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Neurodegenerative Disease

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Neurodegenerative diseases are disorders involving the central nervous system that lead to progressive neural deterioration. As people age, neurodegenerative diseases are becoming more prevalent, challenging healthcare systems. Treatment usually focuses on managing symptoms, rather than addressing the root causes, and is largely ineffective. Advances in neurobiology and neurogenetics are improving our understanding of the causes of neurodegenerative diseases, allowing us to identify targets and develop therapies that halt or slow the processes that cause neuronal damage. Research shows that neurodegenerative diseases share mechanisms, like misfolded protein aggregates, abnormal protein accumulation, neuroinflammation, and genetic/epigenetic factors. However, a precision medicine approach is becoming increasingly necessary to capture the variability among individuals and disease subtypes. A deeper understanding of these mechanisms is crucial for developing effective future treatments. Despite notable advancements, applying this knowledge to clinical practice remains in its early stages. This Reprint provides an update on the recent advancements in neurodegenerative disease research by including papers exploring the molecular mechanisms and pathways driving neurodegenerative conditions, as well as studies highlighting potential therapeutic targets and introducing novel drug candidates and biomarkers for specific diseases. This resource is intended for researchers and clinicians interested in the molecular mechanisms and therapy of neurodegenerative diseases.



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