Madineh **Sedigh-Sarvestani**

Post-doc Fellow · Max Planck Florida Institute for Neuroscience

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"Understanding the visual system without borders."

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

A sinusoidal transform of the visual field in cortical area V2.
bioRxiv
M Sedigh-Sarvestani, KS Lee, R Satterfield, N Shultz, D Fitzpatrick.
2020

Neuromatch Academy: Teaching Computational Neuroscience with global accessibility.
arXiv
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
2020

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

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

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

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

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

α2-adrenergic stimulation of the VLPO destabilizes the anesthetic state.
J Neurosci
HS McCarren, MR Chalifoux, B Han, JT Moore, QC Meng, N Baron-Hionis, **M Sedigh-Sarvestani**,D Contreras, SG Beck, MB Kelz.
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.
J Neurosci
M Sedigh-Sarvestani, I Fernanzdez-Lamo, A Jaegle, MM Taylor.
34(34):11177-9, 2014.

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

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

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

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

Teaching and Organizing

Co-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*

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*

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 2020*

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 Virgina, Cang Lab Meeting. Extrastriate visual system of the tree shrew. *June 2019*

Multichannel Recording Workshop @ SFN, 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*