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Researchers identify target for senolytic drugs

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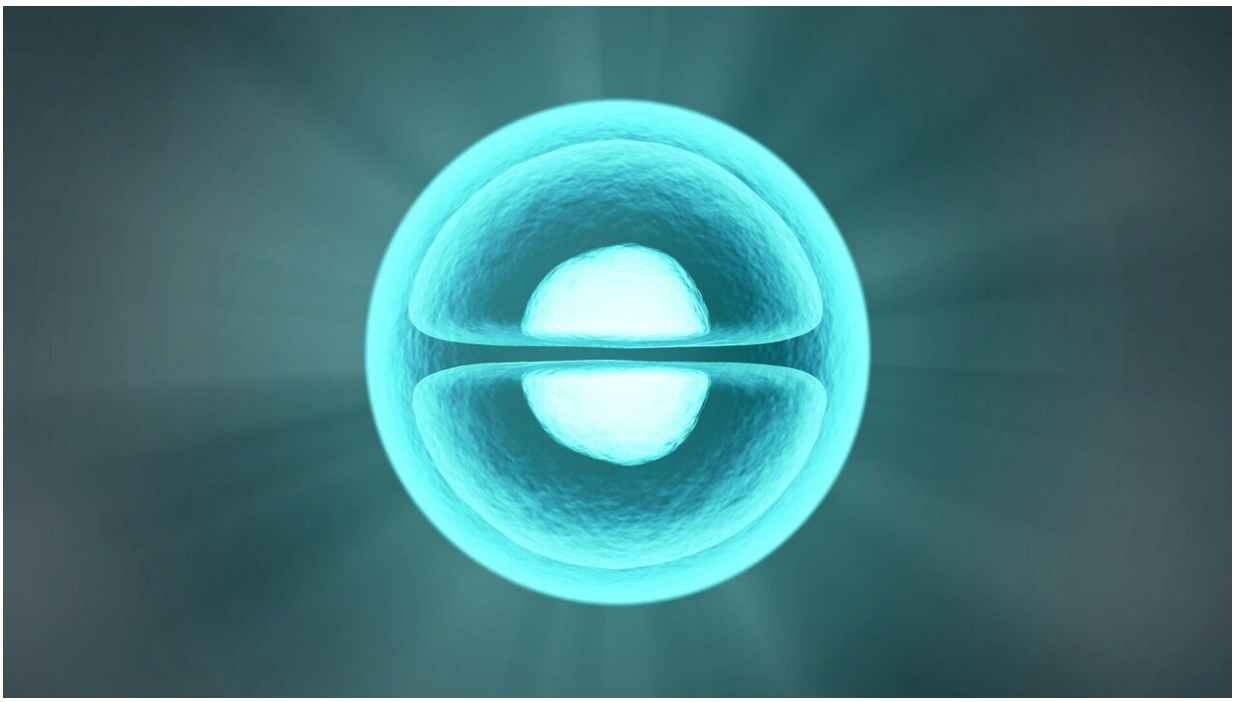

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In a study recently published in *Nature*, University of Minnesota Medical School researchers found that senescent immune cells are the most dangerous type of senescent cell.

Cells become senescent when they are damaged or stressed in the body, and they accumulate in our organs as we age. Senescent cells drive

inflammation and aging as well as most age-related diseases.

The research team—led by Laura Niedernhofer, MD, Ph.D., a professor in the Department of Biochemistry, Molecular Biology and Biophysics—discovered that senescent immune cells drive tissue damage all over the body and shorten lifespan. Therefore, senescent immune cells are detrimental and should be targeted with senolytics.

U of M researchers, including Niedernhofer and collaborators at the Mayo Clinic, previously identified a new class of drugs in 2015 and coined them as senolytics, which selectively remove senescent cells from your body. However, senolytic drugs have to be targeted to a specific cell type, so one senolytic drug is not able to kill a senescent brain cell and a senescent liver cell.

"Now that we have identified which cell type is most deleterious, this work will steer us towards developing senolytics that target senescent immune cells," said Niedernhofer, who is also the director for the Institute on the Biology of Aging and Metabolism at the U of M Medical School, one of the state-sponsored Medical Discovery Teams. "We also hope that it will help guide discovery of biomarkers in immune cell populations that will help gauge who is at risk of tissue damage and rapid aging, and therefore who is at most need of senolytic therapy."

More information: Matthew J. Yousefzadeh et al, An aged immune system drives senescence and ageing of solid organs, *Nature* (2021). DOI: 10.1038/s41586-021-03547-7

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