

Gavin McAllister Traber, PhD.

Experienced life science expert with an extensive background in biochemistry, molecular and cellular biology, and professional and technical laboratory experience continuously seeking to attain, develop, and apply new skills and knowledge in the pursuit and exploration of science.

RESEARCH and PROFESSIONAL EXPERIENCE

Postdoctoral Scholar – Laboratory of Dr. Kathleen Sakamoto, Stanford University School of Medicine: *Department of Pediatrics - Hematology & Oncology*, 01/2025 – Current

- Study of novel therapies against pediatric acute myeloid leukemia as well as the role of signaling molecules in normal hematopoiesis.
- Investigating the mechanistic actions of ribosomal S6 kinases (RSK) in healthy hematopoietic cells and leukemia.

Graduate Student Researcher – Laboratory of Prof. Dr. Aiming Yu, University of California, Davis School of Medicine: *Department of Biochemistry and Molecular Medicine*, 09/2020 – 06/2024

- Pre-doctoral graduate research focusing on RNAi anti-cancer pharmacology and experimental therapeutics to translate noncoding RNAs into new therapies.
- Investigating the mechanistic actions of microRNAs in the regulation of cancer cellular processes including drug/xenobiotic disposition and tumor progression and metastasis.
- Novel RNA bioengineering technologies and synthesis of recombinant RNAs for basic research and drug development.
- Mentoring and training graduate, undergraduate, and visiting scholars.

NIH T32 Trainee – Pharmacology, University of California, Davis, 1st year 07/2021 – 06/2022; 2nd year 07/2021– 06/2023

- Provides predoctoral trainees with the core educational and research training required for investigating and translating pre-clinical discoveries towards viral therapeutics for clinical trials.
- Builds Foundations of modern physiology and pharmacology:
 - Pharmacokinetics, Pharmacodynamics, Pharmacotoxicology, Drug Metabolism, Drug Discovery
 - Translation, Biostatistics and Responsible Conduct of Research
- https://health.ucdavis.edu/pharmacology/training_program.html

Engineering Technician – Google Accelerated Science (GAS) Google via Adecco, 08/2019 – 07/2020

- Independently established pipelines and mastery of peptide synthesis, purification, and validation via HPLC and MALDI mass spectrometry.
- Assisted in the design of the GAS Biochemistry laboratory and laboratory training plans.
- Worked collaboratively with senior software engineers research scientists to integrate biochemical research with artificial intelligence to accelerate the scientific process.

Life Science Technician II – Laboratory of Prof. Dr. Michael Snyder Stanford University School of Medicine: *Department of Genetics*, 06/2018 – 08/2019

- Conducted technical metabolomic and lipidomic experiments via LC/MS

PERSONAL INFORMATION

Location
San Jose, CA, 95128

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EDUCATION

Doctor of Philosophy (PhD)
Biochemistry, Molecular, Cellular, and Developmental Biology
University of California, Davis, CA
GPA – 4.0

Biochemistry Certificate
Biochemistry: Biomolecules, Methods, and Mechanisms
edX MITx: 7.05x Online Course
ID: 1981852f5298465f9ba2a9fa2cb0c2f6

Bachelor of Science
Molecular and Cellular Biology
Harding University, Searcy, AR

Diploma
Crescenta Valley High School
La Crescenta, CA

KEY SKILLS and EXPERIENCE

Biochemistry and Molecular Biology

- LC-MS
 - Method development
 - Drug uptake and accumulation
 - Metabolomics and lipidomics
- RNA Structure and Bioengineering
 - Cloning
 - Extraction and purification
 - Plasmid transformation and isolation
- RNA interference (RNAi)
 - microRNA
 - small interfering RNA
 - shRNA
- *In vivo* therapy

untargeted and targeted approaches, respectively, on large cohorts in the pursuit of personalized medicine.

- Performed LC/MS metabolomic and lipidomic sample preparation, LC/MS method development, data processing, maintenance, troubleshooting, data analysis, and kept detailed records for technical experiments.

Teaching Assistant of Anatomy & Physiology – Harding University:
Department of Biology, 03/2017 – 05/2018

- Responsible for grading exams and quizzes, proctoring tests, running weekly laboratory sessions, and biweekly preparation of all laboratories.

Student Research Assistant – Harding University: *Department of Biology, 08/2017 – 05/2018*

- **Molecular Genetics** - Identifying and assessing the effects of target gene lesions in the growth and development of *Arabidopsis thaliana*.
- **Developmental Physiology** - Studying the effects of carbon black nanoparticles on separate cohorts of *Caenorhabditis elegans* on response and viability.

Supplemental Instruction (SI) Leader – Harding University: *Center for Student Success, 06/17 – 01/18*

- Supplemental Instruction of Organic & Biochemistry
- Primary goal - attend class sessions, takes informative notes, prepares lesson plans, and facilitate guided supplemental reviews.

CHARIOT Summer Research Fellow - Stanford Lucile Packard Children's Hospital, *05/2017 – 08/2017*

- Seminal research fellow for the clinical investigation into the role of technological intervention in modulating patient pre-procedural anxiety.
- <https://chariotlab.stanford.edu/fellowship/#section-343a29d-5>

College Tutor – Harding University: *Center for Student Success, 01/2017 – 05/2018*

- Anatomy & Physiology, Biochemistry, Organic Chemistry, Cell Biology, and Genetics.

PUBLICATIONS

First Author

- **Gavin M. Traber**, Mei-Juan Tu, Su Guan, Neelu Batra, and Ai-Ming Yu. "Bioengineered miR-7-5p modulates non-small cell lung cancer cell metabolism to improve therapy." *Mol Pharmacology*. 2025 January. doi: 10.1016/j.molpha.2024.100006
- **Gavin M. Traber** and Ai-Ming Yu. "The Growing Class of RNAi Therapeutics." *Mol Pharmacology*. 2024 May. doi: 10.1124/molpharm.124.000895
- **Gavin M. Traber**, Colleen Yi, Neelu Batra, Mei-Juan Tu, and Ai-Ming Yu. "Novel RNA molecular bioengineering technology efficiently produces functional miRNA agents." *RNA*. 2024 March. doi: 10.1261/rna.079904.123
- **Gavin M. Traber** and Ai-Ming Yu. "RNAi Based Therapeutics and Novel RNA Bioengineering Technologies". *JPET*. 2023 Jan. doi: 10.1124/jpet.122.001234

- Patient Derived Xenograft
- Combination therapy
- Rodent/Mouse model
- Histology
- RT-qPCR
 - Primer Design
- Mammalian Cell Culture
- Cell viability assay
 - MTT and CellTiter Glo
- Agilent Seahorse
 - Glycolytic Rate and MitoStress
- Gel Electrophoresis
- Western blot
- Bicinchoninic Acid assay
- Solid Phase Peptide Synthesis
- Protein Purification
- MTBE and Bligh-Dryer Biphasic Extraction
- Mutagenesis

Microscopy Spectroscopy, Spectrometry, and Chromatography

- Metabolomic and Lipidomic Mass Spectrometry (Orbitrap ESI, MALDI, and Quadrupole)
- FPLC – BioRad (Trainer)
- HPLC – Agilent, Thermo Fisher, and Shimadzu (Trainer)
- Confocal Imaging – Leica (Trainer) and Molecular Devices
- Nano Drop Photospectroscopy and plate reader/luminometer – TECAN (Trainer)
- IncuCyte Live Cell Imager (Trainer)

Software and Data Analysis

- Graphpad Prism bio-statistical analysis
- IncuCyte Live Cell Analyst
- Leica LAS X imaging
 - Confocal
 - Immuno fluorescent
- Molecular Devices Pico
 - Live cell imaging
- LC/MS data collection and processing
 - Thermo Fisher
 - Agilent
 - ABSciex
- HPLC/FPLC
 - Agilent
 - Shimadzu
 - Bio-Rad
- Programing and Communication
 - RStudio analysis (Basic)
 - Microsoft Excel, Po

Co-Author

- Tu et al. “Functional comparison of Bio- and chemo-engineered miRNA molecules.” Manuscript in preparation.
- Mao et al., “Comparison of Three Computational Tools for the Prediction of RNA Tertiary Structure.” *Non-Coding RNA*. 2024 Nov. doi: 10.3390/ncrna10060055
- Hornburg et al. “Dynamic Lipidome Changes Associated with Human Health, Disease, and Aging”. *Nature Metab.* 2023 Sept. doi: 10.1038/s42255-023-00880-1
- Marić et al. “Early Prediction and Longitudinal Modeling of Preeclampsia from Multiomics”. *Patterns (N Y)*. 2022 Dec. doi: 10.1016/j.patter.2022.100655
- Tu et al. “Bioengineered RNA Therapy in Patient-Derived Organoids and Xenograft Mouse Models”. *Methods Mol Biol.* 2022 June. doi: 10.1007/978-1-0716-2441-8_10
- Ranjbarvaziri et al. “Altered cardiac energetics and mitochondrial dysfunction in hypertrophic cardiomyopathy”. *Circulation*. 2021 Oct. doi: 10.1161/CIRCULATIONAHA.121.053575
- Stelzer et al. “Integrated trajectories of the maternal metabolome, proteome, and immunome predict labor onset”. *Science Translational Medicine*. 2021 May. doi: 10.1126/scitranslmed.abd9898
- Yang et al. “Physiological blood-brain transport is impaired with age by a shift in transcytosis”. *Nature*. 2020 July. doi: 10.1038/s41586-020-2453-z
- Dubreuil et al. “Systematic identification of regulators of oxidative stress reveals non-canonical roles for peroxisomal import and the pentose phosphate pathway”. *Cell Reports*. 2020 Feb. doi: 10.1016/j.celrep.2020.01.013

ABSTRACTS

- **Gavin M. Traber**, Mei-Juan Tu, Neelu Batra, Colleen Yi, and Ai-Ming Yu. Rrecombinant miR-7-5p effectively inhibit NSCLC cell viability through regulating mitochondrial metabolism. ASPET. St. Louis, MO; May, 2023.
- **Gavin M. Traber**, Mei-Juan Tu, Neelu Batra, Colleen Yi, and Ai-Ming Yu. Bioengineered RNA for the control of NSCLC metabolism. Dept. of Biochemistry and Molecular Medicine, Krebs Symposium. Sacramento, CA; May, 2023.
- **Gavin M. Traber**, Mei-Juan Tu, Neelu Batra, Colleen Yi, and Ai-Ming Yu. Role of miR-7-5p in mitochondrial metabolism. International Society for the Study of Xenobiotics and MDO. Seattle, WA; September, 2022.
- **Traber et al.** Exposure to carbon black nanoparticles during larval development affects adult physiological stress tolerance in wild type isolates of *Caenorhabditis elegans*. Arkansas Academy of Sciences. Jonesboro, AR; April, 2018.

ACHIEVEMENTS AND RECOGNITIONS

Molecular Pharmacology Highlighted Trainee Author (2025)

ASPET Young Investigator Speaker – Division for Cancer Pharmacology (2023)

ASPET Travel Grant Awardee (2023)

Krebs Symposium Student Committee Member – Dept. Biochemistry and Molecular Medicine (2022 – Current)

NIH T32 Training Grant (2021 – 2023)

JPET Highlighted Trainee Author (2023)

ISSX Travel Grant Awardee (2022)

Phi Kappa Phi (ΦΚΦ) – Honors Society

BMCDB Graduate Program Fellowship (2020 – 2021)

Co-Founder, Vice President – Association of Biological Sciences, Harding University, Searcy, AR (2017 – 2018)

Dean’s List – Harding University, Searcy, AR

Omicron Delta Kappa (OΔK) – Honors Society (2018)

Ovation Award – World Strides Heritage Music Festival, San Francisco, CA (2014)

John Philips Sousa Award – Crescenta Valley Instrumental Music Department, La Crescenta, CA (2014)

Eagle Scout – Boy Scouts of America Troop 390, La Crescenta, CA (2012)

HOBBIES AND INTERESTS

Outdoor Activities: Classic Car Restoration · Hiking · Backpacking · Scuba Diving · Gardening

Sports: Golf · Tennis · Racquetball

Instrumental Music: Piano · Trumpet

Indoor Activities: Reading · Cooking · Puzzles · Whiskey/Wine Enthusiast

REFERENCES

Yu Lab - University of California, Davis – School of Medicine:

Prof. Ai-Ming Yu

Principal Investigator, Dissertation Committee Chair,
Mentor
916-412-9045, aimyu@ucdavis.edu

Prof. Kermit Carraway

Professor, Dissertation Committee Member
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Google Accelerated Science (GAS):

Dr. Sara Ahadi

Mentor
530-304-0641, saraahadi@gmail.com
Alkahest – Associate Director Multi-Omics and Integrative
Analysis

Snyder Lab - Stanford University - School of Medicine:

Prof. Michael Snyder

Principal Investigator
650-723-4668, mpsnyder@stanford.edu

Dr. Daniel Hornburg

Mentor
650-382-8023, hornburg@stanford.edu
Bruker – Vice President Biomarkers & Precision
Medicine