

# TOMAS BENCOMO

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Biomedical data scientist passionate about using informatics to improve our understanding and treatment of human disease. I am currently applying to MD-PhD programs. My research interests focus on using bioinformatics to elucidate disease biology and building tools to aide physician decision-making. I'm also interested in open science and science education.

## EDUCATION

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<b>BS</b>	Stanford University, Computer Science Concentration in Biocomputation GPA: 3.99	2017 - 2021
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## 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 in 2020	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 skin cancer genes using single cell sequencing
- Performed a meta-analysis of publicly available non-melanoma 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)
- Applied single cell RNA-sequencing to study SCCs with perineural invasion
- 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

## PUBLICATIONS

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### Articles

#### Mutant collagen COL11A1 enhances cancerous invasion

2021

Carolyn Lee, Zurab Siprashvili, 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:** Variant calling, RNA-Seq & scRNA-Seq analysis, data visualization

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