

What is established — and what is not

This overview separates established from preliminary evidence. It is deliberately candid: this field is heavily over-promised.

CLAIM

Consultation, not diagnostics

LEVEL

Trend, not single value

AS OF

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We state the evidence openly, including where it is thin. Anyone presenting these analyses should know the limits — otherwise they collapse at the first critical question.

What is well established

Lifestyle changes epigenetic markers

Randomised pilot trial, 8 weeks of diet, sleep, exercise and relaxation: epigenetic age on average 3.2 years lower than in the control group (Fitzgerald et al., Aging 2021). This measured DNA methylation, not microRNA.

Inflammation as an ageing axis

"Inflammaging" is an established concept; miR-21 is described as a circulating inflammation marker (Olivieri et al. 2012).

microRNAs are stable in dried blood

microRNAs are considered more robust than mRNA and remain comparatively stable in dried samples — the sampling route itself is sound.

The established standard for biological age

That is methylation clocks: Horvath, PhenoAge, GrimAge and DunedinPACE. DunedinPACE shows high test-retest reliability and associations with morbidity and mortality.

What is preliminary

microRNA age clock

The published model for miR-21, miR-24 and miR-155 (n = 539) explains about 5 % of the variance in age with a mean absolute error of 10.4 years; two of the three markers did not correlate significantly with chronological age. The authors themselves call it a pilot study and ask for validation before clinical application. As an age determination the value does not hold.

Telomere length by qPCR

The method varies considerably between runs and laboratories; DNA extraction, storage and cell composition systematically affect the result. For diagnostic questions flow-FISH is considered superior. Assay variation from dried blood is higher than from venous blood.

Gene-based dietary advice

The Food4Me study found no difference in weight loss between levels of personalisation including genetics; a randomised trial showed no advantage of a nutrigenetic over a balanced standard diet. The German Society of Human Genetics rejects genetic testing for dietary advice, and US professional bodies do not consider it ready for routine practice.

microRNA as stress markers

There is work on individual microRNAs and acute as well as chronic stress, but no established cut-offs and no diagnostic validation.

What follows for practice

- These are consultation and monitoring tools, not diagnostics — that wording is not legal caution, it is the state of the evidence.
- The trend holds, the single value does not. An initial and a follow-up measurement under identical conditions are the actual benefit.
- Do not claim equivalence with methylation clocks — different method, different evidence.
- Do not advertise gene-based dietary advice as superior for weight loss; the benefit lies in structure, conversation and adherence.
- Candour pays: with physicians, an honest appraisal is an advantage over providers who over-promise.

OPEN ITEMS WITH THE LABORATORY PARTNER

- Analytical validation: precision and reproducibility of the assays from dried blood, with figures.
- Origin and composition of the more than 60,000 reference values.
- Turnaround time and an anonymised sample report.



Sources: Schneider et al., Front Nutr 2025 (miRNA-3Age, pilot study, n = 539); Fitzgerald et al., Aging 2021 (RCT, n = 43); Olivieri et al., Mech Ageing Dev 2012; Lin et al., PMC6363640 (qPCR telomere measurement, critical factors); Food4Me study; position of the German Society of Human Genetics. As of 05.08.2026.

This document does not replace clinical judgement and makes no therapeutic claims.

