Justin Silverman

CONTACT INFORMATION

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justin-silverman.com
statsathome.com

RESEARCH INTERESTS

Mathematical and Statistical Models for Solving Clinically Relevant Problems
Diet and human health, host-associated microbiota, complex systems, machine learning, geometric approaches to probability and statistics, probability theory

EDUCATION

Duke University

M.D./Ph.D. Candidate (2012 - PhD expected 2018, MD expected 2019)
Computational Biology and Bioinformatics

- Dissertation Topic: Bayesian time-series models for the design and evaluations of microbiome-based therapeutics
- Advisor: Lawrence David, Ph.D.

Johns Hopkins University

B.S. Physics and Biophysics (Double Major), May 2011

- Minor in mathematics
- Overall GPA: 3.87

PUBLICATIONS

Silverman JD, Washburne AD, Mukherjee S, David LA, (2017) A phylogenetic transform enhances analysis of compositional microbiota data. eLife 2017;6:e21887

Washburne AD, **Silverman JD**, Leff JW, Bennett DJ, Darcy JL, Mukherjee S, Fierer N, David LA. (2017) Phylogenetic factorization of compositional data yields lineage-level associations in microbiome datasets. PeerJ 5:e2969 https://doi.org/10.7717/peerj.2969

PATENTS AND SOFTWARE

Justin Silverman (2016) philr: Phylogenetic partitioning based ILR transform for metagenomics data. R package version 1.0.0. http://bioconductor.org/packages/philr/

Justin David Silverman, Adam Sean Jermyn, Nina Markovic. (2015) *System for Lightweight Image Processing.* U.S. Patent 9,097,739.

CONFERENCE TALKS

Modeling time evolution and therapeutic effect in human microbiota, The 7^{th} International Workshop on Compositional Data Analysis, Abbadia San Salvatore, Italy. (June 2017)

INVITED TALKS

Scalable count-compositional models for microbiome time-series data, Seminari d'Estadistica I Investigacio Operativa, Universitat Politècnica de Catalunya, Spain. (May 2017)

Modeling time evolution in human microbiota, Seminar in Compositional Data, Universitat de Girona, Spain. (May 2017)

A geometric approach to modeling human microbiota dynamics, Health Analytics Workshop, Duke University. (November 2016)

Honors and Awards

Best Young Presentation (Compositional Data Analysis Workshop)	2017
Phi Beta Kappa (JHU Highest Honors for Arts and Sciences)	2011
Donald E. Kerr Memorial Award for Excellence in Physics	2011
H. Keffer Hartline Award for Outstanding Scholarship in Biophysics	2011
JHU Office of Greek Life Senior Academic Excellence Award	2011
Goldwater Scholar	2010
Provost Undergraduate Research Award	2010
Materials Research Science and Engineering Center, Summer REU	2010
Sigma Pi Sigma (Physics Honor Society, Invitation Only)	2010

Scientific Research Experience

Compositionally robust approaches to microbiome data analysis. 2014–Present
advisor: Lawrence David, Molecular Genetics and Microbiology
Duke University

Characterization of ultra-short single-walled carbon nanotubes. 2010–2012
advisor: Nina Markovic, Department of Physics
Johns Hopkins University

Quantifying the burden of type II diabetes and obesity in rural Guyana 2010
advisor: Sherryn Roth, Department of Medicine
University of Toronto

Teaching Experience

Statistical Methods in Computational Biology Spring 2017
Teaching Assistant, Duke University

Spectroscopy (Quantum Mechanics for Biophysics) Fall 2011
Teaching Assistant, Johns Hopkins University

Standardized Testing

270	USMLE Step 1	2014
263	USMLE Step 2 CK	2015
Pass	USMLE Step 2 CS	2015

Graduate / Medical Coursework

- Statistical Methods for Computational Biology
- Bayesian and Modern Statistics
- Time Series and Dynamic Models
- Genome Tools and Technologies
- Intro Computational Genomics
- Molecular Biology
- Biochemistry
- Physiology
- Pathology
- Neuroscience
- Immunology
- Medical Microbiology

Clinical Rotations

- Medicine
- Surgery
- Pediatrics
- Neurology
- Psychiatry
- Obstetrics and Gynecology
- Pediatric Intensive Care
- Emergency Medicine
- Family Medicine
- Radiology