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Assignment

1 discuss the genetic basis of antibody diversity

1. discuss the immune response with respect to turmor and organ transplantation

1 **Diversity**

* 1. **The human immune system is capable of producing a vast number of different antibody molecules, each with its own antigenic specificity**
     1. **This vast diversity is possible because immunoglobulins genes undergo an unusual type of interaction**
        1. **Embryonic DNA contains a great many genes for the variable regions of the H and L chains**
        2. **A process of somatic recombination (DNA rearrangement and deletion), followed by RNA splicing, results in a large variety of B cell lines that encode different H chains and L chains**
        3. **A fairly high rate of somatic mutation in k , l , and H chains further adds to the diversity**

**2 Chromosomes, exons, introns, and gene rearrangements**

* 1. **H chains and k and l chains are each encoded on separate chromosomes**
     1. **In the human these are as follows**
        1. **All H chain immunoglobulin classes are coded on chromosome 14**
        2. **The l chain gene complex is on chromosome 22**

**2**

Discuss the immune response with respect to tumor and organ transplantationThe immune response to tumors is complex. Cells of the immune system can inhibit tumor growth and progression through the recognition and rejection of malignant cells, a process referred to asimmunoediting. Yet, immune responses can also promote tumor cell growth, survival, and angiogenesis through the induction of oncogenic inflammation. Immunodeficiency can predispose to the development of spontaneous and virally induced cancer, and established tumors often generate immunosuppressive microenvironments that can block productive antitumor immunity, serving as a substantial barrier to effective immune therapy. Through a deeper understanding of the complicated relationship between tumors and the immune system, tumor immunology strives to harness the immune system to generate protective antitumor responses

The immune responses involved in transplantation are governed by the laws that are based on the genetics of the donor and recipient The **immune response** is usually triggered by the presence of the donor's own unique set of HLA proteins, which the recipient's **immune system** will identify as foreign.