

Zarek S. Siegel

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Education

Wesleyan University, Middletown, CT.....MAY 2016

Bachelor of Arts, GPA: 4.06, Triple Major in Neuroscience & Behavior, Chemistry, and the Science in Society Program (SISP)

Honors:

- ♦ High Honors in Chemistry, May 2016
- ♦ Hawk Prize (in biochemistry), April 2016
- ♦ Inducted into American Society of Biochemistry and Molecular Biology Honor Society ($\chi\Omega\Lambda$), January 2016
- ♦ Early Inductee into Phi Beta Kappa Society, December 2015
- ♦ American Chemical Society Analytical Chemistry Award, April 2015
- ♦ Dean's List, every semester

Palo Alto High School, Palo Alto, CA.....JUNE 2012

National Merit Finalist; California Scholarship Federation Member

Outside coursework: Coursera (Logic: Language and Information 1, Drugs and the Brain, Programming for Everybody (Python), Computer Science 101), Lynda (programming courses)

Experience

Research Technician, *Michael LeVine Group*,

Department of Physiology and Biophysics, Weill Cornell Medicine.....JULY 2016-PRESENT

Computational investigation of the serotonin transport (SERT) and receptor (5HT_{2A}) proteins using molecular dynamics and docking simulations, focusing on understanding the mechanisms of ligand binding to the S2 site of SERT.

Student Researcher, *Erika Taylor Group*,

Department of Chemistry, Wesleyan University.....SEPTEMBER 2014-MAY 2016

Computational screening and development of novel inhibitors of Heptosyltransferase I (HepI) and the histone acetyltransferase domain of E1A binding protein p300 as part of an NIH-funded grant. Generated large data sets using molecular docking, which were then statistically analyzed in conjunction with *in vitro* and *in vivo* data from collaborators.

QAC Summer Apprentice,

Quantitative Analysis Center, Wesleyan University.....MAY-AUGUST 2015

Received funding to work full-time (40 hrs/wk) on drug development project, gained experience in statistical analysis and programming.

Summer Researcher, *Russell Fernald Group*,

Department of Biology, Stanford University.....JUNE-AUGUST 2014

Behavioral neuroscience/neuroethology of African cichlids, especially with reference to bower building behavior and social dominance. Helped develop an ethogram for a new model species.

Course Assistant, Department of Chemistry, Wesleyan University

Led discussion sections, graded problem sets and exams, provided help with miscellaneous homework and studying problems.

Principles of Chemistry

(Profs. Brian Northrop, T. David Westmoreland).....SEPTEMBER 2013-MAY 2014

Organic Chemistry

(Profs. Erika Taylor, Michael Calter).....SEPTEMBER 2014-MAY 2016

Department Peer Advisor,

Office of Student Affairs, Wesleyan University.....JUNE 2015- MAY 2016

Answered questions for underclassmen and transfer students regarding planning classes and completing major requirements for Chemistry and Neuroscience & Behavior Departments. Nominated to the position by Chemistry department chair.

Chemistry Tutor,

Office of Student Affairs, Wesleyan University.....FALL 2014-SPRING 2015

Conducted one-on-one sessions with students on difficult concepts and homework problems.

Presentations and Publications

- ♦ **Senior Honors Thesis:** “*In silico* screening and analysis of small molecule ligands binding to Heptosyltransferase I and the histone acetyltransferase domain of E1A binding protein p300,” completed April 12th, 2016.
- ♦ Poster Session: “The association between anxiety symptoms and use of sedative drugs in the national epidemiologic study of alcohol and related conditions,” April 29th, 2016.
- ♦ Poster Session: “Computational design of enzyme inhibitors: Understanding the binding of inhibitors to Heptosyltransferase I and the histone acetyltransferase domain of E1A binding protein p300 using molecular docking,” April 15th, 2016
- ♦ Poster Session: “Computational Design of Enzyme Inhibitors: Virtual screening and analysis of virtual ligands to develop high-affinity inhibitors of Heptosyltransferase I the p300 Histone acetyltransferase domain,” July 30th, 2015.
- ♦ Publications:
 - Cote, J. M., Ramirez-Mondragon, C. A., **Siegel, Z. S.**, Czyzyk, D. J., Gao, J., Sham, Y. Y., Mukerji, I., & Taylor, E. A. (2017). The Stories Tryptophans Tell: Exploring Protein Dynamics of Heptosyltransferase I from *Escherichia coli*. *Biochemistry*.
- ♦ Publications in progress:
 - Henry, R.A., Kuo Y.M., **Siegel, Z.S.**, Yen, T., Rhodes, J., Taylor, E.A., & Andrews, A.J. Discordant effects of putative lysine acetyltransferase inhibitors in biochemical and living systems. [Submitted for review]
 - Nkosana, N.K., Czyzyk, D.J., **Siegel, Z.S.**, Cote, J.M., & Taylor, E.A. Synthesis, kinetics and inhibition of *Escherichia coli* Heptosyltransferase I by monosaccharide analogues of Lipid A.
- ♦ Acknowledged in York, R. A., Patil, C., Hulsey, C. D., Streelman, J. T., & Fernald, R. D. (2015). Evolution of bower building in Lake Malawi cichlid fish: phylogeny, morphology, and behavior. *Frontiers in Ecology and Evolution*, 3, 18.

Skills

- ♦ **Languages:** fluent Spanish; intermediate German; basic French, Portuguese, Russian, Italian
- ♦ **Computer:** Python, R, Bash shell scripting, LaTeX, Tcl; basic knowledge (and eagerness to learn more) of Perl, Mathematica, HTML/CSS, JavaScript; Microsoft Word, Excel, PowerPoint, Adobe Acrobat Pro, Apple Logic Pro; Comfortable in Mac OS X, Windows, Linux (including command line, and cluster computing); Molecular dynamics (NAMD, VMD), Molecular docking (AutoDock, AutoDock Vina, AutoDockTools), Molecular modeling/visualization (PyMol, OpenBabel, ChemDraw, ChemBio3D), Schrödinger Suite
- ♦ **Laboratory:** *E. coli* cell culture, protein purification, Bradford assays, protein kinetics, UV-Vis spectrophotometry, SDS-PAGE, plate reader operation, NMR

Other Information

- ♦ **Interests:** brains (neurotransmitters, consciousness, psychopharmacology), linguistics (phonology, language evolution, neurolinguistics, writing systems), languages, music (ukulele, banjo, electronic, theory, Javanese Gamelan), technology, artificial intelligence, information theory, philosophy/social theory of science
- ♦ **Hobbies:** walking, hiking, travel, photography, constructed languages, learning languages, coding/automation, listening to audiobooks & podcasts