Using molecular tools to measure levels of bacterium in the intestinal tract

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Presentation Description:

The bacterium Akkermansia muciniphila plays an important role at suppressing the immune system following organ transplantation. Using quantitative PCR on mice faeces, we were able to determine relative amounts of A. muciniphila compared to other bacteria.

Abstract:

The gut microbiota is a complex community of bacteria, viruses and fungi that inhabit the intestinal tract of mammals. It plays an important role in human health and disease but the contribution of each individual bacterial species to different diseases/conditions is still an area of active research. One species in particular, Akkermansia muciniphila, is a mucous-digesting bacterium and has been implicated in diminishing the impact of several diseases, including obesity. In preclinical mouse models of rejection, recent progress in the Choy lab has suggested that A muciniphila may play a role in mitigating the infiltration of immune cells that causes organ transplant rejection. To study this further, we are currently developing an assay to quantify the amount of A. muciniphila in fecal samples using quantitative polymerase chain reaction (qPCR). In addition, histological stains of the mucin (precursor to mucous) layer of the colon are employed to examine potential functional outcomes of the absence A. muciniphila in the gut. The impact of this research could help improve the lives of transplant recipients by developing a better understanding of the crosstalk between the microbiome and the immune system.