Curriculum Vitae

Personal

Name:	Fabian Niess, PhD (Date of birth: 4.Nov.1987)
Email:	fabian.niess@meduniwien.ac.at
Languages:	German, English (C2), Czech (A1), Slovak (A1)
Orcid:	https://orcid.org/0000-0003-1235-7595

Education

07/2015 - 02/2020	Medical Physics (PhD), *Medical University of Vienna*
03/2012 - 06/2015	Biomedical Engineering (MSc), *Technical University of Graz*
02/2013 - 07/2013	Erasmus Exchange Program, *Czech Technical University Prag*
10/2007 - 02/2012	Biomedical Engineering (BSc), *Technical University of Graz*
10/2002 - 06/2007	Matura, *HTL Bulme Graz Gösting* (Technical School)

Positions

04/2020-	Postdoc (FWF and ERC funded) *Department of Biomedical Imaging and Image-guided Therapy, Medical University of Vienna*
07/2015-03/2020	PhD Candidate (FWF funded) *Center for Medical Physics and Biomedical Engineering, Medical University of Vienna*
01/2015-06/2015	Master Candidate (FWF funded) *Center for Medical Physics and Biomedical Engineering, Medical University of Vienna*
08/2013-09/2013	Praktikum *Center for Medical Physics and Biomedical Engineering, Medical University of Vienna*

Career Breaks

08/2022-10/2022 Paternity leave (2 months)

Net research experience

5 years + 2 months (before PhD) and 5 years + 11 months (after PhD)

Main research interest

- Non-invasive assessment of glucose metabolism at 3T and 7T using direct (2H-MRSI) and indirect (1H-MRSI) detection of deuterium labeled substrates.
- Pulse sequence development (Siemens IDEA) and data processing for MR spectroscopy and imaging at high field (3 T) and ultra high field (7 T) (dynamic ^{31}P spectroscopy, time resolved ^{1}H perfusion imaging, multinuclear interleaved NMR, Cartesian and non-Cartesian k-space sampling for MRSI)
- Intracellular high energy metabolism and oxygenation of healthy human muscle tissue (functional, hemodynamic and metabolic response to voluntary exercise and/or ischemia)
- Resting and post exercise lactate quantification in healthy human muscles (3D localized Double Quantum Filtered ^{1}H MR spectroscopy at 7 T)

Selected Academic Publications

Orcid: https://orcid.org/0000-0003-1235-7595
h-factor: 11 (google scholar)
25 peer-reviewed publications (9 as first author, 3 as senior author)
12 first author conference contributions (7 oral presentation)

1. **Niess F**, Strasser B, Hingerl L, Bader V, Frese S, Clarke WT, Duguid A, Niess E, Motyka S, Hangel G, Kršňák M, Trattnig S, Scherer T, Lanzenberger R, Bogner W. Whole-brain deuterium metabolic imaging via concentric ring trajectory readout enables assessment of regional variations in neuronal glucose metabolism *Human Brain Mapping* 2024; doi: 10.1002/hbm.26686

2. **Niess F**, Strasser B, Hingerl L, Niess E, Motyka S, Hangel G, Kršňák M, Gruber S, Spurny-Dworak B, Trattnig S, Scherer T, Lanzenberger R, Bogner W. Reproducibility of 3D MRSI for imaging human brain glucose metabolism using direct (2H) and indirect (1H) detection of deuterium labeled compounds at 7T and clinical 3T. *Neuroimage* 2023; doi: 10.1016/j.neuroimage.2023.120250

3. **Niess F**, Hingerl L, Strasser B, Bednarik P, Goranovic D, Niess E, Hangel G, Kršňák M, Spurny-Dworak B, Scherer T, Lanzenberger R, Bogner W. Noninvasive 3-Dimensional 1H-Magnetic Resonance Spectroscopic Imaging of Human Brain Glucose and Neurotransmitter Metabolism Using Deuterium Labeling at 3T: Feasibility and Interscanner Reproducibility. *Investigative Radiology* 2023; doi: 10.1097/RLI.0000000000000953

4. Bednarik P, Goranovic D, Svatkova A, **Niess F**, Hingerl L, Strasser B, Deelchand D, Spurny-Dworak B, Kršňák M, Trattnig S, Hangel G, Scherer T, Lanzenberger R, Bogner W. 1H magnetic resonance spectroscopic imaging of deuterated glucose and of neurotransmitter metabolism at 7T in the human brain. *Nature Biomedical Engineering* 2023; doi: 10.1038/s41551-023-01035-z

5. **Niess F**, Roat S, Bogner W, Kršňák M, Kemp GJ, Schmid AI, Trattnig S, Moser E, Zaitsev M, Meyerspeer M. 3D localized lactate detetion in muscle tissue using double-quantum filtered ^{1}H MRS with adiabatic refocusing pulses at 7T. *Magnetic Resonance in Medicine* 2022; doi: 10.1002/mrm.29061

6. **Niess F**, Schmid AI, Bogner W, Wolzt M, Carlier P, Trattnig S, Moser E, Meyerspeer M. Interleaved ^{31}P MRS / ^{1}H ASL for analysis of metabolic and functional heterogeneity along human lower leg muscles at 7T. *Magnetic Resonance in Medicine* 2020; doi: 10.1002/mrm.28088

7. **Niess F**, Fiedler GB, Schmid AI, Laistler E, Frass-Kriegl R, Wolzt M, Moser E, Meyerspeer M. Dynamic multivoxel-localized ^{31}P MRS during plantar flexion exercise with variable knee angle. *NMR in Biomedicine* 2018;31:e3905 doi: 10.1002/nbm.3905

8. **Niess F**, Fiedler GB, Schmid AI, Goluch S, Kriegl R, Wolzt M, Moser E, Meyerspeer M. Interleaved multivoxel ^{31}P MR spectroscopy. *Magnetic Resonance in Medicine* 2017;77:921-927. doi: 10.1002/mrm.26172

9. Bader, V, Strasser B, Bogner W, Hingerl L, Frese S, Duguid A, Osburg A, Clarke WT, Motyka S, Kršňák M, Trattnig S, Scherer T, Lanzenberger R, **Niess F**. Concentric Ring Trajectory Sampling With k-Space Reordering Enables Assessment of Tissue-Specific T1 and T2 Relaxation for 2H-Labeled Substrates in the Human Brain at 7T. *NMR in Biomedicine* 2025;38:e5311, doi: 10.1002/nbm.5311

10. Frese S, Strasser B, Hingerl L, Montrazi E, Frydman L, Motyka S, Bader V, Duguid A, Osburg A, Kršňák M, Lanzenberger R, Scherer T, Bogner W, **Niess F**. Balanced Steady-State Free Precession Enables High-Resolution Dynamic 3D Deuterium Metabolic Imaging of the Human Brain at 7T *Investigative Radiology* 2025; doi: 10.1097/RLI.0000000000001196

11. **Niess F**, Strasser B, Hingerl L, Kovarik J K, Bader V, Frese S, Duguid A, Niess E, Motyka S, Kršśák M, Scherer T, Bogner W. Feasibility of high-resolution Deuterium Metabolic Imaging of the human kidney using Concentric Ring Trajectory sampling at 7T *NMR in Biomedicine* 2025; doi: 10.1002/nbm.70139

12. **Niess F**, Strasser B, Lanz B, Bogner W. Advanced Methods in Deuterium Metabolic Imaging *Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA)* 2026; doi: 10.1007/s10334-026-01322-1

13. Bader, V, Strasser B, Hingerl L, Kovarik JJ, Frese S, Pfleger L, Duguid A, Osburg A, Kršśák M, Scherer T, Bogner W, **Niess F**.Assessment of T1 and T2 relaxation times of deuterium (2H) labeled resonances in the human liver and kidney using k-space reordered 3D concentric ring trajectory sampling at 7T. *Magnetic Resonance Materials in Physics, Biology and Medicine (MAGMA)* 2026 doi: 10.1007/s10334-025-01320-9

Research Grants

- Imaging dynamics of glioma metabolism via MRI (2022), Austrian Science Fund, **Principal Investigator** (€399k)
- Understanding weight-loss effects on brain metabolism (2026), Austrian Science Fund, **Principal Investigator** (€450k)

Additional research Achievements

- Invited Educational Presentation on DMI, ISMRM Workshop: MR Spectroscopy: Frontiers in Molecular and Metabolic Imaging 15-18 October 2024 Boston, MA, USA
- Invited Educational Presentation, Annual Meeting ISMRM 04-09 May 2024 Singapore
- Invited Oral Presentation at 14th Annual Scientific Symposium UHF Magnetic Resonance, 08. September 2023, Max Delbrück Center Berlin, Germany
- Young Steam Engines for Innovations Award, 14th Annual Scientific Symposium UHF Magnetic Resonance, 08. September 2023, Max Delbrück Center Berlin, Germany
- ISMRM Summa Cum Laude Merit Award, Annual Meeting ISMRM 03-08 June 2023, Toronto, Canada. (Oral Presentation)
- ISMRM Magna Cum Laude Merit Award, Joint Annual Meeting ISMRM-ESMRMB 16-21 June 2018, Paris, France. (Oral Presentation)
- Best Poster Presentation, ISMRM MRS Workshop 2018 Utrecht, Netherlands
- Special Issue Guest Editor 2025 on Deuterium Metabolic Imaging for *Magnetic Resonance Materials in Physics, Biology and Medicine*
- Review activity for *Investigative Radiology*, *Diabetologia*, *Imaging Neuroscience*, *Journal of Cerebral Blood Flow and Metabolism*, *Journal of Magnetic Resonance Imaging*, *NMR in Biomedicine* and *Magnetic Resonance in Medicine*