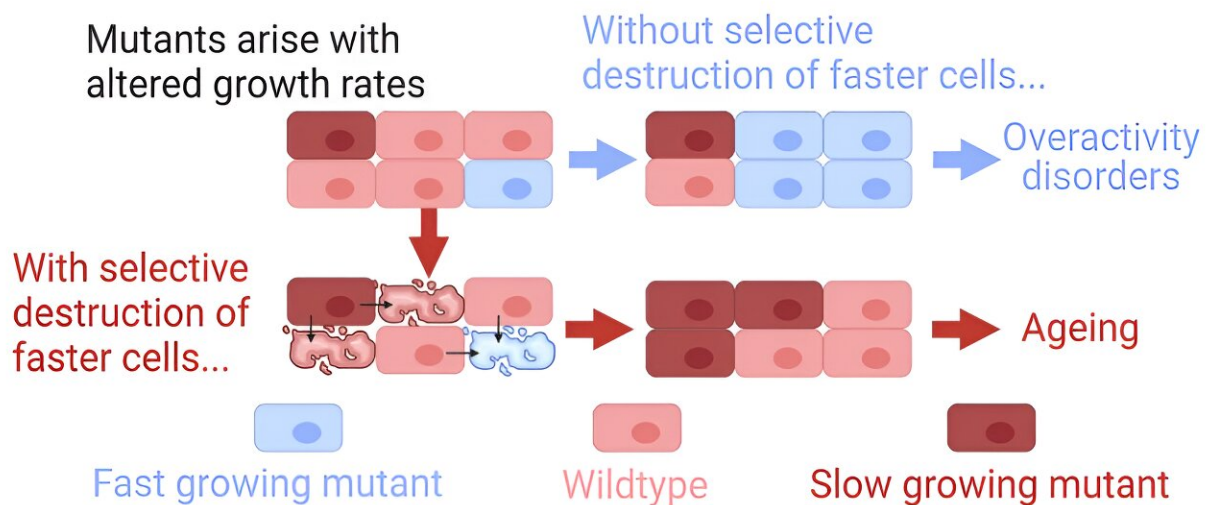


A novel theory of aging, independent of damage accumulation

August 9 2023



Outcomes of cell competition and control by selective destruction. Credit: *Aging* (2023). DOI: 10.18632/aging.204956

A new editorial paper titled "A novel theory of ageing independent of damage accumulation" has been published in *Aging*.

The underlying cause or causes of aging are an enduring mystery, but in 1977, Kirkwood postulated that organisms might gain a fitness

advantage by reducing investment in somatic maintenance if this allowed them to invest more resources in more crucial processes such as reproduction. The accumulation of somatic damage was therefore inevitable, and his disposable soma theory has dominated gerontology ever since.

However, as our understanding of aging increases, it is becoming increasingly difficult to align all the aspects of aging with accumulating damage. For example, mutations that increase damage accumulation can also increase longevity, while rejuvenation revelations such as parabiosis and Yamanaka factors indicate that youthfulness can be regained without high energetic cost and despite high levels of damage.

In their new editorial, researchers James Wordsworth and Daryl Shanley from Newcastle University discuss their recently published paper on selective destruction theory (SDT). SDT suggests a mechanism of aging which is both independent of accumulating damage and consistent with epigenetic rejuvenation. The authors used agent-based modeling to describe how aging could undergo [positive selection](#) independent of energetic costs.

"The mechanism of selective destruction is currently theoretical. In our most developed model, we demonstrated that if slow cells induced epigenetic changes in faster cells causing their metabolism to slow (rather than killing them) it not only reduced unnecessary cell death, but also further reduced the likelihood of overactivity disorders by preventing the spread of fast cells," the researchers write.

More information: James Wordsworth et al, A novel theory of ageing independent of damage accumulation, *Aging* (2023). [DOI: 10.18632/aging.204956](#)

Provided by Impact Journals LLC

Citation: A novel theory of aging, independent of damage accumulation (2023, August 9)
retrieved 28 April 2024 from

<https://medicalxpress.com/news/2023-08-theory-aging-independent-accumulation.html>

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