Morgan Sarah Schwartz

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EDUCATION

FALL 2018 - PRESENT	PhD in Biology **California Institute of Technology**, Pasadena, CA
MAY 2018	BA in Biology **Smith College**, Northampton, MA

RESEARCH EXPERIENCE

JAN 2019 - PRESENT	Graduate Student for Dr. David Van Valen, California Institute of Technology *Developing a spatial optical barcode method to perform high-throughput live cell pooled library screens.*
OCT 2018 - DEC 2018	Rotation Graduate Student for Dr. Angelike Stathopoulos, California Institute of Technology *Developed transgenic fly lines in order to study germband extension and explored the application of vector field analysis for quantifying the process.*
SEPT 2015 - AUG 2018	STRIDE Research Scholar for Dr. Michael Barresi, Smith College *Led a project investigating zebrafish forebrain development and developing software to analyze 3D structures in the brain to enable analytical comparisons of complex structures. Concluding in an honors thesis.*
JUNE - AUG 2016	Janelia Undergraduate Scholar for Dr. Philipp Keller, Janelia Research Campus, Howard Hughes Medical Institute *Studied time-lapse microscopy datasets and developed Python-based tools for characterizing metrics of cell behavior in Drosophila brain development.*
SUMMER 2015	Intern for Dr. Marwan Sabbagh, Banner Sun Health Research Institute *Analyzed the pathological and clinical presentation of Neurofibrillary Tangle Predominant Dementia in comparison to Alzheimer's Disease.*
AUG 2014 - MAY 2015	STRIDE Research Scholar for Dr. Laura Katz, Smith College *Studied the biodiversity of plankton populations in tide pools by isolating and sequencing the DNA of individual species.*
AUG 2014 - MAY 2015	Research Assistant for Dr. Thomas Riddell, Smith College *Developed a proposal for walking tour and accompanying marker text to memorialize the Northampton State Hospital.*

Jan - June 2014	Research Assistant for Southwest Autism Research and Resource Center *Studied the effect of volunteer work with rescue animals on the social skills of young adults with Autism Spectrum Disorder.*

Honors and Awards

2019	**Undergraduate Teaching Award**, Caltech Student Committee for Biology Advancement
2018	**Highest Honors**, Smith College Biology Department
2018	**First Place Undergraduate Poster**, New England Society for Developmental Biology
2017	**Finalist**, 2018 Rhodes Fellowship
2017	**Finalist**, 2018 Marshall Scholarship
2017	**Goldwater Scholar**, Barry Goldwater Scholarship and Excellence in Education Foundation
2017	**Associate Membership**, Sigma Xi, The Scientific Research Honor Society
2017	**First Place Undergraduate Poster**, National Society for Developmental Biology
2016	**First Place Undergraduate Poster**, New England Society for Developmental Biology
2014-2017	**Dean's List**, Smith College
2014-2018	**STRIDE Scholar**, Smith College
2014	**Faculty Prize**, Phoenix Country Day School
2014	**National Merit Scholar**, National Merit Scholarship Program

Publications

Schnabl JM, Litz M, Schwartz M, Barresi MJ et al. (In preparation) **Cranial neural crest cell immigration is required for forebrain formation in zebrafish.**

Schnabl JM, Litz M, Schwartz M, Barresi MJ et al. (In preparation) **Defining the cell types associated with commissure formation in the zebrafish forebrain.**

Schnabl JM, Schwartz M, Barresi MJ et al. (In preparation) **Forging a path: New roles for slit1a in mediating glial bridge development and requirements in axon pathfinding.**

Schwartz M, Schnabl JM, Litz M, Baumer BS, Barresi MJ. (2019) **ΔSCOPE: A new method to quantify 3D biological structures and identify differences in zebrafish forebrain development.** bioRxiv, 715698. (In press Developmental Biology)

Bannon D, Moen E, Schwartz M, Van Valen D, et al. (2019) **Dynamic allocation of computational resources for deep learning-enabled cellular image analysis with Kubernetes.** bioRxiv, 505032. (Under review Nature Methods)

Moen E, Borba E, Miller G, Schwartz M, Van Valen D, et al. (2019) **Accurate cell tracking and lineage construction in live-cell imaging experiments with deep learning.** bioRxiv, 803205. (Under review Nature Methods)

Schwartz M, Sabbagh M et al. (2016) **Neurofibrillary Tangle Predominant Dementia: Clinical and pathological description in a case series**. Journal of Alzheimer's Disease and Parkinsonism, 6:204.

Posters and Presentations

Schwartz M, Van Valen D, et al. (2019) **Deep learning enabled image analysis unites high throughput functional genomics with live cell imaging.** Presentation. Women in Computational Biology, Janelia Research Campus, VA.

Schwartz M, Barresi MJ, et al. (2018) **∆SCOPE: A new method to quantify biological structures and identify differences in zebrafish forebrain development.** Poster. New England Society for Developmental Biology, Woods Hole, MA.

Schwartz M, Barresi MJ, et al. (2017) **A new computational method to quantify 3D image data to detail changes in morphological structure and spatial relationships during nervous system development.** Poster. National Society for Developmental Biology, Minnesota, USA.

Schwartz M. (2016) **Untangling brain development at Janelia Research Campus.** Presentation. Smith in the World, Massachusetts, USA.

Schwartz M, Barresi MJ, et al. (2016) **Investigating the role of robo4 in glial bridge condensation and its influence on the formation of the post-optic commissure.** Poster. New England Society for Developmental Biology, Massachusetts, USA.

Schwartz M, Browne B, Sabbagh M. (2015) **Barriers and solutions to under-enrollment in Alzheimer's Disease clinical trials.** Poster. Banner Health Summer Research Symposium, Arizona, USA.

Schwartz M, McDannell B, El-Banna G, Grattepanche JD, Katz LA. (2015) **Microbial biodiversity in the ocean.** Poster. Smith College Celebrating Collaborations, Massachusetts, USA.

Schwartz M, Smith S, Riddell T. (2015) **A walking tour of Northampton State Hospital.** Presentation. Smith College Celebrating Collaborations, Massachusetts, USA.

Patents

Schwartz M, Pao E, Van Valen D. **Deep learning enabled spatial optical barcodes for pooled library screens.** Filed 13 Nov 2019. US Provisional Patent.

Teaching Experience

Fall 2019   **Teaching Assistant for Bi 122: Genetics**, California Institute of Technology
Collaborated with a team of four teaching assistants to write homework assignments and exam material.

Spring 2019   **Head Teaching Assistant for Bi 1: Principles of Biology**, California Institute of Technology
Led a team of two professors and eighteen teaching assistants to manage a required non-major course of 200 students. Earned a teaching award.

Winter 2019   **Teaching Assistant for Bi 8: Introduction to Molecular Biology**, California Institute of Technology
Worked with a team of six graduate teaching assistants to write homework and exam material and hold weekly recitation sections to supplement lecture material.

Fall 2017   **Lab Assistant for Bio 303: Developmental Biology**, Smith College
Worked collaboratively with the instructor and a three-person team to prepare experiments and was personally responsible for confocal microscope imaging.

Spring 2016   **Tutor for Bio 230: Genomes and Genetic Analysis**, Smith College
Led weekly and on request tutoring sessions, where I helped students master unfamiliar material and prepare for tests.