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Sommario/riassunto	Carbohydrates are extremely abundant bio-molecules; they are on all mammalian cell surfaces as well as on bacterial cell surfaces. In mammals most secreted proteins are glycosylated, with the glycan component comprising a significant amount by mass of the glycoprotein. Although, many years ago carbohydrate-protein recognition events were demonstrated as involved in invertebrate self-non self recognition, the contribution of carbohydrate-protein binding events to the mechanisms of the mammalian immune response was not embraced with the same enthusiasm. Adaptive immunity and the contribution of antibodies, T cells and T-lymphocyte sub-sets and protein antigen presentation dominated immunological theory. Unlike protein structures, carbohydrate structures are not template driven yet the numerous enzymes involved in carbohydrate biosynthesis and modification are encoded by a major component of the genome, and the expression of these enzymes is tightly regulated. As a consequence carbohydrate structures are also regulated, with different structures appearing according to the stage of cell differentiation and according to the age or health of the individual. The advent of technologies that have allowed carbohydrate structures and carbohydrate-protein binding events to be more easily interrogated has resulted in these types of interactions taking their place in modern immunology. We now

know that glycans and their ligands (or lectins) are involved in numerous immunological pathways of both the innate and adaptive systems. However, it is clear that our understanding is still in its infancy, as more and more examples where carbohydrate structures contribute to aspects of the immune response are being recognised. The goal of this research topic is to explore the variety of roles undertaken by glycans and lectins in all aspects of the immune response. The particular focus is how the interactions of glycans with their ligands contribute to the mechanism of immune responses.