Amy S. Tsai

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EDUCATION

2018-2022	University of California, Davis School of Medicine M.D.
2013-2016	University of California, Berkeley, CA B.A. in Molecular and Cell Biology—Neurobiology Graduated with Honors and Highest Distinction
2009-2013	Monta Vista High School, Cupertino, CA

RESEARCH EXPERIENCE

Research Assistant

September 2016 – Present

Gaudillière Laboratory
Department of Anesthesiology
Stanford School of Medicine, CA, 94305

Collected and stimulated whole blood samples with cytokines for mass cytometry (CyTOF) analysis. Stained samples using high-parameter mass-conjugated antibody panel. Analyzed samples using Helios Mass Cytometer. Worked in collaboration with the Aghaeepour group on interpreting elastic net analysis of high dimensional datasets. Roles included study design, sample collection, sample processing, study design, data analysis and interpretation, writing and editing manuscripts, and presentations in both domestic and international conferences. Worked closely with Dr. Edward Ganio, Dr. Xiaoyuan Han, Dr. Kazuo Ando and other clinical and academic doctors. Mentored visiting international student researchers.

Projects worked on include:

- Peripheral Immune Response During Recovery after Hip Arthroplasty: Collected samples at prior to surgery and up to 6 time points following surgery.
- Systemic Immune Signature of Chronic Periodontitis: Collected samples from 15 healthy controls and 15 patients with chronic periodontitis at two time points: before cleaning and dental hygiene management, and 3 weeks after treatment. Analyzed samples using mass cytometry and analysis and interpretation of data.
- Immune Trajectory of Stroke Recovery: Collected and analyzed up to 9 time points in patients following acute ischemic stroke onset. Analysis revealed distinct phases of recovery based on immunological adaptations.
- Identifying immunological differences between transient ischemic attacks and non-ischemic transient neurological events. Collected samples for individuals and performed preliminary analysis.

Additionally helped with sample collection for the following projects:

- March of Dimes Prematurity Studies
- Onset of Labor: Identifying immunological trigger for labor

Research Assistant

September 2015 – July 2016

Wang Laboratory
Department of Environmental Science, Policy and Management
University of California, Berkeley, CA, 94702

Analyzed Hydromantes genetic data (mtDNA, nuclear DNA, and ddRADs) and compiled decadal temperatures in the Shasta area for Senior Honors Thesis. Extracted samples using Qiagen and phenylchloroform BEAD protocols. Quantified DNA using NanoDrop and Qubit, amplified DNA using PCR, purified DNA using Exo/SAP protocol, cycle sequenced using Big Dye 3.1 (Sanger sequencing), and further purified sequences using ethanol precipitation.

Collected sequences using 3730 GeneMapper and analyzed 16S mtDNA and 3 nuclear loci with GeneSequencher.

Honors Thesis: Shasta Salamander Population Genetic Responses to 40 Years of Climate Change Using Traditional Sequencing and Genome Wide Markers

Research Assistant

September 2014 – May 2016

Bowie Laboratory
Museum of Vertebrate Zoology
University of California, Berkeley, CA, 94702

Obtained genotype data on Batis, Cossypha, Anniella species. Experienced in extracting DNA, quantifying DNA using NanoDrop, amplifying DNA using PCR, and genotyping DNA using Fragment Analysis Genotyping. Optimized primers using gradient PCR for Lampornis hummingbird genotyping.

AWARDS AND HONORS

April 2017	Best Basic Science Oral Presentation Award, Stanford Plastic Surgery Research Symposium
May 2016	I.L. Chaikoff Memorial Award, University of California, Berkeley
April 2016	Outstanding Poster in the Molecular and Cell Biology Honors Poster Session (Neurobiology Emphasis)
2014-2016	Dean's Honor Roll
Aug 2012	National Merit Commendation
Aug 2012	AP Scholar with Distinction

PUBLICATIONS

N. Aghaeepour, E. A. Ganio, D. McIlwain, **A. S. Tsai**, M. Tingle, S. Van Gassen, D. K. Gaudilliere, Q. Baca, L. McNeil, R. Okada, M. S. Ghaemi, D. Furman, R. J. Wong, V. D. Winn, M. L. Druzin, Y. Y. El-Sayed, C. Quaintance, R. Gibbs, G. L. Darmstadt, G. M. Shaw, D. K. Stevenson, R. Tibshirani, G. P. Nolan, D. B. Lewis, M. S. Angst, B.Gaudilliere. An immune clock of human pregnancy. *Science Immunology.* 2017.

N. Aghaeepour, C. Kin, E. A. Ganio, K. P. Jensen, D. K. Gaudilliere, M. Tingle, **A. Tsai**, H. L. Lancero, B. Choisy, L. S. McNeil, R. Okada, A. A. Shelton, G. P. Nolan, M. S. Angst, B. L. Gaudilliere. Deep Immune Profiling of an Arginine-Enriched Nutritional Intervention in Patients Undergoing Surgery. *The Journal of Immunology.* 2017.

G. O. U. Wogan, K. A. Feldheim, **A. Tsai,** A. Brown, J. Kapelke, M. Galinato, J. Tung, J. M. Bates, P. Kaliba, G. Voelker, and R. C. K. Bowie. New genetic resources and a preliminary assessment of species boundaries in the Batis capensis species complex (Passeriformes: Platysteridae). *Biochemical Systematics and Ecology*. 2016.

PRESENTATIONS

May 2018	Stroke Collaborative Action Network (SCAN), Stanford, USA
April 2018	Stanford Plastic Surgery Research Symposium, Stanford, USA
April 2017	Stanford Plastic Surgery Research Symposium, Stanford, USA

POSTERS

June 2018	Stanford Anesthesia Research Dinner, Stanford USA
May 2018	Stanford and UCSF Joint Anesthesia Research Conference, San Francisco, USA
April 2018	Cyto 2018, Prague, Czechia
May 2017	Stanford Anesthesia Research Dinner, Stanford, USA
April 2016	Molecular and Cell Biology Honors Poster Session, Berkeley, USA

PROFESSIONAL MEMBERSHIPS

Member | International Society for Advancement of Cytometry

LABORATORY SKILLS

- Mass Cytometry (Helios system)
- Antibody Staining
- Peripheral Blood Mononuclear Cell (PBMC) Isolation and
- Barcoding using palladium isotopes
- Intracellular Cytokine Assays
- Whole Blood Processing and stimulation
- DNA quantitation assays (QubitTM and NanoDrop)
- DNA Amplification using Polymerase Chain Reaction
- Gel electrophoresis
- Traditional (Sanger) Sequencing
- Recrystallization
- Titrations
- Fragment Analysis Genotyping
- DNA Extractions (QIAGEN and Phenol-chloroform)
- Primer Optimization
- ExoSAP Purification
- Immunohistochemistry (Monoclonal mouse-anti-parvalbumin immunoperoxidase)
- NADPH-diaphorase Histochemistry (mice brains)—staining, mounting,
- dehydrating, clearing and coverslipping

EXTRACURRICULARS

2015-2016	Volunteer at the Alta Bates Hospital: Surgery Center
2015-2016	Internal Vice President of the American Medical Student Association
Feb 2016	Organized UC Berkeley AMSA 9th Annual Pre-Health Conference
Nov 2015	AMSA Physician Networking Night
Feb 2015	Organized UC Berkeley AMSA 8th Annual Pre-Health Conference
Nov 2014	AMSA Health-Tech Forum
Fall 2014	Chemistry 1A Undergraduate Student Instructor
2014-2015	Public Relations Director of the American Medical Student Association
Feb 2014	UC Berkeley AMSA 7th Annual Pre-Health Conference
2013-2014	Fundraising Committee in the American Medical Student Association

ADDITIONAL SKILLS

- GraphPad Prism
- R
- CytoBank (manual gating, CITRUS)
- ImmuneAtlas (manual gating)
- Adobe Suite (Photoshop and Illustrator)
- Basic Bioinformatics (BLAST, Sequencher, Arlequin and PopART)
- CPR and First-Aid Certified
- Mandarin Chinese (Conversational)
- Taiwanese (Conversational)
- German (Basic)

REFERENCES AVAILABLE ON REQUEST