ImmunoTools *special* Award 2016

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Role of short chain fatty acids and their receptor (GPR43) in the immune response to anaerobic bacteria

Short chain fatty acids (SCFAs) (acetic, propionic and butyric acids) are fermentation products released by commensal bacteria. Recently, it has been shown that these bacterial metabolites can act through different molecular mechanisms including G-protein coupled receptors (GPCRs) such as GPR41 (FFAR3), GPR43 (FFAR2) and GPR109a (HCA1) and inhibition of a class of enzymes called histone deacetylases.

The SCFAs modulate several important aspects of immune cells function including neutrophils migration, neutrophils and macrophage production of inflammatory mediators, dendritic cells differentiation and their ability to uptake and present antigens and lymphocytes proliferation, differentiation and their effector functions. These molecules are particularlly important in the intestinal tract, where they present a crutial role in the maintenance of homeostasis. Changes in their concentrations, which may be secondary to dysbiosis or the result of the contribution of infectious agents, have been described in infectious conditions including periondontitis and infections that affect the intestinal and genitourinary tracts and in some cases have been associated with the severity or intensity of these diseases.

In this context, a question that remains to be addressed is whether changes in thse metabolites concentrations interfere with the immune response and contribute to the initiation and development of the diseases or are merely a consequence of the changes in microbial components that accompany these pathological conditions. In this regard, the aim of our team is to investigate the effects of SCFAs in the immune response to bacteria. For that, we use different *in vivo* and *in vitro* approaches including studies in isolated neutrophils and macrophages and in animal models of periodontitis, colitis caused by *C.difficile* and subcutaneous abscess. We will use ImmunoTools antibodies for immunophenotyping of different cell types and growth

factor for generation and activation of macrophages and neutrophils obtained from bone marrow. We also plan to use ImmunoTools reagents for evaluation of lymphocytes polarization *in vitro* and apoptosis of different cell types.

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includes 25 reagents

FITC - conjugated anti-mouse CD4, CD8a, Annexin-V

PE - conjugated anti-mouse CD3e, CD11b, CD80, Gr-1, a/b TCR, g/d TCR

APC - conjugated anti-mouse CD4, CD8a, CD11a, CD11b, CD62L, Gr-1, Annexin-V

recombinant mouse cytokines: rm GRO-a / CXCL1, rm IFNgamma, rm IL-2, rm IL-4, rm IL-6, rm IL-10, rm M-CSF, rm TNFa, rm VEGF-A

DETAILS more AWARDS