

GABRIELA LOMELI

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EDUCATION

- 8/18 – present **University of California, Berkeley and University of California, San Francisco Graduate Program in Bioengineering**
- *PhD, Bioengineering*, anticipated Summer 2023 (GPA: 4.0/4.0)
 - National Science Foundation Graduate Research Fellow
 - Advisor: Amy E. Herr, Ph.D.
- 9/14 – 6/18 **Stanford University**
- *BS, Chemical Engineering*, 2018 (GPA: 3.9/4.0)
 - *Minor, German Studies*, 2018

RESEARCH AND ENGINEERING EXPERIENCE

- 5/19 – present **Graduate Student Researcher, University of California, Berkeley**
Faculty Mentor: Dr. Amy E. Herr
- Graduate Researcher:
 - Study of protein post-translational modifications through design and validation of novel polydimethylsiloxane (PDMS)-based, microfluidic, isoelectric focusing device
 - Research towards increasing multiplexed protein detection in single cells by Multiplexed Ion Beam Imaging (MIBI) of single-cell protein separations
 - Study of oncoprotein isoform heterogeneity in HER2-positive breast cancer cells via single-cell isoelectric focusing towards better understanding of therapeutic response in cells expressing truncated HER2 isoforms
 - Safety Officer: Coordinate with EH&S campus staff to ensure lab processes follow chemical and biological safety guidelines
 - Rotation Project: Developed a method for making gradient pore-size polyacrylamide gels
- 3/19 - 5/19 **Graduate Rotation Student, University of California, Berkeley**
Faculty Mentor: Dr. Aaron Streets
- Rotation Project: Investigated the use of hydrogel beads for single-cell encapsulation and sequencing
- 9/18 - 11/18 **Graduate Rotation Student, University of California, Berkeley**
Faculty Mentor: Dr. Phillip Messersmith
- Rotation Project: Explored the role of albumin as an endogenous drug carrier
- 6/17 – 9/17 **Analytical Operations Intern, Genentech, Inc., South San Francisco, CA**
- Optimized the protocol for imaged capillary isoelectric focusing (iCIEF)
 - Collected and analyzed chromatography data for use in bioprocess development
 - Performed maintenance for high-performance liquid chromatography instruments
 - Awarded position in the Genentech Leader Intern Exchange Program (gLINX)
- 12/14 – 12/16 **Process Monitoring Intern, Stanford Nanofabrication Facility, Stanford, CA**
- Performed photolithography and etching on silicon wafers in a class 100 cleanroom
 - Acquired regular etch rate and selectivity data on dry etching tools to track tool performance
 - Wrote qualification instructions for dry etching tools and trained new interns
- 6/15 - 8/16 **Undergraduate Research Assistant, Alexander Dunn Research Group, Stanford, CA**
- Improved the lab's three-color immunofluorescence microscopy technique with image processing improvements
 - Selected two protein hits (PINCH1 and ARF4) from a proteomics screen and studied how they bind differentially to paxillin in MCF10a cells before and after epithelial-to-mesenchymal transition (EMT)
- 1/14 - 5/14 **Subsystems Engineering Intern, Northrop Grumman Corporation, Palmdale, CA**
- Modeled subsystem hardware and the electrical cables and tubes that attach to it using the computer-

aided design software CATIA

PUBLICATIONS

ORCID: 0000-0001-8603-1614

- **G. Lomeli** & A.E. Herr. “Detecting Protein Post-Translational Modifications using Isoelectric Focusing in On-Chip Immobilized pH Gradient Gels”, *In preparation*.
- L. Hansen, **G. Lomeli**, J. Vlassakis, & A.E. Herr. “Single-Cell Resolution Immunoblotting” in *Single Cell ‘Omics of Neuronal Cells*, **2022**, J.V. Sweedler, J. Eberwine, S.E. Fraser (Eds.) Neuromethods, vol 184. Humana, New York, NY. https://doi.org/10.1007/978-1-0716-2525-5_7.
- **G. Lomeli**, M. Bosse, S.C. Bendall, M. Angelo, & A.E. Herr. “Multiplexed Ion Beam Imaging Readout of Single-Cell Immunoblotting”, **2021**, *Analytical Chemistry*, 93(24):8517-8525. doi: 10.1021/acs.analchem.1c01050.

ORAL PRESENTATION

- **G. Lomeli**, M. Bosse, S.C. Bendall, M. Angelo, A.E. Herr “Tandem electrophoresis and multiplexed ion beam imaging for the detection of proteoforms in single cells.” Presented at the Society for Laboratory Automation and Screening International Conference (SLAS 2021).

POSTER PRESENTATIONS

- **G. Lomeli** and A.E. Herr “Towards Single-Cell Proteoform Profiling: On-Chip Isoelectric Focusing in Immobilized pH Gradient Gels.” Presented at Hilton Head Solid-State Sensors, Actuators and Microsystems Workshop (Hilton Head 2022). (**Springer Nature Best Poster Award, Runner-Up**)
- **G. Lomeli** and A.E. Herr “Fabrication of Stable Gradients in a Hydrogel-filled Microfluidic Device.” Presented at the 25th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS 2021) and at the UC Berkeley/UCSF Annual BioE Retreat (2021).
- **G. Lomeli**, M. Bosse, S.C. Bendall, M. Angelo, A.E. Herr “Detection of Proteoforms from Single Cells by Multiplexed Ion Beam Imaging.” Presented at the 24th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS 2020) and at the UC Berkeley/UCSF Annual BioE Retreat (2020).
- **G. Lomeli**, H.M. Robison, M. Bosse, M. Angelo, A.E. Herr “Combining mass spectrometry and electrophoresis for the multiplexed detection of proteoforms.” Presented at the UC Berkeley/UCSF Annual BioE Retreat (2019).
- **G. Lomeli**, S. Tan, A.H. Mekhdjian, A.C. Chang, and A.R. Dunn. “Exploring novel paxillin interactors before and after EMT through immunofluorescence microscopy.” Presented at the Stanford Summer Engineering Academy Closing Dinner and Ceremony (2016), Stanford Chemical Engineering REU Poster Session (2016), and Stanford School of Engineering Opportunity Job Fair Reception (2016).
- **G. Lomeli**, A.H. Mekhdjian, A.C. Chang, and A.R. Dunn. “Enhancing three-color fluorescence spectroscopy with imaging and process improvements.” Presented at the Stanford Summer Engineering Academy Closing Dinner and Ceremony (2015) and Stanford Chemical Engineering REU Poster Session (2015).

TEACHING AND MENTORSHIP

- 4/22 – 7/22 **Co-Instructor**, “Single-Cell Western Blotting” module of “Single-Cell Analysis” course, *Cold Spring Harbor Laboratories, Cold Spring Harbor, NY*
- Led lectures and hands-on workshops on single-cell western blotting to 18 graduate students and postdoctoral researchers
- 3/22 – 5/22 **Mentor**, Be a Scientist (BAS) Program, *Longfellow Middle School, Berkeley, CA*
- Mentored 7th grade students in the ideation and execution of a science project
 - Program took place weekly over a 2-month period and was conducted entirely in Spanish
- 8/21 – 12/21 **Graduate Student Instructor**, “Capstone Senior Bioengineering Design” course, *UC Berkeley, Berkeley, CA*
- Provided critical feedback to teams during design reviews and presentations

- Held consulting hours for capstone project questions
- Led electronics lecture and accompanying lab

- 9/15 – 6/18 **Course Assistant**, “Computers and Photography” course, *Stanford University, Stanford, CA*
- Organized class lectures to deliver valuable content in creative ways
 - Led photography labs on wide angle and macro photography

LEADERSHIP AND INVOLVEMENT

- 6/20 – present **Latino/a Association of Graduate Students in Engineering and Science (LAGSES)**, *UC Berkeley*
- Vice President (2021 - 2022): Coordinated travel plans to conferences, filled in for the President at meetings as necessary, managed LAGSES graduate development program, and assisted Outreach Chair with events
 - Corporate Liaison (2020 - 2021): Planned networking opportunities
- 12/19 – 1/22 **Bioengineering Association of Students (BEAST)**, *UC Berkeley and UCSF*
- Industry/Alumni Liaison (2019 - 2020): Planned networking opportunities
 - Admissions Committee (2021 - 2022): Reviewed the applications of 60 prospective Bioengineering PhD students and assisted in the selection of admitted applicants
- 9/21 **Rally for Medical Research**, *UC Berkeley*
- Advocate: Spoke directly with Members of Congress and congressional staff about the importance of federal funding for medical research by advocating for a \$3.5 billion increase in funding to the National Institutes of Health (NIH)
- 6/19 – 2/21 **Bay Area Graduate Pathways in STEM (GPS)**, *UC Berkeley and Stanford University*
- GPS is a one-day conference that aims to inspire diverse talent to be the next generation of leaders through advanced degrees in STEM fields
 - Speaker Recruitment Chair (2019 - 2021): Recruited ~25 speakers from industry and academia to be Keynote speakers, workshop leaders, and panelists
 - Mentor (2018): Mentored several students through the graduate school application process

FELLOWSHIPS

- NSF Graduate Research Fellowship (2018)
- GEM University Fellowship (2018)

AWARDS AND HONORS

- Springer Nature Best Poster Award, Runner-Up at the Hilton Head Solid-State Sensors, Actuators and Microsystems Workshop 2022
- 2022 Outstanding Graduate Student Instructor Award, UC Berkeley
- 2021-2022 Joint UC Berkeley - UCSF Bioengineering Diversity, Equity, Inclusion, Belonging, & Service Award
- 2020-2021 Joint UC Berkeley - UCSF Bioengineering Diversity, Equity, Inclusion, Belonging, & Service Award
- Lloyd Scholar in Bioengineering Award. UC Berkeley Department of Bioengineering (2021)
- Brodie Scholar in Bioengineering Award. UC Berkeley Department of Bioengineering (2020)
- NorCal Section AIChE Senior Award (2018)
- Michel Boudart Academic Excellence Award. Stanford University (2018)
- Genentech US Biologics Technical Development Outstanding Junior Award (2016)
- Vice Provost for Undergraduate Education Summer Research Award. Stanford University (2015 and 2016)

SKILLS / PROFICIENCIES

- **Languages:** Bilingual in English and Spanish
- **Programming Languages:** Python • Java • C++

- **Software Tools:** Microsoft Word, PowerPoint, Excel, and Publisher • SolidWorks • CATIA • MATLAB • ImageJ • COMSOL • LaTeX • R
- **Lab Techniques:** Microfabrication, fluorescence and confocal spectroscopy, mammalian and bacterial cell culture, polyacrylamide gel synthesis, DNA purification, circular dichroism spectroscopy, high-performance liquid chromatography, imaged capillary isoelectric focusing, gas chromatography – mass spectrometry, multiplexed ion beam imaging

PROFESSIONAL MEMBERSHIPS AND HONOR SOCIETIES

- NextProf Nexus 2021 Alumni
- American Institute of Chemical Engineers (AIChE)
- Tau Beta Pi Engineering Honor Society
- Delta Phi Alpha National German Honorary Society