Morgan Sarah Schwartz

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EDUCATION

FALL 2018 - PRESENT	PhD in Biology **California Institute of Technology**, Pasadena, CA
SEPT 2014 - MAY 2018	BA in Biology **Smith College**, Northampton, MA

RESEARCH EXPERIENCE

JAN 2019 - PRESENT	Graduate Student, PI: 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, PI: 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, PI: Dr. Michael Barresi, Smith College *Led a team 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, PI: 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, PI: 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, PI: 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, PI: 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, 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

2020	**Honorable Mention**, National Science Foundation Graduate Research Fellowship
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
2018	**Finalist**, Rhodes Fellowship
2018	**Finalist**, 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
2014-2018	**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

Noah F. Greenwald, Geneva Miller, Erick Moen, Alex Kong, Adam Kagel, Christine Camacho Fullaway, Brianna J. McIntosh, Ke Leow, Morgan Sarah Schwartz, Thomas Dougherty, Cole Pavelchek, Sunny Cui, Isabella Camplisson, Omer Bar-Tal, Jaiveer Singh, Mara Fong, Gautam Chaudhry, Zion Abraham, Jackson Moseley, Shiri Warshawsky, Erin Soon, Shirley Greenbaum, Tyler Risom, Travis Hollmann, Leeat Keren, Will Graf, Michael Angelo, David Van Valen. (2021) **Whole-cell segmentation of tissue images with human-level performance using large-scale data annotation and deep learning.** *bioRxiv.* doi:10.1101/2021.03.01.431313.

Dylan Bannon, Erick Moen, Morgan Schwartz, Enrico Borba, Takamasa Kudo, Noah

Greenwald, Vibha Vijayakumar, Brian Chang, Edward Pao, Erik Osterman, William Graf, David Van Valen. (2021) **DeepCell Kiosk: scaling deep learning–enabled cellular image analysis with Kubernetes.** *Nature Methods.* doi:10.1038/s41592-020-01023-0. [https://github.com/vanvalenlab/kiosk-console]

Jake Schnabl, Mackenzie P. H. Litz, Caitlin Schneider, Nadia PenkoffLidbeck, Sarah Bashiruddin, Morgan S. Schwartz, Kristin Alligood, Stephen H. Devoto, Michael J. F. Barresi. (2020) **Characterizing the diverse cells that associate with the developing commissures of the zebrafish forebrain.** *Developmental Neurobiology.* doi:10.1002/dneu.22801.

Morgan S Schwartz, Jake Schnabl, Mackenzie PH Litz, Benjamin S Baumer, Michael Barresi (2020) **ΔSCOPE: A new method to quantify 3D biological structures and identify differences in zebrafish forebrain development.** *Developmental Biology.* [https://github.com/msschwartz21/deltascope]

Erick Moen, Enrico Borba, Geneva Miller, Morgan Schwartz, Dylan Bannon, Nora Koe, Isabella Camplisson, Daniel Kyme, Cole Pavelchek, Tyler Price, Takamasa Kudo, Edward Pao, William Graf, David Van Valen. (2019) **Accurate cell tracking and lineage construction in live-cell imaging experiments with deep learning.** *bioRxiv.* doi:10.1101/803205' [https://github.com/vanvalenlab/deepcell-tracking]

Morgan Schwartz, Thomas G Beach, Andrew Tsai, Michael Malek-Ahmadi, Sandra Jacobson, Lucia I Sue, Kathryn Davis, Marwan N Sabbagh and Geidy Serrano. (2016) **Neurofibrillary Tangle Predominant Dementia: Clinical and pathological description in a case series**. *Journal of Alzheimer's Disease and Parkinsonism* doi:10.4172/2161-0460.1000204.

CONFERENCE PRESENTATIONS

Gordon Research Seminar: Optics and Photonics in Medicine and Biology	2022
Winter Q-Bio	2022
American Society for Cell Biology	2021
Women in Computational Biology, Janelia Research Campus	2019
New England Society for Developmental Biology	2018

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

2021, 2022	**Teaching Assistant for DL@MBL: Deep Learning for Microscopy Image Analysis**, Marine Biological Laboratory

Spring 2021   **Teaching Assistant for BeBi 205: Deep Learning for Biological Data**, California Institute of Technology
Worked alongside Professor Van Valen to develop and teach a new course on the practical applications of deep learning for biological data.
`https://vanvalenlab.github.io/bebi205`

Fall 2019 & 2020   **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.