Special Issue

Transcription Regulation in Aging

Message from the Guest Editor

Aging is the inevitable process of functional decline after a period of maturity. It is accompanied by a decrease in functionality of cells, tissues, organs, and organisms. This functional decline is characterized by signaling pathways, the “hallmarks of aging” that include amongst others genomic instability, telomere attrition, senescence, loss of proteostasis, and epigenetic alterations that are directly or indirectly affecting the process of gene expression. Gene expression patterns specify and mirror cellular conditions as an effort to sustain homeostasis and functionality. The initial step of gene expression is transcription of DNA by the RNA polymerases and is, as all processes in the cell, affected by aging. Thus transcription itself is subject to functional decline and decreasing strength of regulation. Transcriptomic data allow researchers to characterize the changes in gene expression patterns that occur during aging and display typical changes. In this issue, we would like to sum up the current knowledge of how aging processes affect the regulation of transcription by the RNA polymerases and thus impact on gene expression and cellular homeostasis.

Guest Editor

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