**Prof. CHEN Sheng**

1. Foodborne pathogen isolation from retail meat and seafood in Hong Kong

Objective: To understand the general process of isolation and identification of foodborne pathogens (Escherichia coli, Salmonella, Klebsiella pneumoniae, Vibrio and Staphylococcus aureus) from retail meat and seafood, including pork, beef, chicken and shrimp.

2. Bacterial isolation from the environment and antimicrobial resistance determination

Objective: To understand the process of bacterial isolation from the environment such as wastewater, soil and air, and study the basic technologies relating to bacterial antimicrobial resistance including antimicrobial susceptibility test, DNA extraction and bioinformatic analysis.

3. Virulence-related gene knockout in Klebsiella pneumoniae

Objective: To study the methods for gene knockout in bacteria, including vector design, PCR amplification of homologous sequences, recombinant plasmid construction, transformation and genotype identification.

4. Purification of the flagellar hook FlgE protein

Objective: To understand the methods for bacterial protein isolation and purification, including sample preparation, centrifugation, initial purification, chromatographic separation, elution and protein identification.

**Prof. Chiou Jiachi, Amber**

Selectivity of Bifidobacterium species towards polysaccharides from edible fungi and plant

Project summary:

Polysaccharides are non-digestible carbon sources that beneficially affect the host by preferably stimulating the growth and activity of beneficial bacteria. Bifidobacterium spp. is known to harbor immunomodulation activity and plays important roles to facilitate immune development of infants, as well as maintaining gut homeostasis of adults.

The student will work with human-derived Bifidobacterium species and selected polysaccharides from our preliminary data, examining the structural and functional changes of polysaccharides in cell models, as well as its effect on alteration of gut microbiota via in vitro fecal fermentation model.

**Prof. ZHU Yuyan**

High-Throughput Screening for Substances That Improve Glucose and Lipid Metabolism (高通量筛选提高糖脂代谢的物质)

**Prof. ZHAO Danyue, Daisy**

(1) Exploring the roles of hydrogen gas in bacterial metabolism of dietary polyphenols (wet lab + data analysis)

(2) Application of metabolomic techniques for the identification of nutritional and metabolic disease markers (mainly data analysis)

**Prof. GAN Renyou**

Biofortification of dietary phytochemicals from seed germination

**Prof. CHEN Xu**

The role of gut microbiota on the advanced atherosclerosis

**Dr. ZHONG Yuyue**

Bio-inspired structure color of biomacromolecules