PERSONAL INFORMATION

Jiayi Guo 郭佳亿

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Personal website

Sex Male | Date of birth 17/02/2002 | Nationality Chinese

RESEARCH EXPERIENCE

Project Leader (Finished) --- immunology 2022/03--2024/04

China University Life Science Competition (ULSC)

Project Name： Research on Macrophage Death Induced by Cytoplasma Membrane Vesicles(CMVs) Separated from Streptococcus Agalactiae Cells

Study the mechanism of host cell inflammation and cell death caused by the interaction of CMVs released by GBS with mouse macrophages, the transfer of bacterial effector molecules to host cells through CMVs and their cytotoxicity, and study CMVs produced by Gram-positive bacteria during vivo infection and their direct association with host cell pathology. Conduct research on the extraction and identification of CMVs from streptococcus agalactiae, the effects of CMVs on macrophage proliferation in mice; the expression of macrophage inflammatory cytokines induced by CMVs; the death of macrophage induced by CMVs.

Project Leader (Finished) --- immunology 2023/03--2023/08

National Innovation and Entreperneurship Competition Fund

Project Name: Recombinant Tumor Vaccine for Breast Cancer HER2 Antigen Based on Bacterial Outer Membrane Vesicle

This project aims to develop a novel recombinant tumor vaccine for breast cancer HER2 antigen based on bacterial outer membrane vesicle (OMV). The vaccine uses ClyA protein as a guiding sequence to locate HER2 antigen to the outer membrane of E. coli and elicit immune response in mouse macrophages. The vaccine is constructed by cloning and fusing ClyA and HER2 genes, expressed in E.coli, separated by overspeed centrifugation, and identified by molecular biology techniques.

Project Leader (Finished) ---Bioinformatics 2024/12--2024/04

Graduation Projects

Project Name: Benchmarking of different intergration softwares of Sincle-cell ATAC

The complexity of genome dataset is increasing, and current dataset offen include different sample, generated across multiple conditions. The methods of intergration can minimize this complexity of dataset. In this project, we present a benchmarking study of data intergration methods in complex intergration tasks,Through systematic benchmarking, we aim to assess the efficacy, accuracy, and scalability of different integration methodologies. By leveraging a diverse set of datasets reflecting real-world scenarios, providing insights into the performance of these software tools under varying conditions. The project's outcomes will not only inform the selection of optimal integration methods but also contribute valuable knowledge to the evolving landscape of single-cell genomics research.

DEDUCATION AND TRAINING

Biological Chemical Engineering （Double major: English） 2020/09--2024/06

Inner Mongolia University(IMU) (Monitor of the Class)

Address: No. 24, Zhaojun Road; Yuquan District, Hohhot City, Inner Mongolia 010000

Major Courses(Bold font represents a score exceeding 85)： **Bioinformatics**, **Probability Theory and Mathematical Statistics**, **Professional Foreign Language (English)**, General Biology, **Instrumental Analysis**, **Cell Biology**, Physiology, **Microbiology**, **Biological Statistics**, Biochemistry, College Chemistry, **Cell Engineering**, Advanced Mathematics, **Genetic engineering,** Molecular biology, **Principle of chemical engineering**

Comprehensive Evaluation: Rank **1 in 30**

Bioinformatics 2023/12--2024/04

Westlake University (Visiting student)

No.18 Shilongshan Road, Xihu District, Hangzhou, Zhejiang, 310024
Zhang Kai Lab (Lab website)

Major job: Finishing the content of the **graduation project** and help the RA to do **some data analysis job**. Also supplement laboratory teaching documents.

Learned Skills: Basic concepts and methods of **Computional biology,** become proficient in **data science.** Ability of **making English presentation**.

Chemical Biology 2024/09--Now

University of Geneva and École polytechnique fédérale de Lausanne(EPFL)

Geneva and Lausanne, Switzerland

Major Courses: Elements in bioinformatics, Machine Learning(Auditor), Micropy and imaging course

ADDITIONAL INFORMATION

Bioinformatics competence

SELF-ASSESSMENT				
Data processing	Data Mining	English Writing	Literature reading	Problem solving
Competent user	Basic user	Familiar	Proficient	Competent

-Familiar with Systems such as Windows, **MacOS**, **Ubuntu** or **CentOS**, as well as some tools like **"DepMap"**, "**UCSC genome browser**" or **GEO database**, can manage my code with Github

Programming Languages and IDE

-Understanding the basic syntax of **Python** and familiar with some packages of python such as NumPy, Pandas, Matplotlib

-**Jupyter notebook** and **VSCode**

Other skills

Swimming, Volleyball, Cycling, Chinese Cooking

PERSONAL SKILLS

Honors and awards

09.2024, Merit-based Fellowship from SNE Chemical biology
07.2024, Excelent Bachelor Thesis
09/2023,Selected as the candidate of " JingYing Scholar" Training Program of Inner Mongolia University
04/2023, Third-Class Model Scholarship of Inner Mongolia University
04/2023, Undergraduate First-class Academic Scholarship of Inner Mongolia University
05/2022, 2021 Outstanding Youth League Cadre of Inner Mongolia University
05/2022 University-level Merit Student of Inner Mongolia University
04/2022, Undergraduate Second-class Academic Scholarship of Inner Mongolia University

05/2021, 2020 Outstanding League Member of Inner Mongolia University
04/2021, Undergraduate Third-class Academic Scholarship of Inner Mongolia University

Projects

03/ 2023 - 06/ 2023, Group Leader in China Undergraduate Life Sciences Contest (CULSC)

04/2022, Participant of Internet + College Students' Innovation and Entrepreneurship Competition

03/ 2022 - 03/ 2024, Project Leader of the University-level College Students' Innovation Training Competition

Publications

[1]Sun Cai, Wu Yanhao, **Guo Jiayi**. Research Progress in the Application of OMV in Tumor Vaccines[J].*Chinese Bulletin of Life Sciences*, 2022,34(11):1431-1441.DOI:10.13376/j.cbls/2022157, https://www.lifescience.net.cn/webadmin/upload/20230217114012_3526_8413.pdf

[2]Wang S, **Guo J**, Bai Y, et al. Bacterial outer membrane vesicles as a candidate tumor vaccine platform. *Front Immunol.* 2022;13:987419. doi:10.3389/fimmu.2022.987419 https://pubmed.ncbi.nlm.nih.gov/36159867/