

**Mark Zielinski, M.S.**  
Brandeis University

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Neuroscience Ph.D. Program  
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**EDUCATION**

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- 2013-present      **Brandeis University**  
*M.S., Ph.D., Neuroscience - Quantitative Biology Specialization*  
Advisor: Dr. Shantanu Jadhav  
(expected June 2019)
- 2007-2011        **University of Chicago**  
*B.A., Biology- Specialization in Neuroscience*  
*Minor, Computational Neuroscience*

**RESEARCH EXPERIENCE**

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- 2013-present      **Brandeis University, Waltham, MA**  
*Graduate Student, Ph.D. candidate*  
Advisor: Dr. Shantanu Jadhav
- 2011-2013        **University of Chicago Medical Center, Chicago, IL**  
*Research Technologist, Islet Research Lab*  
Advisor: Dr. Manami Hara, Dr. Graeme Bell
- 2009-2011        **University of Chicago, Chicago, IL**  
*Research Assistant, Somatosensory Research Lab*  
Advisor: Dr. Sliman Bensmaia

## PUBLICATIONS

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0. (*in review*) **MC Zielinski**, JD Shin, SP Jadhav. Coherent coding of spatial position in prefrontal cortex and hippocampus on a theta timescale.
1. **MC Zielinski**, W Tang, SP Jadhav. The role of replay and theta sequences in mediating hippocampal-prefrontal interactions for memory and cognition *Hippocampus*. 2017;10.1002/hipo.22821
2. AE Papale, **MC Zielinski**, LM Frank, SP Jadhav, AD Redish. Interplay between hippocampal sharp wave ripple events and vicarious trial and error behaviors in decision making. *Neuron*. 2016;92(5):975-982.
3. SA Greeley, **MC Zielinski**, A Poudel, H Ye, S Berry, JB Taxy, D Carmody, DF Steiner, LH Philipson, JR Wood, M Hara. Preservation of Reduced Numbers of Insulin-Positive Cells in Sulfonylurea-Unresponsive KCNJ11-Related Diabetes. *Journal of Clinical Endocrinology and Metabolism*. 2017;102(1):1-5.
4. A Poudel, JL Fowler, **MC Zielinski**, G Kilimnik, M Hara. Stereological analyses of the whole human pancreas. *Scientific Reports*. 2016;6:34049.
5. Bailey KA, Savic D, **Zielinski M**, Park S-Y, Wang L, Witkowski P, Brady M, Hara M, Bell GI, Nobrega MA. Evidence of non-pancreatic beta cell-dependent roles of Tcf7l2 in the regulation of glucose metabolism in mice. *Human molecular genetics*. 2015;24(6):1646–1654.
6. Gołab K, Kizilel S, Bal T, Hara M, **Zielinski M**, Grose R, Savari O, Wang X-J, Wang L-J, Tibudan M. Improved Coating of Pancreatic Islets With Regulatory T cells to Create Local Immunosuppression by Using the Biotin-polyethylene Glycol-succinimidyl Valeric Acid Ester Molecule. *Transplantation proceedings*. 2014;46(6):1967–1971.
7. Manfredi LR, Saal HP, Brown KJ, **Zielinski MC**, Dammann JF, Polashock VS, Bensmaia SJ. Natural scenes in tactile texture. *Journal of neurophysiology*. 2014;111(9):1792–1802.
8. Savari O, **Zielinski MC**, Wang X, Misawa R, Millis JM, Witkowski P, Hara M. Distinct function of the head region of human pancreas in the pathogenesis of diabetes. *Islets*. 2013;5(5):226–228.
9. Wang X, Misawa R, **Zielinski MC**, Cowen P, Jo J, Periwal V, Ricordi C, Khan A, Szust J, Shen J. Regional differences in islet distribution in the human pancreas—preferential beta-cell loss in the head region in patients with type 2 diabetes. *PLoS One*. 2013;8(6).

10. Wang X, **Zielinski MC**, Misawa R, Wen P, Wang T-Y, Wang C-Z, Witkowski P, Hara M. Quantitative analysis of pancreatic polypeptide cell distribution in the human pancreas. PloS one. 2013;8(1):e55501.
11. Kilimnik G, Jo J, Periwal V, **Zielinski MC**, Hara M. Quantification of islet size and architecture. Islets. 2012;4(2):167–172.
12. Manfredi LR, Baker AT, Elias DO, Dammann III JF, **Zielinski MC**, Polashock VS, Bensmaia SJ. The effect of surface wave propagation on neural responses to vibration in primate glabrous skin. PloS one. 2012;7(2):e31203.

#### ABSTRACTS/ CONFERENCE PROCEEDINGS

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0. (*in preparation*) **MC Zielinski**, JD Shin, SP Jadhav. Coherent coding of spatial position in prefrontal cortex and hippocampus on a theta timescale. Poster presented at the 48th annual meeting of the Society for Neuroscience, San Diego, CA [Abstracts of the Society for Neuroscience 48: 424.03]
1. **MC Zielinski**, JD Shin, SP Jadhav. Sequential activity during hippocampal theta supports distinct prefrontal representations. Poster presented at the 47th annual meeting of the Society for Neuroscience, Washington, DC [Abstracts of the Society for Neuroscience 47: Diversity Poster Session, ME05.141]
2. **MC Zielinski**, AE Papale, AD Redish, LM Frank, SP Jadhav. Disrupting awake sharp-wave ripples increases vicarious trial and error behavior. Poster presented at the 45th annual meeting of the Society for Neuroscience, Chicago, IL [Abstracts of the Society for Neuroscience 45: 86.07]
3. AE Papale, **MC Zielinski**, LM Frank, SP Jadhav, AD Redish. Sequential activity during theta and sharp wave ripples supports flexible decision making. Poster presented at the 45th annual meeting of the Society for Neuroscience, Chicago, IL [Abstracts of the Society for Neuroscience 45: 86.04]
4. **Zielinski MC**, Wang X, Misawa R, Wang L-J, Witkowski P, Hara M. Histological Analysis of the Whole Human Pancreas in Health and Disease. Amer Diabetes Assoc 1701 N Beauregard St, Alexandria, VA 22311-1717 USA; 2013. p. A563–A563.
5. Greeley SAW, **Zielinski MC**, Wood JR, Steiner DF, Bell GI, Philipson LH, Hara M. Fewer Beta Cells and Insulin Granules in Autopsy Histology of a Patient With Sulfonylurea-Unresponsive KCNJ11 Neonatal Diabetes. Amer Diabetes Assoc 1701 N Beauregard St, Alexandria, VA 22311-1717 USA; 2013. p. A562–A562.
6. Golab K, Kizilel S, Bal T, Hara M, **Zielinski M**, Wang X-J, Grzanka J, Wang L-J, Cochet O, Tibudan M. Biotin-PEG-SVA as a more Effective Linking Molecule in Comparison to Biotin-PEG-NHS for Coating of Pancreatic Islets with Regulatory T Cells

(Tregs) to Create Local Immunoprotection-Optimization of the Method.  
 TRANSPLANTATION. Lippincott Williams & Wilkins 530 Walnut St, Philadelphia, PA  
 19106-3621 USA; 2013. Vol. 96, No. 6, p. S63-S63.

**7.** Golab K, Kizilel S, Bal T, Hara M, **Zielinski M**, Wang X, Grzanka J, Wang L, Cochet O, Tibudan M. Optimization of the Coating of Pancreatic Islets with T Regulatory Cells in the Novel Immunoprotective Approach. Wiley-Blackwell 111 River St, Hoboken 07030-5774, NJ USA; 2013. p. 242–242.

**8. Zielinski MC**, Wang X, Dilorio P, Jo J, Periwal V, Misawa R, Witkowski P, & Hara M. (2012). Pancreatic islet development and aging in humans. Poster presentation at 7th Annual Chicago Diabetes Day, Chicago, IL.

**9. Zielinski MC**, Wang X, Dilorio P, Jo J, Periwal V, Misawa R, Witkowski P, & Hara M. (2012). Pancreatic islet development and aging in humans. Poster presentation at 2012 Beta Cell Biology Consortium Retreat, Chantilly, VA.

**10.** Manfredi LR, Dammann JF, **Zielinski MC**, Polashock VS, Baker AT, & Bensmaia SJ. (2011). The statistics of natural scenes in tactile perception. Poster presented at the 41st annual meeting of the Society for Neuroscience, Washington DC [Abstracts of the Society for Neuroscience 41: 704.13]

## INSTITUTIONAL TALKS

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### Graduate Research Seminar

2018 Coherent coding of spatial position in prefrontal cortex and hippocampus  
 2017 Role of hippocampal and prefrontal neural activity patterns in decision making  
 2016 Role of hippocampal neural activity patterns in memory guided behavior

### Neuroscience Department Journal Club

2017-2018 Presentation of: DOI: 10.1038/nature21692  
 Mapping of a non-spatial dimension by the hippocampal-entorhinal circuit.

2016-2017 Presentation of: DOI: <http://dx.doi.org/10.7554/eLife.13998.001>  
 Adult axolotls can regenerate original neuronal diversity in response to brain injury.

2015-2016 Presentation of: DOI:10.1038/nature14031  
 Three-dimensional head-direction coding in the bat brain.

### Computational and Systems Neuroscience Journal Club

2016-2017 Presentation of: DOI: 10.1038/nn.4507  
 Hippocampal awake replay in fear memory retrieval.

2015-2016 Presentation of: DOI: 10.1126/science.aaa9633  
 Autoassociative dynamics in the generation of sequences of hippocampal place cells.

## TEACHING EXPERIENCE

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Fall 2015     Data Analysis and Statistics Workshop  
Fall 2015     Computational Neuroscience  
Spring 2016   General Biology Laboratory  
Fall 2017     Data Analysis and Statistics Workshop

## SCHOLARSHIPS, HONORS, AND AWARDS

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2017           Neuroscience Scholars Program Professional Development Award  
2016           Top 10% Kaggle Ranking- Melbourne Univ. AES/MathWorks/NIH Seizure Prediction  
2016-2018     Neuroscience Scholars Program (NSP)- Associate  
2012           Best Poster Award, 7th Annual Chicago Diabetes Day  
2011           Grant Finalist and Recipient, University of Chicago Uncommon Fund  
2009-2012     Scholarship Recipient, Cystic Fibrosis Scholarship Foundation  
2009-2012     Keynote Speaker, Cystic Fibrosis Scholarship Foundation  
2010-2011     University of Chicago Dean's List  
2008-2011     University of Chicago Odyssey Scholarship Recipient

## SCIENTIFIC MEMBERSHIPS AND ASSOCIATIONS

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2016- 2018           Neuroscience Scholars Program(NSP)- Associate  
2014- Present        American Association for the Advancement of Science (AAAS)  
2013- Present        Society for Neuroscience (SfN)

## COURSES AND CERTIFICATIONS

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2013           Coursera - Machine Learning, Dr. Andrew Ng  
2013           Coursera - Introduction to Data Science, Dr. Bill Howe

## SKILLS

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Matlab, Python, Git, Linux, Fiji/ImageJ, PCB design (Autodesk Eagle), some 3D modeling (Autodesk Inventor), SQL, R, Tableau

Data Analysis, Statistics, Signal Processing, Exploratory Data Analysis, Data Mining and Visualization, some Machine Learning and Big Data

Research, Experimental Design, Grant Writing, Teaching, Mentoring, Scientific Writing, Grant Writing, Histology and Immunohistochemistry, Aseptic Surgery, Animal Models of Disease and Behavior- Rat, Mouse, some NHP

Neuroscience, Systems Neuroscience, Computational Neuroscience, Behavioral Neuroscience, Electrophysiology, *in-vivo* Extracellular Electrophysiology, Neurobiology, Neuroanatomy, Neurophysiology, some Computational Biology, Endocrinology

Polish, some Spanish