**Classes of Antibodies**

IgG  IgM  IgA  IgD  IgE

**Classes of Antibodies**

**IgG**
1. Classical antibody --> monomer --> bivalent --> Found in blood & lymph
2. Crosses placenta --> protects fetus and newborn
3. 80-85% total serum antibody (vast majority)
4. Enhances phagocytosis, neutralizes toxins, inactivates virus, kills bacteria
5. Responds after (later than) IgM
6. Greatly increased in anamnestic response

**IgM (Ig Macro)**
1. Pentamer --> 10 combining sites --> found in blood & lymph
2. Adult levels reached by 9 months of age (first class to reach adult levels)
3. 5-10% total serum antibody
4. Agglutinates, promotes lysis and phagocytosis of microorganism --> high bactericidal action
5. First found in blood stream after infection
6. Relatively short lived (half life = 5 days) when compared to IgG (half life = 25 days)

**IgA**
1. Serum monomer and secretory dimer --> 15% total serum antibody
2. Found in secretions of mucus and mucous membranes --> also found in milk and saliva
3. Less specific --> many kinds of foreign objects
4. Localized protection of mucosal surfaces

**IgD**
1. Found on β cell surfaces and in blood and lymph --> monomer
2. 0.2% total serum antibody
3. May activate β cells
4. IgD may react with haptens (penicillin) and serum proteins

**IgE**
1. Monomer --> bound to mast cells and basophils
2. 0.002% total serum antibody
3. Allergic reactions and lysis of protozoan parasites
4. Antigen + IgE (on mast cells) causes release of histamine --> this results in inflammatory response
T lymphocytes

**T<sub>H</sub> (T helper cells)**
1. Produce lymphokines (cytokines)
   a. IL-2
      --> stimulates other T helper cells to grow and divide (IL = interleukin)
      -> T Killer cells to grow and divide
   b. BCGF
   c. BCDF
   d. Gamma interferon
      --> helps other T helper cells to grow and divide - activates killer T cells
      --> helps β cells produce antibodies
      --> keeps macrophages at infection site

**T<sub>K</sub> (Killer T cells) (T<sub>C</sub> or cytotoxic cells)**
1. Involved in graft rejection
2. Breaks down membranes of foreign cells
3. Activated by foreign tissue and interferon
4. Also produce lymphokines

**T<sub>S</sub> (Suppressor cells)**
1. Prevents against hypersensitivity and allergic reactions
2. Suppresses all other T cells and β cells
3. Newborns have a lot to minimize reactions to many new antigens

**T<sub>D</sub> (Delayed hypersensitivity)**
1. Cell-mediated immunity was originally named after T<sub>D</sub> activity
2. Associated with allergic reaction, rejection of transplantation tissues, cancer diseases and with inflammatory response
3. Activate macrophages by producing 3 lymphokines:
   a. MCF
      --> Macrophage Chemotactic Factor
   b. MAF
      --> Macrophage Activating Factor
   c. MIF
      --> Migration Inhibiting Factor

**T<sub>M</sub> (Memory cells)**
1. Remember original contagion