

Diet and Chronic Disease: mechanistic studies on the impact of dietary protein on gut barrier function and the microbiota.

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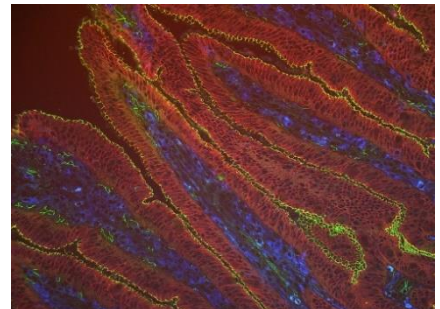
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Project Description: The gut microbiota is increasingly being linked to various chronic diseases including cardiovascular and liver disease. Currently, recommendations are to increase dietary protein, but we do not yet know what effect this will have on long term health. Some dietary protein is undigested and ends up in the colon where it is utilized by some gut bacteria and this can skew the microbiota. This altered microbiota interacts with host immunity and metabolism differently to one which is not fed by excess protein in the diet.

We have previously shown that increased dietary protein could be an important factor in the development of 'leaky gut' syndrome where the intestinal barrier does not work as it should. This means that various molecules from food and bacteria cross over into the blood stream and generate low-level immune responses. It is this low-grade inflammation which is known to contribute to later chronic disease.

We also know that female and male guts, immunity, metabolism and microbiotas are very different which suggests they could respond very differently to excess dietary protein. This has important implications when it comes to the development of interventions to reduce leaky gut and therefore later chronic disease.

This PhD will explore this in more detail using a piglet model, and determine the mechanisms involved using cutting-edge microbiota composition, metabolic profiling and immunological technologies.



References:

<https://www.frontiersin.org/articles/10.3389/fimmu.2019.02705/full>