Shorter telomeres point to increased Alzheimer's risk

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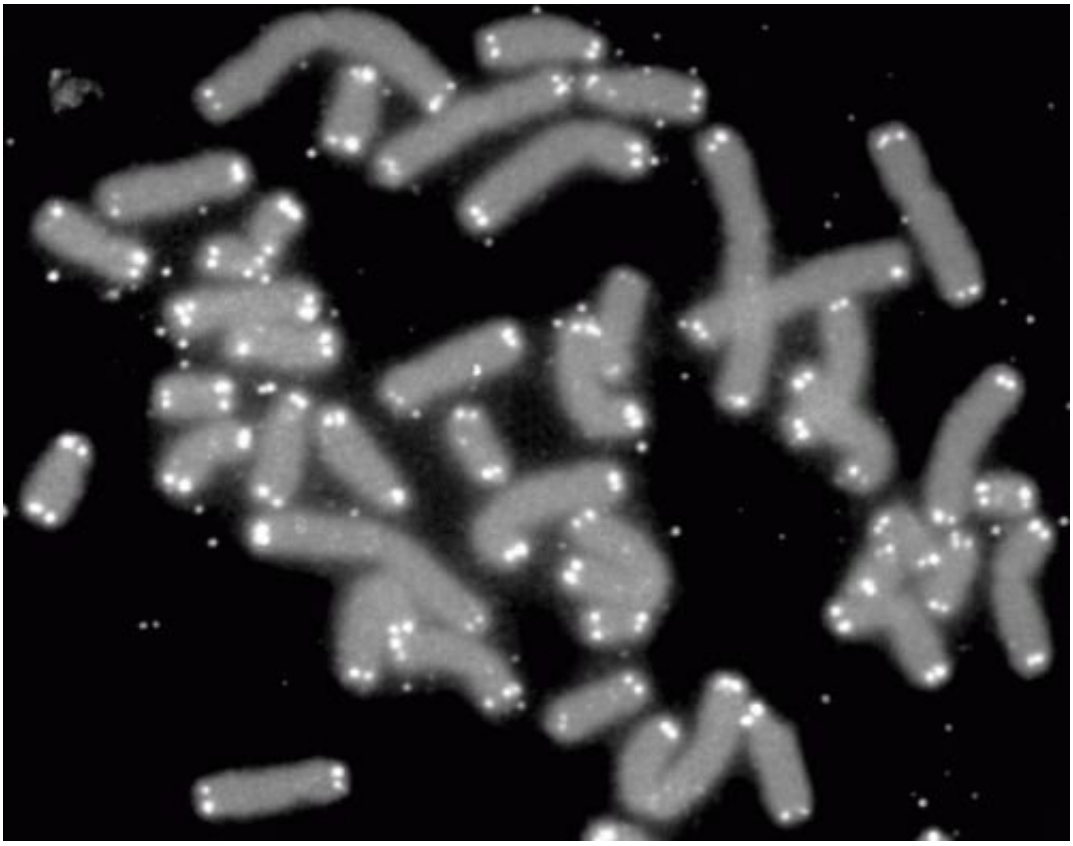

Human chromosomes (grey) capped by telomeres (white). Credit: PD-NASA; PD-USGOV-NASA

Short telomeres in midlife are associated with a higher risk of developing Alzheimer's disease, UConn School of Medicine researchers report in the May 30 issue of *Aging Cell*.

Telomeres are repetitive lengths of DNA that cap our chromosomes, protecting the rest of the DNA from damage. They start out long and gradually shorten with age and stress. How much they shorten and how quickly depends upon several factors including genetics, diet, environment, and lifestyle, but once they get too short, the cell can no longer divide and renew itself. Instead, cells with too-short telomeres begin to encourage inflammation and many diseases of aging.

UConn School of Medicine biostatistician Chia-Ling Kuo and colleagues wondered if Alzheimer's disease and related dementias, which are closely associated with aging, were also associated with shorter telomeres. They analyzed data from more than 43,000 participants in the UK Biobank. The study was limited to participants of European descent, to reduce potential differences in telomere length due to ethnicity. The researchers looked at the participants' telomere lengths at midlife, and then checked whether they had developed Alzheimer's disease or a related dementia over the next 12 years.

They found that shorter telomeres did seem to indicate a higher risk of developing Alzheimer's. Kuo says the researchers intend on following the participants in the UK Biobank study further, as the cohort is still relatively young (the oldest participants are about 80 years old now) with few cases of dementia. As they age, the patterns of who does, and does not, develop Alzheimer's disease will give more insight into the role of telomeres.

Kuo points out that telomere shortening may be slowed in some circumstances when people adopt a healthier diet and exercise more. If longer telomeres actually reduce Alzheimer's risk, it's one more reason for people to adopt a healthy lifestyle.

More information: Rui Liu et al, Mid-life leukocyte telomere length and dementia risk: An observational and mendelian randomization study

of 435,046 UK Biobank participants, *Aging Cell* (2023). DOI: 10.1111/acel.13808