

Biomarkers indicate health in old age

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Researchers have identified a set of biomarkers for health in old age in human blood. Credit: Max Planck Institute for Biology of Ageing

Researchers on aging from the Max Planck Institute for Biology of aging and the Leiden University Medical Center collaborate to link basic insights from model organisms to the causes of aging in humans. Now, they have found a combination of biomarkers in the blood that could



help clinicians estimate the disease vulnerability of elderly people in clinical studies, and could possibly be used in intervention studies in model organisms that slow down aging.

When basic researchers investigate the molecular basis of aging, they usually study model <u>organisms</u> such as worms, fruit flies or mice. The Max Planck Institute for Biology of aging aims to link basic insights into aging to the causes and processes underlying aging-associated diseases in humans, and has therefore recruited Prof. Eline Slagboom from the Leiden University Medical Center in the Netherlands (LUMC) as a Max Planck Fellow in 2018. Now the researchers have identified a set of biomarkers in human blood which could be used in parallel in <u>clinical studies</u> and in aging research on model organisms.

The scientists searched in <u>blood samples</u> of 44,168 individuals for biomarkers that are indicative of a person's remaining lifespan. After an extensive analysis, the scientists arrived at a set of 14 biomarkers which include for example, various amino acids—the building blocks of proteins—and levels of 'good' and 'bad' cholesterol, fatty acid balances and inflammation.

Starting point for studies in humans and animals

The blood-based measurement is intended as a first step towards a more personalized treatment of the elderly, explains study director Prof. Eline Slagboom. "As researchers on aging, we are keen to determine the biological age. The calendar age just doesn't say very much about the general state of health of elderly people: one 70-year-old is healthy, while another may already be suffering from three diseases. We now have a set of biomarkers which may help to identify vulnerable elderly people, who could subsequently be treated."

The set of biomarkers is also a starting point for parallel studies in model



organisms. "aging research in model organisms is ahead of that in humans. To make use of that knowledge we need instruments to compare human and animal studies and this could be one. We are currently investigating if the identified substances can be found in the blood of typical <u>model</u> organisms such as mice and if they are affected by interventions in aging," explains Slagboom. The researchers are now working on answering these questions together with the Cluster of Excellence for Aging Research at the University of Cologne.

More information: Joris Deelen et al. A metabolic profile of all-cause mortality risk identified in an observational study of 44,168 individuals, *Nature Communications* (2019). <u>DOI: 10.1038/s41467-019-11311-9</u>

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