

Carla J. Becker

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EDUCATION	Harvey Mudd College (HMC) , Claremont, California	Expected May 2018
	B.S. Physics, B.S. Chemistry 3.73 GPA (most recent semester)	
	Randolph School , Huntsville, Alabama	May 2014
	Valedictorian	
PROJECT EXPERIENCE	Engineering Researcher	
	HMC Department of Engineering	Jan 2017 – present
	Supervisor: Prof. Matthew Spencer	
	• Developed simulations of phase change memory and tunnel field effect transistors to determine their physical plausibility.	
	Howard Hughes Medical Institute Student Fellow	
	HMC Department of Chemistry	Jan 2016 – May 2017
	Supervisor: Prof. Whitney C. Duim	
	• Performed single-molecule super-resolution fluorescence microscopy with the goal of modeling the aggregation of the mis-folded protein involved in Huntington's disease	
	• Helped build microscope and develop imaging process for characterizing aggregation	
	Student Body Senate Chair	
	Associated Students of Harvey Mudd College	Mar 2016 – Apr 2017
	• 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	
	Howard Hughes Medical Institute Student Fellow	
	HMC Department of Biology	Jan 2015 – Dec 2015
	Supervisors: Prof. Dan Stoebel, Prof. Eliot Bush	
	• 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 <i>E. coli</i>	
	Science and Engineering Apprenticeship Program (SEAP) Apprentice	
	Aviation and Missile Research, Development, and Engineering Center	May 2011 – Sep 2014
	Supervisors: Dr. Paul Ruffin, Eugene Edwards, Gayla McMichael	
	• Gained experience with fiber optics, acoustic sensors, foams, and equipment/instruments associated with these technologies	
	• Developed educational outreach materials for grades K-8	
PUBLICATIONS	“The genome-wide transcriptional response to varying RpoS levels in <i>Escherichia coli</i> K-12”	
	Journal of Bacteriology, under Professors Dan Stoebel and Eliot Bush, Jan 2017	
	“Assessment of acoustic and thermal sensors for monitoring gun barrel degradation”	
	Aviation and Missile Research, Development, and Engineering Center (AMRDEC), under Eugene Edwards, Sep 2013	
	“Internal optical spectroscopic real-time diagnosis technique”	
	AMRDEC, under Dr. Paul Ruffin, Sep 2012	
RELEVANT SKILLS	Programming Languages, HDLs: MATLAB, Python, L ^A T _E X, Unix, Mathematica, Verilog, Verilog-A, HSPICE.	
	Laboratory Skills: Sterile technique, various forms of spectroscopy, associated super-resolution skills	

**WORK
EXPERIENCE**

Harvey Mudd College

Senior Intern, Office of Admissions	Sep 2017 – present
Lab Assistant, Department of Biology	Sep 2014 – present
Tour Guide, Office of Admissions and Financial Aid	Jan 2015 – present
Tutor, Department of Biology	Jan 2016 – Dec 2016
Grader, Department of Chemistry	Sep 2015 – May 2016
Caller, Office of Annual Giving	Oct 2014 – Dec 2015

**AWARDS AND
HONORS**

2016 Alabama Alumnus of the Year, Future City Competition
Bausch and Lomb Honorary Science Award (2014)
Wernher von Braun Award for Academic Excellence and Integrity (2014)
1st Place, SEAP Technical Paper Competition (2012, 2013)

**RELEVANT
COURSEWORK**

Biology: Biochemistry and Laboratory, Molecular Genetics.

Chemistry: Instrumental Analysis and Laboratory, Chemical Analysis and Laboratory, Group Theory/Quantum Chemistry/Spectroscopy, Carbons (Organic I) and Laboratory, Physical Chemistry and Laboratory, Energetics/Dynamics/Structure, Intro Chemistry Laboratory

Computer Science: Robotics Laboratory, Principles of Computer Science, Intro to Biology and Computer Science.

Engineering: Intro to Signals and Systems, Audited courses: Advanced Systems Engineering, Digital Design and Computer Engineering, Engineering Electronics and Laboratory.

Mathematics: Fourier Series and Boundary Value Problems, Engineering Mathematics (audit), Linear Algebra/ Differential Equations II, Multivariable Calculus, Differential Equations (I), Linear Algebra (II), Probability and Statistics, Calculus.

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

Non-technical Courses: Global Environmental Politics, Socratic Dialogues, Parties and Campaigns, Financial Economics, Activism, Vocation, Justice, and Special Topics in Religious Studies, Intermediate Spanish, Ballet, African Dance, Mexican Folk Dance, Jazz Dance, Independent Study in Leadership.

PRESENTATIONS

Carla Becker, Ali Khan, Rebecca Harman, Rachel Levy, Whitney C. Duim
“Characterizing the Huntingtin Aggregation Pathway via Super-Resolution and Single Molecule Fluorescence Microscopy” presented at:

- Howard Hughes Medical Institute Poster Session at the Claremont Colleges (Sep 2016)
- Conference for Undergraduate Women in Physics Poster Session (Jan 2017)
- American Chemical Society, Division of Biological Chemistry Poster Session (Apr 2017).

Carla Becker, Eliot Bush, Dan Stoebe

“A Bioinformatics Assessment of Sensitivity Profiles in *E. coli*” presented at:

- Howard Hughes Medical Institute Poster Session at the Claremont Colleges (Sep 2015)
- Southern California Conference for Undergraduate Research Poster Session (Mar 2016)