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Glycans in dendritic cells function and cancer progression

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Altered protein glycosylation is a universal feature of cancer cells, and specific glycan structures influence tumor progression by increasing tumour tolerogenic immune responses and metastatic capacity [1].

Our group works on the role of glycosylation -a posttranslational modification of proteins - in the modulation of immune responses to pathogens and cancer. Virtually every cell surface protein is glycosylated and a considerable number of proteins that regulate immune cell development and function bind glycans (i.e. are lectins). Thus, glycan modifications can change the way the immune system recognizes pathogens, cancer cells, and also "self" antigens. We have been devoted to dendritic cells (DCs), one of the most important cells of the immune system by orchestrating immune responses and being a key link between innate and adaptive immunity. Our group has shown that sialic acid-containing glycans influence differentiation, maturation and the capacity of DCs to migrate and capture antigens and to prime T lymphocytes to respond to such agents. The main goal of their research concerns the exploration of DC-based immunotherapy, and to learn how to fine tune the immune response, focused on the modifications of specific glycosidic structures in cells. This could result in the establishment of enhanced vaccines against unique signatures in tumour cells and bacteria.

It is an exciting time in Glycoimmunology– there are so many open questions and so many potential applications of new knowledge to immune host-pathogen defence and tumour immunology!

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