TELOMERASE REACTIVATION AND TISSUE REJUVENATION IN MICE

As highlighted in earlier posts, the relationship between telomere length and aging has been extensively studied.

In a paper that appeared in Cell, Shim et al. (1) tested more than 600.000 compounds and found a small molecule acting as an activator of the *TERT* enzyme (*TERT* Activator Compound, TAC) in mice. *TERT* is responsible of the telomere elongation. Administration of TAC in very old mice produces relief from neuroinflammation in the brain, increases neurotrophic factors, stimulates adult neurogenesis; it also preserves cognitive function without obvious toxicity or an increase in cancer risk. The authors conclude that TAC "provide preclinical proof of concept for physiological *TERT* activation as a strategy to mitigate multiple aging hallmarks and associated pathologies".

It is important to note that the mitigation of aging via *TERT* reactivation was reported in 2022 by Jaskelioff et al. (2). However, in that study, the reactivation was achieved through genomic modification of the mice (conditional knock-in), which is obviously not feasible in humans.

1. https://www.cell.com/cell/abstract/S0092-8674(24)00592-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867424005920%3Fshowall%3Dtrue
2. https://www.nature.com/articles/nature09603