

Is Immunology Growing Rapidly in Scientific Field?

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Description

Immunology is the branch of biomedical concerned with the structure and function of the immune system. Immunologists study how the immune system defends the body against attack from micro-organism and parasites how it discriminates between self and non-self how it deals with foreign molecules and how it recognizes and deals with neoplastic and virally transformed cells, as well as transplanted organs, cells and proteins. They are also concerned with what happens when the immune system acts against self. The complexity of immunology can be quite daunting. Traditionally in teaching immunology is broken down into a description of its cellular and human components then an explanation of the innate and adaptive immune responses, before moving on to more explanation of the innate and the adaptive immune responses, before moving on to more complex subjects including immune regulation, allergy and hypersensitivity, autoimmunity, malignancy and immune-deficiency. Immunology is rapidly growing field with many new and exciting discoveries made tear. These enhance our understandings of health and indicate how subtle changes in the immune systems have profound effects.

In the diagnostics arena immunologically procedures are the basis of many haematological microbiologically, biochemical and histopathological tests and there is a lot of cross-over between immunology and the other pathology disciplines active substances that they produce are important to all pathologists. The unique specifically of antibodies for their target antigens is the basis of many tests. The identification of cell surface proteins and the production of specific antibodies against them have allowed the rapid identification, investigations and enumeration of lymphocyte sub-population and the derivation of the clusters of diffraction classification of cells. The CD antigens are used in defining and identifying leukaemia's and lymphomas. Antigen capture by antibody is fundamental to diverse techniques, including double diffusion

gel based assays enzyme and radio immunoassays, flow cytometer out also into other fields such as Nano engineering. Inflammation is a component of almost all immunological reactions. Interaction of an antibody with its specific antigen activities complement resulting in increased vascular permeability and mobilization of cells, resulting in an inflammatory infiltrate at the site of reaction. This interplay between complement antibody and inflammatory phagocytic cells is important for defence against infection. A deficiency in one of these components predisposes the individual to repeated infections and disease.

On first exposure to antigen, the individual becomes immunologically primed and subsequent contact with that antigen leads to secondary boosting of the immune response. This immunological priming and secondary boosting leads to the production of antibodies and effector cells. However in some cases, the memory reaction may be excessive, causing tissue damage. The most common example is allergy. The immune system has evolved to recognize myriad foreign antigens and inevitable doing so some lymphocytes are produced that react against the body own constituents causing autoimmunity. The antisera system used in laboratory tests are produced by immunizing animals with the relevant purified antigen. This results in a polyclonal antibody response from different B-cell clones reacting to various determinants of the antigen. With the advent of hybridism technology, monoclonal antibodies are increasingly being used. Monoclonal antibodies react with only epitope on an antigen.

Conclusion

They are derived from a single cell hybridized with a non-secreting myeloma cell to produce an immortalized cell line which can be cultured to produce cast qualities of monoclonal antibodies depending upon the assay technology to be used.