

# Abstract

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## Replicative aging, telomeres, and oxidative stress.

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**BACKGROUND:** Aging is a very complex phenomenon, both in vivo and in vitro. Free radicals and oxidative stress have been suggested for a long time to be involved in or even to be causal for the aging process. Telomeres are special structures at the end of chromosomes. They shorten during each round of replication and this has been characterized as a mitotic counting mechanism.

**RESULTS:** Our experiments show that the rate of telomere shortening in vitro is modulated by oxidative stress as well as by differences in antioxidative defence capacity between cell strains. In vivo we found a strong correlation between short telomeres in blood lymphocytes and the incidence of vascular dementia.

**CONCLUSION:** These data suggest that parameters that characterise replicative senescence in vitro offer potential for understanding of, and intervention into, the aging process in vivo.

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