Zachary Lewis

Scientist | Manager | Product Owner | Data Analyst

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- Broadly-trained experimental scientist with deep expertise across analytic, molecular, and genomic approaches.
- Product owner and team leader, responsible for developing and launching new spatial proteomic assays.
- Strategic thinker with demonstrated success managing large cross-functional teams.
- Adept data scientist experienced with pipeline creation, workflow reproducibility, and computational biology.
- Skilled leader who nurtures cohesive groups ranging from small classrooms to international multi-laboratory teams.
- Accomplished communicator with high proficiency in visualizing data and translating complex scientific concepts for diverse audiences.

Education

2016 **Harvard University** | PhD in Organismic and Evolutionary Biology
- Dissertation : Causes and Consequences of Lung Loss in Salamanders

2007 **Reed College** | BA in Biology

Research Experience

January 2024 – Present | Scientist 3 | Molecular Genetics, Allen Institute for Brain Science, Seattle, WA
- Constructing mouse central and peripheral nervous system atlases.

Single-cell | Spatial biology | Data analysis | Neuroscience

December 2022 – October 2023 | Senior Scientist | Research Proteomics, NanoString Technologies, Seattle, WA
- Developed and launched the CosMx custom protein barcoding service assay product.
- Played a key leadership role in a multidisciplinary team developing a same-slide high-plex RNA and protein multi-omic assay for the CosMx Spatial Molecular Imager.
- Created a 120-plex immuno-oncology subcellular spatial proteomics assay and associated analytic methods.
- Led collaborations with academic partners using high-plex spatial proteomic assays for immuno-oncology and neuroscience applications.

Management | Immuno-oncology | Leadership | Data analysis | Assay development | Product development

August 2020 – December 2022 | Scientist 2 | Research Proteomics, NanoString Technologies, Seattle, WA
- Invented, developed and commercialized the CosMx spatial proteomics assay.
- Invented and commercialized a method to enable advanced cell segmentation and field of view selection for CosMx protein and RNA assays.
- Led a R&D team as a technical lead and Product Owner (Agile framework) for the CosMx spatial imaging system.
- Developed software and workflows for on- and off-instrument data processing and analysis.

Collaboration | Assay development | Spatial genomics | High-plex | Product launch | Project management

August 2017 – July 2020 | Postdoctoral Associate | Ecology and Evolutionary Biology, Yale University, New Haven, CT
- Led genome sequencing and assembly projects for four marine invertebrate species using several complementary technological approaches.
- Developed protocols for photographic and biochemical characterization of ultraviolet radiation-protective molecules in a marine invertebrate.
- Forged collaborations with international teams of researchers and technical specialists to generate gold-standard genome assemblies.
- Managed a team of students and boat pilots during international fieldwork to collect genomic material.

Teamwork | Visualization | High performance computing | Reproducibility | Sequencing | HPLC-MS/MS

August 2016 – August 2017 | Postdoctoral Associate | Ecology and Evolutionary Biology, Brown University, Providence, RI
- Developed a technology for spatial transcriptomics of histological tissue sections.
- Initiated gene expression analyses in a non-model plant species to determine the mechanism of C4-CAM photosynthesis. Gathered key data for a successful NSF grant proposal.
- Designed a low cost, high resolution 3D imaging system to reconstruct organismal morphology that has been deployed at other universities.

Assay development | Instrumentation | Spatial transcriptomics | Genomics

August 2009 – July 2016

PhD Student | Organismic and Evolutionary Biology, Harvard University, Cambridge, MA

- Established a research program focused on why certain salamanders fail to develop lungs, and how they perform gas exchange without lungs.
- Discovered a new pulmonary surfactant protein that may have therapeutic applications.
- Integrated diverse approaches in embryology, molecular biology, genomics and anatomy to determine the mechanism by which lungs fail to develop in certain salamanders.

Genomics | Gene expression | Embryology | Histology | Micro-computed tomography | Fieldwork

February 2008 – August 2009

Research Technician II, Oregon Health and Sciences University, Portland, OR

- Developed techniques for single cell lineage tracing in the zebrafish peripheral nervous system.
- Facilitated a multi-laboratory forward mutagenesis screen for neural defects in zebrafish.

Confocal microscopy | Molecular biology | Forward genetics | Immunohistochemistry

June 2007 – September 2007

Betty Liu Post-Baccalaureate Fellow, Reed College, Portland, OR

- Utilized histological and molecular techniques to describe the process of sexual differentiation in threespine stickleback fish.
- Developed molecular resources for *in situ* hybridization in threespine stickleback fish.

Histology | Molecular biology | Cloning

Leadership Experience

February 2021 – Present

Product Owner | CosMx Spatial Proteomics Assays, NanoString Technologies, Seattle, WA

- Led a large scrum team (>20) developing the first spatial proteomic assay for the CosMx Spatial Molecular Imager. The cross functional team spanned departments including R&D, Marketing, Product Development, Process Development, Engineering and Quality Engineering.
- Ran weekly standup meetings and report out meetings to senior leadership.
- Collaborated with Marketing, Project Management and the C-suite to plan product road maps.
- Managed three direct reports to develop assays and analysis technology.
- Incorporated lessons from formal management training and iterative feedback to develop as a manager and mentor.

August 2019 – Present

Lecturer | Ecology and Evolutionary Biology, Yale University, New Haven, CT

- Designed and implemented a new undergraduate lecture-based course in comparative physiology.
- Ran a large laboratory class in comparative anatomy.
- Successfully transitioned a laboratory class from in-person to remote during the COVID-19 pandemic.
- Integrated best practices for active and inclusive course design to foster a cohesive classroom community.
- Incorporated input from daily formative assessment to guide teaching and gauge comprehension.
- Managed teaching fellows and support staff so that the team could help students meet learning goals.

August 2009 – July 2016

Teaching Fellow, Harvard University, Cambridge, MA

- Designed new laboratories and activities for diverse courses such as herpetology, genetics, introductory biology and developmental biology.
- Received a university-wide Certificate of Distinction in Teaching Award for a Herpetology course.
- Implemented active learning approaches to improve student engagement and foster deep learning.

Skills

Project Management	SAFe Agile, Azure DevOps, Product ownership
Programming	*R*, LaTeX, Unix, Python, Docker, git, HTML
Imaging	Spatial proteomics, image analysis, highly-multiplexed imaging, spatial transcriptomics, confocal, micro-CT, episcopic block face imaging, 3-D reconstruction
Bench	RNA and DNA *in situ* hybridization, immunohistochemistry, transcriptomics, embryology, automation, HPLC-MS/MS, microsurgery, histology, field biology
High Performance Computing	Single-cell spatial analysis (RNA and protein), genome assembly, genome annotation, pipeline development, reproducible workflows, transcriptomics
Sequencing	Library preparation, Illumina, PacBio, High molecular weight DNA
Visualization	*R*, napari, Illustrator, Adobe CC, ImageJ, Keynote, PowerPoint