

# AGING BIOLOGY UPDATE

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**UAB NATHAN SHOCK CENTER OF EXCELLENCE  
IN THE BASIC BIOLOGY OF AGING**

## **December 2024 ABU**

### **Featured**

[SenNet recommendations for detecting senescent cells in different tissues](#)

[Transposable element 5mC methylation state of human blood cells predicts age and disease](#)

[Need for geroscience shown by the implausibility of radical human life extension via standard medical research in the twenty-first century](#)

[Separate and unequal: a systematic analysis of life expectancy disparities in the USA](#)

### **Basic Biology**

[DNA methylation drives hematopoietic stem cell aging after proliferative stress in young female mice](#)

[Mapping epidermal and dermal cellular senescence in human skin aging](#)

[Pan-neuronal knock down of histone reader dENL/AF9 extends \*Drosophila\* health and lifespan](#)

[Surge in spermidine is essential for fasting- and rapamycin-induced autophagy and longevity in yeast, nematodes, flies, and mice](#)

[Insights into human ovarian aging from single-nuclei multi-omic analyses](#)

[Growth hormone deficiency directly alters lifespan and metabolism in mice](#)

[In our heads: adult skull bone marrow is an expanding and resilient hematopoietic reservoir](#)

[IGFBP7 is a key component of the senescence-associated secretory phenotype](#)

[Mating reconciles fitness and fecundity by switching diet preference in flies](#)

[Maternal COVID-19 infection in early pregnancy shortens offspring telomeres and impairs placental function](#)

[Sex- and tissue-specific gene expression in muscle, liver, and fat of young and old inbred mice](#)

[Endogenous mitochondrial NAD\(P\)H fluorescence predicts lifespan in worms](#)

[Age-related STING suppression in macrophages contributes to increased viral load during influenza A virus infection](#)

[Inhibition of TrkB kinase activity impairs autophagy in cervical motor neurons of young but not older mice](#)

Review: [Waste clearance shapes aging brain health](#)

Review: [Impact of fecal microbiota transplantation on healthy longevity](#)

Review: [Serine metabolism in aging and age-related diseases](#)

### **Clinical**

[Ovarian aging impacts fertility treatments too](#)

[Gabapentinoid use associated with increasing risk of hip fracture in older frail adults](#)

[An intervention to improve sleep of people living at home with dementia](#)

[Systems engineering to improve health and care for older people](#)

[Blood-brain barrier function compromised in older humans, more pronounced in males](#)

[Estimation of physiological aging based on routine clinical biomarkers](#)

[Psychological resilience associated with a reduction in frailty in older adults](#)

[Supply and geographic distribution of geriatric physicians and geriatric nurse practitioners does not match needs in the US](#)

[Autonomic function is associated with chair rise time in older adults](#)

[Caesarean delivery associated with increased future mortality risk of mother](#)

[Patient portals do not provide equal access for older US adults](#)

[Pain is consistently associated with frailty](#)

RCT: [Geriatrician-led frailty screening in the ER leads to improved outcomes](#)

RCT: [Short exercise bout improved some aspects of cognition in healthy older adults](#)

Special Issue: [Improving geriatric pharmacology](#)

Review: [Anxiety disorders in later life](#)

Review: [Aging, senescence, and cutaneous wound healing](#)

Review: [Measurement and analysis of frailty in RCTs indicates standards needed](#)

Review: [How to close the gap between preclinical and clinical sarcopenia therapies](#)

## **Epidemiology/Demography**

[Metabolomic signatures of aging from the Long Life Family Study](#)

[Sex-specific dynamics of human aging](#)

[Weak link between life expectancy and years lost to disability in global analysis](#)

[Multiple trajectories of decline in intrinsic capacity and their impact on age-related outcomes](#)

[Move! physical activity and life expectancy](#)

[Shocker: Older adults who consumed caffeine were more active than non-consumers](#)

[Physical activity associated with reduced all-cause mortality at every age](#)

[Evidentiary support for causal relationship between gut microbiome and longevity](#)

[Plasma protein-based organ-specific aging and mortality models unveil diseases as accelerated aging of organismal systems](#)

[Lifespan and healthspan of nonhuman primates used in biomedical research](#)

[Air pollution might be an underappreciated risk factor for physical disability in later life](#)

[Socioeconomic inequalities linked to neurocognitive disorders and mortality](#)

[Socioeconomic Inequalities in frailty differ between the US and England](#)

[Resilience to lifetime trauma associated with reduced risk for cardiometabolic disease and mortality in older adults](#)

[The joint distribution of years lived in good and poor health](#)

[Later born cohorts show increased disease incidence in the U.S.](#)

## **Energetics/Nutrition**

[Late-life low protein or isoleucine diet impacts physiological and molecular signatures of aging in mice](#)

[Nutrient control of growth and metabolism through mTORC1 regulation of mRNA splicing in worms](#)

[Association between the Planetary Health Diet Index and biological aging among the U.S. population](#)

Review: [Exercise training to preserve vitality capacity in aging](#)

Review: [Aging and obesity share similarities in B-cell defects](#)

Review: [Mitochondria: the epigenetic regulators of ovarian aging and longevity](#)

Preprint: [Age, sex, and mitochondrial haplotype affect gut microbiome and](#)

[metabolites in rats](#)

### **Contrary or Null Findings**

[Whew! Number of children not consistently associated with the risk of dementia](#)

[Electric fans do not alter core body temperature in older adults exposed to extreme indoor heat](#)

[Negative effects of lifespan extending intervention on resilience in mice](#)

[Brazilian Longitudinal Study of Aging: duration of reproductive lifespan, parity and hormonal replacement therapy were not associated with incidence of dementia](#)

[Older caregivers had more advantageous demographic, psychosocial, and physical profiles and similar levels of insomnia and daytime sleepiness compared to non-older caregivers](#)

### **Evolution/Comparative**

[Metabolic scaling, energy allocation tradeoffs, and the evolution of humans' unique metabolism](#)

[Translating time—brain development and aging in 150 mammal species](#)

[Expanding the study of cancer resistance across species](#)

Review: [Eusocial insects—how to achieve a long lifespan and a high fecundity](#)

Review: [Consequences of the loss of old individuals for long-lived animals](#)

Review: [Telomeres and the surprising similarities between plants and mammals](#)

Preprint: [Population size, reproductive longevity, and germline mutation rate](#)

### **Novel Organisms**

[Loss of developmental diapause may promote extended lifespan in bees](#)

[Non-senescent planaria are not immortal: Stress and decline in two species](#)

[Predation affects the evolution of sex-specific longevity the broad-horned flour beetle](#)

[Big brown bats show minimal evidence for age-related hearing loss](#)

[Older mothers produce smaller eggs without compromising offspring quality in a thelytokous mite](#)

Preprint: [Larger breeds from the Dog Aging Project show accelerated epigenetic aging](#)

### **Caregiving**

[Culturally responsive care in perioperative settings for older adults](#)

[Time burdens of cancer care](#)

[Physical activity improves quality of life for informal caregivers of older adults](#)

[Setting standards in residential aged care: Achievable Benchmarks \(ABC\)](#)

[Unmarried couples struggle to navigate caregiving obligations](#)

[Caregiving is hard; social support and help reduce the burden on caregivers](#)

[Challenges facing older caregivers caring for older people with intellectual disabilities](#)

## **Theory**

[Evidence for natural selection for aging](#)

Review: [Epigenetic clocks and programmatic aging](#)

## **Policy/Ethics**

[Collateral damage: increasing antibiotic resistance](#)

Special Issue: [JAMA-Modern ethics for medical research](#)

[Patient and public involvement in the design of clinical trials](#)

[Brave new world: digital doppelgängers and lifespan extension](#)

[History and impact of the NIA's Resource Centers for Minority Aging Research](#)

## **Opinion/Commentary**

[Mitochondria as sensors of intracellular pathogens](#)

[What are public attitudes toward longevity biotechnology?](#)

[The controversy over blue zones](#)

[Caring for our invisible older carers](#)

## **Odd and Ends**

[Blue zones or blue smoke?](#)

[New Estimates of US Civil War mortality from full-census records](#)

[Does drooling predict lifespan?](#)

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Aging Biology Update is brought to you by the UAB Nathan Shock Center and compiled by Kathleen Fischer and Steven Austad. [Subscribe to this newsletter](#).



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