

# TOMAS BENCOMO

[tjbencomo.github.io](https://tjbencomo.github.io)  
[tjbencomo@gmail.com](mailto:tjbencomo@gmail.com)

MD/PhD student at the University of Washington using informatics to improve our understanding and treatment of human disease. My research interests focus on using bioinformatics to elucidate disease biology, develop treatment strategies for precision medicine, and build tools to aide physician decision-making. I have several years of experience studying cancer through genomics and imaging based approaches. I'm also interested in open science and science education.

## EDUCATION

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<b>MD/PhD</b>	University of Washington Medical Scientist Training Program Co-mentored by Paul Nghiem and Manu Setty	2022 - present
<b>BS</b>	Stanford University, Computer Science Concentration in Biocomputation GPA: 3.99	2017 - 2021

## HONORS AND AWARDS

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<b>Stanford Bio-X Summer Research Grant</b>	Funding for undergraduate research in the Dermatology department	2020
<b>Tau Beta Pi Member</b>	Joined the engineering honors society	2020
<b>Stanford VPUE Conference Grant</b>	Award to present research at Society For Investigative Dermatology Annual Meeting	2020
<b>Mayo Clinic Summer Undergraduate Research Fellowship</b>	Fellow studying glioblastoma in the Precision NeuroTherapeutics Program	2018 & 2019
<b>TGen Helios Scholar</b>	High school intern in the Helios Program at TGen	2016
<b>Helios Symposium Poster Award Winner</b>	Awarded for a top 10 poster at the intern symposium	2016

## EXTRACURRICULARS

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<b>Tau Beta Pi Honors Society Board – Academic Co-Chair</b>	Organize academic development events and lead the Peer Mentorship Program	2020 – 2021
<b>Computer Science Peer Mentor</b>	Advise and mentor underclassmen considering a major in Computer Science	2020 – 2021

## RESEARCH EXPERIENCE

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**Research Associate**, Lee Lab, Stanford Medicine 2021 – present

Advisor: Carolyn Lee MD, PhD

- Worked as the lab bioinformatician
- Investigated mechanisms of perineural invasion using single cell sequencing
- Performed a meta-analysis of publicly available non-melanoma RNA-Seq datasets
- Studied metabolic reprogramming caused by non-coding mutations in metabolic genes
- Mentored undergraduate trainees

**Undergraduate Researcher**, Lee Lab, Stanford Medicine 2017 – 2021

Advisor: Carolyn Lee MD, PhD

- Characterized novel genes implicated in skin cancers using multi-omics data
- Examined survival data to find biomarkers for squamous cell carcinoma (SCC)
- Analyzed proteomics data to identify novel interactors for melanoma oncogene RAC1
- Developed NGS analysis pipelines and deployed on SLURM HPC cluster
- Assisted with experimental design and grant applications
- Used sequencing approaches to investigate molecular basis of rare skin diseases

**Summer Undergraduate Research Fellow**, Swanson Lab, Mayo Clinic 2018-2019

Advisor: Kristin Swanson PhD

- Analyzed MRI data to study blood brain barrier disruption in glioblastoma (GBM)
- Investigate sex-specific visual features of GBM on MRI
- Trained machine learning models to predict drug distribution in the brain from MRI
- Built prognostic models using radiomics data to predict patient survival
- Created data processing pipelines to process MR images and test registration methods
- Integrated processing pipelines with lab's codebase

**Helios Scholar**, Translational Genomics Research Institute 2016

Advisor: Seungchan Kim PhD and Gil Speyer PhD

- Redesigned the lab's EDDY algorithm to use NVIDIA's CUDA API
- Wrote C code and implemented memory optimizations to exploit GPU parallelism
- Helped secure \$200,000 Compute 4 the Cure grant from NVIDIA
- Achieved 500x speedup; the algorithm can now analyze previously impossible datasets

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## PUBLICATIONS (SEE [GOOGLE SCHOLAR](#) FOR UP TO DATE LIST)

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### Articles

**MAB21L4 deficiency drives squamous cell carcinoma via activation of RET** 2022

Ankit Srivastava, Cristina Tommasi, Dane Sessions, Angela Mah, **Tomas Bencomo**, Jasmine M Garcia, Tiffany Jiang, Michael Lee, Joseph Y Shen, Lek Wei Seow, Audrey Nguyen, Kimal Rajapakshe, Cristian Coarfa, Kenneth Y Tsai, Vanessa Lopez-Pajares, Carolyn S Lee

Cancer Research

**Mutant collagen COL11A1 enhances cancerous invasion** 2021

Carolyn Lee, Zurab Siphshvili, Angela Mah, **Tomas Bencomo**, Lara Elcavage, Yonglu Che, Rajani Shenoy, Sumaira Aasi, Paul Khavari

Oncogene

## Conference Abstracts

### **Somatic Mutation of the OXA1L 5'UTR enables Cutaneous Squamous Cell Carcinoma**

Angela Mah, Jasmine Garcia, Dane Sessions, **Tomas Bencomo**, Ashley Amado, Ankit Srivastava, Carolyn Lee

Plenary Session - Society For Investigative Dermatology 2021 Annual Meeting

### **Molecular Profiling of Cutaneous C-Group Non-Langerhans Cell Histiocytoses**

Rebekah Wieland, **Tomas Bencomo**, Carolyn Lee, Ryanne Brown

United States and Canadian Academy of Pathology 2021 Annual Meeting

### **Sex Differences In GBM Patient Survival As A Function of Extent Of Surgical Resection and Cycles of Adjuvant Temozolomide During Standard Of Care Regimens**

Julia Lorence, **Tomas Bencomo**, Haylye White, Cassandra Rickertsen, Susan Massey, Kyle Singleton, Andrea Hawkins-Daarud, Sandra Johnston, Alyx Porter, Maciej Mrugala, Bernard Bendok, Leland Hu, Joshua Rubin, Kristin Swanson

Society for Neuro-Oncology 2020 Annual Meeting

### **Rac1-interacting proteins are prognostic factors for melanoma survival**

Marten CG Winge, **Tomas Bencomo**, M. Peter Marinkovich, Carolyn S. Lee

Society For Investigative Dermatology 2020 Annual Meeting

### **Sex differences in GBM treatment: an observational study**

Lorence J., **Bencomo T.**, White H., Rickertsen C.R., De Leon, G. Singleton K. W., Daruud-Hawkins A., Bendok B. R., Porter A. B., Mrugala M. M., Rubin J.B., and Swanson K. R.

3<sup>rd</sup> Annual Celebration of Women's Health Research – Sexx as a Biological Variable

### **Sex Differences in Tumor Location Incidence in Newly Diagnosed Glioblastoma Patients**

Lorence J., **Bencomo T.**, White H., Rickertsen C.R., De Leon G., Singleton K., Bendok B., Porter A. B., Rubin J. B., Swanson K. R.

Society for Neuro-Oncology 2019 Annual Meeting

### **Modeling the interface between non-invasive imaging and drug distribution**

Ranjbar, Sara; **Bencomo, Tomas**; Jackson, Pamela R; Randall, Elizabeth; Regan, Micheal; Abdelmoula, Walid M; Lopez, Begona GC; Massey, Susan Christine; He, Lihong; Macura, Slobodan; Hu, Leland; Agar, Jefferey N; Sarkaria, Jann; Agar, Nathalie; Swanson, Kristin R.

CSBC/PS-ON 2019 Annual Investigators Meeting

### **The Same But Different: Identifying Distinct Imaging Ecologies in Male and Female Glioblastomas**

**Tomas Bencomo**, Andrea Hawkins-Daarud, Kyle Singleton and Kristin R. Swanson.

CSBC/PS-ON 2018 Annual Investigators Meeting

### **GPU-accelerated differential dependency network analysis**

Gil Speyer, Juan Rodriguez, **Tomas Bencomo** and Seungchan Kim

Euromicro International Conference on Parallel, Distributed and Network-Based Processing 2018

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## LANGUAGES

**English:** Native Language

**Spanish:** Intermediate Proficiency

## **TECHNICAL SKILLS**

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**Programming:** R, Python, Java, C, C++

**Biostatistics:** Regression modeling, machine learning, survival analysis, experimental design

**Bioinformatics:** Mutation profiling, bulk and single cell RNA-sequencing, data visualization

**Computing:** Snakemake, Docker, Unix, Bash, HPC, scikit-learn, pandas, tidyverse