Physiology 7

- send answer to iClicker Question 27A now.

Output: Muscle

- structure (meat)
- contraction
  - demos
  - animations
- signalling
- iClicker Question 27B

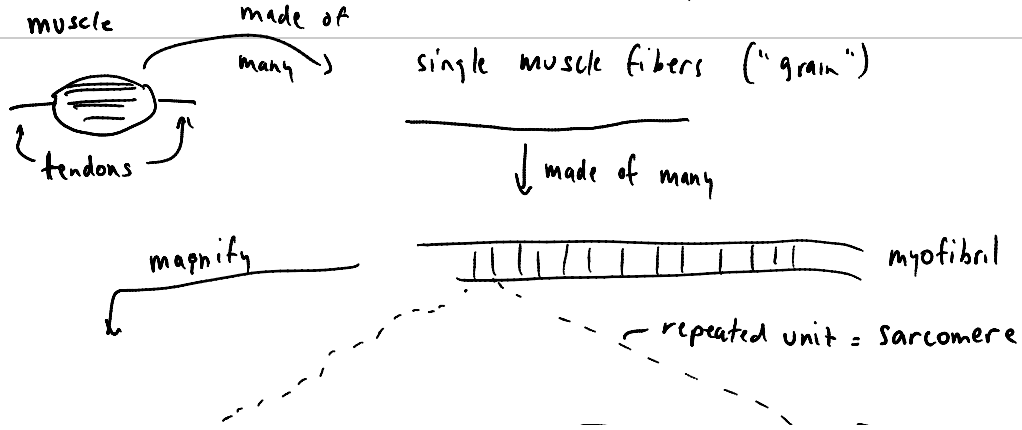
Nothing due in lab **next** week: lab practical exam

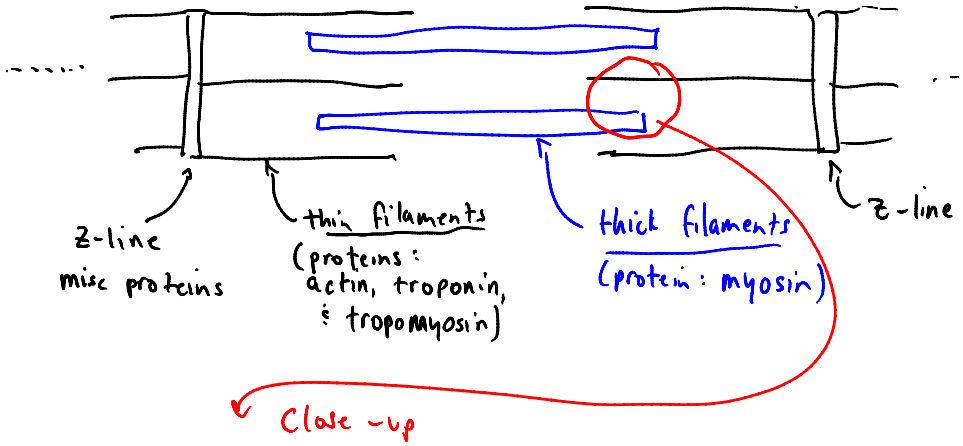
Exam 3 Monday 4/26 - details in Ecology I (note revisions!)

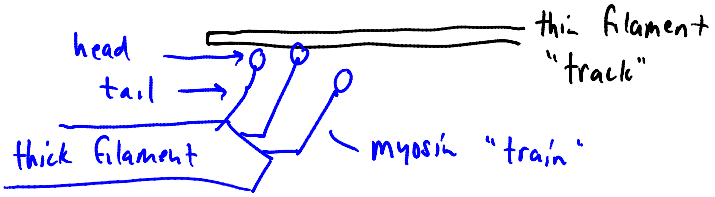
- Last names A - G in McCormack Cafe
- Last names H - Z here (1 bonus point for going to correct place!)

Output from the nervous system : Muscle

muscle structure : all meat (except "organ meats") is muscle (striated muscle)

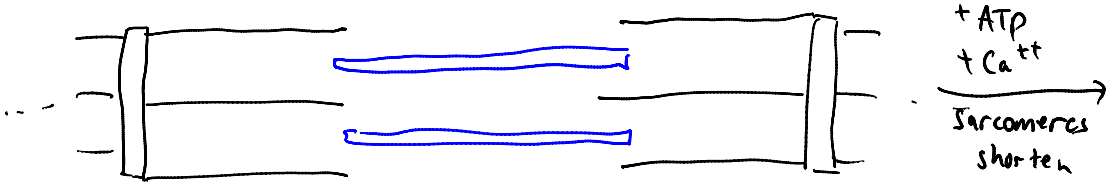




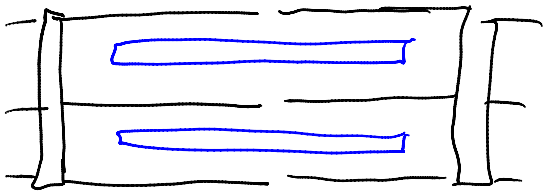


* in presence of ATP & Ca^{++} ions, myosin heads "walk" along actin towards Z-lines
- each "step" costs 1 ATP → ADP + P_i (energy input)

relaxed muscle - little overlap



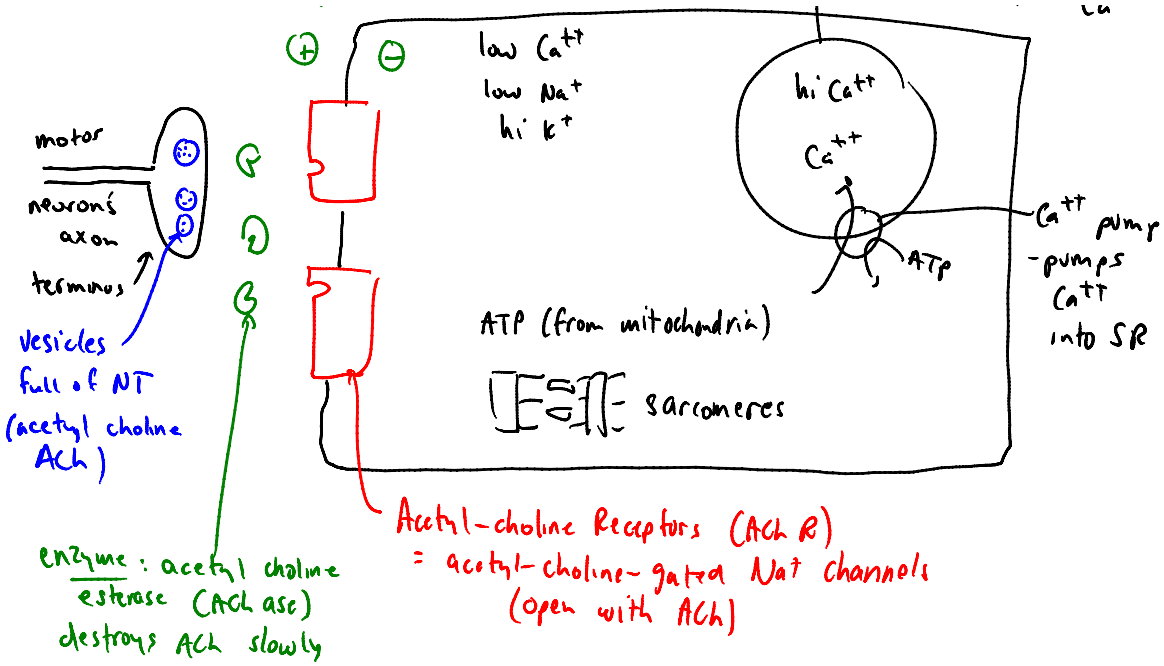
contracted muscle



all filaments same length
but more overlap
∴ whole fiber shortens

=> muscles can only pull (can be stretched passively)

How does action potential in motor neuron → muscle contraction?



Step by step

1. action potential reaches terminus of motor neuron
2. Spritz of ACh released
3. ACh binds to AChR
4. AChR opens
5. Na^+ goes in thru AChR into muscle cell
6. muscle cell $U_m \rightarrow \oplus$
7. $U_m \ominus$ triggers SR membrane proteins to release Ca^{++} into muscle cell cytoplasm
8. Ca^{++} allows actin, myosin, ATP to work
9. muscle contracts

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10. AChase (always active) destroys ACL
11. AChR closes
12. $K^+ \rightarrow$ out, $U_m \ominus$; Ca^{++} pumped back into SR
13. myosin lets go of actin ; muscle relaxes

∴ 1 AP in motor neuron ⇒ 1 "twitch" of muscle