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UAB THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

AGING BIOLOGY UPDATE

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

Featured
Transcriptional and epigenetic decoding of the microglial aging process in mice

Senescence-induced cellular reprogramming drives whole-body regeneration in *Hydractinia*

Contrary or Null Findings
No correlation between birth size and biological age markers in Polish men

Underreporting does not affect conclusions about the cumulative advantage and disadvantage hypothesis of aging

Monthly vitamin D supplements do not influence telomere length in healthy adults

Receptive and participatory arts engagement are not consistently linked to healthy aging

Lack of concordance in proteomic changes induced by diverse mouse longevity interventions

Energetics/Nutrition
Greater male variability in daily energy expenditure decreases in later life

Impaired mitochondrial translation is mitigated by exercise and PGC-1α in old mice

Short-term intensive fasting enhances human red blood cell immune function

Deciphering the decline of metabolic elasticity in aging and obesity

Fly acetyltransferase chameau promotes starvation resilience but reduces longevity

Changing carbohydrate source without restricting calories maintains a youthful profile in aging yeast

Review: Food insecurity as a cause of adiposity, poor health and shorter lifespan

Basic Biology
DNA methylation noise as a biomarker of aging and disease

Downregulation of transposable elements extends worm life

Overproduction of anti-microbial peptides shortens fly lifespan

Farnesol prevents aging-related muscle weakness in (mostly) female mice

Early-adulthood spike in fly protein translation drives aging via juvenile hormone/germline signaling

Chromatin dynamics in the centromere region during senescence in human cell lines

Physical resilience predicts mouse lifespan and later-life health

Neuronal mTORC1 inhibition promotes longevity without reducing worm growth and reproduction

Senolytics reduce age-associated artery stiffening and dysfunction in mice

Mitochondrial GTP metabolism controls reproductive aging in *C. elegans*

Drosophila metallophosphodiesterase has pleiotropic roles in longevity and odorant response

Op-ed: Lifespan effects of calorie and protein restriction are consistent with predicted impacts on entropy generation

Klotho increases antioxidant defenses in cultured mouse astrocytes and ubiquitin–proteasome activity in cultured neurons

Iron overload enhances cerebral endothelial senescence in aged female mice and their cells

Heat-induced hormesis in longevity is linked to heat-stress sensitivity in *Drosophila buzzatii*

Quantifying sex differences in human brain protein expression

Female GHRH knockout mice show reduced glucagon activity under calorie restriction

Public database: Open Genes—database of human genes associated with aging and longevity

Preprint: Klotho, aging Alzheimer's disease, and brain microRNAs and tRNA fragments

Preprint: On standardization of controls in lifespan studies

Theory
A thermodynamic approach might predict individual lifespans

Hormesis defines the limits of lifespan

Epidemiology/Demography
Frailty, sex, and poverty are associated with DNA damage and repair in frail, middle-aged urban adults

Disease, health and age-associated changes in the human lipidome

Complete fatty degeneration of thymus associates with age and male sex

Early life adversity has sex-specific effects on survival in rhesus macaques

Life expectancy correlated with age at diagnosis of type 2 diabetes

Serum neurofilament light chain levels increase with age in men but not women

Novel genes associated with age-related diseases identified

COVID-19 exacerbated U.S. racial inequities in mortality

Some HLA subtypes share adaptive immune response to Alzheimer's and Parkinson's diseases

Associations with healthy aging from birth to age 84 years in Finland

Plasma metabolomic profiles associated with mortality and longevity in humans

Weight loss late in life associated with reduced survival

Blood biomarker profiles in Swedish centenarians and non-centenarians over 35 years

Lower mortality risk(!) in APOE4 carriers with normal cognitive aging

Presence of grandchildren increases the likelihood of grandparents living independently

Swedish centenarians are mostly women, mostly in care facilities, but men more likely than women to live independently

Clinical
Sex differences in biological aging and the association with clinical measures

Evaluation and treatment of acute trauma pain in older adults

Physical activity intervention improves bone mineral density in premenopausal women

Surprise! Exercise interventions in sedentary older adults improve function

Efficiency of spoken word recognition slows across the adult lifespan

Review: Biomarkers of aging for the identification and evaluation of longevity interventions

Review: Optimizing preclinical models of ageing for translation to clinical trials

Ecology & Evolution
Growth rate, evolutionary entropy and aging across the tree of life

Pleiotropic fitness effects across sexes and ages in *Drosophila*

Natural disaster and immunological aging in free-living rhesus macaques

Review: Updating the genomics and evolution of lifespan

Novel Organisms/Comparative
Convergent signatures of extreme longevity in bivalve molecular evolution

GHR-KO pigs as a model of Laron syndrome

Intermittent fasting increases longevity in female, but not male, spider mite, *Tetranychus luden*i

High levels of CD44 in multiple tissues of naked mole-rats and other long-lived mammals

Evolution of p53 pathway-related genes provides insights into whale longevity

Putting zoo animal cancer into perspective

Review: The central role of stem cells in determining plant longevity variation

Review: Phenotypic molecular features of long-lived animal species

Review: Medical applications of antler stem cells

Caregiving
Intervention target: decline of purpose in life with cognitive impairment

Caregiving burden increases with particular symptoms in dementia patients

Who cares for the carer? Designing a health and wellbeing clinic for older care partners

Review: Regulation of long-term care for older persons

Review: Effectiveness of community-based palliative care program components

Policy/Ethics
Prevalence of unmet health care need in older adults in 83 countries

Commentary
We need to shift the focus of aging research to aging itself

Unanswered questions about the causes of obesity

A physicochemical perspective on cellular ageing

Minding the Gap - Wage parity is crucial for eldercare in Canada

Reflections on measures of social isolation among older adults

Cohort studies have great potential in healthy aging research

Odd and Ends
Hobbies improve mental wellbeing among people aged 65 years and older in 16 countries

Aging and the anxieties of longevity from the premodern to the present

Idea: Using light to fuel mitochondria and increase metazoan lifespan

Review: How to calculate sample size in animal and human studies

Announcement
The UAB Department of Biology is hiring

Aging Biology Update is brought to you by the UAB Nathan Shock Center and compiled by Kathleen Fischer, Jessica Hoffman, Heather Patterson, and Steven Austad. Subscribe to this newsletter.

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