Curriculum Vitae

James G. Heys
Department of Neurobiology and Anatomy
University of Utah – School of Medicine
36. S. Wasatch Dr,
4547 Sorenson Molecular Biotechnology Building
Salt Lake City, UT, 84122
(801) 587-8090, FAX: (801) 581-4233
Email: jim.heys@neuro.utah.edu

EDUCATION

Years	Degree	Institution (Area of Study)
2013 - 2018	Postdoctoral Fellow	Northwestern University (Neurobiology) Evanston, IL
2007 - 2013	Ph.D.	Boston University (Neuroscience) Boston, MA
1999 - 2004	B.A.	University of Wisconsin–Parkside (Economics) Kenosha, WI

UNIVERSITY OF UTAH ACADEMIC HISTORY

Neurobiology & Anatomy, 01/01/2019 - Present

01/01/2019 Tenure Track, Assistant Professor

HONORS & FELLOWSHIPS & GRANTS

2021 – 2026	NIH – DP2 – Director's New Innovator Award
2021 – 2023	Brain and Behavior Research Foundation – Young Investigator Award
2020 – 2023	Whitehall Foundation – Research Grant
2014 – 2018	Simons Foundation – Collaboration on the Global Brain – Postdoctoral Fellowship
2007 – 2008	National Institutes of Health Training Grant, Boston University, Boston, MA

RESEARCH EXPERIENCE

2013 - Present **Postdoctoral Research**
Northwestern University, Evanston, IL
Laboratory of Dr. Daniel Dombeck
Project: Uncovering neural representations of time and space in medial entorhinal cortex through 2-photon calcium imaging

2007 - 2013 **Ph.D. Research**
Boston University, Graduate Program in Neuroscience, Boston, MA
Laboratory of Dr. Michael Hasselmo
Project: Intrinsic cellular mechanisms underlying medial entorhinal cortex grid cell coding

2005 - 2007 **Research Assistant**
University of Washington, Department of Psychology, Seattle, WA
Laboratory of Dr. Sheri Mizumori
Project: Neuronal representation of conditioned taste in the basolateral amygdala

PEER-REVIEWED JOURNAL ARTICLES

1. **Heys JG,** Wu Z, Allegra Mascaro AL, Dombeck DA. Inactivation of the Medial Entorhinal Cortex Selectively Disrupts Learning of Interval Timing. **Cell Report,** 32(12):108163.
2. **Heys JG**, Dombeck DA (2018). Evidence for a subcircuit in medial entorhinal cortex representing elapsed time during immobility. **Nature Neuroscience**, *21*(11), 1574-1582.
3. **Heys JG**, Shay CF, MacLeod KM, Witter MP, Moss CF, Hasselmo ME (2016). Physiological Properties of Neurons in Bat Entorhinal Cortex Exhibit an Inverse Gradient along the Dorsal-Ventral Axis Compared to Entorhinal Neurons in Rat. **Journal of Neuroscience,** *36*(16), 4591-9.
4. **Heys JG**, Rangarajan KV, Dombeck DA (2014). The functional micro-organization of grid cells revealed by cellular-resolution imaging. **Neuron**, *84*(5), 1079-90.
5. **Heys JG**, MacLeod KM, Moss CF, Hasselmo ME (2013). Bat and rat neurons differ in theta-frequency resonance despite similar coding of space. **Science**, *340*(6130), 363-7.
6. **Heys JG**, Hasselmo ME (2012). Neuromodulation of I(h) in layer II medial entorhinal cortex stellate cells: a voltage-clamp study. **Journal of Neuroscience**, *32*(26), 9066-72.
7. **Heys JG**, Giocomo LM, Hasselmo ME (2010). Cholinergic modulation of the resonance properties of stellate cells in layer II of medial entorhinal cortex. **Journal of Neurophysiology**, *104*(1), 258-70.

REVIEW ARTICLES

1. Issa JB, Tocker G, Hasselmo ME, **Heys JG**, Dombeck DA. (2020) Navigating Through Time: A Spatial Navigation Perspective on How the Brain May Encode Time. **Annu Rev Neurosci.** doi: 10.1146/annurev-neuro-101419-011117.
2. Barry C, **Heys JG**, Hasselmo ME (2012). Possible role of acetylcholine in regulating spatial novelty effects on theta rhythm and grid cells. [Review]. *Front Neural Circuits*, *6*, 5.
3. **Heys JG**, Schultheiss NW, Shay CF, Tsuno Y, Hasselmo ME (2012). Effects of acetylcholine on neuronal properties in entorhinal cortex. [Review]. **Frontiers in Behavioral Neuroscience**, *6*, 32.
4. Hasselmo ME, Brandon MP, Yoshida M, Giocomo LM, **Heys JG**, Fransen E, Newman EL, Zilli EA (2009). A phase code for memory could arise from circuit mechanisms in entorhinal cortex. [Review]. **Neural Networks**, *22*, (8), 1129-38.

INVITED TALKS

2021	**Heys JG.** A distinct subcircuit in medial entorhinal cortex mediates learning of interval timing behavior during immobility, Timing Research Forum Seminar Series (virtual)
2020	**Heys JG.** Neural Mechanisms Underlying Interval Timing in Medial Entorhinal Cortex, 2nd Conference of the Timing Research Forum, Queretaro, Mexico
2019	**Heys JG.** Specialized sub-circuits in medial entorhinal cortex encode elapsed time during immobility. Hippocampus Conference, Taormina, Italy
2019	**Heys JG.** Neural mechanism underlying temporal processing in the entorhinal cortex, Department of Biomedical Engineering, University of Utah, Salt Lake City, UT
2019	**Heys JG**. Neural representations of time and space underlying episodic memory. Biozentrum, University of Basel, Basel, Switzerland
2018	**Heys JG**. Distinct neural representations of time and space in medial entorhinal cortex. Simons Collaboration on the Global Brain NY Area Post-doc Meeting. New York, NY

2018	**Heys JG**. Neural representations of time and space underlying episodic memory. Department of Neurobiology, Duke University School of Medicine, Durham, NC
2018	**Heys JG**. Neural representations of time and space underlying episodic memory. Department of Neuroscience, Yale School of Medicine, New Haven, CT
2018	**Heys JG**. Neural representations of time and space underlying episodic memory. Department of Neurobiology and Anatomy, University of Utah School of Medicine, Salt Lake City, UT
2018	**Heys JG**. Neural representations of time and space underlying episodic memory. Department of Psychological and Brain Sciences, Boston University, Boston, MA
2017	**Heys JG**. Distance Neural Representations of Time and Space in medial entorhinal cortex, Simons Collaboration of the Global Brain Annual Meeting, New York, NY
2015	**Heys JG**. Optical Imaging and Manipulation of Medial Entorhinal Cortex Grid Cells. Simons Collaboration on the Global Brain Annual Meeting, New York, NY
2015	**Heys JG**. Using Virtual Reality to Enable Cellular Resolution 2-Photon [Ca2+] Imaging of Medial Entorhinal Cortex Grid Cells. 6th Bernstein Sparks Workshop: Multi-modal closed-loop stimulation and virtual realities, Munich, Germany
2013	**Heys JG**. A cross-species comparison of intrinsic cellular mechanisms underlying spatial processing in medial entorhinal cortex. Neuroscience Seminar, University of Wisconsin–Milwaukee, Milwaukee, WI
2012	**Heys JG**. Intrinsic cellular electrophysiology and mechanisms underlying spatial processing in medial entorhinal cortex. Department of Neurobiology, Northwestern University, Evanston, IL
2012	**Heys JG**. Intrinsic cellular electrophysiology and mechanisms underlying spatial processing in medial entorhinal cortex. Janelia Research Campus, Ashburn, VA