

Yi Jou (Ruby) Liao

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RESEARCH EXPERIENCE

Graduate Researcher, Dr. Alexander Wyatt Lab

Vancouver Prostate Centre, Vancouver, BC, Canada

2023/09 - Present

- Analyzing the combinatorial frequency of tumor suppressor gene loss using circulating tumor DNA (ctDNA) data in a metacohort of metastatic prostate cancer patients
- Investigating the correlation between tumor suppressor gene loss and aggressive clinical phenotypes in metastatic prostate cancer.
- Utilized bioinformatics tools and conducted rigorous manual curation to validate specific allelic states of gene alterations

Graduate Rotation Student, UBC GSAT Research Rotations, Vancouver, BC, Canada

2023/09 - 2023/12

- Alexander Wyatt Lab, Vancouver Prostate Centre
 - Conducted motif enrichment analysis on circulating tumor DNA plasma ChIP-seq data
- Keegan Korthauer Lab, BC Children's Hospital Research Institute
 - Investigated literature and public data to assess DNA methylation array probe reliability metrics
- Steven Jones Lab, BC Genome Sciences Centre
 - Analyzed allelic differentially methylated tumor suppressor genes and correlation to gene expression using long-read sequencing data

Computational Research Assistant, Dr. Thomas Graeber Lab

UCLA Department of Pharmacology, Los Angeles, CA, USA

2022/06 - 2023/07

- Investigated gene enrichment trends and associations with stemness and neuroendocrine signatures in longitudinally matched ovarian cancer patient tissue and patient derived xenograft samples, utilizing both bulk and single-cell transcriptomics data
- Implemented a RNA-seq SNP variant calling pipeline in Snakemake to perform phylogenetic tree analysis, examining the relatedness of 59 ovarian cancer samples from UCLA patients
- Conducted transcription factor analysis to map gene co-expression networks and identify differentially expressed master regulators between pre-therapy and recurrent ovarian cancer samples
- Executed both custom and standard bioinformatics analyses of mass spectrometry metabolomics data for clients and collaborative projects at the UCLA Metabolomics Center
- Assisted in writing and editing grant proposals, contributing to successful funding of projects
- Mentored undergraduate volunteers and created training materials to introduce R programming and basic computational techniques for new lab members

Undergraduate Research Assistant, Dr. Thomas Graeber Lab

UCLA Department of Pharmacology, Los Angeles, CA, USA

2021/09 - 2022/06

- Co-examined a CRISPR-Cas9 paralog knockout dataset with a drug sensitivity screen using analytical techniques such as correlation, principal components analysis (PCA), partial least squares regression (PLSR), and canonical correlation analysis (CCA) to explore potential cancer vulnerabilities in paralogous genes
- Presented findings as senior research capstone in the form of a research paper, poster, and presentation

EDUCATION

Masters of Science, Genome Science and Technology

University of British Columbia (UBC), Vancouver, BC, Canada

2023/09 - Present

- Average: 95.3%
- Coursework: Bioinformatics Algorithms, High Dimensional Biology Statistics, Cancer Biology

Bachelor of Science, Computational & Systems Biology, Concentration in Data Science

University of California, Los Angeles (UCLA), Los Angeles, CA, USA

2020/09 - 2022/06

- GPA: 3.68
- Thesis: "Uncovering Synergistic Paralogues as Druggable Targets"; Advisor: Dr. Thomas Graeber
- Coursework: Biological Modeling, Bioinformatics, Machine Learning, Probability, Computer Organization, Algorithms & Complexity, Linear Algebra, Differential Equations

Associate in Science, Biological Sciences

Associate in Arts, Liberal Arts - Business & Computer Information Systems Emphasis

De Anza College, Cupertino, CA, USA

2017/07 - 2020/06

- GPA: 3.78, Magna Cum Laude

SCHOLARSHIPS, AWARDS, & HONORS

Award	Amount(s)	Year(s) Received
UBC Faculty of Science Graduate Award	\$4200, \$2163	2024, 2023
UBC International Tuition Award	\$2133, \$1067	2024, 2023
UBC GSAT Research Rotation Award	\$8700	2023
UCLA Dean's Honors List		2022
De Anza Dean's List		2020, 2019, 2018, 2017

PUBLICATIONS

Work in Progress

Sipola, J., Munzur, A., Kwan, E., Seo, C., Hauk, B., Parekh, K., **Liao, Y.**, Bernales C., Donnellan G., Bloise I., Fung E., Ng S., Wang G., Vandekerkhove G., Annala M., Nykter M., Maurice-Dror C., Chi K., Herberts C., Takeda D., Wyatt A., 2023. Plasma cell-free DNA histone methylation enables phenotypic and clinical segmentation of metastatic prostate cancer. Manuscript in preparation.

Jewett, A., Huerta-Yepey, S., Chen, P.-C., Kaur, K., Jain, Y., Singh, T., Esedebe, F., **Liao, Y.**, DiBernardo, G., Moatamed, N.A., Mei, A., Malarkannan, S., Graeber, T., Memarzadeh, S., 2023. Supercharged NK cells, unlike primary activated NK cells, effectively target ovarian cancer cells irrespective of MHC-class I expression. Preprint. <https://doi.org/10.21203/rs.3.rs-3328625/v1>

Poster Presentations

Esedebe, F., Singh, T., **Liao, Y.**, Ochoa, C., DiBernardo, G., Damoiseaux, R., Orsulic, S., Memarzadeh, S., Graeber, T., 2023. Targeting neuroendocrine vulnerabilities in recurrent platinum-resistant ovarian cancers. UCLA Jonsson Comprehensive Cancer Center Annual Retreat, Los Angeles, California, USA.

Liao, Y., Esedebe, F., Graeber, T., 2022. Uncovering synergistic paralogs as potential druggable targets in cancer. UCLA Computational & Systems Biology Poster Session, Los Angeles, California, USA.

Esedebe, F., Singh, T., **Liao, Y.**, Ochoa, C., DiBernardo, G., Damoiseaux, R., Orsulic, S., Memarzadeh, S., Graeber, T., 2022. Targeting neuroendocrine vulnerabilities in recurrent platinum-resistant ovarian cancers. UCLA Pharmacology Retreat, Santa Monica, California, USA.

Esedebe, F., Balgovind, A., **Liao, Y.**, Ochoa, C., DiBernardo, G., Damoiseaux, R., Orsulic, S., Singh, T., Memarzadeh, S., Graeber, T., 2022. Targeting neuroendocrine vulnerabilities in platinum-resistant ovarian cancers. UCLA QCBio Retreat, Los Angeles, California, USA.

Conference Abstracts

Gangi, A., Kim, D.M., Aguirre, F.P., Alvarez, R., Zhou, L., ten Hoeve, J., **Liao, Y.**, Graeber, T., Cho, M.T., Abbas, A.A., Davelaar, J., Sankar, K., Osipov, A., Hendifar, A.E., Hitchins, M.P., Gong, J., 2023. Association of intermediates of bioenergetic pathways and plasma metabolomics with colorectal cancer (CRC): Diagnosis, stage, and survival., in: Journal of Clinical Oncology. Wolters Kluwer, pp. e15575–e15575. https://doi.org/10.1200/JCO.2023.41.16_suppl.e15575

Kim, D.M., Aguirre, F.P., Gangi, A., Alvarez, R., Zhou, L., ten Hoeve, J., **Liao, Y.**, Graeber, T., Hendifar, A.E., Osipov, A., Sankar, K., Cho, M.T., Abbas, A., Davelaar, J., Hitchins, M.P., Gong, J., 2023. Plasma central carbon metabolite changes associated with KRAS mutation and circulating tumor DNA (ctDNA) status in colorectal cancer (CRC)., in: Journal of Clinical Oncology. Wolters Kluwer, pp. 181–181. https://doi.org/10.1200/JCO.2023.41.4_suppl.181

TEACHING EXPERIENCE

COM SCI M182/CM186 Course Reader, UCLA, Los Angeles, CA, USA

2021/09 - 2022/06

- Computer Science “Dynamic Biosystem Modeling and Simulation Methodology” courses
- Developed problem solutions and graded assignments using LaTeX, MATLAB, and Simulink

BIOL 6A/6C Teaching Assistant, De Anza College, Cupertino, CA, USA

2019/01 - 2020/06

- Supervised labs for two general biology courses through four quarters
- Assisted with lab exercises, grading assignments, and developing lab materials

LEADERSHIP EXPERIENCE

Kitchen Crew Chief, University Cooperative Housing Association, Los Angeles, California, USA
2022/09 - 2023/02

- Head of the Kitchen Crew in a 400-member university housing non-profit cooperative
- Ensured training and scheduling of 30 kitchen shift leads for all days of the week
- Communicated and resolved conflicts between chefs, shift leads, co-op student governing bodies, kitchen workers, and all members of the co-op
- Analyzed kitchen sign in records using R to improve scheduling and management of worker shifts

Sales Shift Leader, Paris Baguette Cafe, San Jose, California, USA
2017/06 - 2019/08

- Delegated store tasks to ensure smooth operation
- Trained new hires to integrate workers with workflow
- Computed finances and managed inventory to ensure accurate records
- Correspond between sales workers, bakers, cake makers, and restaurants to arrange catering and special orders

VOLUNTEER EXPERIENCE

Medical Office Building / Hospital Volunteer, Kaiser Permanente, Santa Clara, California, USA
2018/08 - 2021/07

- Delegated hundreds of patient discharges to escort volunteers as dispatcher
- Trained new volunteers with tours, wheelchair handling, and utilizing computer resources
- Inputted and performed analysis on volunteer escort data
- Provided volunteer service across various areas of the medical center including clinics, the emergency department, and various hospital departments
- Served 591 total hours