

Delay aging and extend our lifespans? Gene therapy might be able to do that

How many aging-promoting genes are there in the human genome? What are the molecular mechanisms by which these genes regulate aging? Can gene therapy alleviate individual aging? Recently, researchers from the Chinese Academy of Sciences have shed new light on the regulation of aging.

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In [this study](#), the researchers conducted genome-wide CRISPR/Cas9-based screens in human premature aging stem cells and identified more than 100 candidate senescence-promoting genes. They further verified the effectiveness of inactivating each of the top 50 candidate genes in promoting cellular rejuvenation using targeted sgRNAs.

Among them, KAT7 encoding a histone acetyltransferase was identified as one of the top targets in alleviating cellular senescence. It increased in human mesenchymal precursor cells during physiological and pathological aging. KAT7 depletion attenuated cellular senescence whereas KAT7 overexpression accelerated cellular senescence.

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Altogether, this study has successfully expanded the list of human senescence-promoting genes using CRISPR/Cas9 genome-wide screen and conceptually demonstrated that gene therapy based on single-factor inactivation is able to delay individual aging. This study not only deepens our understanding of aging mechanism but also provides new potential targets for aging interventions.

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