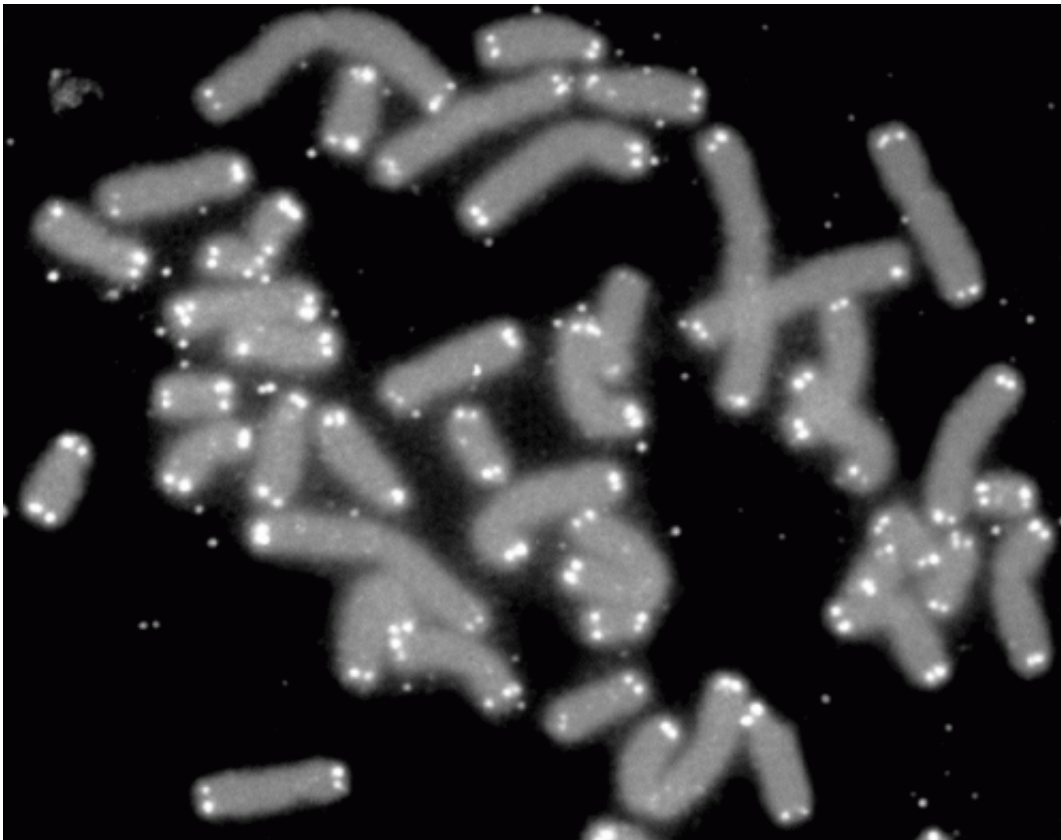


Association between alcohol consumption and telomere length

March 26 2021, by David Bradley



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

There is no consensus across medical science as to whether or not there is a safe lower limit on alcohol consumption nor whether a small amount of alcohol is beneficial. The picture is complicated by the various

congeners, such as polyphenols and other substances that are present in different concentrations in different types of alcoholic beverage, such as red and white wine, beers and ales, ciders, and spirits. Moreover, while, there has been a decisive classification of alcohol consumption as a cause of cancer, there is strong evidence that small quantities have a protective effect on the cardiovascular system.

Now, writing in the *International Journal of Web and Grid Services*, a team from China, Japan, Taiwan, and the U.S., has looked at how a feature of our genetic material, DNA, relates to aging and cancer and investigated a possible connection with alcohol consumption. The ends of our linear chromosomes are capped by repeated sequences of DNA base units that act as protective ends almost analogous to the stiff aglets on each end of a bootlace.

These protective sections are known as telomeres. Which each [cell replication](#) the length of the telomeres on the ends of our chromosomes get shorter. This limits the number of times a cell can replicate before there is insufficient protection for the DNA between the ends that encodes the proteins that make up the cell. Once the telomeres are damaged beyond repair or gone the cell will die. This degradative process has been linked to the limited lifespan of the cells in our bodies and the aging process itself.

Yan Pei of The University of Aizu in Aizuwakamatsu, Japan, and colleagues Jianqiang Li, Yu Guan, and Xi Xu of Beijing University of Technology, China, Jason Hung of the National Taichung University of Science and Technology, Taichung, Taiwan, and Weiliang Qiu of Brigham and Women's Hospital in Boston, U.S., have carried out a meta-analysis of the scientific literature. Their analysis suggests that [telomere length](#) is associated with [alcohol consumption](#). Given that shorter telomeres, before they reach the critical length, can nevertheless lead to genomic instability, this alcohol-associated shortening could offer insight

into how cancerous tumor growth might be triggered.

Telomere shortening is a natural part of the aging process. However, it is influenced by various factors that are beyond our control such as [paternal age](#) at birth, ethnicity, gender, age, [telomere](#) maintenance genes, genetic mutations of the telomeres. However, telomere length is also affected by inflammation and [oxidative stress](#), environmental, psychosocial, behavioral exposures, and for some of those factors we may have limited control. For others, such as chronic exposure to large quantities of alcohol we have greater control.

More information: Jianqiang Li et al. Association between alcohol consumption and telomere length, *International Journal of Web and Grid Services* (2021). [DOI: 10.1504/IJWGS.2021.113686](https://doi.org/10.1504/IJWGS.2021.113686)

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