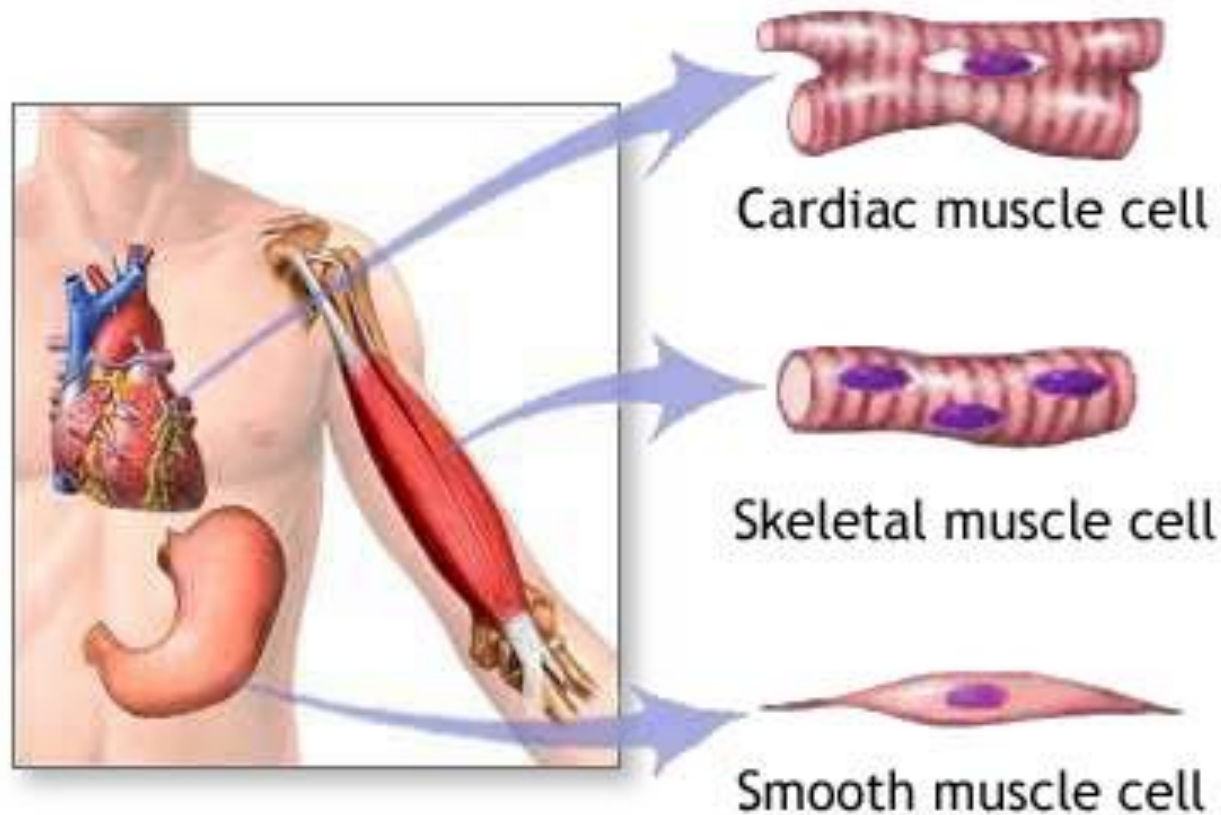
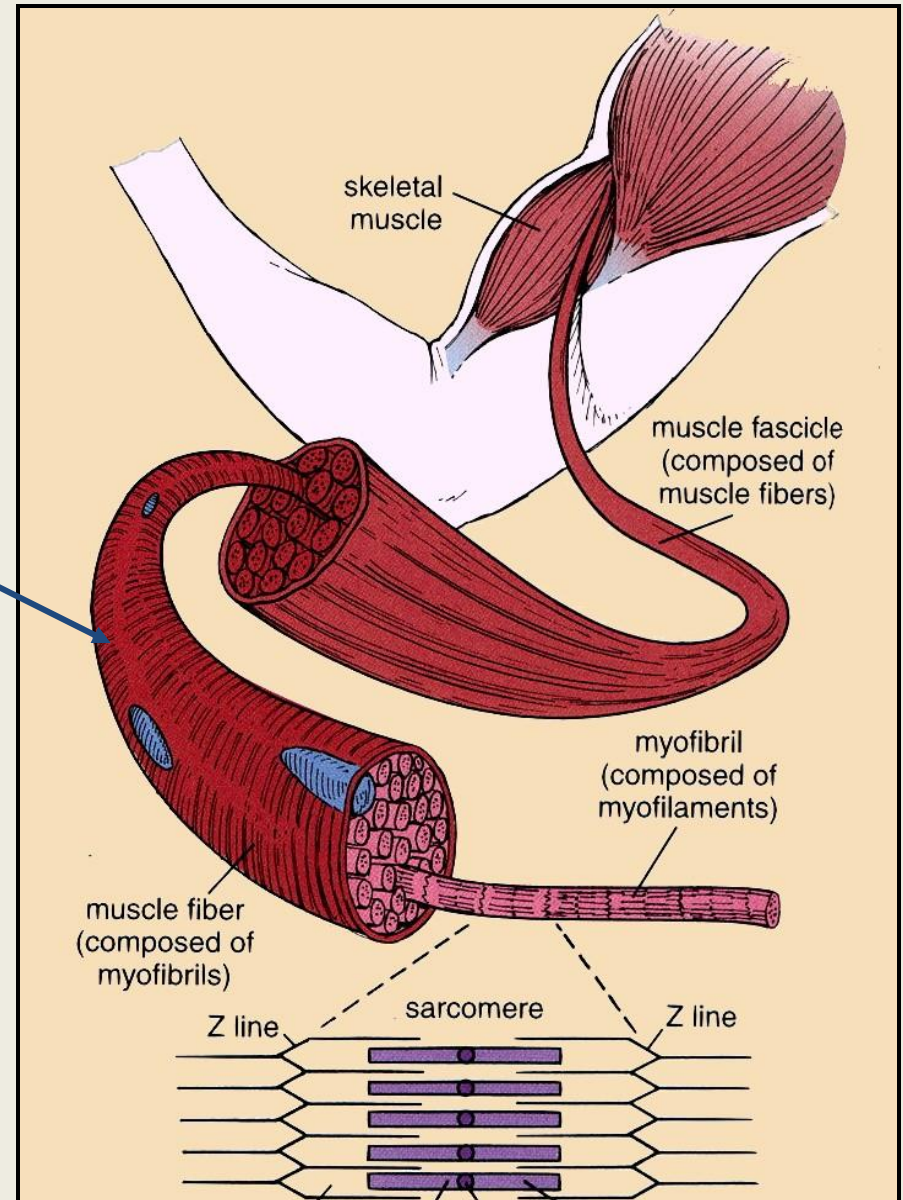


Svalová tkáň



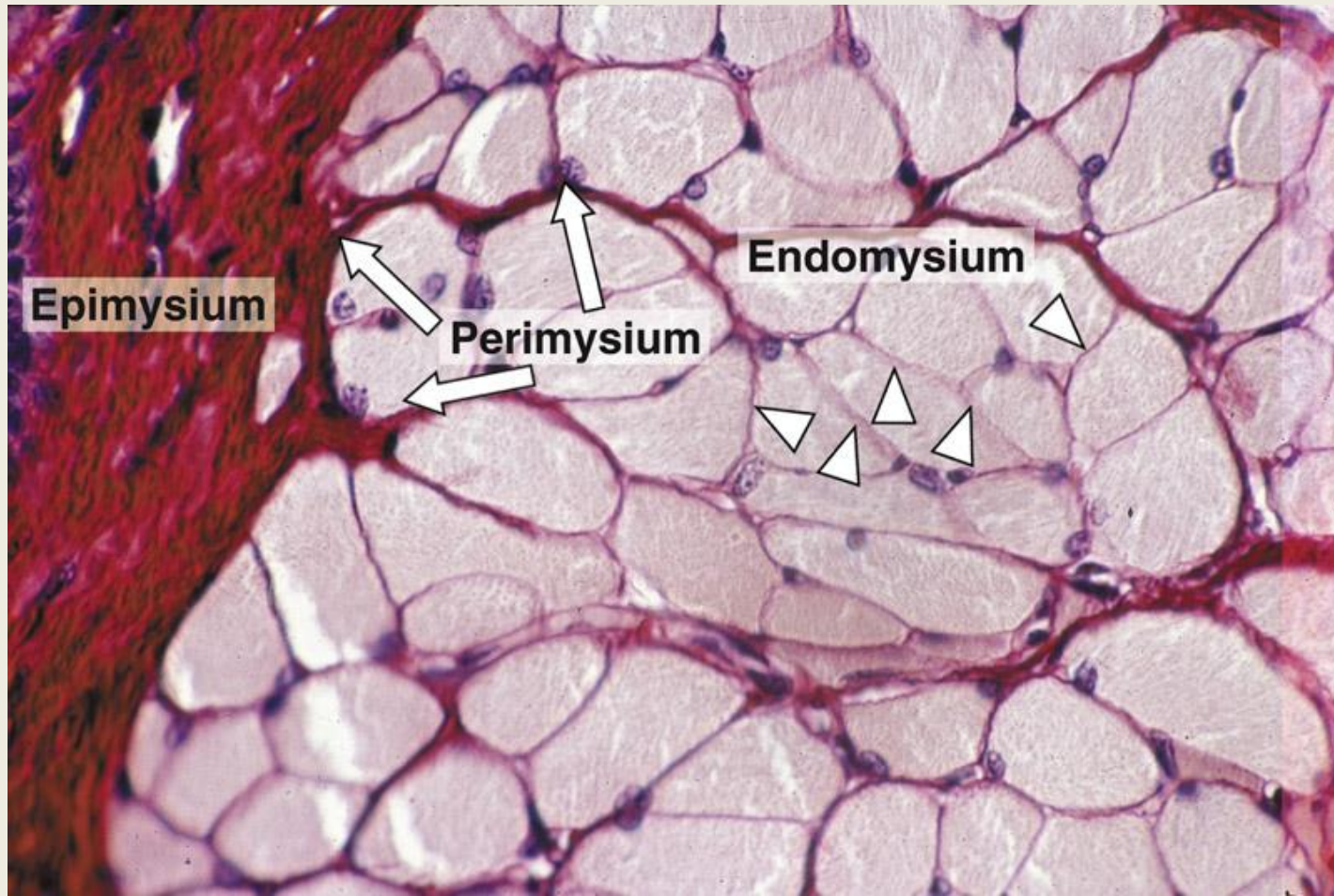
Kosterní svalová tkáň

- sval
- fasciculus – svalový snopec – svazek vláken
- **svalové vlákno = rhabdomyocyt**
 - l:1-30cm,tl:10-100 μm
 - obrovská mnohojaderná buňka – syncytium
 - obsahuje **myofibrily**



Kosterní svalová tkáň

- vazivo
 - epimysium – husté kolagenní vazivo, obaluje sval
 - perimysium – řídké kolagenní kolem sval. fasciculů
 - endomysium – jemná retikulární síť kolem rhabdomyocytů

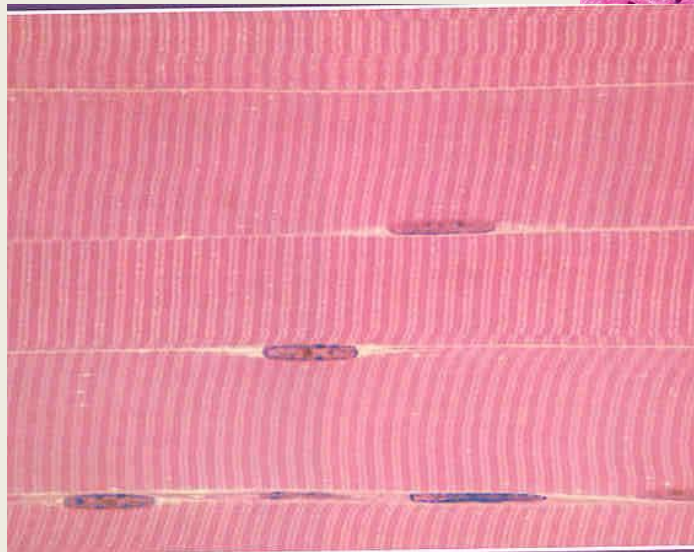
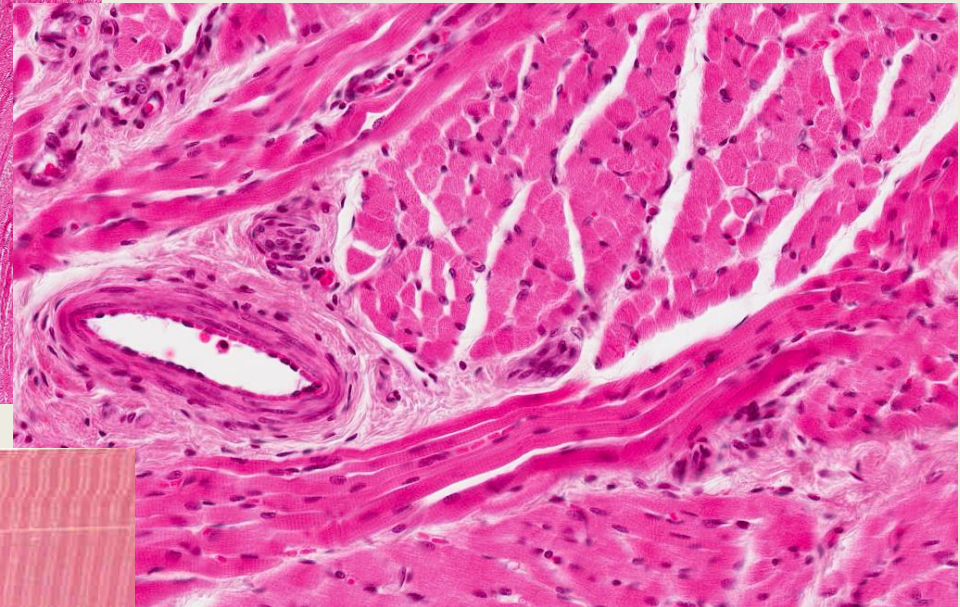


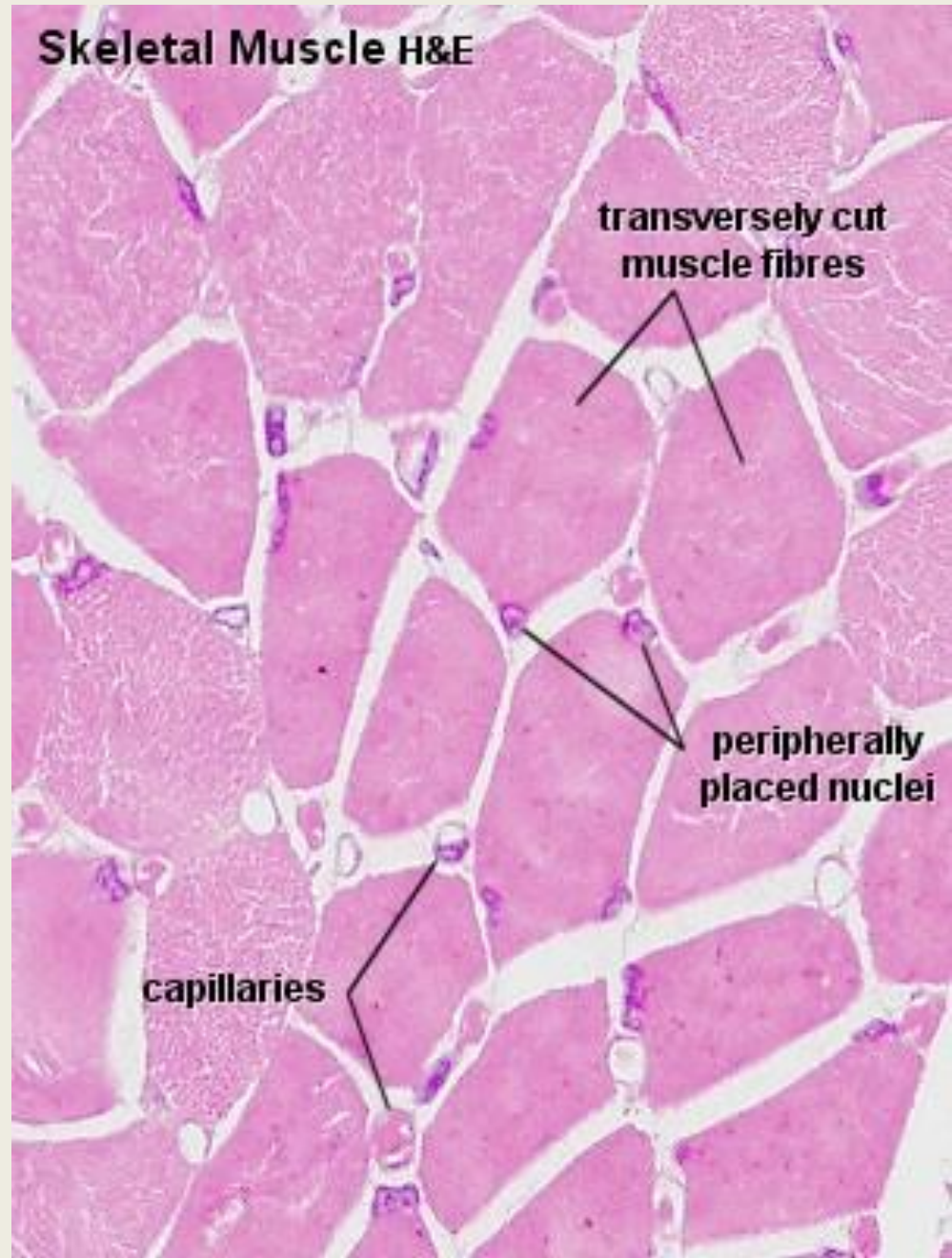
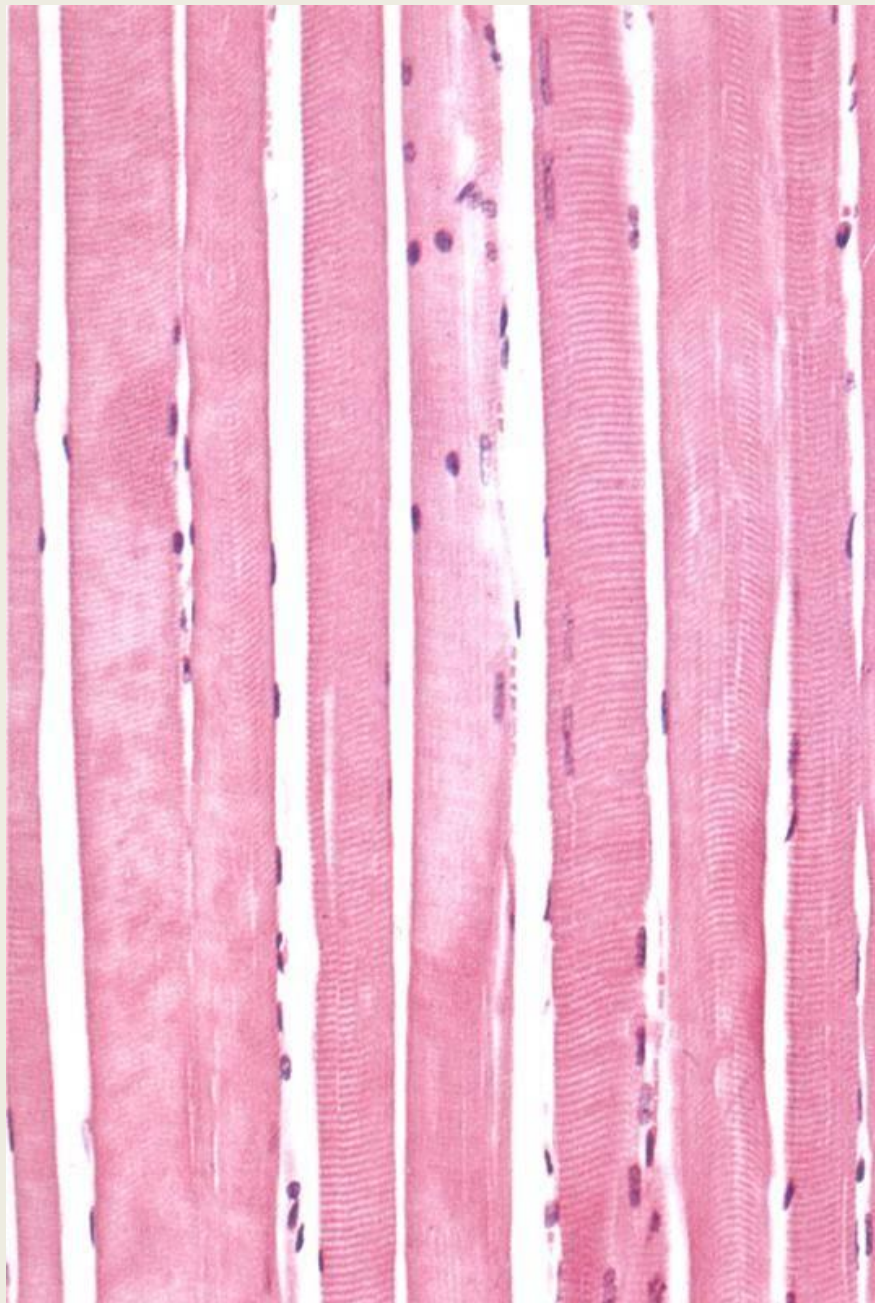
Kosterní svalová tkáň



svalová
tkáň

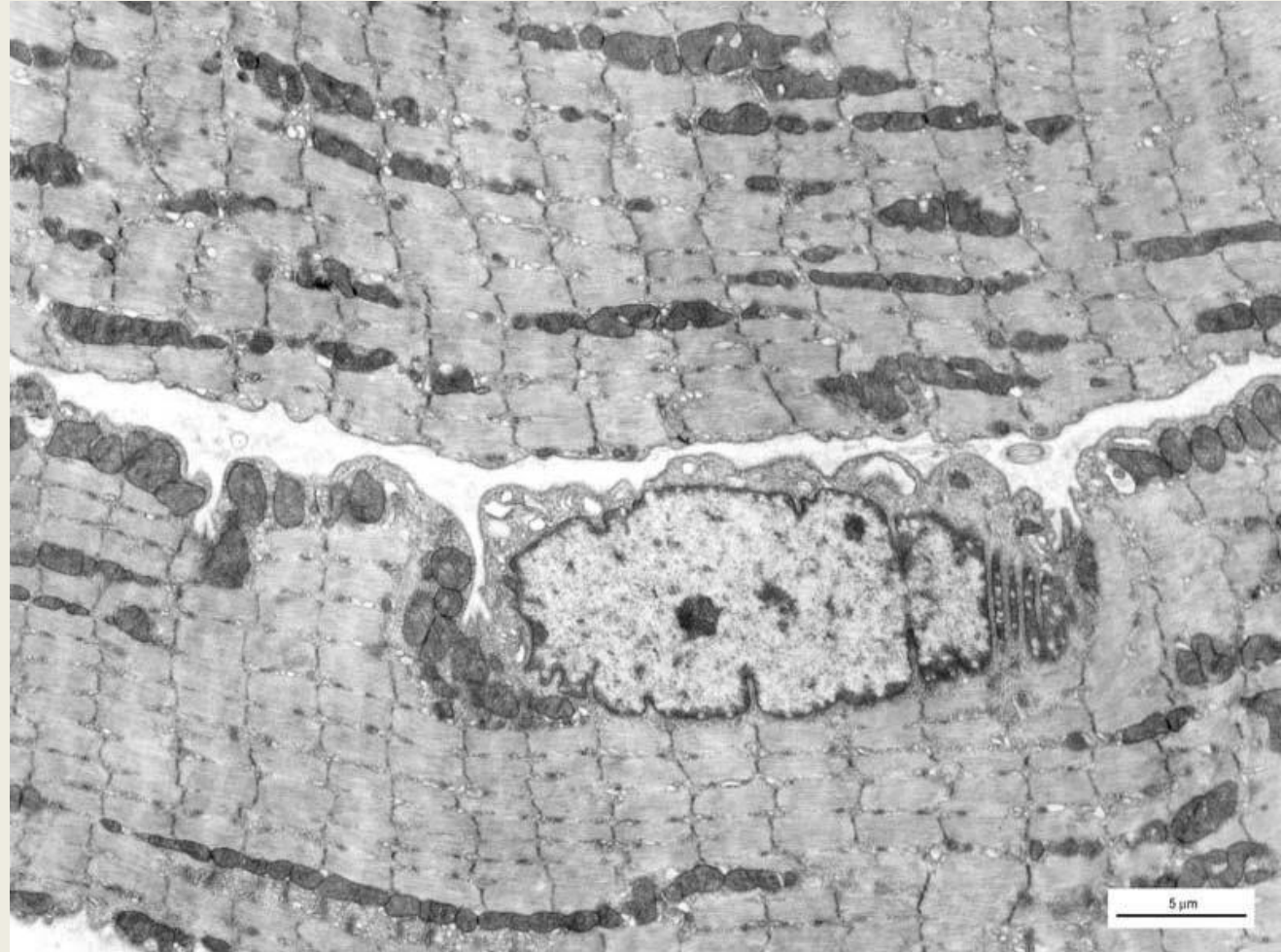
apex
linguae





Stavba svalového vlákna

- Sarkolema, T-tubuly
- Sarkoplazma
- **Jádra**
 - hned pod sarkolemou, na 1mm vlákna: 20-45 jader
- SR – AER
- **Myofibrily**
 - vlákna tlustá 1-2 μm
- Mitochondrie, GA, glykogen, lipidové kapky, myoglobin

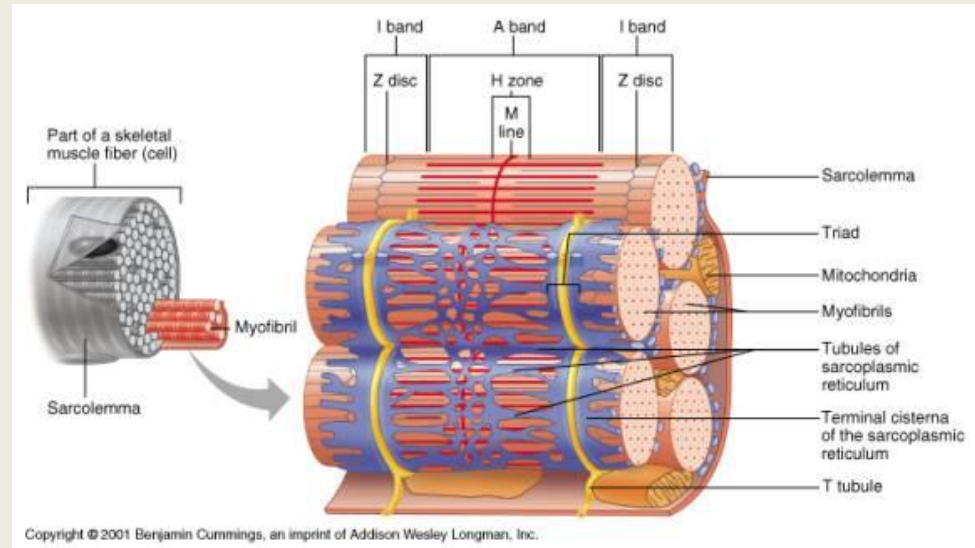


Stavba svalového vlákna



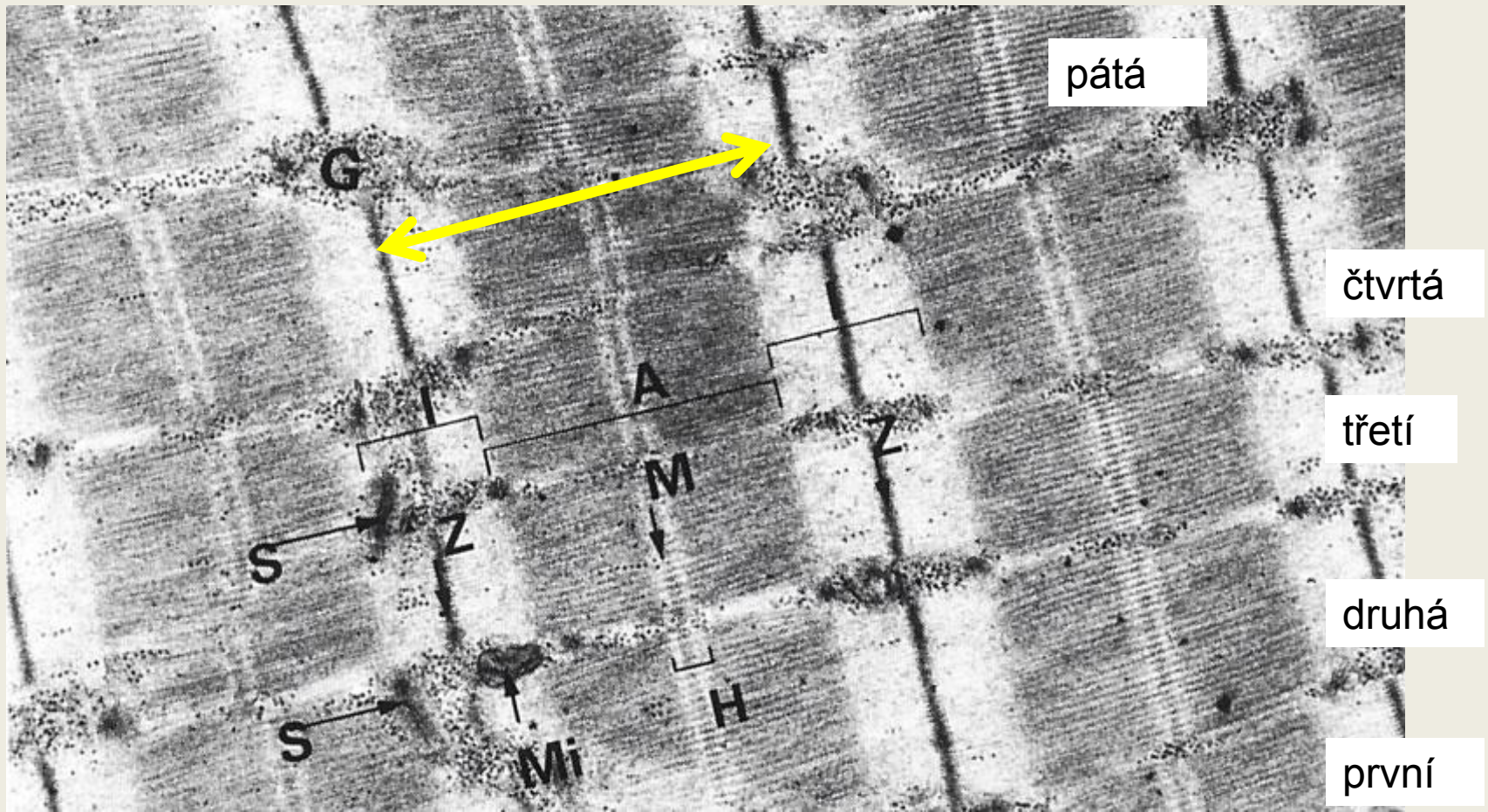
triáda

Myofibrily
Sarkoplazmatické
retikulum
Triády
T-tubuly

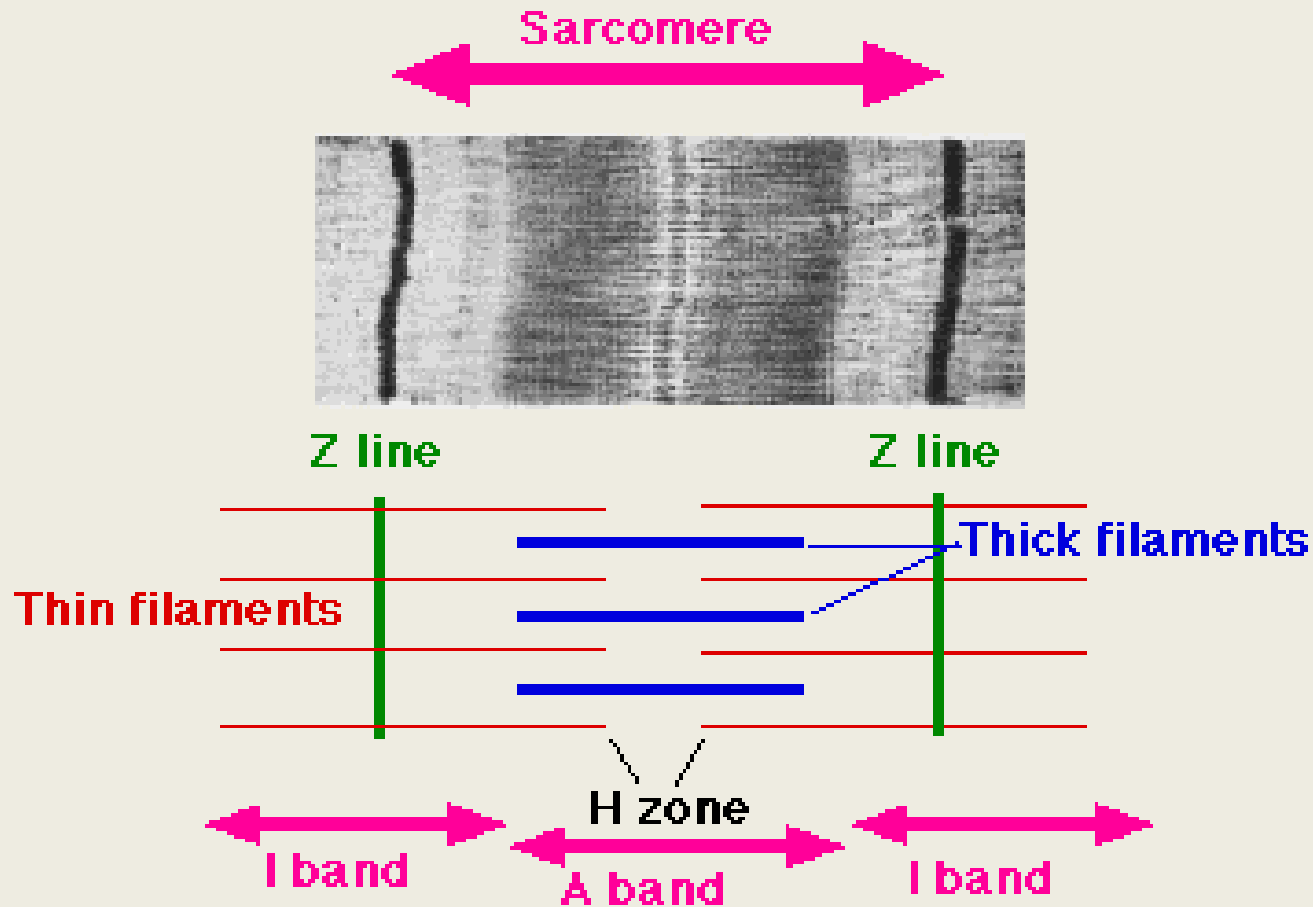


Myofibrila, sarkomera

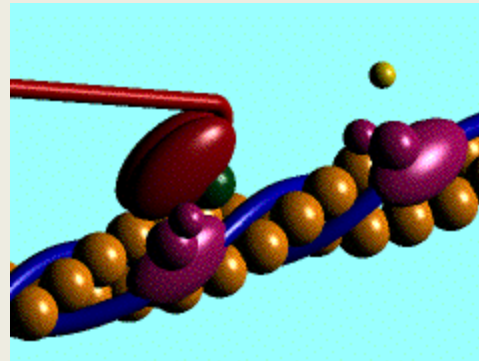
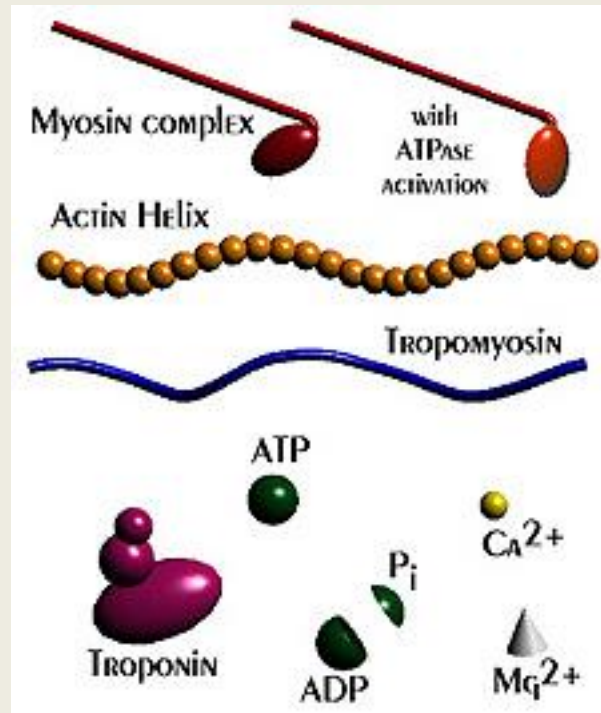
- Každá **myofibrila** se skládá z pravidelně se střídajících světlejších a tmavších úseků, které se odlišují barvitelností a lomem.



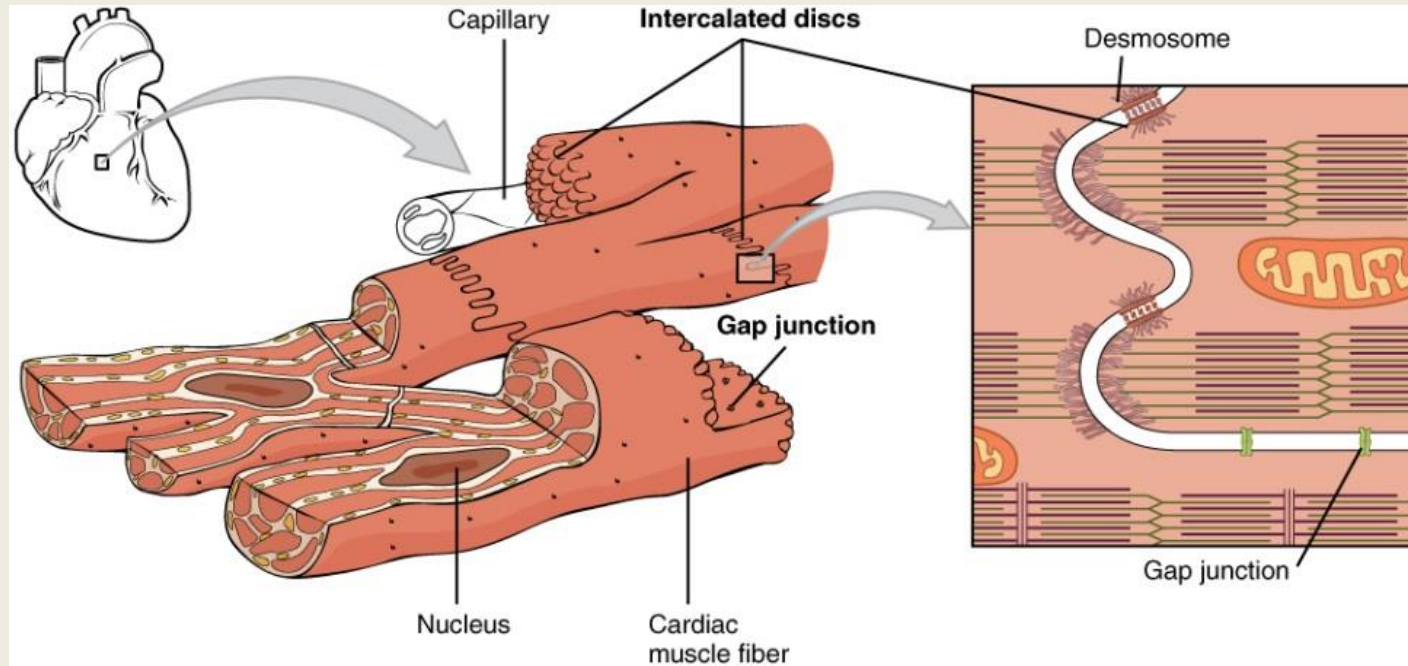
Myofibrila, sarkomera



Mechanismus svalové kontrakce

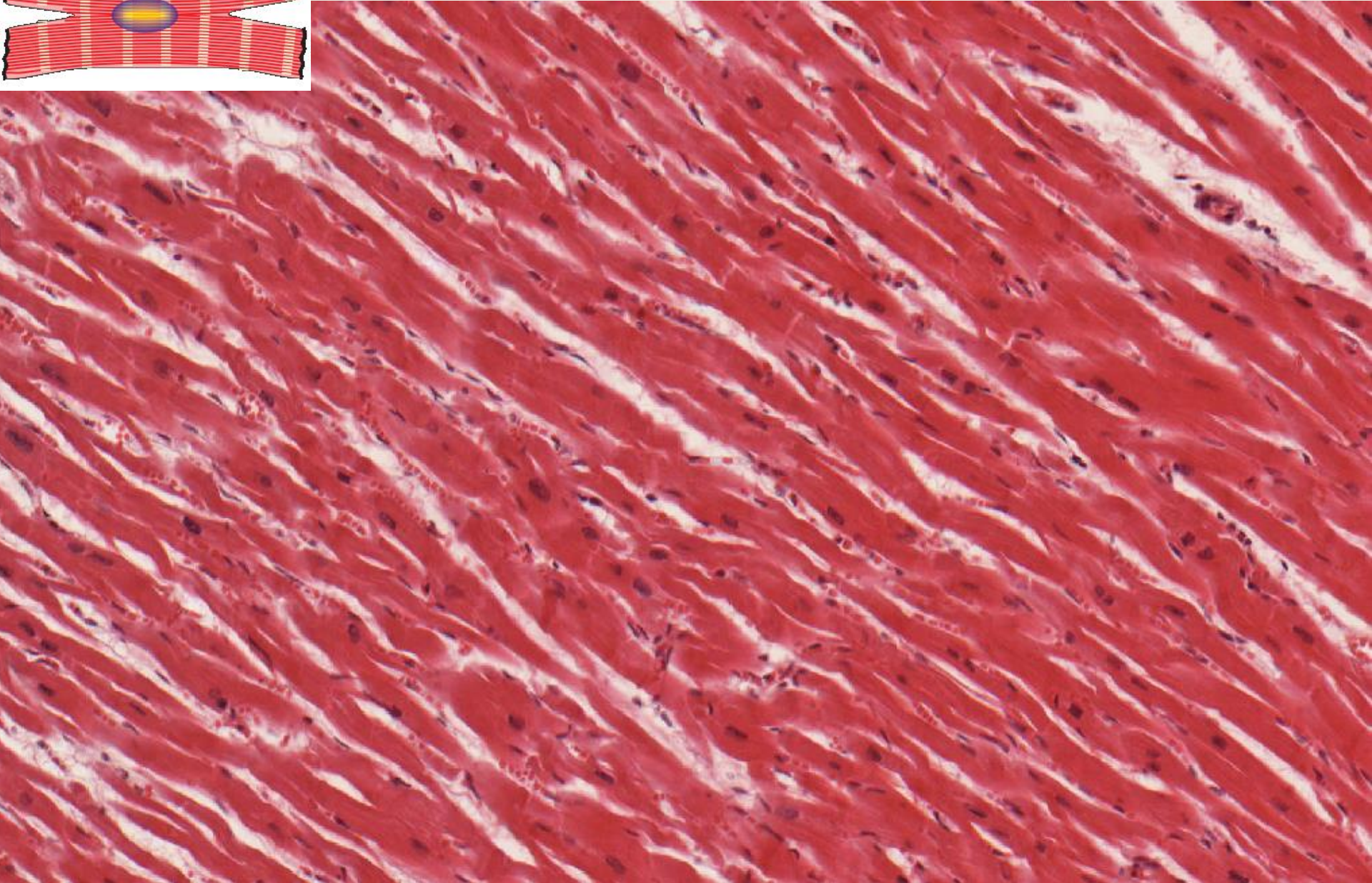
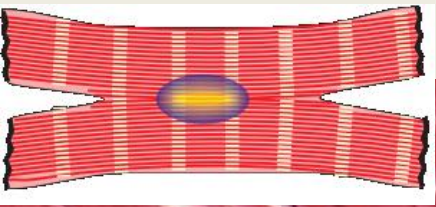


Srdeční svalová tkáň

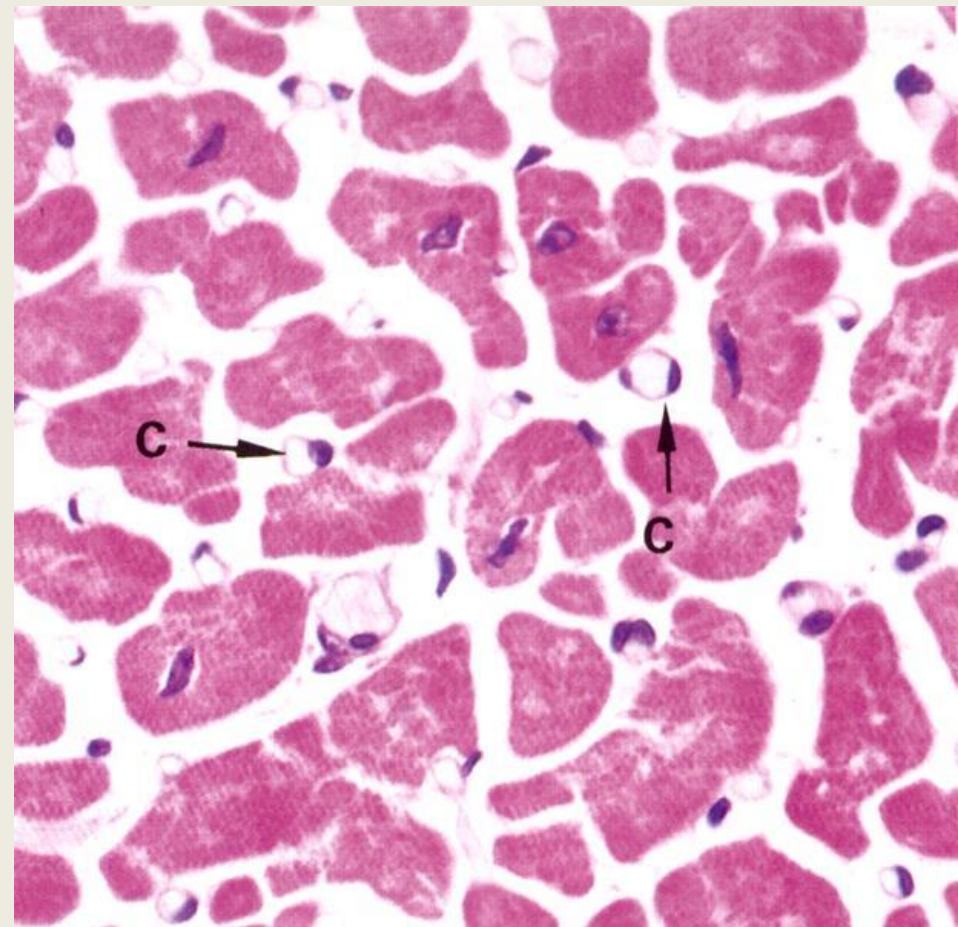
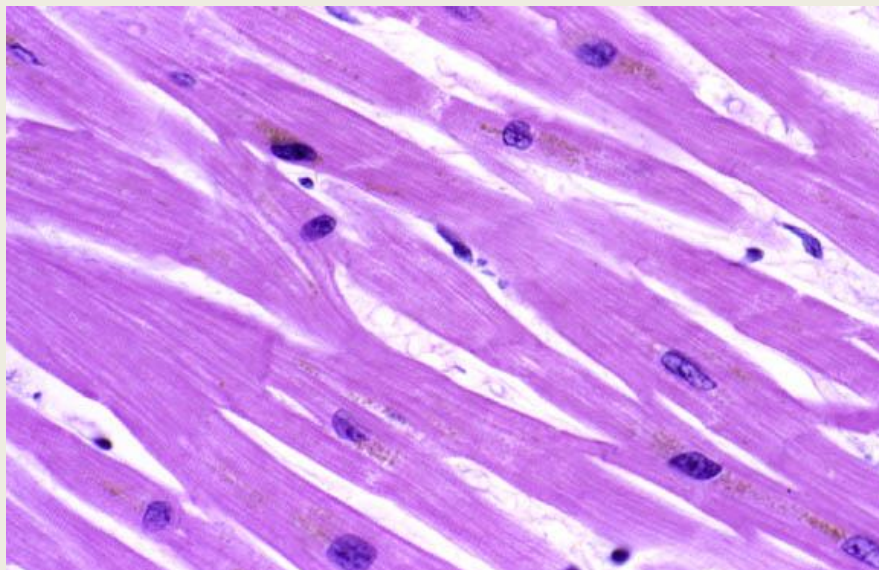
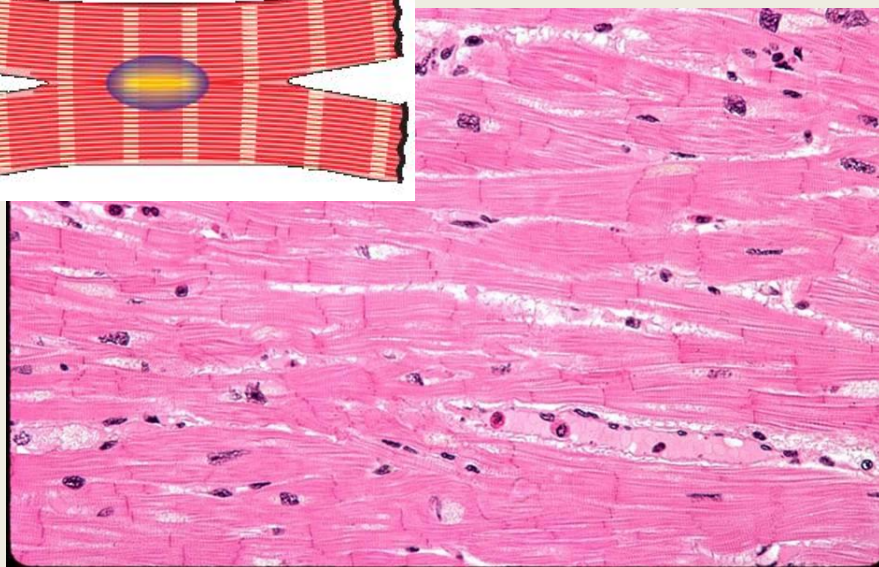
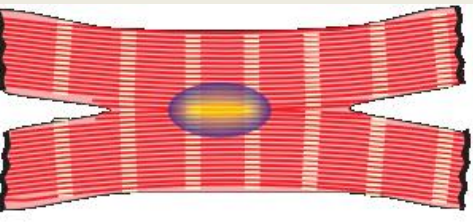


- **kardiomyocyty pracovní** - tl:10-15 μm , l:85-100 μm a **vzrušivé**
- válcovitý nebo s výběžky /Y/
- 1 oválné jádro uprostřed s 1 nebo 2 jadérky
- sarkolema + lamina basalis
- **myofibrily** – žíhané /kratší sarkomery, sousední myofibrily sdílejí myofilamenta/
- hojně **mitochondrie**
- GA, glykogen, lipofuscin, lipidy
- kardiomyocyty síní – aurikulin /ANF/
- SR - diády

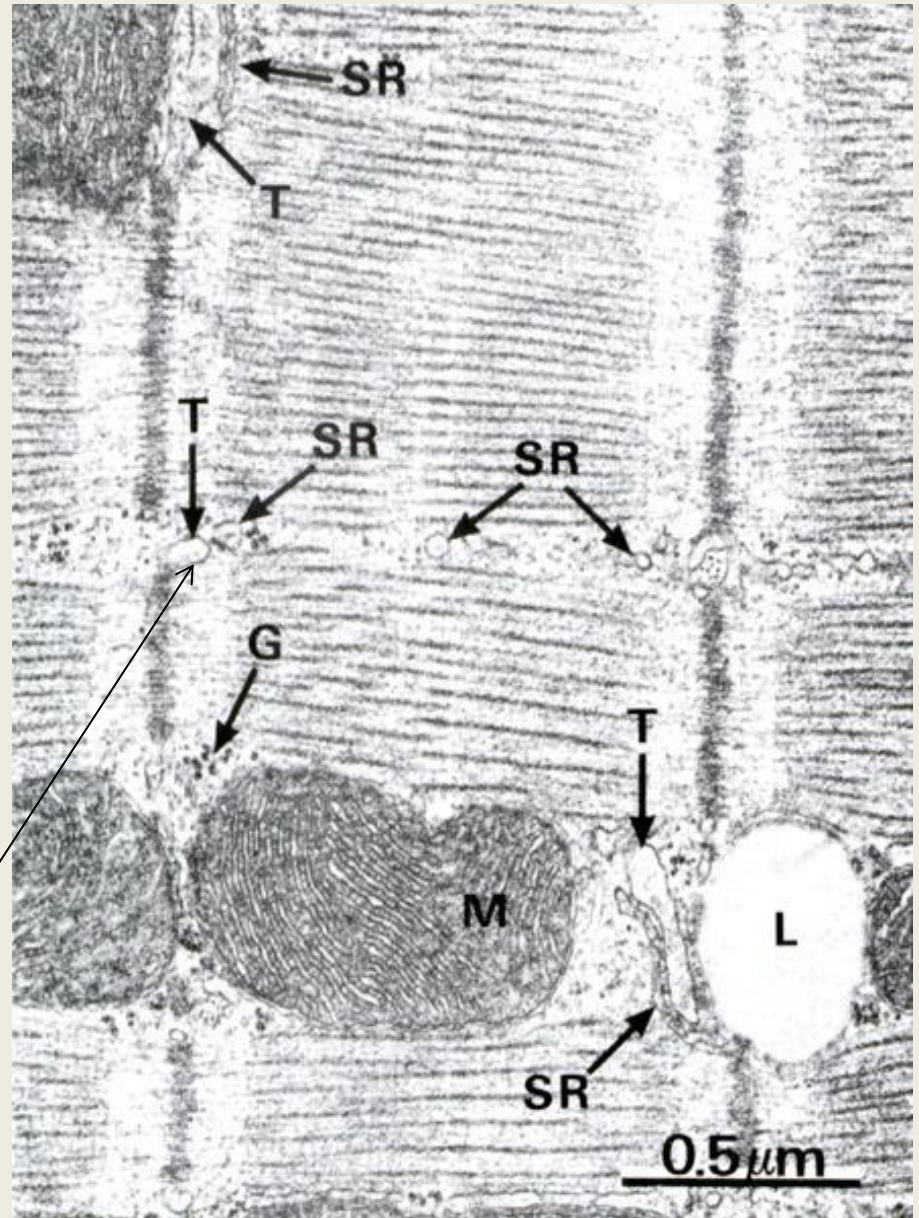
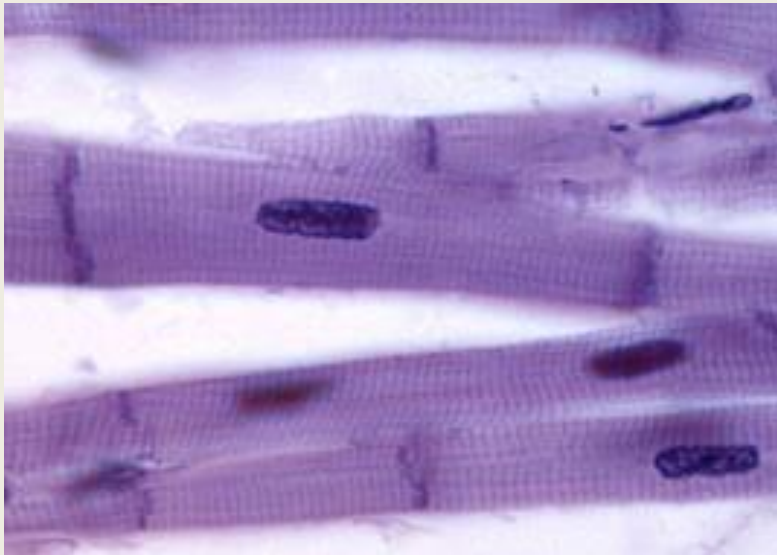
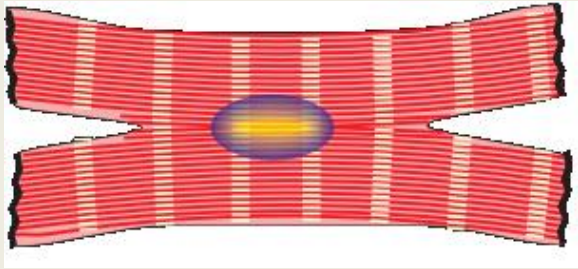
Srdeční svalová tkáň



Srdeční svalová tkáň

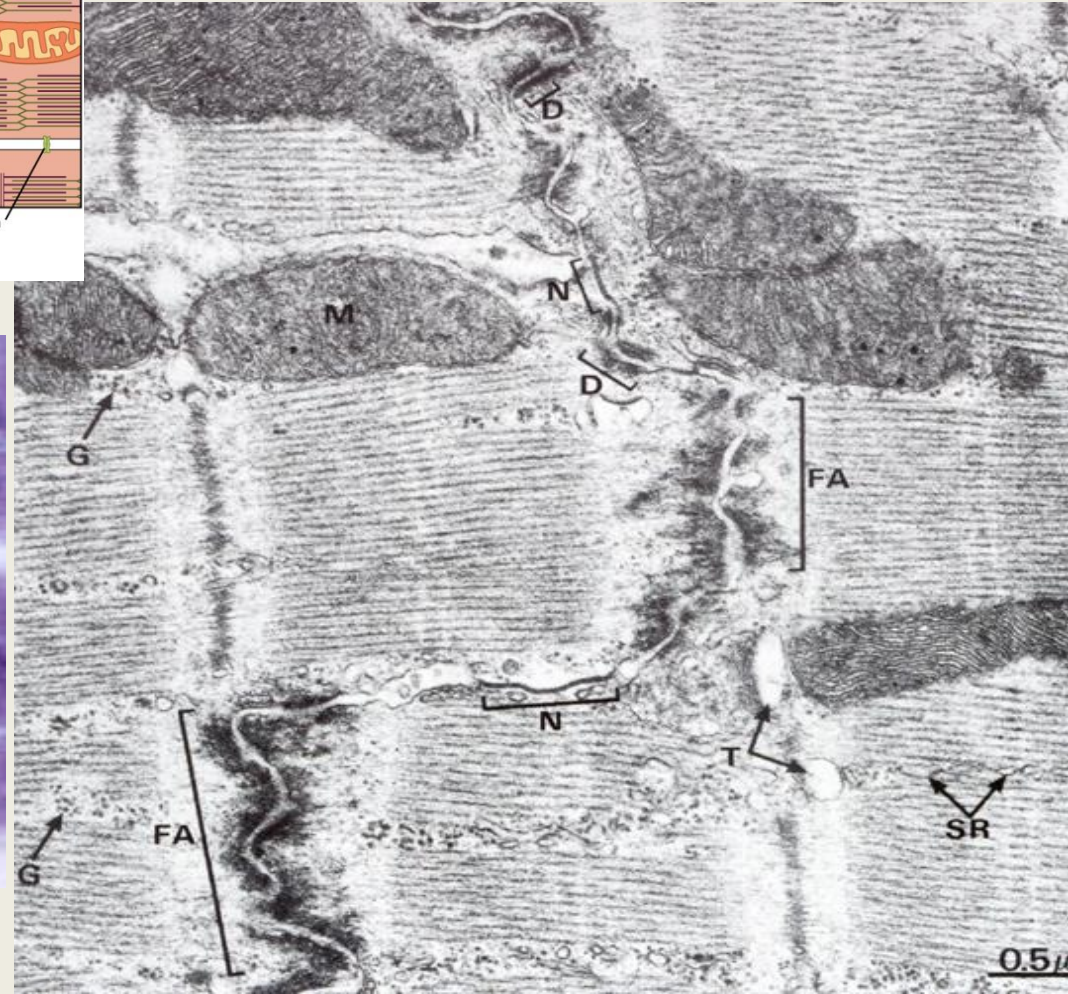
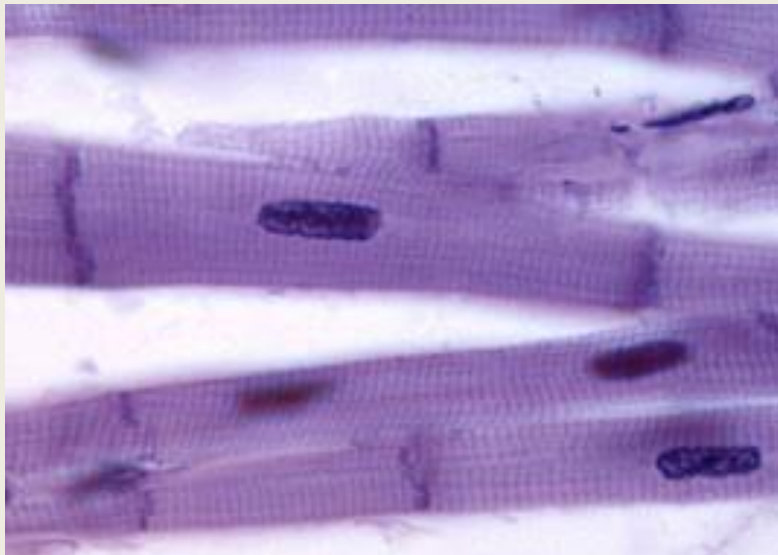
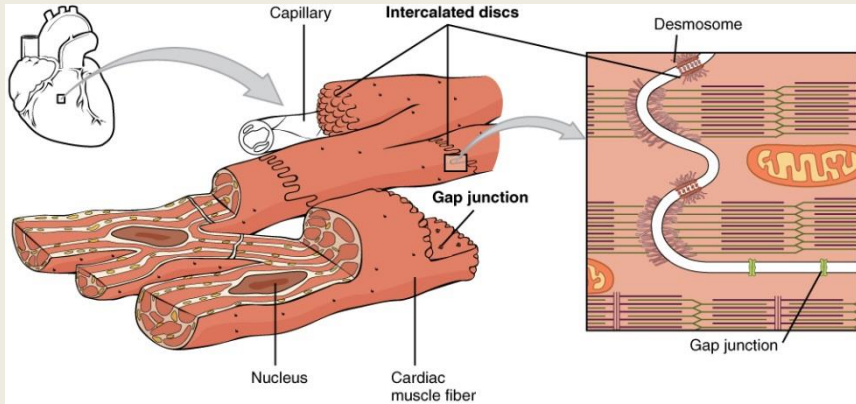


Kardiomyocyt

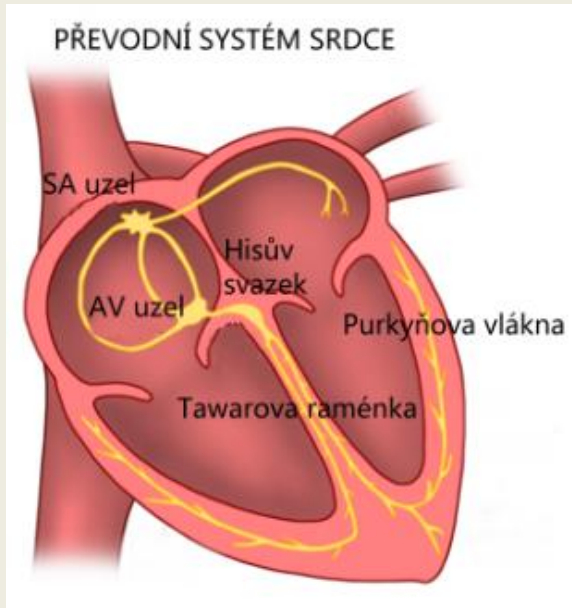


diády

Kardiomyocyty - interkalární disky



Kardiomyocyty – vzrušivé



SA-uzel 60 – 80/min
AV-uzel 30 – 40/min
Hisův svazek
Tawarova raménka
Purkyňova vlákna

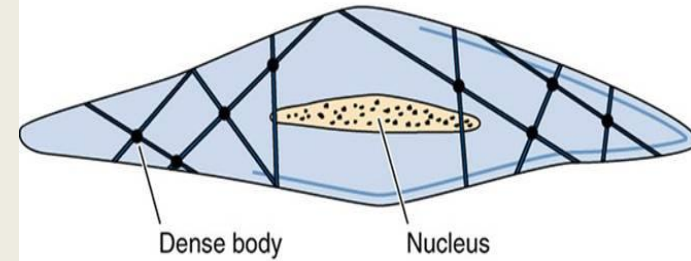


Hladká svalová tkáň

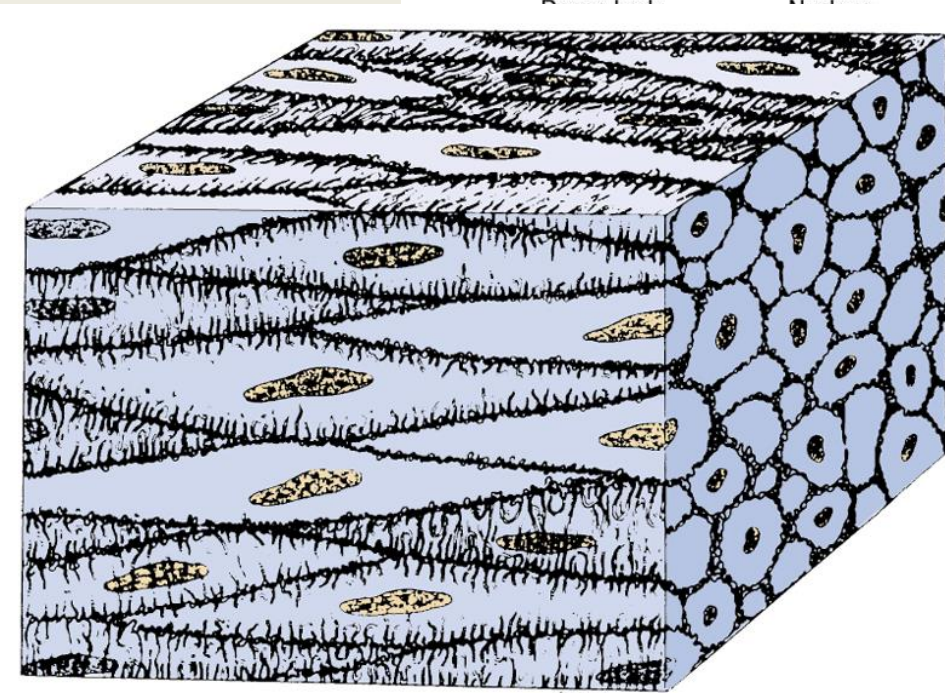
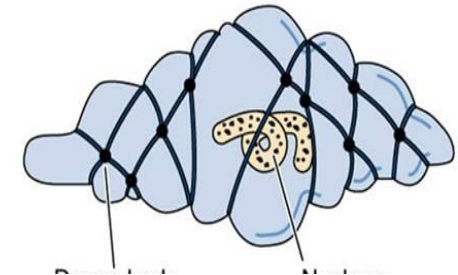
- **leiomyocyt** – buňka vřetenovitého tvaru s 1 tyčinkovitým jádrem /a několika jadérky/
- l:20-500 μm , tl.:3-10 μm
- cytoplazma bez žíhání
- typické organely, jen málo SR
- kaveoly – vesikulární invaginace sarkolemy
- **myofilamenta** – A+M /více aktinu/, tvoří prostorovou síť, místo troponinu kalmodulin
- **denzní tělíska** – slouží k úponu filament
- spoje typu nexusů

Mezi buňkami - jemná retikulární vlákna.

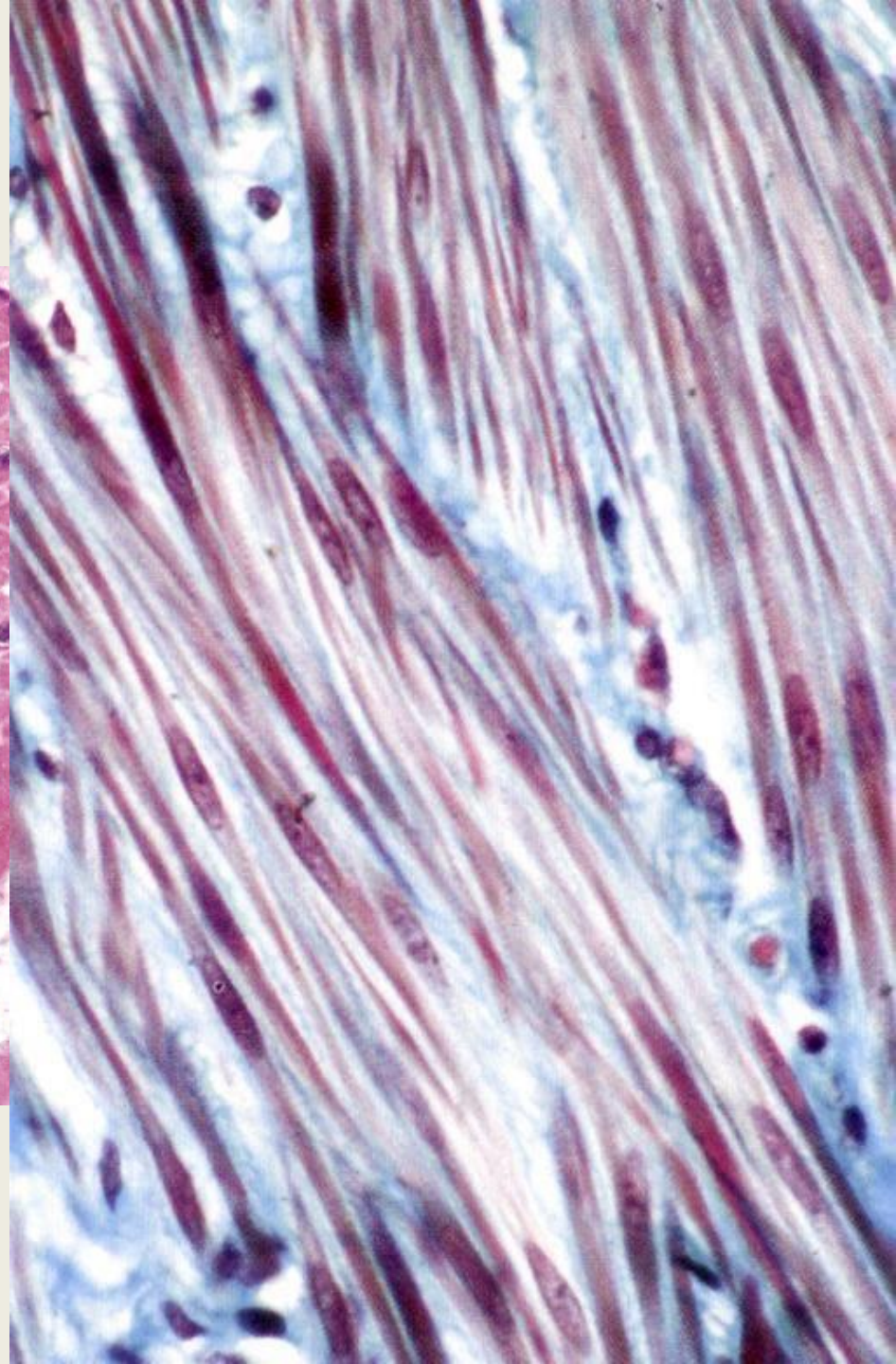
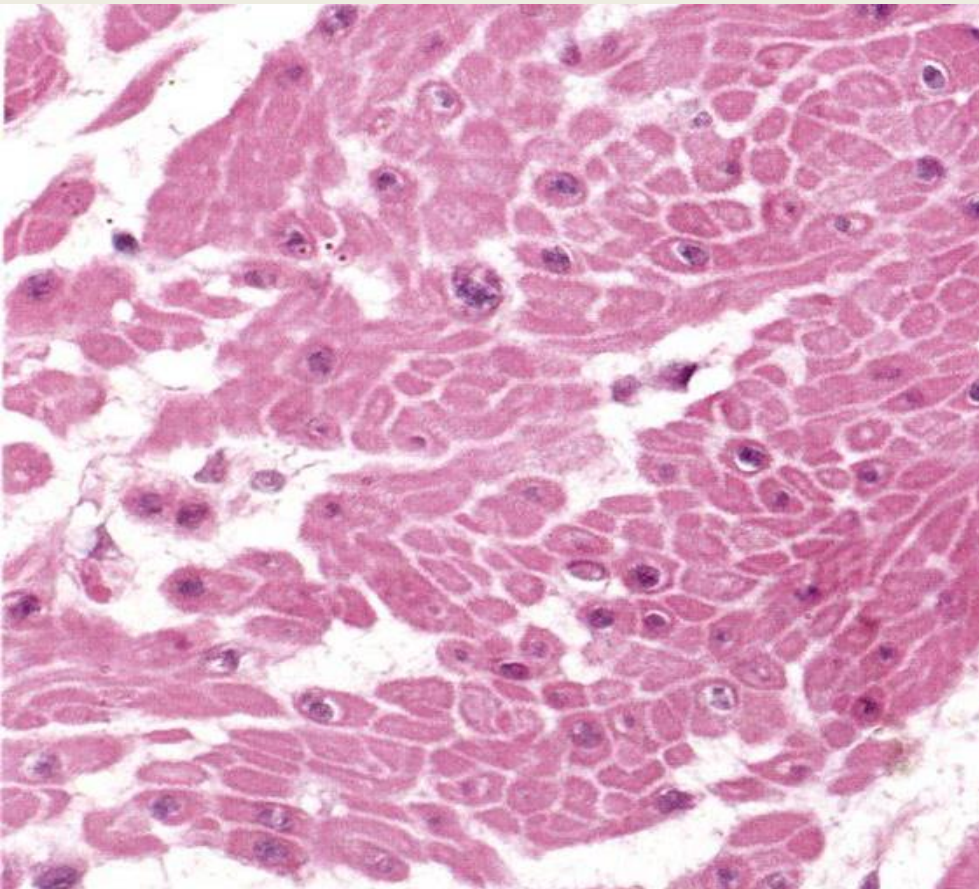
Relaxed smooth muscle cell



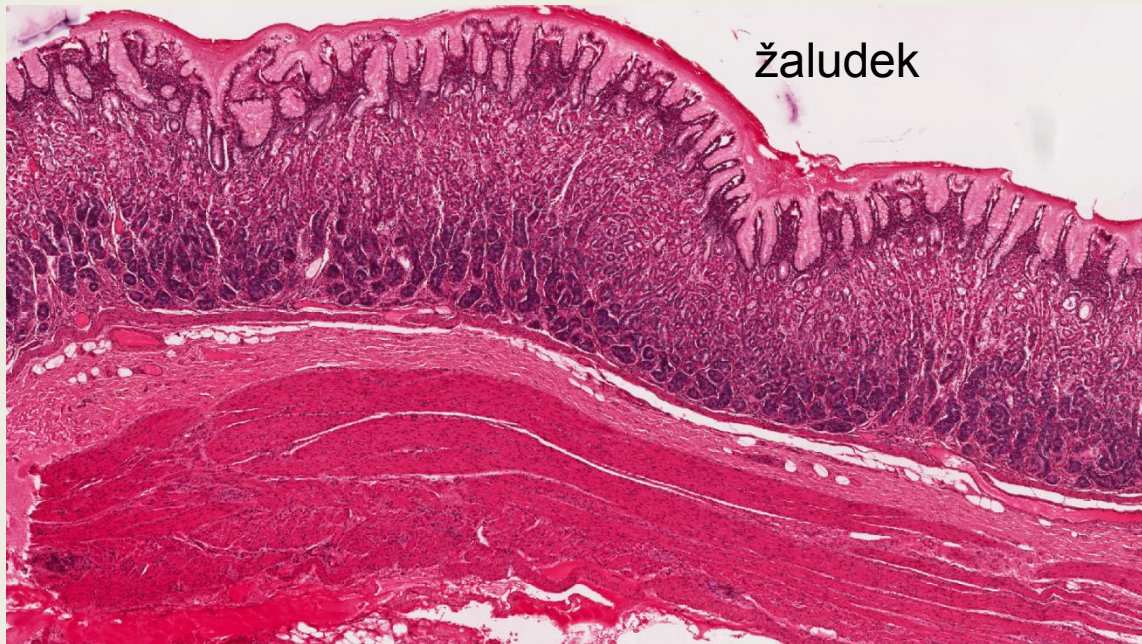
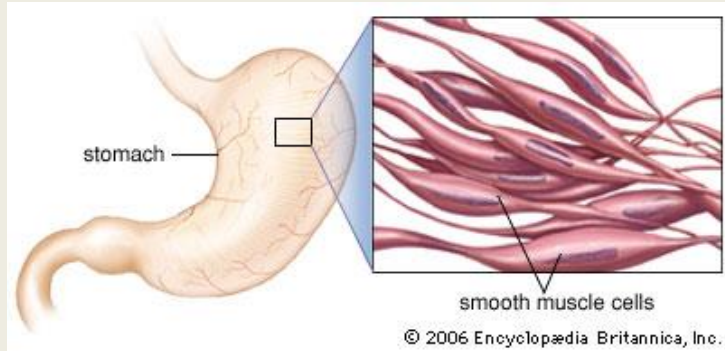
Contracted smooth muscle cell



Hladká svalová tkáň



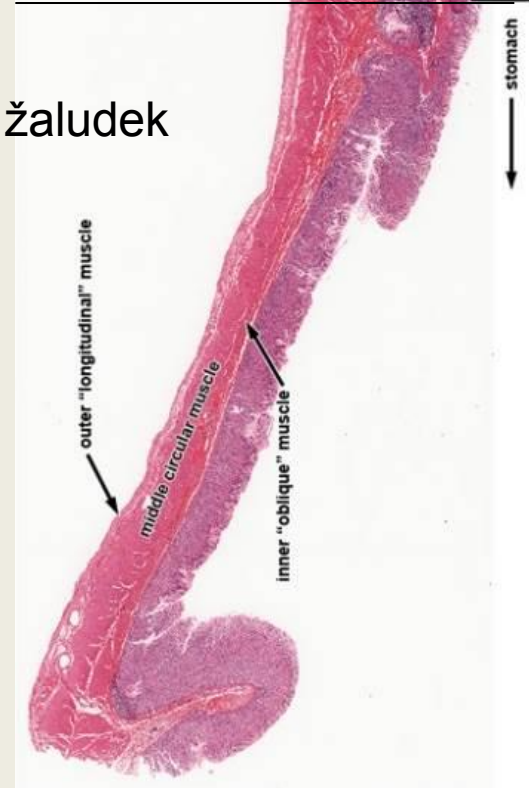
Hladká svalová tkáň



jícen



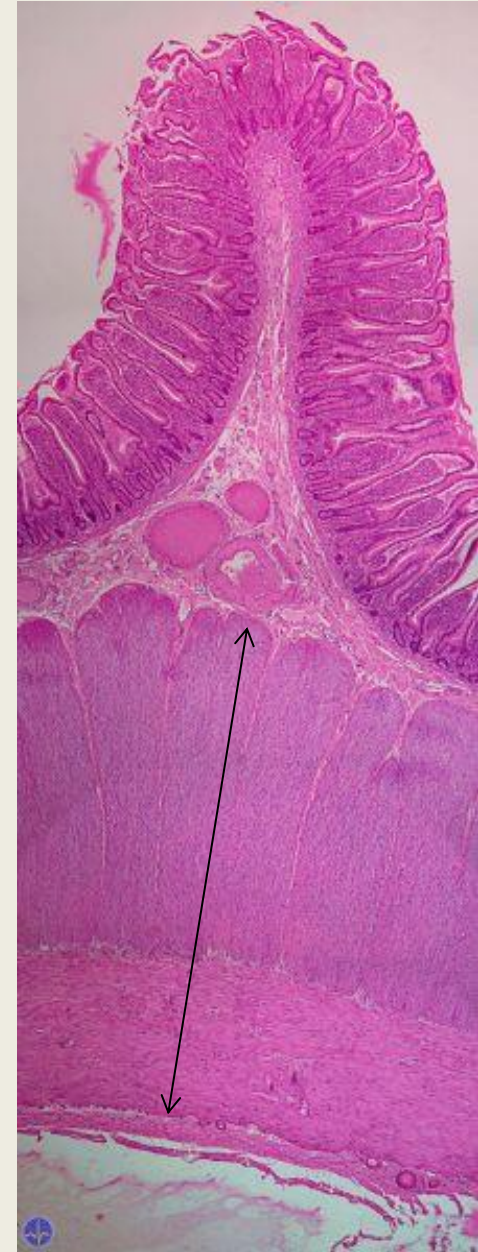
žaludek



Hladká svalová tkáň



tenké střevo



Základní typy svalové tkáně

- **Kontrakce**

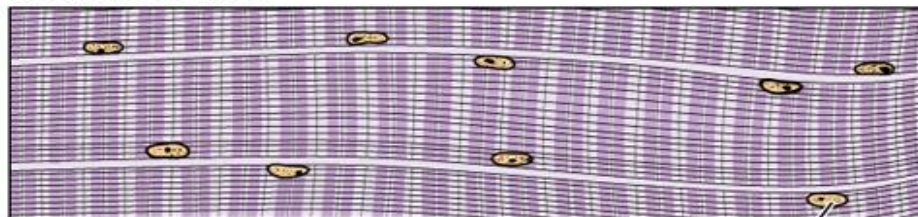
- Rychlá, ovládaná vůlí
- Rychlá autonomní
- Pomalá autonomní

- **Původ**

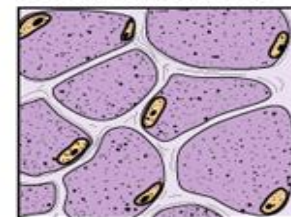
- Mesoderm /myotomy/
- Mesoderm /kardiogenní ploténka/
- Mezenchym

Muscle types

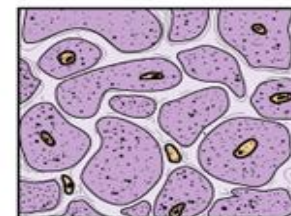
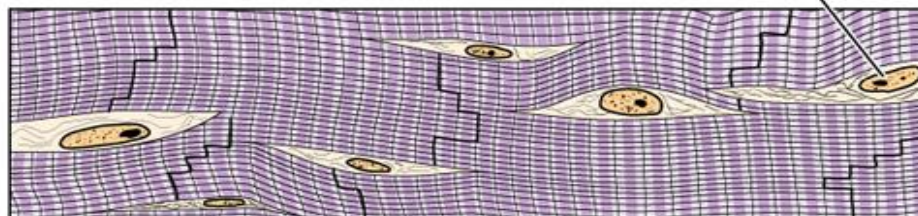
Skeletal muscle



Cross sections



Cardiac muscle



Smooth muscle

