



DNA Damage on Cellular Senescence, Aging and Age-Related Diseases

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Deadline for manuscript
submissions:

closed (10 December 2021)

Message from the Guest Editors

Dear Colleagues,

Life poses threats to the genome; extrinsic sources as well as intrinsic insults can cause DNA damage. This activates the DNA damage response (DDR) which initially leads to growth arrest. Depending on the amount of damage, this transient arrest may result in permanent cell cycle inhibition, i.e., cellular senescence. The causal correlation between DNA damage and senescence as well as aging is supported by findings on mutations or disrupted expression of DDR genes that often result in premature aging. Additionally, recent advances in identifying senescent cells in vivo indicate that senescent cells accumulate with age, possibly as a result of age-related defects in the immune system. This accumulation—together with the tissue repair capacity decline of senescent progenitor cells—would make aged tissues not only less functional but also more vulnerable to other stressors, which could be the causal factor for the appearance of age-related diseases.





medicina



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