Is the nucleolus the key to stopping cellular aging?

Under a microscope, it's hard to miss. Take just about any cell, find the nucleus, then look inside it for a dark, little blob. That's the nucleolus.

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"We think the nucleolus plays an important role in regulating the life span of animals," said Adam Antebi, a cellular biologist at the Max Planck Institute for Biology of Ageing in Germany. He's an author of a new review published last week in Trends in Cell Biology that examines all the new ways that researchers have fallen in love with the nucleolus — especially its role in aging.

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The nucleolus can wax and wane in response to a body's available nutrients and growth signals.

The more growth signals it intercepts, the more machines, or ribosomes, it makes. It gets bigger to contain them, but mysteriously this also shortens a cell's or organism's life. When food is restricted, or a metabolic pathway is silenced or slowed down, nucleoli shrink, making fewer ribosomes, and cells live longer.

Dr. Antebi thinks that as the nucleolus gets smaller, it also starts remodeling the things it would create to make the best of available supplies.

This is a highly coordinated process, he said. And life span can be thought of as how well the nucleolus balances the need to grow with the need to repair, correct mistakes and make sure everything works.

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