The CurePSP Brain Bank: History and Current Status

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History

The Cure PSP brain bank began as a collaboration with Dr. Larry Golbe at Robert Wood Johnson Medical and Dental School in New Jersey. As a clinician engaged in clinical studies of PSP, he recognized the need for brain banking of PSP tissue for final diagnosis and as a resource for research on PSP. The CurePSP brain began at Albert Einstein College of Medicine in the Bronx, NY and relocated to Mayo Clinic in Jacksonville, Florida in 1997.

From an initial brank of fewer than 30 cases, the brain bank has grown to include over 1,500 PSP cases and 200 cases of corticobasal degeneration (CBD), as well as 18 cases with autosomal dominant *MAPT* mutations. The brain bank provides diagnostic evaluations using quantitative and semi-quantitative scores of Alzheimer type pathology and PSP pathologies.

Current Status

In addition to PSP, and CBD, and other non-Alzheimer tauopathies, the current PSP bank has 11 cases of primary frontotemporal degenerations with tau pathology, including cases with *MAPT* mutations (P301L, N279K, IV10+16, N410H) and common variants in MAPT (*e.g.*, A152T). The cases are used in clinicopathologic conferences, and they have been instrumental in obtaining NIH grant support for numerous activities.

A map with pins from donor sites includes all 50 States and Puerto Rico.

Contributions to Research

Over 2,200 samples have been shared with investigators in 50 States and 7 Provinces in Canada. The samples have been used in genetic studies, including RNASeq (N=1836), GWAS (N=1089), and (WGS (N=611). Genetic studies have identified mutations in *MAPT* (P301L, N279K, IV10+16 and P301L).

Region	NFT & pre-NFT	Coiled bodies	Tufted astrocytes	Tau+ threads
Temporal cortex				
Superior frontal gyrus				
Motor cortex				
Caudate/putamen				
Globus pallidus				
Basal nucleus				
Hypothalamus				
Ventral thalamus				
Subthalamic nucleus				
Thalamic fasciculus				
Red nucleus				
Substantia nigra				
Oculomotor complex				
Midbrain tectum				
Locus ceruleus				
Pontine tegmentum				
Pontine base				
Medullary tegmentum				
Inferior olive				
Dentate nucleus				
Cerebellar white matter				

NEUROPATHOLOGY DIAGNOSES:
1. PROGRESSIVE SUPRANUCLEAR PALSY

Semi-quantitative scores of neuronal and glial lesions with tau immunohistochemistry in 21 brain regions.

Summary

The CurePSP brain bank provides a resource for scientists studying primary tauopathies, such as progressive supranuclear palsy and corticobasal degeneration. The diagnostic service provides not only a written report, but also a summary in lay language terms. The report contains a description of pathology and a final pathologic diagnosis. Knowing the nature of the disorder that afflicted their loved one provides closure and it has immeasurable value to the family. It also provides promise that their donation will contribute to understanding how we can better diagnose and treat PSP and CBD.

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