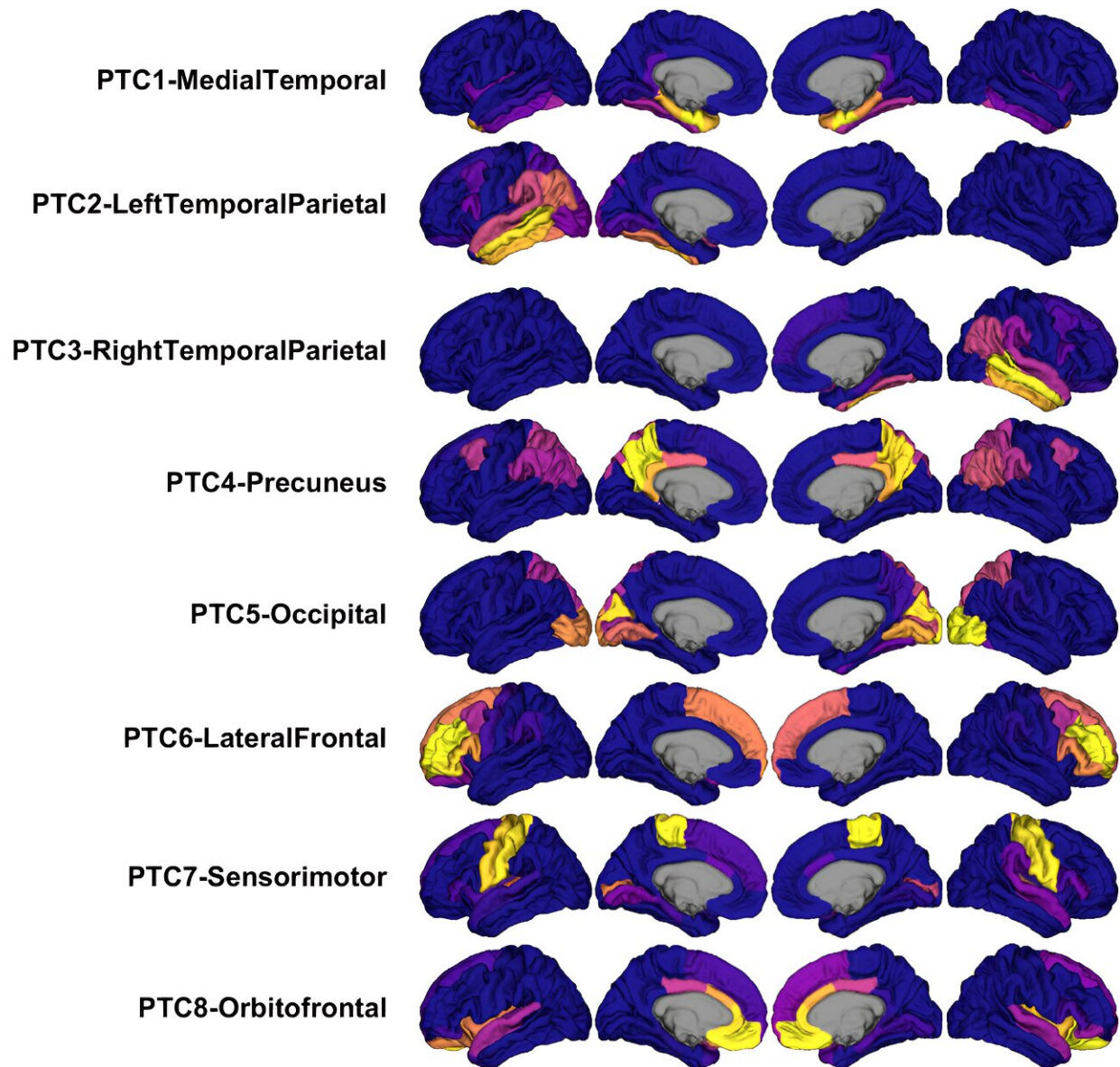


New method uses tau protein deposition patterns to predict Alzheimer's severity

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Representations of the eight PTCs derived with NMF. Each PTC (one per row)

indicates regions where FTP signal covaries across the dataset. Within each PTC, hotter regions (yellow/orange) indicate regions of stronger correlated FTP change. PTCs were estimated in the discovery cohort (ADNI-ADS). FTP, flortaucipir; NMF, non-negative matrix factorization; PTC, Pattern of Tau Covariance. Credit: *Alzheimer's & Dementia* (2024). DOI: 10.1002/alz.13769

Researchers at Washington University School of Medicine in St. Louis have devised a method to gauge Alzheimer's disease severity by analyzing the patterns of tau pathology in brain scans. The findings could lead to a way to determine how far the disease has progressed in individuals, which could help guide treatment decisions.

The accumulation and spread of tau protein throughout the [brain](#) is a key process underlying Alzheimer's pathology. Led by Aristeidis Sotiras, an assistant professor of radiology at the School of Medicine's Mallinckrodt Institute of Radiology and a faculty member of the Institute for Informatics, Data Science & Biostatistics, and Tom Earnest, a graduate student in the Division of Computational & Data Sciences, the researchers used unsupervised machine learning to analyze tau [deposition](#) data from brain scans of patients with Alzheimer's. They identified eight patterns of tau deposition that correlated with clinical and cognitive outcomes and created a model linking tau deposition patterns with Alzheimer's disease severity.

The study is [published](#) in *Alzheimer's and Dementia*.

"We sought to find an innovative way to monitor tau pathology in Alzheimer's, and to make a model based on tau deposition patterns that could be applied to future patients," Earnest said. "The earlier doctors can intervene, the better chance they will have of slowing the [cognitive decline](#) associated with Alzheimer's."

More information: Tom Earnest et al, Data-driven decomposition and staging of flortaucipir uptake in Alzheimer's disease, *Alzheimer's & Dementia* (2024). [DOI: 10.1002/alz.13769](https://doi.org/10.1002/alz.13769)

Provided by Washington University in St. Louis

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