

## Special Issue

# Telomeres and Human Disease

### Message from the Guest Editor

Telomeres are protective nucleoprotein structures that cap the ends of linear chromosomes to prevent degradation and fusion. In most somatic cells, telomeres become progressively shorter with each cell division due to the inherent properties of linear DNA replication. This process is attenuated in germ cells and, to a lesser extent, in stem cells by the action of the enzyme telomerase. Mutations in key telomere maintenance genes are associated with rare inherited disorders characterized by extremely short, dysfunctional telomeres and shared clinical features such as bone marrow failure. A shorter mean leukocyte telomere length (LTL) is associated with the risk of common age-related conditions such as coronary artery disease and chronic obstructive pulmonary disease. The relationship between telomere length and neoplastic disease is more complex, with a shorter LTL being associated with an increased risk of some cancers and a decreased risk of others. A better understanding of the pathways underlying telomere maintenance and its role in age-related disease risk will pave the way for novel treatments and interventions that support healthy ageing.

### Guest Editor

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## International Journal of Molecular Sciences

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