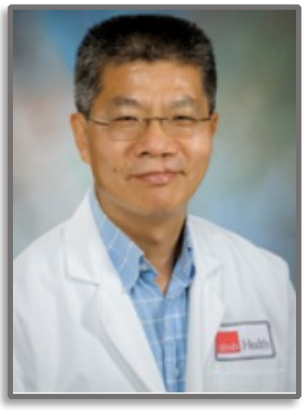

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Trends in Microbiota Regulation of Immunity: What our Another Half is Doing?

The host and microbiota have evolved mechanisms for coexistence over millions of years. Accumulating evidence indicates that a dynamic mutualism between the host and the commensal microbiota has important implications for health, and microbial colonization contributes to the maintenance of intestinal immune homeostasis. However, alterations in communication between the mucosal immune system and gut microbial communities have been implicated as the core defect that leads to development of chronic intestinal inflammation and cancer as well as other diseases, such as diabetes, obesity etc. Dr. Yingzi Cong's basic research programs focus on investigating host immune system, microbiome interaction in the intestines, pathogenesis of inflammatory bowel disease, and development of mucosal vaccines, which are based on the analysis of unique murine models of inflammatory bowel disease using a battery of reagents that have been developed recently. A number of research projects are underway in his laboratory and these NIH funded studies involve a number of significant collaborations both at UTMB as well as with other Universities and Research Institutes. Specifically, individual projects include:

1. The role of T cells reactive to commensal bacterial antigens in mucosal immunity and pathogenesis of IBD.
2. Gut microbiome and its metabolites regulation of host immune responses and experimental colitis.
3. microRNA regulation of host response to commensal bacteria and pathogenesis of IBD.
4. Regulation of intestinal IgA response to microbiota and pathogens
5. Development of mucosal vaccines

Abstract: The intestinal mucosa establishes state of hypo-responsiveness against commensal bacteria and of active readiness against pathogens. Despite enormous challenges by the microbiota, the intestine lives in harmony with it, in part due to interactions of the microbiota with the host to maintain intestinal homeostasis. Multiple

host mechanisms have evolved to regulate this relationship, including both innate and adaptive immunity. Host regulates the microbiota, and gut bacteria, in turn, adapt to host by altering their gene expression patterns and immune responses. Different gut bacteria have different roles in regulation of host immune responses. Some bacteria preferably promote T effector cells while the others preferably promote Treg cells in the intestines. It has also been emerging that gut bacterial metabolites profoundly affect intestinal mucosal immune responses. I will present data from our current research projects on gut microbiota regulation of host immune responses at mucosal surface.