Since the discovery of the telomere by Hermann Muller and Barbara McClintock in years 1938-1940, a huge progress has been made in molecular genetics and in the relatively new field, biogerontology. Another 35 years have passed by since the discovery of telomerase by Carol Greider and Elizabeth Blackburn. Scientific community has linked many naturally occurring ageing mechanisms in the cells to the shortening of telomeres and the lack of telomerase activity in these cells. A great number of mutagens, radiation, and toxic chemicals negatively impact the length of telomeres and the truncation of the end of chromosomes triggers a fatal cascade of events inside the cell which can lead to the state of senescence and eventually to the cell’s death. Even though cellular and bodily ageing is a complex, multilevel, and highly orchestrated natural process happening at the subcellular level of all multicellular organisms and a single known mechanism is extremely insufficient to explain all observed molecular and morphological changes, a unified cohesive theory of ageing must exist. Presented here Cellular Senescence Unification (CSU) model, combining the free-radical-mitochondrial and telomeric theories helps establish a strengthened base for future therapies of all age-related disorders. If the CSU model is strong enough to explain and describe most of all observed alterations in the ageing cell, a focused and deliberate therapy might be developed and follow its footsteps. This work introduces telomerase therapy as efficient, highly effective, and clinically favored treatment of most age-related disorders that can be explained by the CSU model. This gene therapy is another natural step made forward since the first discovery of the telomere 80 years ago.

**Key words:** telomeres, telomerase therapy, cellular senescence, unified theory of ageing