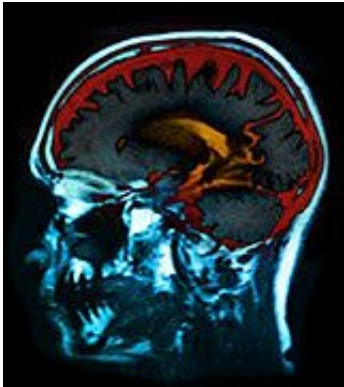


Transneuronal spread model fits neurodegenerative disease

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Neurodegenerative diseases may be characterized by specific regions of the brain that are critical network epicenters, with disease-related vulnerability associated with shorter paths to the epicenter and greater total connectional flow, according to a study published in the March 22 issue of *Neuron*.

(HealthDay) -- Neurodegenerative diseases may be characterized by specific regions of the brain that are critical network epicenters, with disease-related vulnerability associated with shorter paths to the epicenter and greater total connectional flow, according to a study published in the March 22 issue of *Neuron*.

To investigate how intrinsic connectivity in health predicts regional vulnerability to neurodegenerative disease, Juan Zhou, Ph.D., from the University of California in San Francisco, and colleagues used task-free functional [magnetic resonance imaging](#) to identify the healthy intrinsic

connectivity patterns seeded by brain regions vulnerable to five neurodegenerative diseases (Alzheimer's disease, behavioral variant frontotemporal dementia, [semantic dementia](#), progressive nonfluent aphasia, and corticobasal syndrome).

The investigators found that, for each neurodegenerative disease, specific regions emerged as critical network epicenters, and their normal connectivity profile was most similar to the disease-linked pattern of atrophy. In healthy subjects, greater disease-related vulnerability was consistently associated with regions with shorter functional paths to the epicenters and also with higher total connectional flow.

"These findings best fit a transneuronal spread model of network-based vulnerability. Molecular pathological approaches may help clarify what makes each epicenter vulnerable to its targeting disease and how [toxic protein](#) species travel between networked brain structures," the authors write.

More information: [Abstract](#)
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