



Curriculum Vitae

Prof. Dr. Friedemann Paul, MD
***1967**

**Charité-Universitätsmedizin Berlin,
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Current Position Head of Research Group „Clinical Neuroimmunology“, NeuroCure Clinical
Research Center, Charité - Universitätsmedizin Berlin
and
Head of Research Group “Clinical and Experimental Neuroimmunology” in the
Experimental and Clinical Research Center, Charité Campus Buch

Medical Education and Career

1988 – 1995	Medical studies at the Free University of Berlin, Clinical training in France, Israel and Zimbabwe
1996 – 2001	Training in Neurology und Clinical Neurophysiology, Auguste-Viktoria-Klinikum, Berlin
2001 – 2004	Training in Epileptology und Electroencephalography, Epilepsiezentrum Berlin-Brandenburg
2002 – 2003	Training in Psychiatry, Schlosspark-Klinik Berlin
Since 2003	Resident in Neurology
Since 2004	Resident and Senior Physician, Cecilie Vogt Clinic for Neurology, Charité – Universitätsmedizin Berlin
Since 2008	Head of Research Group „Clinical Neuroimmunology“, NeuroCure Clinical Research Center, Charité – Universitätsmedizin Berlin
Since 2011	Professor of Clinical Neuroimmunology, NeuroCure Clinical Research Center, Charité – Universitätsmedizin Berlin

Research Fields

Neuromyelitis Optica (Devic's Syndrome)

Neurodegeneration and Neuroprotection in Multiple Sclerosis (MS) and Experimental Autoimmune Encephalomyelitis (EAE)

Diagnostic Tools in Neuroimmunology (Imaging (OCT, MRI, Ultrahigh Field MRI, Ultrasound), Laboratory and CSF Biomarkers)

Cognitive impairment, Sleep Disorders and Fatigue in Multiple Sclerosis

Selected Publications

1: Oberwahrenbrock T, Ringelstein M, Jentschke S, Deuschle K, Klumbies K, Bellmann-Strobl J, Harmel J, Ruprecht K, Schippling S, Hartung HP, Aktas O, Brandt AU, Paul F. Retinal ganglion cell and inner plexiform layer thinning in clinically isolated syndrome. *Mult Scler.* 2013 May 23. [Epub ahead of print] PubMed PMID: 23702433.

2: Finke C, Kopp UA, Scheel M, Pech LM, Soemmer C, Schlichting J, Leypoldt F, Brandt AU, Wuerfel J, Probst C, Ploner CJ, Prüss H, Paul F. Functional and structural brain changes in anti-NMDAR encephalitis. *Ann Neurol.* 2013 May 20. doi: 10.1002/ana.23932. [Epub ahead of print] PubMed PMID: 23686722.

3: Dörr J, Krautwald S, Wildemann B, Jarius S, Ringelstein M, Duning T, Aktas O, Ringelstein EB, Paul F, Kleffner I. Characteristics of Susac syndrome: a review of all reported cases. *Nat Rev Neurol.* 2013 Apr 30. doi: 10.1038/nrneurol.2013.82. [Epub ahead of print] PubMed PMID: 23628737.

4: Brandt AU, Oberwahrenbrock T, Kadas EM, Lagreze WA, Paul F. Dynamic formation of macular microcysts independent of vitreous traction changes. *Neurology* 2014;83:73-7.

5: Lill CM, Günther-Kunkel K, Hoch H, Paul F, Grond-Ginsbach C, Hausser I, Zipp F. Bilateral vertebral artery dissection, agenesis of both ICAs, and connective tissue aberrations. *Neurology.* 2013 Apr 9;80(15):1442-3. doi: 10.1212/WNL.0b013e31828c2f8e. PubMed PMID: 23568999.

6: Mähler A, Mandel S, Lorenz M, Ruegg U, Wanker EE, Boschmann M, Paul F. Epigallocatechin-3-gallate: a useful, effective and safe clinical approach for targeted prevention and individualised treatment of neurological diseases? *EPMA J.* 2013 Feb 18;4(1):5. doi: 10.1186/1878-5085-4-5. PubMed PMID: 23418936; PubMed Central PMCID: PMC3585739.

7: Dörr J, Döring A, Paul F. Can we prevent or treat multiple sclerosis by individualised vitamin D supply? *EPMA J.* 2013 Jan 29;4(1):4. doi: 10.1186/1878-5085-4-4. PubMed PMID: 23356351; PubMed Central PMCID: PMC3564873.

9: Dinkin M, Paul F. Higher macular volume in patients with MS receiving fingolimod: positive outcome or side effect? *Neurology*. 2013 Jan 8;80(2):128-9. doi: 10.1212/WNL.0b013e31827ccf4a. Epub 2012 Dec 5. PubMed PMID: 23223537.

10: Zimmermann H, Freing A, Kaufhold F, Gaede G, Bohn E, Bock M, Oberwahrenbrock T, Young KL, Dörr J, Wuerfel JT, Schippling S, Paul F, Brandt AU. Optic neuritis interferes with optical coherence tomography and magnetic resonance imaging correlations. *Mult Scler*. 2013 Apr;19(4):443-50. doi: 10.1177/1352458512457844. Epub 2012 Aug 30. PubMed PMID: 22936335.

11: Sinnecker T, Dörr J, Pfueller CF, Harms L, Ruprecht K, Jarius S, Brück W, Niendorf T, Wuerfel J, Paul F. Distinct lesion morphology at 7-T MRI differentiates neuromyelitis optica from multiple sclerosis. *Neurology*. 2012 Aug 14;79(7):708-14. doi: 10.1212/WNL.0b013e3182648bc8. Epub 2012 Aug 1. PubMed PMID: 22855861.

12: Sinnecker T, Bozin I, Dörr J, Pfueller CF, Harms L, Niendorf T, Brandt AU, Paul F, Wuerfel J. Periventricular venous density in multiple sclerosis is inversely associated with T2 lesion count: a 7 Tesla MRI study. *Mult Scler*. 2013 Mar;19(3):316-25. doi: 10.1177/1352458512451941. Epub 2012 Jun 26. PubMed PMID: 22736752.

13: Wuerfel J, Sinnecker T, Ringelstein EB, Jarius S, Schwindt W, Niendorf T, Paul F, Kleffner I, Dörr J. Lesion morphology at 7 Tesla MRI differentiates Susac syndrome from multiple sclerosis. *Mult Scler*. 2012 Nov;18(11):1592-9. doi: 10.1177/1352458512441270. Epub 2012 Jun 18. PubMed PMID: 22711711.

14: Finke C, Pech LM, Sömmer C, Schlichting J, Stricker S, Endres M, Ostendorf F, Ploner CJ, Brandt AU, Paul F. Dynamics of saccade parameters in multiple sclerosis patients with fatigue. *J Neurol*. 2012 Dec;259(12):2656-63. doi: 10.1007/s00415-012-6565-8. Epub 2012 Jun 19. PubMed PMID: 22711158.

15: Brandt AU, Zimmermann H, Kaufhold F, Promesberger J, Schippling S, Finis D, Aktas O, Geis C, Ringelstein M, Ringelstein EB, Hartung HP, Paul F, Kleffner I, Dörr J. Patterns of retinal damage facilitate differential diagnosis between Susac syndrome and MS. *PLoS One*. 2012;7(6):e38741. doi: 10.1371/journal.pone.0038741. Epub 2012 Jun 11. PubMed PMID: 22701702; PubMed Central PMCID: PMC3372471.

16: Kaufhold F, Kadas EM, Schmidt C, Kunte H, Hoffmann J, Zimmermann H, Oberwahrenbrock T, Harms L, Polthier K, Brandt AU, Paul F. Optic nerve head quantification in idiopathic intracranial hypertension by spectral domain OCT. *PLoS One*. 2012;7(5):e36965. doi: 10.1371/journal.pone.0036965. Epub 2012 May 15. PubMed PMID: 22615858; PubMed Central PMCID: PMC3352870.

17: Hackmack K, Paul F, Weygandt M, Allefeld C, Haynes JD; Alzheimer's Disease Neuroimaging Initiative. Multi-scale classification of disease using structural MRI and wavelet transform. *Neuroimage*. 2012 Aug 1;62(1):48-58. doi: 10.1016/j.neuroimage.2012.05.022. Epub 2012 May 15. PubMed PMID: 22609452.

18: Hackmack K, Weygandt M, Wuerfel J, Pfueller CF, Bellmann-Strobl J, Paul F, Haynes JD. Can we overcome the 'clinico-radiological paradox' in multiple sclerosis? *J Neurol*. 2012 Oct;259(10):2151-60. doi: 10.1007/s00415-012-6475-9. Epub 2012 Mar 24. PubMed PMID: 22446893.

19: Sinnecker T, Mittelstaedt P, Dörr J, Pfueller CF, Harms L, Niendorf T, Paul F, Wuerfel J. Multiple sclerosis lesions and irreversible brain tissue damage: a comparative ultrahigh-field strength magnetic resonance imaging study. *Arch Neurol*. 2012 Jun;69(6):739-45. doi: 10.1001/archneurol.2011.2450. PubMed PMID: 22351849.

20: Kleiter I, Hellwig K, Berthele A, Kümpfel T, Linker RA, Hartung HP, Paul F, Aktas O; Neuromyelitis Optica Study Group. Failure of natalizumab to prevent relapses in neuromyelitis optica. *Arch Neurol*. 2012 Feb;69(2):239-45. doi: 10.1001/archneurol.2011.216. PubMed PMID: 22332191.

21: Jarius S, Ruprecht K, Wildemann B, Kuempfel T, Ringelstein M, Geis C, Kleiter I, Kleinschnitz C, Berthele A, Bretschneider J, Hellwig K, Hemmer B, Linker RA, Lauda F, Mayer CA, Tumani H, Melms A, Trebst C, Stangel M, Marziniak M, Hoffmann F, Schippling S, Faiss JH, Neuhaus O, Etrich B, Zentner C, Guthke K, Hofstadt-van Oy U, Reuss R, Pellkofer H, Ziemann U, Kern P, Wandinger KP, Bergh FT, Boettcher T, Langel S, Liebetrau M, Rommer PS, Niehaus S, Münch C, Winkelmann A, Zettl U UK, Metz I, Veauthier C, Sieb JP, Wilke C, Hartung HP, Aktas O, Paul F. Contrasting disease patterns in seropositive and seronegative neuromyelitis optica: A multicentre study of 175 patients. *J Neuroinflammation*. 2012 Jan 19;9:14. doi: 10.1186/1742-2094-9-14. PubMed PMID: 22260418; PubMed Central PMCID: PMC3283476.

22: Paul F, Veauthier C. Fatigue and sleep disorders in multiple sclerosis: is obstructive sleep apnea a link? *Sleep Breath*. 2012 Dec;16(4):949-50. doi: 10.1007/s11325-011-0643-5. Epub 2012 Jan 18. PubMed PMID: 22252283.

23: Stricker S, Oberwahrenbrock T, Zimmermann H, Schroeter J, Endres M, Brandt AU, Paul F. Temporal retinal nerve fiber loss in patients with spinocerebellar ataxia type 1. *PLoS One*. 2011;6(7):e23024. doi: 10.1371/journal.pone.0023024. Epub 2011 Jul 29. PubMed PMID: 21829579; PubMed Central PMCID: PMC3146534.

24: Veauthier C, Paul F. Fatigue in multiple sclerosis: which patient should be referred to a sleep specialist? *Mult Scler*. 2012 Feb;18(2):248-9. doi: 10.1177/1352458511411229. Epub 2011 Jun 7. PubMed PMID: 21652611.

25: Jarius S, Jacobi C, de Seze J, Zephir H, Paul F, Franciotta D, Rommer P, Mader S, Kleiter I, Reindl M, Akman-Demir G, Seifert-Held T, Kristoferitsch W, Melms A, Wandinger KP, Wildemann B. Frequency and syndrome specificity of antibodies to aquaporin-4 in neurological patients with rheumatic disorders. *Mult Scler*. 2011 Sep;17(9):1067-73. doi: 10.1177/1352458511403958. Epub 2011 May 4. PubMed PMID: 21543553.

26: Pfueller CF, Brandt AU, Schubert F, Bock M, Walaszek B, Waiczies H, Schwentek T, Dörr J, Bellmann-Strobl J, Mohr C, Weinges-Evers N, Ittermann B, Wuerfel JT, Paul F. Metabolic changes in the visual cortex are linked to retinal nerve fiber layer thinning in multiple sclerosis. *PLoS One*. 2011 Apr 6;6(4):e18019. doi: 10.1371/journal.pone.0018019. PubMed PMID: 21494672; PubMed Central PMCID: PMC3071815.

27: Dörr J, Wernecke KD, Bock M, Gaede G, Wuerfel JT, Pfueller CF, Bellmann-Strobl J, Freing A, Brandt AU, Friedemann P. Association of retinal and macular damage with brain atrophy in multiple sclerosis. *PLoS One*. 2011 Apr 8;6(4):e18132. doi: 10.1371/journal.pone.0018132. PubMed PMID: 21494659; PubMed Central PMCID: PMC3072966.

28: Bock M, Brandt AU, Kuchenbecker J, Dörr J, Pfueller CF, Weinges-Evers N, Gaede G, Zimmermann H, Bellmann-Strobl J, Ohlraun S, Zipp F, Paul F. Impairment of contrast visual acuity as a functional correlate of retinal nerve fibre layer thinning and total macular volume reduction in multiple sclerosis. *Br J Ophthalmol*. 2012 Jan;96(1):62-7. doi: 10.1136/bjo.2010.193581. Epub 2011 Mar 3. PubMed PMID: 21378002.

29: Doepp F, Paul F, Valdueza JM, Schmierer K, Schreiber SJ. No cerebrocervical venous congestion in patients with multiple sclerosis. *Ann Neurol*. 2010 Aug;68(2):173-83. doi: 10.1002/ana.22085. PubMed PMID: 20695010.

30: Weinges-Evers N, Brandt AU, Bock M, Pfueller CF, Dörr J, Bellmann-Strobl J, Scherer P, Urbanek C, Boers C, Ohlraun S, Zipp F, Paul F. Correlation of self-assessed fatigue and alertness in multiple sclerosis. *Mult Scler*. 2010 Sep;16(9):1134-40. doi: 10.1177/1352458510374202. Epub 2010 Jul 7. PubMed PMID: 20610494.

31: Bock M, Brandt AU, Dörr J, Pfueller CF, Ohlraun S, Zipp F, Paul F. Time domain and spectral domain optical coherence tomography in multiple sclerosis: a comparative cross-sectional study. *Mult Scler*. 2010 Jul;16(7):893-6. doi: 10.1177/1352458510365156. Epub 2010 Mar 29. PubMed PMID: 20350961.

32: Urbanek C, Weinges-Evers N, Bellmann-Strobl J, Bock M, Dörr J, Hahn E, Neuhaus AH, Opgen-Rhein C, Ta TM, Herges K, Pfueller CF, Radbruch H, Wernecke KD, Ohlraun S, Zipp F, Dettling M, Paul F. Attention Network Test reveals alerting network dysfunction in multiple sclerosis. *Mult Scler*. 2010 Jan;16(1):93-9. doi: 10.1177/1352458509350308. Epub 2009 Dec 7. PubMed PMID: 19995842.

33: Vogt J, Paul F, Aktas O, Müller-Wielsch K, Dörr J, Dörr S, Bharathi BS, Glumm R, Schmitz C, Steinbusch H, Raine CS, Tsokos M, Nitsch R, Zipp F. Lower motor neuron loss in multiple sclerosis and experimental autoimmune encephalomyelitis. *Ann Neurol*. 2009 Sep;66(3):310-22. doi: 10.1002/ana.21719. PubMed PMID: 19798635.

34: Wuerfel J, Paul F, Beierbach B, Hamhaber U, Klatt D, Papazoglou S, Zipp F, Martus P, Braun J, Sack I. MR-elastography reveals degradation of tissue integrity in multiple sclerosis. *Neuroimage*. 2010 Feb 1;49(3):2520-5. doi: 10.1016/j.neuroimage.2009.06.018. Epub 2009 Jun 16. PubMed PMID: 19539039.

35: Wuerfel J, Haertle M, Waiczies H, Tysiak E, Bechmann I, Wernecke KD, Zipp F, Paul F. Perivascular spaces--MRI marker of inflammatory activity in the brain? *Brain*. 2008 Sep;131(Pt 9):2332-40. doi: 10.1093/brain/awn171. Epub 2008 Aug 1. PubMed PMID: 18676439.

36: Paul F, Waiczies S, Wuerfel J, Bellmann-Strobl J, Dörr J, Waiczies H, Haertle

M, Wernecke KD, Volk HD, Aktas O, Zipp F. Oral high-dose atorvastatin treatment in relapsing-remitting multiple sclerosis. PLoS One. 2008 Apr 9;3(4):e1928. doi: 10.1371/journal.pone.0001928. PubMed PMID: 18398457; PubMed Central PMCID: PMC2276246.

37: Paul F, Jarius S, Aktas O, Bluthner M, Bauer O, Appelhans H, Franciotta D, Bergamaschi R, Littleton E, Palace J, Seelig HP, Hohlfeld R, Vincent A, Zipp F. Antibody to aquaporin 4 in the diagnosis of neuromyelitis optica. PLoS Med. 2007 Apr;4(4):e133. PubMed PMID: 17439296; PubMed Central PMCID: PMC1852124.