## **Neurite orientation**

Neurite orientation refers to the directionality of neural processes, such as axons and dendrites, in the brain. Axons are long, thin fibers that extend from neurons and transmit electrical signals to other neurons, while dendrites receive signals from other neurons and transmit them to the neuron cell body.

The orientation of neurites is important for the connectivity and organization of neural networks in the brain. In white matter, which is composed of axonal fibers, the orientation of neurites can be inferred from the diffusion of water molecules in the tissue, as measured by diffusion magnetic resonance imaging (dMRI). Neurite orientation dispersion and density imaging (NODDI) is a specific dMRI technique that can provide more detailed information about neurite orientation and density.

Understanding the orientation of neurites in different regions of the brain can provide insights into the functional connectivity and information processing of neural circuits. For example, the orientation of neurites in the visual cortex is organized in a retinotopic map, reflecting the spatial organization of visual stimuli on the retina. The orientation of neurites in the motor cortex is organized in a somatotopic map, reflecting the organization of motor movements in the body. By studying neurite orientation, researchers can gain a better understanding of how the brain processes information and controls behavior.

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