

Steven B Smith

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http://stevenbsmith.net

CAREER OBJECTIVES

The ability to use computational and bioinformatic methods to solve clinical problems. The application of mathematical models and computer algorithms to “omic” data to make associations, predict outcomes, or prioritize experimentation. Ideally, the ability to also conduct experimental validation of computational findings.

INDUSTRY EXPERIENCE

Personal Genome Diagnostics, Baltimore, MD

June 2017-Present

Bioinformatics Scientist

- Developing NGS bioinformatics pipelines to analyze cancer signatures in tissue and liquid biopsy.
- Responsible for on-time delivery of key NGS analytes that meet customer specifications and performance.
- Design NGS experiments to evaluate performance of pipeline components.

Acidophil, LLC, Lutherville, MD

August 2014-March 2017

Bioinformatics Intern

- Assisted company with various SharePoint tasks to help streamline virtual collaboration.
- Performed IP, due diligence and IP research on a myriad of projects to support ongoing efforts.

GlaxoSmithKline Pharmaceuticals, Upper Merion, PA

September 2010-July 2012

Computational Biology Intern

- Computationally discovered common genomic signatures of host responses after exposure to respiratory viruses and bacteria. Identified possible drug targets for follow-up studies.
- Identified potentially repurposed compounds that reverse viral- or bacterial- host gene signature using Connectivity-MAP analysis.
- Analyzed Next Generation Sequencing metagenomic data in diabetic and obese mouse models to elucidate the role of microbiome in chronic disease states.

AstraZeneca Pharmaceuticals, Wilmington, DE

March 2009-September 2009

Research Assistant

- Lead a study that quantified the effects of rat body temperature compensation in whole body plethysmography. Prospective impact to study design considerations during assessment studies.
- Evaluated the safety profile of seven candidate drug compounds *in vivo* using combinations of telemetry, automated blood sampling, and whole body plethysmography.
- Performed jugular vein and carotid artery cannulation surgery to support ongoing safety assessment studies.

Lyophilization Technology, Inc, Warminster, PA

September 2007 to March 2008

Laboratory Technician

- Assisted in formulation and filling of freeze-dried parental pharmaceuticals according to GMPs.
- Performed finished product testing such as Karl Fischer titration for moisture analysis on freeze-dried products to ensure proper moisture extraction for long-term preservation.
- Composed and executed qualification validation protocols and engineering studies to maintain compliance.

COMPUTATIONAL & BIOINFORMATIC EXPERIENCE

- Used computational methods to evaluate and prioritize Next Gen Seq gene expression data in a variety of computer languages including **Python** and **R**; **machine learning** (Naïve Bayes, Random Forest).
- Investigated host-microbiome interactions using **RNA- and DNA-seq** approaches using pipelines implementing Tophat/BWA, DESeq, edgeR and Bayesian and machine learning algorithms.
- Designed/implemented functional algorithms, workflows, and databases using **Perl, Linux, and MySQL** to make processes automated, repeatable, traceable, and transparent.

LABORATORY EXPERIENCE

- Optimized an RNA extraction method to sequence small RNA on Illumina HiSeq 4000 platform.
- Designed experiments for quantifying microRNA and microbial species using qPCR.
- Executed cell and bacterial culture experiments.

EDUCATION

University of Maryland, College of Computer, Mathematical, and Natural Sciences

Doctor of Philosophy in Biological Sciences, Graduation: 2017 (Comp. Bio, Bioinformatics, & Genomics)

Mentor: Jacques Ravel, Institute for Genome Sciences, Baltimore, MD

Thesis Title: Identification and Characterization of Regulatory miRNAs and mRNAs in the Longitudinal Human Host Response to Vaginal Microbiota.

University of Pennsylvania, School of Engineering & Applied Science

Master of Science in Engineering, Graduated August 2011 (Major: Bioengineering)

Thesis Title: Identification of Common Biological Pathways and Drug Targets in Respiratory Viral Infection Using Host mRNA Expression Profiles.

Drexel University, School of Biomedical Engineering, Science & Health Systems

Bachelor of Science in Engineering, Graduated Cum Laude June 2010 (Major: Biomedical Engineering)

PEER REVIEWED PUBLICATIONS

Smith SB, Edwards V, Humphrys M, Gajer P, Ali SB, and Ravel J (2017) *microRNA Expression Induced by Vaginal Microbiota Controls Cell Proliferation*. Manuscript under review.

Smith SB and Ravel, J (2017) *The vaginal microbiota, host defense and reproductive physiology*. J Physiol, 595: 451–463. doi:10.1113/JP271694

Smith SB, Magid-Slav M, Brown JR (2013) *Host Response to Respiratory Bacterial Pathogens as Identified by Integrated Analysis of Human Gene Expression Data*. PLoS ONE 8(9): e75607.

Smith SB, Dampier W, Tozeren A, Brown JR, Magid-Slav M (2012) *Identification of Common Biological Pathways and Drug Targets Across Multiple Respiratory Viruses Based on Human Host Gene Expression Analysis*. PLoS ONE 7(3): e33174.

SEMINARS & CONFERENCES

Sequence-Based Analysis of Human MicroRNA Expression Associated with Dynamic Vaginal Microbiota. American Society for Microbiology Microbe Conference. Boston, Massachusetts. June 18, 2016.

Identifying Human Host Response Caused by Multiple Viruses. Computational Biology Seminar Series. GlaxoSmithKline Pharmaceuticals, King of Prussia, Pennsylvania. November 15, 2011.

Identification and Characterization of Arabidopsis Mutants with Known miRNA Phenotype. Genetics & Molecular Biology Lab Seminar. University of Pennsylvania, Philadelphia, Pennsylvania. April 21, 2011.

Effects of Varying Body Temperature in Whole Body Plethysmography. Safety Assessment Seminar. AstraZeneca Pharmaceuticals, Wilmington, Delaware. September 22, 2009.