

Carla Becker

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Education

Harvey Mudd College (HMC), Claremont, CA; B.S. Physics, B.S. Chemistry – Expected May 2018

Randolph High School, Huntsville, AL; Valedictorian – May 2014

Publications

- "Comparing Eutectics of Organic Acid Mixtures," HMC – December 2015
- "A Bioinformatics Assessment of Sensitivity Profiles in *E. coli*," HMC – August 2015
- "Internal Optical Spectroscopic Real-Time Diagnosis Technique," Aviation and Missile Research Development and Engineering Center (AMRDEC) – September 2013
- "Assessment of Acoustic and Thermal Sensors for Monitoring Gun Barrel Degradation," AMRDEC – July 2013

Project Experience

Researcher, Harvey Mudd College Department of Chemistry – January 2016 - present

- Performed single-molecule super-resolution fluorescence microscopy to study the protein aggregates involved in Huntington's disease
- Helped build microscope and develop imaging process for characterizing aggregation

Student Body Senate Chair – March 2016 - present

- Lead twice-weekly meetings of 30-50 people
- Regularly presented to faculty, administrators, and board of trustees
- Envisioned, organized and executed initiatives, events, and projects for the student body's benefit

Researcher, Harvey Mudd College Department of Biology – January 2015 - present

- Coded and determined bioinformatic methods used to illuminate testable hypotheses in the lab
- Used standard molecular and microbiological techniques to investigate transcriptional regulation related to the stress response in *E. coli*

Army's Science and Engineering Apprenticeship Program (SEAP), AMRDEC – 2011 - 2014

- Gained experience with fiber optics, acoustic sensors, foams, and equipment/instruments associated with these technologies
- Developed educational outreach materials for grades K-8

Volunteer Experience

- Student Body Senate Chair, HMC
- HMC Honor Board
- Student Philanthropy
- United States Space and Rocket Center (USSRC)

Work Experience

- Researcher, HMC (2015 - present)
- Lab Assistant, HMC (2014 - present)
- Tour Guide, HMC (2015 - present)
- Grader, HMC Dept. of Chemistry (2015, 2016)

Awards and Honor Societies

- 2016 Alumnus of the Year for the Alabama Region for the Future City Competition
- Bausch and Lomb Honorary Science Award (2014)
- Wernher von Braun Award for academic excellence and integrity (2014)
- 1st Place in SEAP Technical Paper and Presentation Competition (2012, 2013)

Other Skills

- Python, MATLAB, Mathematica, L^AT_EX, Unix
- Sterile laboratory techniques and methodologies

Technical Course List

Physics

Statistical Mechanics and Thermodynamics
Theoretical Mechanics
Electronics Laboratory
Quantum Physics (Quantum Mechanics I)
Modern Physics Laboratory
Electromagnetic Theory and Optics
Mechanics and Wave Motion
Special Relativity
Intro Physics Laboratory

Mathematics

Fourier Series and Boundary Value Problems
Linear Algebra/ Differential Equations II
Multivariable Calculus
Differential Equations
Linear Algebra
Probability and Statistics
Calculus

Other Courses

Financial Economics
African Aesthetics
Independent Study in Leadership
Parties and Campaigns
Critical Inquiry: Socratic Dialogues
Intermediate Spanish
Intermediate Classical Ballet
Introduction to Academic Writing

Biology

Molecular Genetics

Chemistry

Chemical Analysis
Chemical Analysis Laboratory
Group Thry., Quant. Chem., and Spectroscopy
Carbons (Organic I)
Physical Chemistry
Physical Chemistry Laboratory
Energetics, Dynamics, and Structure (Intro Chem.)
Intro Chemistry Laboratory

Computer Science

Robotics Laboratory
Principles of Computer Science
Introductions to Biology and Computer Science

Engineering

Introduction to Signals and Systems