# Frontotemporal Lobar Degeneration: Clinical Syndromes, Molecular Pathogenesis, Neuroimaging, and Diagnostic Frameworks

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## Abstract

Background:Frontotemporal lobar degeneration (FTLD) represents a heterogeneous group of neurodegenerative disorders characterized by progressive dysfunction in behavior, executive function, and language associated with selective degeneration of frontal and temporal networks. Increasing recognition of molecular heterogeneity and clinicopathological dissociation has reshaped contemporary understanding of FTLD.

Objective: To provide a comprehensive, high-level synthesis of FTLD integrating clinical phenotypes, molecular mechanisms, genetic architecture, and neuroimaging correlates, with emphasis on advances from 2020 to 2026.

Methods: A structured narrative review was conducted, emphasizing recent literature alongside foundational studies. Evidence was synthesized across clinical, genetic, neuropathological, and neuroimaging domains to construct an integrated disease framework.

Results: FTLD encompasses multiple clinical syndromes, including behavioural variant frontotemporal dementia (bvFTD) and primary progressive aphasia (PPA) variants, underpinned by distinct proteinopathies (tau, TDP-43, FUS). enetic discoveries, particularly involving MAPT, GRN, and C9orf72 have clarified disease mechanisms but also highlighted phenotypic variability. Neuroimaging and biomarker advances have improved diagnostic precision, although substantial clinicopathological discordance persists.

Conclusions: FTLD is best conceptualized as a network-based neurodegenerative spectrum driven by molecularly distinct but clinically overlapping processes. Future diagnostic and therapeutic strategies will depend on biomarker integration and molecular stratification.

Key words:
Frontotemporal Lobar Degeneration,
Clinical Syndromes, Molecular Pathogenesis,
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