Nikoloz **Sirmpilatze**

Postdoctoral Researcher

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Research Interest

My research focuses on the effects of anesthesia on brain function – a topic that I explore with neuroimaging techniques, including functional Magnetic Imaging (fMRI) and *in vivo* 2-photon calcium imaging. I collect and analyze neuroimaging data from multiple mammalian species – including humans, various non-human primates and rats. I am particularly interested in the neural activity patterns that arise across various depths of anesthesia, either spontaneously or in reaction to sensory stimulation.

Education

German Primate Center - Functional Imaging Lab

Göttingen, Germany

PhD in Neuroimaging — *May 2017 - Sep. 2021*

- *Thesis title:* Functional imaging of the anesthetized brain in primates and rodents
- *Supervisor:* Prof. Dr. Susann Boretius
- *Final grade:* Summa cum laude

Georg-August University of Göttingen - IMPRS for Neurosciences

Göttingen, Germany

MSc in Neuroscience — *Sep. 2015 - Apr. 2017*

- *Thesis title:* The temporal stability of BOLD fMRI measurements in medetomidine-anesthetized rats
- *Supervisor:* Prof. Dr. Susann Boretius
- *Final grade:* excellent 1.1 (1.0 down to 5.0)

Aristotle University of Thessaloniki

Thessaloniki, Greece

Doctor of Medicine (MD) — *Oct. 2009 - Jul. 2015*

- *Final grade:* excellent 9.43/10

Advanced Courses & Workshops

Sep. 2019	**Brainhack Comparative MRI**, PRIME-DE Global Collaboration Workshop	*London, UK*
Feb. 2018	**Introduction to Data Science with python**, GGNB graduate school	*Göttingen, Germany*
May 2017	**Regression Modeling in R**, Leibniz Science Campus Primate Cognition	*Göttingen, Germany*
Nov. 2016	**Laboratory Animal Science Course on Primates**, European Primate Network (EUPRIM-NET)	*Göttingen, Germany*
Oct. 2016	**Laboratory Animal Science (FELASA Category B)**, Central Animal Facility, University Medical Center	*Göttingen, Germany*

Stipends & Awards

2019	**Magna cum Laude Merit Award & Educational Stipend**, 27th Annual Meeting of the ISMRM	*Montreal, Canada*
2017	**Student Support Program**, 34th Annual Meeting of the ESMRMB	*Barcelona, Spain*
2015	**Full MSc Student Scholarship**, German Academic Exchange Service (DAAD)	*Germany*
2010	**Undergraduate distinction**, Yearly Stipend from the State Scholarships Foundation of Greece (IKY)	*Greece*

Academic Service

PRIME-RE (PRIMatE Resource Exchange)

Maintainer and contributor — *Sep. 2019 - present*

- PRIME-RE is an open resource exchange platform for non-human primate neuroimaging: prime-re.github.io
- It is a community effort, initiated by the PRIME-DE (PRIMatE Data Exchange) consortium

Neurizons Conference

Organizer — *2017 - 2020*

- Neurizons is a biennial student-organized neuroscience conference
- Was responsible for graphic design in 2018 and led the migration to an online format in 2020

Teaching Experience

Teaching Assistant for *Introduction to MRI/fMRI* — *Göttingen, Germany*

IMPRS for Neurosciences MSc Program — *2017 - 2019*

- Gave tutorials and hands-on method courses of fMRI acquisition and analysis
- Workload: approx. 1 week per year for 3 years

Supervisor for Master Student — *Göttingen, Germany*

IMPRS for Neurosciences MSc Program — *Oct. 2018 - Mar. 2019*

- *Dmytro Nesterenko:* Resting state connectivity and negative BOLD responses

Supervisor for Lab Rotations — *Göttingen, Germany*

IMPRS for Neurosciences MSc Program — *2019 - 2020*

- *Hanna Dubrovska:* Ipsilateral negative BOLD response during the motor task in the HCP dataset
- *Anna Liashenko:* Changes in resting state functional connectivity after the neurofeedback training of anterior midcingulate cortex (aMCC)
- Duration of each rotation: 8 weeks

Community Teaching Assistant for *Medical Neuroscience* — *Online*

MOOC offered by Duke University through www.coursera.org — *Jan. - Mar. 2013*

- Monitored student forums and answered questions

Teaching Assistant for *Neuroanatomy* — *Thessaloniki, Greece*

Laboratory of Descriptive Anatomy, Aristotle University Medical School — *Feb. - May 2011*

- Assisted during practical course on brain dissection

Skills

MRI acquisition	Familiar with **Bruker** (Paravision) and Siemens Prisma platforms
MRI analysis	**FSL**, **ANTS**, **nipype**, Freesurfer, Connectome Workbench, AFNI, BrainVoyager, nilearn
Optical Methods	*In vivo* 2-photon calcium imaging in rat neocortex
Programming	**Python**, R, Bash, git, LaTeX
Laboratory Animals	Rodent handling, anesthesia, surgery, stereotaxic injections
Languages	**Greek**, **Georgian**, **English**, German, Russian

Research Output

Peer-reviewed publications

1. **Sirmpilatze**, N., Baudewig, J. & Boretius, S. Temporal stability of fMRI in medetomidine-anesthetized rats. *Scientific Reports* **9,** 16673. doi:10.1038/s41598-019-53144-y (2019).
2. Messinger, A., **Sirmpilatze**, N., Heuer, K., Loh, K. K., Mars, R. B., Sein, J., Xu, T., Glen, D., Jung, B., Seidlitz, J., Taylor, P., Toro, R., Garza-Villarreal, E. A., Sponheim, C., Wang, X., Benn, R. A., Cagna, B., Dadarwal, R., Evrard, H. C., Garcia-Saldivar, P., Giavasis, S., Hartig, R., Lepage, C., Liu, C., Majka, P., Merchant, H., Milham, M. P., Rosa, M. G., Tasserie, J., Uhrig, L., Margulies, D. S. & Klink, P. C. A collaborative resource platform for non-human primate neuroimaging. *NeuroImage* **226,** 117519. doi:10.1016/j.neuroimage.2020.117519 (2021).
3. Hafner, G., Guy, J., Witte, M., Truschow, P., Rüppel, A., **Sirmpilatze**, N., Dadarwal, R., Boretius, S. & Staiger, J. F. Increased Callosal Connectivity in Reeler Mice Revealed by Brain-Wide Input Mapping of VIP Neurons in Barrel Cortex. *Cerebral Cortex.* bhaa280. doi:10.1093/cercor/bhaa280 (2020).
4. Lohrberg, M., Winkler, A., Franz, J., van der Meer, F., Ruhwedel, T., **Sirmpilatze**, N., Dadarwal, R., Handwerker, R., Esser, D., Wiegand, K., Hagel, C., Gocht, A., König, F. B., Boretius, S., Möbius, W., Stadelmann, C. & Barrantes-Freer, A. Lack of astrocytes hinders parenchymal oligodendrocyte precursor cells from reaching a myelinating state in osmolyte-induced demyelination. *Acta Neuropathologica Communications* **8,** 224. doi:10.1186/s40478-020-01105-2 (2020).

Preprints

1. **Sirmpilatze**, N., Mylius, J., Ortiz-Rios, M., Baudewig, J., Paasonen, J., Golkowski, D., Ranft, A., Ilg, R., Gröhn, O. & Boretius, S. Spatial signatures of anesthesia-induced burst-suppression differ between primates and rodents. *bioRxiv.* doi:10.1101/2021.10.15.464515 (2021).

Consortium publications

1. Milham, M. *et al.* Accelerating the Evolution of Nonhuman Primate Neuroimaging. *Neuron* **105,** 600–603. doi:10.1016/j.neuron.2019.12.023 (2020).
2. Gau, R. *et al.* Brainhack: Developing a culture of open, inclusive, community-driven neuroscience. *Neuron* **109,** 1769–1775. doi:10.1016/j.neuron.2021.04.001 (2021).

Conference Contributions

1. **Sirmpilatze**, N., Baudewig, J., Mylius, J., Golkowski, D., Ranft, A., Ilg, R., Paasonen, J., Gröhn, O. & Boretius, S. *fMRI mapping of anesthesia-induced burst suppression across multiple mammalian species* in *15th European Molecular Imaging Meeting (virtual)* Online Talk (2020).
2. **Sirmpilatze**, N., Baudewig, J., Mylius, J., Golkowski, D., Ranft, A., Ilg, R. & Boretius, S. *Using BOLD fMRI to map anesthesia-induced burst suppression in humans and non-human primates* in *27th Annual Meeting of the International Society for Magnetic Resonance in Medicine* Talk (2019).
3. **Sirmpilatze**, N., Baudewig, J. & Boretius, S. *Are fMRI measurements in medetomidine-anesthetized rats temporally stable?* in *27th Annual Meeting of the International Society for Magnetic Resonance in Medicine* Digital Poster (2019).
4. **Sirmpilatze**, N., Baudewig, J., Kötz, K. & Boretius, S. *Optimizing medetomidine anesthesia for fMRI in rats* in *11th Forum of Neuroscience, Federation of European Neuroscience Societies* Poster (2018).
5. **Sirmpilatze**, N., Baudewig, J., Kötz, K. & Boretius, S. *The temporal stability of BOLD fMRI measurements in medetomidine anesthetized rats* in *34th Annual Meeting of the European Society for Magnetic Resonance in Medicine and Biology* Poster (2017).

Open Datasets

1. **Sirmpilatze**, N. & Klink, P. C. *RheMAP: Non-linear warps between common rhesus macaque brain templates* (Zenodo, 2020). doi:10.5281/zenodo.3786357.
2. **Sirmpilatze**, N., Baudewig, J. & Boretius, S. *Temporal stability of fMRI in medetomidine-anesthetized rats* (OpenNeuro, 2019). doi:10.18112/openneuro.ds001981.v1.0.3.

Open Code

1. **Sirmpilatze**, N. *niksirbi/pcarpet: Pre-release of pcarpet* version v.0.1.2. 2021. doi:10.5281/zenodo.5545696.