Huiqiao Zhou

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EDUCATION

Macau University of Science and Technology

BACHELOR OF FOOD AND NUTRITIONAL SCIENCES Sept 2022 - Jun 2026

- ***Main Courses:*** *Immunology and Microbiology, Biochemistry and Molecular Biology, Food Chemistry and Analysis, Nutrition, Human Development and Aging, Statistics*
- ***Experiments:*** *Anatomy and Physiology - Laboratory, Biochemistry and Molecular Biology - Laboratory, Analytical Chemistry - Laboratory, Food Chemistry and Analysis - Laboratory*

HONORS

2025

- **Provincial Bronze Award in the Higher Education Main Track of the Jiangxi Province College Students' Innovation Competition** (Project title: Pioneer in China's First Epitope-Targeted Identification for Accurate Diagnosis of Allergenic Components)

2024

- **Provincial Bronze Award in the Industrial Proposition Track of the Jiangxi Province College Students' Innovation Competition (**Project title: Smart Rural Health Management and Wellness Services via Internet of Things (IoT) and Big Data)

2023

- **Provincial Gold Award in the Industrial Proposition Track of the 9th Jiangxi Province "Internet +" College Students' Innovation and Entrepreneurship Competition (**Project title: Cloud Medical Hut–Primary Health Insurance Station under Smart Medical Platform)
- **National Silver Award in the China International College Students' Innovation Competition (**Project title: R&D Plan for China's First Low-Allergen Milk Powder Core Ingredient Whey Powder)

PUBLICATIONS

- **Zhou HQ**, Chen X, Li X. Food Allergenicity Evaluation Methods: Classification, Principle, and Applications. *Foods*. 2025 June; 14:1-21.
- Zhou YA#, Li NS#, Zhu YC, He ZK, Ouyang Y, Ling LX, Wu XD, **Zhou HQ**, Wang H, Xu XB, Fei X, He C, Dong YJ, Liu J, Lu NH, Zhu Y*, Hu Y*. Helicobacter pylori activates DOPEY1 to promote p53 degradation through the USP7/TRIP12 axis in gastric tumorigenesis. *Oncogene*. 2025 May; 44(18):1245-1258.
- Du RC#, Liu X#, Lai YK#, Hu YX, Deng H, **Zhou HQ**, Lu NH, Zhu Y, Hu Y*. Exploring the performance of ChatGPT on acute pancreatitis-related questions. *Journal of Translational Medicine*. 2024 Jun 1;22(1):527.
- Shi YY, **Zhou HQ**, Fu QH, Wang XY, Wu XB, Liu WJ, Gan D. Systemic inflammation index mediated the associations between Dietary intake for gut microbiota and risk of sarcopenia. *Nutrition & Metabolism*. Accepted.

RESEARCH EXPERIENCES

Study on the Relationship Between Dietary Intake for Gut Microbiota (DI-GM) and Sarcopenia — The Mediating Role of Inflammatory Markers

Main Researcher May 2025 - Aug 2025

- **Standardized Processing of Dietary Data:** Extracted dietary data from the National Health and Nutrition Examination Survey (NHANES) database, calculated food group and nutrient intake, providing foundational data for the calculation of the DI-GM.
- **DI-GM Calculation and Correlation Analysis:** Calculated participants' DI-GM based on food group intake data; applied logistic regression models to assess the association between DI-GM and risk of sarcopenia, with adjustment for confounding factors; utilized the restricted cubic spline analyses to explore the non-linear relationship between DI-GM and risk of sarcopenia and evaluated the robustness of the result through stratified analysis.
- **Mediation Effect Analysis of Inflammatory Markers:** constructed mediation effect analyses using R's mediation package, to explore the mediating role of inflammatory markers in the associations between DI-GM and risk of sarcopenia, elucidating the regulatory effect of inflammation and supporting the hypothesis that DI-GM influences muscle health through the gut microbiota-inflammation axis.
- **Skill Acquisition:** Proficient in extracting dietary data from NHANES and calculating the DI-GM; skilled in applying

logistic regression, restricted cubic spline analyses, and mediation effect analysis; familiar with sarcopenia diagnostic criteria and epidemiological study design principles.

- **Academic Output:** Contributed to the writing of an SCI paper, led the presentation of data analysis results and drafting of the method section; focused on explaining the mediation effect mechanism; collaborated with the team to optimize paper structure and logic. The paper is currently under revision.

Smart Rural Health Management and Wellness Services via IoT and Big Data

Solution and Implementation Plan Designer Jul 2024

- **Built the technical framework:** Proposed the complete architecture of the "Smart Health Big Data Platform", clarified the collection, cleaning, and standardization processes for scattered medical data (such as medical records, examination results, etc.), and laid the foundation for the application of data in diagnostic assistance and health management.
- **Developed the implementation plan:** Detailed the platform's implementation steps and core principles (security, scalability, etc.), systematically analyzed technical risks (e.g., data security) and market risks, and put forward targeted response measures to ensure the project's implementability.
- **Research tools and methods:** Utilized big data technologies (Hadoop, Spark) to process massive medical data, combined AI natural language processing technology to parse medical record texts, and used IoT technology to connect devices such as smart bracelets and mattresses for real-time collection of residents' health data; meanwhile, adopted system architecture design methods to ensure the platform's stability and flexibility.

The First Domestic Hypoallergenic Whey Powder via Independent Original Epitope-Directed Enzymatic Hydrolysis

Main Participant (College of Food Science and Technology, Nanchang University) Jun 2023 - Aug 2023

- **Project Background:** Addressing the gap in domestically developed hypoallergenic whey powder, this initiative uses proprietary epitope-directed enzymatic hydrolysis technology to break the monopoly on imported raw materials.
- **Technical and Experimental Work:** Reviewed milk protein allergen literature, screened IgE epitope localization and targeted enzymatic hydrolysis technologies to confirm the phage display and peptide scanning approach; conducted milk protein allergen epitope mapping (used patient serum-specific IgE for random peptide library selection, identified α-lactalbumin/β-lactoglobulin epitope sequences); optimized parameters via immunology and protein engineering theories.
- **Tool Application:** Proficient in ELISA readers (IgE binding validation), SDS-PAGE (peptide molecular weight analysis), HPLC (enzymatic product quantification); analyzed hundreds of datasets for reproducibility.
- **Achievements:** Pioneered world-leading epitope-directed enzymatic desensitization technology to develop China's first such whey powder; built the first domestic cow's milk allergy epitope database; the product solves nutrient deficiency issues for milk-allergic groups, especially infants.

Study on Healthy Dietary Patterns and Risk of Metabolic Dysfunction — Associated Fatty Liver Disease

Research Assistant (The First Affiliated Hospital of Nanchang University) May 2023 - Aug 2023

- **Dietary Data Collection and Quality Control:** Assisted in conducting dietary surveys, responsible for collecting participants' food type and consumption frequency data; evaluated and corrected dietary data inconsistencies and missing values; verified data accuracy and consistency via statistical software; supplemented follow-up interviews to ensure data reliability.
- **Data Analysis:** Used Stata to analyze participants' baseline characteristic differences based on dietary intake scores; contributed to multi-variable regression analysis, focusing on assessing the relationship between dietary patterns and metabolic disorders (with emphasis on fatty liver disease/MASLD).
- **Skills and Insights Gained:** Mastered efficient data cleaning techniques (handling missing values, outliers, duplicates) and data consistency assessment methods for quality control; enhanced Stata proficiency in epidemiological data analysis, including descriptive statistics and regression modeling; gained in-depth insights into dietary patterns' impact on MASLD and systematic understanding of epidemiological research methodologies.

INTERNSHIP

State Key Laboratory of Food Science and Resource Exploitation, College of Food Science and Technology, Nanchang University

Assistant Jul 2025 - Aug 2025

- **Prepared β-Lactoglobulin (BLG) antigen from milk:** Independently performed key steps including milk defatting, casein precipitation via isoelectric point, hollow fiber membrane ultrafiltration, and DEAE ion exchange

chromatography. High-purity BLG protein was verified by SDS-PAGE electrophoresis, and protein concentration was accurately determined using the BCA method, providing stable and reliable sample support for subsequent allergen research experiments.

- **Purified antibodies from sera of special populations:** Independently conducted antibody purification from sera of special populations, strictly controlled the purification process and quality to ensure antibody activity and purity met standards, and guaranteed the smooth progress of subsequent immunological experiments.
- **Key participation in BLG allergenicity evaluation:** Deeply involved in core work such as peptide epitope mapping, competitive ELISA experiments, and KU812 cell culture and toxicity testing; systematically learned mouse dissection techniques and experimental precautions, mastered the characteristics of different mouse strains, became familiar with breeding requirements for SPF-grade and barrier environments, strictly followed aseptic operation standards, and acquired skills in retro-orbital plexus blood collection and separation of organs/tissues such as mesenteric lymph nodes (MLN).
- **Experimental methods and technical routes:** Proficiency in mastering and applying complete technical processes including milk defatting, casein separation via isoelectric point, hollow fiber membrane ultrafiltration, standard protein purification, SDS-PAGE electrophoresis, BCA protein concentration determination, antibody purification, phage display technology, cELISA, and cell experiments; possessed the ability to independently design and execute experiments.
- **Research tool application:** Skilled in operating professional instruments (protein purification, electrophoresis-imaging, protein quantification, immunological analysis, cell culture systems) and general equipment (high-speed refrigerated centrifuge, etc.); familiar with key reagents/samples (DEAE-Sepharose Fast Flow, BCA kit, RPMI 1640 medium, β-lactoglobulin standards, etc.); proficient in microplate reader supporting software and GraphPad for data analysis and visualization.

Prince of Wales Hospital, The Chinese University of Hong Kong

Assistant (Alternative Splicing in Pancreatic Cancer Research) Jul 2024 - Aug 2024

- **Human Pancreatic Cancer Cell Culture:** Handled routine culture of human pancreatic cancer cells for experiments; independently performed cell thawing, regular cell medium changes, and cell passaging, ensuring consistent viability and quantity of cells required for research.
- **Western Blot Experiment Execution:** Took part in key steps of the experiment, including protein extraction and protein quantification; understood the principles and procedures of gel preparation, and mastered the overall experimental steps to keep the process standardized.
- **qPCR-Related Experimental Operations:** Conducted sample extraction and sample quality assessment to ensure the accuracy of subsequent experiments; assisted in preparing qPCR reaction systems, operated the instrument for sample loading, and set up instrument programs to assist in obtaining gene expression analysis data.

EXTRACURRICULAR ACTIVITIES

“Orange Heart for Elders” Volunteer Program

Volunteer (The First Affiliated Hospital of Nanchang University) Jun 2024 - Aug 2024

- Handled basic outpatient guidance tasks; focused on addressing elderly patients’ key challenges, such as difficulties with smart medical services and mobility issues; assisted seniors in operating intelligent registration machines and self-service payment terminals through step-by-step explanations, while verifying payment information; accompanied dozens of mobility-impaired elderly patients throughout processes including department transfers, examination appointments, and report printing, effectively reducing their time spent on medical procedures.