Connective Tissue Part 1

- Connective tissue is one of the four main types of tissue in the body, the other three are:
  - Epithelial
  - Muscle
  - Nervous

- Connective tissue is the most widely abundant and distributed of the four main tissues in the body, it serves some major functions such as:
  - Binding and support
  - Protection
  - Insulation
  - Storage of reserve fuel
  - Transporting substances

- We can further classify connective tissue into four main classes:
  - Connective tissue proper
  - Cartilage
  - Bone
  - Blood (will be done by another lecturer)

- All connective tissue has common characteristics:
  - They all have a common origin stemming from the embryo
    - They all arise from mesenchymal tissue
  - They all have varying degrees of vascularity
    - Cartilage is avascular
    - Bone is highly vascularised
  - The cells are suspended in an extracellular matrix
    - This is a protein-sugar mesh
    - The matrix supports cells so they can bear weight, withstand tension and endure abuse

- The exact composition of connective tissue varies considerably, however, there are 3 components to the structure of connective tissue:
  - Ground substance
    - This is an unstructured gel-like material that fills the space between cells
      - This is a medium by which solutes diffuse between the capillaries and cells
    - There are a number of components to the ground substance:
      - Interstitial fluid
      - Cell adhesion proteins
      - Proteoglycans
      - Water, in varying amounts, affecting viscosity
  - Fibres
    - Collagen
      - These are the strongest and most abundant fibres
      - They provide toughness and tensile strength
      - The main types are 1, 2, 3, 4, 5
    - Elastic fibres
      - These are networks of long, thin elastin fibres that allow for stretch and recoil
    - Reticular fibres
      - These are short, branched, collagenous (not collagen) fibres