Cells that fight pathogens might also speed up human ‘inflammaging’

Our T cells let us down as we age, becoming weaker pathogen fighters. This decline helps explain why elderly people are more susceptible to infections and less responsive to vaccines. One reason T cells falter as we get older is that mitochondria, the structures that serve as power plants inside cells, begin to malfunction.

But T cells might not just reflect aging. They could also promote it. Older people have chronic inflammation throughout the body, known as inflammaging, and researchers have proposed it spurs aging. T cells may stoke this process because they release inflammation-stimulating molecules.

To test that hypothesis, immunologist María Mittelbrunn of the University Hospital 12 October’s Health Research Institute and colleagues genetically modified mice to lack a protein in the mitochondria of their T cells. This alteration forces the cells to switch to a less efficient metabolic mechanism for obtaining energy.

By the time the rodents were 7 months old, typically the prime of life for a mouse, they already appeared to be in their dotage.

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T cells with malfunctioning mitochondria may contribute to aging in some people who appear to get old prematurely and develop age-related diseases when they are relatively young. This mechanism may be a factor “in the unhealthy 70- or 80-year-old.”

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