

Augustine Chemparathy

agchempa@stanford.edu web.stanford.edu/~agchempa

EDUCATION

Stanford University, Stanford, CA

Sep 2015-Present

- B.S. with Distinction, Computer Science and Bioengineering, GPA: 4.067/4.00, Phi Beta Kappa
- M.S. candidate, Management Science & Engineering, Health Systems Modeling and Policy track
- Relevant coursework: Machine Learning (CS 229); Deep Learning (CS 230); Analysis of Costs, Risks, and Benefits of Health Care (HRP 392); Healthcare Operations Management (MS&E 263)

EXPERIENCE

Software Experience: Python, Matlab, Tableau, Javascript, React.js

Qi Lab, Stanford Bioengineering, Computational Biology Research Assistant September 2019-Present

- Used bioinformatic tools to search bacterial and archaeal genomes for novel DNA-cutting enzymes. These enzymes can provide an alternative to CRISPR-Cas for use in gene therapies.
- Developed a bioinformatic method to target a broad spectrum of RNA viruses with a minimal set of Cas13d guides. Created the website crispr-pacman.stanford.edu using the MERN stack to make antiviral guide sets available to the research community.
- **Publications:**
 - “Development of CRISPR as a prophylactic strategy to combat novel coronavirus and influenza” *Cell* (2020).
 - “Computational Methods for Analysis of Large-Scale CRISPR Screens”. *Annual Review of Biomedical Data Science*, Volume 3 (2020).
 - “A comprehensive analysis and resource to use CRISPR-Cas13 for broad-spectrum targeting of RNA viruses” (2020). In review.
 - “In vivo multiplexed gene activation via improved Cas12a” (2021). In review.

CLABSI Data Analysis Team, Stanford Children’s Hospital

March 2018-Present

- Designed and evaluated a electronic health record dashboard at Stanford Lucile Packard Children’s Hospital to increase adherence to the central line-associated bloodstream infection (CLABSI) prevention bundle. In the 15 months after the dashboard was deployed, adherence to the entire CLABSI bundle across the hospital increased from 25% to 44%.
- **Publications:**
 - “Development and implementation of a real-time bundle compliance dashboard for central line associated bloodstream infections.” Upcoming publication in *Pediatric Quality and Safety*

Dror Lab, Stanford Computer Science, Computational Biology Intern

June 2017-Present

- Developed a data analysis tool to gather insights from noncovalent interaction data from molecular dynamics (MD) simulations. Available at [getcontacts.github.io](https://github.com/getcontacts).
- Optimized ComBind, a software package for ranking ligand docking poses. Used ligands that do not bind to an enzyme in order to improve pose ranking for ligands that bind to the enzyme.
- **Publications:**
 - “Leveraging non-structural data to predict structures of protein-ligand complexes” (2020). In review.
 - “Uncovering patterns of atomic interactions in static and dynamic structures of proteins” (2019). In review. Available as BioArXiv pre-print.

Arbor Biotechnologies, SWE Intern

June 2019-September 2019

- Identified novel CRISPR/Cas proteins using Arbor's metagenomic database. Developed a machine learning model to predict which computational hits were most likely to function as biologically active CRISPR effectors.

Porteus Lab, Stanford Institute for Stem Cell Biology, Wet Lab Intern

June 2016-August 2018

- Received a research grant from Stanford Undergraduate Advising and Research (UAR) to evaluate methods for genome editing of NK cells using CRISPR-Cas9 to produce chimeric antigen receptor (CAR)-natural killer (NK) cells for cancer immunotherapy against glioblastomas.
- Evaluated a strategy to use CRISPR-Cas9 to repair a mutation causing monogenic Type 1 Diabetes.

Jonikas Lab, Princeton Department of Molecular Biology, Wet Lab Intern

June 2013-August 2014

- Characterized the relationship between synthesis of the biodiesel precursor triacylglycerol (TAG) and cellular redox stress in a model microalgae. Presented research as a finalist at Intel STS 2015.

ACTIVITIES

Volunteer Organizer

July 2018-Present

I organize Stanford students to cook and serve breakfast at the Palo Alto Opportunity Center, a transitional shelter for the homeless in the Palo Alto community.

Co-President, Stanford Students in Biodesign (SSB)

May 2017-June 2019

Coordinate recruitment, activities, and club organization for Stanford's largest undergraduate organization for interdisciplinary biosciences.

Writing Tutor, Stanford Hume Center for Writing And Speaking

Sept 2016-June 2019

Assist undergraduate and graduate students at Stanford with all stages of the writing process for conference publications, theses, term papers, applications, and other academic writing pieces.

Teaching Assistant, Linear Dynamical Systems (EE 263), Stanford University

Sept 2017-Dec 2017

Held office hours, wrote midterm problems, and graded exams for 135 students in Stanford's highest-enrollment electrical engineering course.

HONORS AND AWARDS

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| • Phi Beta Kappa | 2019 |
| • Frederick E. Terman Scholastic Award, awarded to Top 30 seniors of Stanford Engineering | 2019 |
| • President's Award for Academic Excellence, Top 5% of Stanford Class of 2019 by GPA | 2017 |
| • Intel Science Talent Search Finalist | 2015 |
| • Davidson Fellow for Science | 2015 |
| • US National Chemistry Olympiad High Honors (Top 50) | 2015 |
| • USA Biology Olympiad National Certificate of Achievement (Top 56) | 2014 |
| • USA Junior Mathematics Olympiad Qualifier | 2013 |