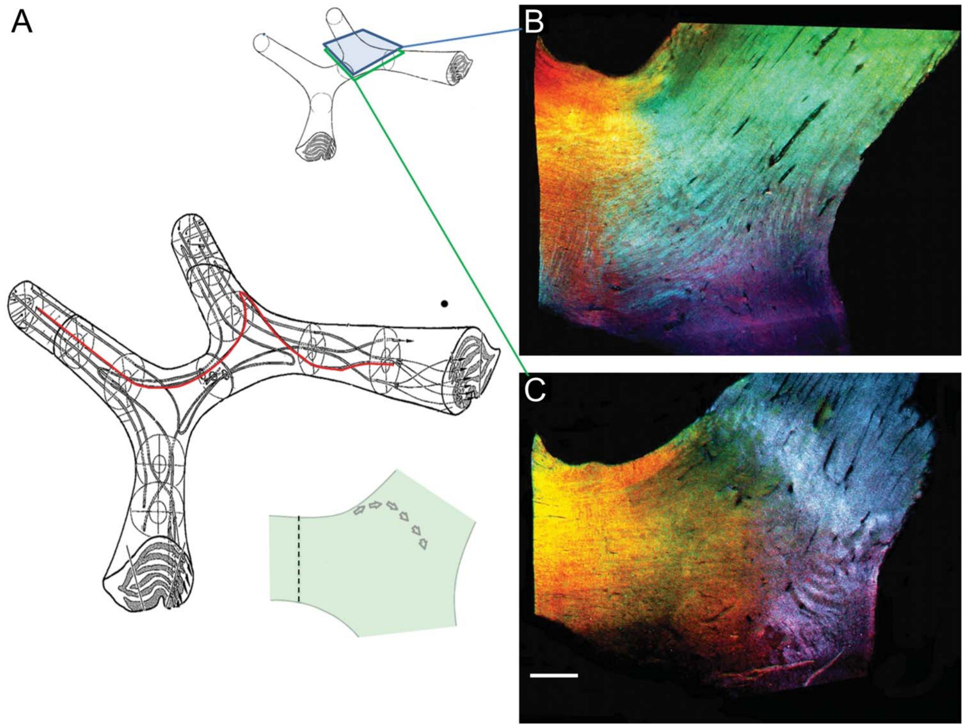
Wilbrand knee

Figure **Anisotropic scattering imaging reveals Wilbrand knee**



(A) Hypothetical course of Wilbrand knee indicated by red line (adapted from John P. Patten, *Neurological Differential Diagnosis*, 2nd ed: © 1996, Springer-Verlag, London, with kind permission of Springer Science + Business Media). (B) Superior chiasmal sections show no curving of crossing fibers. (C) Inferior chiasmal sections show sheets of crossing fibers (white) originating from the anterior chiasm that bend toward the optic nerve before arcing back toward the optic tract. Scale: 1 mm.

Wilbrand and Saenger[1] studied optic chiasms after unilateral enucleation, noting inferonasal crossing fibers curved anteriorly into the contralateral optic nerve (Wilbrand knee; figure, A). This explains contralateral superotemporal visual field defects (junctional scotomas) with optic nerve lesions at the chiasmal junction. However, Wilbrand knee may be an enucleation artifact.[2] The anisotropic light-reflecting properties of myelinated axons permitted imaging of normal human chiasms. Thin sections (25 μm) were illuminated and digitally imaged from 3 incident angles. Each of the images was pseudocolored (red, green, or blue) and merged, revealing an anomalously oriented fiber tract (appearing white) that reversed direction at the optic nerve–chiasm junction, found in inferior (figure, C) but not in superior sections (figure, B), consistent with Wilbrand and Saenger's original description.

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contributed to the study concept and design, was responsible for conceptualizing anisotropic scattering imaging and constructing the apparatus necessary to collect the data, provided oversight and supervision over data acquisition and analysis, and assisted in revising the manuscript and figures for content.

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