UHD.22.082
1 december 2022

FHML/Maastricht UMC+ format Curriculum Vitae

Please read explanations carefully, fill in all requested information, and leave format intact. If a certain subject does not imply, do not remove but leave blank or use "not applicable (n.a.)"

General information on career policies and procedures may be found here:
https://umployee.maastrichtuniversity.nl/over-de-um/over-fhml/procesbevordering-wp-functieschalen-12-13-en-14

Information on the profiles may be found here:
https://umployee.maastrichtuniversity.nl/over-de-um/over-fhml/benoemingscriteria-per-wp-functieschalen-12-13-en-14

Please check which profile is to be assessed:

☐ Assistant professor 1
☐ Researcher 2
☐ Teacher 2
☐ Associate professor mixed profile Education and Research
☐ Associate professor mixed profile Patient Care and Education/Training
☐ Associate professor mixed profile Patient Care and Research
☐ Associate professor profile Research
☐ Associate professor profile Education
☐ Researcher 1
☐ Teacher 1

Curriculum Vitae

Name: Gerald Drenthen **date: 11-12-2023**

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1. Personal details:

Full Name:	Gerhard Sebastiaan Drenthen
Living address (including tel.):	Puthof 15, Eindhoven, 0620598555
Date and place of birth:	27-01-1989, Almelo
Nationality:	Dutch

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2. Professional address:

Name university / institute:	Maastricht University
Department:	Radiology and Nuclear Medicine

Tel.: 043 387 4907

E-mail: g.drenthen@maastrichtuniversity.nl

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3. Training / Education (including graduation, PhD and teaching qualification)

PhD training:

2015 – 2019 Thesis title "Myelin and Networks, Magnetic Resonance in Epilepsy"
Maastricht University, Department of Radiology and Nuclear Medicine
Award date: 02-07-2020
Promotor: W.H. Backes

Teaching qualifications

2023-2024 Course Small Group Teacher Training, Maastricht University

2023-2024 Mentoring skills, Maastricht University

2022 Workshop thesis supervision and assessment, Maastricht University

2022 Introductory course on the principles of PBL, Maastricht University

Postdoctoral training

2019-2023 Neuro-engineering
Maastricht University, Department of Radiology and Nuclear Medicine

Bachelor's and Master's degree:

2012-2015 Master of Electrical Engineering
Eindhoven University of Technology

2014-2015 Graduation internship
Eindhoven University of Technology and Maastricht University
Thesis title: "Study of alterations in the brain for two neurological disorders, based on Magnetic Resonance Spectroscopy (MRS) and Imaging (MRI)"

2013 Internship Control Systems, Electrical Engineering
Omron Industrial Automation Business
Kusatsu, Japan

2007-2012 Bachelor of Electrical Engineering
Eindhoven University of Technology

Pre-university education

2001-2007 Secondary School: CSG Het Noordik, Almelo, The Netherlands

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4. Professional appointments

Position	Period	Institution
Post-doctorate researcher	1-10-2019 – current	Maastricht University
PhD candidate	01-09-2015 – 30-09-2019	Maastricht University

Licenses and certifications

2023 Basic Life support
2023 Re-certification BROK/GCP
2020 Re-certification BROK/GCP
2016 Basic Life support
2016 BROK/GCP

Experience	Number of years
Research activities	1 FTE * 7 years

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5 Clinical experience and main clinical interest

Not applicable

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6. Teaching experience

In recent years I have already gained relevant experiences for teaching. First of all, I truly enjoy working together with early career scientists (bachelor and master students). Sharing my passion for research, and seeing their scientific and personal growth feels very fulfilling. Moreover, at our department, I am responsible for the coordination and supervision of all new bachelor and master student projects (roughly five per year), and manage monthly research meetings where students get the opportunity to present their ongoing research to their peers. Besides supervision, I currently fulfil several teaching responsibilities at Maastricht University, the Eindhoven University of Technology, and the Radiological Society of the Netherlands. All the teaching responsibilities for the current academic year are outlined in the table below:

Teaching for academic year 2023-2024

	load	formula	hours	fte
Lectures				
Radiological Society of the Netherlands	8 hrs	* 5	40	0,02
MRI for Brain lecture (TU/e, 5XSM0)	2 hrs	* 5	10	0,01
MRI for Brain labs (TU/e, 5XSM0)	7 hrs	* 3	21	0,01
fMRI workshop (MBS1002)	6 hrs	* 3	18	0,01
Supervising students				
Master graduation, Biomedical Engineering (TU/e)	36 wks	* 2	72	0,04
Bachelor Thesis, Maastricht Science Program	18 wks	* 2	36	0,02
Tutorship				
BBS2003	24 hrs	* 1.5	36	0,02
Assessment of reports				
Beeldvormende technieken report (GEN1011)	8 pcs	* 0.5	4	0,00
Health sciences				
Appointment for 0.10 fte			165	0,10
Total			402	0,24

The table shows all teaching obligations for the academic year of 2023-2024. Besides the teaching appointment of 0.10 fte for the Bachelor of Health Sciences, there are several recurring teaching obligations for Maastricht University (~0.05 fte), Eindhoven University of Technology (~0.06) and the Radiological Society of the Netherlands (~0.02 fte). Formula is taken from bros.maastrichtuniversity.nl.

A-roles: Teaching in direct interaction with students

Supervising student projects

Eindhoven University of Technology

2023-2024 Master graduation project, department of Biomedical Engineering. Lars Vermeer. Project title: Investigating thalamic connectivity in MRI-negative epilepsy patients
Role: Daily supervisor

2023 Master graduation project, Medical Engineering. Thaomy Tran. Project title: Autoencoder-based unsupervised anomaly detection in focal epilepsy patients using 7T resting-state functional MRI
Role: Daily supervisor

2023 Master graduation project, Medical Engineering. Gaby van Iersel. Project title: Deep Learning-Based Prediction of Ischemic Stroke Complications from CT Images: Insights into Epilepsy and Intracranial Haemorrhages
Role: Daily supervisor

2022 Master graduation project, department of Medical Engineering. Merel Eussen. Project title: Network efficiency of structural covariance networks relate to cognitive performance in children with childhood absence epilepsy.
Role: Daily supervisor

2022 Master graduation project, department of Medical Engineering. Nathalie Roos. Project title: The automatic segmentation of enlarged perivascular spaces using 7T MRI
Role: Daily supervisor

2020 Clinical module: Diagnostics and monitoring (8FM22), Master Medical Engineering. Doreen Habets & Laura Kempen. Project title: MWF and IVIM parameters in children with childhood absence epilepsy
Role: Daily supervisor

2020 Clinical module: Diagnostics and monitoring (8FM22), Master Medical Engineering. Rutger Hendrix & Rob Mooij. Project title: Structural covariance networks to clarify mechanisms of Alzheimer's disease
Role: Daily supervisor

2020 Clinical module: Diagnostics and monitoring (8FM22), Master Medical Engineering. Pam Boerdonk & Elze Swinkels. Project title: Investigating childhood absence epilepsy patients using intravoxel incoherent motion imaging in the brain
Role: Daily supervisor

2019 Clinical module: Diagnostics and monitoring (8FM22), Master Medical Engineering. Sanne Eemers & Sacha Massop. Project title: Childhood Absence Epilepsy: assessment of brain morphology characteristics using Structural Covariance Network analysis
Role: Daily supervisor

2019 Master graduation project, department of Electrical Engineering. Floor Fasen. Project title: Impaired brain functioning in children with childhood absence epilepsy related to cognitive performance.
Role: Daily supervisor

2017 Bachelor thesis, department of Electrical Engineering. Jasper Sleumer. Project title: Classify Epileptic Patients and First-Seizure Subjects Using Graph Metrics from EEG and fMRI Data.
Role: Daily supervisor

2017 Bachelor thesis, Eindhoven University of Technology, department of Electrical Engineering. Bart van der Sanden. Project title: Towards a new biomarker, myelin weighted diffusion network: phantom & in vivo results.
Role: Daily supervisor

2017 Clinical module: Diagnostics and monitoring (8FM22), Master Medical Engineering. Teun van de Meerakker & Koen Franse. Project title: Analysis of the Cortical Thickness in Children with Absence Epilepsy.
Role: Daily supervisor

2016 Clinical module: Diagnostics and monitoring (8FM22), Master Medical Engineering. Marjolein de Munnik & Larissa Jansen. Project title: Myelin Water Fraction: reducing acquisition time of 32 echo spin-spin MRI imaging.
Role: Daily supervisor

Maastricht University

2024 Bachelor Thesis Research, Maastricht Science Program. Jade Margaritoff, Project title: Multiparametric MRI in Stroke; A Comparative Study of Healthy and Diseased Brain Tissue
Role: Daily supervisor

2023 Bachelor Thesis, Biomedical Sciences. Amaia Alvarez van Schie, Project title: The relationship between brain perfusion and cerebral blood supply in patients with vascular cognitive impairment
Role: Daily supervisor

2023 Bachelor thesis, Biomedical Sciences. Anouk Meeusen, Project title: Accuracy of Perivascular Scoring and Volume acquired with Ultra-High-Field Magnetic Resonance Imaging using different Spatial Resolutions: Implications for Cognitive Decline
Role: Daily supervisor

2022 Bachelor thesis, Maastricht science program. Sofia Venturini. Project title: Is there a relationship between CSF flow and renal function, and what could be the effect of cognitive decline and hypertension?
Role: Daily supervisor

Vrije Universiteit Amsterdam

2021 Bachelor thesis, biomedical sciences. Kingsley Essemiah. Project title: Altered parenchymal diffusion and microvascular perfusion in childhood absence epilepsy.
Role: Daily supervisor

Hanze institute of technology, Groningen

2020 Bachelor thesis, bio-informatics. Darius Dubber. Project title: Optimizing automated quality control of structural MR brain segmentations in the Maastricht Study.
Role: Advisor

Lectures

Maastricht University

2023 Lecture "Principles of MRI" and "Neuroimaging: new (f)MRI techniques", "Noninvasive Techniques in Biomedical Research", Bachelor Biomedical Sciences, Maastricht University, BBS2003.

Eindhoven University of Technology

2023-current "Principles and history of functional MRI", Electrical Engineering, Eindhoven University of Technology, 5XSM0.

As a lecturer for the "MRI for the Brain" bachelor course of Electrical Engineering, I provided a two-hour introductory lecture on functional MRI. Besides lectures, the students had labs to work on the assignments of the course. I attended these labs on functional MRI as a teacher to supervise the students on their assignments.

Radiological Society of the Netherlands

2021-current "Principles of MRI", National Education on Clinical Imaging Modalities for Radiology Residents, Region South, Eindhoven.

As lecturer of the MRI workgroup of the Radiological Society of the Netherlands, I provide two four-hours lectures to radiology residents (~20 attendees each year). During these lectures I present the principles of how an MRI image is made, and provide examples and cases that are relevant to the radiology residents.

Mentoring

2023-current Mentor for Bachelor of Health Sciences, Maastricht University, GZW1243 & GZW1241

As a mentor for twelve first year students of Health Sciences, I have regular plenary and individual meetings where I introduce Problem Based Learning, and we discuss the study progress and any other questions and problems that the students might have. As mentor, I am the main point of contact for the students. Furthermore, the mentor role for Health Sciences also includes guidance and assessment of a scientific writing course.

Tutoring

2022-current "Non-invasive Techniques in Biomedical Research", Bachelor Biomedical Sciences, Maastricht University, BBS2003.

As a tutor I guide the process of Problem Based Learning for bachelor students of Biomedical Sciences via two tutor sessions per week. While one of the students chairs the meeting, I monitoring the discussions and intervene/steer when necessary.

Workshops

2022-current "fMRI computer workshop", Master Biomedical Sciences, Maastricht University, MBS1002.

As MRI-expert, I teach a two-hour workshop on functional MRI analysis using MATLAB for master students of Biomedical Sciences. The workshop introduces the students on the steps that are needed to prepare the MRI images for analysis. Subsequently, they can extract age differences in the functional response of the brain using the prepared images. Approximately forty students

participate in the workshop, in three separate sessions (roughly twelve students each session).

B-roles: Course development and/or organisation and/or policy making for small programme components

Eindhoven University of Technology

2023-current Course Development for the course MRI for the brain. Electrical Engineering, Eindhoven University of Technology, 5XSM0.

The course had three main parts, and I was responsible for the functional MRI part of the course. For this I developed part of the lecture slides, the assignments (labs) and exam questions. Furthermore, I presented the introductory fMRI lecture and assisted the students with the assignments in the labs. This (2023) was the first year the course was given, and it received mostly positive reviews from the ~20 students that attended the course. Using the feedback from the students, the course will be improved for next academic year.

Maastricht University

2022-current Development of an fMRI computer workshop for the Master Biomedical Sciences, Maastricht University, MBS1002.

I developed a computer practical as part of the Biomedical Approaches (MBS1002) course using MATLAB. During the 2-hour practical, students are introduced to the workflow of functional MRI data. They get to experience the required preprocessing steps prior to analysis, and can see differences in the fMRI images in a older versus a younger subject. Approximately 40 students attend the workshop, divided over three sessions.

Radiological Society of the Netherlands

2021-current Member MRI workgroup, National Education on Clinical Imaging Modalities for Radiology Residents.

Besides providing the lectures for the radiology residents (~20 attendees each year), I am also a member of the MRI workgroup. As a member of the workgroup, I develop the curriculum material, I develop new teaching material, together with the rest of the workgroup members, and continuously improve this over the years.

C-roles: Course development and/or organisation of larger programme components and/or educational policy and/or education management

Not applicable.

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7. Management positions

Not applicable.

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8. Main research themes
Short description of research line (max 200 words)

My research is focussed on using dedicated and quantitative MRI techniques combined with advanced analytical methods to answer clinically relevant questions.

I initiated and developed a new line of research in the Maastricht UMC+ for quantitative myelin-imaging by introducing novel image acquisition and analysis techniques. From a methodological viewpoint, I developed a new acquisition method (multi-slice multi-echo GRASE) which improves upon the existing methods in terms of acquisition time and robustness to subject motion. Next, I introduced a new analysis method, to provide a more accurate estimation of the myelin content. Subsequently, these methods were applied in a clinical epilepsy study, where I worked in close collaborations with clinical experts. Currently, there are several preclinical and clinical studies being initiated at the Maastricht University Medical Center that aim to use the quantitative myelin imaging methods that I developed.

Besides myelin imaging, my research themes and expertise also cover brain connectivity (functional and structural), cerebral waste clearance, ultra-high field imaging and machine learning techniques. I have employed these techniques in a variety of pathologies, such as focal and generalized epilepsy, Alzheimer's disease, small-fiber neuropathy, cerebral small vessel disease and stroke.

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9. Thesis promotorship and supervision

Member of supervisory team (co-promotor)

Expected

Lis van den Boogaard, Cognitive Neuroscience, 2024-2028
IMPROMYND study, Improving Myelin imaging for NeuroDegenerative disorders

Member of supervisory team (not as co-promotor)

Ongoing

Daniel Uher, Neuroengineering, 2021-2025
EpiUltra study, Ultra High Field MRI in patients with suspected focal, drug-resistant epilepsy and negative 3T MRI

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10. Scientific quality

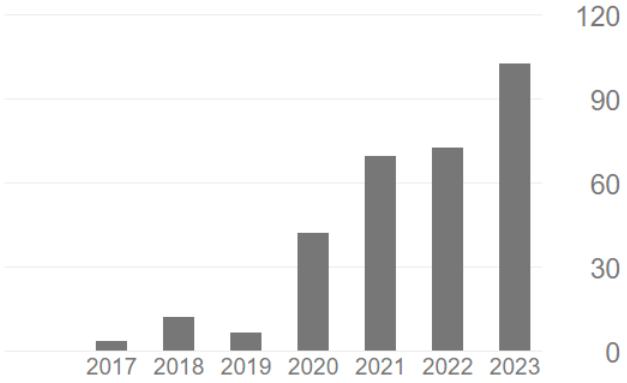
10.1. List of publications

Indicate estimators of quality in your field (i.e # first/second/(second)last/sole authorship, top tier journals in your discipline, etc.)

First authorships: 14/25
Second authorships: 1/25
Last authorships: 2/25

Citations (google scholar, November 2023)

	All	Since 2018
Citations	322	317
h-index	10	10
i10-index	10	10



Subdivided into the following categories and in counter-chronological order. Indicate open access publications using an asterisk.

a. Scientific publications in international journals with a referee system

2023

1. van Gool R, Far A, **Drenthen GS**, Jansen JFA, Goijen CP, Backes WH, Linden DEJ, Merkies ISJ, Faber CG, Upadhyay J, Hoeijmakers JGJ. Peripheral Pain Captured Centrally: Altered Brain Morphology on MRI in Small Fiber Neuropathy Patients With and Without an SCN9A Gene Variant. The Journal of Pain. 2023.

2. Eussen MJA, Jansen JFA, Voncken TPC, Debeij-Van Hall MHJA, Hendriksen JGM, Vermeulen RJ, Klinkenberg S, Backes WH, **Drenthen GS**. Exploring the core network of the structural covariance network in childhood absence epilepsy. Heliyon. 2023. In Press.

3. **Drenthen GS**, Elschot EP, van der Knaap N, Uher D, Voorter PHM, Backes WH, Jansen JFA, van der Thiel MM. Imaging Interstitial Fluid With MRI: A Narrative Review on the Associations of Altered Interstitial Fluid With Vascular and Neurodegenerative Abnormalities. J Magn Reson Imaging. 2023 Oct 12. doi: 10.1002/jmri.29056. Epub ahead of print. PMID: 37823526.

4. **Drenthen GS**, Beckers AB, Jansen JFA, Backes WH, Poser BA, Keszthelyi D. Comparing the efficacy of data-driven denoising methods for a multi-echo fMRI acquisition at 7T. Neuroimage. 2023 Oct 15;280:120361. doi: 10.1016/j.neuroimage.2023.120361. Epub 2023 Sep 3. PMID: 37669723.

5. Voorter PHM, Backes WH, Gurney-Champion OJ, Wong SM, Staals J, van Oostenbrugge RJ, van der Thiel MM, Jansen JFA, **Drenthen GS**. Improving microstructural integrity, interstitial fluid, and blood microcirculation images from multi-b-value diffusion MRI using physics-informed neural networks in cerebrovascular disease. Magn Reson Med. 2023 Oct;90(4):1657-1671. doi: 10.1002/mrm.29753. Epub 2023 Jun 15. PMID: 37317641.

6. Elschot EP, Backes WH, de Jong JJA, **Drenthen GS**, Wong SM, Staals J, Postma AA, Rouhl RPW, van Oostenbrugge RJ, Jansen JFA. Assessment of the clinical feasibility of detecting subtle blood-brain barrier leakage in cerebral small vessel disease using dynamic susceptibility contrast MRI. Magn Reson Imaging. 2023 Oct;102:55-61. doi: 10.1016/j.mri.2023.04.004. Epub 2023 May 1. PMID: 37137345.

7. Uher D, **Drenthen GS**, Schijns OEMG, Colon AJ, Hofman PAM, van Lanen RHGJ, Hoeberigs CM, Jansen JFA, Backes WH. Advances in Image Processing for Epileptogenic Zone Detection with MRI. Radiology. 2023 Jun;307(5):e220927. doi: 10.1148/radiol.220927. Epub 2023 May 2. PMID: 37129491.

8. **Drenthen GS**, Jansen JFA, van der MM, Voorter PHM, Backes WH. An optimized b-value sampling for the quantification of interstitial fluid using diffusion- weighted MRI, a genetic algorithm approach. Magn Reson Med. 2023 Jul;90(1):194-201. doi: 10.1002/mrm.29612. Epub 2023 Feb 6. PMID: 36744716.

9. Dietrich O, Cai M, Tuladhar AM, Jacob MA, **Drenthen GS**, Jansen JFA, Marques JP, Topalis J, Ingrisch M, Ricke J, de Leeuw FE, Duering M, Backes WH. Integrated intravoxel incoherent motion tensor and diffusion tensor brain MRI in a single fast acquisition. NMR Biomed. 2023 Jul;36(7):e4905. doi: 10.1002/nbm.4905. Epub 2023 Feb 6. PMID: 36637237.

2022

10. **Drenthen GS**, Backes WH, Freeze WM, Jacobs HIL, Verheggen ICM, van Boxtel MPJ, Hoff EI, Verhey FR, Jansen JFA. Rich-Club Connectivity of the Structural Covariance Network Relates to Memory Processes in Mild Cognitive Impairment and Alzheimer's Disease. J Alzheimers Dis. 2022;89(1):209-217. doi: 10.3233/JAD-220175. PMID: 35871335; PMCID: PMC9484119.

11. van Lanen RHGJ, Wiggins CJ, Colon AJ, Backes WH, Jansen JFA, Uher D, **Drenthen GS**, Roebroeck A, Ivanov D, Poser BA, Hoeberigs MC, van Kuijk SMJ, Hoogland G, Rijkers K, Wagner GL, Beckervordersandforth J, Delev D, Clusmann H, Wolking S, Klinkenberg S, Rouhl RPW, Hofman PAM, Schijns OEMG. Value of ultra-high field MRI in patients with suspected focal epilepsy and negative 3 T MRI (EpiUltraStudy): protocol for a prospective, longitudinal therapeutic study. Neuroradiology. 2022 Apr;64(4):753-764. doi: 10.1007/s00234-021-02884-8. Epub 2022 Jan 5. PMID: 34984522; PMCID: PMC8907090.

2021

12. Monereo-Sánchez J, de Jong JJA, **Drenthen GS**, Beran M, Backes WH, Stehouwer CDA, Schram MT, Linden DEJ, Jansen JFA. Quality control strategies for brain MRI segmentation and parcellation: Practical approaches and recommendations - insights from the Maastricht study. Neuroimage. 2021 Aug 15;237:118174. doi: 10.1016/j.neuroimage.2021.118174. Epub 2021 May 15. PMID: 34000406.

13. **Drenthen GS**, Jansen JFA, Gommer E, Gupta L, Hofman PAM, van Kranen-Mastenbroek VH, Hilkman DM, Vlooswijk MCG, Rouhl RPW, Backes WH. Predictive value of functional MRI and EEG in epilepsy diagnosis after a first seizure. Epilepsy Behav. 2021 Feb;115:107651. doi: 10.1016/j.yebeh.2020.107651. Epub 2020 Dec 11. PMID: 33309424.

2020

14. **Drenthen GS**, Backes WH, Jansen JFA. Estimating myelin-water content from anatomical and diffusion images using spatially undersampled myelin-water imaging through machine learning. Neuroimage. 2021 Feb 1;226:117626. doi: 10.1016/j.neuroimage.2020.117626. Epub 2020 Dec 8. PMID: 33301943.

15. **Drenthen GS**, Fasen F, Fonseca Wald ELA, Backes WH, Aldenkamp AP, Vermeulen RJ, Debeij-van Hall M, Hendriksen J, Klinkenberg S, Jansen JFA. Functional brain network characteristics are associated with epilepsy severity in childhood absence epilepsy. Neuroimage Clin. 2020;27:102264. doi: 10.1016/j.nicl.2020.102264. Epub 2020 Apr 23. PMID: 32387851; PMCID: PMC7210592.

16. **Drenthen GS**, Fonseca Wald ELA, Backes WH, Aldenkamp AP, Vermeulen RJ, Debeij-van Hall MHJA, Klinkenberg S, Jansen JFA. Constructing an Axonal-Specific Myelin Developmental Graph and its Application to Childhood Absence Epilepsy. J Neuroimaging. 2020 May;30(3):308-314. doi: 10.1111/jon.12707. Epub 2020 Apr 7. PMID: 32255537; PMCID: PMC7317939.

17. **Drenthen GS**, Backes WH, Aldenkamp AP, Vermeulen RJ, Klinkenberg S, Jansen JFA. On the merits of non-invasive myelin imaging in epilepsy, a literature review. J Neurosci Methods. 2020 May 15;338:108687. doi: 10.1016/j.jneumeth.2020.108687. Epub 2020 Mar 12. PMID: 32173402.

18. Fonseca Wald ELA, Hendriksen JGM, **Drenthen GS**, Kuijk SMJV, Aldenkamp AP, Vles JSH, Vermeulen RJ, Debeij van Hall MHJA, Klinkenberg S. Correction to: Towards a Better Understanding of Cognitive Deficits in Absence Epilepsy: a Systematic Review and Meta-Analysis. Neuropsychol Rev. 2020 Mar;30(1):164-165. doi: 10.1007/s11065-019-09425-4. Erratum for: Neuropsychol Rev. 2019 Dec;29(4):421-449. PMID: 31863246; PMCID: PMC7089885.

2019

19. Fonseca Wald ELA, Hendriksen JGM, **Drenthen GS**, Kuijk SMJV, Aldenkamp AP, Vles JSH, Vermeulen RJ, Debeij-van Hall MHJA, Klinkenberg S. Towards a Better Understanding of Cognitive Deficits in Absence Epilepsy: a Systematic Review and Meta-Analysis. Neuropsychol Rev. 2019 Dec;29(4):421-449. doi: 10.1007/s11065-019-09419-2. Epub 2019 Nov 27. Erratum in: Neuropsychol Rev. 2019 Dec 20;: PMID: 31776780; PMCID: PMC6892766.

20. Wong SM, Backes WH, **Drenthen GS**, Zhang CE, Voorter PHM, Staals J, van Oostenbrugge RJ, Jansen JFA. Spectral Diffusion Analysis of Intravoxel Incoherent Motion MRI in Cerebral Small Vessel Disease. J Magn Reson Imaging. 2020 Apr;51(4):1170-1180. doi: 10.1002/jmri.26920. Epub 2019 Sep 4. PMID: 31486211; PMCID: PMC7078988.

21. **Drenthen GS**, Fonseca Wald ELA, Backes WH, Debeij-Van Hall MHJA, Hendriksen JGM, Aldenkamp AP, Vermeulen RJ, Klinkenberg S, Jansen JFA. Lower myelin-water content of the frontal lobe in childhood absence epilepsy. Epilepsia. 2019 Aug;60(8):1689-1696. doi: 10.1111/epi.16280. Epub 2019 Jul 8. PMID: 31283841.

22. **Drenthen GS**, Backes WH, Aldenkamp AP, Jansen JFA. Applicability and reproducibility of 2D multi-slice GRASE myelin water fraction with varying acquisition acceleration. Neuroimage. 2019 Jul 15;195:333-339. doi: 10.1016/j.neuroimage.2019.04.011. Epub 2019 Apr 6. PMID: 30965132.

23. **Drenthen GS**, Backes WH, Aldenkamp AP, Op 't Veld GJ, Jansen JFA. A new analysis approach for T2 relaxometry myelin water quantification: Orthogonal Matching Pursuit. Magn Reson Med. 2019 May;81(5):3292-3303. doi: 10.1002/mrm.27600. Epub 2018 Nov 16. PMID: 30444019; PMCID: PMC6587563.

2018

24. **Drenthen GS**, Backes WH, Rouhl RPW, Vlooswijk MCG, Majoie MHJM, Hofman PAM, Aldenkamp AP, Jansen JFA. Structural covariance networks relate to the severity of epilepsy with focal-onset seizures. Neuroimage Clin. 2018;20:861-867. doi: 10.1016/j.nicl.2018.09.023. Epub 2018 Sep 26. PMID: 30278373; PMCID: PMC6169103.

2016

25. **Drenthen GS**, Barendse EM, Aldenkamp AP, van Veenendaal TM, Puts NA, Edden RA, Zinger S, Thoonen G, Hendriks MP, Kessels RP, Jansen JF. Altered neurotransmitter metabolism in adolescents with high-functioning autism. Psychiatry Res Neuroimaging. 2016 Oct 30;256:44-49. doi: 10.1016/j.pscychresns.2016.09.007. Epub 2016 Sep 20. PMID: 27685800; PMCID: PMC5385138.

b. LE: Letters to the Editor;

Not applicable

c. WN: Scientific publication in national journal with referee system;

Not applicable

d. WB/WBC: Scientific publication as a book or as a contribution to a book including proceedings;

Not applicable

e. Other publications.

Editorials

1. Jansen JFA, **Drenthen GS**. Editorial for "MRI-Based Back Propagation Neural Network Model as a Powerful Tool for Predicting the Response to Induction Chemotherapy in Locoregionally Advanced Nasopharyngeal Carcinoma". J Magn Reson Imaging. 2022 Aug;56(2):560-561. doi: 10.1002/jmri.28049. Epub 2021 Dec 28. PMID: 34962010.

2. **Drenthen GS**, Jansen JFA. Editorial for "Deep Learning-Enabled Identification of Autoimmune Encephalitis on 3D Multi-Sequence MRI". J Magn Reson Imaging. 2022 Apr;55(4):1093-1094. doi: 10.1002/jmri.27951. Epub 2021 Oct 20. PMID: 34668607.

Non-refereed publications

1. Merkofer JP, van de Sande DMJ, Amirrajab S, **Drenthen GS**, Veta M, Jansen JFA, Breeuwer M, van Sloun RJG. "A Deep Learning Approach Utilizing Covariance Matrix Analysis for the ISBI Edited MRS Reconstruction Challenge". arXiv:2306.02984. doi: https://doi.org/10.48550/arXiv.2306.02984

2. Berto RP, Bugler H, Dias G, Oliveira M, Ueda L, Dertkigil S, Costa PDP, Rittner L, Merkofer JP, Van de Sande DMJ, Amirrajab S, **Drenthen GS**, Veta M, Jansen JFA, Breeuwer M, van Sloun RJG, Qayyum A, Rodero C, Niederer S, Souza R, Harris AD. "Advancing GABA-edited MRS Research through a Reconstruction Challenge". bioRxiv: 2023.09. 21.557971. doi: https://doi.org/10.1101/2023.09.21.557971

List of ten most important publications (including motivation, Journal, and you may use Category normalized citation Index (CNCI) to indicate impactful publications. The university library may provide the CNCI. *(not compulsory for applicants for an assistant professorship)*

1. **Drenthen G.S.**, Backes W.H., Aldenkamp A.P., Jansen, J.F.A. 2019. Applicability and reproducibility of 2D multi-slice GRASE myelin water fraction with varying acquisition acceleration. NeuroImage 195, 333-339. Doi: https://doi.org/10.1016/j.neuroimage.2019.04.011

2. **Drenthen G.S.**, Backes W.H., Aldenkamp A.P., Op 't Veld G.J., Jansen, J.F.A. 2019. A new analysis approach for T2 relaxometry myelin water quantification: Orthogonal

Matching Pursuit. Magn. Reson. Med. 81, 3293-3303. Doi: https://doi.org/10.1002/mrm.27600

3. **Drenthen G.S.**, Fonseca Wald E.L.A., Backes W.H., Debeij-Van Hall M.H.J.A., Hendriksen J.G.M., Aldenkamp A.P., Vermeulen R.P., Klinkenberg S., Jansen J.F.A. 2019. Lower myelin-water content of the frontal lobe in childhood absence epilepsy. Epilepsia 60, 1689-1696. Doi: https://doi.org/10.1111/epi.16280

I am most proud of the contributions I have made to the field of in-vivo myelin imaging. From a methodological viewpoint, I developed a new acquisition method (multi-slice multi-echo GRASE) which improves upon the existing methods in terms of acquisition time and robustness to subject motion. Subsequently, the reproducibility of the optimized acquisition was shown to be improved [1]. Next, a new analysis method, the orthogonal matching pursuit, was introduced, which was able to provide a more accurate estimation of the myelin content compared to the conventional analysis methods [2]. Altogether, these technical advances can benefit future patients suffering from myelin related neurological disorders. Moreover, these novel methods were applied in a pediatric epilepsy study, where I worked in close collaborations with clinical experts [3]. This study is one of the first to show quantitative myelin-specific abnormalities in a prospective epilepsy sample.

4. **Drenthen G.S**., Backes W.H., Rouhl R.P.W., Vlooswijk M.C.G., Majoie M.H.J.M., Hofman P.A.M., Aldenkamp A.P., Jansen J.F.A. 2018. Structural covariance networks relate to the severity of epilepsy with focal-onset seizures. NeuroImage: Clin. 20, 861-867. Doi: https://doi.org/10.1016/j.nicl.2018.09.023

5. **Drenthen G.S**., Backes W.H., Freeze, W.M., Jacobs H.I.L., Verheggen I., van Boxtel M.P.J., Hoff E.I., Verhey F.R., Jansen J.F.A. 2022. Rich-club connectivity of the structural covariance network is reduced in mild cognitive impairment and Alzheimer's disease. J. Alzheimers Dis. Pre-press. Doi: https://doi.org/10.3233/JAD-220175

Besides myelin imaging, I have also gained extensive experience in graph and network analysis of the human brain. For example, I have demonstrated the potential of structural covariance networks (SCN), deduced from regular structural clinical scans, combined with graph theoretical analysis, to unveil the brain's network organization, in the fields of epilepsy [4], and dementia [5]. We found that the topographical organization of the SCNs were related to epilepsy severity, AD-related atrophy and cognitive decline. The relevance of my work on SCNs in epilepsy was awarded the best poster prize at the IEEE West Europe Student and Young Professional congress in 2015 as well as the international clinical symposium Kempenhaeghe in 2017.

6. **Drenthen G.S**., Barendse E.M., Aldenkamp A.P., van Veenendaal T.M., Puts N.A.J., Edden R.A.E., Zinger S., Thoonen G., Hendriks M.P.H., Kessels R.P.C., Jansen J.F.A. 2016. Altered neurotransmitter metabolism in adolescents with high-functioning autism. Psychiatry Res. Neuroimaging 256:44-9. Link: https://doi.org/10.1016/j.pscychresns.2016.09.007

Prior to my PhD training, as a master student, I was honored that the work of my graduation project on magnetic resonance spectroscopy in high-functioning autism was deemed as high-quality and relevant enough to be promoted to an international peer-reviewed article [6]. Moreover, this work won the best student-paper award of the IEEE student branch Eindhoven in 2015, and it is well received by the scientific community, which is evident from the >50 citations it has received.

7. **Drenthen G.S.**, Backes W.H., Jansen J.F.A. 2021. Estimating myelin-water content from anatomical and diffusion images using spatially undersampled myelin-water imaging through machine learning. NeuroImage 226, 117626. Doi: https://doi.org/10.1016/j.neuroimage.2020.117626

8. Voorter P.H.M., Backes W.H., Gurney-Champion O.J., Wong S.M., Staals J., van Oostenbrugge R.J., van der Thiel M.M., Jansen J.F.A., and **Drenthen G.S.**, 2022. Three-component IVIM fitting in cerebrovascular disease using physics-informed neural networks: repeatability and accuracy. Proc. Intl. Soc. Mag. Reson. Med. 1726. Link: https://index.mirasmart.com/ISMRM2022/PDFfiles/1726.html

9. **Drenthen G.S.**, Jansen J.F.A., 2022. Editorial on: "Deep Learning-Enabled Identification of Autoimmune Encephalitis on 3D Multi-sequence MRI" J. Magn. Reson. Imaging 55(4), 1093-1094. Link: https://doi.org/10.1002/jmri.27951

Over the years, I have either led, supervised, or been involved in several projects that utilized advanced machine learning methods. For example, using neural networks, I provided a 5-fold acceleration of myelin imaging acquisition by exploiting the information in standard clinical scans [7]. This work is especially relevant to the proposed research idea, as it provides a proof of concept for extracting quantitative myelin-proxies from standard clinical scans. Furthermore, as a last author, I supervised and worked on a physics-informed neural network approach for spectral fitting of three diffusion components based on the intra-voxel incoherent motion mathematical model [8]. Here, we showed that the physics-informed approach outperforms traditional fitting methods in terms of accuracy and repeatability. Moreover, as a deep-learning expert, I was honored to be invited to write an editorial on a peer-reviewed article that utilized deep learning techniques for early diagnosis of encephalitis using MRI [9].

10. **Drenthen, G.S.** GitHub repository, https://github.com/GSDrenthen

I believe that sharing research in such a way that others can easily implement the utilized methodology and validate the results is very important. Therefore, I have made it my mission to always share the algorithms and scripts required to perform the analysis in a public repository [10]. Although there are often practical limitations when sharing raw data, I believe that open access publishing and sharing of in-house developed algorithms on public repositories like GitHub are important. This allows results to be tested and validated by other researchers, and potentially build their own work on top of the established ground much more quickly and efficiently.

10.2. Major received competitive funding from national and international organizations

Name project:	**More than meets the eye - Unveiling hidden MRI tissue markers for disease progression in dementia**
Period:	2024-2029
Project coordinator:	**G.S. Drenthen**
Other participants:	JFA Jansen, IHGB Ramakers, WJ Jansen, AA Jacobi-Postma, S Köhler, PJ Visser and WH Backes
Applicant address:	Maastricht UMC+ Postbus 5800 6202 AZ Maastricht
Funded by:	ZonMW
Sum of contract in Euro's:	300.000,-
Sum to person C.V.:	300.000,-
Results:	n.a. (project is yet to start)

Name project:	**Do cerebral tissue markers explain why lifestyle factors affect cognition?**
Period:	2023-2025
Project coordinator:	**G.S. Drenthen**
Other participants:	WJ Jansen and S Köhler
Applicant address:	Maastricht UMC+ Postbus 5800 6202 AZ Maastricht
Funded by:	Alzheimer Nederland
Sum of contract in Euro's:	53.000,-
Sum to person C.V.:	53.000,-
Results:	n.a. (project is ongoing)

Name project:	**Beyond the grayscale of WM lesions in dementia: vascular or demyelinating origin**
Period:	2022-2023
Project coordinator:	**G.S. Drenthen**
Other participants:	n.a.
Applicant address:	Maastricht UMC+ Postbus 5800 6202 AZ Maastricht
Funded by:	SWOL University fund Limburg
Sum of contract in Euro's:	7.500,-
Sum to person C.V.:	7.500,-
Results:	n.a. (project is ongoing)

Name project:	**Optimal timing of cell therapy for cerebral palsy after perinatal asphyxia**
Period:	2024-2028
Project coordinator:	R. Jellema
Other participants:	**G.S. Drenthen**, T. Wolfs, R.J. Vermeulen, C. Nijboer, M. Benders, D. Ophelders
Applicant address:	Maastricht UMC+ Postbus 5800 6202 AZ Maastricht

Funded by:	Hersenstichting (Op weg naar genezing)
Sum of contract in Euro's:	600.000,-
Sum to person C.V.:	30.000,-
Results:	n.a. (project is ongoing)

Name project:	**Improving Myelin imaging for NeuroDegenerative disorders (IMPROMYND)**
Period:	2024-2028
Project coordinator:	J.F.A. Jansen
Other participants:	**G.S. Drenthen**, O. Gerlach, A.A. Jacobi-Postma, S. Zinger, J.W.M. Bergmans, M. Breeuwer
Applicant address:	Maastricht UMC+ Postbus 5800 6202 AZ Maastricht
Funded by:	Hersenstichting (BRAINS)
Sum of contract in Euro's:	923.000,-
Sum to person C.V.:	50.000,-
Results:	n.a. (project is ongoing)

Name project:	**AI-assisted 4D cortical assessment for minimally invasive treatment of epilepsy (AIM@Epilepsy)**
Period:	2024-2028
Project coordinator:	A.L.A.J. Dekker
Other participants:	**G.S. Drenthen**, L. Wee, O. Schijns, V. van Kranen-Mastenbroek, E. Gommer, W.H. Backes, R. Marroquim, S. Evers, G. Mastrigt, S. Tousseyn, A. Colon, D. Eekers, R. Houben, M. Jacobs, N. Nierenberg.
Applicant address:	Maastricht UMC+ Postbus 5800 6202 AZ Maastricht
Funded by:	NWO
Sum of contract in Euro's:	1.150.000,-
Sum to person C.V.:	30.000,-
Results:	n.a. (project is ongoing)

Total sum to person C.V.: 470.500,-

10.3. Received funding from industry

Not applicable

10.4. Current projects *(not yet described under funded project 10.1 and 10.3)*

Name project:	**MiCRovascular rarefaction in vascUlar Cognitive Impairment and heArt failure (CRUCIAL)**
Partners:	R.J. van Oostenbrugge, J. Staals, R. Rouhl, W.H. Backes, T. Treibel, A. Gonzalas
Period:	2020-2023
Funded by:	H2020
PhD's:	n.a.

Name project:	**EpiUltra study: Ultra High Field (UHF) MRI (7T + 9.4T) for the detection of brain abnormalities in patients with suspected focal, drug-resistant epilepsy and negative 3T MRI.**
Partners:	O. Schijns, A. Colon, J.F.A. Jansen, W.H. Backes
Period:	2021-2025
Funded by:	EpilepsieNL
PhD's:	n.a.

Name project:	**Vagal Nerve Stimulation in Irritable Bowel Syndrome (RESILIENCE)**
Partners:	D. Keszthelyi
Period:	2022-2024
Funded by:	ERC
PhD's:	n.a.

Name project:	**Central pain location in SCN9A-associated SFN - an fMRI pilot study**
Partners:	J.G.J Hoeijmakers, C.G. Faber
Period:	2020-2023
Funded by:	Prinses Beatrix Spierfonds
PhD's:	n.a.

Name project: **Spectral Analysis in life sciences and materials sciences through Artificial Intelligence**

Partners: J.F.A. Jansen, M. Breeuwer, J. van den Brink, R. van Sloun, M. Veta

Period: 2020-2023

Funded by: ITAE

PhD's: n.a.

10.5. Most important scientific awards

Awards

2021 Best Thesis Award, School for Mental Health and Neuroscience, Maastricht

2017 Best poster award, International clinical symposium Kempenhaeghe

2015 Best paper award, IEEE SBE Student Paper Contest

2015 Best poster award, IEEE West-European Student and Young Professional Congress

Honors

2023 Session chair (moderator) ISMRM Benelux meeting, Brussels, The Netherlands

2022 Session chair (moderator) ISMRM Benelux meeting, Maastricht, The Netherlands

2020 ISMRM Educational Stipend, Virtual

2018 ISMRM Educational Stipend, Paris

2016 ISMRM Educational Stipend, Singapore

10.6. Contributions to meetings, seminars and lectures as invited speaker

Oral presentations at scientific meetings (first-authorships)

1. **Drenthen GS**, Jansen JFA, Voorter PHM, de Jong JJA and Backes WH. Evaluation of different b-value sampling strategies in cerebral IVIM: application to interstitial fluid. 13th Annual meeting of the ISMRM Benelux, 2021, online.

2. **Drenthen GS**, Backes WH, Fonseca Wald ELA, Klinkenberg S, Vermeulen RJ, Hendriksen J, Debeij van Hall M, Aldenkamp AP, Jansen JFA. Characterizing healthy development of axonal-myelin Cross-sectional maturational differences in childhood absence epilepsy. 36th Annual meeting of the ESMRMB 2019, Rotterdam.

3. **Drenthen GS**, Fonseca Wald ELA, Backes WH, Klinkenberg S, Debeij-van Hall M, Vermeulen RJ, Aldenkamp AP, Jansen JFA. T2 relaxometry reveals frontal demyelination in children with childhood absence epilepsy. 11th Annual meeting of the ISMRM Benelux, 2019, Leiden.

4. **Drenthen GS**, Jansen JFA, Backes WH, Aldenkamp AP. Myelin-water quantification in children with early absence epilepsy. Junior Researchers day, Department of Radiology and Nuclear Medicine, 2019, Maastricht.

5. **Drenthen GS**, Jansen JFA, Backes WH, Aldenkamp AP. Myelin-water quantification in children with early absence epilepsy. Junior Researchers day, Department of Radiology and Nuclear Medicine, 2018, Maastricht.

6. **Drenthen GS**, Backes WH, Aldenkamp AP, Jansen JFA. Myelin-Water Quantification: Orthogonal Matching Pursuit versus Non-Negative Least Squares. 10th Annual meeting of the ISMRM Benelux, 2018, Antwerp.

7. **Drenthen GS**, Jansen JFA, Backes WH, Aldenkamp AP. Myeline kwantificatie met behulp van MRI: vergelijking van verschillende analytische technieken. Wetenschapsdag (Scienceday) 2018, Department of Neurology, 2017, Maastricht.

8. **Drenthen GS**, Jansen JFA, Backes WH, Aldenkamp AP. Myelin imaging in children with early absence epilepsy. Junior Researchers day, Department of Radiology and Nuclear Medicine, 2017, Maastricht.

9. **Drenthen GS**, Vlooswijk MCG, Majoie HJM, Hofman PAM, Aldenkamp AP, Backes WM, Jansen JFA. Individual measures of network efficiency in patients with epilepsy based on cortical thickness. 24th Annual meeting of the ISMRM, May 11th 2016, Singapore. Program number: 0779.

10. **Drenthen GS**, Jansen JFA, Backes WH, Aldenkamp AP. Longitudinal Early Epilepsy Study. Junior Researchers day, Department of Radiology and Nuclear Medicine, 2016, Maastricht.

11. **Drenthen GS**, Aldenkamp AP, Jansen JFA. Altered connectivity in epilepsy patients based on cortical thickness: A graph analysis. 1st IEEE West-European Student and Young Professional Congress, 2015, Eindhoven. (Pitch)

Poster presentations at scientific meetings (first-authorships)

1. **Drenthen GS**, Far A, Faber CG, Upadhyay J, Linden D, van Gool R, Backes WH, Hoeijmakers JGJ, Jansen JFA. DTI reveals abnormal structural connectivity of pain-associated regions in SCN9A-associated small fibre neuropathy. 31st Annual meeting of the ISMRM, 2023, Toronto.

2. **Drenthen GS**, Far A, Faber CG, Upadhyay J, Linden D, van Gool R, Backes WH, Hoeijmakers JGJ, Jansen JFA. Altered response of the functional network during pain stimulus in small fiber neuropathy. 31st Annual meeting of the ISMRM, 2023, Toronto.

3. **Drenthen GS**, Voorter PHM, van Dinther M, Staals J, van Oostenbrugge R, Backes WM, Jansen JFA. Exploring microstructural changes in patients with vascular cognitive impairment using multi-b-value diffusion and T2-relaxometry MRI. 31st Annual meeting of the ISMRM, 2023, Toronto.

4. **Drenthen GS**, Far A, Faber CG, Upadhyay J, Linden D, van Gool R, Backes WH, Hoeijmakers JGJ, Jansen JFA. DTI reveals abnormal structural connectivity of pain-associated regions in SCN9A-associated small fibre neuropathy. 15th Annual meeting of the ISMRM Benelux, 2023, Brussels.

5. **Drenthen GS**, Jansen JFA, van der Thiel MM, Voorter PHM, Backes WM. Optimal b-value sampling for interstitial fluid estimation in cerebral IVIM imaging, a genetic algorithm approach. 30th Annual meeting of the ISMRM, 2022, Londen

6. **Drenthen GS**, Jansen JFA, van der Thiel MM, Voorter PHM, Backes WM. Optimal b-value sampling for interstitial fluid estimation in cerebral IVIM imaging, a genetic algorithm approach. 14th Annual meeting of the ISMRM Benelux, 2022, Maastricht

7. **Drenthen GS**, Backes WH, Freeze W, Jansen JFA. Rich-club connectivity of the structural covariance network is reduced in mild cognitive impairment and Alzheimer's disease. 29th Annual meeting of the ISMRM, 2021, Online.

8. **Drenthen GS**, Jansen JFA, Voorter PHM, de Jong J, Backes WH, Jansen JFA. Evaluation of different b-value sampling strategies in cerebral IVIM: application to interstitial fluid. 29th Annual meeting of the ISMRM, 2021, Online.

9. **Drenthen GS**, Jansen JFA, Voorter PHM, de Jong J, Backes WH, Jansen JFA. Evaluation of different b-value sampling strategies in cerebral IVIM: application to interstitial fluid. 13th Annual meeting of the ISMRM Benelux, 2021, Online.

10. **Drenthen GS**, Backes WH, Jansen JFA. Accelerating myelin-water imaging by extracting myelin content from anatomical and diffusion images through machine learning. 28th Annual meeting of the ISMRM, 2020, Online.

11. **Drenthen GS**, Backes WH, Jansen JFA. Accelerating myelin-water imaging by extracting myelin content from anatomical and diffusion images through machine learning. 12th Annual meeting of the ISMRM Benelux, 2020, Arnhem.

12. **Drenthen GS**, Backes WH, Fonseca Wald ELA, Klinkenberg S, Vermeulen RJ, Hendriksen J, Debeij van Hall M, Aldenkamp AP, Jansen JFA. Characterizing healthy development of axonal-myelin Cross-sectional maturational differences in childhood absence epilepsy. 36th Annual meeting of the ESMRMB 2019, Rotterdam.

13. **Drenthen GS**, Backes WH, Fonseca Wald ELA, Klinkenberg S, Vermeulen RJ, Hendriksen J, Debeij van Hall M, Aldenkamp AP, Jansen JFA. Myelin quantification in children with childhood absence epilepsy. 11th Annual meeting of the ISMRM Benelux, 2019, Antwerp.

14. **Drenthen GS**, Backes WH, Fonseca Wald ELA, Klinkenberg S, Vermeulen RJ, Hendriksen J, Debeij van Hall M, Aldenkamp AP, Jansen JFA. Characterizing healthy development of axonal-myelin: Cross-sectional maturational differences in childhood absence epilepsy. 21st Annual international clinical symposium Kempenhaeghe, 2019, Heeze.

15. **Drenthen GS**, Backes WH, Fonseca Wald ELA, Klinkenberg S, Vermeulen RJ, Hendriksen J, Debeij van Hall M, Aldenkamp AP, Jansen JFA. Myelin quantification in children with childhood absence epilepsy. MHeNS Research day, 2018, Maastricht.

16. **Drenthen GS**, Backes WH, Aldenkamp AP, Jansen JFA. Myelin-Water Quantification: Orthogonal Matching Pursuit versus Non-Negative Least Squares. 26th Annual meeting of the ISMRM, 2018, Paris.

17. **Drenthen GS**, Backes WH, Aldenkamp AP, Jansen JFA. Reproducibility of Myelin Water Fraction for GRASE sequences with a varying SENSE factor. 26th Annual meeting of the ISMRM, 2018, Paris.

18. **Drenthen GS**, Backes WH, Vlooswijk MCG, Majoie HJM, Hofman PAM, Aldenkamp AP, Jansen JFA. Altered structural correlation networks (SCN's) in cryptogenic localization-related epilepsy (CLRE) are associated with seizure frequency. 32nd International Epilepsy Congress, 2017, Barcelona.

19. **Drenthen GS**, Backes WH, Aldenkamp AP, Jansen JFA. Myelin quantification using Magnetic Resonance Imaging: comparison of different analytic techniques. 4th IEEE SBE poster contest, 2017, Eindhoven.

20. **Drenthen GS**, Backes WH, Vlooswijk MCG, Majoie HJM, Hofman PAM, Aldenkamp AP, Jansen JFA. Altered structural correlation networks (SCN's) in cryptogenic localization-

related epilepsy (CLRE) are associated with seizure frequency. 19th Annual international clinical symposium Kempenhaeghe, 2017, Heeze.

21. **Drenthen GS**, Backes WH, Aldenkamp AP, Jansen JFA. Myelin Water Fraction estimation using a two-step exponential model - Phantom and in vivo results. 9th Annual meeting of the ISMRM Benelux, 2017, Tilburg.

22. **Drenthen GS**, Backes WH, Aldenkamp AP, Jansen JFA. Myelin Water Fraction estimation using a two-step exponential model - Phantom and in vivo results. MHeNS Research day, 2016, Maastricht.

23. **Drenthen GS**, Aldenkamp AP, Jansen JFA. A Comparison of Graph Analysis and Maximum Spanning Tree Analysis in Epilepsy. 3rd IEEE SBE poster contest, 2016, Eindhoven.

24. **Drenthen GS**, Vlooswijk MCG, Majoie HJM, Hofman PAM, Aldenkamp AP, Backes WH, Jansen JFA. Individual measures of network efficiency in patients with epilepsy, based on cortical thickness. 8th Annual meeting of the ISMRM Benelux, 2016, Eindhoven.

25. **Drenthen GS**, Aldenkamp AP, Jansen JFA. Altered connectivity in epilepsy patients based on cortical thickness: A graph analysis. 1st IEEE West-European Student and Young Professional Congress, 2015, Eindhoven.

Lectures as invited speaker

2024 Keynote lecture: "Cerebral MRI in small-fiber neuropathy". NeuroMuscular Diseases (NMD) research symposium, Amsterdam.

2023 Keynote lecture: "Imaging myelin in the young brain". Annual Dutch Flemish Neonatal Neurology Symposium, Maastricht.

2020 Creating myelin-specific maps from standard clinical brain MRI, a machine learning approach. hMRI meeting, Department of Neurophysics, Max Planck institute, Leipzig. (online)

2019 Magnetic Resonance Imaging as a tool for in vivo Myelin quantification. Cognitive Neuroscience (5XSH0) course, Eindhoven University of Technology.

2019 MRI myelin measurements as tool for development: Application in Childhood Absence Epilepsy. 21st Annual international clinical symposium Kempenhaeghe.

2018 Magnetic Resonance Imaging as a tool for in vivo Myelin quantification. Cognitive Neuroscience (5XSH0) course, Eindhoven University of Technology.

2018 Myelin quantification using the Orthogonal Matching Pursuit. 20th Annual international clinical symposium Kempenhaeghe, Neu3Ca forum.

2017 Magnetic resonance spectroscopy in Autism. Cognitive Neuroscience (5XSH0) course, Eindhoven University of Technology.

2017 Advanced imaging: cortical thickness-graph analysis and fMRI. 19th Annual international clinical symposium Kempenhaeghe, Neu3Ca forum.

2016 Magnetic resonance spectroscopy in Autism. Cognitive Neuroscience (5XSH0) course, Eindhoven University of Technology.

10.7. Memberships
(including period)

Please add specific information on your role i.e. member, chair, treasurer etc.

a. Associations/Societies

2016-present	Member of the International Society of Magnetic Resonance in Medicine (ISMRM)
2012-2014	Board member of the IEEE Student Branch Eindhoven
2011-2015	Member of the Institute of Electrical and Electronics Engineers (IEEE)

b. Scientific committees

Not applicable

c. Editorial Boards, editorships

2023	Editorial Board of Journal of Alzheimer's Disease
2021-current	Journal reviewer for Epilepsia
2021-current	Journal reviewer for Epilepsy and Behavior
2021-current	Journal reviewer for Frontiers in neurology
2021-current	Journal reviewer for IEEE Transactions on Medical Imaging
2021-current	Journal reviewer for NMR in Biomedicine
2021-current	Journal reviewer for Quantitative Imaging in Medicine and Surgery
2021-current	Journal reviewer for Journal of Magnetic Resonance Imaging
2021-current	Journal reviewer for Journal of Neuroimaging
2022-current	Journal reviewer for IBRO Neuroscience Reports
2022-current	Journal reviewer for Neuroimage
2022-current	Journal reviewer for Neuropsychiatric Disease and Treatment
2023-current	Journal reviewer for Life
2023-current	Journal reviewer for Neurobiology of Aging
2023-current	Journal reviewer for Brain Sciences
2023-current	Journal reviewer for European Journal of Neurology
2023-current	Journal reviewer for Investigative Radiology
2022	Abstract reviewer for ISMRM
2022	Abstract reviewer for ISMRM Benelux
2023	Abstract reviewer for ISMRM
2023	Abstract reviewer for ISMRM Benelux
2024	Abstract reviewer for ISMRM
2024	Abstract reviewer for ISMRM Benelux
2023	Grant reviewer for ZonMw-programma Nationaal Plan Hoofdzaken (NPH)

d. Other

11. Describe and reflect on internal, national and international collaborations
As the UM deems collaboration a very important competence please elaborate so that your cv shows your ability to collaborate within teams and with other teams. Collaboration is defined by VSNU a contributing to a joint result with other persons or groups, even when this is not of direct personal interests. Reflect on your role and/or contribution to science, and interpersonal interactions. Preferably use examples from daily practice.

Within your own team/department/unit:

I am involved as a technical supervisor in several ongoing PhD-projects. I truly enjoy working together with early career scientists. Sharing my passion for research, and seeing their scientific and personal growth feels very fulfilling. Moreover, at our department, I am responsible for the coordination and supervision of all new bachelor and master student

projects (roughly five per year), and manage monthly research meetings where (PhD)-students get the opportunity to present their ongoing research to their peers.

Cooperation with other (clinical) groups within the Maastricht UMC+ and other hospitals

I closely collaborate with clinical experts from the Alzheimer Center Limburg and the Neurology, Neurosurgery and Internal Medicine departments in the Maastricht UMC+, and utilized my technical skills to handle various MRI techniques in such a way that it benefitted clinically relevant topics (ranging from epilepsy, small-fiber neuropathy, cerebral small vessel disease, dementia, irritable bowel syndrome, multiple sclerosis, perinatal asphyxia). As such, I experienced the merits of combining both technical and clinical experts first-hand.

Faculty-wide initiatives within Maastricht University:

I initiated and developed a new line of research in the Maastricht UMC+ for quantitative myelin-imaging by introducing novel image acquisition and analysis techniques. The relevance of my work has been recognised, since there are currently several preclinical and clinical studies at the Maastricht University Medical Center that employ the quantitative myelin imaging methods that I developed. Moreover, I am involved in these projects as an advisor and technical expert.

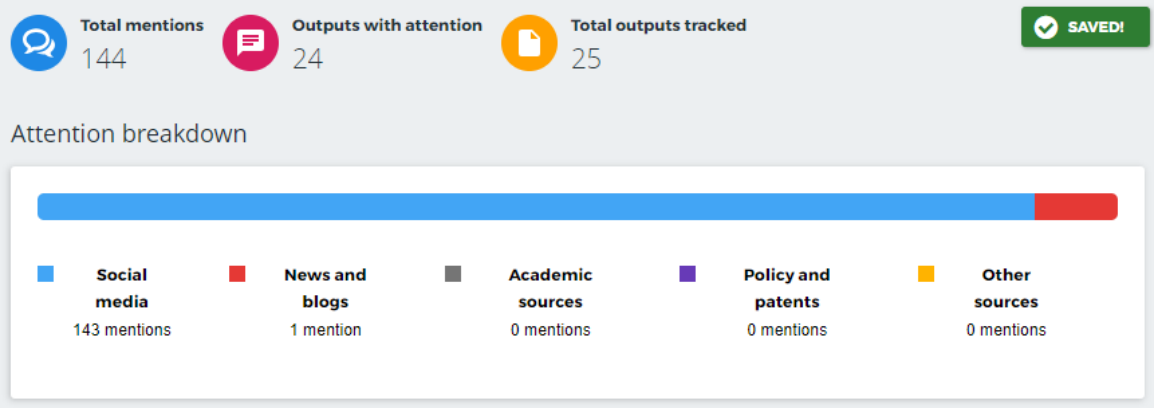
Inter-and transdisciplinary research and education activities:

I have been recognized as an international expert in my field. For example, I have moderated for the ISMRM-Benelux conference, acted as a reviewer for various international journals (>10), was invited to write two editorials for the Journal of Magnetic Resonance Imaging, act as an associate editor for the Journal of Alzheimer's Disease, and I have been invited as a keynote speaker on the annual Neonatal Neurology Symposium and NeuroMuscular Diseases Symposium. Furthermore, I participate in several EU-funded projects (e.g. the ITEA-funded "Spectralligence", and the H2020-funded "CRUCIAL") and maintain active collaborations with several international researchers (e.g. from Boston Children's Hospital, Zhejiang University School of Medicine, University Hospital Munich, and the University of Geneva) as well as industry partners (Philips, Sensmet, and Dynaxion).

12. Connective leadership - (required if applying for Associate professor profile)

Not applicable

13. Societal impact



13.1. Media exposure
TV, radio, interviews, opinion articles, contribution to public discussions on forums, television, in social media.

I share my research updates with the public by posts on social media platforms such as LinkedIn (https://www.linkedin.com/in/geralddrenthen/) and Twitter (@Gerald898).

13.2. Public events

Not applicable

13.3. Patents/spin-offs

Not applicable

13.4. Advisory reports for policy makers and/or clinical guidelines

Not applicable

13.5. Memberships (top 10) of civil society advisory bodies

Not applicable

13.6 Information on the following societal impact indicators is optional:

Not applicable