

Nan Gao Laboratory

Gao lab studies the interactions of intestinal microbiota with the host, and how these interactions are regulated by dietary components to shape the tissue physiology, influencing health and disease susceptibility. An ongoing project involves *Lactobacillus rhamnosus* GG (LGG), one of the most widely consumed probiotics. Although LGG's potential beneficial effects have been examined in many clinical trials worldwide, the mechanisms by which LGG modulates host physiology and health remain unclear. By using germ-free mice, the lab has isolated, through innovative multi-omics correlation approaches, two novel LGG-regulated dietary-dependent metabolic pathways. The lab is using 2-D and 3-D organoid cultures, and animal experiments to examine the contribution of these pathways to intestinal barrier function modulation. The Beckman Scholar will be exposed to state-of-the-art cell, molecular, and immunological techniques, such as confocal immunofluorescent microscopic assay, flow cytometry, and bioinformatic analysis. The Beckman Scholar will attend lab meetings and journal clubs and participate in experimentations supervised by senior graduate students and postdoctoral fellows. The Beckman Scholar will be intellectually and technically prepared for higher education programs in graduate and medical schools.