Kian Faizi

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EDUCATION

California Institute of Technology   Sep. 2021 – present
Ph.D. in Systems Biology (GPA: 4.0)   *Pasadena, CA*

- Spring rotation: rhizosphere engineering for plant synthetic biology (Dr. Gözde Demirer)
- Winter rotation: genome minimization and phage engineering (Dr. Kaihang Wang)
- Fall rotation: quantifying transcriptional regulation in *E. coli* (Dr. Rob Phillips)

University of California, San Diego   Aug. 2017 – June 2021
B.S. in Molecular Biology, Minor in Mathematics (GPA: 3.75)   *La Jolla, CA*

- Selected coursework: Bioinformatics, Biophysics, Computational Linear Algebra,
  Dynamical Systems, Genome Editing, Statistics, Stochastic Processes

EXPERIENCE

Visiting Postgraduate Research Fellow   June 2022 – Aug. 2022
Lab of Dr. Pamela Silver, Harvard Medical School   *Boston, MA*

- Exploring chloroplast evolution via organellar gene editing in *C. reinhardtii*
- Inaugural New Science summer fellow (on sabbatical from Caltech)

Lab Technician   Nov. 2019 – Sep. 2021
Lab of Dr. Wolfgang Busch, Salk Institute for Biological Studies   *La Jolla, CA*

- Investigated Pareto-optimal trade-offs in the *Arabidopsis* root system using
  high-throughput phenotyping and graph-theoretic modeling [1]
- Created a GUI for time-series segmentation and analysis of root images
- Helped develop algorithms for plant phenotyping from noisy 3D point clouds [2]
- Quantified root responses to nutrient deficiency using time-lapse optical microscopy
- Built a pipeline for co-expression network analysis of scRNA-seq data
  to identify genetic targets for crop engineering

Volunteer Research Assistant   Nov. 2018 – Nov. 2019
Lab of Dr. Patrick Hsu, Salk Institute for Biological Studies   *La Jolla, CA*

- Developed an automated pipeline to mine over 20 TB of metagenomic
  sequence data for new orthologs of CRISPR-Cas13d
- Helped perform a pooled 150,000-guide Cas13d screen to optimize gRNA design [p1]

PUBLICATIONS

[1] Network design principles in the *Arabidopsis* root system.

- **Kian Faizi**, Matthieu Platre, Arjun Chandrasekhar, Saket Navlakha, and Wolfgang Busch. *In prep.*

[2] Branch-Pipe: Improving graph skeletonization around branch points in 3D point clouds.

- Illia Ziamtsov, **Kian Faizi**, and Saket Navlakha. *Remote Sensing.* (2021) doi:[10.3390/rs13193802](https://doi.org/10.3390/rs13193802)

PREPRINTS

[p1] Deep learning of Cas13 guide activity from high-throughput gene essentiality screening.

- Jingyi Wei, Peter Lotfy, **Kian Faizi**, Hugo Kitano, Patrick D. Hsu, and Silvana Konermann. *bioRxiv.* (2021)
  doi:[10.1101/2021.09.14.460134](https://doi.org/10.1101/2021.09.14.460134)

TEACHING

Principles of Biology | *Caltech*   Apr. 2022 – June 2022
Genetic Inquiry | *UCSD*   Aug. 2020 – Dec. 2020

Posters and Presentations

Co-expression analysis of single-cell RNA-seq data | *Talk*   Oct. 2020
- HDSI Research Conference

Mining Genomes for RNA-Targeting CRISPR Effectors | *Talk*   Aug. 2019
- UCSD Summer Research Conference

Metagenomic Discovery of Type VI-D CRISPR Effectors | *Poster*   June 2019
- UCSD Biology Student Research Showcase

Honors and Awards

New Science Summer Fellowship ($33,000) | *New Science Inc.*   Mar. 2022
- Project: *It's Evolving, Just Backwards: Restoring the Autonomy of an Endosymbiotic Organelle*, proposed independently

Halıcıoğlu Data Science Institute Scholarship Project Award | *UCSD*   May 2021

DOE CSGF Honorable Mention | *Krell Institute*   Apr. 2021

Halıcıoğlu Data Science Institute Scholarship ($2,500) | *UCSD*   Dec. 2019
- Project: *Single-cell transcriptomics and web mining for rapid reverse genetics in plants*, proposed under Dr. Wolfgang Busch

Eureka! Scholar ($5,000) | *UCSD*   June 2019
- Project: *Discovery and development of Type VI-D CRISPR effectors for transcriptome engineering applications*, proposed under Dr. Patrick Hsu

Provost Honors | *UCSD*   quarterly

Professional Activities

CaltechASM founding member | *Caltech*   May 2022 – present
- Helped establish the campus chapter of the American Society for Microbiology

Undergraduate Bioinformatics Club member | *UCSD*   Nov. 2017 – June 2021
- Collaborated with Illumina to develop digital resources for high school students interested in bioinformatics
- Helped organize the 2018 Faculty & Industry Bioinformatics Symposium
- Volunteered at the SD Science & Engineering Festival to teach the community about DNA sequencing technology

Skills

Laboratory: Cell/tissue culture, molecular cloning, CRISPR screens, optical microscopy, qPCR
Computational: Python, bash, Arch Linux, web development, dashboarding
Organizational: Git, LaTeX