Hemoglobin

What is Hemoglobin?

- **Definition:** Hemoglobin (Hb) is a globular, tetrameric protein found in red blood cells (RBCs), responsible for transporting oxygen from the lungs to body tissues and carrying some carbon dioxide back to the lungs.
- **Structure:** Composed of 4 subunits — each with a globin chain (protein) and a heme group containing an iron atom.
- **Genes:** Human Hb is coded by HBA1, HBA2 (alpha chains), and HBB (beta chain) genes.
- **Location:** Mainly in RBCs (~90-95% of RBC dry weight), also found in some other cells like macrophages and neurons.
- **Types of Hemoglobin:**
    - **Hemoglobin A (HbA):** 2 alpha + 2 beta chains; 95–98% Percentage in Adults; Most common adult form.
    - **Hemoglobin A2 (HbA2):** 2 alpha + 2 delta chains; 2–3% Percentage in Adults; Minor adult form.
    - **Hemoglobin F (HbF):** 2 alpha + 2 gamma chains; <1% in adults; main fetal Hb; Higher O2 affinity; allows oxygen transfer from mother to fetus.