

EDUCATION

Ph.D., Microbiology, *University of California, Berkeley* Aug. 2021 – present

B.S., Biochemistry and Cell Biology, *University of California, San Diego* Sept. 2017 – Dec. 2020
Minors: Global Health, Chemistry GPA: 3.88
Magna Cum Laude, Phi Beta Kappa, Honors Distinction (Div. Biological Sciences)

Graduate level coursework: Mechanisms of Organic Chemistry Bioorganic and Natural Products Chemistry
Chemical Biology Seminars: Metagenomics, Molecular Epidemiology

RESEARCH EXPERIENCE

UC Berkeley, Department of Bioengineering

Research Specialist July 2020 – June 2021

Advisor: Dr. Patrick D. Hsu, Ph.D.

- ❖ Conducting CRISPR knockout and transcriptional activation screens to discover host factor dependencies in SARS-CoV-2 infection. Publication under review.

UC San Diego School of Medicine, Department of Pathology

Undergraduate Research Assistant Aug. 2019 – June 2020

Advisor: Dr. Hiutung Chu, Ph.D.

- ❖ Senior Honors Thesis: Feeding bugs in the baby's gut: characterization of human milk oligosaccharide metabolism by infant gut bacteria

UC San Francisco, Department of Biochemistry & Biophysics

Summer Research Training Program Student May 26, 2019 – Aug. 2, 2019

Advisor: Dr. Seemay Chou, Ph.D.

- ❖ Validated hits from a CRISPR interference screen on the genetic basis of *E. coli* susceptibility to the type VI secretion system of *P. aeruginosa*

Salk Institute for Biological Studies, Molecular and Cell Biology

Undergraduate Research Assistant May 2018 – May 2019

Advisor: Dr. Patrick D. Hsu, Ph.D.

- ❖ Studied and developed RNA-targeting CRISPR technologies for research and therapeutic applications, such as RNA base-editing, live RNA imaging, RNA knockdown screens of CRISPR-Cas13d orthologs, multiplexing, and mRNA splice modulation

UC San Diego, Division of Biological Sciences

Undergraduate Research Assistant Jan. 2018 – Apr. 2018

Advisor: Dr. Shannon M. Lauberth, Ph.D.

- ❖ Examined biochemical interactions between chromatin reader BRD4 and noncoding RNA to study cancer epigenetics

AWARDS

- ❖ Barry Goldwater Scholarship. Fall 2019 – Spring 2021
- ❖ UC San Diego BioTechathon 2019 (Premier Biotech Case Competition at UC San Diego): Individual Award: "Best Speaker"; Team Award: "Most Innovative". April 2019
- ❖ Ledell Family Research Scholarship for Science and Engineering. Summer 2018

PUBLICATIONS

- ❖ (preprint) Biering SB, Sarnik SA, **Wang E**, et al. Genome-wide, bidirectional CRISPR screens identify mucins as critical host factors modulating SARS-CoV-2 infection. bioRxiv 2021.04.22.440848; doi: <https://doi.org/10.1101/2021.04.22.440848>
- ❖ **Wang E**, Hsu PD. A Catalogue of Cas9 Orthologs to Advance Genome Engineering. CRISPR J. 2020 Dec;3(6):427-430. doi: 10.1089/crispr.2020.29115.ewa. PMID: 33346708.

OTHER WRITING

- ❖ [A Guide to Getting Started in Undergrad Research](#). Guest Blog. Addgene. 2021.06.08
- ❖ [Talking the Talk: How Microbes Communicate](#). Print. Saltman Quarterly. Vol 16. p10-13 2020.06.17
- ❖ [Animals in Captivity: Prison or Protection?](#) Print. Saltman Quarterly. Fall Insider. 2019.11.09
- ❖ [Who Started the Fire? Why California Has Been Burning](#). Print. Saltman Quarterly. Spring Insider. 2019.05.27
- ❖ [How to Win a Nobel Prize](#). Online. Saltman Quarterly. 2019.05.21
- ❖ [An Introduction to the Rapidly Expanding World of CRISPR](#). Online. Saltman Quarterly. 2019.04.17
- ❖ [Should we be PRObiotic or ANTIbiotic?](#) Online. Saltman Quarterly. 2019.02.21
- ❖ [A Glimpse into the Struggles of Women in Science](#). Online. Saltman Quarterly. 2019.01.28

PRESENTATIONS

- ❖ SACNAS 2020 – National Diversity in STEM Conference, Online. October 2020. **Wang E**, Sarnik SA, Biering SB, Sathyan V, Harris E, Hsu PD. “CRISPR screens to discover host factor dependencies for SARS-CoV-2 infection” (poster). Registration scholarship recipient.
- ❖ SACNAS 2019 – National Diversity in STEM Conference, Honolulu, HI. November 2019. **Wang E**, Trotta K, Silvis M, Gross C, and Chou S. “Molecular mechanisms of *E. coli* susceptibility to the Type VI Secretion System” (poster). Travel scholarship recipient.
- ❖ UCSF SRTP Student Research Symposium, San Francisco, CA. July 2019. **Wang E**, Trotta K, Silvis M, Gross C, and Chou S. “Molecular mechanisms of *E. coli* susceptibility to the Type VI Secretion System” (talk and poster). Best presentation – honorable mention.
- ❖ National Collegiate Research Conference, Cambridge, MA. January 2019. **Wang E**, Lotfy P, Konermann S, Ivanoff C, Hsu PD. “Development of the RNA-Targeting CRISPR Effector Cas13d for Transcriptome Engineering” (poster).
- ❖ UCSD Summer Research Conference, La Jolla, CA. August 2018. **Wang E**, Lotfy P, Hsu PD. “A-to-I RNA editing with CRISPR-Cas13d” (oral presentation).
- ❖ Student Research Showcase UCSD Div. Biological Sciences, La Jolla, CA. June 2018. “Discovery and application of the RNA-Targeting CRISPR Effector Cas13d in Transcriptome Engineering” (poster)

SKILLS

General:

- ❖ Microsoft Office Programs (Word, Excel, PowerPoint)
- ❖ Basic Python scripting and data analysis
- ❖ Adobe Creative Cloud: Photoshop and Illustrator (Sample work available upon request)
- ❖ Graphing and Data Analysis with Microsoft Excel and GraphPad Prism 8
- ❖ Conversational fluency in Mandarin Chinese and Japanese

Laboratory techniques:

- ❖ Molecular biology: high-throughput cloning, golden gate assembly, Gibson assembly, NGS sample preparation, RNAseq library preparation, PCR, RT-qPCR, CRISPR screening,
- ❖ Tissue culture: basic cell maintenance, transient transfections, lentiviral transduction, flow cytometry
- ❖ Microbiology: growth curves, competition assays, minimal media preparation, anaerobic culture
- ❖ Biochemistry: western blot, protein expression and purification, ELISA

TEACHING EXPERIENCE

Undergraduate Instructional Assistant
Course: Human Physiology I

Fall 2019

OTHER ACTIVITIES & OUTREACH

Alter Ego Dance Community

Jan. 2020 – present

Leadership: Mental Health Coordinator (May 2020 – present)

Choreography-based dance team, support team mental health by providing guidance, reaching out, leading meditation and bonding activities, and managing conflicts within general members and leadership

Saltman Quarterly

Fall 2018 – June 2020

Roles: Online Reporter (Oct. 2018 – June 2019); Staff Writer (June 2019 – June 2020)

UCSD's Premier Undergraduate Biology Research Journal. Write and publish articles related to the biological sciences for digital and print publication. (science communication, science journalism)

Medical, Educational Missions and Outreach

Oct. 2018 – June 2020

Leadership: Sponsorship Intern (Oct. 2018 – April 2019)

501(c)(3) non-profit, student-run, humanitarian organization devoted to serving underprivileged communities through addressing medical and educational needs. Coordinated with local businesses to collect donations for annual fundraising gala.

a.bio.club

Oct. 2018 – June 2020

UCSD undergraduate student organization where students interested in discussing research in biology organize and facilitate biweekly journal clubs of primary research articles.

UCSD Biological Sciences Student Association

Oct. 2017 – June 2018

Role: Volunteer Committee Member

Planned and organized volunteer and outreach events, as well as fundraisers

UCSD Office of Students with Disabilities

Winter 2018, Fall 2018

Role: Volunteer Notetaker

Took organized and detailed notes for distribution to students with disabilities

Courses: General Chemistry, Multivariable Calculus

REFERENCES

Patrick D. Hsu, Assistant Professor, University of California, Berkeley – Bioengineering
pdhsu@berkeley.edu

Hiutung Chu, Assistant Professor, University of California, San Diego – Pathology
hiuchu@ucsd.edu

Seemay Chou, Assistant Professor, University of California, San Francisco – Biochemistry & Biophysics
seemay.chou@ucsf.edu