

# Zhenyu WU

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## Education

PhD candidate in MCDB Program Sep 2019 - Jun 2024 (Expected)  
● Ohio State University, Columbus, U.S, 43202

Bachelor of Science in Life Science and Biotechnology Sep 2014 - Jun 2018  
● Wuhan University, Wuhan, P.R. China  
● Cumulative Grade Point Average: 3.72/4

## Lab Experiences

### Dr. Qin Ma's BMBL Lab & Dr. Jian Zhu's Lab

#### Current Research Project

- Use deep transfer learning framework to predict drug sensitivity at the single cell resolution
- NK cell mediated ADCC killing efficiency
- Integrative analysis of single cell RNA-seq data on Head and neck cancers

#### Published paper

Wu Z, Lawrence PJ, Ma A, Zhu J, Xu D, Ma Q. Single-Cell Techniques and Deep Learning in Predicting Drug Response. Trends Pharmacol Sci. 2020 Dec;41(12):1050-1065. doi: 10.1016/j.tips.2020.10.004. Epub 2020 Nov 2. PMID: 33153777; PMCID: PMC7669610.

## ACADEMIC SERVICES

Reviewed 3 manuscripts for 3 journals:

- ICIBM: International Conference on Intelligent Biology and Medicine
- CBAC: Computational Biology and Chemistry
- Bioinformatics

## Research Experiences

- Comparison Between Different Single Cell RNA Sequencing Technology Oct 2017 – 2018  
Research assistant in Paivi Saavalainen 's lab, Department of Immunology, University of Helsinki
  - Learnt three different scRNA-seq protocol (drop-seq, seq-well and ddseq)
  - Isolated PBMC cell and stimulate with IL-6, CD3/CD28
  - Data analysis with R language (package Seurat)
  - Used FACS to test the efficiency of a IL-6 antibody

- **Development of A DNA/RNA/Protein Extraction Protocol From Gut Samples** Oct 2017  
 Research assistant in Paivi Saavalainen 's lab, Department of Immunology, University of Helsinki
  - Tested the extraction efficiency of different kits (Allprep, Tripleprep) as well as some homemade protocol, checked the production quality via Labchip and Qubit.
  - Modified the protocol (homogenization and buffer) according to result and reference papers.
  - Repeated the final protocol to prove its efficiency.
  
- **Protein O-GlcNac Modification Identification** Nov 2016 – Nov 2017  
 Research assistant in Hui Sun's lab, college of life science, Wuhan University
  - Enriched protein from Hepatitis patients blood, Hepatitis mouse liver.
  - Extracted and purified protein ConA from *Canavalia*; revived *E. coli*, induced protein AAL26 expression and purified it by chromatography.
  - Isolated protein with O-GlcNac modification by HPLC and prepared the sample for MS.
  - Analyzed MS data and screened for potential research target.
  - Mastered experiment skills like Western Blot, ELISA, Flow Cytometry.
  
- **Assessment of Sand Cementation and Fixation by *S. pasteurii* Mar-Seq** 2017  
 Independent Research funded by school of civil engineering, Wuhan University
  - Explored and optimized the culture condition of *Sporosarcina pasteurii* (Temperature, pH and rotational speed).
  - Tested its carbamide degradation ability and sent for 16s rRNA sequencing.
  - Injected those bacteria into porous medium and investigated the effect of Microbially induced Calcite Precipitation by measuring precipitation and permeability.
  
- **Molecular Ecology of the Pollination of *G. montanum*** Apr - May 2017  
 Research assistant in Yanbing Gong's lab, college of life science, Wuhan University
  - Observed and classified the pollinators of *Gnetum montanum*.
  - Used GC-MS to separate and identify the volatile compounds of male and female strobili.
  - Ran bioassays with artificial flowers and synthetic scent compounds and then calculated the visiting frequency of pollinators to test the preference of pollinators.
  - Collected male and female ovules in different blooming stages and sent those samples for RNA-sequencing, then analyzed the data to identify the source of the pollination drops odor.
  
- **Construction of a Criticality Detector System in plasmid** Nov 2014 - Jun 2015  
 Project of WHU-iGEM 2015, college of life science, Wuhan University
  - Light sensing part: designed and constructed a plasmid that can express Cph8 protein and two necessary enzymes Ho1 and pcyA in *E. coli*.
  - Counting part: constructed plasmids that can express GFP, RFP, serine integrase and excisionase in *E. coli*.

- Drug dosage control part: constructed a plasmid that can express acid-activated peptide and test its efficiency in low pH environment.
- Improvement of Bio-brick BBa\_R0052: inserted RBS + GFP + Terminator sequence into previous brick and tried out a new precise insertion strategy by whole plasmid PCR.

## Summer School and Lab Visiting

- **Summer School for Systematic and Synthetic Biology** **Jul 2016**  
Peking-Tsinghua Center for Life Science, Peking University
  - Attended lectures addressed in systematic and synthetic biology
- **Summer Lab Visiting** **Jul 2017**  
Hong Kong University of Science and Technology, Hong Kong
  - invited by Professor Zeng to run a DNA staining experiment in his marine lab

## English Proficiency

- TOEFL 98=R:28+L:29+S:20+W:21 (2017.2)
- GRE Q170+V156+AW3.0 (2017.6)

## Scholarships

- Scholarship for Visiting student (5000 CNY)  
Nov.2017
- Excellent Student Scholarship (2000 CNY) Oct. 2016
- Excellent Student Scholarship (2000 CNY) Oct. 2015
- Elite Freshman Scholarship (2000 CNY) Oct. 2014

## Essential Skills and Extracurricular Experiences

### Java

- Implemented a management system in Java to model flower sale and stock Jun 2016

### Basketball

- Basketball player in college team 2014 - 2016
- Award of excellent basketball player May 2015

### Leadership

- Led a cycling team riding around Hainan Island in 7 days Jan 2016
- Presenter in Excellent Student Cadre award ceremony Nov 2015

### Literature

- Book review for *Visconte dimezzato* published in college magazine (in Chinese) Oct 2015
- Book review for *Walden* published in college magazine (in Chinese) Apr 2016

### Part-Time Work Experience

- President in financial department of WHU-Riding community Jan 2016
- Worked in an avocado plantation in Gatton, Australia Jul 2016