MUSCULAR TISSUE

One of the basic tissue.

Latin word MUSCULUS means little mouse (MUS).

Contractile tissue which brings movements.

Composed predominantly of cells.

Cells are specialized to shorten in length by contraction.

CLASSIFICATION

- SKELETAL MUSCLE
- SMOOTH MUSCLE
- CARDIAC MUSCLE
- MYOEPITHELIAL CELLS

SKELETAL MUSCLE

- Voluntary , Striped , Striated or Somatic muscles.
- Respond quickly to stimuli, being capable of rapid contractions and therefore , get fatigued easily.
- Skeletal muscle is made up of long , cylindrical fibres. Each fibre is syncytium with hundreds of nuclei along its length. The nuclei are elongated and lie along the periphery of the fibre.

  SARCOLEMMA ---- SARCOPLASM-----MYOFIBRILS-----MYOFILAMENTS

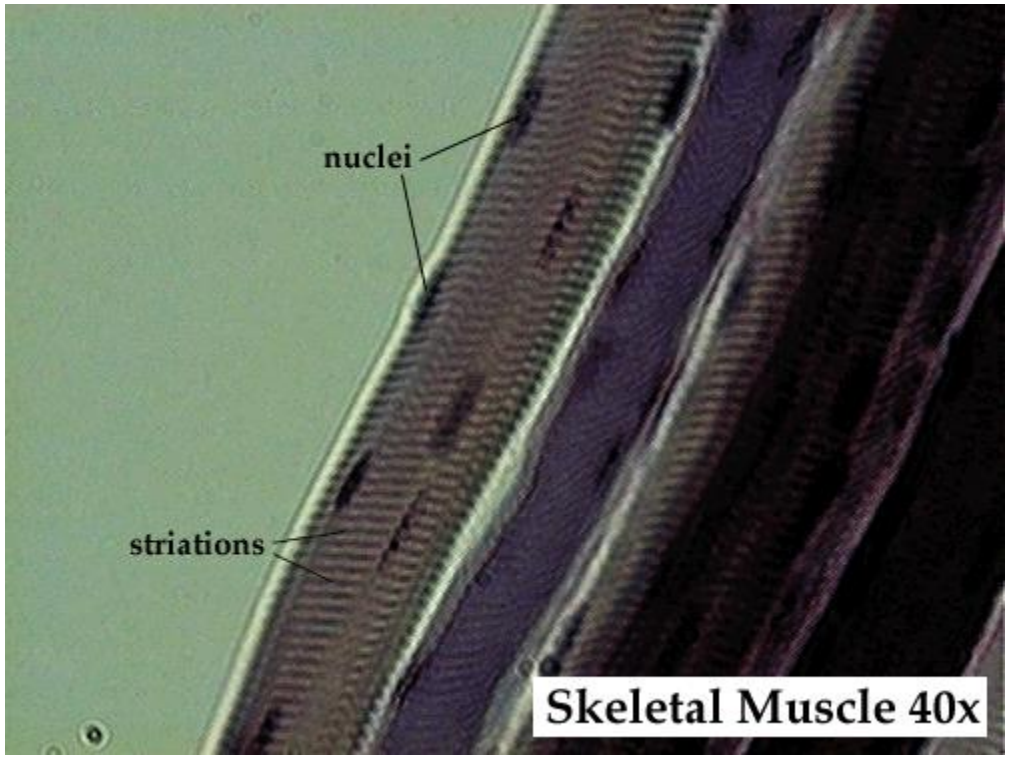
  MYOFIBRIL--- Sarcomere, A-band, I-band, Z-band, H-band , M-band.

  MYOFILAMENTS –Actin (thin) , Myosin (thick)

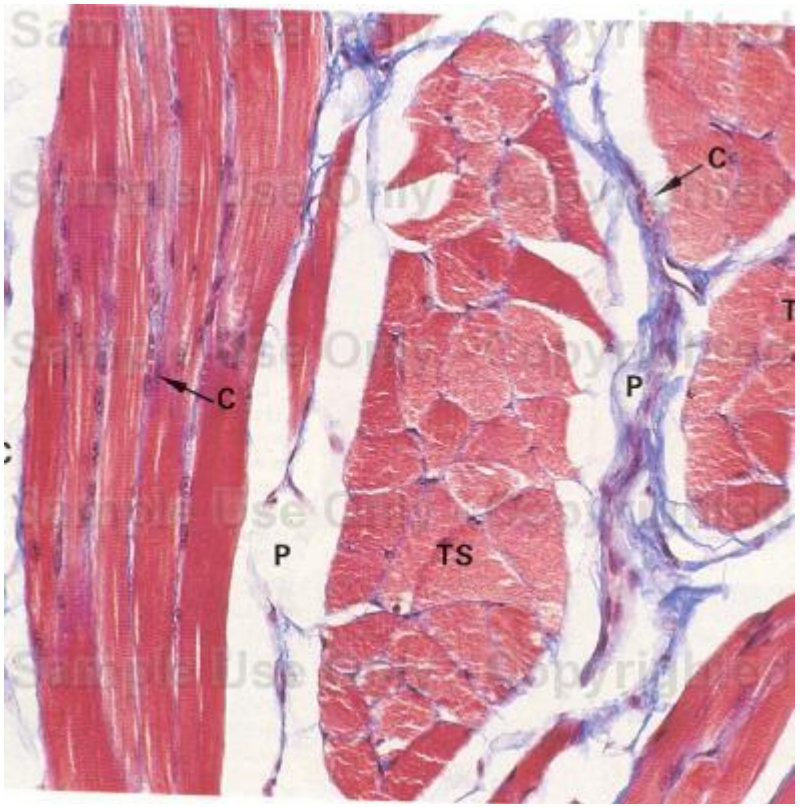
  SARCOPLASMIC RETICULUM

SKELETAL MUSCLE

SKELETAL MUSCLE



SKELETAL MUSCLE



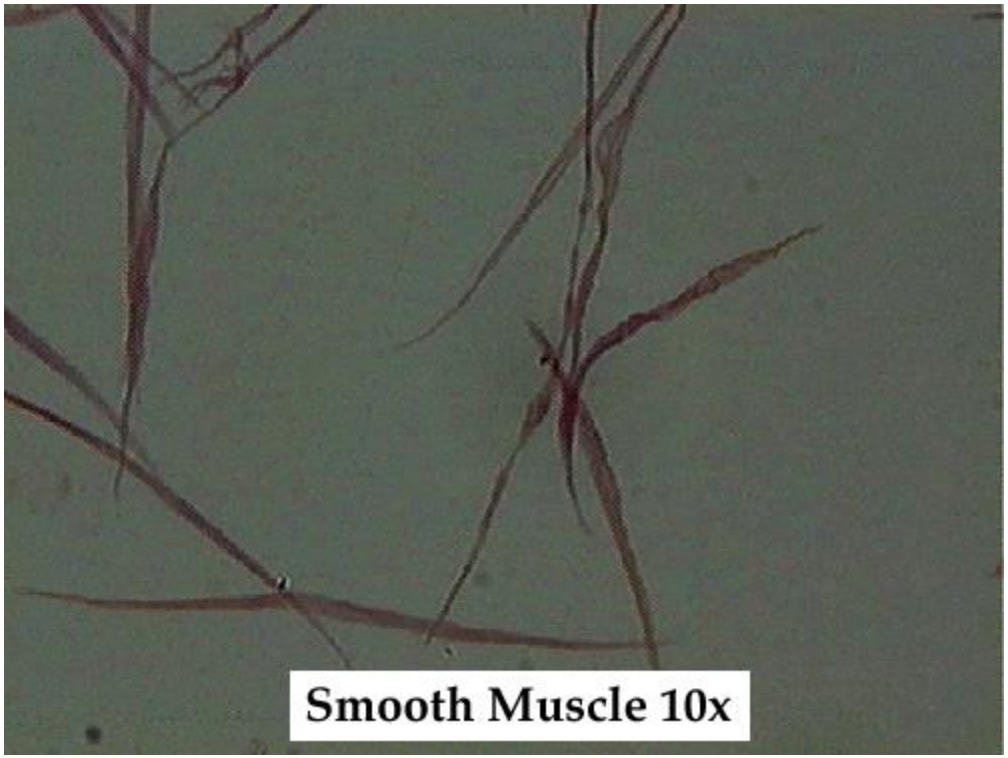
- CONNECTIVE TISSUE FRAMEWORK --- ENDOMYSIUM
  PERIMYSIUM
  EPIMYSIUM

RED MUSCLE	WHITE MUSCLE
Slow twitch	Fast twitch
myoglobin pigments abundant	less
fibers are narrower.	
Sarcoplasm abundant. mitochondria are more	
Sarcoplasmic reticulum is less extensive	
Myofibrils, striations less defined	
Contraction more sustained and	
Fatigue less easily.	

SMOOTH MUSCLE

- PLAIN , UNSTRIPED , NON-STRIATED, VISCERAL, INVOLUNTARY MUSCLES
- Responds slowly to stimuli, being capable of sustained contraction, therefore, do not fatigue easily.
- Each muscle fibre is an elongated, spindle shaped cell with single nucleus placed centrally. The myofibrils shows longitudinal striations.Sarcoplasm scanty in amount and contains contractile proteins. No Sarcomere. No T system , Pinocytic vesicles are there.
- Contraction is slow and prolonged, resistant to fatigue.

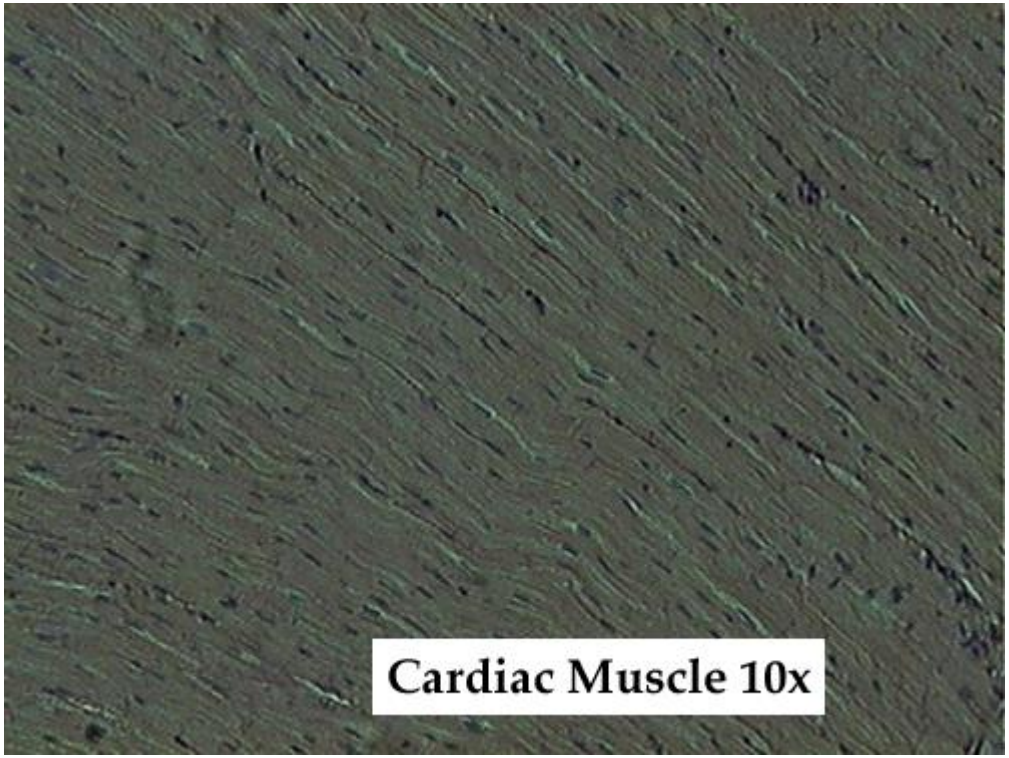
SMOOTH MUSCLE



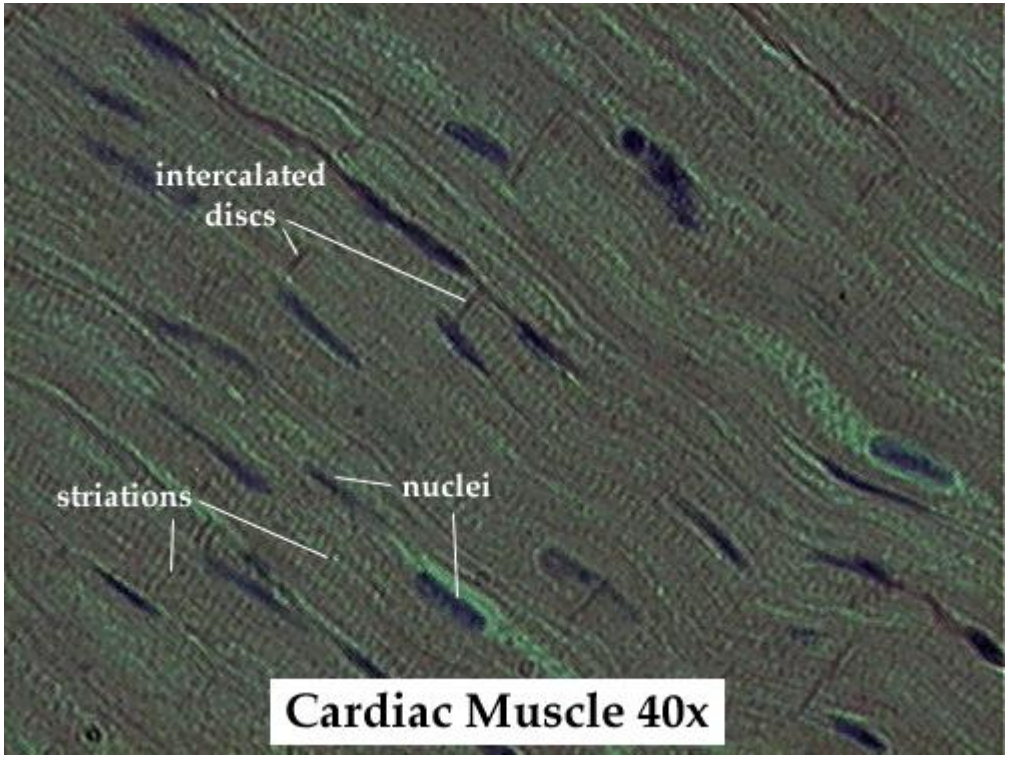
CARDIAC MUSCLE

- It forms myocardium of the heart.
- Posses automatic and rhythmic contractile activity.
- Similar to skeletal muscle - Elongated fibre, numerous myofibrils, connective tissue framework and capillary network are there.
- Differ from skeletal muscle - not run in strict parallel manner , single centrally placed nucleus, sarcoplasm is abundant contains large mitochondria, myofibrils are less.sarcoplasmic reticulum is less prominent. INTERCALATED DISC is present. Involuntary muscle.
- INTERCALATED DISC - Tight cell junctions. Insertion of actin filaments.Therfore behave like Z lines. Lies at the regular interval of 70 micro. Disc increases with age. Absent at birth.
- No regenerative ability.

CARDIAC MUSCLE



CARDIAC MUSCLE



Aknowledgement

- Inderbir Singh’s Textbook of Human Histology
- Textbook of Histology- Atlas and Practical Guide by JP Gunasegaran
- Difiore’s Atlas of Histology
- Images from Google
- Histology Text & Atlas -Brijeshkumar