P45 – **Linking diet gut immunity and microbiota in the pathogenesis of Type 1 Diabetes**

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Background: Autoimmune diseases are dramatically increased in the last 20 years (Wang et al., 2015). They are characterized by the loss of tolerance to self-antigens and consequently the immune system attack a wide range of different tissues and organs (Phillips et al., 2017). Recent data indicate that gut immunity and the mechanisms that regulate effector and regulatory T cell differentiation in the intestine are instrumental to maintain immune tolerance towards self-tissues and to prevent extra-intestinal autoimmune diseases such as Type 1 Diabetes (T1D) (Bluestone et al., 2015). This observations led to the hypothesis that environmental factors such as diet and microbiota modifications affect the pathogenesis of autoimmune T1D by altering immunity at the intestinal level.

Methodology: To test this hypothesis we analyzed gut mucosal immunity in tissue samples isolated from the small intestine of T1D patients and healthy controls (HC) by phenotypical and functional analysis of gut mucosal immune cell subsets. In parallel, by using 16S rRNA sequencing, we analysed the gut microbiota strains isolated from the small intestine (duodenum) of T1D patients and HC trough brushing of the mucosal tissue.

Results: We observed a statistically significant increase of Th22cells and CD11c+ CD1c+CX3CR1+ dendritic cells (DCs) in the gut mucosa of T1D patients. By using 16S rRNA sequencing we have also detected alterations of the gut microbiota in T1D patients. Specifically, we found a decrease in the relative abundance of the *Fusobacterium* strain in T1D patients. We are now testing in vitro the mechanism through which the *Fusobacterium* strain modulate adaptive and T cell immunity in the intestine (T cells and DCs).

Conclusions / Implications for practice: Our results could pave the way to new therapeutic approaches aimed at treating/preventing T1D by modulating the gut microbiota composition through probiotic administration and/or dietary approaches.

References
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