

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**

Extracellular matrix

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