Maxwell Murphy

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EDUCATION

University of California, Berkeley — **Berkeley, CA**

Ph.D. Biostatistics — Expected May 2024

M.A. Biostatistics — May 2019

B.A. Molecular and Cellular Biology — Developmental Genetics — May 2013

SKILLS

Computer/Programming:

- Languages | Python, R, Typescript, Javascript, SQL, Java, C++, C, Bash
- Frameworks/Libraries/Tools | Tidyverse, Flask, NumPy, SciPy, MatPlotLib, Pandas, D3.js, TensorFlow, Angular, Git, Docker
- Parallel programming/algorithm implementation, and cloud computing

Statistics:

- Applying causal inference techniques and ensemble machine learning to estimate effects of longitudinal, static, and dynamic interventions
- Developing and applying Bayesian Modeling methodology and using probabilistic programming languages
- Working with large -omics and sequencing datasets such as scRNAseq and microarray data

RESEARCH EXPERIENCE

University of California, Berkeley — **Berkeley, CA**

Center for Targeted Machine Learning and Causal Inference

Accenture Targeted Learning and Causal Inference Fellow — Jan 2020–Aug 2022

Developed software for applying targeted learning and causal inference methodology with a focus on real industry use-cases, 'big data' sets, and cluster trials. Developed novel approach to managing supply chain risk through state of the art survival analysis and machine learning.

University of California, San Francisco — **San Francisco, CA**

Graduate Student Researcher — Principle Investigator: Bryan Greenhouse (Biohub) — Aug 2017–Current

Currently developing statistical models to infer underlying complexity of malaria infections using mixed genetic data and spatial models of population structure to infer origin of clinically detected infections. Providing support to lab members in developing statistical models for various bioinformatics pipelines.

Staff Research Associate II | Lab Manager — Greenhouse Lab/Malaria Elimination Initiative — Apr 2014–Aug 2017

Conducted large scale multiplex and nested PCR experiments to generate genetic data for malaria transmission mapping. Developed data analysis pipeline and graphical user interface for high-throughput analysis of genetic data from malaria causing parasites. Developed applications for tracking clinical samples used in lab, and data visualization tools for analyzing transmission network based data. Carried out administrative duties of lab, managed other members of the lab, conducted PCR experiments on clinical samples, liaised with foreign clinical labs and provided technical support for protocols.

INDUSTRY EXPERIENCE

Accenture — **San Francisco, CA**

Technology Innovation Summer Associate Manager — May 2021–Aug 2021

Developed causal inferential frameworks applying the Targeted Learning methodology to leverage machine learning while maintaining robust statistical inference with applications to problems within supply chain management. Developed a simulation framework in Python to explore performance of various machine learning methods and provide insights to stakeholders.

Verily Life Sciences — Project Debug — **South San Francisco, CA**

Data Science Intern — May 2019–Aug 2019

Developed statistical pipelines to provide realtime estimates of and inference around mosquito abatement techniques. Developed probabilistic spatial models of mosquito dispersal to inform and optimize adaptive mosquito release scheduling. Provided statistical guidance in developing experimental trial design.

CytomX Therapeutics — **South San Francisco, CA**

Database Developer — Oct 2013—Apr 2014

Developed SQL database to organize and make accessible in-vivo data generated by the Pharmacology group. Used VBA to develop an Excel/VBA based front-end to access and upload data for non-technical users. Carried out data analysis on publicly available gene expression data (The Cancer Genome Atlas) and built internal tools for data exploration and use by other members of company.

Pharmacology/Bioinformatics Intern — May 2013–Aug 2013

Performed data analysis on publicly available gene expression data to identify potential targets for cancer therapeutics, then carried out cell cytotoxicity experiments at the bench to validate predictions. Carried out day-to-day tasks in the pharmacology group tasked with characterizing efficacy of novel cancer therapeutics, including maintaining cancerous mammalian cell lines and basic animal husbandry in a BSL 2 lab.