Madineh **Sedigh-Sarvestani**

Post-doc Fellow · Max Planck Florida Institute for Neuroscience

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Education

Summer Workshop on Dynamic Brain — *Friday Harbor*, *Aug 2016*

Computational Neuroscience in Vision — *CSHL Labs*, *July 2014*

PhD Biomedical Engineering — *Penn State University*, *Aug 2013*

BS Engineering — *Harvey Mudd College*, *May 2005*

Research Experience

Max Planck Florida Institute for Neuroscience — *PI: David Fitzpatrick*

Post-doc Fellow — *2018 - present*

- Chronic calcium imaging in awake tree shrews to study the functional organization of visual cortex.

University of Pennsylvania — *PI: Diego Contreras*

Post-doc Fellow — *2014 - 2017*

- Electrophysiology in anesthetized cats to study thalamocortical circuits in the visual system.
- Evolution of epileptiform activity in the cat visual cortex.

Penn State University — *PI: Bruce Gluckman*

Graduate Student — *2008-2014*

- Modeling of sleep and epilepsy circuits, algorithm development for automated sleep and seizure classification.
- Chronic recordings in freely moving rodents to study sleep and seizure relationship.

Walter Reed Army Institute of Research

Research Engineer I — *2007-2008*

- Algorithm development for automated seizure classification.

Biostar West

Research Associate — *2005-2007*

- Hydrogel design for functional differentiation of stem cells.

Awards & Funding

NIH-NEI Small Conference Grant (R13) — *2020-21*

NIH-NEI Post-doctoral training fellowship (F32) — *2015-19*

COSYNE Travel grant — *2015,2016*

Travel grant for Gordon Conference on Thalamocortical Interactions — *2016*

NIH-NINDS Pre-doctoral training fellowship (F31) — *2010-2013*

Best Poster Award at 6th International Workshop on Seizure Prediction — *2013*

Best Poster Award at 4th International Workshop on Seizure Prediction — *2009*

Publications

DeBruyn and Cassagrande manuscripts as a basis for cross-species retina research.
T Norton, E Savier, **M Sedigh-Sarvestani**.
Under Review, 2021

Sinusoidal transformation of the visual field is the basis for periodic maps in V2.
M Sedigh-Sarvestani, KS Lee, R Satterfield, N Shultz, D Fitzpatrick.
Neuron
In press, 2021

A bright future for the tree shrew in neuroscience research: Summary from the inaugural Tree Shrew Users Meeting.
E Savier, **M Sedigh-Sarvestani**, R Wimmer, D Fitzpatrick.
Zoological Research
42(4): 478-81, 2021

Neuromatch Academy: Teaching Computational Neuroscience with global accessibility.
T van Viegen, A Akrami, K Bonnen, E DeWitt, A Hyafil, H Ledmyr, GW Lindsay, P Mineault, JD Murray, XPitkow, A Puce, **M Sedigh-Sarvestani**, C Stringer, T Achakulvisut, E Alikarami, MS Atay, E Batty, JC Erlich, BV Galbraith, Y Guo, AL Juavinett, MR Krause, S Li, M Pachitariu, E Straley, D Valeriani, E Vaughan, M Vaziri-Pashkam, ML Waskom, G Blohm, K Kording, P Schrater, B Wyble, S Escola, MAK Peters
TiCS
25(7):535-538, 2021

Thalamocortical synapses in the cat visual system are weak and unreliable.
M Sedigh-Sarvestani, LA Palmer, D Contreras.
eLife
e41925, 2019.

Inhibition in simple cell receptive fields is broad and OFF-subregion biased.
M.M. Taylor, **M Sedigh-Sarvestani**, LA Palmer, D Contreras.
J Neurosci
38(3):595-612, 2018.

Spatiotemporal evolution of focal epileptiform activity from surface and laminar field recordings in cat neocortex.
H. Bink, **M Sedigh-Sarvestani**, I Fernandez-Lamo, L Kini, H Ung, D Kuzum, F Vitale, B Litt, D Contreras.
J Neurophysiol
119(6):2068-81, 2018.

Intracellular, in vivo, dynamics of thalamocortical synapses in visual cortex.
M Sedigh-Sarvestani, L Vigeland, I Fernandez- Lamo, MM Taylor, LA Palmer, D Contreras.
J Neurosci
37(21):5250-5262, 2017.

Seizures and brain regulatory systems: Consciousness, sleep, and autonomic systems.
M Sedigh-Sarvestani, H Blumenfeld, T Loddenkemper, LM Bateman.
J Clin Neurophysiol
32(3):188-93, 2015.

α2-adrenergic stimulation of the VLPO destabilizes the anesthetic state.
HS McCarren, MR Chalifoux, B Han, JT Moore, QC Meng, N Baron-Hionis, **M Sedigh-Sarvestani**,D Contreras, SG Beck, MB Kelz.
J Neurosci
34(49): 16385-16396, 2014.

Second order receptive field properties of simple and complex cells support a new standard model of thalamocortical circuitry in V1.
M Sedigh-Sarvestani, I Fernanzdez-Lamo, A Jaegle, MM Taylor.
J Neurosci
34(34):11177-9, 2014.

REM sleep precedes seizure onset in the TeTX model of temporal lobe epilepsy.
M Sedigh-Sarvestani, GI Thuku, SJ Schiff, SL Weinstein, BJ Gluckman.
J Neurosci
34(4):1105-14, 2014.

Reconstructing mammalian sleep dynamics with data assimilation.
M Sedigh-Sarvestani, SJ Schiff, BJ Gluckman.
PLoS Comp Biol
8(11):e1002788, 2012.

Data assimilation of glucose dynamics for use in the intensive care unit.
M Sedigh- Sarvestani, DJ Albers, BJ Gluckman.
IEEE Eng Med Biol Soc
Conf Proceedings, 2012.

Analyzing large data sets acquired through telemetry from rats exposed to organophosphorous compounds.
M De Araujo Furtado, A Zheng, **M Sedigh-Sarvestani**, L Lumley, S Lichtenstein, D Yourick.
J Neurosci Meth
184(1):176-83, 2009.

Teaching and Organizing

Lead organizer for Tree Shrew Users Meeting *2020-present*

Chief Instructions Officer, Neuromatch Academy *2021*

Executive Committee Member, Neuromatch Academy *2020*

Co-Instructor, CSHL Neural Data Science Summer Course *2019*

TA, CSHL Neural Data Science Summer Course *2015,17*

SAT tutor: Summit Education (Maryland) and Ivy Tutoring (Los Angeles) *2005-2008*

Mentoring and Outreach

Neuromatch Academy. NMA is a volunteer-run globally accessible virtual summer school in computational neuroscience that has served 5000+ students. In 2020, I contributed to content development. In 2021, I led the team responsible for hiring and training 400 TAs. Outside the summer school, I mentor several NMA students in Iran and Europe. *2020-present*

Max Planck Florida. I'm involved in several institute and community based initiatives at MPFI. In 2018, I was the supervisor for Solana Liu, a post-bac student and Saige Drecksler, a high-school student and have served as the post-doc mentor for graduate students at the institute. I've also given several public science talks, including one at the local high school, and have participated in many outreach efforts in the community. *2018-present*

Philadelphia Charter Schools. During the school year, I served as the science mentor for 6th and 7th grade students in Belmont Academy. During weekly class-room visit, I would work with the kids on their science fair projects. I also served as a science fair judge for the school district of Philadelphia. *2014-17*

Invited Talks

Monash University (Virtual). Sensory and Systems Neuroscience Group Seminar. A sinusoidal transformation of the visual field is the basis for striped maps in V2. *Mar 2021*

Vanderbilt University (Virtual). Neuroscience Brown Bag Seminar. A sinusoidal transformation of the visual field is the basis for striped maps in V2. *Feb 2021*

Allen Institute (Virtual). Organization of higher order visual areas. *Feb 2021*

University College London (Virtual). BehavioNeuro Talks. Organization of higher order visual areas. *Dec 2021*

University of Miami (Virtual). 4th Annual Neural Engineering Symposium. A sinusoidal transformation of the visual field. *Oct 2020*

Weill Cornell Medicine (Virtual). Frontiers in Neuroscience Seminar Series. Rethinking maps in the visual system. *Sept 2021*

University of Alabama. Vision Science Research Center Visiting Scholars Program Seminar Series. Specialized visuotopic maps anchor the functional organization of higher visual areas. *Jan 2020*

University of Virginia. Cang Lab. Extrastriate visual system of the tree shrew. *June 2019*

Society for Neuroscience. Hosted by Thomas Recording. Characterizing the thalamocortical circuit in the cat visual cortex. *Oct 2017*

University of Pennsylvania. Small Circuits and Behavior Meeting. Understanding thalamocortical circuitry in the early visual pathway. *Aug 2014*