Direct visualization of remyelination in multiple sclerosis using T2-weighted high-field MRI

In multiple sclerosis (MS), remyelination may restore conduction and prevent axonal degeneration. Ability to monitor remyelination in MS in vivo would benefit natural history studies and clinical trials of novel drugs. High-field MRI (≥3 T) is a promising tool to detect remyelination. We scanned a block of postmortem MS brain at 9.4 T. Histology revealed two areas of demyelination, and one showing remyelination. These findings corresponded to distinct changes visible on the T2-weighted MRI (figure). As human high-field MRI systems become increasingly widespread, remyelination in patients with MS may become detectable on T2-weighted scans.

Klaus Schmierer, PhD, Harold G. Parkes, PhD, Po-Wah So, PhD, London, UK

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Address correspondence and reprint requests to Dr. Klaus Schmierer, Institute of Neurology, University College London, Department of Neuroinflammation, NMR Research Unit, Queen Square, London WC1N 3BG, UK; k.schmierer@ion.ucl.ac.uk


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Klaus Schmierer, Harold G. Parkes and Po-Wah So

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