Yuan Xue

Cancer cfDNA Epigenetics, Single-Cell Genomics, Host-Pathogen Interactions
Bioinformatics Scientist @ ClearNote Health

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Employment

ClearNote Health 2022 – now
Bioinformatics Scientist II *San Mateo, CA, USA*

Education

Stanford University 2015 – 2021
Ph.D. Bioengineering. Thesis advisers: Stephen Quake, John Boothroyd *Stanford, CA, USA*

Stanford University 2015 – 2017
M.S. Bioengineering *Stanford, CA, USA*

Reed College 2010 – 2014
B.A. Biology. Thesis Adviser: Jay Mellies *Portland, OR, USA*

Awards & Honors

Stanford Bio-X Travel Award 2019

Stanford Bio-X SIGF Fellow 2018

› One of 11 students awarded with a three-year fellowship to conduct interdisciplinary research on the topics of parasitology and single-cell bioinformatics co-advised by professors John Boothroyd and Stephen Quake

Reed College Larry Ruben Postbac. Research Fellow 2014

Reed College Summer Experience Awardee 2013

Reed College Independent Research Awardee 2012

iGEM Competition Team Gold Medalist 2009

Selected publications

1. Yuhong Ning, **Yuan Xue**, Verena Friedl, David Haan, Anna Bergamaschi, Gulfem Guler, Kyle Hazen, Aaron Scott, Tierney Phillips, Erin McCarthy, Christopher K. Ellison, Roger Malta, Albert Nguyen, Vanessa Lopez, William Gibb, Romola Cavet, Shimul Chowdhury, Wayne Volkmuth, Samuel Levy‡. 5-hydroxymethylcytosine analysis reveals stable epigenetic changes in tumor tissue that enable cancer detection in cell-free DNA. **under review (2023).**

2. 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. **under review (2023).**

3. 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

4. **Yuan Xue**, Ido Braslavsky, Stephen R. Quake. Temperature effect on DNA polymerase fidelity. **Journal of Biological Chemistry (2021)**. bioRxiv preprint

5. 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

6. 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

7. **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

8. Alexander Tarashansky, **Yuan Xue**, Pengyang Li, Stephen R. Quake, Bo Wang. Self-assembling Manifolds in Single-cell RNA Sequencing Data. **Elife (2019)**. bioRxiv preprint

9. **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

10. **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)**.

11. 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

Teaching Assistant 2018
Microfluidic Device Laboratory (BioE301D) *Stanford University*

Teaching Assistant 2017
Introduction to Bioengineering (BioE80) *Stanford University*

Teaching Assistant 2014
Microbiology *Reed College*

Academic tutor 2011 – 2014
Biology, Chemistry *Reed College*

Peer reviewer Frontiers In Pharmacology, Frontiers In Oncology, Frontiers In Immunology, Sensors, BMC Immunology, Autophagy, Applied Sciences, Aging Cell, Journal of Cellular Physiology, International Journal of Molecular Sciences, Journal of Leukocyte Biology, Health Informatics Journal, MDPI Microbiology, MDPI Algorithms

Conferences & Presentations

5-Hydroxymethycytosine analysis reveals stable epigenetic changes in tumor tissue that enable cfDNA cancer predictions 2022
Oral presentation *ESMO Congress 2022*

Building a single-cell atlas of Toxoplasma interactome 2019
Invited talk *National University of Singapore*

Building a single-cell atlas of Toxoplasma interactome 2019
Invited talk *Cell Symposia Single Cells: From Technology to Biology*

Single-cell co-transcriptomic measurement resolves parasitic life cycle and host interactions 2018
Poster presentation *Stanford Bioengineering department retreat*

Building a single-cell atlas of Toxoplasma interactome 2018
Invited talk *Stanford Microbiology & Immunology department retreat*

Cool biochemistry measured with a hot tool 2017
Poster presentation *Stanford Bioengineering department retreat*

Temperature adaptation and polymerase fidelity 2017
Poster presentation *Gordon Research Conference (GRC): Nucleic Acids*

Skills

Languages English, Cantonese, Mandarin, Japanese, Python, R, Bash, LaTeX

Visualization matplotlib, plotly, seaborn, bokeh, networkX, graphviz, graph-tool

Machine Learning numpy, pandas, sklearn, scikit-learn, tensorflow, keras, statsmodels

Workflows Nextflow, Snakemake, cloud computing (e.g. AWS, slurm), Docker

Web development Flask-REST backend, Apache2

Bioinformatics STAR, minimap2, htseq-count, salmon, velocyto, samtools, scanpy, Kraken

Maintained Packages

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