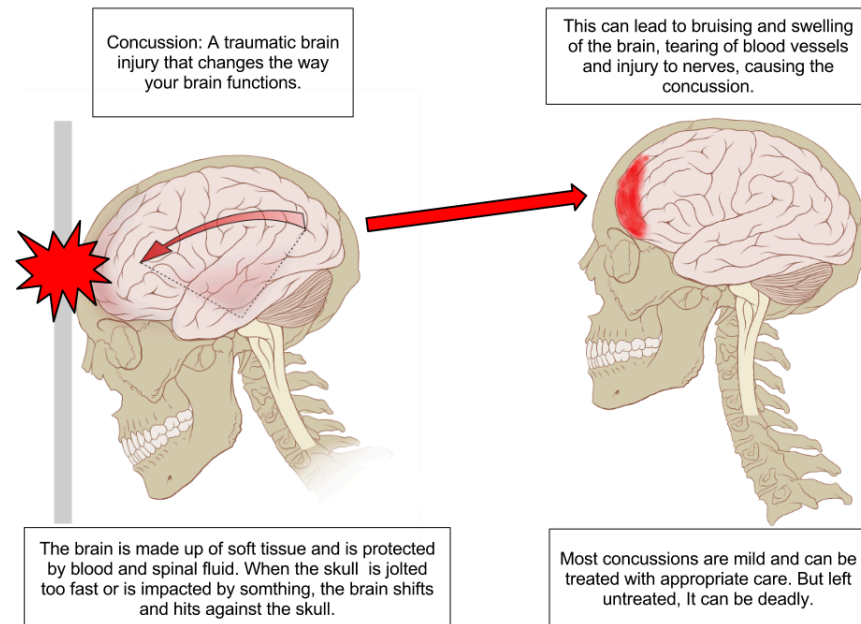
Concussion and Memory
Changes

Brain Activity During Sleep

Word Finding Changes in Late
Life

Concussion and Traumatic Brain Injury

- TBI:
 - Responsible for more than 80,000 emergency department visits each year.
- Concussion:
 - Also known as a “mild TBI”
 - Early to mid-life concussions are associated with increased risk of dementia later in life
 - Very little is known about concussions later in life



Concussion, Inflammation and Aging: The ImTAB Study



Inflammation, mTBI, and Alzheimer's Biomarkers:

A Study on Concussion, the Immune
System, and Memory!



**65 Years and Older with a Concussion in
the Past 5 Years**

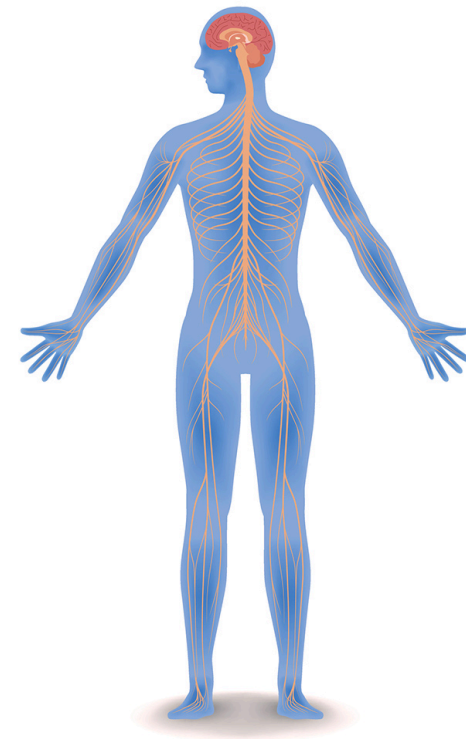
Baseline Visit

1-Year Visit

Tests of Memory/Thinking
Neurological Exam
Blood Draw
Brain MRI

The Immune System and Aging

- The immune system **changes dynamically** over time, including our response to infections
- Many changes occur in the peripheral (body) immune system and the central (brain) immune system
- Very little is known about inflammation in the brain and its relationship to Alzheimer's



Immunity, Infections, and Aging: The LIIA Study



**Longitudinal Innate Immunity and Aging:
A Study on Aging, Memory, and the Immune
System!**



**60 Years and Older, Healthy,
No Significant Memory Concerns**

Baseline Visit

2-Year Follow-Up Visit

Tests of
Memory/Thinking
Neurological Exam
Blood Draw
Spinal Tap
Brain MRI

Tests of
Memory/Thinking
Neurological Exam
Blood Draw
Spinal Tap

COVID-19 Pandemic and CUACC Research

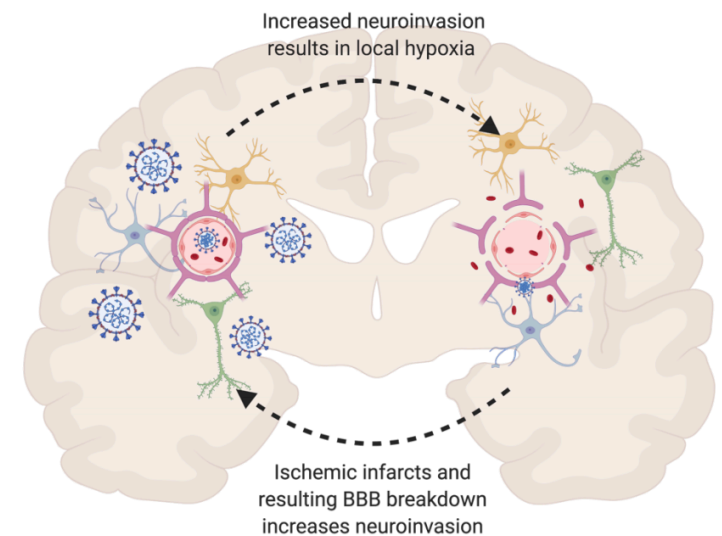
- **Antibody Testing:** As part of the LIA study, we will be investigating how *exposure* to COVID-19 relates to brain and memory outcomes
 - Participants will receive the results of this testing
- **Study Precautions:**
 - Pre-screening of all participants
 - Use of HEPA filters
 - Use of Plexi-Glass Dividers
 - Moving portions of assessment to video-based call



Neurological Symptoms in COVID-19

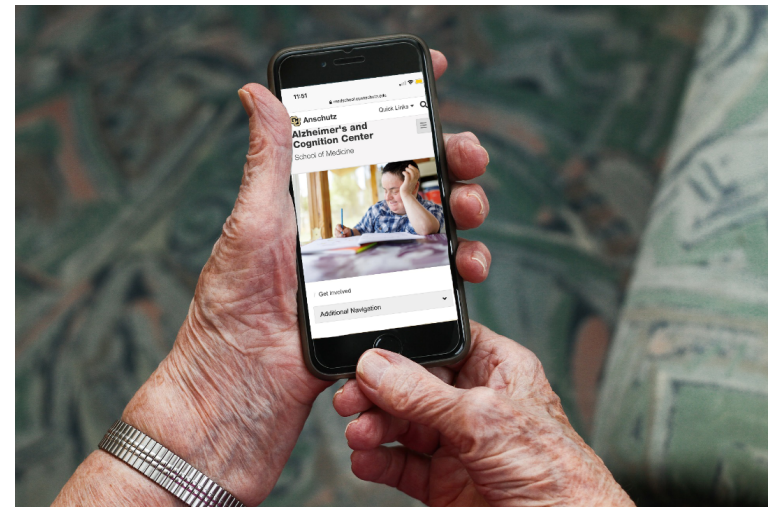
Primary infection of the brain or systemic effects?

- SARS-CoV-2 most often infects respiratory system first,
 - Spread to other organ systems – ACE2 receptors
 - About 1/3 of patients with neurological symptoms in one study
 - More likely if more severe COVID-19 disease
- Effects of sepsis, hypoxia, and immune hyperstimulation (i.e. “cytokine storm”) on the brain



Contact the CUACC

- **Are you experiencing changes in your thinking or memory and would like to set up a clinical evaluation?**
 - Memory Disorders Clinic: 720-848-2080
- **Are you interested in participating in research?**
 - Contact Neurology Research Partners
 - Phone: 303-724-4644
 - Email: NeurologyResearchPartners@ucdenver.edu
 - Website Form: www.cumemoryresearch.org
 - Mention “Healthy Brain Aging Studies”



CU Alzheimer's and Cognition Center

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HEALTHY BRAIN AGING

- Starts Here -

THANK YOU!