

## Alison N. Su

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### EDUCATION

- 2016-Present **UNIVERSITY OF CALIFORNIA, BERKELEY AND UNIVERSITY OF CALIFORNIA, SAN FRANCISCO GRADUATE PROGRAM IN BIOENGINEERING** Berkeley, CA  
*PhD Candidate in Dr. Amy Herr's lab*  
*NSF Graduate Research Fellow*
- 2013-2014 **THAYER SCHOOL OF ENGINEERING AT DARTMOUTH COLLEGE** Hanover, NH  
*Bachelor of Engineering concentrating in Bioengineering*
- 2009-2013 **DARTMOUTH COLLEGE** Hanover, NH  
*Bachelor of Arts in Engineering Sciences, summa cum laude, GPA 3.91/4.00*
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### HONORS AND AWARDS

- 2018 **AWARDED "OUTSTANDING STUDENT PAPER AWARD" AT THE 9TH INTERNATIONAL CONFERENCE ON MICROTECHNOLOGIES IN MEDICINE AND BIOLOGY, MONTEREY, CA**
- 2017-Present **AWARDED NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIP**
- 2015 **NOMINATED FOR "MAKE A MEANINGFUL CONTRIBUTION" AWARD, ADIMAB LLC**  
*One of six awards voted on annually in a company-wide survey focused on company culture*
- 2014 **THE SPECIAL FACULTY AWARD FOR ENGINEERING AND SERVICE TO HUMANITY, DARTMOUTH COLLEGE**  
*Awarded to recognize a student or team of students in any degree program for exemplary achievement related to the application of engineering in service to society*
- 2013 **THE RICHARD W. OLMSTED 1932 PRIZE, DARTMOUTH COLLEGE**  
*Awarded to a Dartmouth senior majoring in Engineering Sciences with the highest GPA in the major*
- 2013 **PASSED THE NCEES FUNDAMENTALS OF ENGINEERING EXAM**
- 2013 **INDUCTED INTO PHI BETA KAPPA, DARTMOUTH COLLEGE**
- 2012 **INDUCTED INTO TAU BETA PI (ENGINEERING HONOR SOCIETY), DARTMOUTH COLLEGE**
- 2011, 2013 **RUFUS CHOATE SCHOLAR, DARTMOUTH COLLEGE**  
*Awarded for being among the top 5% of students*
- 2012 **SHORT TERM EDUCATIONAL PROGRAM (STEP) TOWARDS DIGESTIVE & METABOLIC PHYSIOLOGY FELLOWSHIP, UNIVERSITY OF MICHIGAN**  
*A summer research fellowship awarded to students from math, physics, engineering, computational sciences and other quantitative backgrounds to encourage them to apply their expertise to research relevant to digestive and metabolic physiology and associated diseases*
- 2011 **JAMES O. FREEDMAN PRESIDENTIAL SCHOLAR, DARTMOUTH COLLEGE**  
*Scholarship to perform research with a Dartmouth faculty member*
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### RESEARCH EXPERIENCE

- 2017-Present **UNIVERSITY OF CALIFORNIA, BERKELEY** Berkeley, CA  
**PhD Candidate; Faculty Mentor: A. Herr (March 2017-present)**
  - Design and validation of accessible measurement tools and workflows for biomedical applications ranging from bench to bedside.

- Development of imaging and analysis technique to quantify spatially-resolved thermodynamic partitioning of solutes in complex hydrogel materials with high precision and accuracy.
  - Characterization and validation of UV-C dose for informed design and in-process validation of UV-C systems for N95 respirator decontamination during the COVID-19 pandemic.
- 2017      **UNIVERSITY OF CALIFORNIA, SAN FRANCISCO**      San Francisco, CA  
*Rotation Student; Faculty Mentor: T. Kortemme (January 2017-March 2017)*
- Investigated how *in silico* multi-state design of dihydrofolate reductase using Rosetta Software could be improved by incorporating covariation into the design parameters.
- 2016      **UNIVERSITY OF CALIFORNIA, BERKELEY**      Berkeley, CA  
*Rotation Student; Faculty Mentor: L. Sohn (September 2016–November 2016)*
- Worked on developing an integrated node-pore sensing platform that could rapidly and accurately measure both surface-protein expression levels and mechanical properties of potentially cancerous breast tissue cells.
- 2014-2016      **ADIMAB LLC**      Lebanon, NH  
*Predocctoral Researcher, Antibody Discovery (July 2014-July 2016)*
- Discovered and characterized fully-human, therapeutically-relevant monoclonal antibodies against immuno-oncology targets using flow cytometry and proprietary yeast library technology.
  - Identified and demonstrated potential entry points of contamination in the workflow, resulting in a redesigned workflow. Presented data to entire company.
  - Helped optimize the glycosylation profile of the Adimab yeast strain using site saturation mutagenesis and proprietary yeast library technology.
  - Planned and conducted experiments to characterize bispecific antibody constructs
  - Won the Mini Lab Olympics, which tested the ability to carry out various lab techniques in a fun competition.
- 2013-2014      **THAYER SCHOOL OF ENGINEERING AT DARTMOUTH COLLEGE**      Hanover, NH  
*Design Team Member, Engineering class: Engineering Design Methodology (September 2013–March 2014)*
- One of a group of four students who developed a prototype for an antibody-based lateral flow assay for detecting *S. aureus* on environmental surfaces.
  - Served as lead researcher, designed almost all experiments, conducted sandwich ELISAs.
  - Work was recognized by Thayer School of Engineering with “The Special Faculty Award for Engineering and Service to Humanity.”
- 2013      **DARTMOUTH COLLEGE**      Hanover, NH  
*Undergraduate Student, Methods in Biotechnology Course (March 2013-June 2013)*
- Graduate-level, experiment-based lab course
  - Worked on three projects simultaneously, successfully completed all three within the time frame, honed project management skills, and solidified passion for biotechnology.
  - Used error-prone PCR to generate a mutant library of TEM-1 beta-lactamase protein variants and evaluated the frequency of variants that expressed new resistance to cefataxime and maintained resistance to ampicillin.
  - Applied saturation mutagenesis on the araBAD promoter region to create a library of cells with inducible expression of varying levels of GFP driven by the araBAD promoter, analyzed sequences that led to various expression levels.
  - Compared the abilities of ion metal affinity chromatography vs. cross-flow filtration followed by FPLC purification to purify A1-III alginate lyase.
- 2012      **UNIVERSITY OF MICHIGAN**      Ann Arbor, MI  
*Fellow, Digestive and Metabolic Physiology; Faculty Mentor: O. MacDougald (June 2012-August 2012)*

- Investigated the mechanism by which the transcription factor Prrx1 regulates adipogenesis, work that led to co-authorship of a paper in *The Journal of Biological Chemistry* (B. Du et al., see “Publications”).
- Cultured 3T3-L1 adipocytes, performed western blots, read primary literature to develop protocols and help interpret results.

**Intern, Skeletal Tissue Engineering; Faculty Mentor: L. Larkin (January 2012-March 2012)**

- Assisted in developing novel approaches to repair injured ACLs.
- Force- and tensile-tested constructs using micro beads, determined stiffness and stress- and strain-to failure properties.
- Cultured both bone marrow stromal cells and adipose stem cells, differentiated them into bone and ligament to prepare ACLs for implantation.

2011

**DARTMOUTH COLLEGE**

Hanover, NH

**Presidential Scholar Research; Faculty Mentor: B. Gimi (June 2011-December 2011)**

- Investigated the biocompatibility of SU-8 microcompartments to deliver pancreatic islet cells to diabetics, work which led to co-authorship of a paper in *Materials Science & Engineering C* (Nemani et al., see “Publications”).

2009-2010

**UNIVERSITY OF MICHIGAN**

Ann Arbor, MI

**Intern, Skeletal Tissue Engineering; Faculty Mentor: L. Larkin (June-August in 2009 and 2010)**

- Assisted in developing novel approaches to repair injured ACLs.
- Force- and tensile-tested constructs using micro beads, determined stiffness and stress- and strain-to failure properties.

## PEER REVIEWED JOURNAL ARTICLES

- 2020 **A. Su**, B.E. Smith, & A.E. Herr, “*In Situ* Measurement of Thermodynamic Partitioning in Open Hydrogels”, *Analytical Chemistry*, **2020**, 92(1):875-883.
- 2020 S. Jeeawoody, K.A. Yamauchi, **A. Su**, & A.E. Herr, “Laterally Aggregated Polyacrylamide Gels for Immunoprobed Isoelectric Focusing”, *Analytical Chemistry*, **2020**, 92(4):3180-3188.
- 2013 B. Du, W.P. Cawthorn, **A. Su**, C.R. Doucette, Y. Yao, N. Hemati, S. Kampert, C. McCoin, D.T. Broome, C.J. Rosen, G. Yang, & O.A. MacDougald, “The transcription factor paired-related homeobox 1 (Prrx1) inhibits adipogenesis by activating transforming growth factor- $\beta$  (TGF $\beta$ ) signaling”, *J. Biol. Chem*, **2013**, 288(5):3036-3047.
- K.V. Nemani, K.L. Moodie, J.B. Brennick, **A. Su**, & B. Gimi, “In vitro and in vivo evaluation of SU-8 biocompatibility”, *Mater. Sci. Eng. C*, **2013**, 33:4453-4459.

## PRESENTATIONS

### ORAL PRESENTATIONS

- 2019 **A. Su**, B.E. Smith, and A.E. Herr, “3D-resolved thermodynamic partitioning measurements in hydrogels”, Chan Zuckerberg Biohub Inter-lab Confab 2019, UCSF Mission Bay.

### POSTER PRESENTATIONS

- 2019 **A. Su**, B. E. Smith, and A. E. Herr. A method to quantify and normalize optical artefacts in partition coefficient measurements for tunable hydrogels. EMBS Micro and Nanotechnology in Medicine Conference, Kauai, HI.
- 2018 **A. Su** and A. E. Herr. Probing the impact of hydrodynamic radius on partitioning behavior for in-gel immunoassay detection. The 9th International Conference on Microtechnologies in Medicine and Biology, Monterey, CA. (*Poster Award Winner*)

- 2017 **A. Su** and A. E. Herr. Investigating the effect of probe size on partitioning behavior in in-gel immunoassays. UC Berkeley/UCSF Graduate Group in Bioengineering Retreat, Tahoe City, CA.
- OTHER**
- 2018 Panelist for “Girl Scouts Engineering Fun Day 2018” at UC Berkeley
- Spoke on a panel directed towards parents of girl scouts ages 4-8 that was focused on how to get young girls to enjoy and thrive in STEM disciplines.

## TEACHING EXPERIENCE

- 2019 **GRADUATE STUDENT INSTRUCTOR FOR BIOE192: BIOENGINEERING SENIOR CAPSTONE DESIGN COURSE** (*August 2019-December 2019*)
- Guided and supported student teams through the engineering design process, prepared and delivered lecture on solid modelling, graded oral presentations and written reports.
- 2019 **CO-INSTRUCTOR FOR “SINGLE-CELL WESTERN BLOTTING” SECTION OF “SINGLE CELL ANALYSIS” COURSE AT COLD SPRING HARBOR LABORATORIES** (*July 2019*)
- Developed curriculum, delivered a lecture, established workflow, and led 18 students (graduate and medical students, post-doctoral researchers from around the world) through the entire single-cell western blotting experimental procedure.
- 2019 **MENTOR TO ROTATING GRADUATE STUDENT** (*March 2019-April 2019*)
- Provided research guidance to a student during their 7-week rotation in lab.
- 2015-2016 **RESEARCH TRAINER FOR NEW EMPLOYEE AT ADIMAB** (*August 2015-July 2016*)
- Assisted in training a new predoctoral researcher.
- 2014 **TEACHING ASSISTANT FOR “INTRODUCTION TO ENGINEERING” COURSE AT DARTMOUTH COLLEGE** (*January 2014-March 2014*)
- Guided a team of students through the process of finding and solving an engineering problem and developing a prototype for the proposed solution.
- TEACHING ASSISTANT FOR “SYSTEMS” COURSE AT DARTMOUTH COLLEGE** (*January 2014-March 2014*)
- Co-led homework help sessions, assisted in grading.
- TEACHING ASSISTANT FOR “INTRODUCTION TO THERMODYNAMICS” COURSE AT DARTMOUTH COLLEGE** (*April 2014-June 2014*)
- Co-led homework help sessions, graded homework.
  - Evaluated the performance of student-built Stirling engines.
- MACHINE SHOP TEACHING ASSISTANT AT THAYER SCHOOL OF ENGINEERING AT DARTMOUTH COLLEGE** (*April 2014-June 2014*)
- Assisted students building projects on computer numerical control (CNC) mills and lathes, general maintenance.
- 2013 **THERMODYNAMICS TUTOR** (*September 2013-January 2013*)
- Tutored undergraduate student from another institution on thermodynamic concepts and problem sets, helped her prepare for exams.
- 2010, 2013 **MATH TUTOR IN HANOVER, NH** (*September-November in 2010 and 2013*)
- Assisted college and high school students with different mathematical concepts.

## LEADERSHIP ACTIVITIES AND SERVICE

- 2020-Present **CONTRIBUTING MEMBER OF [N95DECON.ORG](http://N95DECON.ORG)**
- Member of the sub-team focused on investigating UV-C decontamination of N95 respirators.
  - Coauthored publicly available reports that review, condense, and disseminate peer-reviewed scientific literature on UV-C decontamination of N95s.

- 2019-Present **ELECTED MEMBER OF ADMISSIONS COMMITTEE FOR THE PHD PROGRAM (*UC BERKELEY/UCSF GRADUATE PROGRAM IN BIOENGINEERING*)**
- Read applications, work to ensure that the program is accessible to people of all backgrounds, and advocate for diversity to be a priority of the program to improve the educational experience for all bioengineering students.
- 2019-Present **ELECTED MEMBER OF DIVERSITY, ENHANCEMENT, AND INCLUSION (DEI) COMMITTEE (*UC BERKELEY/UCSF GRADUATE PROGRAM IN BIOENGINEERING*)**
- Serve as a student member of Faculty Search Committee with a focus on assessing candidates in the areas of teaching, mentorship, and promoting DEI.
- 2017-2019 **CO-HEAD PEER ADVISOR FOR THE BIOENGINEERING ASSOCIATION OF STUDENTS (*UC BERKELEY/UCSF GRADUATE PROGRAM IN BIOENGINEERING*)**
- Matched incoming graduate students with current students who will serve as a mentor as new students transition into graduate school life.
  - Served as resource for younger students to ask questions concerning the PhD program, course schedule, choosing a dissertation lab, etc.
- 2013-2014 **PRESIDENT OF TAU BETA PI, THE ENGINEERING HONOR SOCIETY (*DARTMOUTH COLLEGE*)**
- Conducted meetings, coordinated service projects, monitored emails, represented chapter at national conference.
- 2011-2014 **VICE-PRESIDENT OF SOCIETY OF WOMEN ENGINEERS (*DARTMOUTH COLLEGE*)**
- Assisted President with conducting meetings, fostered collegiality among women engineers.
- 2012-2013 **WOMEN IN SCIENCE PROGRAM (WISP) MENTOR (*DARTMOUTH COLLEGE*)**
- Mentored a female freshman interested in pursuing a college degree in a science, math, or engineering field. Helped her choose courses and plan out her college degree, answered any other questions she had or put her in contact with those who could.
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## SKILLS AND TECHNIQUES

- PCR, flow cytometry, magnetic-activated cell sorting (MACS), ELISA, site-saturation mutagenesis, primer design, transfections, gel electrophoresis, western blots, photolithography, sterile technique, yeast and mammalian cell culture (including primary cell culture), widefield and confocal microscopy
  - Microsoft Office, Matlab, Python, LaTeX, Benchling, Electronic Lab Notebook
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## INTERESTS

- Tennis, pickleball, table tennis, travel, snorkeling, tide pooling, jigsaw puzzles, miniature poodles