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► **COVER:** 'Fission and fusion' by Kirsten Lee, inspired by the Review on p505.



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Most neurodegenerative diseases remain incurable; however, our knowledge of the pathophysiological changes that cause them is growing in leaps and bounds, as reflected in several articles this month.

Animal models are central to neurodegeneration research, and technologies for introducing mutated genes into mice and invertebrates have significantly advanced our understanding of neurodegenerative diseases. On page 532, Götz and Ittner review the recent insights into two leading causes of dementia – Alzheimer's disease and frontotemporal dementia – that have stemmed from these models.

Together with other research approaches, animal models have revealed a central role for mitochondrial dysfunction in neurodegeneration. On page 505, Bossy-Wetzel and colleagues describe the cycles of fission and fusion that characterize normal mitochondrial behaviour, and discuss how the disruption of mitochondrial dynamics might contribute to neurodegenerative diseases.

The idea that cognitive health can be protected by making relatively small lifestyle changes offers an attractive way to combat the onset and effects of cognitive dysfunction. In a Science and Society article on page 568, Gómez-Pinilla discusses the influence of nutrients on neuronal function and considers how we could modulate our diet to promote our cognitive health. Given our growing understanding of how to preserve our cognitive and physical health, why is it that we don't always choose the healthiest option? As Rangel and colleagues explain in their Review on page 545, when we're weighing up our options we assign a value to each of them. However, when different valuation systems come into conflict, this can lead to poor decision making.

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