

Bobby Shih

Innovative genomic medicine researcher and computational biologist

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Summary Statement

Experienced biomedical and bioinformatic research scientist with a strong academic and industry background. Proven ability to design and conduct complex experiments, coupled with extensive knowledge in the bioinformatic analysis of next-generation sequencing data. My expertise in molecular and computation biology drives innovative and insightful approaches. Motivated to make groundbreaking discoveries in human disease through cutting-edge bioinformatics in a collaborative, fast-paced environment.

Skills

Technical Expertise: Bioinformatic analytical pipeline development (R/Python), NGS data analysis, multi-omic single-cell RNA-seq analysis, DEG/GSEA/CNV/pseudotime analysis, statistics, genomics, data visualization, R Shiny web app development

Programming Languages: R, Shiny, Python, HTML, CSS, bash

Lab Expertise: Molecular biology, high-throughput screening, single-cell library preparation (10X), mouse models, FACS, CRISPR/Cas9, lentiviral infection, western blotting, cell culture, liquid chromatography (LC), 2D-LC

Professional: Excellent organization and communication, strong presenter, highly collaborative

Education

Ph.D. Integrated Cellular, Molecular and Biomedical Studies, Columbia University Sept 2018 – Oct 2023

B.Sc. Biochemistry & Chemistry, University of Washington – Seattle Sept 2013 – Jun 2017
Cumulative GPA: 3.80/4.00

Experience

Ph.D Candidate – Teresa Palomero Laboratory Apr 2019 – Current
Columbia University, New York, NY

- Conducted and analyzed multi-omic single-cell sequencing (RNA, TCR, cell surface) to identify molecular mechanisms in disease progression, resistance, and relapse.
- Led data analysis for a collaborative project using single-nuclei RNA-seq to study lymphomagenesis and tumor-microenvironment interactions.
- Executed high throughput screens to identify novel therapeutic strategies for T-cell lymphoma.
- Performed CRISPR/Cas9 whole genome knockout screens to identify therapeutic vulnerabilities and mechanisms of resistance.
- Developed and functionally characterized genetic mouse models of lymphoma.
- Palomero lab AWS administrator

Columbia Technology Ventures (CTV) Fellow Jan 2021 – Feb 2022
Columbia University, New York, NY

- Prepared early-stage technology assessments, identified marketed and in-development competition, and proposed potential applications for inventions submitted to CTV.
- Prepared marketing abstracts and contributed to targeted marketing campaigns.

Analytical Sciences Intern June 2016 – Sept 2016
Seattle Genetics, Bothell, WA

- Designed experiments and developed methodologies to characterize the antibody-drug conjugates (ADCs) in development using the Agilent 2D-LC system.
- Coordinated within and across teams for collaborative experiments

Publications

Shih B.B, Ma C, Cortes J.R, Reglero C, Miller H, Quinn S.A, Gallego R.A, Laurent A.P, Mackey A, Ferrando A.A, Geskin L, Palomero T. Combined treatment with romidepsin and afatinib suppresses JAK-STAT signaling and elicits synergistic antitumor effects in cutaneous T cell lymphoma. *J Invest Dermatol*. In submission.

Cortes J.R, Filip I, Gallego R.A, Patino J.A, Quinn S.A, Cooke A, Lin W.H, Laurent A.P, **Shih B.B.**, Mackey A, Einson J, Zairis S, Rivas A, Laginestra M.A, Pileri S, Campo E, Baghat G, Ferrando A.A, Rabadan R, Palomero T. Oncogenic Vav1-Myo1f induces therapeutically targetable macrophage-rich tumor microenvironment in Peripheral T-Cell Lymphoma. *Cell Reports*. 2022 Mar

Cortes J.R, Patrone C.C, Quinn S.A, Gu Y, Sanchez-Martin M, Mackey A, Cooke A.J, **Shih B.B.**, Laurent A.P, Trager M.H, Ferrando A.A, Geskin L.J, Palomero T. Jak-STAT Inhibition Mediates Romidepsin and Mechlorethamine Synergism in Cutaneous T-Cell Lymphoma. *J Invest Dermatol*. 2021 Dec

Awards and Grants

Ruth L. Kirschstein Predoctoral Individual National Research Service Award Parent: NIH/NCI F31 Project Number: 1F31CA261153 Impact Score / Percentile / Total Direct: 22 / 8+ / \$138,108	Apr 2021 – Apr 2024
25th Summer Institute in Statistical Genetics Scholarship	June 2020
Distinguished Achievement in Biochemistry Research – University of Washington	Apr 2017
University of Washington Conference Travel Award	Apr 2017

Presentations

Seminar, Integrated CMBS Program Seminar Series , Columbia University, “Mechanisms of Transformation in T-Cell Lymphoma: Identification of Therapeutic Targets”	April, 2023
Seminar, Integrated CMBS Program Seminar Series , Columbia University, “Mechanisms of Transformation in T-Cell Lymphoma: Identification of Therapeutic Targets”	Mar, 2022
Seminar, West Coast Biological Sciences Undergraduate Research Conferences , “Characterizing the Effect of Zinc Binding on the Structure and Function of a Small Heat Shock Protein”	April, 2017
Poster, Undergraduate Research Symposium , University of Washington, “The Role of Cysteine in the Structure and Function of a Human Small Heat Shock Protein	May, 2015

Thesis

<i>Mechanisms of Transformation in T-Cell Lymphoma: Identification of Therapeutic Targets</i> Advisor: Teresa Palomero Submitted in fulfillment of the requirements for the degree of Doctor of Philosophy from Columbia University in the City of New York	Oct, 2023
<i>Characterizing the Structure and Function of a Human Small Heat Shock Protein, HSPB8</i> Advisor: Rachel Klevit Senior thesis for Graduation with Departmental Honors from the University of Washington Department of Chemistry and Biochemistry	June, 2017