

Paul W. Hook

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733 N. Broadway, MRB446, Baltimore, MD 21205, USA

EDUCATION

Johns Hopkins School of Medicine | Baltimore, MD, USA | 2014 - Present
Ph.D. Human Genetics (in progress)

The Pennsylvania State University | University Park, PA | 2008 - 2012
B.S. in Biochemistry and Molecular Biology (May 2012)

RESEARCH EXPERIENCE

Graduate Student | Advisor: Andrew McCallion | 2014 - Present
Johns Hopkins School of Medicine, Baltimore, MD

- Established strategies to isolate and characterize mouse dopaminergic neurons from a transgenic mouse model
- Designed, performed, and analyzed RNA-seq and single-cell RNA-seq experiments on mouse dopaminergic neurons
- Established a scoring paradigm for prioritizing candidate genes from Parkinson disease GWAS loci using single-cell RNA-seq data
- Analyzed publicly available ATAC-seq data in order to identify putative enhancers in central nervous system cell populations for subsequent functional testing
- Performed transgenic zebrafish assays in order to functionally validate putative enhancers found within deletions associated with autism

Research Technologist | PI: Andrew McCallion | 2012 - 2014
Johns Hopkins School of Medicine, Baltimore, MD

- Explored the functional consequences of disrupting genes in zebrafish including effects on somitogenesis and heart development
- Developed and implemented the use of Cas9 nuclease genome editing in zebrafish and human cell culture in the lab
- Managed the laboratory including being responsible for all ordering and working to maintain safety and compliance
- Trained lab members in relevant laboratory techniques and protocols

Science Undergraduate Laboratory Internship (SULI) | Advisor: Michael Huesemann | 2011
Department of Energy (DOE), Pacific Northwest National Laboratory, Sequim, WA

- Explored how temperature affected algal growth and algal lipid composition for the DOE's National Alliance for Advanced Biofuels and Bio-products team
- Built and established the use of an algal culture thermal gradient incubator

Chemical Research Intern | Advisor: Joseph T. Keiser | 2010 - 2011
The Pennsylvania University, University Park, PA

- Adapted and developed experiments focused on exploring the biochemical components of peanuts for an undergraduate laboratory class
- Assisted in designing and building demonstrations for undergraduate chemistry lectures

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PUBLICATIONS

- Hook, P. W.**, McClymont, S. A., Cannon, G. H., Law, W. D., Morton, A. J., Goff, L. A., & McCallion, A. S. (2018). Single-Cell RNA-Seq of Mouse Dopaminergic Neurons Informs Candidate Gene Selection for Sporadic Parkinson Disease. *The American Journal of Human Genetics*, 102(3), 427–446.
- Turner, T. N., Hormozdiari, F., Duyzend, M. H., McClymont, S. A., **Hook, P. W.**, Iossifov, I., ... Eichler, E. E. (2016). Genome Sequencing of Autism-Affected Families Reveals Disruption of Putative Noncoding Regulatory DNA. *American Journal of Human Genetics*, 98(1), 58–74.
- Maragh, S., Miller, R. A., Bessling, S. L., Wang, G., **Hook, P. W.**, & McCallion, A. S. (2014). Rbm24a and Rbm24b are required for normal somitogenesis. *PLoS ONE*, 9(8).
- Van Wagenen, J., Miller, T.W., Hobbs, S., **Hook, P.**, Crowe, B., and Huesemann, M. (2012). Effects of light and temperature on fatty acid production in *Nannochloropsis salina*. *Energies* 5, 731–740.

PRESENTATIONS

Hook, P.W., McClymont, S.A., Goff, L.A., McCallion, A.S. (2016). RNA-seq analysis identifies phenotypic heterogeneity among *ex vivo* purified dopamine neurons and highlights their progressive temporal diversification; Abstract #319. Presented at the 66th Annual Meeting of *The American Society of Human Genetics*, October 22, 2016, Vancouver, BC, Canada. **Platform talk.**

HONORS

Graduated with Distinction | The Pennsylvania State University | 2012
Dean's List | The Pennsylvania State University | 2008 – 2012
Kimberly Clark Bright Futures Scholarship | 2008 - 2012
Gail A. and Thomas G. Ernst Scholarship | 2009 - 2011

TEACHING

Teaching Assistant: Evolution of Ideas in Human Genetics (Graduate) | 2016
Presenter: Genome Geeks Are In | Smithsonian National Museum of Natural History | 2015
Peer Learning Assistant: Developmental Biology (Undergraduate) | 2011

LEADERSHIP

Student Representative: Human Genetics Pre-Doctoral Training Program | 2016 – Present