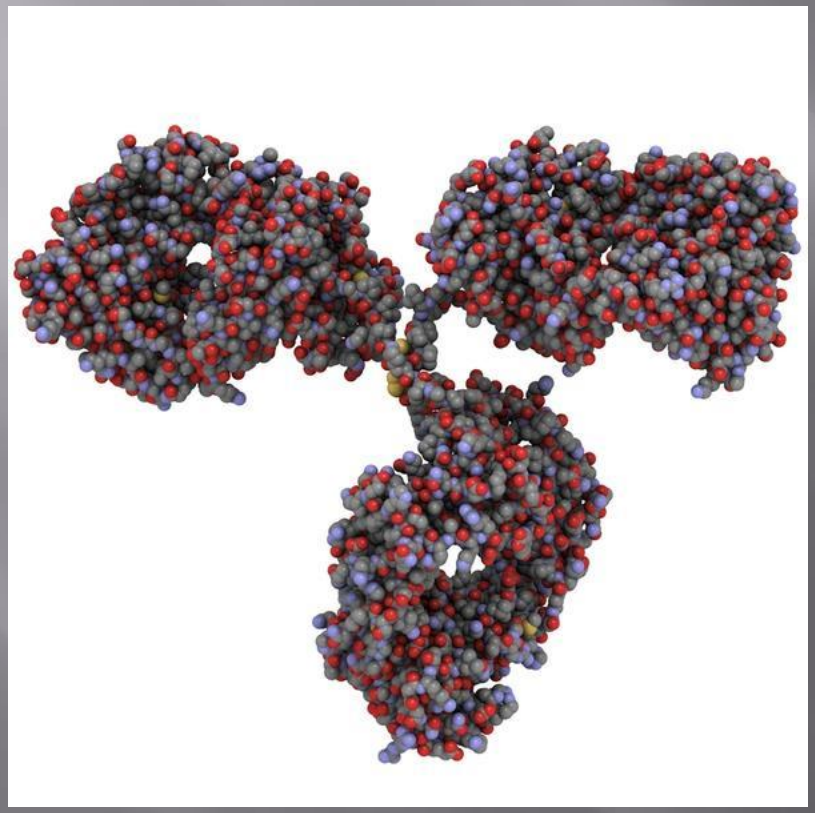
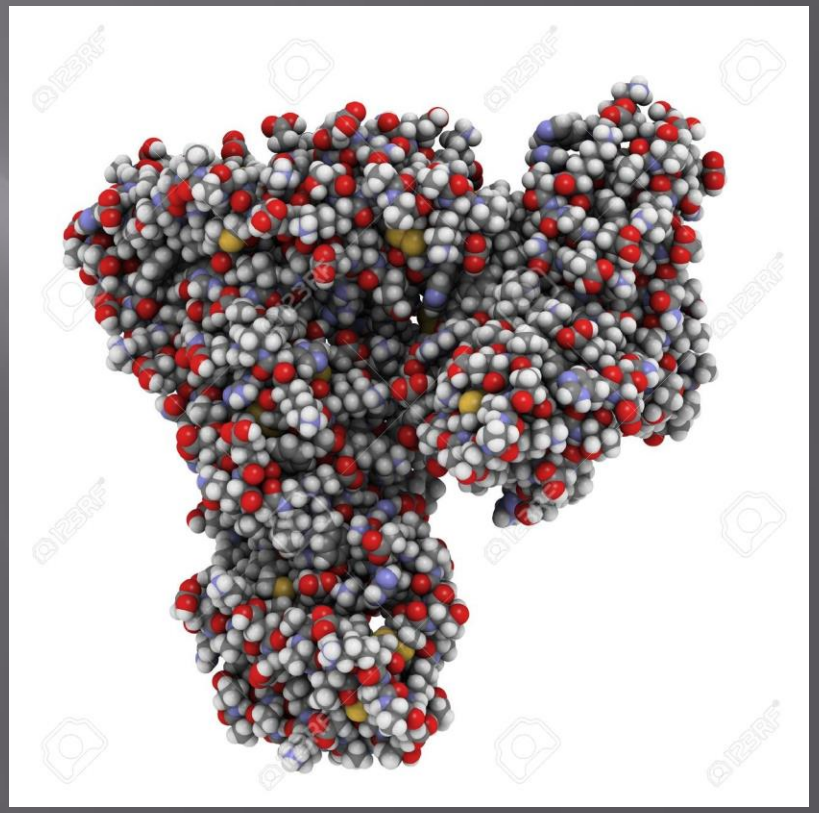
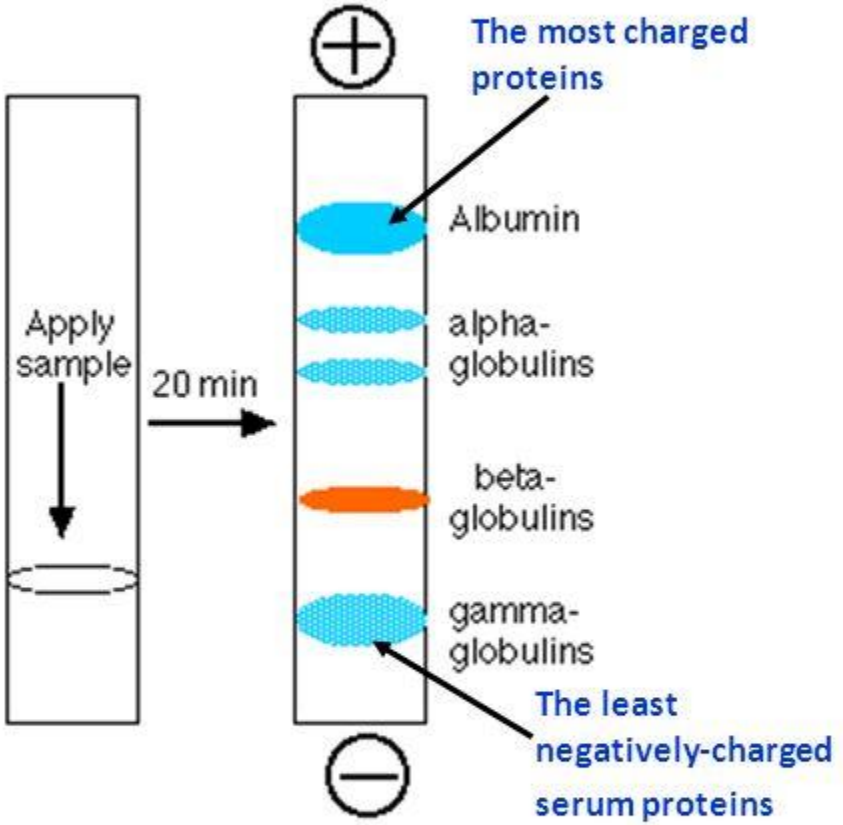
# TOTAL PLASMA PROTEIN





# PLASMA PROTEINS

- **7-9% of the plasma,** 65-90 g/L
- Are synthesized by the **liver** (**with the exception of γ-globulins**)
- **Fractions**
  - **Albumins – plasma concentration – 45 g/L**
  - **Globulins (α, β, γ) – 27 g/L**
  - **Fibrinogen – 3 g/L**
- Albumins have the smallest molecular mass whereas fibrinogen is the largest

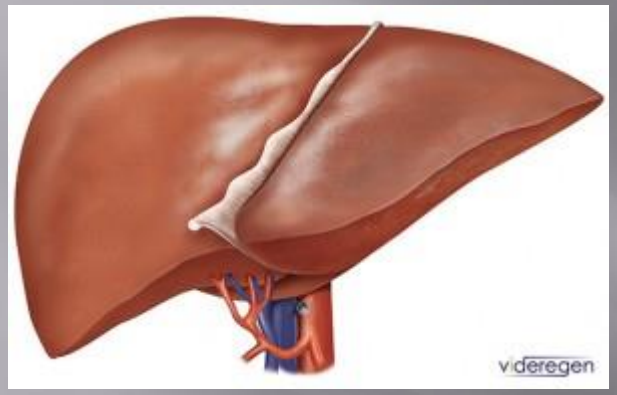


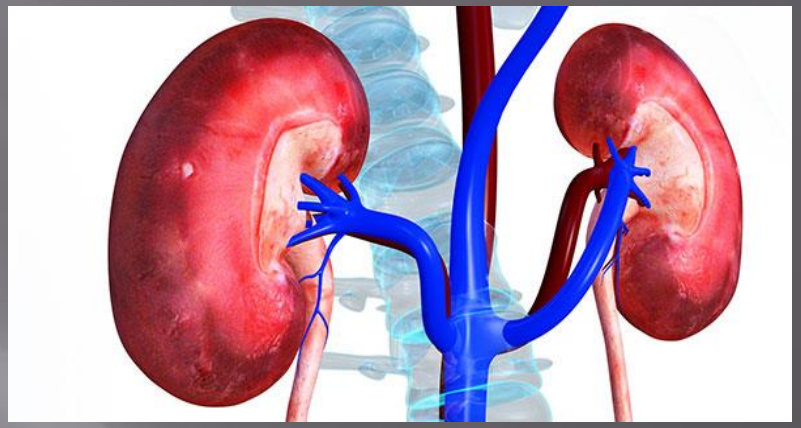
Separating serum proteins by electrophoresis

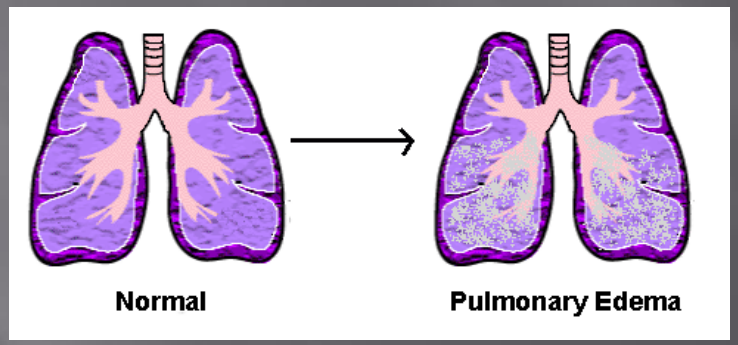
# Plasma Proteins

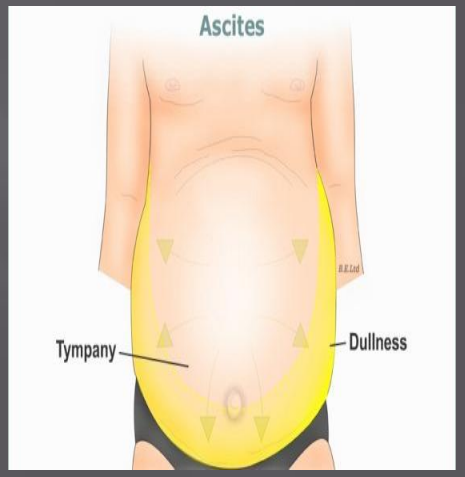
- Primary functions of albumin:
  - help maintain the osmotic transmural pressure differential that ensures proper mass exchange between blood and interstitial fluid at the capillary level.
  - serve as a transport carrier molecule for several hormones and other small biochemical constituents (such as some metal ions).
- Primary functions of the globulins:
  - act as transport carrier molecules for large biochemical substances, such as fats and certain carbohydrates and heavy metals.
  - work together with leukocytes in the body's immune system.
- Primary function of fibrinogen:
  - work with thrombocytes in the formation of a blood clot—a process also aided by one of the most abundant of the lesser proteins, prothrombin.

# Causes of albumin test:



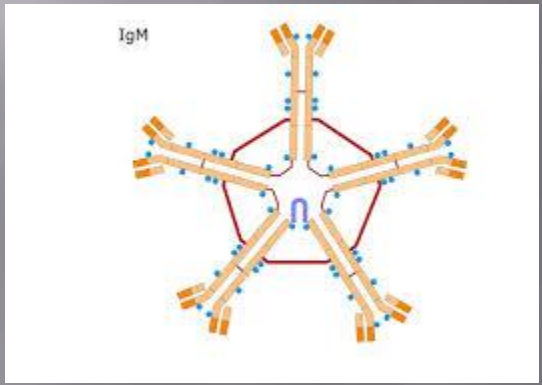



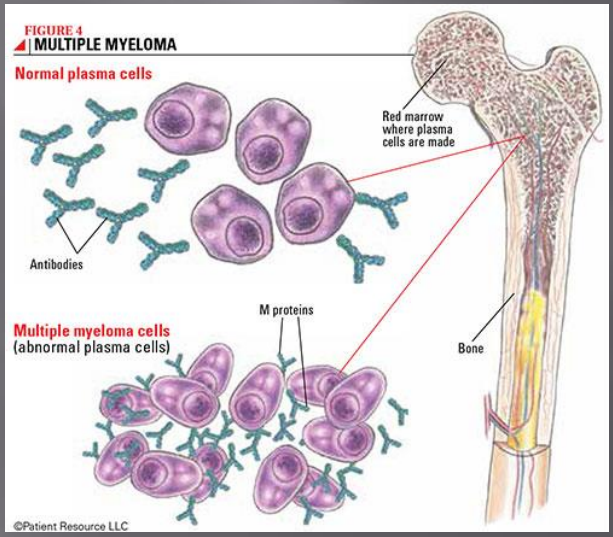


# *Causes of globulin test:*

- **Blood diseases : multiple myeloma, macroglobulinemia**
- **Determine chances of developing an infection**




# High values

- An increase in the percentage of albumin can indicate a severe loss of water from the bloodstream (dehydration).
- An increase in the percentage of alpha-1 globulin may be caused bysystemic lupus erythematosus, rheumatoid arthritis, pregnancy, infection, or cancer.
- An increase in the percentage of alpha-2 globulin may be caused by systemic lupus erythematosus, rheumatoid arthritis, cancer, kidney disease, heart attack, or a long-term (chronic) infection (such as tuberculosis).
- An increase in the percentage of beta globulin may be caused by liver disease (such as cirrhosis), anemia, or an increased lipid level.
- An increase in the percentage of gamma globulin may be caused by a chronic infection, anautoimmune disease, some types of leukemia, multiple myeloma, Waldenstrom's macroglobulinemia, liver disease, or Hodgkin's disease. An increase can also occur normally with aging (a condition called monoclonal gammopathy of unknown significance).

# *What are causes of hypoalbuminemia?*

- **Malnutrition**
- **Impaired protein digestion**
- **Sever burns**
- **Kidney disease**
- **Liver disease**
- **Autoimmune disease ex: SLE**
- **GI malabsorption syndroms ex: sprue**
- **Uncontrolled DM**
- **Hyperthyroidism**
- **HF**

# When should the test done?


The End