

Mitochondrial deterioration linked to major depression in older adults

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Depression can drain a person's energy. In the elderly, there may be a very good reason for that: depression has been linked with the deterioration of the tiny power plants in our cells.

These [power plants](#) are the mitochondria, tiny structures within our cells that handle several important tasks. The most critical is producing the molecules our cells use for energy. When mitochondria don't function well, it causes all kinds of problems for us. Mitochondrial diseases such as Alper's disease and Barth syndrome are the best known and usually become obvious in infancy or childhood. But researchers are now finding other effects.

Major depression, for example. A team of researchers from several institutions, led by UConn School of Medicine student Emma Mastrobattista and Breno S. Diniz, an associate professor in psychiatry and the UConn Center on Aging, reports in the *American Journal of Geriatric Psychiatry* that older adults with [major depression](#) often have rapidly aging mitochondria.

The team measured levels of a protein produced by mitochondria in the blood of depressed adults over 70. The protein, GDF-15, is strongly associated with aging, poorly functioning mitochondria. And aging mitochondria are strongly linked with fast biological aging. The higher the level of GDF-15 in the blood, the more impaired the mitochondria tend to be. In other words, this is when our tiny power plants start to fall apart.

This is the largest study to date providing a link between accelerated mitochondrial aging and depression in older adults, but the scientists were not surprised. Previous work has shown other aspects of accelerated aging are correlated with major depression.

"We have seen it in [immune cells](#); in [glial cells](#) in the brain; in adipose tissue. We see a systemic cellular senescence changes in depressed older adults," says Diniz, meaning overall, older adults with major depression show accelerated aging in cells throughout their body.

"One problem feeds into another, and make what began as a small issue into a much larger one," he says.

The researchers have begun testing interventions that improve [mitochondrial function](#) and clear senescence in humans in hopes that they may slow or even reverse biological aging. They are also collaborating with partners working with senolytics, experimental drugs that selectively remove aged, malfunctioning cells, in the hopes of improving mood, strength, and energy in [older adults](#).

More information: Emma Mastrobattista et al, Late-Life Depression is Associated With Increased Levels of GDF-15, a Pro-Aging Mitokine, *The American Journal of Geriatric Psychiatry* (2022). [DOI: 10.1016/j.jagp.2022.08.003](#)

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