

Maxym V. Myroshnychenko

CONTACT INFORMATION	<i>E-mail:</i> mmyros@gmail.com <i>Web:</i> mmyros.github.io/github.io/
EDUCATION	Indiana University Ph.D. candidate, Program in Neuroscience August 2011 to present University of Nevada, Las Vegas B.S., Biology, Biomathematics August 2011
LABORATORY AFFILIATIONS	Lapish laboratory <i>PI: Christopher Lapish</i> August 2014 to present <ul style="list-style-type: none">• Development of automatic behavior collection and analysis tools• Tetrode and shank recordings from anesthetized and awake rats• Data analysis: state space, spectral decomposition, machine learning• Contribution to VTA/mPFC computational modeling (collaboration with A. Kuznetsov, IUPUI Math)• Optogenetics, TH-Cre with electrophysiology Beggs neuronal dynamics laboratory <i>PI: John Beggs</i> August 2011 to August 2014 <ul style="list-style-type: none">• Statistical analyses of in vitro 512-electrode array data from mouse/rat hippocampus (collaboration with Litke lab, UC Santa Cruz), in vivo Utah array primate data (collaboration with Hatsopoulos lab, U. of Chicago)• Transfer entropy, mutual information, Kalman filter, generalized linear models, current source density, community detection.
CURRENT RESEARCH PROJECTS	Cortico-hippocampal interactions in the radial arm maze Characterizing the process of planning in a delayed spatial task using optogenetic inhibition of vHC projections to mPFC; simultaneous shank recordings Effects of alcohol on interactions between GABA and dopamine neurons Dissecting local and distal dynamic connectivity of ventral tegmental area using dual-site single-unit recordings, optogenetic stimulation, and pharmacological manipulations as a part of France-USA computational modeling collaboration
PUBLICATIONS	Myroshnychenko M, Seamans JK, Philips AG, Lapish CC. Temporal dynamics of hippocampal and medial prefrontal cortex interactions during the delay period of a spatial working memory task. Near submission Morozova E O, Myroshnychenko M, Zakharov D, di Volo M, Gutkin B, Lapish C, Kuznetsov A (2016). Contribution of synchronized GABAergic neurons to dopaminergic neuron firing and bursting. <i>Journal of Neurophysiology</i> , 116(4), 1900-1923. Timme NM, Ito S, Myroshnychenko M, Nigam S, Shimono M, Yeh FC, Hottowy P, Litke AM, Beggs JM. (2016) High-Degree Neurons Feed Cortical Computations. <i>PLoS Comput Biol.</i> May 9;12(5):e1004858.

Nigam S, Shimono M, Ito S, Yeh F, Timme N, Myroshnychenko M, Lapish C, Tosi Z, Hottowy P, Smith W, Masmanidis S, Litke A, Sporns O, Beggs JM. (2016) Rich-club organization in the functional micro-connectome. *Journal in Neuroscience* Jan 20;36(3):670-84.

Timme N, Ito S, Myroshnychenko M, Yeh F, Hiolski E, Hottowy P, Beggs JM. (2014) Multiplex networks of cortical and hippocampal neurons revealed at different timescales. *PLoS ONE* 9(12): e115764..

PRESENTATIONS

Myroshnychenko M, Lapish CC. Prefrontal-hippocampal theta coherence, sharp wave ripples, and bursts of cortical unit activity underlie choices and encoding in the radial arm maze. Poster presentation, Society for Neuroscience meeting, Chicago, IL, 2015

Myroshnychenko M, Lapish CC. Prefrontal-hippocampal theta coherence, sharp wave ripples, and bursts of cortical unit activity underlie choices and encoding in the radial arm maze. Poster presentation, Society for Computational Neuroscience meeting, Prague, Czech Republic, 2015

Myroshnychenko M, Morozova E, Kuznetsov A, Lapish CC. Dissecting reward circuitry with simultaneous single-unit recording in PFC and VTA. Poster presentation, Research society for alcohol, San Antonio, TX, 2015

Myroshnychenko M, Morozova EO, Kuznetsov A, Lapish CC. Dissecting reward circuitry with simultaneous single-unit recording in PFC and VTA. Poster presentation, Indianapolis chapter of Society for Neuroscience meeting, 2014

Myroshnychenko M, Nicholson B, Yeh F, Brickman B, Dahmen K, Litke A, Beggs J. Critical features of massively parallel cortical single-unit recordings. Poster presentation, Gill symposium, Indiana University, 2013

Sarine S. Janetsian, Maxym Myroshnychenko, Christopher C. Lapish. Changes in neuronal firing and oscillatory activity in the PFC following Methamphetamine sensitization. Poster presentation, Society for Neuroscience meeting, 2013

Myroshnychenko MV, Heaney CF, Bolton MM, Sabbagh JJ, Kinney JW " Acute Administration of Ketamine Impairs Learning in Trace Cued Fear Conditioning: Validation of an Animal Model of Schizophrenia." 21th Annual McNair Research Conference. Oklahoma State University. February 24, 2011

Myroshnychenko MV, Heaney CF, Bolton MM, Sabbagh JJ, Kinney JW. " Acute Administration of Ketamine Impairs Learning in Trace Cued Fear Conditioning: Validation of an Animal Model of Schizophrenia."The 2010 McNair Scholars Institute poster presentation. University of Nevada, Las Vegas, NV. October 21, 2010.

Myroshnychenko MV, Estevez J, Harbour D. " *Krameria erecta* and *Oenothera biennis* extracts increase density of *Staphylococcus epidermidis* biofilm." The 2010 McNair Scholars Institute poster presentation. University of Nevada, Las Vegas, NV. October 21, 2010.

Zarrabi K, Nitrosesatien N, Koh J, Naserddin S, Abanyan E, Myroshnychenko M, Esteves J, Harbour D, Porter H. Antibacterial Potential and GC-MS Studies of Select Medicinal Plants of Mojave Desert. Presented at the 2009 Northwest Regional Meeting of the American Chemical Society, Pacific Lutheran University, Tacoma, WA.

SKILLS

Experimental techniques

- Stereotaxic surgery
- Awake behaving/anesthetized extracellular electrophysiology (tetrodes, Neuronexus, Harris, Masmanidis shanks, gold and PEDOT coating)
- Spikesorting shank data (spyking circus, phy packages)
- Optogenetics (programming PulsePal driver)

Programming

- Matlab, mex/C, Python, R, github

Real-time processing

- Linux OS, Open Ephys, Arduino, simple GUIs, computer vision

SUMMER SCHOOL ATTENDANCE

CoSMo June 2013

- Computational Sensory-Motor Neuroscience, organizer K. Kording
- Machine learning, Bayesian and neural net approaches to decoding

CRCNS July 2014

- Berkeley summer course in mining and modeling of neuroscience data, organizers Jeff Teeters and Fritz Sommer
- STC, model fitting, ICA, GLM

AWARDS

Fellowships

- National Science Foundation Biomathematics Scholar May 2010 - May 2011
- University of Nevada, Las Vegas McNair Summer Institute Fellowship May 2010

Scholarships and grants

- University of Nevada, Las Vegas Scholarship November 2009
- College of Southern Nevada Scholarship November 2008
- Federal SMART grant 2009 - 2011

TEACHING EXPERIENCE

Indiana University,

Teaching assistant Fall 2014

Addiction neuroscience lecture and lab. Responsible for grading, lab preparation

The Lovaas Center of Las Vegas, Las Vegas, Nevada

Tutor June 2009 to August 2009

Applied Behavioral Analysis for children with autism.

College of Southern Nevada, Las Vegas, Nevada

Tutor September 2009 to May 2009

Responsible for coaching students on various subjects including biology, writing, and mathematics.

REFERENCES

- Dr. Christopher Lapish lapishc@gmail.com
- Dr. Alexey Kuznetsov askuznet@gmail.com
- Dr. John Beggs jmbeggs@indiana.edu