nature INSIGHT

NEURODEGENERATIVE DISEASES

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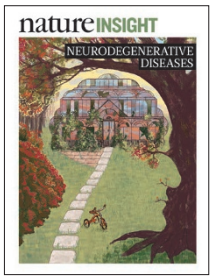

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The prevalence of neurodegenerative disorders is increasing, owing — in part — to extensions in lifespan. Currently, there is no cure for any of these diseases, although not for lack of trying. The hard work and dedication that goes into unravelling mechanisms of disease is discernible from this collection of reviews. Each summarises our knowledge, highlights exciting advances and provides ample inspiration for future research.

The signs of the passage of time are clearly visible in the brain. Tony Wyss-Coray synthesizes current knowledge on brain ageing and neurodegeneration and explores the prospect of stalling, or even resetting, the clock.

Growing evidence suggests that genetic, cellular and circuit dysregulation results from, and can lead to, cellular and cognitive hallmarks of Alzheimer's disease. Li-Huei Tsai, Rebecca Canter and Jay Penney argue for a multipronged approach to the treatment of this common form of dementia.

Paul Taylor, Robert Brown and Don Cleveland discuss emerging themes and mechanisms that underlie amyotrophic lateral sclerosis (also known as Lou Gehrig's disease or motor neuron disease), a progressive degeneration of motor neurons in the brain and spinal cord.

Parkinson's disease is characterized by the progressive death of dopamine neurons. Asa Abeliovich and Aaron Gitler propose that the accumulation of cellular damage eventually overwhelms the protein-disposal mechanisms of these neurons.

John Collinge considers the wider relevance of mammalian prions for neurodegenerative diseases. And Roland Riek and David Eisenberg provide a structural perspective on neurodegeneration through the properties of protein aggregates, the hallmarks of various neurodegenerative disorders. They explore the self-replication, cell-to-cell transmission and toxicity of these amyloids.

We hope that this collection will not only stimulate further research on neurodegenerative diseases but also direct more funding towards this area — as a greater understanding will reveal new opportunities for therapeutic intervention.

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Marie-Thérèse Heemels
Senior Editor

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