

Michael F. Wells, PhD

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Education

- 2010 – 2015 **Massachusetts Institute of Technology**, Department of Brain & Cognitive Sciences—Cambridge, MA
Visiting Scholar in the McGovern Institute, Laboratory of Dr. Guoping Feng
- 2008 – 2015 **Duke University**, Department of Neurobiology—Durham, NC
Ph.D. in Neurobiology, Laboratory of Dr. Guoping Feng
Thesis Topics: Synaptic formation, circuit development, mouse models of neurodevelopmental disorders
- 2004 – 2008 **University of Notre Dame**, College of Science—Notre Dame, IN
B.S. in Biological Sciences, Cum Laude

Research Positions

- 2015—Present **Laboratory of Dr. Kevin Eggan**, Stanley Center for Psychiatric Research at the Broad Institute & Harvard University Department of Cell and Regenerative Biology—Cambridge, MA
K99/R00 Postdoctoral Fellow
- Created novel method for differentiating neural progenitor cells from human stem cells
 - Uncovered genetic contributors to neural phenotypes using whole genome CRISPR-Cas9 screens
 - Identified common human genetic variant associated with susceptibility to Zika virus infection *in vitro*
 - Using “villages” of stem cell-derived neural cells to study mechanisms underlying neurodiversity and developmental disorders
- 2008 – 2015 **Laboratory of Dr. Guoping Feng**, MIT Department of Brain & Cognitive Sciences—Cambridge, MA
F31 Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellow (2012-2015)
- Generated and characterized conditional knockout mouse models of human developmental diseases
 - Discovered synaptic defects in the cortico-striatal pathway of *Shank3b* knockout mouse
 - Identified thalamo-cortical pathway dysfunction in *Ptchd1* knockout mouse
 - Developed and performed cutting-edge mouse distractibility task with the Halassa lab (MIT)
 - Published several papers in high-impact journals, including co-first authored *Nature* article
- 2007 **Laboratory of Dr. Emmanuel Pothos**, Tufts Sackler School of Biomedical Science—Boston, MA
Sackler Summer Scholar
- 2006 **Laboratory of Dr. Virginia Seybold**, Univ. of Minnesota Department of Neuroscience—Minneapolis, MN
Life Sciences Summer Undergraduate Research Program (LSSURP) Scholar

Publications

Wells MF, Nemesh J, Mitchell JM, Ghosh S, Mello C, Meyer D, Piccioni F, Eggan K, McCarroll S. “Single-cell transcriptional profiling of cell villages enables interrogation of natural variation in gene expression and Zika virus susceptibility.” (*In preparation*)

Burberry A, **Wells MF**, Limone F, Couto A, Smith KS, Keaney J, Gillet G, van Gastel N, Wang J-Y, Pietilainen O, Qian M, Eggan P, Cantrell C, Mok J, Kadiu I, Scadden DT, Eggan K. “C9orf72 suppresses systemic and neural inflammation induced by gut bacteria.” *Nature* 582: 89-94, 2020 May 13.

Chen Q, Diester CA, Gao X, Guo B, Lynn-Jones T, Chen N, **Wells MF**, Liu R, Goard MJ, Dimidschstein J, Feng S, Shi Y, Liao W, Lu Z, Fishell G, Moore CI, Feng G. “Dysfunction of cortical GABAergic neurons leads to sensory hyper-reactivity in a *Shank3* mouse model of ASD.” *Nature Neuroscience* 1-13, 2020 March 2.

Altimus CM, Marlin BJ, Charalambakis NE, Colon-Rodriguez A, Glover EJ, Izbicki P, Johnson A, Lourenco MV, Makinson RA, McQuail J, Obeso I, Padilla-Coreano N, **Wells MF**. “The Next 50 Years of Neuroscience.” *Journal of Neuroscience* 40 (1) 101-106, 2020 January 2.

Orefice LL, Mosko JR, Morency DT, **Wells MF**, Tasnim A, Mozeika SM, Ye M, Chirila AM, Emanuel AJ,

Rankin G, Fame RM, Lehtinen MK, Feng G, Ginty DD. "Targeting Peripheral Somatosensory Neurons to Article Targeting Peripheral Somatosensory Neurons to Improve Tactile-Related Phenotypes in ASD Models." *Cell* (178) 867-886, 2019 Aug 8.

Wells MF, Salick MR, Piccioni F, Hill EJ, Mitchell JM, Worringer K, Raymond J, Kommineni S, Chan K, Ho D, Peterson B, Siekmann M, Pietilainen O, Nehme R, Kaykas A, Eggan K. "Genome-wide screens in accelerated human stem cell-derived neural progenitor cells identify Zika virus host factors and drivers of proliferation." *bioRxiv*, 2018 November 22. (*Under review*)

Salick MR*, **Wells MF***, Eggan K, Kaykas A. "Modelling Zika Virus Infection of the Developing Human Brain In Vitro Using Stem Cell Derived Cerebral Organoids." *J. Vis. Exp.* (127): e56404, 2017 September 19.

Wells MF*, Salick MR*, Wiskow O, Ho D, Worringer K, Ihry R, Kommineni S, Bilican B, Klim JR, Kane LT, Kaykas A, and Eggan K. "Genetic ablation of *AXL* does not protect human neural progenitor cells and cerebral organoids from Zika virus infection." *Cell Stem Cell* 19 (6): 703-708, 2016 December 1.

Wells MF*, Wimmer R*, Schmitt I, Feng G, Halassa M. "Thalamic reticular defects underlie ADHD-like behaviors in *Ptchd1*^{Y/-} mice." *Nature* 532: 58-63, 2016 April 7.

Zhou Y, Kaiser T, Monteiro P, Zhang X, Van der Goes MS, Wang D, Barak B, Zeng M, Li C, Lu C, **Wells M**, Amaya A, Nguyen S, Lewis M, Sanjana N, Zhou Y, Zhang M, Zhang F, Fu Z, Feng G. "Mice with Shank3 mutations associated with ASD and schizophrenia display both shared and distinct defects." *Neuron* 89 (1): 147-162, 2016 January 6.

Peca J*, Feliciano C*, Ting J, Wang W, **Wells MF**, Fu Z, Feng G. "Shank3 mutant mice display autistic-like behaviors and postsynaptic dysfunction." *Nature* 472: 437-442, 2011 April 28.

Grants & Awards

2021	Intersections Science Fellow, Yale School of Medicine
2020	Program for Achieving Career Excellence (PACE) Rising Star, Cornell University
2019	Rising Stars in Biomedical, Massachusetts Institute of Technology
2019 – 2024	K99/R00 Pathway to Independence Award (NIMH)
2019	University of Michigan, NextProf Science Future Faculty Workshop
2018	Certificate of Distinction in Teaching, Harvard University
2018 – 2021	Burroughs Wellcome Fund Postdoctoral Enrichment Program award
2018	Linton-Poodry Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Leadership Institute
2018	Abstract award, 13 th Annual Harvard University Stem Cell Institute Malkin Retreat
2017	Univ. of Washington Broadening the Representation of Academic Investigators in Neuroscience (BRAINS) Fellow
2016	Travel Award, 7 th ISN Special Conference of Neurochemistry
2012 – 2015	F31 Ruth L. Kirschstein National Research Service Award for Individual Predoctoral Fellowship (NIMH)
2013	Koch Institute Image Award
2012	Ford Foundation Predoctoral Fellowship (Award not accepted)
2008 – 2012	Duke Endowment Fellowship, Duke University
2011	Travel Award, Phelan-McDermid Syndrome International Consortium

Advocacy & Leadership

- 2020 – 2024 **Society for Neuroscience (SfN) Trainee Advisory Committee (TAC)**
Incoming Committee Chair (2020)
Committee Chair (2021-2024)
- 2020 – Present **COVID-19 National Scientist Volunteer Database**
Creator and co-director
- Launched and manage a database of over 9,300 scientists from around the country ready to volunteer their time and talents to fight the COVID-19 pandemic in their communities
 - Oversee over 100 volunteer coordinators as we work to find opportunities for the scientists in our database
- 2017 – 2020 **Wishart Media Inc**
Co-founder
- 501(c)(3) non-profit company created with musician Michael Angelakos (*Passion Pit*)
- 2017 – 2018 **Society for Neuroscience (SfN) Early Career Policy Ambassador Program**
Ambassador—One year term
- Led and participated in meetings with members of U.S. Congress during SfN Hill Day (March 2017)
- 2016 – 2019 **Society for Neuroscience (SfN) Trainee Advisory Committee (TAC)**
Committee Member—Three year term
- Provided input and guidance to the SfN Council and other committees on issues that concern trainees
- 2013 – 2015 **MIT Science Policy Initiative (SPI)**
Executive Committee Member and Discussion Series Chair
- Led and participated in meetings with members of U.S. Congress during Congressional Visit Day

Invited Seminars

- 2020 “Exploration of human neural diversity through mixed-donor cultures of Stem cell-derived NGN2-accelerated Progenitors (SNaPs).” Mt. Sinai Neuroscience Seminar Series, New York, NY.
- 2020 “How to Tell Your Personal Story.” Society for Neuroscience Advocacy Forum, Washington, DC.
- 2019 “Accelerated production of human stem cell-derived neural cells for large-scale genetic screens and multiplexed transcriptomic analysis.” Tufts University 10th annual Neuroscience Symposium, Boston, MA.
- 2019 “The genetics underlying Zika virus neuropathogenesis.” Broad Institute Functional Genomics Consortium annual meeting, Cambridge, MA.
- 2019 “Accelerated production of human stem cell-derived neural cells for large-scale genetic screens and multiplexed transcriptomic analysis.” Yale SYNAPSES seminar series, New Haven, CT.
- 2018 “Rapid induction of neural progenitor cells from human pluripotent stem cells for large-scale genetic screens.” SFARI Workshop: Studying ASDs using iPS cells and brain organoids, New York, NY.
- 2018 “Rapid differentiation of neural progenitor cells from human pluripotent stem cells for the study of Zika virus neuropathogenesis.” 13th Annual Harvard University Stem Cell Institute Malkin Retreat, Cambridge, MA
- 2017 “Bridging the gap between the bench and the big stage.” Society for Neuroscience annual conference—Chapters Workshop, Washington, DC.

Selected Posters and Presentations

- 2019 “Accelerated production of human stem cell-derived neural progenitor cells for large-scale genetic screens and multiplexed transcriptomic analysis.” Nanosymposium, Society for Neuroscience annual conference, Chicago, IL.

- 2017 “Rapid differentiation of neural progenitor cells from human pluripotent stem cells for the study of Zika virus neuropathogenesis.” Oral presentation, Harvard-LMU Young Scientists Conference, Munich, Germany.
- 2016 “Thalamic reticular dysfunction underlies attention deficits and hyperactivity in the *Ptchd1* knockout mouse.” Oral presentation, 7th ISN Special Conference on Neurochemistry, Coimbra, Portugal.
- 2015 Cognitive defects and thalamic reticular nucleus dysfunction in *Ptchd1* knockout mouse.” Poster, Wiring the Brain Conference, Cold Spring Harbor Laboratory.
- 2010 “*Shank3* as a mouse model of autism-spectrum disorder.” Oral presentation, MIT Brain & Cognitive Sciences Brain Lunch Series, Cambridge, MA.
- 2007 “Dietary obesity is linked to central and peripheral catecholamine deficits.” Poster, Tufts University Summer Symposium, Boston, MA.

Teaching

- 2018 **Harvard University Stem Cell and Regenerative Biology Department**—Cambridge, MA
Teaching Fellow for “SCRB15B: CRISPR/Cas9 Precision Genetics and Gene Therapy”
- 2016 **MIT Department of Brain & Cognitive Sciences**—Cambridge, MA
Invited lecturer for “9.32 Genes, circuit, and behavior”
- 2013 – 2014 **MIT Department of Brain & Cognitive Sciences**—Cambridge, MA
Teaching Assistant for “9.00 Introduction to Psychological Science”
- 2010 **Duke University Department of Neurobiology**—Durham, NC
Teaching Assistant for “Concepts in Neurobiology”

Outreach & Mentorship

- 2013 – 2015 **TTT Mentor Program**—Cambridge, MA
Grade-school project coordinator
- 2009 – 2010 **Building Opportunities and Overtures in Science and Technology (BOOST)**—Durham, NC
Science Mentor

Outreach Publications

- Wells MF**, “How Does This Postdoc Approach Advocacy? Putting His Audience First, In Unexpected Ways.” [Neuronline](#), 2017 May 31.
- Wells MF**, “We still don’t really know how Zika gets into the brain.” [Massive](#), 2017 April 2.
- Wells MF**, “Leading Edge Voices: Postdocs, what would you tell your younger self?” [Cell](#) 168, 2017 February 23.

Media Coverage

- “Molecular biologists offer wartime service in the effort to test for COVID-19.” [PNAS](#), April 15, 2020
- “Calling all scientists: Experts volunteer for virus fight.” [Associated Press](#), March 30, 2020
- “A call to scientists idled by shuttered labs: Share your bench skills and resources to fight Covid-19.” [STAT](#), March 24, 2020
- “Interview with Passion Pit’s Michael Angelakos and a Neuroscientist.” [Teen Vogue](#), May 19, 2017
- “Zika in Africa—the invisible epidemic?” [The Lancet](#), April 22, 2017
- “Passion Pit offer new album in exchange for science retweets.” [Entertainment Weekly](#), March 23, 2017
- “A Zika vaccine, but for whom?” [New York Times](#), December 28, 2016
- “Zika scientists: We’re back to square one.” [Boston Herald](#), December 3, 2016
- “Science Reddit Ask Me Anything (AMA).” [Reddit](#), March 28, 2016
- “MIT study uncovers possible genetic link for ADHD, autism.” [Boston Herald](#), March 24, 2016