Bch 314

* 7a: Discuss the genetic basis of antibody diversity? Much of the antibody diversity can be explained on a genetic basis. The heavy chain variable region is coded for by three separate genes: V, D and J and the light chain by two genes are on chromosome 14, k- light chain on chromosome 2, and ,x- light chain on chromosome 22. Three theories have been put forth to explain antibody diversity which allows B cells to generate an antibody repertoire capable of reacting with a wide range of antigens. 1) the germline theory postulates that separation genes exist for each antibody molecule and that the antibody repertoire is largely inherited. 2) the deoxyribonucleic acid (DNA) rearrangement theory proposes that a limited number of genes undergo genetic rearrangements to create antibody populations. 3) The somatic mutation theory proposes that a limited number of inherited genes undergo mutations to general antibody repertoire..
* 1b. Tumor: the 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 as Immunoediting. Yet, immune response can also promote tumor cell growth, survival and angiogenesis through the induction of oncogenic inflammation. TRANSPLANTATION: this is the process of moving cells, tissues or organs from one site to another, either within the same person or between a donor and a recipient. If an organ system fails or becomes damaged as a consequence of disease or injury, it can be replaced with a healthy organ or tissue from a donor. Organ transportation is a major operation and is only offered when all other treatment options have failed. Consequently, it is often a life saving intervention. the immune system plays a critical role in transplantation. The complex mechanism of immunity, which under normal circumstances work to identify foreign microbes and direct the immune system to destroy them, pose a significant barrier to successful transportation. The intensity of the immune response against the organ or tissue also commonly referred to as the Graft, will depend on the genetic disparity between the donor and recipient.