

Francis Cunningham

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Education

University of California, Berkeley August 2017 - present
PhD, Chemical and Biomolecular Engineering
Research Advisor: Markita P. Landry

University of California, Santa Barbara Sept. 2012 - June 2017
B.S. Chemical Engineering

Technical Experience

Graduate Student Researcher 10/2017 - present
Markita P. Landry Group, UC Berkeley

- CRISPR/Cas9 genome editing in plants using functionalized nanomaterial delivery vessels

RISE Research Intern 09/2016 – 06/2017
Michelle O'Malley Group, UCSB

- Co-cultures of yeast and anaerobic gut fungi for production of valuable chemicals
- Explored viability and sugar breakout metabolism of *N. californiae* and *A. robustus* on grassy biomass feedstocks
- High Performance Liquid Chromatography for sugar identification
- Developed automated analysis for HPLC signal characterization

Undergraduate Researcher 06/2015 – 06/2016
Scott Shell Group, UCSB

- Size/shape/chemistry effects on nanoparticle transport across a lipid bilayer
- Coarse-grained molecular simulations with additional analysis in Python
- Non-equilibrium simulation techniques to calculate underlying thermodynamics

Process Engineering Intern 07/2016 – 09/2016
ZPower, LLC

- R&D and manufacturing of rechargeable silver-zinc microbatteries
- Independent ownership of two projects related to battery cathode and separator materials
- Process data analysis - Six-Sigma Gage R&R, ANOVA
- Analytical techniques - XRF, FTIR, BET Surface Area/Porosity, proprietary testing

Leadership

Co-President 06/2016 – 06/2017
Internal Chair 05/2015 – 06/2016

American Institute of Chemical Engineers (UCSB Chapter)

- Promote professional development of UCSB Chemical Engineering students
- Interact with industry and academia to facilitate information sessions, plant tours, research seminars, and networking events
- Engage engineering students with the Santa Barbara community through volunteer restoration projects and K12 outreach

Founder/President <i>UCSB Poets' Club</i>	01/2015 – 06/2017
<ul style="list-style-type: none"> • Provide a weekly open space for discussion and creation of poetry • Develop thought-provoking 'check-in questions' and writing exercises to help others explore their creative abilities • Promote poetry and the philosophy of expression as a form of self-fulfillment and community engagement • Regularly host public events with performances by local poets, musicians, and comedians 	

Scholarships

William Randolph Hearst Foundation Scholarship	2016
National Science Foundation ESTEEM Scholar	2016-2017

Events

Dope Metaphors in the Hub	Triannual, 2015-2017
<ul style="list-style-type: none"> • Poetry and music showcase for local artists 	
Industry Information/Recruitment Sessions	3-5 per year, 2015-2017
<ul style="list-style-type: none"> • Companies hosted include: Gilead Sciences, Amgen Inc, NuSil Technologies, Proctor & Gamble 	

Special Coursework

Science and Economics of Energy Production	Poetics of Struggle
Introductory Polymer Science	Survey of Art History (Greco-Roman to Modern)
Cell Biology and Bioprocess Engineering	Visual Literacy in Art
Principles of Bioengineering	

Miscellaneous Work Experience

Sous Chef, <i>Kol's Café Isla Vista</i>	10/2016 – present
STEM Tutor, <i>Private</i>	01/2014 – 06/2016
Operations Assistant, <i>UCSB University Center</i>	01/2015 – 06/2016
Student Caller, <i>UCSB Annual Fund</i>	07/2013 – 11/2013
Lifeguard, <i>Aquahab LP</i>	06/2011 – 06/2012