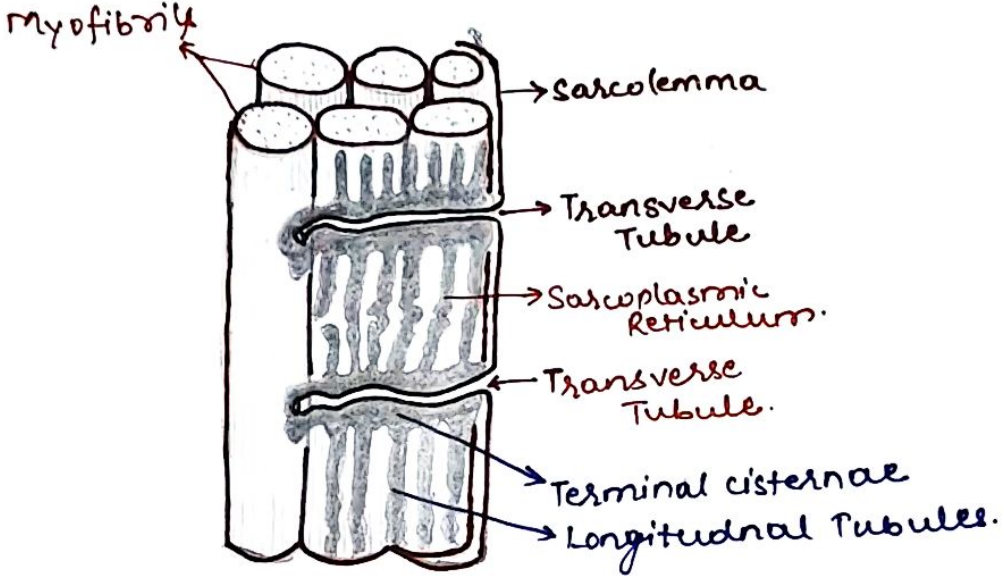
Myofibril
Sarcolemma
Transverse Tubule
Sarcoplasmic Reticulum.
Transverse Tubule.
Terminal cisternae
Longitudinal Tubules.

TRANSVERSE TUBULE - SARCOPLASMIC RETICULUM SYSTEM.

T-Tubules :-

- Internal extension of cell memb. runs transverse to myofibrils
- Begin at cell membrane & penetrate all the way from one side of muscle fibre to other.
- Communicate with ECF & themselves contain ECF in their lumens.

Purpose :-

- AP spreading over muscle fibre membrane, also spreads along T-tubules to deep interior of muscle fibre.

Sarcoplasmic Reticulum :-

Composed of two parts :-

(1) Terminal cisternae → Around T-tubules

(2) Longitudnal Tubules → Around all surfaces of myofibrils.

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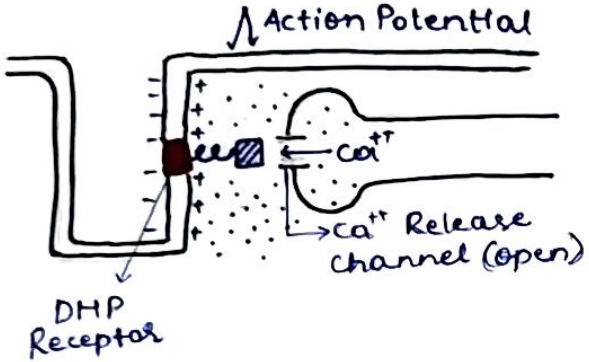
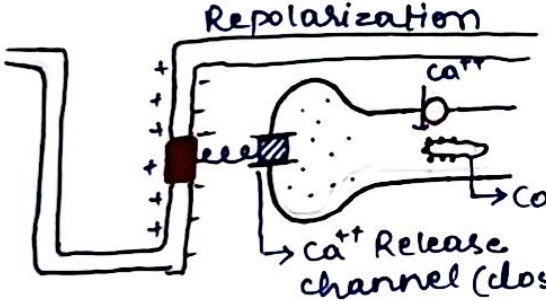
RELEASE OF Ca^{++} IONS BY SARCOPLASMIC RETICULUM





- AP travelling along sarcolemma reaches T-tubule
- AP sensed by DHP receptor
- Opening of Ca^{++} Release channel (Ryanodine Receptor channel)
- Release of Ca^{++} from both cisternae & longitudinal tubules. causing contraction.

Repolarisation leads to closure of Ca^{++} release channel.

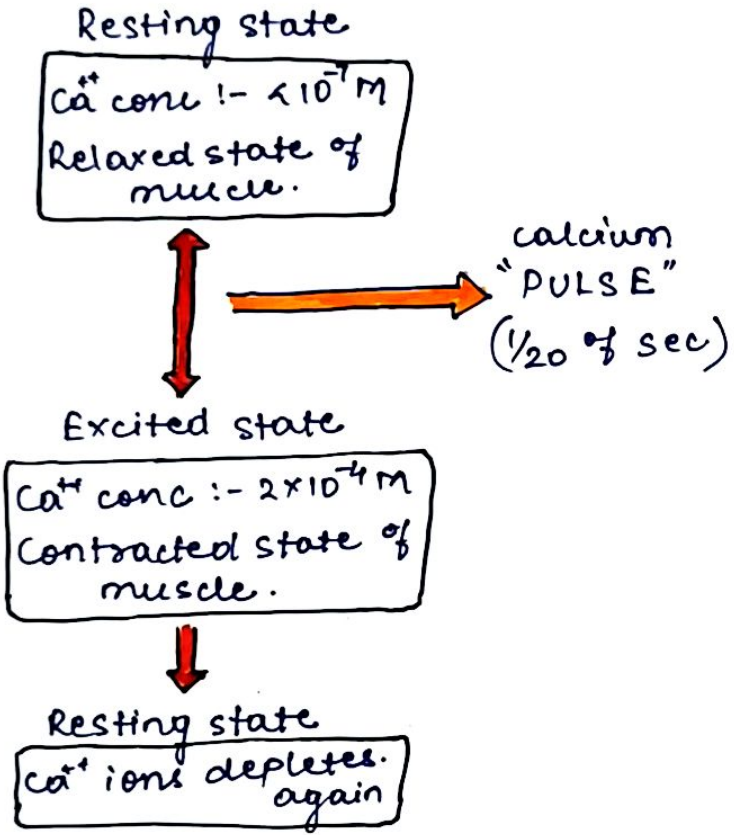
- Removing of Ca^{++} ions from myofibrillar fluid after contraction occurs.

By

✓ Ca^{++} pump actively pumps Ca^{++} back to Sarcoplasmic reticulum.

✓ Calsequestrin (protein) can bind upto 40 times more Ca^{++}.

Excitatory "PULSE" of Calcium Ions



Duration of calcium pulse in heart muscle is about 1/3 of sec.
[D/t long durat^{n} of cardiac AP]