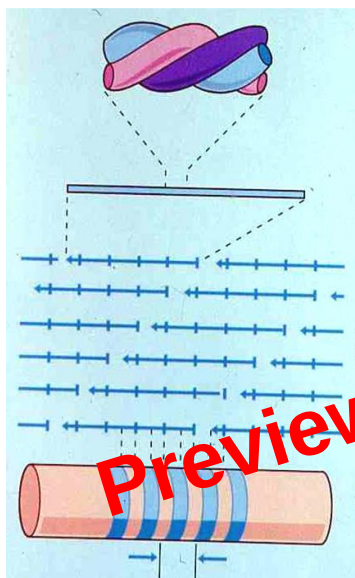


Collagen

There are at least 25 different types of collagen fibres.

- **Type I** – provides **tensile strength**, 90% of total collagen, dermis, ligaments (connect bone to bone), tendons (connect muscle to bone), bone and dentin. Most common.
- **Type II** – Hyaline and elastic cartilage
- **Type III** – Reticulin, **first collagen secreted in wound healing**, lymphoid organs (spleen and lymph nodes); affinity for silver salts that stain tissues (bind to it quite well).
Delicate and branched.
- **Type IV** – **Basal lamina** (basement membrane)
- **Type VII** – forms **anchoring fibrils** e.g. anchors basal lamina of epidermis to underlying dermal fibres

Formation of Collagen Fibril



In cell, it makes **triple helix of 3 polypeptide chains**

Assembled into **Tropocollagen** molecules – 280nm long

Tropocollagen molecules are aligned into **linear arrays** with a 67nm **stagger** to produce a fibril

Assembly is **extracellular**

Fibril banding pattern (due to stagger) with a 67nm **periodicity** (another word for **banding**)

Fibrils and fibres

- **Fibrils** (individual masses of tropocollagen molecules) join together to form **fibres**.
- **Fibres** join together to form **bundles** (what we see with light microscope).

The **hierarchy** (from most to least) is:

- 1) Fibres
- 2) Fibrils
- 3) Tropocollagen