Introduction

Description

The immune system is commonly conceived as the set of cells and molecules which participate in a concerted and tuned response to foreign substances, through a process called the immune response. These foreign substances encompass microbes as well as macromolecules (e.g., proteins, polysaccharides) and small chemicals, which are perceived through molecular recognition events as â??non-self.â?•
The entities which are subject to recognition processes by the immune systemâ??s cell repertoire are called antigens (Ags), while the antigenâ??s domain which is recognized by immune systemâ??s surface receptors and molecules is referred as an epitope (or antigenic determinant). Antigen recognition events constitutively occur in the context of the immune system, whose constant surveillance ensures proficient discrimination between â??selfâ?• and â??non-selfâ?• entities. Antigens that succeed in stimulating an immune response are indicated as immunogens. Under certain circumstances also â??selfâ?• antigens can act as immunogens, leading to so-called autoimmune responses.1 [Abbas, A. K., Lichtman, A. H., & Pillai, S. (2015)]
Immunology studies the events triggered by the encounter of self- and non-self-antigens with cells and proteins of the immuno-repertoire, investigating their physiological and pathological consequences. More than 200 years after the first Jennerâ??s successful vaccination, immunology achieved outstanding results against common infectious diseases, and strongly improved the understanding of the human immune system thanks to techniques involving cell culture, immunochemistry, x-ray crystallography, recombinant DNA and genetically altered animals.2â??5 [Inman, F. P. (1972) ; PomÃ©s, A. et al. (2017) ; Lee, H.-C., Butler, M., & Wu, S.-C. (2012) ; Hein, W. R., & Griebel, P. J. (2003)] Immunity mechanisms and its principal â??actorsâ?• will be next described.