

# Study of Chronic Inflammatory Diseases

## SPECIALTIES

We study chronic inflammatory diseases. The focus of our research in the past 10 years was on investigation of the virulence genes that transform human hosted commensal *Campylobacter* species into inflammatory bowel disease (IBD) causing enteric pathogens.

## SELECTED RECENT PROJECTS

- Identification and characterization of IBD associated *Campylobacter concisus* mobile elements and their virulence genes through bacterial genome analysis
- Examination of the impact of IBD associated virulent *C. concisus* strains on gastrointestinal epithelial barrier and the mucosal immune system
- Development of molecular methods for accurate diagnosis of IBD cases caused by virulent *C. concisus* strains.
- Development of strategies to treat and prevent IBD cases caused by virulent *C. concisus* strains

These projects will lead to accurate detection and proper treatment of IBD cases caused by virulent *C. concisus* strains, reducing conventional IBD treatment associated side effects and surgeries as well as IBD associated colorectal cancer.

## TRACK RECORD

The research publications from Dr Zhang can be found at

<https://research.unsw.edu.au/people/dr-li-zhang>

or Google Scholar under "UNSW Li Zhang"

## THE TOOLS OF OUR TRADE

We have specialties in identifying novel bacterial virulence genes through bacterial genome analysis. We have recently identified IBD associated *C. concisus* mobile elements and virulence genes.

We have established a *C. concisus* database in which the genomes and virulence genes of *C. concisus* strains were correlated with IBD phenotypes.

We used cell culture, small animals and *in vitro* organ culture models to examine the impact of bacterial species and their virulence factors on human gastrointestinal epithelial barrier and the mucosal system.

## COMPETITIVE ADVANTAGES OF YOUR TECHNOLOGIES

- The existing problems  
IBD is a group of life-long inflammatory diseases. Due to the unknown aetiology, the current treatments for IBD mainly target the patients rather than the causative agents. The long-term uses of the immune response inhibitory drugs in the IBD treatment are often associated with severe side effects and many patients require surgical interventions. Long-term inflammation in patients with IBD also increases the risk of colorectal cancer.
- The advantages of your technologies  
We have found molecular markers that can identify IBD cases caused by virulent *C. concisus* strains, which will lead to the development of specific diagnostic, preventive and therapeutic strategies in IBD management.

## RESEARCH TEAM

Dr Zhang's team has one research assistant, three PhD students, one Masters by research student and one Honours student.

We also collaborate with gastroenterologists and other research groups.