

# COOPER J GALVIN

3117 Cottonwood St, Anchorage, AK 99508 · (907) 240-8820 · coopgalvin@gmail.com

## EDUCATION

**Stanford University**, Stanford California June 2014 – Present

- National Science Foundation Graduate Research Fellow
- NIH Training Grant Recipient
- **Biophysics PhD candidate**
- **Bioengineering MA candidate**

**Pomona College**, Claremont, California Graduation May 2014

- **Bachelor of Arts in Chemistry**, Minor: Mathematics
- Awards: Purington Memorial Scholarship
- Awards: 5 Claremont Colleges Neuroscience Fellowship

## WORK/INTERNSHIP EXPERIENCE

**NSF REU Fellowship in Synthetic and Theoretical Chemistry**, Harvard University, Cambridge, MA May–August 2013  
*Research fellow and member of Gordon Research Group*

**Research Fellowship**, Universidad Peruano Cayetano Heredia/Johns Hopkins University, Lima, Peru August -December 2012  
*Investigator*

- Directed a clinical study on diabetic foot disease and a mathematical model for the burden of the disease on Peruvian society.
- Performed calculations on a binding site for Malarial drugs to an enzymes within the Malaria parasite

**NSF REU in Computational Chemistry**, Harvard University, Cambridge, MA May–August 2012  
*Research fellow and member of Aspuru-Guzik Research Group*

**Neuroscience Fellowship**, Western University of Health Sciences, Pomona, CA February 2011-May 2012  
*Research fellow and member of Molecular Biology Research Group*

**Pomona College Chemistry Department**, Pomona College, Claremont, CA September 2011-May 2013

- Tutor for Pomona College Organic Chemistry and General Chemistry students

**Keck Science's Chemistry Department**, Claremont, CA August 2010-May 2012  
*Science of Medicinal Chemistry and General Chemistry Lab TA and Research Assistant*

- Developed methods, tested experiments, and wrote sections of the manual for lab exercises for Science of Medicinal Chemistry Course
- Assisted in preparation and execution of laboratory exercises, Graded and assisted students with all laboratory course work

**Emergency Medical Technician Volunteer**, Anchorage, AK August 2010 – August 2012  
*Student and Volunteer*

- Passed 120 hour course and state issued practical and written exam
- Course included with lecture on relevant practice, anatomy, and physiology and field work providing emergency medical care

## EXTRACURRICULAR LEADERSHIP EXPERIENCE

**Cheese Club and 5 Claremont Colleges Chess Club**, Claremont, CA September 2011-present  
*President*

- Organized weekly meetings and biannual chess tournaments

**Music Mentor**, Claremont, CA January 2013-present

- Held weekly guitar lessons for impoverished youth in the LA area

## SKILLS

**Programming Languages of High Proficiency:** Python, Racket/Scheme, Java, Command Line, Prolog

**Spoken Languages:** English (proficient), Spanish (proficient), Portuguese (beginning), French (beginning)

**Analytical Chemistry Techniques:** GC-MS, Carbon and Hydrogen NMR, XRF, Raman/IR Spec, Polarimetry, TLC

**Biochemical Techniques:** Western Blot, Real-time PRC, X-ray crystallography, Flow Cytometry, Confocal Microscopy,

**Chemical Computational Techniques:** Ab initio/semi-empirical calculations, Solvent Modeling, Transition State Theory Calculations, Force Field Calculations, Molecular Spectroscopic Property Prediction

# COOPER J GALVIN

3117 Cottonwood St, Anchorage, AK 99508 · (907) 240-8820 · coopgalvin@gmail.com

## Peer-Reviewed Publications

[DJ Cameron, Cooper Galvin, T Alkam, Harpreet Sidhu, Jason Ellison, Salvadore Luna, Douglas Ethell, "Alzheimer's-Related Peptide Amyloid- \$\beta\$  Plays a Conserved Role in Angiogenesis", PLoS ONE 7\(7\): e39598. \(2012\) doi:10.1371/journal.pone.0039598](#)

- Raised transgenic zebrafish to express GFP in their neurovasculature
- Developed a new procedure to image their brains, which involved removal of the eye via a tungsten needle
- Converted the stacks into 3D images
- Identified major anatomical differences between those treated with soluble amyloid beta proteins and controls
- Aided in the writing and editing of the publication

[Brian Huskinson, Michael P. Marshak, Changwon Suh, Süleyman Er, Michael R. Gerhardt, Cooper J. Galvin, Xudong Chen, Alán Aspuru-Guzik, Roy G. Gordon, and Michael J. Aziz, "A Metal-Free Organic-Inorganic Aqueous Flow Battery" Nature, 505, 195-198](#)

- Designed and carried out synthesis of the novel disulfo-dioxyanthraquinones
- Demonstrated that these newly synthesized molecules possess the lowest, reversible redox potential that had been demonstrated for any quinone species
- Scaled up the reaction to show that it can be performed safely and affordably with high yields
- Aided in the editing of the publication

[Dmitrij Rappoport, Cooper J Galvin, Dmitry Yu. Zubarev, and Alán Aspuru-Guzik, "Complex Reaction Networks from Heuristics-Aided Quantum Chemistry", J. Chem. Theory Comput., 2014, 10 \(3\), pp 897– 907](#)

- Wrote software that performs all possible double electron movements (bond breaking/forming) between sets of reactants
- Incorporated quantum calculations of energy, including solvent contributions, into the code and optimized computation time
- Aided in the writing and editing of the final publication

[Cooper J Galvin, Adolfo Rumbos, and Jessica I Vincent, and Maria Salvato, "Modeling the Effects of Avian Flu \(H5N1\) Vaccination Strategies on Poultry", CODEE, In Press](#)

- Conducted monthly skype meetings with Maria Salvato to determine the problem statement for the project and to ensure that our model would provide useful information for determining an economical vaccination strategy
- Worked with Ms. Vincent and Mr. Rumbos to create a modified SIR model to best model the progression of H5N1 through a flock of chickens
- Wrote and edited the paper

[Maria Kathia Cardenas, Andrew J Mirelman, Cooper Galvin, Miguel Pinto, J. Jaime Miranda and Robert H Gilman, "The cost of illness attributable to diabetic foot and cost-effectiveness of secondary prevention in Peru", BMC Health Services Research, 2015, 15:483](#)

- Conducted nightly meetings with Maria Cardenas to determine the problem statement for the project.
- Created the markov state model for the progression of diabetic foot disease through a hypothetical population of all diabetes patients in Peru using real clinical outcomes data

# COOPER J GALVIN

3117 Cottonwood St, Anchorage, AK 99508 · (907) 240-8820 · coopgalvin@gmail.com

- Incorporated Ms. Cardenas costs data into the model to create useful predictions for costs related to diabetic foot disease for different treatment strategies
- Wrote the first draft of the paper and have edited subsequent drafts

## Pending Publications

Dmitrij Rappoport, Dmitry Zubarev, Cooper Galvin, and Alán Aspuru-Guzik, “Network Properties of Abiotic Chemical Reaction Networks”, Journal of the American Chemical Society, Under review

- Wrote software that performs all possible double electron movements (bond breaking/forming) between sets of reactants
- Incorporated quantum calculations of energy, including solvent contributions, into the code and optimized computation time
- Aided in parallelizing the code
- Aided in the writing and editing of the final publication