

# Gözde Sultan Demirer

Assistant Professor | Chemistry & Chemical Engineering | California Institute of Technology

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## SUMMARY

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My research group aims to solve the critical challenge of **sustainable production of more food with fewer resources** via interdisciplinary approaches of synthetic biology, chemistry, plant gene editing, and plant-microbe interactions in soil rhizosphere. [Research talks](#) are available on the lab website. I strive to implement best practices in **mentoring, professional development, and [Diversity, Equity, Inclusion & Accessibility](#)** as an educator.

## POSITIONS AND AFFILIATIONS

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**California Institute of Technology**, Pasadena, CA September 2022 - present  
Clare B. Luce Assistant Professor, Chemical Engineering

**University of California, Davis**, Davis, CA August 2020 - September 2022  
Postdoctoral Fellow, Plant Biology and Genome Center  
Advisor: Siobhan M. Brady

## EDUCATION

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**University of California, Berkeley** August 2015 - May 2020  
**Ph.D.** Chemical and Biomolecular Engineering  
Advisor: Markita P. Landry

**Koç University**, Istanbul, Turkey September 2010 - June 2015  
**B.S.** Chemical and Biological Engineering

## HONORS AND AWARDS

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### Since starting at Caltech in September 2022

ASPB Jane Silverthorne Early Career Award	2025
Keystone Symposia ECITA Award	2025
Rising Stars in Plant Sciences Award by Molecular Plant	2024
American Chemical Society (ACS) Zero Hunger Award	2024
AIChE's 35 under 35 Award	2023
CCE Chair's Council Innovation Award	2023
Clare Boothe Luce Professorship Award	2022-2027
Resnick Sustainability Institute Postdoctoral Fellowship	2020-2022
Science and Technology in Society Forum Young Leader	2022

### Before Caltech

UC Davis PSA Travel Grant Awardee	2022
Justice, Equity, Diversity, and Inclusion Award, Life Science Editors Foundation	2021
Faculty for the Future Fellowship, Schlumberger Foundation	2016-2020
MIT Chemical Engineering Rising Star	2019
WCC/Merck Research Award	2019
UC Berkeley Graduate Division Travel Grant	2019
AIChE 2019, Bionanotechnology Graduate Student Award Session, 2 <sup>nd</sup> place	2019
Women's Initiative Committee's (WIC) Travel Award	2018
AIChE 2018, Carbon Nanomaterials Graduate Student Award Session, 2 <sup>nd</sup> place	2018

AICHE 2017, Bionanotechnology Graduate Student Award Session, 3<sup>rd</sup> place  
Eltoukhy East-West Gateway Fellowship  
B.S. Valedictorian, Top Ranking Student Award

2017  
2015-2016  
2015

## PEER-REVIEWED PUBLICATIONS

\*Denotes equal contribution ‡Denotes corresponding author

For full citation details of publications, refer to [Google Scholars](#) page.

### Since starting at Caltech in September 2022

1. Li E.<sup>\*</sup>, Geng Y.<sup>\*</sup>, Khristoforova TR., **Demirer GS<sup>‡</sup>**. Efficient transient gene expression in various monocot and eudicot plant seedlings. *bioRxiv* (2025).
2. Bian, C. <sup>\*</sup>, **Demirer, GS.<sup>\*</sup>**, Oz, MT.<sup>\*</sup>, Cai, Y. M., Witham, S., Mason, G. A., ... & Patron, N. J. Conservation and divergence of regulatory architecture in nitrate-responsive plant gene circuits. *The Plant Cell*, 37(6), (2025).
3. Legendre M., Pistilli V., **Demirer GS<sup>‡</sup>**. Chemical conjugation innovations for protein nanoparticles. *Trends in Chemistry* (2024).
4. Griffin C., Oz TM., **Demirer GS<sup>‡</sup>**. Engineering Plant-Microbe Communication for Improved Plant Nutrient Use Efficiency. *Current Opinion in Biotechnology* (2024).
5. Berruto C. and **Demirer GS.<sup>‡</sup>** Biasing Agricultural Microbiomes and Predicting Associated Plant Host Phenotypes. *Trends in Microbiology* (2024).
6. Krasley AT.<sup>\*</sup>, Li E.<sup>\*</sup>, Galeana JM., Bulumulla C., Beyene AG.<sup>‡</sup>, **Demirer GS.<sup>‡</sup>** Carbon nanomaterial fluorescent probes and their biological applications. *Chemical Reviews* (2024).
7. Lowry G.<sup>\*</sup>, Giraldo JP.<sup>\*</sup>, Steinmetz N.<sup>\*</sup>, Avellan A., **Demirer GS** et al. Towards realizing nano-enabled precision delivery in plants. *Nature Nanotechnology* (2024)
8. **Demirer GS.<sup>\*</sup>**, Gibson D.<sup>\*</sup>, Yue X., Pan K., Cantó-Pastor A. et al. Phosphate deprivation-induced changes in tomato are mediated by an interaction between brassinosteroid signaling and zinc. *New Phytologist* (2023).
9. Wang Y. and **Demirer GS<sup>‡</sup>**. Synthetic Biology for Plant Genetic Engineering and Molecular Farming. *Trends in Biotechnology* (2023).
10. **Demirer GS<sup>‡</sup>**. Detecting and quantifying nanoparticle-mediated biomolecule delivery in plants. *Nature Reviews Methods Primers* (2023).
11. Rustgi S.<sup>‡</sup>, Naveed S., Windham J., Zhang H., and **Demirer GS.<sup>‡</sup>** Plant biomacromolecule delivery methods in the 21st century. *Frontiers in Genome Editing* (2022).

### Before Caltech

12. Park J., **Demirer GS.**, Cheung L. Toolboxes for Plant Systems Biology Research. *Current Opinion in Biotechnology* (2022).
13. Ali Z., Serag M., **Demirer GS.**, Torre B., Di Fabrizio E., Landry M., Habuchi S., Mahfouz M. DNA-carbon nanotube binding mode determines the efficiency of carbon nanotube-mediated DNA delivery to intact plants. *ACS Applied Nano Materials* (2022).
14. Zhang H., Goh NS., Wang J., **Demirer GS.**, Butrus S., Park SJ., Landry MP. Nanoparticle Cellular Internalization is Not Required for RNA Delivery to Mature Plant Leaves. *Nature Nanotechnology* (2021).
15. González-Grandío E., **Demirer GS.**, Jackson C.T., Yang D., Landry M.P. Carbon nanotube biocompatibility in plants is determined by their surface chemistry. *Journal of Nanobiotechnology* (2021).
16. González-Grandío E., **Demirer GS.**, Ma W., Brady SM., Landry MP. A ratiometric dual color luciferase reporter for fast characterization of transcriptional regulatory elements in plants. *ACS SynBio* (2021).
17. Zhang H.<sup>\*</sup>, Cao Y.<sup>\*</sup>, Xu D., Goh NS., **Demirer GS.**, Landry MP., Yang P. Gold nanocluster mediated delivery of siRNA to intact plant cells for efficient gene knockdown. *Nano Letters* (2021).
18. **Demirer GS.<sup>‡</sup>**, Silva TN., Thomas B., Jackson CT., Mortimer JC.<sup>‡</sup>, Rhee SY.<sup>‡</sup>, Landry MP.<sup>‡</sup>. Nanotechnology to advance CRISPR/Cas genetic engineering of plants. *Nature Nanotechnology* (2021).

19. **Demirer GS.**<sup>‡</sup> and Landry<sup>‡</sup>, M.P. Efficient Gene Knock-Down in Tobacco Plants Using Carbon Nanocarriers. *Bio-protocol* (2021).
20. Zhang H., **Demirer GS.**, Fan C. and Landry M.P. Engineering DNA nanostructures for efficient delivery in plant cells. *Nature Protocols* (2020).
21. **Demirer GS.**, Zhang H., Goh N., Pinals R.L., Chang R., Landry M.P. Carbon nanocarriers deliver siRNA to intact plant cells for efficient gene knockdown. *Science Advances* (2020).
22. **Demirer GS.**, Zhang H., Goh N., Grandio E.G., Landry M.P. Carbon nanotube-mediated DNA delivery without transgene integration in intact plants. *Nature Protocols* (2019).
23. Wang J., Grandio G., Newkirk M., **Demirer GS. et al.** Nanoparticle mediated genetic engineering of plants. *Molecular Plant* (2019).
24. **Demirer GS.**<sup>\*</sup>, Zhang Hu.<sup>\*</sup>, Zhang Ho., Ye T., Goh NS., Aditham AJ., Cunningham FJ., Fan. C., Landry MP. DNA Origami Nanostructure-Mediated Gene Silencing in Mature Plants. *PNAS* (2019).
25. **Demirer GS.**, Zhang H., Matos J., Goh N., et al. High Aspect Ratio Nanomaterials Enable Delivery of Functional Genetic Material Without Transgenic DNA Integration in Mature Plants. *Nature Nanotechnology* (2019).
26. **Demirer GS.**<sup>\*</sup>, Goh NS.<sup>\*</sup>, Cunningham FJ.<sup>\*</sup>, Zhang H<sup>\*</sup>, Landry MP. Nano-biolistics: A novel plant genetic transformation approach. *Methods in Molecular Biology* (2018).
27. Cunningham FJ<sup>\*</sup>, Goh NS.<sup>\*</sup>, **Demirer GS.**, Matos J., Landry MP. Nanoparticle-mediated delivery in plants towards advancing plant genetic engineering, *Trends in Biotechnology* (2018).
28. **Demirer GS.** and Landry MP. Delivering Genes to Plants. *Chemical Engineering Progress* (2017).
29. Del Bonis JT., Beyene AG., Chio L., **Demirer GS.**, Yang D., Landry MP. Engineering Molecular Recognition with Bio-mimetic Polymers on Single Walled Carbon Nanotubes. *JOVE* (2017).
30. **Demirer GS.**<sup>\*</sup>, Beyene AG.<sup>\*</sup>, Landry MP. Nanoparticle-templated molecular recognition platforms for detection of biological analytes. *Curr. Protoc. Chem. Biol.* 8:197-223 (2016).
31. **Demirer GS.**, Okur AC., Kizilel SS. Synthesis and Design of Biologically Inspired Biocompatible Iron Oxide Nanoparticles for Biomedical Applications. *Journal of Materials Chemistry B* (2015).
32. Nazli C., **Demirer GS.**, Yar Y., Acar HY., Kizilel SS. Targeted Delivery of Doxorubicin into Tumor Cells via MMP-sensitive PEG Hydrogel Coated Magnetic Iron Oxide Nanoparticles, *Colloids and Surfaces B: Biointerfaces*, (2014).

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## PATENTS & Invention Disclosures

1. **Demirer GS.**, Wang Y., Muchenje K. Targeted DNA Integration in Plants by CRISPR-Associated Transposases (CASTs). Invention Disclosure CIT-9134-P, filed February 2024. Patent filed, February 2025 (U.S. Patent Application No. 30KJ-810004).
2. **Demirer GS.**, Griffin C. Engineering Biofilm-Based Bioinoculants for Climate-Resilient Crops. Invention Disclosure CIT-9249-P, filed December 2024.
3. **Demirer GS.**, Berruto C. Identification of Chemical Targets for The Selective Enrichment Of Desirable Bacteria. Invention Disclosure CIT-9109-P, filed December 2023. Patent filed, December 2024 (U.S. Patent Application No. 18/972,482).
4. **Demirer GS.**, Legendre M. Genetically Encoded Delivery Vehicles for Plant Genetic Engineering. Invention Disclosure CIT-9054-P, filed August 2023.
5. Landry MP., **Demirer GS.** Mature plant transfection using carbon nanotubes. International Patent App. 62/500450, 2017. US Patent App. 16/672459, 2020.
6. Landry MP., Zhang H., **Demirer GS.** Gene Silencing in Plants with DNA Origami Nanostructures. Invention disclosure BK-2019-044, filed September 2018.

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## OTHER PUBLICATIONS (Editorial, Spotlight, Views & News, etc.)

1. Legendre M. and **Demirer GS<sup>‡</sup>**. Improving crop genetic transformation to feed the world. *Trends in Biotechnology* (2022). Spotlight Article.
2. **Demirer GS.<sup>\*</sup>**, Bian C.<sup>\*</sup>, Brady SM. GLRs: Mediating a defense-regeneration tradeoff in plants. *Developmental Cell* (2022). Editorial Preview.
3. **Demirer GS<sup>‡</sup>**. Wonder wheat: A disease-resistant crop without growth tradeoff. *GEN Biotechnology* (2022). Editorial Views & News.

### INVITED RESEARCH TALKS (PAST 5 YEARS)

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1. *Caltech ESE Weekly Seminar Series*: Rhizosphere and Plant Genetic Engineering for Sustainable Agriculture. Pasadena, CA, June 2025.
2. *Duke Department of Biology Seminar*: Understanding and Engineering Plant-Microbe Interactions for Sustainable Agriculture. Durham, NC, May 2025.
3. *Keystone Symposia - Future of Agriculture for Sustainability*: Sustainable Agriculture Through Persistent Plant Growth-Promoting Rhizobacteria. Keystone, CO, January 2025.
4. *1st International SynBYSS Conference*: Improving Targeted Gene Insertion Toolkit in Plants. University of Hawai'i at Mānoa, HI, December 2024.
5. *Texas Tech University 2024 IGCAS Symposium*: Engineering plant-microbe interactions in rhizosphere for crop resilience. Lubbock, TX, November 2024.
6. *2024 International Conference on Microbiome Engineering*: Engineering Plant-Rhizobacteria Interactions for Sustainable Agriculture. Boston, MA, November 2024.
7. *AICHe2024*: Targeted DNA Insertion in Plants By CRISPR-Associated Transposons. San Diego, CA, October 2024.
8. *AICHe2024*: Engineering Plant-Microbe Communication for Sustainable Agriculture. San Diego, CA, October 2024.
9. *Inside IGI Climate*: Panel on Sustainable Crop Improvement. Invited Panelist. Berkeley, CA, October 2024.
10. *7th International Conference on CRISPR Technology*: Expanding The CRISPR Genetic Engineering Toolkit In Plants. San Diego, CA, October 2024.
11. *Bayer Crop Science Plant Biotech Academy Seminar Series*: Developing tools for improved plant genetic engineering. Virtual. October 2024.
12. *JGI 2024 Annual Genomics of Energy and Environment Meeting*: Engineering plant-microbe communication in the rhizosphere. Walnut Creek, CA, September 2024.
13. *Inari Agriculture SLT Science seminar*: Nano- and biotechnology development for plant genetic engineering. Virtual. September 2024.
14. *Biochemical and Molecular Engineering XXIII*: Accelerating Biotech Solutions to aid a Changing World: Targeted DNA insertion in plants by CRISPR-associated transposons. Dublin, Ireland, July 2024.
15. *ICAR 2024*: Elucidating Chemical Signals Dictating Plant Microbiome Assembly And Function. San Diego, CA, July 2024.
16. *Queensland Alliance for Agriculture and Food Innovation*: Accelerating plant biology discoveries with an improved genetic engineering toolkit. The University of Queensland, Brisbane, Australia, July 2024.
17. *International Plant Molecular Biology (IPMB2024) Congress*: Nano- and Biotechnology Tools for Improved Plant Genetic Engineering. Cairns, Australia, June 2024.
18. *SEED 2024*: CRISPR-associated transposons for high efficiency targeted gene insertion in plants. Atlanta, GA, June 2024.
19. *2024 Plant Molecular Biology GRC*: Plant-Microbe Communication Engineering for Sustainable Agriculture. Holderness, New Hampshire, June 2024.
20. *2024 Plant Molecular Biology GRS Keynote*: From Discovery to Translation: Understanding Molecular Mechanisms of Plant Functioning and Sustainability. Holderness, New Hampshire, June 2024.



21. *ECS 2024: Cationic Carbon Dots for Plant Gene Delivery and Genetic Engineering Applications*. San Francisco, CA, May 2024.
22. *2024 Walter E. & Helen Parke Loomis Symposium at Iowa State University: New Frontiers in Plant Biotechnology*. Ames, IA, May 2024.
23. *EBRC 2024 Annual Meeting: Plant Microbiome Engineering for Sustainable Agriculture*. Atlanta, GA, May 2024.
24. *RSI Young Investigators Symposium: Nano and Biotechnology Development for Plant and Planet Health*. Pasadena, CA, April 2024.
25. *ACS 2024: Novel nanoparticle platforms for improved plant genetic engineering*. New Orleans, LA, March 2024.
26. *The Donald Danforth Plant Science Center: Plant genetic engineering via plant virus-like particles*. Olivette, MO, February 2024.
27. *Plant SynBio for Space Conference by TRISH: Nanotechnologies for genetic engineering of plants*. Virtual, August 2023.
28. *ASPB 2023: Towards a Sustainable Future: Engineering genetically-encoded nanoparticles for efficient protein delivery in plants*. Savannah, Georgia, August 2023.
29. *2023 Single Cell Approaches in Plant Biology GRC*. High-throughput resources to study plant transcriptional regulatory elements. Ventura, CA, July 2023.
30. *2023 Environmental Nanotechnology GRC*. Protein nanoparticles for DNA-free plant genetic engineering. Newry, ME, June 2023.
31. *12<sup>th</sup> International Conference on Biomolecular Engineering: Improving plant nitrogen use efficiency via CRISPR/Cas9 genetic engineering*. Santa Barbara, January 2023.
32. *Innovative Genomics Institute CRISPR Journal Club: Nano- and biotechnology development for plant and planet health*. Virtual, October 2022).
33. *The University of Florida Synthetic Biology Working Group Seminar: Synthetic biology and functional genomics for improving nutrient use efficiency in tomato*. Virtual, October 2022.
34. *Stockbridge School of Agriculture Fall Seminar series at the University of Massachusetts: Nano- and Biotechnologies for Plant Genetic Engineering*. Virtual, October 2022.
35. *5<sup>th</sup> International Conference on CRISPR Technologies: Plant gene Editing Enabled by Nanoparticles*. Berkeley, CA, October 2022.
36. *Workshop to Identify Convergent Nanotechnology Approaches for Precision Delivery of Active Agents in Plants*. Carnegie Mellon University, Pittsburgh, PA, September 2022.
37. *Synthetic Biology Young Speaker Series (SynBYSS): Engineering the Nitrogen Regulatory Circuit in Tomato*. Virtual, July 2022 (Award). <https://www.youtube.com/watch?v=NgYrl9POOoo>
38. *32<sup>nd</sup> International Conference on Arabidopsis Research: Conservation and repurposing of nutrient signaling between Arabidopsis and tomato*. Belfast, UK, June 2022.
39. *2022 In Vitro Biology Meeting Novel Delivery Technologies – Overcoming Bottlenecks: Nanomaterials for Plant Genetic Engineering*. San Diego, CA, June 2022.
40. *ECS 241<sup>st</sup> Meeting Carbon Nanostructures in Medicine and Biology Symposium: Carbon Nanotubes for Plant Genetic Engineering*. Vancouver, Canada, June 2022.
41. *UC Riverside Plant Biology Seminar Series: Developing Plant Systems and Synthetic Biology Tools for Sustainable Agriculture*. Riverside, CA, February 2022.
42. *ThinkSTEM February StemConnect x Research Workshop*. Virtual, February 2022.
43. *Cold Spring Harbor Laboratory: Plant Genomes, Systems Biology and Engineering Workshop: Engineering an efficient tomato root system with increased mineral use efficiency*. Virtual, December 2021.
44. *New Breeding Technologies for Food and Nutritional Security Workshop: Developing Nano and Biotechnologies for Crop Genome Engineering*. Virtual, December 2021.

45. *National Postdoctoral week (NPAW) at Clemson University*: Nanomaterials for plant genetic engineering. Virtual, September 2021.
46. *Innovative Genomics Institute CRISPR Journal Club*: Nanoparticle-enabled plant genetic transformation. Virtual, October 2020.
47. *Plant and Animal Genome PAG Conference*: Plant Transgene Genetics Workshop, Carbon Nanomaterials Enable Plant Genome Engineering without Transgene Integration. San Diego, CA, January 2020.

## RESEARCH EXPERIENCE

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**University of California Davis, Brady Lab – Postdoctoral Scholar** 2020-2022

- Improved nutrient use efficiency of tomato plants through studying and modifying gene expression in roots
- Environmental and stimuli-responsive regulation of tomato lateral root formation
- Mapped the interaction between nitrogen and phosphorus in nutrient foraging tomato roots
- Engineered high-throughput and quantitative technologies that advance plant functional genomics

**University of California Berkeley, Landry Lab – Graduate Student Researcher** 2015-2020

- CRISPR/Cas9 gene editing in intact plant leaves *via* nanoparticle-mediated DNA delivery
- Developed a nanomaterial platform for DNA delivery into mature plants for high efficiency transient gene expression; manuscript has been downloaded 20,000 times, and a few hundred research labs have requested nanoparticle samples for use in their own laboratories, and patent is currently under licensing process.
- Established different nanomaterial strategies for siRNA delivery into intact plant cells for high efficiency gene silencing and elucidated the underlying principles of plant nanoparticle internalization process.

## TRAINEES

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### Postdoctoral Scholars

Current:

- Carl McCombe, PhD: The Australian National University (January 2025-present)

Alumni:

- Yuan Geng, PhD: Plant Biology at Purdue University (July 2023 - October 2024)

### Graduate Students

Current:

- Mark Legendre, Chemical Engineering (January 2022 - present)
- Yunqing Wang, Bioengineering (May 2022 - present)
- Eugene Li, Chemical Engineering (September 2022 - present)
- Chiara Berruto, Biology (January 2023 - present)
- Kimberley Tanatswa Muchenje, Biology (March 2023 - present)
- Catherine Griffin, Bioengineering (September 2023-present)
- Clair Colee, Chemistry (March 2025-present)
- Andrés Heredia, Chemistry (March 2025-present)

Alumni:

- Jesus M. Galeana, MS in Chemistry (November 2022 – January 2025)

### Research Technician

Alumni:

- Javi Matta (URM – Latina) (June 2024 – June 2025), BS: Earth Systems Stanford University (2018-2022), M.S. Earth Systems Stanford University (2022-2023)
- Adia Tajima (URM – Native American), BS: Molecular and Environmental Biology, UC Berkeley (June 2023 – March 2024)

- Aya Nakayama (August 2022 - June 2023), current position: PhD Candidate at UCLA BioE

## **Undergraduate Advising**

### **Current:**

- Amelia Saffron, Chemical Engineering Caltech (October 2024-present)
- Nicole Yang, Bioengineering Caltech (June 2024-present)
- Tuyako Khristoforova, Materials Science Caltech (June 2024-present)
- Paulina Chavira (URM – Latina), Bioengineering Caltech (June 2024-present)
- Jolie Jones, Biology and Environmental Science and Engineering Caltech (April 2024-present)
- Virginia Pistilli, Chemistry Caltech (January 2023-present)

### **Alumni:**

- Tessa Pierce, Biology Caltech (January-September 2024)
- Indeever Madireddy, Bioengineering Caltech (January-September 2024)
- Robert Russum (URM – Black, WAVE student), ChemE Howard University (Summer 2024)
- Grace Paolino, Chemistry Caltech (Summer 2024)
- Alexander Rivera (URM – Latino, WAVE student), Biology University of Puerto Rico (Summer 2023)
- Daniela Figueroa (URM – Latina), Chemical Engineering Stanford (Summer 2022)

## **TEACHING AND MENTORING**

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### **Higher Education**

#### **Caltech, *Instructor***

2022-present

- ChE 101: Chemical Reaction Engineering
- ChE 130: Biomolecular Engineering Laboratory

#### **UC Davis, *Research Mentor***

2020-2022

- Jessica Lin, Biotechnology major undergraduate researcher
- Ruthie Mitchell, Biochemistry undergraduate summer researcher from University of Chicago
- He Yang, Genetics major undergraduate researcher
- Zhicheng Zhou, Biotechnology and Agricultural Sciences major undergraduate researcher
- Lilian Grimbert, Biotechnology major undergraduate researcher
- Thomas Tucker Daly, Biotechnology major undergraduate researcher

#### **UC Berkeley, *Research Mentor***

2016-2019

- Salwan Butrus, Amgen Scholar: Currently PhD student at UC Berkeley Chemical Engineering
- Abhishek Aditham, Chemical Engineering Undergraduate: Currently PhD student at MIT Bioengineering
- Roger Chang, Chemical Engineering Undergraduate: Currently PhD student at UIUC Chemical Engineering
- Arismel Tena, Chemistry Undergraduate: Currently PhD student at UCLA Chemistry

#### **UC Berkeley, *Graduate Student Instructor***

- Nanoscience and Engineering Biotechnology (undergraduate/graduate elective course) 2017
- Chemical Engineering Thermodynamics (undergraduate core course) 2016

#### **Koç University, *Teaching Assistant***

2015

- MATLAB for Chemical Engineers (undergraduate core course)

### **K-12 Education**

#### **ThinkSTEM, *Research Workshop Main Speaker***

2022

- Targeted to underrepresented groups,
- Teaching how to start a research project and what it's like to work in a lab

<b>UC Davis Academia Postdoc Panel, <i>Panelist</i></b>	2021
<b>Summer Youth Intensive Program (SYIP), <i>Teacher and Research Mentor</i></b>	2018-2019
<ul style="list-style-type: none"> <li>- Taught biology and chemistry topics to two high school students for 9-months</li> <li>- 4-week mentoring in the laboratory to encourage young students to be involved in STEM and research</li> </ul>	
<b>UC Berkeley BioEHSC 2018 Competition, <i>Lycée Français Team Mentor</i></b>	2018
<b>Bay Area Scientists in Schools, <i>Team Leader and Teacher</i></b>	2016-2018
<b>Koç University Education Group, <i>Volunteer Teacher</i></b>	2011-2013

## LEADERSHIP AND SERVICE

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### Conference Chair and Organizing Committee Member

- 2025 DOE BER Workshop "Plant Design for a Developing Bioeconomy" Co-Chair
- 2025 Synthetic Biology: Engineering, Evolution & Design (SEED2025)
- 2024 International Conference on Biomolecular Engineering (ICBE) Co-Chair
- 2024 SynBYSS: Synthetic Biology Young Speaker Series
- 2023 Synthetic Biology: Engineering, Evolution & Design (SEED2023)
- 2022 32<sup>nd</sup> International Conference on Arabidopsis Research (ICAR2022)
- 2022 *In Vitro* Biology Meeting (SIVB2022)
- 2021 5<sup>th</sup> International Conference on Plant Synthetic Biology, Bioengineering and Biotechnology

### Conference Session Chair/Co-Chair

- 2024 ECS Session Chair: Carbon Nanostructures in Medicine and Biology Symposium
- 2024 ACS BIOT Session Chair: Synthetic Biology and Genome Engineering
- 2023 SEED2023 Chair: Synthetic Biology for Climate and Environment Sustainability
- 2022 AIChE Annual Meeting, Co-Chair: Cell-free systems and DNA assembly platforms
- 2022 *In Vitro* Biology Meeting (SIVB), Chair: Novel Delivery Technologies - Overcoming Bottleneck
- 2022 ECS Spring Meeting, Chair: Carbon Nanostructures in Medicine and Biology Symposium
- 2021 5<sup>th</sup> International Conference on Plant Synthetic Biology, Bioengineering and Biotechnology, Session: New Tools and Technologies
- Plant Synthetic Biology 2021 Virtual Meeting, Chair: Plant SynBio Platform Talks #1
- 2021 AIChE Annual Meeting, Chair: i) Carbon Nanomaterials: Dispersion, Surface Structure, and Biointeractions ii) Nanomaterial interactions with cells and biological barriers
- 2020 AIChE Annual Meeting, Chair: i) Nanomaterial interactions with cells and biological barriers ii) Carbon Nanomaterials Graduate Student Award Session
- 2019 AIChE Annual Meeting, Chair: i) Sensor Development Platforms ii) Carbon Nanomaterials Graduate Student Award Session iii) Nanostructured Biomimetic and Biohybrid Materials and Devices

### Journal Reviewer

Science, Nature Nanotechnology, Nature Biotechnology, Nature Communications, Nature Plants, Angewandte Chemie, Scientific Reports, Environmental Science & Technology, The Plant Journal, Critical Reviews in Environmental Science and Technology, Biomacromolecules, Bioconjugate Chemistry, Trends in Plant Science, Frontiers in Bioengineering and Biotechnology, and various others.

### Journal Editorial

Advisory Board Member at <i>ACS Synthetic Biology</i>	2023-present
Advisory Board Member at <i>GEN Biotechnology</i>	2021-present
Topic Editor at <i>Frontiers in Genome Editing</i> , Genome Editing in Plants	2021-2023

### Other Contributions & Workshops

- Ad hoc grant reviewer and panelist for USDA Agricultural Microbiomes Program 2024



- Ad hoc grant reviewer and panelist for NSF PBI Program 2024
- Grant reviewer and panelist for ARIA Synthetic Plants Program 2024
- Jacobs Institute for Molecular Engineering for Medicine, *Steering Committee Member* 2024-present
- Caltech Engineered Microbes for Environmental Release (EMERs), *Committee Member* 2024-present
- Initiated Plant SynBio Consortium Working Group 2024-present
- Engineering Biology for Space Health: An Innovative Research Roadmap, *Contributor* 2024
- HHMI Mentorship Workshop, *Participant* 2023-2024
- NSF GRFP Reviewer 2022-2023

#### University committees, outreach, and other service

- Chemical Engineering Student Faculty Conference (SFC) member 2022-present
- Bioengineering Graduate Admission Committee, *Member* 2022-present
- Chemical Engineering Graduate Admission Committee, *Member* 2022-present
- Chemical Engineering Seminar Series Committee, *Chair* 2022-present
- Caltech Greenhouse Building Project Lead 2021-present
- Koc University Chemical & Biological Engineering Advisory Board Member 2020-present
- CGSC Summer Seminar Series Speaker Sep 2023
- Student-Faculty Programs Research Presentation July 2023
- WiBBE Career Panel Speaker May 2023
- Bi 180 Guest Lecture and Lab 2023-2024
- CCE Chair's Council Presentation Apr 2023
- The Institute for Collaborative Biotechnology (ICB) Presentation Mar 2023
- Presidential Postdoc Fellows Luncheon Nov 2022
- Women in Chemistry Luncheon Speaker Nov 2022
- CH10A Guest Lecture 2022-2024
- BE 267 Guest Lecture 2022-2024
- CCE Seminar Day Poster Judge Sep 2022
- RSI EBE Rhizosphere Journal Club Research Presentation June 2022
- 2022 Caltech Seminar Day, Sustainability, Science, Solutions Speaker May 2022
- BBE Faculty Research seminar Jan 2022
- SES Research Inc. Interview June 2021
- International Plant Systems Biology Workshop, *Poster Judge* Apr 2021
- Turkish Science Ambassadors Platform – [Panel](#) on Academia Mar 2021