

CURRICULUM VITAE

Sepideh Sadaghiani, Ph.D.

sepideh@illinois.edu

<https://connectlab.beckman.illinois.edu>



Beckman Institute for Advanced Science & Technology
University of Illinois, Urbana-Champaign
405 North Mathew Ave
Urbana, IL-61801

POSITIONS

- Assistant Professor **University of Illinois, Urbana-Champaign** Jan. 2016 - present
Psychology Department, Cognitive Neuroscience Division
Director of the CONNECTlab
LEAP Scholar of the College of Liberal Arts and Sciences
Full-time faculty of the Beckman Institute for Advanced Science & Technology
Co-leader of the Brain Connectivity and Networks working group at the Beckman Institute
Faculty of the Neuroscience Program
- Postdoctoral Researcher **Stanford University** 2015
Genetic polymorphisms influencing large-scale brain network dynamics
- Postdoctoral Researcher **University of California, Berkeley** 2010 – 2014
Network dynamics and neurophysiological mechanisms of cognitive control

EDUCATION

- Ph.D. **Max-Planck International Research School, Germany & NeuroSpin, France**
Neural and Behavioral Sciences, 2007 – 2010
Mentor: Dr. Andreas Kleinschmidt
“The impact of ongoing brain activity on the variability of human brain function and behavior”
- M.Sc. **Max-Planck International Research School, Tübingen, Germany**
Neural and Behavioral Sciences, 2004 – 2006
Mentor: Dr. Uta Noppeney
- B.Sc. **Univ. of Osnabrück, Germany & Univ. of California San Diego**
Cognitive Science, 2001 – 2004
Mentor: Dr. Martin Sereno

AWARDS AND HONORS

- 2020-2021 Lincoln Excellence for Assistant Professors (LEAP) Award, University of Illinois
- 2019 Neuroscience Program award for outstanding faculty, University of Illinois
- 2016/'18/'19/'20 Teachers Ranked as Excellent by Their Students, University of Illinois
- 2010 *Summa cum laude* for Ph.D.
- 2004 Highest honors for B.Sc.

GRANTS AND FELLOWSHIPS

- 2019 – 2024 NIH/NIMH R01 grant (R01MH116226) Role: PI \$2,309,483
“Cognitive Significance of Functional Connectome States”

2018 – 2021	NIH/NINDS R21 grant (R21NS104603) “Brain structure and function in adult ZIKV patients with neurological manifestations”	Role: PI	\$428,848
2019 – 2022	NIN/NIMH R21 grant (R1HD097537) “Effect of emotion mindset on emotion processing”	Role: Co-I	\$417,759
2019 – 2020	Strategic Research Initiative, University of Illinois “Mapping the Human Chronnectome”	Role: Co-PI	\$70k
2016 – 2018	Carle-Illinois seed grant “Understanding cognitive outcomes of strokes using rhythms of the brain”	Role: PI	\$50k
2017	Beckman Institute’s Intelligent Systems seed fund “Unveiling mechanisms of cognitive inflexibility in major depression; the role of infraslow electrophysiological brain activity”		
2016	Faculty Research Travel Grant, Illinois Center for Latin American & Caribbean Studies		
2011 – 2013	German Research Foundation (DFG) postdoctoral research fellowship		
2011	German Academic Exchange Service postdoctoral fellowship (fellowship declined)		
2007 – 2010	Doctorate fellowship of Friedrich-Ebert Foundation, Germany		
2009	Travel Award of the Organization for Human Brain Mapping		
2004 – 2006	Master Studies Fellowship of Friedrich-Ebert Foundation, Germany		
2005	Travel Award of the Organization for Human Brain Mapping		
2003 – 2004	Undergraduate Fellowship of Friedrich-Ebert Foundation, Germany		

PROFESSIONAL ORGANIZATION AND COMMITTEE SERVICE

Program Committee, Cognitive Neuroscience Society, elected for 2021-2023 programs

Program Committee, Organization for Human Brain Mapping, elected for 2019-2021 programs

Sustainability and Environment Action Committee, Organization for Human Brain Mapping, 2021 – Chair of annual meeting working group

Committee on Large-Scale Network Nomenclature, Organization for Human Brain Mapping 2020 -

PUBLICATIONS

Google Scholar profile https://scholar.google.com/citations?user=XD7B_0EAAAAAJ&hl=en

Mostame P, **Sadaghiani S** (2021) Oscillation-based connectivity architecture is dominated by an intrinsic spatial organization, not cognitive state or frequency. *Journal of Neuroscience*. 41(1): 179-92. <https://doi.org/10.1523/JNEUROSCI.2155-20.2020>

Egan MK, Larsen R, Wirsich J, Sutton B, **Sadaghiani S**. (2021) Safety and data quality of EEG recorded simultaneously with multi-band fMRI. *PlosONE*. *In press*
Preprint: <https://doi.org/10.1101/2020.08.19.256974>

Wirsich J, Jorge J, Iannotti GR, Shamshiri EA, Grouiller F, Abreu R, Lazeyras F, Giraud AL, Gruetter R, **Sadaghiani S**, Vulliémoz S (2021) EEG and fMRI connectomes are reliably related: a simultaneous EEG-fMRI study from 1.5T to 7T. *NeuroImage*. 231: 117864
<https://doi.org/10.1016/j.neuroimage.2021.117864>

Mostame P, **Sadaghiani S** (2020) Phase coupling and amplitude coupling are tied by an intrinsic spatial organization but show divergent stimulus-related changes. *NeuroImage*. 219: 117051.
<https://doi.org/10.1016/j.neuroimage.2020.117051>

- Wirsich J, Giraud A-L, **Sadaghiani S** (2020) Concurrent EEG- and fMRI-derived connectomes exhibit linked dynamics. *NeuroImage*. 219: 116998. <https://doi.org/10.1016/j.neuroimage.2020.116998>
- Wirsich J, Amico E, Giraud A-L, Goni J, **Sadaghiani S** (2020) Multi-timescale functional connectome traits: A bimodal decomposition of concurrent EEG-fMRI. *Network Neuroscience*. 4(3): 658-677. https://doi.org/10.1162/netn_a_00135
- Sadaghiani S**, Wirsich J. (2020) Connectome organization across temporal scales: New insights from multimodal approaches. *Network Neuroscience*. 4(1): 1-29. https://doi.org/10.1162/netn_a_00114
- Sadaghiani S**, Dombert PL, Lovstad M, Funderud I, Melig T, Endestad T, Knight RT, Solbakk A-K, D'Esposito M. (2018) Lesions to the Fronto-Parietal Adaptive Control Network Impact Alpha-Band Phase Synchrony and Cognitive Control. *Cerebral Cortex*. 29(10): 4142-4153. <https://doi.org/10.1093/cercor/bhy296>
- Bido-Medina R, Wirsich J, Severino Rodriguez M, Oviedo J, Miches I, Bido P, Tusen L, Stoeter P, **Sadaghiani S**. (2018) Impact of Zika Virus on adult human brain structure and functional organization. *Annals of Clinical and Translational Neurology*, 5(6): 752-762. <https://doi.org/10.1002/acn3.575>
- Aaron Kucyi, Arielle Tambini, **Sadaghiani S**, Shella Keilholz, Jessica R. Cohen (2018) Spontaneous cognitive processes and the behavioral validation of time-varying brain connectivity. *Network Neuroscience*, 2(4): 397-417. https://doi.org/10.1162/netn_a_00037
- Sadaghiani S**, Ng B, Altmann A, Poline J-B, [IMAGEN consortium contributors], Napolioni V, Greicius M (2017). Overdominant effect of a *CHRNA4* polymorphism on cingulo-opercular network activity and cognitive control. *Journal of Neuroscience*, 37(40): 9657-66. <https://doi.org/10.1523/JNEUROSCI.0991-17.2017>
- Sadaghiani S**, and Kleinschmidt A (2016). "Brain Networks and α -Oscillations: Structural and Functional Foundations of Cognitive Control." *Trends in Cognitive Sciences*, 20(11):805-817. <https://doi.org/10.1016/j.tics.2016.09.004>
- Sadaghiani S**, Poline JB, Kleinschmidt A, D'Esposito M (2015). Ongoing dynamics in large-scale functional connectivity predict perception. *Proceedings of the National Academy of Sciences*, 112 (27), 8463-8468. <https://doi.org/10.1073/pnas.1420687112>
- Sadaghiani S**, D'Esposito M (2015). Functional characterization of the cingulo-opercular network in the maintenance of tonic alertness. *Cerebral Cortex*, 25(9): 2763-73. <https://doi.org/10.1093/cercor/bhu072>
- Sadaghiani S**, Kleinschmidt A (2013). Functional interactions between intrinsic brain activity and behavior. *NeuroImage*, 80:379-86. <https://doi.org/10.1016/j.neuroimage.2013.04.100>
- Fabienne P, **Sadaghiani S**, Leroy C, Courvoisier DS, Maroy R, Bottlaender M (2013). High density of nicotinic receptors in the cingulo-insular network. *NeuroImage*, 79:42-51. <https://doi.org/10.1016/j.neuroimage.2013.04.074>
- Sadaghiani S**, Scheeringa R, Lehongre K, Morillon B, Giraud AL, D'Esposito M, Kleinschmidt A (2012). Alpha-band phase synchrony is related to activity in the fronto-parietal adaptive control network. *Journal of Neuroscience*, 32(41): 14305-14310. <https://doi.org/10.1523/JNEUROSCI.1358-12.2012>
- Ciuciu P, Varoquaux G, Abry P, **Sadaghiani S**, Kleinschmidt A (2012). Scale-Free and Multifractal Time Dynamics of fMRI Signals during Rest and Task. *Frontiers in Physiology* 3:186. <https://doi.org/10.3389/fphys.2012.00186>
- Coste C, **Sadaghiani S**, Friston K, Kleinschmidt A (2011). Ongoing Brain Activity Fluctuations Directly Account for Inter-Trial and Indirectly for Inter-Subject Variability in Stroop Task Performance. *Cerebral Cortex*, 21(11): 2612-9. <https://doi.org/10.1093/cercor/bhr050>

Sadaghiani S, Scheeringa R, Lehongre K, Morillon B, Giraud AL, Kleinschmidt A (2010). Intrinsic Connectivity Networks, Alpha Oscillations and Tonic Alertness: A simultaneous EEG/fMRI Study. *Journal of Neuroscience*, 30(30): 10243-50. <https://doi.org/10.1523/JNEUROSCI.1004-10.2010>

Sadaghiani S, Hesselmann G, Friston KJ, Kleinschmidt A (2010). The relation of ongoing brain activity, evoked neural responses, and cognition. *Frontiers in Systems Neuroscience*, 4(20). <https://doi.org/10.3389/fnsys.2010.00020>

Sadaghiani S*, Hesselmann G*, Friston KJ, Kleinschmidt A (2010). Predictive coding or evidence accumulation? False inference and neuronal fluctuations. *PLoS One* 5(3):e9926. <https://doi.org/10.1371/journal.pone.0009926> *The first two authors contributed equally.

Varoquaux G, **Sadaghiani S**, Pinel P, Kleinschmidt A, Poline JB, Thirion B (2010). A group model for stable multi-subject ICA on fMRI datasets. *NeuroImage*, 51(1): 288-99. <https://doi.org/10.1016/j.neuroimage.2010.02.010>

Sadaghiani S, Hesselmann G, Kleinschmidt A (2009). Distributed and antagonistic contributions of ongoing activity fluctuations to auditory stimulus detection. *Journal of Neuroscience*, 29(42): 13410-7. <https://doi.org/10.1523/JNEUROSCI.2592-09.2009>

Sadaghiani S, Maier JX, Noppeney U (2009). Natural, metaphoric and linguistic auditory direction signals have distinct influences on visual motion processing. *Journal of Neuroscience* 29(20): 6490-9. <https://doi.org/10.1523/JNEUROSCI.5437-08.2009>

Sadaghiani S, Ugurbil K, Uludag K (2009). Neural activity-induced modulation of BOLD post-stimulus undershoot independent of the positive response. *Magnetic Resonance Imaging*, 27(8): 1030-8. <https://doi.org/10.1016/j.mri.2009.04.003>

BOOK CHAPTERS:

Damoiseaux JS, Altmann A, Richiardi J, **Sadaghiani S**. (2021) Applications of MRI Connectomics. Chapter to be published in: Jezzard P & Choi IY (Eds.) *Advanced Neuro Magnetic Resonance Techniques and Applications*. Elsevier Academic Press. Preprint: <https://psyarxiv.com/u4y8s>

UNDER REVIEW:

Sadaghiani S. Brookes M, Baillet S. *Invited contribution to special issue*. Connectomics of human electrophysiology. *Under review*. Preprint: <https://psyarxiv.com/dr7zh/>

Jun S, Alderson TH, Altmann A, **Sadaghiani S**. Functional connectome reconfigurations are heritable and related to cognition. *Under review*. Preprint: <https://biorxiv.org/cgi/content/short/2021.05.24.445378v1>

IN PREPARATION:

Alderson TH, Wirsich J, Lehongre K, Morillon B, Giraud AL, Koyejo S, **Sadaghiani S**. Connectome dynamics constitute temporally scale-free transitions across network coactivation patterns. *In preparation*

Mostame P, Wirsich J, Alderson TH, Ridley B, Vulliemoz S, Guye M, Lemieux L, **Sadaghiani S**. Concurrent fMRI and intracranial EEG capture spatially similar connectome states at asynchronous times. *In preparation*

Li Y, Bido-Medina R, Alderson TH, Egan M, Perriello C, Yang R, Pritschet L, Winter-Nelson E, Heller W, **Sadaghiani S**. Long-range temporal structure and scale-free characteristics of emotion- and object perception. *In preparation*

Egan MK, Costines C, D'Esposito M, **Sadaghiani S**. Network interactions underlying endogenous maintenance of attention. *In preparation*

Jun S, Bido-Medina R, Oviedo J, Miches I, Tusen L, Stoeter P, Severino Rodriguez M, **Sadaghiani S**. Long-term impact of Zika virus on adult human brain structure. *In preparation*

SCIENCE COMMUNICATION:

Sadaghiani S (2014). The brain never stops. *Front. Young Minds*, 2:6. [doi:10.3389/frym.2014.00006](https://doi.org/10.3389/frym.2014.00006)

PRESENTATIONS

Invited Talks:

- 2021 20th World Congress of Intl Organization of Psychophysiology (IOP) (virtual)
"Spatial and temporal principles of electrophysiological connectome dynamics"
- 2021 Seminar of Neuro-Cognitive Psychology, University of Munich, Germany (virtual)
"The functional connectome across spatiotemporal scales: integrating fMRI and (i)EEG"
- 2021 Georgia Institute of Technology Neuroscience Seminar Series, Atlanta, GA (virtual)
"How integrating fMRI and (i)EEG changes our understanding of the human brain"
- 2021 Beckman Institute Director's Seminar, Urbana, IL
"The functional connectome across spatiotemporal scales"
- 2020 Medical University of South Carolina, Charleston, SC (virtual)
Center for Biomedical Imaging Seminar series
"Intrinsic connectivity across spatiotemporal scales: integrating fMRI, EEG, and ECoG"
- 2019 Whistler Summer Workshop on Brain Functional Organization, Noosa, Australia
"The connectome across electrophysiological and hemodynamic signals: Bridging modalities to understand the brain's dynamic functional repertoire".
- 2019 Mathematical and Computational Psychology colloquia, Purdue, West Lafayette, IN
"Intrinsic cognitive architectures and the significance of spontaneous brain activity"
- 2017 Cognitive Science Seminar, University of Arizona, Tucson, AZ
"Network dynamics underlying cognitive control"
- 2017 Center for Latin American and Caribbean Studies, Univ. of Illinois, Urbana, IL
"Brain structure and function in adult ZIKV patients with neurological manifestations: A collaboration in the Dominican Republic."
- 2016 International Congress of Neurology and Neurosurgery, Dominican Republic
"Advances in Functional Neuroimaging: Cognitive Relevance of Intrinsic Brain Activity and Connectivity"
"Nicotinic Receptor Polymorphism Linked to Alertness and Cingulo-Opercular Network Activity"
- 2016 SYNAPSE Carle Neuroscience Conference, Carle Foundation Hospital, Urbana, IL
"Cognitive Relevance of Intrinsic Brain Activity and Connectivity"
- 2016 Cognitive Neuroscience, Washington University, St. Louis, MO
"A *CHRNA4* polymorphism impacting cingulo-opercular network activity and alertness"

- 2015 UCLA Advanced Neuroimaging Summer Program, Los Angeles, CA
“Graph Analysis in fMRI”
“Network Analysis”
- 2012, ESMRMB International educational workshop series on Resting State fMRI,
2013, Magdeburg, Germany; Vienna, Austria; & Berlin, Germany
& 2015 “Interactions between ongoing and evoked activity”
“Combining EEG/fMRI of ongoing activity”
- 2015 Neuroengineering IGERT symposium, Urbana, IL
“Electrophysiological Signatures of Large-Scale Functional Connectivity Networks”
- 2012 EEG-fMRI: from trial to trial. Delmenhorst, Germany
“Large-scale phase synchrony and intrinsic connectivity networks for top-down control.”
- 2011 International Conference on Cognitive Neuroscience, symposium, Mallorca, Spain
“Does alpha synchronization index that cyclic inhibition maintains alertness?”

Other Selected Talks:

- 2021 Cognitive Neuroscience Society, symposium talk (virtual)
“Cognitive control network states impacting perception”
- 2020 Organization for Human Brain Mapping annual meeting, educational course (virtual)
“Intrinsic connectivity across modalities: Integrating information from EEG-fMRI and ECoG to understand intrinsic connectivity”
- 2017 Advanced Computational Neuroscience Network – Big Data workshop. Bloomington, IN
“A common nicotinic receptor polymorphism promotes individual differences in tonic alertness and Cingulo-Opercular network activity”
- 2016 Org for Human Brain Mapping annual meeting, symposium talk, Geneva, Switzerland
“The role of intrinsic functional connectivity in perception”
- 2016 Cognitive Neuroscience Society annual meeting, symposium talk, NYC
“Dynamic functional connectivity and behavioral variability”
- 2009 Organization for Human Brain Mapping annual meeting, San Francisco, CA
“Antagonistic contributions of distributed ongoing activity fluctuations to auditory stimulus detection” *NeuroImage 47 (Supplement 1) S155.*
- 2005 Society for Neuroscience annual meeting, Washington DC
“Spatiotemporal brain activation pattern during visually-guided reaching using cortical-surface-based methods.”

Conference/Workshop/Symposium Organizer:

- 2021 Co-organizer, 5th Big Data Neuroscience Meeting of the Advanced Computational Neuroscience Network, Urbana, IL
- 2019 Symposium organizer, Org for Human Brain Mapping annual meeting, Rome, Italy
“Spatial Organization of Connectivity over Timescales”
- 2017 Co-organizer, Global BrainHack (neuroscience hackathon) Illinois chapter, Urbana, IL
- 2017 Co-organizer, Brain Oscillations Symposium, Urbana, IL
- 2013 Session Chair, Organization for Human Brain Mapping, Seattle, WA
“Multi-Modal Modeling and Analysis Methods”

TEACHING AND MENTORING

University of Illinois, Urbana-Champaign

Course Instructor

2018-present	PSYC396 Neuroanatomy and Neuropsychology
2018-present	PSYC496/593 Practical Issues in Cognitive Control Research and Network Neuroscience
2016-present	PSYC445/NEUR445 Cognitive Neuroscience Laboratory (focus on Functional Neuroimaging)
2016, 2021	PSYC598 Brain & Cognition Proseminar

Postdoc Mentor

2016-2018	Jonathan Wirsich, Beckman Institute Now senior researcher at University Hospitals of Geneva
2019-present	Thomas Alderson, Department of Psychology

Graduate Mentor

2016-2019	Richard Bido-Medina, Neuroscience Graduate Program Now Psychiatry resident at MGH/Harvard
2016-present	Maximillian Egan, Department of Psychology
2018-present	Parham Mostame, PhD candidate, Department of Psychology
2019-present	Suhnyoung Jun, Department of Psychology
2019-present	Yuetian (Vivian) Li, Department of Psychology M.Sc. Program
Starting 2021	Martín Irani, Neuroscience Graduate Program

Undergraduate Thesis Mentor

2016-2017	Paul McGrath, Bachelor thesis, visiting student from Germany
2016	Austin Durlinger, Honors credit paper, LAS James Scholar
2018	Jessica Diaz, Honors thesis, Dept. of Psychology
2019	Lija Hoffman, Honors thesis, Dept. of Psychology
2019	Edwin Guzman, Honors thesis, Dept. of Psychology
2019	Coleen Long, Honors thesis, Dept. of Psychology

University of California at Berkeley

2011-2012	Cyril Costines, B.Sc. thesis, visiting student from Germany
2012-2013	Pascasie Leonie Dombert, M.Sc. thesis, visiting from the Netherlands

University of Osnabrück, Germany

Teaching Assistant

2002	Introduction to propositional logic
2003	Modal logic
2003	Object-oriented programming with Java

AWARDS AND HONORS GRANTED TO TRAINEES

University of Illinois, Urbana-Champaign

2020-2021	Parham Mostame, Beckman Graduate Fellowship (\$25k)
2019-2022	Maximillian Egan, NSF Graduate Research Fellowship (\$102k)
2018-2019	Maximillian Egan, Beckman Graduate Fellowship (\$25k)
2018	Richard Bido-Medina, Illinois International Graduate Achievement Award (\$500)
2017	Richard Bido-Medina, Center for Latin American and Caribbean Studies, Tinker Summer Research Fellowship (\$2k)
2017	Laura Pritschet, Carle Neuroscience Institute Undergraduate Research Award (\$3k)

SERVICE

Grant/Award Reviewer

- 2021 NIH study section “Human Complex Mental Functions (HCMF)”, review panel member
- 2019 Fast-Start Award of the Marsden Fund, Government of New Zealand
- 2018 Career Development Award of the International Human Frontier Science Program

Service at the University of Illinois

- 2021-2026 **Executive Committee**, Beckman Institute for Advanced Science and Technology
- 2021 **Faculty Hiring Committee**, Department of Psychology
- 2018-2020 **Program Advisory Committee**, Beckman Institute for Advanced Science and Technology
- 2019/2020 **Undergraduate Studies Committee** Member
- 2019/2020 **Diversity Committee**, faculty contact for students
- 2016, 2017 **Admissions Committee** Representative, University of Illinois, Urbana-Champaign
- 2016-present **Dissertation Committee** Member:
 - University of Illinois, Urbana-Champaign:
 - Giang-Chau Ngo, Dept. of Bioengineering
 - Cybelle Smith, Dept. of Psychology
 - Tania Kong, Dept. of Psychology
 - Lydia Nguyen, Dept. Speech and Hearing (ongoing)
 - Aishwarya Rajesh, Dept. of Psychology (ongoing)
 - Lizzy Lydon, Dept. Speech and Hearing (ongoing)
 - Grace Clements, Dept. of Psychology (ongoing)
 - Paul Camacho, Dept. of Bioengineering (ongoing)
 - External:
 - Saurabh Sonkusare, University of Queensland, Australia
 - Tabea Kamp, Maastricht University, The Netherlands