DNA DAMAGE AS A UNIFYING CAUSE OF AGEING

The dream of defeating the ageing process is as old as human civilization. Given the global ageing of the population, efforts in developing interventions against ageing has also attracted many drug companies. But the -sine qua non- condition for achieving this goal requires the understanding of the causes of ageing. In this regard, the number of studies in humans and model animals is enormous, and different causes of ageing have been proposed: mutations, chromosomal changes, activity of transposable elements, deletions in mitochondrial DNA, telomere shortening, protein abnormalities (e.g. crosslinking, oxidation…), accumulation of insoluble protein aggregates, abnormalities in gene function leading to cancer, epigenetic defects, progressive decline in heart function, irreversible changes in major arteries etc. In conclusion, many details have been revealed, but we still lack an overview of the phenomenon. Recently, epigenetics has come to the fore (Nature, 2020). Now, an article in Nature (2021) points to the "Central role of DNA damage as a unifying cause of ageing". The thesis is that all the above-mentioned hypothesized causes of ageing can be traced back to DNA damage.