

Special Issue

Molecular Genetics, Epigenetics and Genomics of Neurodegenerative Diseases

Message from the Guest Editor

Understanding neurodegenerative diseases requires integrating genetics, epigenetics, and genomics. Genetics investigates DNA variants shaping risk; epigenetics examines reversible modifications—DNA methylation, histone changes, and miRNA expression—regulating gene activity without sequence change; genomics profiles the genome and regulatory elements and integrates genetic and epigenetic data to reveal mechanisms. In Alzheimer's, Parkinson's, and amyotrophic lateral sclerosis, genetics reveals risk variants, but gene–environment interactions and epigenetic shifts are also crucial. Epigenetic changes respond to environment, aging, and disease progression and alter cellular functions. Advanced genomics reveals complex molecular signatures, illuminating heterogeneity and potential biomarkers. This Special Issue welcomes research and reviews on molecular mechanisms of neurodegeneration, including genetic variants, DNA methylation, histone modifications, miRNA expression, and genomic regulation. Experimental studies, in vitro or disease-controlled, will deepen biological understanding and guide pharmacological and clinical therapies.

Guest Editor

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