

New Study Shows Cortical Disarray Measurement (CDM®) Can Reflect Microscopic Patterns of Pathology in Frontotemporal Dementia

Research presented at ISFTD 2026 connects measurements from the living brain with disease patterns confirmed through postmortem analysis

OXFORD, United Kingdom, Oct. 9, 2026 (GLOBE NEWSWIRE) -- [Oxford Brain](#)

[Diagnostics \(OBD\)](#), a pioneer in quantitative brain biology, today announced new research demonstrating that its [Cortical Disarray Measurement \(CDM®\)](#) technology reflected the distribution of autopsy-confirmed pathology in people with frontotemporal lobar degeneration (FTLD). FTLD is the underlying disease process in frontotemporal dementia (FTD), the most common form of dementia in people under age 60.

The study, titled “[Laminar diffusion MRI alterations mirror intracortical neuropathological distribution in frontotemporal lobar degeneration](#),” is being presented at the 15th International Conference on Frontotemporal Dementias (ISFTD). The research was conducted in collaboration with the Departments of Neurology, Radiology, and Pathology and Laboratory Medicine at the [University of Pennsylvania Perelman School of Medicine](#).

Frontotemporal dementia can be driven by different underlying proteins, including tau and TDP-43. Although these forms of the disease can produce similar clinical symptoms, they affect the microscopic organization of the brain in different ways. Today, those differences cannot be reliably observed in the living brain, limiting the ability to characterize the underlying disease biology and develop targeted therapies.

“These findings help establish an important connection between what we can measure noninvasively in the living brain and the microscopic pathology ultimately observed at autopsy,” said Dr. Steven Chance, Founder and Chief Scientific Officer of Oxford Brain Diagnostics. “By moving beyond conventional measures such as brain volume and examining the organization of the cortex itself, we may be able to develop a more biologically informative view of how neurodegenerative diseases affect the brain.”

The study investigated whether CDM technology could help address this gap by using diffusion MRI to measure microscopic patterns within the cortex. Researchers compared

MRI measurements obtained during life with subsequent postmortem findings across 14 cortical regions in 36 autopsy-confirmed cases of behavioral variant frontotemporal dementia. The cohort included 19 cases of FTLD-tau and 17 cases of FTLD-TDP, the two major molecular forms of the disease.

The analysis used PerpPD+, a measurement generated by OBD's CDM technology that provides information about the microscopic organization of the brain's cortex.

Researchers examined whether this MRI measurement corresponded with the amount of disease pathology found in the outer versus deeper layers of the cortex. These layers are connected differently in the brain.

The results showed that the patterns measured by CDM were associated with the distribution of pathology across these cortical layers. The relationship differed between the two molecular forms of the disease and was particularly strong in FTLD-TDP, where the MRI measurement tracked the greater concentration of pathology found in the outer cortical layers.

"Frontotemporal degeneration encompasses several underlying pathologies that can be difficult to distinguish during life," said Principal Investigator, David Irwin, MD, Associate Professor at University of Pennsylvania Perelman School of Medicine and Co-director of the Penn Frontotemporal Degeneration Center. "The relationship observed between MRI measurements taken during life and pathology confirmed after death is encouraging and supports further investigation of these measures in larger, prospective studies."

The findings build upon previous OBD research showing that cortical diffusion MRI can help to distinguish [microstructural differences between frontotemporal dementia syndromes](#) and reflect [neuropathology in Alzheimer's disease](#). This study extends that work by demonstrating that a measurement taken during life reflects the distribution of distinct features of FTLD pathology across different layers of the cortex.

About Oxford Brain Diagnostics

Oxford Brain Diagnostics (OBD) is advancing a new approach to quantitative brain biology to improve how neurodegenerative disease is assessed. Developed at the University of Oxford and supported by 40+ scientific publications, OBD's patented Cortical Disarray Measurement (CDM®) technology uses advanced MRI to objectively

measure brain microstructure. The technology supports earlier detection and differential diagnosis, patient characterization, treatment monitoring, and therapeutic development.

OBD's first clinical product is FDA-cleared, and its technology is used in collaboration with leading healthcare providers, academic institutions, and global pharmaceutical companies.

For more information, visit www.oxfordbraindiagnostics.com.

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