

LIU Ran

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EDUCATION

- **Hong Kong University of Science and Technology** Hong Kong
PhD student in Life Science; Current CGA: 4.300/4.300 *Sep 2024 - Current*
- **Hong Kong University of Science and Technology** Hong Kong
Bachelor of Science in Data Science and Technology; CGA: 3.995/4.300; Major CGA: 4.042/4.300 *Sep 2020 - Jun 2024*
- **University of California, Berkeley** Berkeley CA, United States
Exchange Student; GPA:4.000/4.000 *Jan 2023 - August 2023*

RESEARCH AND INTERNSHIP EXPERIENCE

- **Final Year Project for major in Biochemistry and Cell Biology** HKUST, Hong Kong
Supervisor: **Prof. Jiguang WANG** *September 2023 - June 2024*
 - Project title: Unraveling cell-cell communications from cancer single-cell RNA sequencing data.
 - Developing a computational tool to provide more robust method to aggregate different inference pipeline outputs.
- **Final Year Project for major in Data Science and Technology** HKUST, Hong Kong
Supervisor: **Prof. Dit-Yan YEUNG** *September 2023 - June 2024*
 - Project title: Physics-Informed Adversarial Learning for Solving General 2D Computational Fluid Dynamics Problems
 - Developed an adversarial training strategy to improve generalizability and robustness of traditional physics-informed neural network (PINN) on fluid dynamics
- **Summer Research Internship** Joint Genome Institute, United States
Supervisor: **Prof. Igor GRIGORIEV** *June 2023 - Current*
 - Project title: Developing Quality Metric for Genome Assemblies and Annotations in MycoCosm.
 - Data analysis and operation of the online public fungal genome database MycoCosm (<https://mycocosm.jgi.doe.gov/mycocosm/home>).
 - Developed a comprehensive quality metric evaluating genome assemblies and annotations, preparing for paper submission as a first author.
- **Undergraduate Research Assistant** HKUST, Hong Kong
Supervisor: **Prof. Jiguang Wang** *April 2022 - June 2024*
 - A major contributor to the project on cancer phylogeny inference and quality control.
 - Further developed the previous bioinformatic tool and performed more comprehensive studies.
 - Written a manuscript and preparing for journal submission
- **Winter Internship** Pharmacogenetics Ltd, Hong Kong
Supervisor: **Prof. Hong XUE** *January 2022 - January 2022*
 - Performed several wet lab experiments such as PCR, electrophoresis, DNA and RNA extraction and purification, animal dissection behavior experiment, etc.
- **Undergraduate Research Opportunity Program (UROP)** HKUST, Hong Kong
Supervisor: **Prof. Hong XUE** *September 2021 - December 2021*
 - Project title: Human complex disease genomics and bioinformatics.
 - Assisting genomic DNA library construction.
 - Written a manuscript and preparing for journal submission
- **Undergraduate Research Opportunity Program (UROP)** HKUST, Hong Kong
Supervisor: **Prof. Jiguang Wang** *June 2021 - August 2021*
 - Project title: The application of BIG DATA technology in precision cancer medicine.
 - Developed a bioinformatic tool to improve cancer evolutionary tree construction in the project.

PUBLICATIONS

- Ran Liu, Yingxi Yang, Jiabao Li, ETRIP: a statistical tool for tumor phylogeny inference and correction from paired samples bulk sequencing data (to be submitted).
- Min Shi; Yingxi Yang; Na Huang; Dongqiang Zeng; Zongchao Mo; Jiao Wang; Xiaomeng Zhang; Ran Liu; Chunlin Wang; Xiaoxiang Rong; Zhenzhen Wu; Qiong Huang; Haixia Shang; Jihong Tang; Zhaojun Wang; Jianan Cai; Genjie Huang; Yijin Guan; Jian Guo; Jiguang Wang; Wangjun Liao, Genetic and microenvironmental evolution of colorectal liver metastases under chemotherapy (published on Cell Rep Med, doi: 10.1016/j.xcrm.2024.101838).

HONORS AND AWARDS

- Hong Kong PhD Fellowship Scheme awardee
- First class honor awardee and academic achievement medalist during undergraduate
- University's Scholarship Scheme for Continuing Undergraduate Students for 3 years
- Chiaphua Industries Limited Scholarship for Chinese Mainland Undergraduate Students for 2 years
- The D. H. Chen Foundation Life Science Scholarship for 2 years
- HKSAR Government Scholarship Fund - Reaching Out Award in 2023

SKILLS SUMMARY

- **Solid Biology:** Cancer, genomics, genetics, genetic wet lab techniques (PCR, gel electrophoresis)
- **Computer Science:** Programming (Python, C++, R), and machine learning (Pytorch, adversarial learning)
- **Math and Statistics:** multivariable calculus, linear algebra, analysis, statistical inference
- **Languages:** Putonghua, Cantonese, English