

# Carla J. Becker

carla.joy.becker@gmail.com  
(256) 348-6748

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<b>EDUCATION</b>	<b>Harvey Mudd College (HMC)</b> , Claremont, California B.S. Physics, B.S. Chemistry <b>Randolph School</b> , Huntsville, Alabama Valedictorian	Expected May 2018  May 2014
<b>PROJECT EXPERIENCE</b>	<b>Engineering Researcher</b> HMC Department of Engineering Supervisor: Prof. Matthew Spencer <ul style="list-style-type: none"><li>Developed simulations of tunnel field effect transistors (TFETs) to determine their physical plausibility</li></ul> <b>Howard Hughes Medical Institute Student Fellow</b> HMC Department of Chemistry Supervisor: Prof. Whitney C. Duim <ul style="list-style-type: none"><li>Performed single-molecule super-resolution fluorescence microscopy with the goal of modeling the aggregation of the mis-folded protein involved in Huntington's disease</li><li>Helped build microscope and develop imaging process for characterizing aggregation</li></ul> <b>Student Body Senate Chair</b> Associated Students of Harvey Mudd College (ASHMC) <ul style="list-style-type: none"><li>Lead twice-weekly meetings of 30-50 people</li><li>Regularly presented to faculty, administrators, and board of trustees</li><li>Envisioned, organized and executed initiatives, events, and projects for the student body's benefit</li></ul> <b>Howard Hughes Medical Institute Student Fellow</b> HMC Department of Biology Supervisors: Prof. Dan Stoebe, Prof. Eliot Bush <ul style="list-style-type: none"><li>Coded and determined bioinformatic methods used to illuminate testable hypotheses in the lab</li><li>Used standard molecular and microbiological techniques to investigate transcriptional regulation related to the stress response in <i>E. coli</i></li></ul> <b>Science and Engineering Apprenticeship Program (SEAP) Apprentice</b> Aviation and Missile Research, Development, and Engineering Center Supervisors: Dr. Paul Ruffin, Eugene Edwards, Gayla McMichael <ul style="list-style-type: none"><li>Gained experience with fiber optics, acoustic sensors, foams, and equipment/instruments associated with these technologies</li><li>Developed educational outreach materials for grades K-8</li></ul>	Jan 2017 – present  Jan 2016 – present  Mar 2016 – present  Jan 2015 – Dec 2015  May 2011 – Sep 2014
<b>PUBLICATIONS</b>	“The genome-wide transcriptional response to varying RpoS levels in <i>Escherichia coli</i> K-12” Journal of Bacteriology, under Prof. Dan Stoebe and Eliot Bush, Jan 2017 “Assessment of acoustic and thermal sensors for monitoring gun barrel degradation” AMRDEC, under Eugene Edwards, Sep 2013 “Internal optical spectroscopic real-time diagnosis technique” AMRDEC, under Dr. Paul Ruffin, Sep 2012	
<b>RELEVANT SKILLS</b>	<b>Programming Languages:</b> MATLAB, Python, Mathematica, Verilog-A, L <sup>A</sup> T <sub>E</sub> X, Unix. <b>Laboratory Skills:</b> Sterile technique, NMR, GCMS, optical table and laser setup	
<b>WORK EXPERIENCE</b>	<b>Harvey Mudd College</b> Lab Assistant, Department of Biology Tour Guide, Office of Admissions and Financial Aid Tutor, Department of Biology Grader, Department of Chemistry Caller, Office of Annual Giving	May 2011 – Sep 2014 Jan 2015 – present Jan 2016 – Dec 2016 Sep 2015 – May 2016 Oct 2014 – Dec 2015

<b>AWARDS AND HONORS</b>	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)
<b>RELEVANT COURSEWORK</b>	<p><b>Physics:</b> 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.</p> <p><b>Mathematics:</b> Fourier Series and Boundary Value Problems, Linear Algebra/ Differential Equations II, Multivariable Calculus, Differential Equations, Linear Algebra, Probability and Statistics, Calculus.</p> <p><b>Engineering:</b> Introduction to Signals and Systems.</p> <p><b>Chemistry:</b> Chemical Analysis and Laboratory, Group Theory/Quantum Chemistry/Spectroscopy, Carbons (Organic I), Physical Chemistry and Laboratory, Energetics/Dynamics/Structure, Intro Chemistry Laboratory</p> <p><b>Computer Science:</b> Robotics Laboratory, Principles of Computer Science, Introductions to Biology and Computer Science.</p> <p><b>Biology:</b> Molecular Genetics.</p> <p><b>In Progress/Planned:</b> Quantum Mechanics II, Adv. Analytical Chemistry and Laboratory, Biochemistry and Laboratory, Digital Electronics, Engineering Mathematics, Electric &amp; Magnetic Circuits/Devices.</p>
<b>PRESENTATIONS</b>	<p>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:</p> <ul style="list-style-type: none"> <li>• Howard Hughes Medical Institute Poster Session at the Claremont Colleges (Sep 2016)</li> <li>• Conference for Undergraduate Women in Physics Poster Session (Jan 2017)</li> <li>• American Chemical Society, Division of Biological Chemistry Poster Session (Apr 2017).</li> </ul> <p>Carla Becker, Eliot Bush, Dan Stoebe          “A Bioinformatics Assessment of Sensitivity Profiles in <i>E. coli</i>” presented at:</p> <ul style="list-style-type: none"> <li>• Howard Hughes Medical Institute Poster Session at the Claremont Colleges (Sep 2015)</li> <li>• Southern California Conference for Undergraduate Research Poster Session (Mar 2016)</li> </ul>