

What goes wrong in a brain affected by Alzheimer's disease?

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The ability of different regions of the brain to communicate gradually breaks down with aging and in Alzheimer's disease, but there are key differences between these two processes. Some of these differences are reported in a study that compared neural networks, signaling efficiency,

and disruptions in connectivity in the brains of healthy elderly subjects and patients with Alzheimer's disease. The article is published in *Brain Connectivity*.

Madelaine Daianu and colleagues (UCLA School of Medicine, Los Angeles, CA; Mayo Clinic, Rochester, MN; University of California San Francisco; and Veterans Affairs Medical Center, San Francisco), representing the Alzheimer's Disease Neuroimaging Initiative, analyzed anatomical connectivity in the brains of subjects with Alzheimer's disease (AD) or with [mild cognitive impairment](#) and in healthy older individuals.

In the article "Breakdown of Brain Connectivity between Normal Aging and Alzheimer's Disease: A Structural k-Core Network Analysis" the authors report "widespread network disruptions, as connections were lost in AD." The differences between AD and normal aging brains included decreases in [network nodes](#), neural fiber path length, and signaling efficiency. They also described asymmetry in the proportions of fibers that connect the left and right cortical regions of the brain and suggest that this asymmetry could worsen as the disease progresses.

"New imaging techniques and analysis methods are shedding new light on the differences between normal aging and Alzheimer's disease," says Christopher Pawela, PhD, Co-Editor-in-Chief and Assistant Professor, Medical College of Wisconsin. "Imaging is helping us understand that normal aging and Alzheimer's disease are distinct and involve different processes in the brain. Hopefully, this new understanding will bring new treatment and therapy paradigms for Alzheimer's [disease](#)."

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