

Longevity & Healthspan Literature Monitor

As requested by Prof. Dr. Michael Friebe

Coverage period: July 7 - September 18, 2026 | Sources: PubMed (incl. Nature, Nature Aging, Nature Medicine, Nature Metabolism, Nature Communications, Cell, Cell Systems, Science, NEJM, JAMA, JAMA Internal Medicine)

Score	Relevance for Personal Prevention & Healthspan
★★★★★ 5	Breakthrough / immediately actionable for personal healthspan
★★★★☆ 4	High relevance - strong mechanistic or clinical data
★★★☆☆ 3	Moderate - promising early data or relevant mechanisms
★★☆☆☆ 2	Low-moderate - basic science, limited translational path
★☆☆☆☆ 1	Minimal direct relevance to personal prevention

SECTION A - Score 5: Breakthrough Findings

No articles reached this score in this reporting period.

SECTION B - Score 4: High Relevance

4 ★★★★☆	Integration of proteomic aging clocks in a phase 2a clinical trial supports simultaneous geroprotective assessment Nature biotechnology September 7, 2026 Zhavoronkov A, Galkin F, Chen S et al. DOI: 10.1038/s41587-026-03286-y Summary: Analysis of serum proteomes from a published phase 2a human clinical trial of an anti-fibrotic drug (rentosertib) in idiopathic pulmonary fibrosis applied six proteomic aging clocks. All clocks consistently predicted lower biological age in treated patients, with pathway analyses suggesting anti-aging shifts in senescence and metabolic processes alongside anti-fibrotic activity. Supports integrating proteomic aging clocks into human drug trials to simultaneously assess geroprotective effects, a practical step toward biomarker-guided prevention.
4 ★★★★☆	Longitudinal dynamics of gene expression and metabolomics in an aging population cohort Science (New York, N.Y.) September 3, 2026 El-Sayed Moustafa JS, Ramisch A, Raza YN et al. DOI: 10.1126/science.aed6452 Summary: Longitudinal whole-blood transcriptomic and metabolomic profiling of 335 women over 8 years found 5,061 genes and 181 metabolites changing over time, with individual trajectories often diverging from population trends and enrichment for cardiometabolic and neurodegenerative pathways. Trajectories were shaped by genetics, circadian rhythm, seasonality and pollutant exposure. Demonstrates the feasibility and importance of individualized longitudinal multi-omic monitoring for precision aging prevention.

4

★★★★☆

Late-life semaglutide treatment slows ageing and extends lifespan in female mice

Nature | September 2, 2026 | Feng Y, Barthez M, Wang Y et al.

DOI: 10.1038/s41586-026-10940-7

Summary: In 20-month-old female mice, 3 months of the GLP-1 receptor agonist semaglutide improved physiological function, attenuated aging hallmarks, and modulated nutrient-sensing longevity pathways; continued treatment extended lifespan. Effects paralleled and in some functional domains exceeded matched calorie restriction. Given semaglutide's existing human use for metabolic disease, this animal study strengthens the case for repurposing GLP-1 agonists as geroprotective agents, though human lifespan/healthspan data are still lacking.

4

★★★★☆

Biological Age Associates with Longitudinal Frailty-Related Functional Decline: The Health and Retirement Study

The journals of gerontology. Series A, Biological sciences and medical sciences | August 28, 2026 | Prapiadou S, Kimball TN, Tan BYQ et al.

DOI: 10.1093/gerona/glag213

Summary: In 4,018 Health and Retirement Study participants followed up to 12 years, epigenetic clocks (notably Hannum and DNAmGrimAge) were associated with faster longitudinal decline in cognition, grip strength and walking speed, independent of chronological age. Identifies which epigenetic clocks best track real-world frailty-related functional decline, informing which biomarkers are most useful for monitoring personal aging trajectories and prevention efforts.

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A geroprotective probiotic and its functional metabolite counteract inflammaging to extend healthspan

Nature aging | August 25, 2026 | Lu X, Ping J, Han Z et al.

DOI: 10.1038/s43587-026-01181-4

Summary: Cross-cohort human microbiome analysis (Chinese cohorts) identified Bifidobacterium pseudocatenulatum as depleted with age; its metabolite 5-aminovaleric acid betaine (5-AVAB) also declines with human aging. In naturally aged mice, oral B. pseudocatenulatum or 5-AVAB supplementation reduced multiorgan inflammaging and improved cognitive-motor function and healthspan. Suggests a microbiome-metabolite axis as a translatable target, though efficacy data are from mice; human relevance limited to biomarker decline observation.

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★★★★☆

Responsiveness of epigenetic aging biomarkers to longevity interventions in humans

Nature medicine | August 21, 2026 | Sehgal R, Borris D, Armstrong JF et al.

DOI: 10.1038/s41591-026-04562-9

Summary: Analysis of TransLAGE, a harmonized database of 51 human longitudinal interventional studies, computed 16 epigenetic clocks and 94 DNAm biomarkers to test responsiveness to longevity interventions. Mortality/pace-of-aging clocks responded most consistently; pharmacological and lifestyle interventions produced the strongest DNAm biomarker shifts. Provides an evidence base for using epigenetic clocks as surrogate endpoints in personal prevention trials, clarifying which biomarkers are actually modifiable.

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Senescence-associated metabolic alterations aggravate calcific aortic valve disease

European heart journal | August 7, 2026 | Qian X, Xu L, Zheng Y et al.

DOI: 10.1093/eurheartj/ehag191

Summary: Combined human aortic-valve transcriptomics/single-cell data with mouse knockout models showed that age-related NAMPT decline in valvular endothelial cells depletes NAD⁺, inactivates SIRT1, and drives NF-kappaB-mediated inflammaging and calcification. UK Biobank proteomics and Mendelian randomization linked circulating NAMPT to aortic stenosis risk, and nicotinamide mononucleotide supplementation showed therapeutic potential in mice. Supports NAD⁺ boosting strategies as a plausible, human-genetics-backed approach to prevent calcific valve disease, a common cardiovascular aging condition.

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★★★★☆

Early life sugar rationing and ageing related diseases, biological ageing and mortality

Nature communications | July 31, 2026 | Zheng J, Zhou Z, Huang J et al.

DOI: 10.1038/s41467-026-76257-1

Summary: Natural-experiment study of 64,809 UK Biobank participants used Britain's postwar sugar rationing exposure in the first 1,000 days of life. Early-life sugar restriction was associated with 9% lower hallmark-disease incidence and 19% lower all-cause mortality, plus 1.0-1.2 years younger biological age across clocks and altered proteomic pathways (AMPK up, mTOR down). Provides strong human evidence that early-life dietary sugar exposure has durable effects on lifelong biological aging and disease risk, supporting sugar-limiting public health guidance.

4

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Gut microbiota associates with frailty in older women

Nature communications | July 8, 2026 | Vilar Geraldi M, Dwibedi C, Jaiswal R et al.

DOI: 10.1038/s41467-026-75176-5

Summary: Metagenomic cohort study of 2,081 Swedish women aged 75-80 (SUPERB) and a validation Chinese cohort of 1,448 older adults linked a composite Frailty Mortality Index to gut microbial diversity, gene richness and functional capacity. 404 bacterial species were associated with frailty, with concordant signatures across continents. Highlights gut microbiome as a modifiable, cross-population biomarker and potential target for frailty prevention in aging women.

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Identifying populations with faster cognitive decline using blood-based biomarkers

Alzheimer's & dementia (New York, N. Y.) | July 8, 2026 | Pike JR, Liu Y, Chisolm T et al.

DOI: 10.1002/trc2.70289

Summary: Using plasma biomarker data from the ARIC cohort (n=1,826), validated in MESA (n=383) and ACHIEVE (n=552), elevated neurofilament light and related blood biomarkers identified dementia-free older adults with faster subsequent cognitive decline. Applying a neurofilament light threshold reduced the sample size needed to detect a 33% reduction in cognitive decline in prevention trials by 57%. Demonstrates a practical, blood-based tool to enrich personal prevention and clinical trial strategies for cognitive decline.

SECTION C - Score 1-3: Moderate / Lower Relevance

3

★★★☆☆

Sex-specific biological aging clocks across organs and omics

Nature medicine | September 16, 2026 | MULTI Consortium, Song Z, Feng D et al.

DOI: 10.1038/s41591-026-04662-6

3 ★★★★☆	Sex-specific aging clocks from a large-scale human phenome reveal distinct aging transitions and circulating signatures Nature aging August 25, 2026 Li J, Gao DD, Li J et al. DOI: 10.1038/s43587-026-01180-5
3 ★★★★☆	Immunometabolic reprogramming via GLP-1 receptor agonists in people with HIV: A multidimensional systemic framework Bioscience trends August 21, 2026 Sun L, Isnard S, Zhu H et al. DOI: 10.5582/bst.2026.01148
3 ★★★★☆	Inhibiting cyclin D1-CDK6 suppresses senescence-associated inflammatory gene expression and age-related functional decline Nature aging August 20, 2026 Rajesh A, Havas AP, Arnold R et al. DOI: 10.1038/s43587-026-01196-x
3 ★★★★☆	CK2alpha restriction of STING accumulation underlies systemic aging Nature communications August 19, 2026 Zhang J, Jin M, Rao D et al. DOI: 10.1038/s41467-026-76351-4
3 ★★★★☆	Histological aging signatures for monitoring tissue-specific aging and disease Nature medicine August 14, 2026 Abila E, Buljan I, Zheng Y et al. DOI: 10.1038/s41591-026-04566-5
3 ★★★★☆	Comparative effects of semaglutide tirzepatide and retatrutide on renal fibrosis in UUO and aged mice iScience August 13, 2026 Ding M, Li X, Wei Y et al. DOI: 10.1016/j.isci.2026.117174
3 ★★★★☆	Senescent microglia with shortened telomeres secrete soluble DLK1 to induce aging-associated hypomyelination and neuronal dysfunction Neuron August 11, 2026 Liu B, Mahoney M, Feng Y et al. DOI: 10.1016/j.neuron.2026.07.021
3 ★★★★☆	Diet-responsive proteogenomic effects following short-term restriction of animal products in humans Nature communications August 8, 2026 Simistiras A, Bocher O, Emmanouil C et al. DOI: 10.1038/s41467-026-76379-6
3 ★★★★☆	Methionine tuning for health without frailty Cell metabolism August 4, 2026 Garrido A, Price NL, de Cabo R DOI: 10.1016/j.cmet.2026.06.013

3 ★★★★☆	Mitochondrial metabolism and epigenetic crosstalk drive SASP Nature July 29, 2026 Martini H, Birch J, Marques FDM et al. DOI: 10.1038/s41586-026-10791-2
3 ★★★★☆	A Low-Data-Burden Vascular-Behavioral Profile for First-Pass Stratification of Later-Life Cognitive Decline Across International Aging Cohorts American journal of preventive medicine July 26, 2026 Wei L, Zhang L, Ji Y et al. DOI: 10.1016/j.amepre.2026.108528
3 ★★★★☆	Lifelong restriction of dietary valine has sex-specific benefits for health and lifespan in mice Nature aging July 24, 2026 Calubag MF, Ademi I, Green CL et al. DOI: 10.1038/s43587-026-01169-0
3 ★★★★☆	Understanding and making sense of epigenetic age misalignment across different aging clocks Epigenomics July 24, 2026 Johnson AA, Shokhirev MN DOI: 10.1080/17501911.2026.2708567
3 ★★★★☆	Positioning TERT at the apex of aging Nature aging July 20, 2026 DePinho RA DOI: 10.1038/s43587-026-01179-y
3 ★★★★☆	Prevention of Vascular Aging as a Novel Paradigm for GLP-1 Receptor Agonist-Mediated Cardioprotection Circulation research July 16, 2026 Dennis CJ, He AZ, Krishnaraj A et al. DOI: 10.1161/CIRCRESAHA.126.327425
3 ★★★★☆	Trained immunity links hematopoietic stem cell aging to aging-associated inflammation Nature aging July 16, 2026 Mu WC, Barthez M, Feng Y et al. DOI: 10.1038/s43587-026-01175-2
3 ★★★★☆	Sirtuin 1 deficiency mediates chronic kidney disease-induced inflammaging cardiovascular calcification Molecular biomedicine July 7, 2026 Xu L, Zheng Y, Liu M et al. DOI: 10.1186/s43556-026-00488-3

SUMMARY - Key Findings by Domain		
Domain	Score 5 Highlight	Score 4 Highlight

Aging Biomarkers	-	Proteomic aging clocks detected lower biological age in anti-fibrotic drug trial patients, supporting biomarker-guided geroprotective drug assessment. (Nature biotechnology)
Precision Prevention	-	8-year multi-omic profiling of women shows individualized trajectories shaped by genetics, circadian rhythm and exposures, supporting personalized monitoring. (Science (New York, N.Y.))
Pharmacology / Metabolism	-	Late-life semaglutide slowed aging hallmarks and extended lifespan in old female mice, exceeding calorie restriction in some functions. (Nature)
Frailty / Epigenetic Clocks	-	Hannum and DNAmGrimAge clocks predicted faster cognitive, grip strength and walking speed decline over 12 years independent of age. (The journals of gerontology. Series A, Biological sciences and medical sciences)
Microbiome / Geroprotection	-	A depleted human-aging-associated gut bacterium and its metabolite reduced inflammaging and improved healthspan in aged mice. (Nature aging)
Epigenetic Clocks	-	Across 51 human interventional studies, mortality/pace-of-aging clocks responded most consistently to pharmacological and lifestyle interventions. (Nature medicine)
Cardiometabolic / NAD+	-	Human genetics and proteomics link declining NAMPT/NAD+ to calcific aortic valve disease; NMN helped in mouse models. (European heart journal)
Nutrition / Metabolism	-	Postwar sugar rationing in early life linked to 9% lower disease incidence, 19% lower mortality, and younger biological age in UK Biobank. (Nature communications)
Microbiome / Frailty	-	Cross-continental cohorts of older women found 404 gut bacterial species associated with a frailty mortality index. (Nature communications)
Neurodegeneration / Biomarkers	-	Elevated neurofilament light identified dementia-free adults at risk of faster cognitive decline, improving prevention trial efficiency. (Alzheimer's & dementia (New York, N. Y.))

Key Takeaway for Personal Prevention (September 2026)

This month's evidence includes several strong human findings worth discussing with a clinician, alongside promising but preclinical animal work that should not yet guide personal action. Human cohort evidence (UK Biobank) suggests early-life sugar restriction associates with lower lifelong disease risk and younger biological age, and human cohort data link gut microbiome diversity to frailty in older women, and elevated blood neurofilament light to faster cognitive decline - both potentially useful discussion points for personalized risk assessment with a doctor. A human interventional-study analysis indicates certain epigenetic clocks respond to lifestyle and drug interventions, supporting their future use as monitoring tools. Findings on semaglutide extending lifespan, NAD⁺-boosting protecting heart valves, and a gut metabolite reducing inflammation are so far only animal/cell studies and should not be interpreted as validated prevention strategies. Overall: ask your clinician about metabolic health monitoring, sugar intake, and biomarker tracking, but recognize that drug-repurposing and microbiome-metabolite therapies remain experimental.

General information drawn from the studies above - not medical advice. Animal and early findings are not recommendations; discuss any change to your health routine with your clinician.