

# Ruilian Zhang

(917)-709-6254 | rz2570@columbia.edu | New York, NY, 10032

## EDUCATION

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<b>Columbia University</b>	New York, NY
Mailman School of Public Health, Master of Science in Biostatistics	Sep. 2021 - (Expected) May. 2023
<b>Sichuan University</b>	Chengdu, China
Bachelor of Science in Biotechnology; GPA: <b>3.86/4.0</b> ; Rank: <b>1/45</b>	Sep. 2017 - Jun. 2021
<b>University of California, Berkeley</b>	Berkeley, CA
Summer Session; GPA: <b>4.0/4.0</b>	Jul. 2019 - Aug. 2019
<b>University of California, Los Angeles</b>	Los Angeles, CA
Participant of Cross-Disciplinary Scholars in Science and Technology (CSST) Program	May. 2020 - Jan. 2021

## RESEARCH EXPERIENCES

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**Down-sampling Effects on RNA Sequencing of Prostate Cancer** Aug. 2020-Present

*Jonsson Comprehensive Cancer Center, University of California, Los Angeles*

Principle Investigator: **Prof. Paul Boutros**

- Down-sampled a set of pair-end RNA-sequencing data of CPC-GENE samples by the gradient of reads
- Aligned down-sampled FASTQs with STAR and HISAT2 methods, using align-RNA pipeline
- Quantified RNA abundance by running Kallisto on FASTQs and RSEM on aligned BAMs
- Called fusions by running FusionCatcher using Dockers
- Used R to compare outputs of number of transcripts detected and correlations between sets
- Conducted Differential Gene Expression Analysis by DESeq2 on samples with/without ERG fusions

**Influence of Common Gene Fusion Sites on Tumorigenesis** Sep. 2019-Jan. 2020

*State Key Laboratory of Biotherapy, West China Hospital, Sichuan University*

Principle Investigator: **Prof. Heng Xu**

- Mastered the interpretation of the Next Generation Sequencing data
- Used Python to sort out cancer-related circular-RNAs concerning to a dataset of fusion genes

**Mechanism of Brefeldin A Inhibiting the Growth of Hepatoma Cells** Sep. 2018-Sep. 2019

*Selected as a Nation-level College Student Innovation and Entrepreneurship Training Program*

*State Key Laboratory of Biotherapy, West China Hospital, Sichuan University*

Principle Investigator: **Prof. Canhua Huang**

- Cultured and passaged cells of Huh7 cell line in a series of petri dishes
- Optimized the gradient of drug concentration and applied to the treatment of cells
- Conducted MTT assay and Clonogenic assay to measure cell viability
- Prepared protein sample from cells and conducted Western Blot to detect autophagy-related proteins

**Improvement on Protein Purification Method for Molecular Neurobiology** Aug. 2018-Sep. 2018

*State Key Laboratory of Biotherapy, West China Hospital, Sichuan University*

Principle Investigator: **Prof. Bo Xiao**

- Optimized the experimental conditions of HIS-Tag purification
- Extracted pET-23 plasmids from E. coli K12 and conducted SDS-PAGE on them

## PAPER STUDY and REPORTS

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**An Overview of *Entamoeba Histolytica***

- Reviewed *Entamoeba histolytica* based on morphological structure, taxonomic characteristics, living habits, and latest research progress and human relationships

#### **Tamiflu and Influenza**

- Introduced the anti-influenza drug Oseltamivir, also known as Tamiflu, from the aspects of development history, mechanism of action, and synthetic process etc.

#### **His-Tag Affinity Purification**

- Introduced a chromatography method for protein purification based on theory and practical experiences

#### **Humanization of Monoclonal Trophoblast Glycoprotein Antibody**

- Designed a synthetic route of Trophoblast Glycoprotein (5T4) antibody with CDR implantation
- Discussed the feasibility and explored the potential of 5T4 as a tumor treatment target

#### **PAK4 Inhibitor Drives Efficacy of B7-H3-Targeted CAR-T Cells Against Solid Tumors**

- Suggested and designed experiments to combine the using of PAK4 inhibitor and CAR-T to solve the difficulties of CAR-T infiltration in solid tumors

#### **A Review of Single-cell Transcriptomic Analysis of Alzheimer's Disease**

#### **A Review of A Single-Nucleotide Polymorphism Tagging Set for Human Drug Metabolism and Transport**

### **INTERNSHIP EXPERIENCE**

Technical Support Dept, **GenScript Technology Co., Ltd** | Technical Account Associate *Aug. 2020-Oct. 2020*

- Answered biological and medical research related questions of Catalog Products
- Prepared quotes and placed orders upon customer needs
- Created and maintained the Confluence Workspace of department's contact and product information
- Updated product inventory daily and reported hot products such as SARS-CoV-2 Surrogate Virus Neutralization Test Kit

### **HONORS AND AWARDS**

**Outstanding Student** of Sichuan University *Oct. 2018*

**First Prize Scholarship** by Sichuan University twice for two consecutive years 2018 & 2019

**First Prize Scholarship** by State Key Laboratory of Biotherapy twice for two consecutive years 2018 & 2019

**National Special Prize**, in National English Contest for College Students *May. 2018*

**Second Prize**, in "Foreign Language Teaching and Research Press" Cup English Contest *Oct. 2018*

**Second Prize**, in Liaoning Provincial Chemistry Olympic Contest *Dec. 2017*

### **EXTRACURRICULAR ACTIVITIES**

**Team Leader, 2020 First Digital Sichuan Innovation Competition** *Jul. 2020*

- Led a group of five to design an automatic identification tool for medical insurance fraud based on health big data, and conducted feasibility analysis of the tool
- Entered the finals (100 out of 642)

**President, Culture and Art Department Committee, Sichuan University** *2017-2018*

- Planned and organized school-wide activities like Debate Competitions, Singing Contest, etc.
- Hosted lectures about literature and art

**Minister, Arts Department, School of Life Sciences, Sichuan University** *2017-2018*

- Planned and organized activities like Welcome Party and Talent Show
- Represented School of Life Sciences, joined in the Dance Competition and be awarded second prize

### **Skills**

**Programming Skills:** R, Python, LaTeX