Qichen Fu

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Education

Zhejiang University-University of Edinburgh (ZJU-UoE) Institute *Haining, China*
BSc in Bioinformatics (dual degree from both ZJU and UoE) *Sept 2019 - Expected Jun 2023*
- GPA: 3.96/4.00; Average Overall Mark: 90.12/100; Major course GPA ranking: 1/28
- **Selected courses:** Genomics and Proteomics 2, Applied Data Science 2 (statistics and machine learning), Database and Software Technology 2 (Java basic + OOP, database and Java Web), Biomedical Informatics 3 (bioinformatics algorithms), Computational Biology and Systems Biology 3 (computational modelling)

Research Experience

Department of Genetics, Cambridge University *Remote*
Research Assistant at Dr. Julie Ahringer's (FRS, FMedSci) Lab *Jun 2022 - Sept 2022*
- **Project:** *Test the efficiency of OmniC - a new genome conformation and regulation capture method*
- Processed OmniC data using NGS analysis software, made contact maps, called significant interactions, performed aggregate peak analysis, benchmarked OmniC with the previous technique (ARC-C)
- Investigated rRNA gene contacts and nucleolus interactions in C. elegans

ZJU-UoE institute, Zhejiang University *Haining, China*
Student Research Training Program at Dr. Wei Guo's Lab *Feb 2021 - May 2022*
- **Project:** *Investigating special subpopulation-partial EMT cells in cancer stem cells of lung adenocarcinoma*
- Analyzed eight public single-cell RNA-seq datasets of patients' lung adenocarcinoma tissue
- Identified 16 candidate surface markers for cancer stem cells that co-expressed epithelial and mesenchymal markers

Systems Biology program, Centre for Genomic Regulation *Barcelona, Spain*
Summer Research Intern at Dr. Ben Lehner's Lab *July 2021 - August 2021*
- **Project:** *Understanding genetic encoding of p53 multimodal interactions using deep mutational scanning*
- Searched protein databases for binding interfaces, made constructs and tested the binding affinity by double-deep protein complementation assay
- Identified appropriate binding interfaces for deep mutational scanning, learned conceptual knowledge of deep mutational scanning

ZJU-UoE institute, Zhejiang University *Haining, China*
Research Assistant at Dr. Xin Xie's Lab *Jun 2020 - Jan 2021, July 2022*
- **Project 1:** *Nuclear receptor COUP-TFII's role in colorectal carcinogenesis*
- Made COUP-TFII-GFP construct, learned basic wet-lab experiments, wrote five standard protocols for the lab
- **Project 2:** *Building Functional Exosome@MicroRNA ossification factors and its application in bone tissue regeneration*
- Revealed exosome@miRNA's role in promoting bone regeneration via RNA-seq analysis

Bioinformatics Course Projects

Chest x-ray image segmentation and tuberculosis classification *Haining, China*
Biomedical Image Analysis 4 *Oct 2022 - Present*
- Segmentation of chest X-ray images using traditional and machine-learning based (U-Net) methods
- Classification of tuberculosis positive or control using convolutional neural network

Modelling mutational effects on protein structure *Haining, China*
Computational Biology and Systems Biology 3 *Feb 2022 - Apr 2022*
- Analyzed how mutations affect Tet repressor stability, dimerization, and DNA binding using in silico deep mutagenesis (FoldX)
- **R code and report:** `https://github.com/QichenFU/CBSB3_miniproject`

Implementation of UMAP algorithm (miniumap) *Haining, China*
Biomedical Informatics 3 *Nov 2021-Dec 2021*
- Implemented UMAP algorithm for dimensionality reduction, benchmarked the algorithm performance
- Selected as one of the top projects: BMI3 Miniprojects Gallery (labw.org)
- **Python code and documentation:** `https://github.com/QichenFU/miniumap`

RNA-seq data analysis *Haining, China*
Genomics and Proteomics 2 *May 2021*
- Analyzed RNA-seq data of K562 cells to understand the transcriptional response to electron acceptors AKB and pyruvate
- **R code and report:** `https://github.com/QichenFU/GP2_Data_Analysis_ICA`

Precision Medicine Matching System

Haining, China

Database and Software Technology 2

Feb 2021-Jun 2021

- Identified and annotated the variants of the Hep3B2.1-7 cell line from its RNA-seq data
- **Bash scripts and report:** `https://github.com/QichenFU/DST_group_project_4`

A COVID-19 query tool

Haining, China

Database and Software Technology 2

Jan 2021

- Built a database query software/app for COVID-19 cases statistics using Python and SQL
- **Python code and documentation:** `https://github.com/QichenFU/pyCOVID`

An R Cheatsheet for data science

Haining, China

Applied Data Science 2

Nov 2020-May 2021

- A self-made R cheatsheet for Applied Data Science 2 course revision
- **RMarkdown:** `https://github.com/QichenFU/R_Cheatsheet_for_Applied_Data_Science_2`

Skills

Programming	Python (Pandas, NumPy, Matplotlib, Scikit-learn), R (ggplot2, Seurat, DESeq2, RMarkdown), SQL, Java (Object-Oriented Programming, JavaWeb), Shell (Bash), LaTeX, Git
Dry lab	RNA-seq analysis (gene expression analysis, variant calling), single-cell RNA-seq analysis (filtering, normalization, clustering, differentially expressed gene analysis), 3D genome data analysis
Wet lab	Molecular biology (PCR, RT-qPCR, molecular cloning), western blot, cell culture and transfection, basic C. elegans, E. Coli and drosophila experiments, yeast transformation, double-deep protein complementation assay

Achievements

2022	**Verbal-152 (52%), Quantitative-169 (93%), Analytical-3.5 (37%),** Graduate Record Examinations
2022	**Reading-28, Listening-26, Speaking-23, Writing-27,** TOEFL
2022	**One-star volunteer (> 50 volunteer hours),** Zhejiang University
2021	**Academic Scholarship First Prize (Top 5%),** ZJU-UoE institute
2020	**Academic Scholarship Second Prize (Top 10%),** ZJU-UoE institute

Extracurricular and Volunteer Experience

ZJU-UoE institute

Haining, China

Academic family leader

Sept 2020 - Jun 2021

- Organized student orientation and provided guidance to 12 first-year students in academic and daily life

ZJU-UoE institute

Haining, China

Student Representative

Sept 2020 - Jun 2021

- Collected and analyzed feedback from students and presented them to the course team
- Attended four Staff-Student meetings to make suggestions to the course team

Campus new media center, International Campus, ZJU

Haining, China

Member of News Editing Department

Oct 2019 - Jun 2020

- Wrote and edited the tweets for the WeChat public account of international campus, ZJU

Languages

Chinese	Native proficiency
English	Professional proficiency