Samuel M. Thompson

Dept. of Bioengineering
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Education

University of California, San Francisco — ***graduated June 2020***
Ph.D. Biophysics

Massachusetts Institute of Technology — ***graduated June 2013***
B.Sc. Chemistry, Japanese minor — Cumulative GPA: 4.56/5.0

Texas Academy of Mathematics and Science — ***graduated June 2008***
Honors diploma, President's List, 100+ hours of community service

Research Positions

Laboratories of Professors Polly Fordyce and David Baker — ***September 2020 - present***
Department of Bioengineering, Stanford University, Stanford, California
Institute for Protein Design, University of Washington, Seattle, Washington
[Biophysics] Design and high-throughput screening of non-aqueous proteins as biocatalysis and novel nanomaterials using computational protein design and droplet-based microfluidics.

Laboratory of Professor Tanja Kortemme — ***September 2013 - September 2020***
Department of Bioengineering and Therapeutic Sciences, University of California, San Francisco, California
[Computational Protein Design] Modeling enzymes as multi-state ensembles for protein design. High-throughput screening to map mutational landscape of E.coli DHFR in different proteostasis regimes.

Laboratory of Professor Wen Shan Yew — ***June 2013 - August 2013***
Department of Biochemistry, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
[Synthetic Biology] Determination of structural motifs that decide carbocation rearrangement pathways for natural product cyclization in monoterpene cyclases.

Laboratory of Professor Catherine Drennan — ***May 2011 - September 2011, September 2012 - June 2013***
Department of Chemistry, MIT, Cambridge, Massachusetts
[Structural Biology] Crystallographic and 3D electron microscopy analysis of the human variant of ribonucleotide reductase. Electron microscopy analysis of conformational changes regulating the catalytic cycle in the carbon dioxide fixing enzyme carbon monoxide dehydrogenase/acetyl-CoA synthase.

Laboratory of Professor Junichi Takagi — ***September 2011 - August 2012***
Institute for Protein Research, Osaka University, Osaka, Japan
[Structural Biology] Purification, refolding from soluble aggregates, and crystallographic analysis of a promiscuous extracellular carboxypeptidase with potential chemical biology applications. Development of image processing algorithms for 3D electron microscopy.

Laboratory of Professor Alice Ting — ***September 2008 - May 2011***
Department of Chemistry, MIT, Cambridge, Massachusetts
[Chemical Biology] Development of fluorescent protein labeling methods for the PRIME methodology via re-engineering of E.coli lipoate protein ligase.

Laboratory of Professor Andrew Ellington — ***June 2008 - August 2008***
Institute for Cellular and Molecular Biology, University of Texas, Austin, Texas
[Synthetic Biology] Design of Winfree-type DNA- /RNA-based transcriptional logic gates for *in vitro* repressilator circuitry.

Laboratory of Professor Zhibing Hu — ***October 2006 - June 2008***
Department of Physics, University of North Texas, Denton, Texas
[Materials Science] Characterization of thermosensitive biomedical polymers poly(ethylene glycol) and poly(N-isopropylacrylamide) microgels and cross-linked thin-films for application in drug delivery.

Publications

Negative-Stain Electron Microscopy Reveals Dramatic Structural Rearrangements in Ni-Fe-S-Dependent Carbon Monoxide Dehydrogenase/Acetyl-CoA Synthase. Steven E. Cohen, Edward J. Brignole, Elizabeth C. Wittenborn, Mehmet Can, Samuel Thompson, Stephen W. Ragsdale, & Catherine L. Drennan. *Structure* **2020** S0969-2126(20)30324-5.

Altered expression of a quality control protease in E. coli reshapes the in vivo mutational landscape of a model enzyme. Samuel Thompson,* Yang Zhang, Christine Ingle, Kimberly A. Reynolds, & Tanja Kortemme. *eLife* **2020** 9 e53476.

Veuthey TL, Thompson S. Why you need an agenda for meetings with your principal investigator. Tess L. Veuthey & Samuel Thompson. *Nature* **2018** 561(7722):277.

Flex ddG: Rosetta Ensemble-Based Estimation of Changes in Protein-Protein Binding Affinity upon Mutation Kyle A. Barlow, Shane Ó Conchúir, Samuel Thompson, Pooja Suresh, James E. Lucas, Markus Heinonen, Tanja Kortemme. *Journal of Physical Chemistry B* **2018** 122 (21) 5389-5399.

Conformational Freedom of the LRP6 Ectodomain Is Regulated by N-glycosylation and the Binding of the Wnt Antagonist Dkk1. Kyoko Matoba, Emiko Mihara, Keiko Tamura-Kawakami, Naoyuki Miyazaki, Shintaro Maeda, Hidenori Hirai, Samuel Thompson, Kenji Iwasaki, Junichi Takagi. *Cell Reports* **2017** 18 (1) 32-40.

Determination of Ubiquitin Fitness Landscapes Under Different Chemical Stresses in a Classroom Setting. David Mavor, Kyle A. Barlow, Samuel Thompson, et al. *Elife* **2016** 5, 15802.

Allosteric inhibition of human ribonucleotide reductase by dATP entails the stabilization of a hexamer. Nozomi Ando, Haoran Li, Edward J. Brignole, Samuel Thompson, Martin I. McLaughlin, Julia E. Page, Francisco J. Asturias, JoAnne Stubbe, Catherine L. Drennan. *Biochemistry* **2015** 55 (2), 373-81

Structure-guided engineering of a Pacific Blue coumarin ligase for specific protein imaging in living cells. Justin D. Cohen, Samuel Thompson, and Alice Y. Ting. *Biochemistry* **2011** 50 (38), 8221-5.

A fluorophore ligase for site-specific labeling inside living cells. Chayasith Uttamanpinant, Katharine A. White, Hemanta Baruah, Samuel Thompson, Marta Fernádez-Suárez, Sujiet Puthenveetil, and Alice Y. Ting. *Proceedings of the National Academy of Sciences* **2010** 107 (24), 10914-9.

Yeast display evolution of a kinetically efficient 13-amino acid substrate for lipoic acid ligase. Sujiet Puthenveetil, Daniel S. Liu, Katharine A. White, Samuel Thompson, and Alice Y. Ting. *Journal of the American Chemical Society* **2009** 131 (45), 16430-8.

Photonic hydrogels with poly(ethylene glycol) derivative colloidal spheres as building blocks. Tong Cai, Guonan Wang, Samuel Thompson, Manual Marquez, and Zhibing Hu. *Macromolecules* **2008** 41 (24), 9508-12.

*As co-contributing author

Honors and Awards

Stanford School of Medicine Dean's Postdoctoral Fellowship —	November 2020
UCSF Dr. Herbert Landahl Mathematical Biophysics Student Excellence Award —	November 2018
Protein Engineering Canada Best Presentation Award —	June 2018
UCSF Mel Jones Memorial Research Award —	June 2017
UCSF Quantitative Biosciences Consortium TA Award —	November 2015
NSF Graduate Research Fellowship —	April 2014
UCSF Chuan Lyu Chancellor Fellowship —	June 2013
MIT Department of Chemistry Research Award —	May 2013
Osaka University Frontier Lab Best Presentation —	August 2012
MIT Foreign Languages and Literature Distinguished Student —	April 2011
HHMI-MIT Summer Undergraduate Fellowship —	June 2009
Eugene and Margaret McDermott Scholarship Fund —	2008-2011, 2013
Barry M. Goldwater Scholar —	March 2008
Intel Talent Search Semifinalist —	January 2008
Siemens Competition Regional Finalist —	November 2007