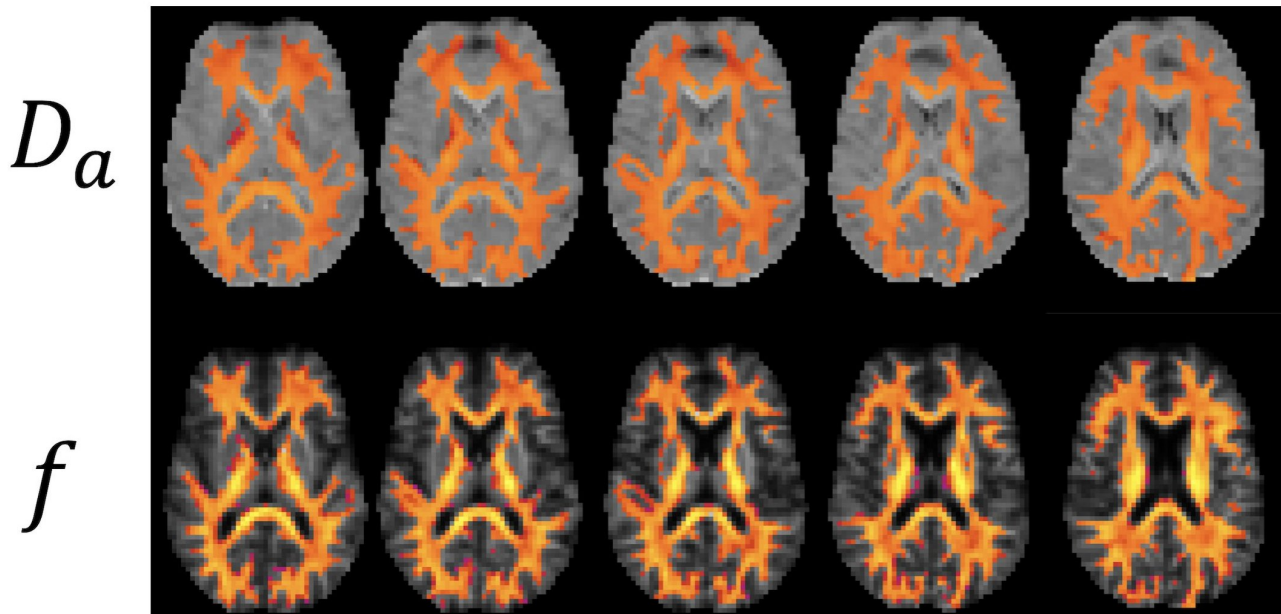


CBI's Image of the Month

November, 2020

Courtesy of the Jensen Lab



By utilizing a custom triple diffusion encoding pulse sequence, the intra-axonal and extra-axonal diffusion tensors can be independently measured with MRI throughout white matter in the brain. This allows water diffusion properties of axons to be characterized separately from glial cells and the extracellular space. The images show parametric maps of consecutive axial slices from a single healthy subject for the intrinsic intra-axonal diffusivity (D_a), which is calculated from the trace of the intra-axonal diffusion tensor, along with the axonal water fraction (f), which is also determined by the pulse sequence. The method is only valid in white matter regions (shown in color). The method can be useful to distinguish axonal from extra-axonal changes in brain tissue microstructure.

Ramanna R, Moss H, McKinnon E, Yacoub E, Helpert J, Jensen J, *Magnetic Resonance in Medicine*. 2020;83:2209-20.