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
Graduate Student Researcher pursuing PhD in Dr. Amy Herr's lab

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 3.91/4.0

HONORS AND AWARDS

2017 **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

RESEARCH EXPERIENCE

2017-Present **UNIVERSITY OF CALIFORNIA, BERKELEY** Berkeley, CA
Graduate Student Researcher; Faculty Mentor: A. Herr *(March-present)*
- Investigating methods to increase the sensitivity and resolution of the single-cell western blot assay.

2017 **UNIVERSITY OF CALIFORNIA, SAN FRANCISCO** San Francisco, CA
Rotation Student; Faculty Mentor: T. Kortemme *(January-March)*
- 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–November)*

- 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

Predoctoral Researcher, Antibody Discovery *(July-July)*

- 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–March)*

- One of a group of four students who developed a prototype for an antibody-based mechanism for detecting *S. aureus* on environmental surfaces.
- Served as lead researcher, designed almost all experiments, conducted sandwich ELISAs.
- Work was recognized by the engineering school with "The Special Faculty Award for Engineering and Service to Humanity."

2013 **DARTMOUTH COLLEGE** Hanover, NH

Undergraduate Student, Methods in Biotechnology Course *(March-June)*

- Graduate-level course requiring extensive time in the lab (>30 hours/week) for ten weeks.
- 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-August)*

- 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* (Du B 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-March)*

- 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-December)*
- 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 for two summers)*
- 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.

TEACHING EXPERIENCE

2015-2016 **RESEARCH TRAINER FOR NEW EMPLOYEE AT ADIMAB (AUGUST-JULY)**
- Assisted in training a new predoctoral researcher.

2014 **TEACHING ASSISTANT FOR "INTRODUCTION TO ENGINEERING" COURSE AT DARTMOUTH COLLEGE (JANUARY-MARCH)**
- 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-MARCH)
- Co-led homework help sessions, assisted in grading.

TEACHING ASSISTANT FOR "INTRODUCTION TO THERMODYNAMICS" COURSE AT DARTMOUTH COLLEGE (APRIL-JUNE)
- 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-JUNE)
- Assisted students building projects on computer numerical control (CNC) mills and lathes, general maintenance.

2013 **THERMODYNAMICS TUTOR (SEPTEMBER-JANUARY)**
- 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)**
- Assisted college and high school students with different mathematical concepts.

LEADERSHIP ACTIVITIES

2017-Present **CO-HEAD PEER ADVISOR FOR THE BIOENGINEERING ASSOCIATION OF STUDENTS**
- Match incoming graduate students with current students who will serve as a mentor as new students transition into graduate school life
- Serve 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**
- Conducted meetings, coordinated service projects, monitored emails, represented chapter at national conference.

2011-2014 **VICE-PRESIDENT OF SOCIETY OF WOMEN ENGINEERS**
- Assisted President with conducting meetings, fostered collegiality among women engineers.

2012-2013 **WOMEN IN SCIENCE PROGRAM (WISP) MENTOR**

- 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.

PUBLICATIONS

- Du B, Cawthorn WP, **Su A**, Doucette CR, Yao Y, Hemati N, Kampert S, McCoin C, Broome DT, Rosen CJ, Yang G, MacDougald OA (2013). The transcription factor paired-related homeobox 1 (Prrx1) inhibits adipogenesis by activating transforming growth factor-β (TGFβ) signaling. J Biol Chem 288:3036-3047.
- Nemani KV, Moodie KL, Brennick JB, **Su A**, Gimi B (2013). In vitro and in vivo evaluation of SU-8 biocompatibility. Mater Sci Eng C 33:4453-4459.

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
- Microsoft Office, Matlab, Python, LaTex, Benchling, Electronic Lab Notebook

INTERESTS

- Tennis, soccer, table tennis, travel, snorkeling, tidepooling, jigsaw puzzles, Ultimate Frisbee

Updated May 2017