matthew solomonson

biologist/developer

contact

ggmatt@gmail.com
github.com/mattsolo1

laboratory skills

protein purification
x-ray crystallography
molecular cloning
microbiology
electron microscopy

computer skills

javascript
web applications
react/redux
html/jsx/css
unix
docker/aws
ipython ecosystem

interests

informatics
data visualization
genomics
structural biology

personal:
music production
electronics
hiking
cycling
brewing
cooking

education

2010–2015 **Doctor of Philosophy in Biochemistry** University of British Columbia, Vancouver, Canada

2004–2008 **Bachelor of Science, Specialization in Biochemistry** University of Alberta, Canada

research experience

2010–2015 **Doctor of Philosophy in Biochemistry** University of British Columbia, Vancouver, Canada
Structure of the type VII secretion system of Mycobacteria
Supervisor: Dr. Natalie Strynadka

2009-2010 **Laboratory Technologist** University of Alberta, Edmonton, Canada
Biophysical characterization of bacterial respiratory membrane complexes
Supervisor: Dr. Joel Weiner

2008-2009 **Undergraduate Research Thesis** University of Alberta, Edmonton, Canada
Searched for novel respiratory enzymes in E. coli
Supervisor: Dr. Joel Weiner

major awards

2014 **Richard A. Robertson Memorial Scholarship**

2010-2014 **Four Year PhD Fellowship**

2009 **Queen Elizabeth II Scholarship**

2009 **NSERC Undergraduate Research Award**

presentations

2015 **Hybrid Structural Methods Keystone, Poster** Lake Tahoe, California

2014 **Earl Davie Symposium, selected abstract talk** Vancouver, British Columbia

2013 **Tuberculosis Keystone Meeting, Poster** Whistler, British Columbia

2012 **Future methods in x-ray crystallography, Poster** Erice, Italy

2011 **Tuberculosis Keystone Meeting, Poster** Vancouver, British Columbia

leadership

2013-2015 **Biochemistry Graduate Student Association VP**
Lead organizer for monthly departmental poster social

2014 **Biochemistry Department Computation Workshop**
Python programming instructor

2012 **CIHR Synapse Mentor**
Directed a volunteer high school student in laboratory research

2010-2012 **"Structure 2 Function" Journal Club**
Founder and organizer

developer experience

exalt: a web application for exploring the Exome Aggregation Consortium (ExAC) dataset, an analysis of exome sequences from over 60,000 humans. Exomes are the protein coding regions of the genome and important factors in disease and human traits. Written in JavasScript using the React/Redux libraries.
https://github.com/mattsolo1/exalt

hmmerclust: a Python package for detecting gene clusters across thousands of bacterial genomes for comparative molecular systems analysis.
https://github.com/mattsolo1/hmmerclust

Coot Control: an iPad app that provides a tactile control surface with tailor-made joysticks, buttons, and sliders to make tedious molecular building tasks fluid and ergonomic. It was written in Objective-C and communicates to a Python server running on the computer. Demo: https://www.youtube.com/watch?v=Tc3N4X-74jg

publications

Baier F., Chen J., **Solomonson M.**, Strynadka N.C., Tokuriki N. (2015). Distinct Metal Isoforms Underlie Promiscuous Activity Profiles of Metalloenzymes. *ACS Chem Biol* 10.1021/acschembio.5b00068.

Solomonson M., Setiaputra D., Makepeace, K.A., Lameignere E., Petrotchenko E.V., Conrady D.G., Bergeron J.R., Vuckovic M., DiMaio F., Borchers C.H., Yip C.K., Strynadka N.C.J. (2015). Structure of the Mycobacterium tuberculosis ESX-1-secreted virulence factor EspB and insights into its export mechanism. *Structure* http://dx.doi.org/10.1016/j.str.2015.01.002.

Sobhanifar S., Worrall L.J., Gruninger R.J., Wasney G., Blaukopf M., Baumann L., Lameignere E., **Solomonson M.**, Brown E.D., Withers S.G., Strynadka N.C.J. (2015). An intimate look at the structure and mechanism of Staphylococcus aureus TarM, the wall teichoic acid α-glycosyltransferase. *Proc Natl Acad Sci U S A* E576–E585, doi: 10.1073/pnas.1418084112.

Solomonson, M., Huesgen, P.F., Wasney, G.A., Watanabe, N., Gruninger, R.J., Prehna, G., Overall, C.M., and Strynadka, N.C.J. (2013). Structure of the mycosin-1 protease from the mycobacterial ESX-1 protein type VII secretion system. *J Biol Chem* 288, 17782-17790.

Rothery RA, Stein B, **Solomonson M.**, Kirk M.L., Weiner J.H. (2012). Pyranopterin conformation defines the function of molybdenum and tungsten enzymes. *Proc Natl Acad Sci U S A* 109(37):14773-8.

Cherney M.M., Zhang Y.F., **Solomonson M.**, Weiner J.H., James M.N.G. 2010. Crystal Structure of Sulfide:Quinone Oxidoreductase from Acidithiobacillus ferrooxidans: Insights into Sulfidotrophic Respiration and Detoxification. *J Mol Biol* 398:292-305.

Zhang Y., Cherney M.M., **Solomonson M.**, Liu J., James M.N.G., Weiner J.H. 2009. *Acta Crystallogr Sect F Struct Biol Cryst Commun* 65:839-42.