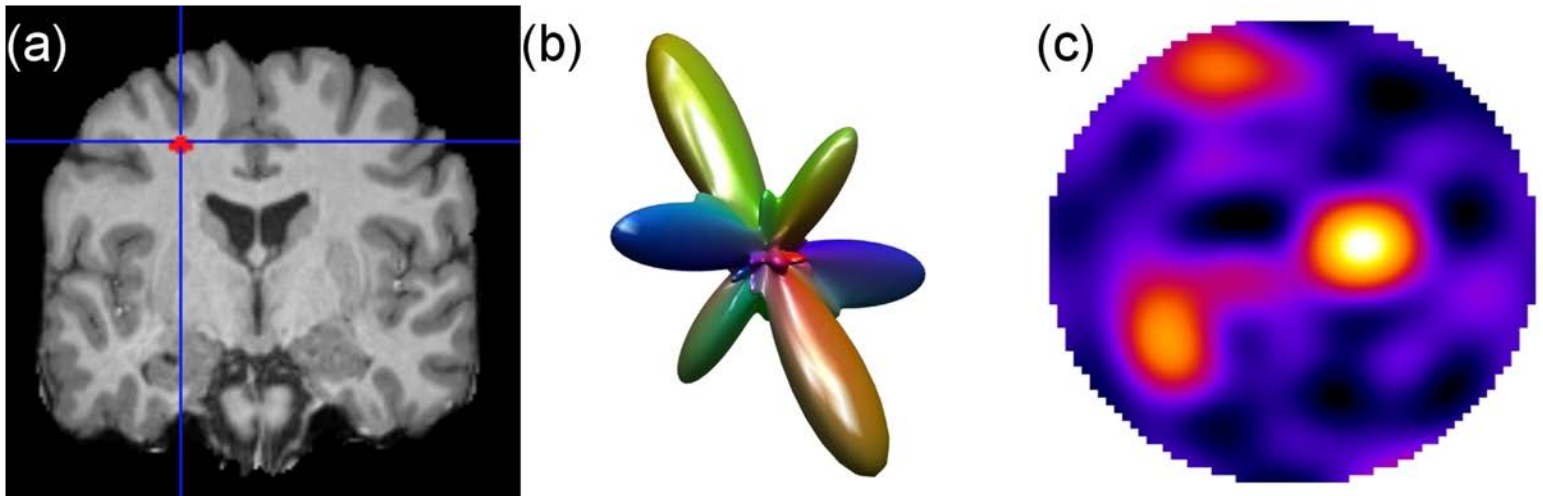


CBI's Image of the Month – November, 2021

Courtesy of Hunter Moss, Ph.D. Student, Jensen Lab, Department of Neuroscience



High Fidelity Fiber Ball Imaging (HiFi-FBI) measures the distribution of axon orientations within each white matter voxel from high b -value diffusion MRI. This distribution is referred to as the fiber orientation density function (fODF) and associates with each direction a value corresponding to the angular density of axons. (a) An individual white matter voxel highlighted in red. (b) 3D glyph of fODF for the highlighted voxel. The height of the curve indicates the axon density in a given direction. (c) Hemispheric equidistant azimuthal projection map of the same fODF. Three large peaks are evident along with additional fine structure. Only one hemisphere is shown because fODFs are symmetric with respect to reflection through the origin. The diffusion MRI data had $b = 8000 \text{ s/mm}^2$ with 256 diffusion encoding directions. HiFi-FBI can be used for fiber tracking, microstructural modeling, and quantifying cytoarchitectural features for individual voxels. Reference: Moss, HG, and Jensen, JH. "High fidelity fiber orientation density functions from fiber ball imaging." *NMR in Biomedicine* (2021): e4613.

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