Regulation of chronic inflammation

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Employing models of microbial colonization, pathogen infection, chronic inflammation and tissue repair, research in the Artis lab is examining how mammalian host genetics and signals derived from the environment and the microbiota influence innate and adaptive immune cell responses at the body's barrier surfaces. We are employing gnotobiotic mice to examine the influence of defined beneficial microbial communities on intestinal and peripheral immune cell development, function and influence on tissue homeostasis. Our recent findings indicate that beneficial microbes have a significant regulatory influence on lymphocyte, innate lymphoid cell and granulocyte function associated with susceptibility to cancer and multiple infectious, inflammatory and metabolic disease processes. We have also developed a number of translational immunology projects, including analysis of tissue samples from patients with diseases of the barrier surfaces including atopic dermatitis, food allergy, obesity and IBD. It is hoped that the results of these basic and translational studies will advance understanding of the pathophysiology of multiple diseases associated with chronic inflammation, including asthma, allergy, inflammatory bowel disease, obesity and cancer and provide a framework to test new therapeutic pathways to prevent and treat these diseases.