The Path-NeuroDegeneration consortium

Several academic institutions and governmental agencies, some of which are supported by National Institutes of Health funding, have curated and harmonised histopathology data relevant to neurodegenerative diseases and non-pathological ageing. Examples of these organisations are the National Alzheimer's Coordinating Center (funded by the National Institutes of Health), Aligning Science Across Parkinson's, and the Brain Digital Slide Archive.[1] To maximise value for the research community, we have convened a consortium for pathology data: the Path-NeuroDegeneration (Path-ND) consortium. We focus on data harmonisation, interoperability, transparency, reproducibility, and efficiency.

For more on the **National Alzheimer's Coordinating Center** see https://naccdata.org/

For more on **Aligning Science Across Parkinson's** see https://parkinsonsroadmap.org/

The goal of Path-ND is to provide comprehensive access to analysis-ready data—including histopathology, genetics, genomics, and other harmonised metadata—for neurodegenerative diseases and other CNS pathologies, which are shared in the same secure cloud-based analysis environment to support collaboration. We focus on governance, federation, and interoperability, empowering researchers to analyse massive in-situ tabular data. Our initiative will have three phases (appendix).

See **Online** for appendix

Path-ND involves centralisation and harmonisation of data using common data elements that are interoperable from different sources. Leveraging the above resources, we have curated hundreds of common data elements related to digital pathology. To facilitate artificial intelligence readiness standards, in the first phase of this initiative we will leverage these common data elements to allow interoperability. By centralising data, we can compare community-contributed machine-learning algorithms for the detection and quantification of pathology. The best-performing algorithm will be selected for use across all centralised and federated datasets. This federation and algorithm deployment will harmonise data a priori, ensuring a degree of interoperability.

In the second phase, Path-ND will incorporate genomics datasets (eg, transcriptomics, proteomics, and epigenomics), spatial genomics, and multiplex staining data. In this phase, we will carry out a genome-wide analysis of digital pathology-derived outcomes from the harmonised data as an exploratory analysis. Analysis-ready data will be hosted centrally for collaborators whenever possible.

In a third phase, we will curate a collection of tested algorithms for detection and quantification of pathology features. Through meta-learning or de novo training efforts on harmonised data, we will also build new models. In parallel, we will grow our centralised data resources to increase statistical power. Our ultimate goal is to do multimodal machine learning analyses within and across diseases to generate new insights and drive the discovery of novel therapeutic targets.

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1 National Institutes of Health. Brain Digital Slide Archive: an open source platform for data sharing and analysis of digital neuropathology. National Institutes of Health. 2023. https://reporter.nih.gov/search/eqg1a6_vj0KulsgL2ViOPA/project-details/10735564 (accessed March 1, 2025).

The Curing Coma campaign in Asia-Oceania

For more on the **Curing Coma campaign** see https://www.curingcoma.org/

Coma is a common manifestation of acute neurological conditions, including traumatic brain injury and stroke. The burden of these diseases is disproportionately high in low-income and middle-income countries (LMICs).[1,2] The Curing Coma campaign of the Neurocritical Care Society is an initiative focused on developing therapies to improve outcomes in patients with coma.[3] Unique challenges with implementation exist in LMICs, and the Asia-Oceania chapter of Neurocritical Care Society proposes that, in our region, the campaign