Gabriella L. Boulting, Ph.D.
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Education

Ph.D., Biochemistry, Harvard University 2011
B.S., Biochemistry, University of California, Los Angeles 2005

Research Experience

Postdoctoral Fellow 2012 - present

Laboratory of Michael E. Greenberg, Department of Neurobiology, Harvard Medical School

- *Authored first study of neuronal activity-dependent transcription in human neurons and discovered primate-specific neuronal activity-regulated genes repurposed through enhancer evolution.*

- *Led the first genome-wide study of neuronal activity-dependent histone modification and transcription factor binding in human neurons and discovered ASD heritability enrichment unique to activity-inducible gene promoters.*

Graduate Studies 2007 - 2012

Laboratory of Kevin Eggan, Department of Stem Cell and Regenerative Biology, Harvard University

- *Led a comparative study of human induced pluripotent stem cells' (iPSCs) and human embryonic stem cells' (ESCs) ability to produce human spinal motor neurons and generated a vetted panel of human iPSC lines for in vitro ALS disease modeling.*

- *Examined in vitro differences between healthy and ALS patient-derived human spinal motor neurons, discovering ER-stress and hyperexcitability phenotypes.*

Research Associate 2005 - 2006

Laboratory of James Bowie, Molecular Biology Institute, University of California, Los Angeles

Undergraduate Research 2002 - 2005

Laboratory of James Bowie, Molecular Biology Institute, University of California, Los Angeles
Laboratory of Joseph Hajdu, Department of Chemistry and Biochemistry, Cal. State University, Northridge

Academic and Professional Honors

- Ruth L. Kirschstein National Research Service Award (NRSA), F32, Postdoctoral Fellow 2014 - 2017
- Mahoney Fellow, Harvard Medical School 2013
- Harvard Stem Cell Institute (HSCI) NRSA, T32, Graduate Student Fellow 2009 - 2011
- Michael and Anna Vranos Graduate Fund in the Life Sciences Fellow 2007 - 2009
- Arthur Furst Award for Excellence in Undergraduate Research, UCLA 2005
- B.S. awarded with honors, Magna Cum Laude, UCLA 2005
- Pfizer Summer Undergraduate Research Fellow 2004
- Florida Scholars Bright Futures Scholarship Recipient 1999 - 2001

Selected Publications

(* indicates equal contribution, ‡ indicates co-corresponding author)
Full publication history : https://scholar.google.com/citations?user=ZLm4qWoAAAAJ

Postdoc

Boulting, G. L.*‡, *et al.* , Greenberg, M. E.‡. Activity-dependent regulome of human GABAergic neurons reveal new patterns of gene regulation and neurological disease heritability. *In press :* Nature Neuroscience.

Ataman, B.*, **Boulting, G. L.***, *et al.,* Greenberg, M. E. (2016). Evolution of Osteocrin as an activity-regulated factor in the primate brain. Nature, 539(7628), 242–247. https://doi.org/10.1038/nature20111

Barak, B., Zhang, Z., Liu, Y., Nir, A., Trangle, S. S., Ennis, M., Levandowski, K. M., Wang, D., Quast, K., **Boulting, G. L**., *et al.,* Feng G. (2019). Neuronal deletion of Gtf2i, associated with Williams syndrome, causes behavioral and myelin alterations rescuable by a remyelinating drug. Nature neuroscience, 22 (5), 700-708.

Hochbaum, D. R., Zhao, Y., Farhi, S. L., Klapoetke, N., Werley, C. A., Kapoor, V., Zou, P., Kralj, J. M., Maclaurin, D., Smedemark-Margulies, N., Saulnier, J. L., **Boulting, G. L.**, *et al.,* Cohen, A.E. (2014). All-optical electrophysiology in mammalian neurons using engineered microbial rhodopsins. Nature Methods 11, 825–833.

Ph.D.

Boulting, G. L.*, *et al.,* Wichterle, H., & Eggan, K. (2011). A functionally characterized test set of human induced pluripotent stem cells. Nature Biotechnology, 29(3), 279–286. https://doi.org/10.1038/nbt.1783

Kiskinis, E.*, Sandoe, J.*, Williams, L. A., **Boulting, G. L.**, *et al.,* Eggan, K. (2014). Pathways disrupted in human ALS motor neurons identified through genetic correction of mutant SOD1. Cell Stem Cell, 14(6), 781–795. https://doi.org/10.1016/j.stem.2014.03.004

Di Giorgio, F. P., **Boulting, G. L.**, Bobrowicz, S., & Eggan, K. C. (2008). Human embryonic stem cell-derived motor neurons are sensitive to the toxic effect of glial cells carrying an ALS-causing mutation. Cell Stem Cell, 3(6), 637–648. https://doi.org/10.1016/j.stem.2008.09.017

Boulting, G. L., and Eggan, K. C. (2013). Genomic and Personalized Medicine (Second Edition). 381–390.

Wainger, B.J., Kiskinis, E., Mellin, C., Wiskow, O., Han, S.S., Sandoe, J., Perez, N.P., Williams, L.A., Lee, S., **Boulting, G.**, et al. Wolf. C. (2014). Intrinsic membrane hyperexcitability of amyotrophic lateral sclerosis patient-derived motor neurons. Cell Reports 7, 1–11.

Bock, C.*, Kiskinis, E.*, Verstappen, G.*, Gu, H., **Boulting, G.**, et al. (2011). Reference Maps of human ES and iPS cell variation enable high-throughput characterization of pluripotent cell lines. Cell 144, 439–52.

Undergraduate

Faham, S., **Boulting, G. L.**, Massey, E. A., Yohannan, S., Yang, D., and Bowie, J. U. (2005). Crystallization of bacteriorhodopsin from bicelle formulations at room temperature. Protein Sci 14, 836–840.

Massey‐Gendel, E., Zhao, A., **Boulting, G.**, *et al.,* Bowie, J. U. (2009). Genetic selection system for improving recombinant membrane protein expression in E. coli. Protein Sci 18, 372‐383.

Yohannan, S., Yang, D., Faham, S., **Boulting, G.**, Whitelegge, J., and Bowie, J. U. (2004). Proline Substitutions are not Easily Accommodated in a Membrane Protein. J Mol Biol 341, 1–6.

Research Presentations

- *Human neuronal activity-dependent gene regulation in development and disease*.
  NeuroLaunchpad online talk series, First Season 2021
- *Activity-dependent gene regulation and transcription of human GABAergic neurons*.
  Hock E. Tan and K. Lisa Yang Center for Autism Research, Harvard University 2020
- Centers of Excellence in Genomic Sciences 17th Annual Grantee Meeting, NIMH, NIH, Boston, MA 2019
- Centers of Excellence in Genomic Sciences 15th Annual Grantee Meeting, NIMH, NIH, Seattle, WA 2017
- Centers of Excellence in Genomic Sciences 14th Annual Grantee Meeting, NIMH, NIH, Stanford, CA 2016
- *Disease modelling using Patient iPSC-derived Neurons*. Roche Pharmaceuticals, Switzerland 2014
- Abcam Stochastic Events in Stem Cell Differentiation and Reprogramming Meeting, Las Vegas, NV 2010

Leadership and Community Engagement

- Founder of the Non-Human Primate Genomics affinity group, Harvard Brain Science Initiative 2020 - present
- Harvard Graduate Womxn in Science and Engineering (HGWISE), graduate student mentor 2020 - present
- Organized tours of HMS Department of Neurobiology laboratories for 65 under-represented group high school students in collaboration with HPREP 2018
- Member of the HMS Dean's Task Force on Diversity and Inclusion 2017 - present
- Member of Diversity in Scientific Pathways Subcommittee of the HMS Task Force on Diversity and Inclusion 2017 - present
- The Joint Committee on the Status of Women participant 2017 - 2019
- Women in Neuroscience (Program In Neuroscience, HMS) 2013 - present

Teaching Experience

- Applications of Pluripotent Stem Cells, Science in the News, Harvard University 2011
- Teaching Assistant, Developmental Genetics and Genomics - MCB 150, Harvard University 2008
- Teaching Fellow, Molecular Biology - MCB 52, Harvard University 2007
- Private tutor in biology and chemistry, Admiral Tutoring, Los Angeles, CA 2002 - 2005