

# Dakota Hawkins

## Contact

---

Address: 36 Bellvista Road Apt. 24, Boston, MA  
Phone: (435)-764-5762  
e-mail: [dyh0110@bu.edu](mailto:dyh0110@bu.edu)  
GitHub: <https://github.com/HawkinsDakota>

## Education

---

2016 – Present Doctor of Philosophy, **Boston University**, Boston, MA  
Bioinformatics I Cynthia A. Bradham Laboratory  
2010 – 2015 Bachelor of Science, **Westminster College**, Salt Lake City, UT  
*cum laude* | Majors: Biology and Mathematics  
GPA: 3.7

## Work Experience

---

2015 – 2016 | Pacific Northwest National Laboratory, Richland, WA  
*Post Baccalaureate Research Assistant*  
Worked in the Applied Statistics and Computational Modeling group under the Computational and Statistical Analysis division. Research focused on bioinformatic-based projects such as analysis of -omics data and development of new quantitative tools to assist researchers.

2013 – 2015 | Westminster College, Salt Lake City, UT  
*QUARC Student Statistics Consultant*  
Helped develop quantitative reasoning on Westminster College Campus. Responsibilities focused on aiding in statistical analysis for local projects, teaching in-class lessons, and developing new quantitative literacy courses for Westminster College

## Research

---

May 2017 – Present Cynthia A. Bradham Laboratory at Boston University, Boston, MA  
Developing novel algorithms to identify shared cell-types across treatments in scRNAseq data, and to integrate spatial information from fluorescence imaging with high-throughput scRNAseq.

Jan. 2017 – May 2017 Paola Sebastiani Laboratory at Boston University, Boston, MA  
Performed eQTL analysis to establish tissue-specific biomarkers for Alzheimer's disease.

Sept. 2016 – Dec. 2016 Stefano Monti Laboratory at Boston University, Boston, MA  
Leveraged general linear models to determine cancer-specific immune response in tumor cells.

Jul. 2016 – Sept. 2016 James Galagan Laboratory at Boston University, Boston, MA  
Conducted ChIP-Seq and RNA-Seq experiments to help map the transcriptional regulatory network of *E. coli*.

Mar. 2016 – Jul. 2016 Pacific Northwest National Laboratory, Richland, WA  
Aided in protein-based stable isotope probing experiments by running analysis pipelines to calculate labeling statistics.

Nov. 2015 – Jul. 2016 Pacific Northwest National Laboratory, Richland, WA  
Provided statistical support to determine differences in -omic make-up of the fecal microbiome between successful and unsuccessful gastric bypass patients.

Jul. 2015 – Feb. 2016 Pacific Northwest National Laboratory, Richland, WA  
Helped create and implement displays and algorithms to visualize and quantify shotgun proteomic data.

2013 – 2014 Westminster College, Salt Lake City, UT  
Developed novel program in Python for automating detection of singing on the nest in field recordings of Northern Mockingbirds.

2012 – 2013 Westminster College, Salt Lake City, UT  
Collected field recordings of House Finch songs to compare urban and non-urban song dialects.

Jan. 2012 – Jun. 2012 University of Utah Health Care, Salt Lake City, UT  
Aided in genetic analysis running reverse transcription and PCR analysis.

## Relevant Course Work

---

Math	Mathematical Biology (I & II), Differential Equations, Mathematical Statistics, Probability and Statistics, Applied Statistics, Statistics for the Life Sciences, Networks, Abstract Algebra
Science	Genetics, Cell Biology, Organic Chemistry, Developmental Biology, Ecology
Computing	Scientific Computing, Intro to Data Structures

## Programming Languages

---

Python:	Used generally for data analysis, machine learning, and package development. <a href="https://github.com/dakota-hawkins/yamada">https://github.com/dakota-hawkins/yamada</a>
R:	Used for -omics data analysis and visualization. <a href="https://github.com/BradhamLab/scPipe">https://github.com/BradhamLab/scPipe</a>
MATLAB:	Used for numerical analysis of different mathematical systems. <a href="https://github.com/HawkinsDakota/MCM2015">https://github.com/HawkinsDakota/MCM2015</a>
C++:	Used for computer vision tasks including object detection and segmentation. <a href="https://github.com/dakota-hawkins/ComputerVision">https://github.com/dakota-hawkins/ComputerVision</a>

## Selected Posters and Presentations

---

- 2020 *ICAT: A Novel Method for Identifying Cell-types across Treatments in Single-cell RNA Sequencing Data*  
**Bioinformatics Open House**  
Unveiled new algorithm to accurately identify cell-types across biological conditions.
- 2019 *Subpopulation Discovery During Patterning-Induced Developmental Diversification in Sea Urchin Embryos via Single-Cell RNA-Seq*  
**Society for Developmental Biology**  
Presented work showcasing subpopulation disruption during perturbation experiments.
- 2018 *Automated Identification of Primary Mesenchyme Cells in Confocal Images*  
**International Conference for the Developmental Biology of the Sea Urchin XXV**  
Presented a computer vision algorithm to identify 3 Dimensional cell boundaries.
- 2017 *Subpopulation Discovery During Patterning-Induced Developmental Diversification in Sea Urchin Embryos via Single-Cell RNA-Seq*  
**The International Workshop on Bioinformatics and Systems Biology**  
Presented work identifying novel subpopulations of Primary Mesenchyme Cells during sea urchin development.
- 2014 *Detecting Singing on the Nest*  
**Westminster College Undergraduate Research Conference**  
Presented undergraduate work to automatically isolate bird songs in field recordings.
- 2014 *An Interdisciplinary Quantitative Analysis and Research Cooperative (QUARC) at Westminster College*  
**Electronic Conference on Teaching Statistics**  
Helped present current activities and goals of QUARC to promote quantitative reasoning at Westminster College.
- 2014 *O Captain! My Captain!*  
**Mathematical Association of America, Intermountain Section**  
Presented methods to determine the best college sports coach over the past century.
- 2014 *Introducing QUARC*  
**Westminster College - Tutorpalooza**  
Presented activities and goals of QUARC to fellow tutors and aids on Westminster campus.
- 2013 *Frequency Characteristics of Urban House Finch Songs*  
**Ecological Society of America**  
Presented undergraduate research on house finch dialects in urban areas within Salt Lake.
- 2013 *Frequency Characteristics of Urban House Finch Songs*  
**Utah Conference on Undergraduate Research**  
Presented undergraduate research on house finch dialects in urban areas within Salt Lake.

## Awards and Accolades

---

2020	1st Place Poster – Bioinformatics Open House, Boston University
2017	2nd Place Poster – IBSB Conference, Berlin Germany
2016	NIH Trainee Fellowship – Boston University
2016	Outstanding Performance Award – Pacific Northwest National Laboratory
2014, 2015	Honorable Mention – Mathematical Competition in Modeling
2013 – 2015	Gore Math/Science Scholarship – Westminster College
2013, 2014	Gore Math/Science Summer Research Grant – Westminster College
2012	Scholars Summer Research Grant – Westminster College

## Professional Affiliations

---

2014 – Present	Beta Beta Beta (Biology Honor Society)
----------------	--