

Jiaying Zheng

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EDUCATION BACKGROUND

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|-------------------|--|
| 09/2024 – Now | Postdoc fellow Department of Medicine & Therapeutics, The Chinese University of Hong Kong |
| 08/2021 – 08/2024 | PhD in Medical Sciences Department of Medicine & Therapeutics, The Chinese University of Hong Kong |
| 09/2018 - 07/2021 | M. E. in Biomedical Engineering Health Science Center, Shenzhen University |
| 09/2014 - 07/2018 | B. E. in Biomedical Engineering Health Science Center, Shenzhen University |

RESEARCH EXPERIENCE

- 1. Multi-center metagenomic analysis identifies universal location-specific gut bacteria signatures as potential biomarkers in inflammatory bowel disease**
The Chinese University of Hong Kong
8/2024-now
- 2. Identification of fecal bacterial markers for the non-invasive diagnosis of inflammatory bowel disease**
The Chinese University of Hong Kong
10/2021-10/2024
 - Microbiome analysis and establishment of machine learning models.
 - Functional pathway annotation and analysis.
 - Microbiome genome assembly and gene annotation.
- 3. Identification of microbial signatures for predicting therapeutic outcomes in patients with ulcerative colitis**
The Chinese University of Hong Kong
1/2023-01/2024
 - Sample and clinical data collection.
 - Microbiome analysis and establishment of machine learning model.
- 4. Development of multiplex droplet digital PCR for breast cancer subtype classification and vaginal microbiome classification**
Health Science Center, Shenzhen University

05/2018 - 05/2021

- Design of primers and probes for targeted RNA and DNA gene.
- Design and analysis of multiplex droplet digital PCR assay.
- RNA extraction from formalin fixed paraffin embedded (FFPE) tissues.
- DNA extraction from vaginal swabs.
- Analysis of microbial 16S sequencing data.

5. Development of rapid blood DNA extraction method and single nucleotide polymorphism genotyping

Huazhong University of Science and Technology Union Hospital (Nanshan Hospital)

09/2017 - 01/2019

- Establish and optimize rapid blood DNA extraction method.
- Design specific primers and probes for single nucleotide polymorphism of cytochrome CYP2C19 and methylenetetrahydrofolate reductase (MTHFR) C677T.

PATENTS

1. Methods, compositions, and kits useful for inflammatory bowel disease (63/689,864, 63/675,266)
2. Methods, compositions, and kits useful for ulcerative colitis (63/562,233)
3. Methods, compositions, and kits useful for Crohn's disease (63/562,232)
4. A Nucleic Acid Composition, Subtyping Kit and Using Method for Breast Cancer Subtyping (Patent Code: 201910234636.5)
5. Rapid DNA Extraction Method for Fluorescent PCR Detection and Method for Methylenetetrahydrofolate Reductase Gene Polymorphism Detection (Patent Code: 201810561497.2)

HONORS & AWARDS

- 04/2024 Silver medal at Geneva International Exhibition of Inventions 2024
- 02/2024 Digestive Disease Week (Conference) oral presentation
- 07/2021 Excellent Undergraduate
- 11/2019 National Scholarship
- 09/2019 First-class of Academic Scholarship
- 08/2019 National Undergraduate Biomedical Engineering Innovation Design Competition, **First prize**
- 05/2019 The 15th Challenge Cup Guangdong College Students Extracurricular Academic Science and Technology Work Contest, **Third prize**

SKILLS

1. Experimental skills:

- Design of primers and probe, operation and analysis of PCR and droplet digital PCR experiments
- DNA and RNA extraction, plasmid extraction, library preparation
- Enzyme-linked immunosorbent assay (ELISA) assay
- Cell and bacteria culture

2. Analysis skills:

- Microbiome metagenomic and 16S amplicon sequencing analysis
- Data processing and schematic diagrams using R Programming, SPSS, GraphPad Prism, Origin, et al.
- Basic operation of Linux

3. Languages:

Mandarin, English (IELTS 7), and Cantonese (Basic)

JOURNAL PUBLICATIONS

1. **Zheng J**, Sun Q, Zhang M, Liu C, Su Q, Zhang L, Xu Z, Lu W, Ching J, Tang W, Cheung CP, Hamilton AL, Wilson O'Brien AL, Wei SC, Bernstein CN, Rubin DT, Chang EB, Morrison M, Kamm MA, Chan FKL, Zhang J, Ng SC. Noninvasive, microbiome-based diagnosis of inflammatory bowel disease. (First author, **Nature Medicine**. 2024, doi: 10.1038/s41591-024-03280-4 IF: 58.82)
2. **Zheng J**, Sun Q, Zhang J, Ng SC. The role of gut microbiome in inflammatory bowel disease diagnosis and prognosis. (First author, **United European Gastroenterol Journal**, 2022, doi: 10.1002/ueg2.12338. IF: 5.8)
3. Su Q, Liu Q, Lau RI, Zhang J, Xu Z, Yeoh YK, Leung TWH, Tang W, Zhang L, Liang JQY, Yau YK, **Zheng J**, Liu C, Zhang M, Cheung CP, Ching JYL, Tun HM, Yu J, Chan FKL, Ng SC. Faecal microbiome-based machine learning for multi-class disease diagnosis. (**Nature Communication**, 2022, doi: 10.1038/s41467-022-34405-3. IF: 17.646)
4. Chen, W.*, **Zheng, J.***, Wu, C., Liu, S., Chen, Y., Liu, X., Du, J. and Wang, J., Breast Cancer Subtype Classification Using 4-Plex Droplet Digital PCR. (Co-first author, **Clinical Chemistry**, 2019, doi: 10.1373/clinchem.2019.302315. IF: 7.29)
5. Wang, J.*, **Zheng, J.***, Zhang, S., Du, J., Chen, Y., Liu, X., Zhang, H., Jiang, X. and Chen, W., High-throughput Blood Sample Preparation for Single Nucleotide Polymorphism Genotyping in Less Than 25 Min. (Co-first author, **Talanta**, 2019, doi: 10.1016/j.talanta.2018.08.051. IF: 5.76)

CONFERENCE PUBLICATIONS

1. **Zheng J**, Sun Q, Zhang M, Liu C, Su Q, Zhang L, Xu Z, Ching JYL, Tang W, Cheung CP, A. L. Hamilton, A. L. Wilson O'Brien, Tun HM, M. Morrison, M. A. Kamm, Chan FKL, Ng SC. Faecal microbiome as targeted non-invasive biomarkers for inflammatory bowel disease: a cross-population metagenomic analysis in six cohorts. (**Digestive Disease Week**, 2024, oral presentation)
2. Zhang J, **Zheng J**, Teh J, Kang S, A. L. Hamilton, A. L. Wilson O'Brien, Ching JYL, Sun Y, Miao Y, Sung JJY, Yu J, M. Morrison, M. A. Kamm, Ng SC. Metagenomic analysis of intra-household transmission patterns of the gut microbiome in Crohn's disease across populations. (**Digestive Disease Week**, 2024, oral presentation)
3. **Zheng J**, Sun Q, Zhang M, Liu C, Zhu W, Ching JYL, Hao F, Chan FKL, Ng SC. Impact of medication on gut microbiome in patients with ulcerative colitis and microbial biomarkers for predicting therapeutic outcomes. (**International Human Microbiome Consortium**, 2024, Poster presentation)
4. Zhang J, Zhu W, Sun Q, Zhang M, Liu C, Ching JYL, **Zheng J**, M. Morrison, M. A. Kamm, Chan FKL, Ng SC. Novel faecal microbiome signatures as non-invasive biomarkers for diagnosis of Crohn's disease and at-risk populations. (**Gastroenterology**, 2022, doi: 10.1016/S0016-5085(22)62606-4)