Supplemental data: e-References

e1. Brügger V, Engler S, Pereira JA, et al. HDAC1/2-Dependent P0 Expression Maintains Paranodal and Nodal Integrity Independently of Myelin Stability through Interactions with Neurofascins. Barres BA, editor. PLoS Biol 2015;**13**:e1002258.

e2. Howell OW, Palser A, Polito A, et al. Disruption of neurofascin localization reveals early changes preceding demyelination and remyelination in multiple sclerosis. Brain 2006;**129**:3173–3185.

e3. Voyvodic JT. Target size regulates calibre and myelination of sympathetic axons. Nature 1989;**342**:430–433.

e4. Michailov GV, Sereda MW, Brinkmann BG, et al. Axonal Neuregulin-1 Regulates Myelin Sheath Thickness. Science. 2004;304:700–703.

e5. Taveggia C, Zanazzi G, Petrylak A, et al. Neuregulin-1 Type III Determines the Ensheathment Fate of Axons. Neuron. 2005;47:681–694.

e6. Lee S, Leach MK, Redmond SA, et al. A culture system to study oligodendrocyte myelination-processes using engineered nanofibers. Nat Methods. 2012;9:917–922.

e7. Brinkmann BG, Agarwal A, Sereda MW, et al. Neuregulin-1/ErbB signaling serves distinct functions in myelination of the peripheral and central nervous system. Neuron. 2008;59:581–595.

e8. Taveggia C, Thaker P, Petrylak A, et al. Type III neuregulin-1 promotes oligodendrocyte myelination. Glia. 2008;56:284–293.

e9. Rasband MN, Tayler J, Kaga Y, et al. CNP is required for maintenance of axon–glia interactions at nodes of Ranvier in the CNS. Glia. 2005;50:86–90.

e10. Kungl T. The Role of 2’,3’-Cyclic Nucleotide 3’-Phosphodiesterase (CNP) in the Peripheral Nervous System [online]. Available at: https://ediss.uni-goettingen.de/handle/11858/00-1735-0000-0023-964D-8. Accessed March 2, 2019.

e11. Brosius Lutz A, Barres BA. Contrasting the glial response to axon injury in the central and peripheral nervous systems. Dev Cell. 2014;28:7–17.

e12. Huebner EA, Strittmatter SM. Axon regeneration in the peripheral and central nervous systems. Results Probl Cell Differ. 2009;48:339–351.

e13. David S, Braun PE, Jackson DL, Kottis V, McKerracher L. Laminin overrides the inhibitory effects of peripheral nervous system and central nervous system myelin-derived inhibitors of neurite growth. J Neurosci Res. 1995;42:594–602.

e14. Kassmann CM, Lappe-Siefke C, Baes M, et al. Axonal loss and neuroinflammation caused by peroxisome-deficient oligodendrocytes. Nat Genet. 2007;39:969–976.

e15. Edgar JM, McLaughlin M, Werner HB, et al. Early ultrastructural defects of axons and axon-glia junctions in mice lacking expression of Cnp1. Glia. 2009;57:1815–1824.

e16. de Monasterio-Schrader P, Patzig J, Möbius W, et al. Uncoupling of neuroinflammation from axonal degeneration in mice lacking the myelin protein tetraspanin-2. Glia. 2013;61:1832–1847.

e17. Micu I, Plemel JR, Lachance C, et al. The molecular physiology of the axo-myelinic synapse. Exp Neurol. 2016;276:41–50.

e18. Samara C, Poirot O, Domènech-Estévez E, Chrast R. Neuronal activity in the hub of extrasynaptic Schwann cell-axon interactions. Front Cell Neurosci Epub 2013 Nov 25.

e19. Blades F, Aprico A, Akkermann R, Ellis S, Binder MD, Kilpatrick TJ. The TAM receptor TYRO3 is a critical regulator of myelin thickness in the central nervous system. Glia. 2018;66:2209–2220.

e20. Lucchinetti C, Brück W, Parisi J, Scheithauer B, Rodriguez M, Lassmann H. Heterogeneity of multiple sclerosis lesions: Implications for the pathogenesis of demyelination. Ann Neurol. 2000;47:707–717.

e21. Lassmann H, Bartsch U, Montag D, Schachner M. Dying-back oligodendrogliopathy: A late sequel of myelin-associated glycoprotein deficiency. Glia. 1997;19:104–110.

e22. Rodriguez M, Scheithauer B. Ultrastructure of Multiple Sclerosis. Ultrastruct Pathol. 1994;18:3–13.

e23. Aboul-Enein F, Rauschka H, Kornek B, et al. Preferential loss of myelin-associated glycoprotein reflects hypoxia-like white matter damage in stroke and inflammatory brain diseases. J Neuropathol Exp Neurol. 2003;62:25–33.

e24. Weil M-T, Möbius W, Winkler A, et al. Loss of Myelin Basic Protein Function Triggers Myelin Breakdown in Models of Demyelinating Diseases. Cell Rep. 2016;16:314–322.

e25. Kim JK, Mastronardi FG, Wood DD, Lubman DM, Zand R, Moscarello MA. Multiple sclerosis: an important role for post-translational modifications of myelin basic protein in pathogenesis. Mol Cell Proteomics. 2003;2:453–462.

e26. Moscarello MA, Wood DD, Ackerley C, Boulias C. Myelin in multiple sclerosis is developmentally immature. J Clin Invest. 1994;94:146–154.

e27. Pritzker LB, Joshi S, Gowan JJ, Harauz G, Moscarello MA. Deimination of Myelin Basic Protein. 1. Effect of Deimination of Arginyl Residues of Myelin Basic Protein on Its Structure and Susceptibility to Digestion by Cathepsin D. Biochemistry. 2000;39:5374–5381.

e28. Moscarello MA, Lei H, Mastronardi FG, et al. Inhibition of peptidyl-arginine deiminases reverses protein-hypercitrullination and disease in mouse models of multiple sclerosis. Dis Model Mech. 2013;6:467–478.

e29. Bradford CM, Ramos I, Cross AK, et al. Localisation of citrullinated proteins in normal appearing white matter and lesions in the central nervous system in multiple sclerosis. J Neuroimmunol. 2014;273:85–95.

e30. Caprariello AV, Rogers JA, Morgan ML, et al. Biochemically altered myelin triggers autoimmune demyelination. Proc Natl Acad Sci. 2018;115:5528–5533.

e31. Keilhoff G, Prell T, Langnaese K, et al. Expression pattern of peptidylarginine deiminase in rat and human Schwann cells. Dev Neurobiol. 2008;68:101–114.

e32. Möller JR, Yanagisawa K, Brady RO, Tourtellotte WW, Quarles RH. Myelin-associated glycoprotein in multiple sclerosis lesions: a quantitative and qualitative analysis. Ann Neurol. 1987;22:469–474.

e33. Sato S, Quarles RH, Brady RO, Tourtellotte WW. Elevated neutral protease activity in myelin from brains of patients with multiple sclerosis. Ann Neurol. 1984;15:264–267.

e34. Stebbins JW, Jaffe H, Fales HM, Möller JR. Determination of a native proteolytic site in myelin-associated glycoprotein. Biochemistry. 1997;36:2221–2226.

e35. Collins BE, Yang LJ, Mukhopadhyay G, et al. Sialic acid specificity of myelin-associated glycoprotein binding. J Biol Chem. 1997;272:1248–1255.

e36. Trapp BD. Myelin‐Associated Glycoprotein Location and Potential Functions. Ann N Y Acad Sci. 1990;605:29-43.

e37. Pan B, Fromholt SE, Hess EJ, et al. Myelin-associated glycoprotein and complementary axonal ligands, gangliosides, mediate axon stability in the CNS and PNS: neuropathology and behavioral deficits in single- and double-null mice. Exp Neurol. 2005;195:208–217.

e38. Li C, Tropak MB, Gerlai R, et al. Myelination in the absence of myelin-associated glycoprotein. Nature. 1994;369:747–750.

e39. Baranzini SE, Galwey NW, Wang J, et al. Pathway and network-based analysis of genome-wide association studies in multiple sclerosis. Hum Mol Genet. 2009;18:2078–2090.

e40. Fünfschilling U, Supplie LM, Mahad D, et al. Glycolytic oligodendrocytes maintain myelin and long-term axonal integrity. Nature. 2012;485:517–521.

e41. Lee Y, Morrison BM, Li Y, et al. Oligodendroglia metabolically support axons and contribute to neurodegeneration. Nature. 2012;487:443–448.

e42. Mantuano E, Lam MS, Shibayama M, Campana WM, Gonias SL. The NMDA receptor functions independently and as an LRP1 co-receptor to promote Schwann cell survival and migration. J Cell Sci. 2015;128:3478–3488.

e43. Wolswijk G, Balesar R. Changes in the expression and localization of the paranodal protein Caspr on axons in chronic multiple sclerosis. Brain. 2003;126:1638-1649.

e44. Coman I, Aigrot MS, Seilhean D, et al. Nodal, paranodal and juxtaparanodal axonal proteins during demyelination and remyelination in multiple sclerosis. Brain. 2006;129:3186–3195.

e45. Howell OW, Palser A, Polita A, et al. Disruption of neurofascin localization reveals early changes preceding demyelination and remyelination in multiple sclerosis. Brain. 2006;129:3173-3185.

e46. O’Brien JS, Sampson EL, Stern MB. Lipid composition of myelin from the peripheral nervous system: intradural spinal roots. J Neurochem. 1967;14:357–365.

e47. Poon KWC, Brideau C, Klaver R, Schenk GJ, Geurts JJ, Stys PK. Lipid biochemical changes detected in normal appearing white matter of chronic multiple sclerosis by spectral coherent Raman imaging. Chem Sci. 2018;9:1586–1595.

e48. Zhou Y, Notterpek L. Promoting peripheral myelin repair. Exp Neurol. 2016;283:573–580.