Mark Zielinski, Ph.D.
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EDUCATION

2013-2020	**Brandeis University** *M.S., Ph.D., Neuroscience - Quantitative Biology Specialization* Advisor: Dr. Shantanu Jadhav
2007-2011	**University of Chicago** *B.A., Biology- Specialization in Neuroscience* *Minor, Computational Neuroscience*

RESEARCH EXPERIENCE

2013-2020	**Brandeis University, Waltham, MA** *Graduate Student, Ph.D. candidate, Postdoctoral Scholar* 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

Pending: **MC Zielinski**, JD Shin, SP Jadhav. Hippocampal theta sequences in REM sleep during spatial learning. bioRxiv 2021.04.15.439854; doi: https://doi.org/10.1101/2021.04.15.439854

1. Jeffrey R Curtis, Vibeke Strand, Steven Golombek, Lixia Zhang, Angus Wong, **Mark C Zielinski**, Viatcheslav R Akmaev, Alif Saleh, Sam Asgarian, Johanna B Withers. Patient

outcomes improve when a molecular signature test guides treatment decision-making in rheumatoid arthritis. Expert Review of Molecular Diagnostics. 2022;22(10):973-982.

2. **MC Zielinski**, JD Shin, SP Jadhav. Coherent Coding of Spatial Position Mediated by Theta Oscillations in the Hippocampus and Prefrontal Cortex. Journal of Neuroscience. 2019;39(23):4550-4565; DOI:10.1523/JNEUROSCI.0106-19.2019

3. **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

4. 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.

5. 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.

6. A Poudel, JL Fowler, **MC Zielinski**, G Kilimnik, M Hara. Stereological analyses of the whole human pancreas. Scientific Reports. 2016;6:34049.

7. 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.

8. Gołąb 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.

9. 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.

10. 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.

11. 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).

12. 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.

13. Kilimnik G, Jo J, Periwal V, **Zielinski MC**, Hara M. Quantification of islet size and architecture. Islets. 2012;4(2):167–172.

14. 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

1. 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]

2. 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]

3. 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]

4. 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]

5. 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.

6. 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.

7. 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.

8. 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.

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 7th Annual Chicago Diabetes Day, Chicago, IL.

10. 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.

11. 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

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
2018-2019   Presentation of: DOI: 10.1038/s41593-018-0256-4
A corticopontine circuit for initiation of urination

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.

Quantitative Biology Journal Club
2015   How to make a pizza from scratch- Food science, chemistry, and botany of flavor and cooking

TEACHING EXPERIENCE

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

MENTORSHIP

Spring 2023   Jean Goncalves, MPH

SCHOLARSHIPS, HONORS, AND AWARDS

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

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

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

SKILLS

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, Machine Learning, 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