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## Summary

I am a **Software Engineer at Human Longevity Inc.** We leverage **massive amounts of sequencing, phenotyping,** and **metabolics data** to **extend healthy human life**. I have deep training in **statistical computing, machine learning, chemical biology,** and **epidemiology**. I **finished my PhD in three years**, and have completed a total of **seven primary author manuscripts** and **two software packages**.

## Education

**University of California, San Francisco**, San Francisco, CA
*PhD*, Epidemiol. and Transl. Science (*emph.* Bioinformatics), 2011–2014

**University of California, Berkeley**, Berkeley, CA
*MPH*, Epidemiology & Biostatistics, 2009–2011
*MS*, Chemical Biology, 2007–2009

**Pomona College**, Claremont, CA
*BA*, Chemistry, 2002–2006

## Skills

**Hacking/Data Jiujitsu**: Python, R, C, Julia, Unix, SQL, SGE systems, parallel computing, pandas, sklearn, nltk, matplotlib, ggplot2, bokeh.
**Statistics/Machine Learning**: Feature selection, regression, clustering, classification (SVM, random forest, neural networks, elastic net, *etc.*)
**Translational Science/Bioinformatics**: Drug design, disease modeling, high throughput experimental data (RNAseq, proteomics, etc.), whole-genome sequencing data (microbiome, comparative genomics, population genetics).

## Software packages

MOSAIC, a foundational method for discovering, e.g. host susceptibility loci
http://pythonhosted.org/bio-MOSAIC
CauseMap, a tool for establishing causality in complex non-linear systems
http://cyrusmaher.github.io/CauseMap.jl

## Research Experience

**University of California, San Francisco** *GSR* **June 2011 to present**
Projects included: statistical methods development and deployment, scoring and integration of complex experimental data, investigation of genetic basis of human disease.

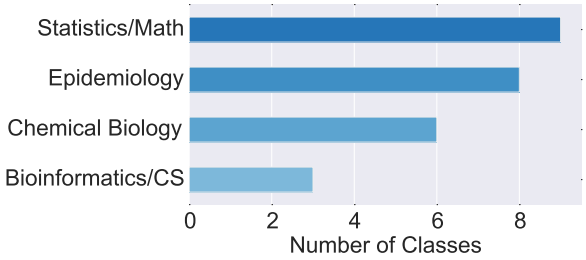
**The Francis I. Proctor Foundation** *RA II* **June 2010 to May 2011**
Built high-performance probabilistic disease model to quantify cost of antibiotic resistance in *S. pneumoniae*. Calculated timeline for competitively eliminating resistance.

**University of California, Berkeley** *RA II* **June 2009 to June 2010**
Conducted a comprehensive literature review of cost-effectiveness of influenza vaccination. Combined with own disease modeling to quantify economic cost of influenza.

**University of California, Berkeley** *GSR* **Sept. 2007 to May 2009**
Leveraged computational tools to design improved inhibitors against tuberculosis. Approaches included molecular simulation, isosteric ligand design, and molecular docking.

**Pomona College** *UGSR* **May. 2005 to May 2006**
Developed a novel method for reducing the cost of small-sample MRI experiments from millions of dollars to ∼$30K. Currently used as a teaching tool at Pomona College.

## Graduate Coursework




## Awards & Honors

Ruth L. Kirschstein National Research Service Award, 2013 to present.
Lloyd M. Kozloff Fellowship, 2013 to 2014.
National Merit Scholarship, 2002 to 2006.

## Publications

**Maher MC** and Hernandez RD. CauseMap: Fast inference of causality from complex time series. *Submitted to Source Code in Biology and Medicine.*

**Maher MC** and Hernandez RD. A MOSAIC of methods: Improving ortholog detection through integration of algorithmic diversity. *Submitted to G3.*

Thompson AM , **Maher MC**, Uricchio LH, Szpiech ZA, Hernandez RD. Comparing Evolutionary Rates Using An Exact Test for 2x2 Tables with Continuous Cell Entries. *Biostatistics. In Review.*

Vujkovic-Cvijin*, Dunham RM*, Iwai S, **Maher MC**, Albright R, Broadhurst MJ, Huang Y, Lederman MM, Hernandez RD, Somsouk M, Deeks SG, Hunt PW, Lynch SV, McCune JM. HIV disease progression is associated with dysbiosis of the colonic mucosally-adherent microbiota. *Science Translational Medicine*, 5(194):193ra91. 2013.

**Maher MC***, Uricchio LH*, Torgerson DG, RD Hernandez. Population genetics of rare variants and complex diseases. *Human Heredity*, 74:3-4. 2012.

**Maher MC**, Alemayehu W, Lakew T, Gaynor BD, Haug S, Cevallos V, Keenan JD, Lietman TM, Porco TC. The fitness cost of antibiotic resistance in Streptococcus pneumoniae: insight from the field. *PLoS One*, 7(1):e2907. 2012.

Lietman TM, Gebre T, Ayele B, Ray KJ, **Maher MC**, See CW, Emerson PM, Porco TC, The epidemiological dynamics of infectious trachoma may facilitate elimination. *Epidemics*, 2: 119-124. 2011.

† Walsh J and **Maher MC**, The cost-effectiveness of influenza vaccination. In R. Rappuoli & G. Del Giudice (Eds.). Influenza Vaccines for the Future. Birkhauser Publications, Boston. 2010.

† Steinmetz WE and **Maher MC**, Magnetic resonance imaging in the undergraduate laboratory, *J. Chem. Ed.*, 84: 1830-1831. 2007.

† Steinmetz WE and **Maher MC**, Magnetic resonance imaging on an NMR spectrometer: an experiment for the Physical Chemistry laboratory, *Concepts in Magn. Reson.*, 30A:133-139. 2007.

* *These authors contributed equally to this work.*
† *Equivalent to first author publication.*
(Ordering conventions differ for professor-student publications.)