

Nikoloz Sirmipilatze

POSTDOCTORAL RESEARCHER

Deutsches Primatenzentrum GmbH, Kellnerweg 4, 37077, Göttingen, Germany

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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*

IMPRS FOR NEUROSCIENCES MSC PROGRAM

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

Göttingen, Germany

2017 - 2019

Supervisor for Master Student

IMPRS FOR NEUROSCIENCES MSC PROGRAM

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

Göttingen, Germany

Oct. 2018 - Mar. 2019

Supervisor for Lab Rotations

IMPRS FOR NEUROSCIENCES MSC PROGRAM

- *Hanna Dubrovskaya*: 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

Göttingen, Germany

2019 - 2020

Community Teaching Assistant for *Medical Neuroscience*

MOOC OFFERED BY DUKE UNIVERSITY THROUGH WWW.COURSERA.ORG

- Monitored student forums and answered questions

Online

Jan. - Mar. 2013

Teaching Assistant for *Neuroanatomy*

LABORATORY OF DESCRIPTIVE ANATOMY, ARISTOTLE UNIVERSITY MEDICAL SCHOOL

- Assisted during practical course on brain dissection

Thessaloniki, Greece

Feb. - May 2011

Skills

MRI acquisition	Familiar with Bruker (Paravision) and Siemens Prisma platforms
MRI analysis	FSL , ANTS , nipype , Freesurfer , Connectome Workbench , AFNI , BrainVoyager , Nilearn
Optical Methods	<i>In vivo</i> 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. ISSN: 2045-2322 (Nov. 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. ISSN: 1053-8119 (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. ISSN: 1047-3211 (Nov. 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. ISSN: 2051-5960 (Dec. 2020).

CONSORTIUM PUBLICATIONS

1. Milham, M. *et al.* Accelerating the Evolution of Nonhuman Primate Neuroimaging. *Neuron* **105**, 600–603. ISSN: 0896-6273 (Feb. 2020).
2. Gau, R. *et al.* Brainhack: Developing a culture of open, inclusive, community-driven neuroscience. *Neuron* **109**, 1769–1775. ISSN: 0896-6273 (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, May 2020).
2. **Sirmpilatze**, N., Baudewig, J. & Boretius, S. *Temporal stability of fMRI in medetomidine-anesthetized rats* (OpenNeuro, Nov. 2019).