Laurent C. Hsia

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Education

University of California, Berkeley, College of Letters & Science.
Biochemistry & Molecular Biology [Class of 2021]

Professional Experiences

National Taiwan University, Synthetic Biology & Biofabrication Laboratory **Taipei, Taiwan**
Research Technician April 2020 – November 2021

- Investigated, outlined, and performed experimentation on COVID-19 home solution that utilizes the principles of RNA interference through the synthetic production of human Dicer protein (hDcr).
- Designed and successfully utilized a split mCherry Bimolecular Fluorescence Complementation assay to monitor protein-protein interaction between two truncated hDcr domains to improve hDcr *in vivo* co-expression.
- Assisted the experimentation of the synthetic production of spider dragline silk as a potential replacement for surgical grafts and industrial materials such as Kevlar and Carbon Fiber.
- Successfully performed knockout on essential genes of the BLR(DE3) E. coli strain to boost production quantity of MaSp1 and MaSp2-based bioengineered spider dragline silk.

International Genetically Engineered Machine Competition (iGEM) **Taipei, Taiwan**
Principal Investigator and Instructor for team KCIS_NewTaipei December 2020 – December 2021

- Taught and trained a team of high school students to create a year-long synthetic biology research project that focuses on solving the issue of vitamin D deficiency through genetically engineering butyrate-producing probiotics.
- Organized and sourced opportunities such as consultation from experts and specialist and laboratory access for students to develop and apply their passion for science.
- Led the team to attend the 2021 iGEM competition and achieved gold medal recognition for outstanding research in the field of synthetic biology.

International Genetically Engineered Machine Competition (iGEM) **Berkeley, CA**
Project Lead for team iGEM@Berkeley January 2020 – May 2021

- Inspired by the Modular Cloning system (MoClo), researched and outlined a project that utilizes a CRISPR-Cas12a system to create an *in vivo* automated cloning system for multi-part DNA assembly.
- Researched and outlined a project approach that substitutes lengthy traditional gene knockout procedures with a Cas12 + DNA ligase fusion protein system capable of performing one-step *in vivo* gene knockouts.

GEMS Academy **Taipei, Taiwan**
Middle School and High School Tutor May 2020 – Present

- Designed and currently teaching a semester long AP Biology course to develop students' deeper understanding of the fundamentals of biology and prepare them for college level biological science courses.
- Designed and taught a yearlong grade 7 and 8 life science course to jump start students' scientific careers and boost their interest and passion in the field of science and technology.

Skills and Interests

Research: Molecular Cloning (Restriction Enzyme Ligation, Gibson Assembly, Golden Gate Assembly), Chemical Transformation, Electroporation, PCR, RT-qPCR, RNA Extraction, Gene Knockout, SEM, Cell Culturing, Lipofectamine Transfection, Electrophoresis, SDS-PAGE, Western Blot, Bradford Assay, Flow Cytometry, DNA microscopy, TLC, LLC, LLE, and more.

Language: English (Native), Mandarin Chinese (Native), Japanese (Beginner).

Technical Skills: SnapGene, Benchling, Adobe Photoshop, Python, Java, Git, Adobe Lightroom cc, Solid Works, Fusion 360, Adobe premiere pro, Microsoft Word, PowerPoint, Excel, and OneNote.

Clubs & Sports: Cal Club Golf team, Cal Ice Hockey team, Cal Division 1 Esports team, ΣAM Fraternity.

Music: Violin (11 years), Trombone (8 years), Guitar (5 years), Piano (1 year), Drums (5 years).