



CURRICULUM VITAE

MICHIEL KLEINNIJENHUIS



FMRIB Centre, Nuffield Department of Clinical Neurosciences, University of Oxford
John Radcliffe Hospital, Headley Way, Headington, OX3 9DU, UK
Date and place of birth: 19 August 1981, Den Ham, The Netherlands

APPOINTMENTS

Postdoctoral researcher (current)

Oxford Centre for Functional MRI of the Brain, University of Oxford, UK

- Investigating the plasticity of the white matter of the brain with novel microstructural markers based on MRI, electron microscopy and histology.

Junior researcher / PhD candidate (2009—2013)

Donders Institute for Brain, Cognition and Behaviour, Nijmegen, The Netherlands

- Development of novel approaches in anatomical brain imaging aimed at improving mapping structural brain networks.

Reliability engineer (2008—2009)

NXP Semiconductors, BU Automotive Safety & Comfort, Nijmegen, The Netherlands

- Research projects on passivation cracks and pattern shift in integrated circuits.

Researcher in applied psychophysiology (2006—2007)

Brainquiry R&D, Nijmegen, The Netherlands

- Research and development of new methods in applied (psycho)physiology.
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EDUCATION

PhD (2014): Donders Graduate School for Cognitive Neuroscience

Radboud University Nijmegen, Nijmegen, The Netherlands

Thesis title: “Imaging brain fibers in the brain”

Advisors: Prof Dirk J. Ruiter, Prof David G. Norris

MSc (2007): Cognitive Neuroscience

Radboud Universiteit Nijmegen, Nijmegen, The Netherlands

Thesis title: “The development of a multipurpose biofeedback system”

Advisors: Prof Jacques Duysens & Prof Stan (C.C.A.M) Gielen

BSc (2003): Applied Physics

Saxion Hogeschool Enschede, Enschede, The Netherlands

Thesis title: “High Definition Encephalography: consequences of downsampling”

SKILLS

Neuroscience

Magnetic Resonance Imaging

- diffusion imaging
- susceptibility imaging

Neuroanatomy

- white matter
- dissection room

Electroencephalography

- brain-computer interfaces
- neurofeedback
- source localisation

Histochemistry

- axon/myelin stains
- human tissue

Physics

MR physics

- biophysical modeling
- image processing
- ex vivo imaging
- high field imaging

Biomedical physics

- photo-acoustics
- signal processing
- control engineering

Solid state physics

- reliability engineering

General

Academic

- writing
- programming
- data analysis
- tutoring
- teaching

Transferable

- commitment
- flexibility
- problem solving

Other

- photography

INTERESTS

Travel – Science – Photography – Food – Tech – Politics – Scuba diving – Reading – Running

PUBLICATIONS

Peer reviewed papers:

Kleinnijenhuis M. A historical essay on connectional neuroanatomy. (in preparation).

Kleinnijenhuis M, Zhang H, Wiedermann D, Küsters B, Dederen PJ, Norris DG, van Cappellen van Walsum A-M. Fibres in the gyrus: characteristics in ex vivo diffusion MRI and histology. *Brain, Structure & Function*. (in preparation).

Kleinnijenhuis M, van Mourik T, Norris DG, Ruiter DJ, van Cappellen van Walsum A-M, Barth M. Laminar characteristics of gyrencephaly using high resolution diffusion tensor imaging in vivo at 7T. *NeuroImage*. (under revision).

Arnts H, Kleinnijenhuis M, Kooloos JGM, Schepens-Franke AN, van Cappellen van Walsum A-M. Combining fiber dissection, plastination, and tractography for neuroanatomical education: revealing the cerebellar nuclei and their white matter connections. *Anatomical Sciences Education*. 2013; 7: 47–55.

van Baarsen K, Kleinnijenhuis M, Konert T, van Cappellen van Walsum A-M, Grotenhuis A. Tractography demonstrates dentate-rubro-thalamic tract disruption in an adult with cerebellar mutism. *Cerebellum*. 2013; 12: 617–22.

Kleinnijenhuis M, Zerbi V, Küsters B, Slump CH, Barth M, van Cappellen van Walsum A-M. Layer-specific diffusion weighted imaging in human primary visual cortex in vitro.

Cortex: a Journal Devoted to the Study of the Nervous System and Behavior. 2013; **49**: 2569–82.

Zerbi V*, Kleinnijenhuis M*, Fang X, Jansen D, Veltien A, Van Asten J, Timmer N, Dederen PJ, Kiliaan AJ, Heerschap A. Gray and white matter degeneration revealed by diffusion in an Alzheimer mouse model. *Neurobiology of Aging.* 2013; **34**: 1440–50. *equal contribution

Kleinnijenhuis M, Barth M, Alexander DC, van Cappellen van Walsum A-M, Norris DG. Structure Tensor Informed Fiber Tractography (STIFT) by combining gradient echo MRI and diffusion weighted imaging. *NeuroImage.* 2012; **59**: 3941–54.

Spronk D, Kleinnijenhuis M, van Luijckeloo G, Arns M. Discrete-trial SCP and GSR training and the interrelationship between central and peripheral arousal. *Journal of Neurotherapy.* 2010; **14**: 217–28.

Arns M, Kleinnijenhuis M, Fallahpour K, Breteler R. Golf performance enhancement and real-life neurofeedback training using personalized event-locked EEG profiles. *Journal of Neurotherapy.* 2008; **11**: 11–8.

Kleinnijenhuis M, Arns M, Spronk D, Breteler R, Duysens J. Comparison of discrete-trial-based SMR and SCP training and the interrelationship between SCP and SMR networks: implications for brain-computer interfaces and neurofeedback. *Journal of Neurotherapy.* 2008; **11**: 19–35.

Conference proceedings:

Kleinnijenhuis M, Mollink J, Johnson EE, Galinsky VL, Frank LR, Jbabdi S, & Miller KL. The effect of axon shape and myelination on diffusion signals in a realistic simulation environment. In: *Organization for Human Brain Mapping.* Geneva, Switzerland, 2016.

Mollink J, Kleinnijenhuis M, Sotiropoulos SN, Cottaar M, Pallegage Gamarallage M, Ansorge O, ... Miller KL. Exploring fibre orientation dispersion in the corpus callosum: Comparison of Diffusion MRI, Polarized Light Imaging and Histology. In: *Organization for Human Brain Mapping.* Geneva, Switzerland, 2016.

Kleinnijenhuis M, Mollink J, Johnson EE, Galinsky VL, Frank LR, Jbabdi S, & Miller KL. The effect of axon shape and myelination on diffusion signals in a realistic Monte Carlo simulation environment. In: *Proceedings of the International Society for Magnetic Resonance in Medicine.* Singapore, 2016.

Mollink J, Kleinnijenhuis M, Sotiropoulos SN, Cottaar M, Pallegage Gamarallage M, Ansorge O, ... Miller KL. Exploring fibre orientation dispersion in the corpus callosum: Comparison of Diffusion MRI, Polarized Light Imaging and Histology. In: *Proceedings of the International Society for Magnetic Resonance in Medicine.* Singapore, 2016.

Edwards LJ, Mohammadi S, Bazin P-L, Kleinnijenhuis M, Pine KJ, van Cappellen van Walsum A-M, ... Weiskopf N. Modelling radial and tangential fibres in the neocortex. In: *Proceedings of the International Society for Magnetic Resonance in Medicine.* Singapore, 2016.

Kleinnijenhuis M, Mollink J, Kinches P, Lam WW, Khrapitchev AA, Sibson NR, ... Miller KL. Monte Carlo simulations disambiguate the biophysical mechanisms of diffusion hindrance along tracts. In: *Organization for Human Brain Mapping.* Honolulu, United States of America, 2015, p. 6096.

Mollink J, Kleinnijenhuis M, Jbabdi S, Sotiropoulos SN, Ansorge O, & Miller KL. Fiber dispersion in the corpus callosum revealed with postmortem diffusion weighted imaging and PLI. In: *Organization for Human Brain Mapping.* Honolulu, United States of America, 2015, p. 6248.

- Tariq M, Kleinnijenhuis M, van Cappellen van Walsum A-M, & Zhang H. Validation of NODDI estimation of dispersion anisotropy in V1 of the human neocortex. In: *Organization for Human Brain Mapping*. Honolulu, United States of America, 2015, p. 6482.
- Kleinnijenhuis M, Mollink J, Kinchesh P, Lam WW, Galinsky VL, Frank LR, ... Miller KL. Monte Carlo diffusion simulations disambiguate the biophysical mechanisms of diffusion hinderance along tracts. In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. Toronto, Canada, 2015, p. 2078.
- Lam WW, Miller KL, Kleinnijenhuis M, & Jbabdi S. Longitudinally hindered diffusion of in vivo human white matter at long diffusion time. In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. Toronto, Canada, 2015, p. 792.
- Mollink J, Kleinnijenhuis M, Sotiropoulos SN, Ansorge O, Jbabdi S, & Miller KL. Diffusion restriction along fibres: How coherent is the corpus callosum? In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. Toronto, Canada, 2015, p. 5375.
- Tariq M, Kleinnijenhuis M, van Cappellen van Walsum A-M, & Zhang H. Validation of NODDI estimation of dispersion anisotropy in V1 of the human neocortex. In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. Toronto, Canada, 2015, p. 3928.
- Kinchesh P, Kleinnijenhuis M, Miller KL, & Smart S. Minimizing Diffusion Encoding of Slice Selection in Stimulated Echo Imaging. In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. Toronto, Canada, 2015, p. 3201.
- Kleinnijenhuis M, van Mourik T, Norris D, Ruiter D, van Cappellen van Walsum A-M, Barth M. Laminar characteristics of gyrencephaly using high resolution diffusion tensor imaging in vivo at 7T. In: *Organization for Human Brain Mapping*. Hamburg, Germany, 2014 (oral).
- Mollink J, van Baarsen K, Slump C, Foxley S, Miller K, Norris D, Kleinnijenhuis M, van Cappellen van Walsum A. Validation of diffusion weighted tractography in the dentatorubrothalamic tract. In: *Organization for Human Brain Mapping*. Hamburg, Germany, 2014.
- Mollink J, van Baarsen K, Slump C, Foxley S, Miller K, Norris D, Kleinnijenhuis M, van Cappellen van Walsum A. Validation of diffusion weighted tractography in the dentatorubrothalamic tract. In: *Nederlandse Anatomen Vereniging*, Lunteren, The Netherlands, 2014.
- Kleinnijenhuis M, Zhang H, Wiedermann D, Norris D, van Cappellen van Walsum A-M. Detailed laminar characteristics of the neocortex revealed by NODDI. In: *International Conference on Magnetic Resonance Microscopy*. Cambridge, United Kingdom, 2013 (oral).
- Kleinnijenhuis M, Zhang H, Wiedermann D, Küsters B, Norris DG, van Cappellen van Walsum A-M. Detailed laminar characteristics of the human neocortex revealed by NODDI and histology. In: *Organization for Human Brain Mapping*. Seattle, WA, USA, 2013, p 3815 (oral).
- Kleinnijenhuis M, Zhang H, Wiedermann D, Küsters B, van Cappellen van Walsum A-M, Norris DG. Detailed laminar characteristics of the human neocortex revealed by NODDI. In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. Salt Lake City, United States of America, 2013, p 5100 (oral).
- Arnts H, Kleinnijenhuis M, Kooloos J, Schepens-Franke A, van Cappellen van Walsum A-M. Dissectie en plastinatie van witte stof in humane hersenen voor neuroanatomisch

onderwijs. In: *Nederlandse vereniging voor Medisch Onderwijs*. Maastricht, The Netherlands, 2012.

Kleinnijenhuis M, Barth M, Zerbi V, Sikma K-J, Küsters B, Slump CH, Norris DG, Ruiter D, van Cappellen van Walsum A-M. A new perspective on the cortical laminar pattern of the primary visual cortex in the occipital lobes. In: *International School of Clinical Neuroanatomy: the Clinical Neuroanatomy of the Occipital Lobes*. Ragusa, Italy, 2012 (oral).

Kleinnijenhuis M. In vitro layer-specific Diffusion Weighted Imaging in human primary visual cortex. In: *Nederlandse Vereniging voor Technische Geneeskunde*. Woerden, The Netherlands, 2011 (oral).

Kleinnijenhuis M, Barth M, Alexander DC, van Cappellen van Walsum A-M, Norris DG. Structure Tensor Informed Fiber Tractography. In: *Hahn lecture*. 2011, p 5.

Kleinnijenhuis M, Barth M, Zerbi V, Sikma K-J, Küsters B, Slump CH, Norris DG, Ruiter D, van Cappellen van Walsum A-M. In vitro layer-specific Diffusion Weighted Imaging in human primary visual cortex. In: *Brain Circuitry and its Disorders*. Doorwerth, The Netherlands, 2011 (oral).

Kleinnijenhuis M, Barth M, Zerbi V, Sikma K-J, Küsters B, Slump CH, Norris DG, Ruiter D, van Cappellen van Walsum A-M. Layer-specific diffusion weighted imaging in human primary visual cortex in vitro. In: *Organization for Human Brain Mapping*. Quebec City, Canada, 2011, p 2509.

Kleinnijenhuis M, Sikma K-J, Barth M, Dederen PJ, Zerbi V, Küsters B, Ruiter D, Slump CH, van Cappellen van Walsum A-M. Validation of Diffusion Weighted Imaging of cortical anisotropy by means of a histological stain for myelin. In: *Proceedings of the International Society for Magnetic Resonance in Medicine: Benelux chapter*. 2011, p 2240.

Kleinnijenhuis M, Barth M, Alexander DC, van Cappellen van Walsum A-M, Norris DG. SWI-informed Diffusion Tensor Tractography. In: *Proceedings of the International Society for Magnetic Resonance in Medicine*. Stockholm, Sweden, 2010, p 4021.

Sikma K-J, Kleinnijenhuis M, Barth M, Dederen PJ, Küsters B, Slump CH, van Cappellen van Walsum A-M. Validating tractography from DWI/SWI data with 3D reconstructed histological data of post-mortem human brain tissue. In: *Nederlandse Vereniging voor Technische Geneeskunde*. Enschede, The Netherlands, 2010.

Breteler R, Kleinnijenhuis M, Spronk D, Heesen E, Arns M. The acquisition of control in self-regulation of Galvanic skin response and slow cortical potentials: A randomized trial. In: Peper E, Fuhs M (eds). *Applied Psychophysiology and Biofeedback: Abstracts of Scientific Papers Presented at the 10th Anniversary Meeting of the Biofeedback Foundation of Europe*. Vienna, Austria, 2006, pp 354–5.

Kleinnijenhuis M, Arns MW, Rijpma J. Golf performance enhancement by means of real-life neurofeedback training based on personalized event-locked EEG profiles. In: Peper E, Fuhs M (eds). *Applied Psychophysiology and Biofeedback: Abstracts of Scientific Papers Presented at the 10th Anniversary Meeting of the Biofeedback Foundation of Europe*. Vienna, Austria, 2006, pp 346–7 (oral).

Invited talks and workshops:

Imaging fibres in the brain: novel approaches to the analysis and validation of diffusion MRI, seminar Centre for Medical Image Computing, University College London, London, UK, 2014.

Structural connectivity, lecture summerschool Brain Networks and Neural Communication, Nijmegen, The Netherlands, 2013.

Real-life neurofeedback in golf, full-day workshop by Michiel Kleinnijenhuis and John Rijpma, Papendal, Arnhem, The Netherlands, 2007.

Real-life neurofeedback, two-day workshop by Michiel Kleinnijenhuis and Desiree Spronk, Nijmegen, The Netherlands, 2007.

Book chapters:

Fallahpour, K., Kleinnijenhuis, M., Arns, M.W. (2011). Peak Performance Using Personalized and Task-Specific Event-Locked EEG: A Wireless, Personalized Medicine Approach to Sports Performance Enhancement. In: Strack BW, Linden MK, Wilson VS (eds). *Biofeedback & Neurofeedback Applications in Sport Psychology*. Association for Applied Psychophysiology and Biofeedback.

Patents:

Arns MW, Slootweg GA, Kleinnijenhuis M. Apparatus for measuring one or more physiological functions of a body and a method using the same. 2007; US20070299323.

Theses:

Kleinnijenhuis M. *Imaging fibres in the brain*. PhD thesis, 2014; 1–288.

Kleinnijenhuis M. *Comparison of SMR and SCP training employing a newly developed discrete-trial based biofeedback system*. MSc thesis, 2007; 1–43.

Kleinnijenhuis M. *Hoge Definitie Encefalografie*. BSc thesis, 2003; 1–57.