



Heather R. MacGregor
Computational Chemistry </> Medical Technology Δ Drug Design
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Education

- **University of California, Santa Barbara** **Santa Barbara, CA**
College of Creative Studies, B.S. Biochemistry 09/2016 – 07/2020
 - Grade: 3.8 of 4.0
 - Coursework: Organic Chemistry with Lab, Biochemistry with Lab, Physical Chemistry, Biophysics and Biomolecular Materials, Drug Design, Chemical Applications of Group Theory, Inorganic Chemistry, Newtonian Physics, Mechanics and Waves
 - **Ponderosa High School** **Shingle Springs, CA**
High School Diploma 08/2012 – 05/2016
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Research Experience

- **Kalju Kahn Research Group** **Santa Barbara, CA**
Department of Chemistry and Biochemistry, UC Santa Barbara 03/2018 – Present
 - Determined a set of computational approaches using the Gaussian 16 program most appropriate for accurate calculation of the vibrational circular dichroism spectrum of chiral molecules while minimizing computational cost.
 - Developed Python scripts to automate file submission, create Gaussian 16 input files, and parse and analyze the accuracy of large volumes of output data with respect to experimental values.
 - **Katja Seltmann Research Group** **Santa Barbara, CA**
Cheadle Center for Biodiversity and Ecological Restoration, UC Santa Barbara 08/2019 – Present
 - Developed Python scripts to parse, analyze, and display graphs of large volumes of data collected by Arable Mark sensors and the backend of a web application to allow for the data to be publicly accessible using the Flask framework.
 - **Maribel Rios Research Group** **Boston, MA**
Department of Neuroscience, Sackler School of Graduate Biomedical Sciences, Tufts University 05/2019 – 08/2019
 - Investigated the feeding-state dependency of inhibitory neurotransmission in specific neuronal populations of the ventromedial hypothalamus using a mouse model.
 - **Manzanita and San Clemente Restoration Project** **Santa Barbara, CA**
Cheadle Center for Biodiversity and Ecological Restoration, UC Santa Barbara 09/2016 – 03/2017
 - Collected field data on vernal pools. Removed and documented invasive species.
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Grants and Fellowships

- **College of Creative Studies Axline Summer Undergraduate Fellowship** 08/2019
UC Santa Barbara, College of Creative Studies
Create Fund
- **Building Diversity in Biomedical Sciences Summer Research Program** 05/2019
Tufts University, Sackler School of Graduate Biomedical Sciences
NIH Award # R25HL007785
- **Cooperative International Science and Engineering Internships (Declined)** 05/2019
Eindhoven University of Technology & UC Santa Barbara
Materials Research Laboratory & National Science Foundation Research Experiences for Undergraduates
- **Gorman Scholars Program (Declined)** 05/2019
UC Santa Barbara, Center for Science and Engineering Partnerships
The Gorman Family

- **Partnership for Research and Education in Materials Internship (Declined)** 05/2019
University of Texas El Paso & UC Santa Barbara
Materials Research Laboratory & Jackson State University & University of Texas El Paso
 - **Edison Summer Research Program** 06/2018
UC Santa Barbara, McNair Scholars Program
Edison International
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Honors and Awards

- **Undergraduate Student Travel Award** 09/2019
Annual Biomedical Research Conference for Minority Students
 - **Edison GRE Preparation Course Scholarship** 04/2019
UC Santa Barbara, McNair Scholars Program
Edison International
 - **Director's Award** 05/2016
Ponderosa High School Music Program
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Presentations

- **Benchmarking Density Functional Methods for Prediction of Gas-Phase Vibrational Circular Dichroism Spectra** 11/2019
Research & Creative Activities Conference, UC Santa Barbara College of Creative Studies
 - **Feeding State Dependency of Inhibitory Synaptic Dynamics in the Ventromedial Hypothalamus** 11/2019
Annual Biomedical Research Conference for Minority Students 11/2019
Research & Creative Activities Conference, UC Santa Barbara College of Creative Studies 11/2019
Summer Research Symposium, Tufts University Sackler School of Graduate Biomedical Sciences 08/2019
 - **Quantum Mechanical Prediction of Gas-Phase Vibrational Circular Dichroism Spectra** 05/2019
Undergraduate Research Colloquium, UC Santa Barbara 05/2019
Research & Creative Activities Conference, UC Santa Barbara College of Creative Studies 11/2018
Summer Research Colloquium, UC Santa Barbara 08/2018
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Publications

- **Benchmarking Density Functional Methods for Prediction of Gas-Phase Vibrational Circular Dichroism Spectra.** H. R. MacGregor, K. Kahn. *Submitted.* (2019)
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Work Experience

- **UC Santa Barbara Chemistry and Biochemistry Research Storeroom** Santa Barbara, CA
Storeroom Assistant 11/2018 – Present
 - Provided supplies and services to research/instructional labs across the UCSB campus.
 - Assisted with stocking and filling orders for hundreds of chemicals and laboratory supplies.
 - **UC Santa Barbara Disabled Students Program** Santa Barbara, CA
Notetaker and Exam Proctor 11/2016 – Present
 - Acted as a liason between clients and their instructor while maintaining the integrity of the testing environment and ensuring that the client received the correct accommodation. Attended quarterly training and proctored a minimum of 4 midterms and 3 finals each academic quarter.
 - Took clear, detailed notes for an ongoing course and uploaded them to an online portal.
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Outreach and Societies

- **Data Science UC Santa Barbara** **Santa Barbara, CA**
Member *09/2019 – Present*
 - **Women in Science and Engineering** **Santa Barbara, CA**
Mentor *09/2019 – Present*
 - Mentored first- and second-year female-identifying students in science and engineering majors.
 - **Biology Mentoring and Engagement** **Santa Barbara, CA**
Learning Assistant *09/2019 – Present*
 - Mentored a group of 5-6 first-year pre-biology students.
 - **American Physical Society Conference for Undergraduate Women in Physics** **Santa Barbara, CA**
Volunteer *01/2019 – 01/2019*
 - Prepared conference materials and checked in attendees, then served as a point of contact between attendees and organizers for the duration of the event.
 - **SciTrek** **Santa Barbara, CA**
Volunteer K-12 Science Instructor *01/2019 – Present*
 - Worked with a team to develop and implement the organization's first high school program focusing on analytical tests of biological macromolecules.
 - Worked with a team to compile scientific literature focused on active learning for eventual use in a journal publication.
 - **American Society for Biochemistry and Molecular Biology** **Santa Barbara, CA**
Board Member *09/2018 – Present*
 - Planned and coordinated chapter events including career development, lab & industry tours, fundraising, research talks, and more.
 - Developed and maintained the chapter website and Facebook page.
 - **College of Creative Studies Peer Mentorship** **Santa Barbara, CA**
Chemistry and Biochemistry Mentor *09/2017 – Present*
 - Served as a mentor and resource to first-year CCS students with similar academic and career interests.
 - **Residence Hall Association** **Santa Barbara, CA**
House Representative *09/2016 – 06/2017*
 - Worked with a team of House Representatives from Manzanita Village and San Rafael Residence Halls to select programs to fund and planned activities for students living in UCSB housing on- and off-campus.
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Skills

Software: QM and MD Simulations (Gaussian 16, Tinker, TurboMole); Molecular Visualization (Molden, PyVib2, PyMol, UCSF Chimera, QuteMol); Microsoft Office Suite

Programming: Python, Bash, Mathematica, L^AT_EX, HTML/CSS/JavaScript

Environments: Ubuntu, Windows 10

Organic chemistry: Thin layer chromatography, Extraction, IR spectroscopy, ¹H- and ¹³C-NMR, Mass spectrometry, Vibrational circular dichroism

Biochemistry: PCR, Immunofluorescence, Microtome and Cryostat tissue sectioning, Genotyping

Languages: English, French (Conversational)