

# Yuan Xue

BIOINFORMATICS SCIENTIST

✉ [XUESOSO@GMAIL.COM](mailto:XUESOSO@GMAIL.COM) | [LINKEDIN](#) | [GITHUB](#) | [XUESOSO.GITHUB.IO](https://XUESOSO.GITHUB.IO) | [GOOGLE SCHOLAR](#)

## EMPLOYMENT

### ClearNote Health

San Mateo, California, USA

*Senior Bioinformatics Scientist*

*Jan 2022 – Present*

- Investigated genomic distribution of epigenetic marker (5hmC) across five major cancer types in tissue and cfDNA samples. Identified tissue-concordant 5hmC features enabling a multinomial logistic regression model to predict tumor origin with 85.2% accuracy. Research effort led to multiple peer-reviewed studies (Nature Comm. Bio., J.M.D.) and presentations at leading conferences (CSHL, ESMO, ASHG).
- Led cross-functional team to design experiments and perform key analyses to optimize cfDNA assays. Reduced measurement error of plasma analytes by 4-fold, significantly enhancing cancer detection model performance.
- Directed wet-lab and bioinformatics teams to establish process controls and analytics in order to monitor assay stability using dbt and Nextflow. Oversaw translation of the analytics into a clinical diagnostic test under LDT regulatory framework.
- Conducted comprehensive benchmarking and cost-benefit analysis of leading sequencing platforms to inform strategic technology selection and optimize assay economics.
- Developed Nextflow pipelines for tumor fraction prediction from low-pass whole genome sequencing (WGS) of cfDNA. Supported tumor burden prediction using joint modeling of 5hmC/WGS measurement. Results presented at AACR.
- Managed one direct report (bioinformatics engineer) to support internal discovery pipeline development and external pharmaceutical client bioinformatic requests.

## EDUCATION

### Stanford University

Stanford, California, U.S.A.

*Ph.D. and M.S. in Bioengineering*

*Sept 2015 – Dec 2021*

Thesis advisers: Dr. Stephen Quake, Dr. John Boothroyd

### Reed College

Portland, Oregon, U.S.A.

*B.A. in Biology*

*Sept 2010 – May 2014*

Thesis adviser: Dr. Jay Mellies

## AWARDS & HONORS

### Bio-X Travel Award

*Stanford Bio-X program*

*2019*

### Stanford Interdisciplinary Graduate Fellowship

*Awarded to eleven students to support their doctoral research with an interdisciplinary scope for three years.*

*2018*

### Postbaccalaureate Research Fellowship

*Reed College, Biology Department*

*2014*

### Summer Experience Research Award

*Reed College*

*2013*

### Gold Team Medal

*MIT iGEM Competition*

*2009*

## SELECTED PUBLICATIONS

- Yuan Xue\***, Yuhong Ning\*, *et al.*, Samuel Levy†. 5-hydroxymethylcytosine analysis reveals stable epigenetic changes in tumor tissue that enable cancer detection in cell-free DNA. **accepted at Nature Communications Biology (2025)**.
- Shimul Chowdhury, Michael Kesling, Micah Collins, Vanessa Lopez, **Yuan Xue**, Glenn Oliveira, Verena Friedl, Anna Bergamaschi, David Haan, Wayne Volkmuth, Samuel Levy†. Analytical Validation of an Early Detection Pancreatic Cancer Test Using 5-Hydroxymethylation Signatures. **The Journal of Molecular Diagnostics (2024)**.

3. Dania Nanes Sarfati, **Yuan Xue**, Eun Sun Song, Ashley Byrne, Daniel Le, Spyros Darmanis, Stephen R. Quake, Adrien Burlacot, James Sikes‡, Bo Wang‡. Coordinated wound responses in a regenerative animal-algal photosymbiotic metaorganism. **Nature Communications (2024)**.
  4. Trung Pham‡\*, **Yuan Xue**\*, Susan Brewer, Kenneth E. Bernstein, Stephen R. Quake‡, Denise Monack‡. Single-cell profiling reveals functional diversity of granuloma macrophages during persistent Salmonella infection. **Science Advances (2023)**. [bioRxiv preprint](#)
  5. **Yuan Xue**, Ido Braslavsky, Stephen R. Quake. Temperature effect on DNA polymerase fidelity. **Journal of Biological Chemistry (2021)**. [bioRxiv preprint](#)
  6. Pengyang Li, Dania Nanes Sarfati\*, **Yuan Xue**\*, Xi Yu, Alexander Tarashansky, Stephen R. Quake, Bo Wang. Single-cell analysis of Schistosoma mansoni reveals a conserved genetic program controlling germline stem cell fate. **Nature Communications (2020)**. [bioRxiv preprint](#)
  7. Suchita Rastogi, **Yuan Xue**, Stephen R. Quake‡, John Boothroyd‡. Differential Impacts on Host Transcription by ROP and GRA Effectors from the Intracellular Parasite Toxoplasma gondii. **mBio (2020)**. [bioRxiv preprint](#)
  8. **Yuan Xue**, Terence Theisen, Suchi Rastogi, Abel Ferrel, Stephen R. Quake‡, John Boothroyd‡. A single-parasite transcriptional atlas of Toxoplasma gondii reveals novel control of antigen expression. **eLife (2020)**. [bioRxiv preprint](#)
  9. Alexander Tarashansky, **Yuan Xue**, Pengyang Li, Stephen R. Quake, Bo Wang. Self-assembling Manifolds in Single-cell RNA Sequencing Data. **Elife (2019)**. [bioRxiv preprint](#)
  10. **The Tabula Muris Consortium**, Stephen R. Quake, Tony Wyss-Coray, Spyros Darmanis. Single-cell transcriptomics of 20 mouse organs creates a Tabula Muris. **Nature (2018)**. [bioRxiv preprint](#)
  11. **Yuan Xue**, Jossef Osborn, Anand Panchal, Jay L. Mellies. The RpoE stress response pathway mediates reduction of enteropathogenic Escherichia coli virulence by zinc. **Applied and Environmental Microbiology (2015)**.
  12. Jing Zhou, Shi-Hao Tan, Valerie Nicolas, Chantal Bauvy, Nai-Di Yang, Jianbin Zhang, **Yuan Xue**, Patrice Codogno, Han-Ming Shen. Activation of lysosomal function in the course of autophagy via mTORC1 suppression and autophagosome-lysosome fusion. **Cell Research (2013)**.
- \*equal contributions; ‡corresponding authors

---

## PROFESSIONAL SERVICE

<b>Teaching Assistant</b> <i>Microfluidic Device Laboratory (BioE301D)</i>	Stanford University 2018
<b>Teaching Assistant</b> <i>Introduction to Bioengineering (BioE80)</i>	Stanford University 2017
<b>Teaching Assistant</b> <i>Microbiology</i>	Reed College 2014
<b>Academic Tutor</b> <i>Biology, Chemistry</i>	Reed College 2011 – 2014

---

## CONFERENCES & PRESENTATIONS

<b>Poster presentation</b> <i>5-hydroxymethylcytosine analysis reveals stable epigenomic changes in tumor tissue that enable cancer detection in cell-free DNA</i>	CSHL Biological Data Science 2024
<b>Oral presentation</b> <i>5-Hydroxymethylcytosine analysis reveals stable epigenetic changes in tumor tissue that enable cfDNA cancer predictions</i>	ESMO Congress 2022

**Invited talk**

*Building a single-cell atlas of Toxoplasma interactome*

National University of Singapore

2019

**Invited talk**

*Building a single-cell atlas of Toxoplasma interactome*

Cell Symposia Single Cells: From Technology to Biology

2019

**Poster presentation**

*Single-cell co-transcriptomic measurement resolves parasitic life cycle and host interactions*

Stanford Bioengineering department retreat

2018

**Invited talk**

*Building a single-cell atlas of Toxoplasma interactome*

Stanford Microbiology & Immunology department retreat

2018

**Poster presentation**

*Cool biochemistry measured with a hot tool*

Stanford Bioengineering department retreat

2017

**Poster presentation**

*Temperature adaptation and polymerase fidelity*

Gordon Research Conference: Nucleic Acids

2017

**Poster presentation**

*Molecular Mechanism of Zinc Disruption of Enteropathogenic Escherichia coli Pathogenesis*

Gordon Research Conference: Microbial Toxins & Pathogenicity

2014

---

**SKILLS**

**Languages:** English (native), Cantonese (native), Mandarin (native), Japanese (conversational)

**Technology Stack:** Python, SQL, DBT, Nextflow, Snakemake, AWS, Slurm, Docker, Vscode, Cursor

**Bioinformatics:** BWA, STAR, minimap2, htseq-count, bedtools, salmon, velocity, samtools, scanpy, Kraken, BLAST

---

**PACKAGE CONTRIBUTIONS****singleCell\_snake**

*A snakemake pipeline for local/Slurm submission of single cell data alignment and transcript counting.*

**nheatmap**

*A python package to generate multi-level heatmap with extensive configuration options.*

**DensityPlot**

*A python package to generate density scatter plot.*

**bag\_of\_velocity**

*A bash / python script for parallel submission of RNA velocity alignment on Slurm.*