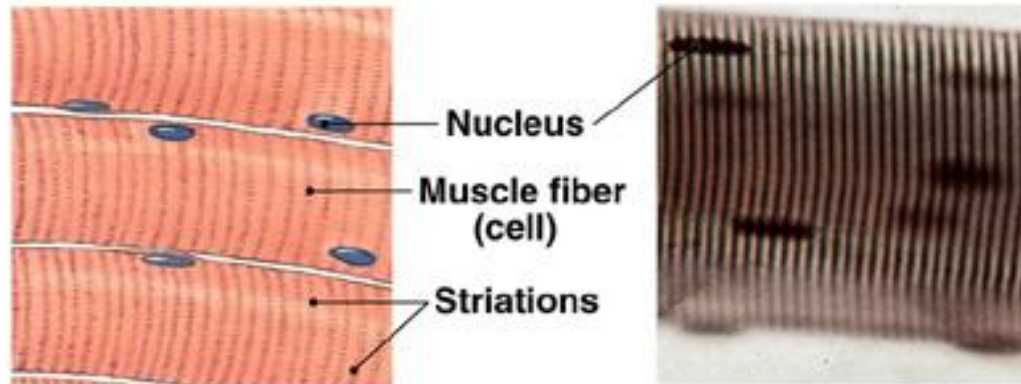


Curs 6

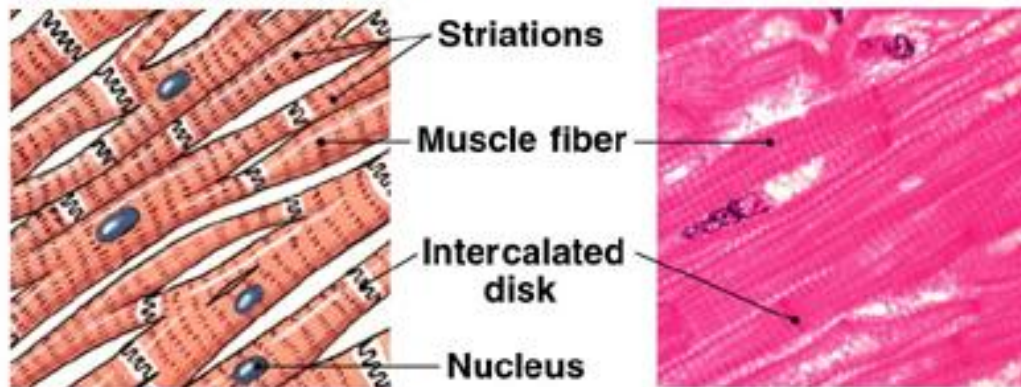
Contractia muschilor scheletici.
Controlul nervos al miscarii

Tipuri de muschi

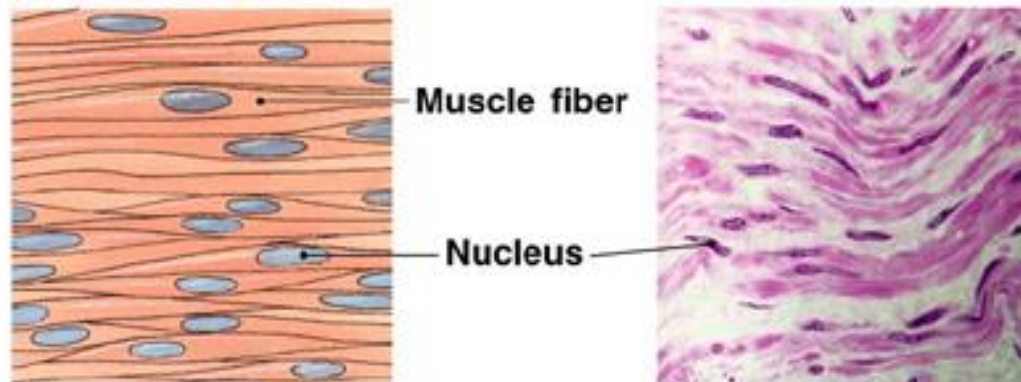
(a) Skeletal muscle



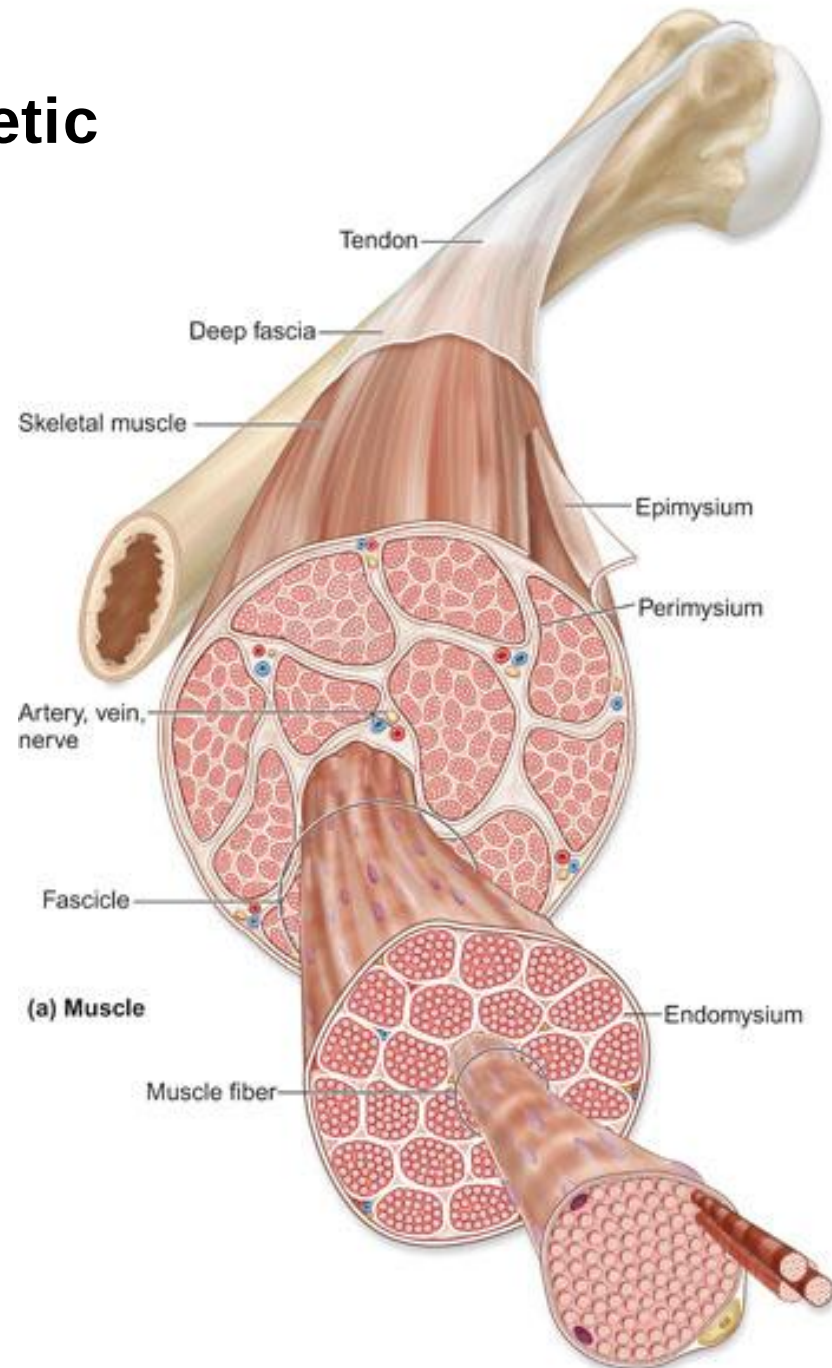
(b) Cardiac muscle



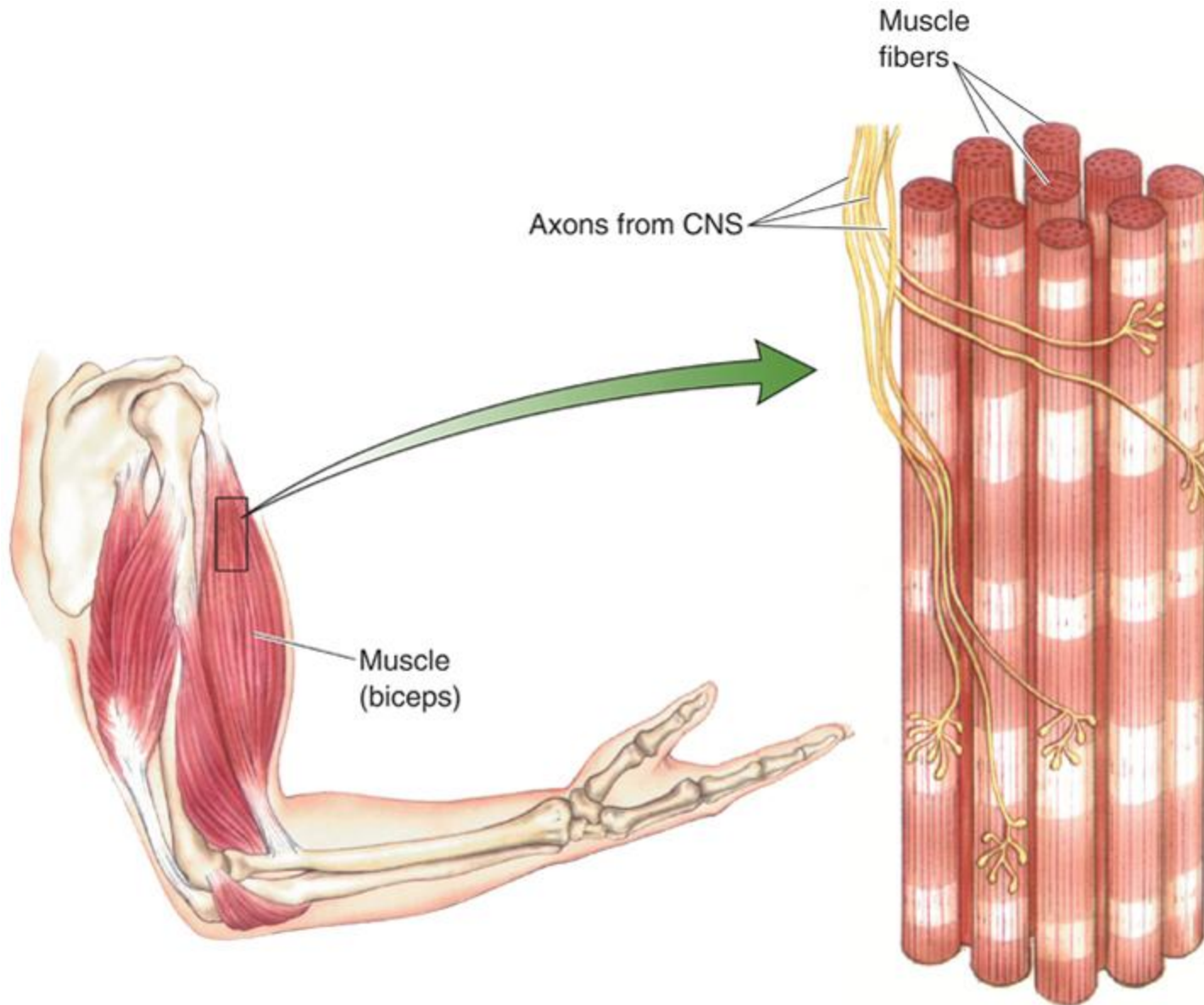
(c) Smooth muscle



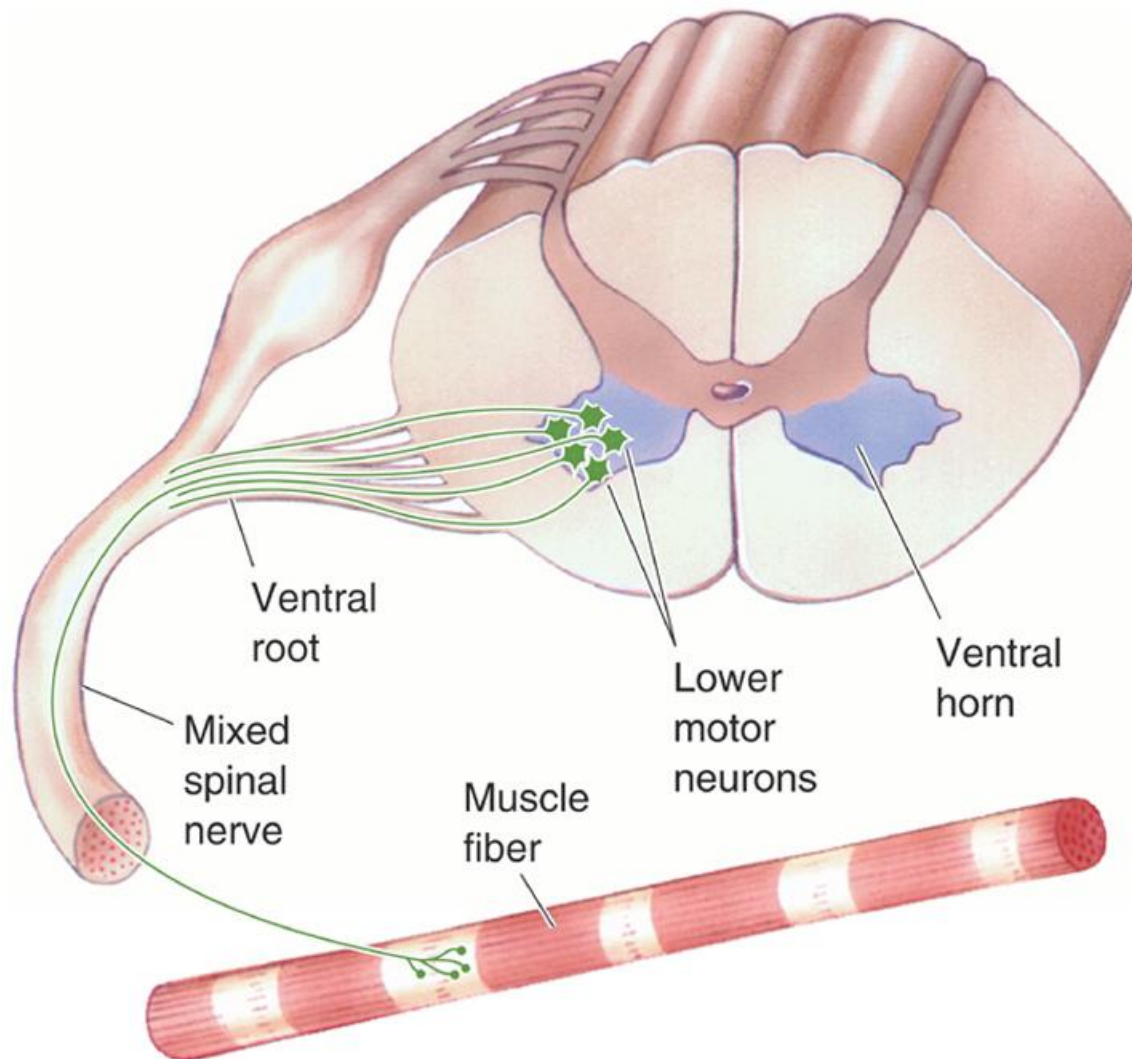
Structura muschiului scheletic



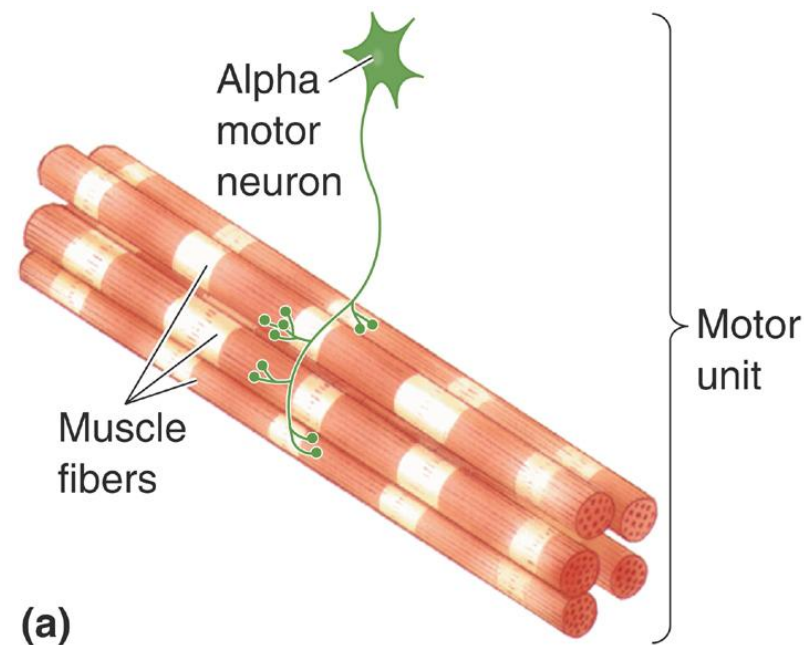
Mușchiului scheletic se contracta la comanda motoneuronilor



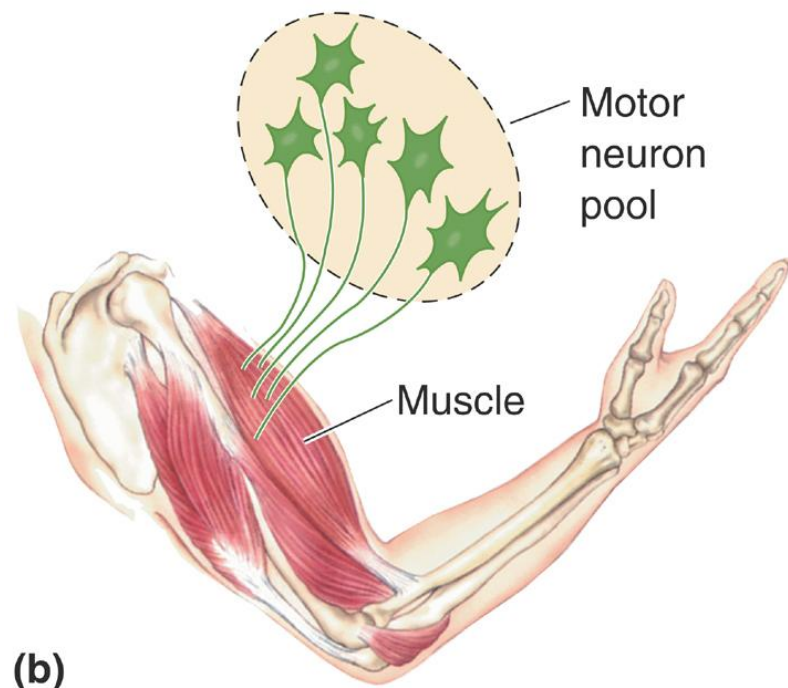
Motoneuronii inferiori (din coarnele ventrale ale maduvei)
controlează activitatea fibrelor musculare scheletice



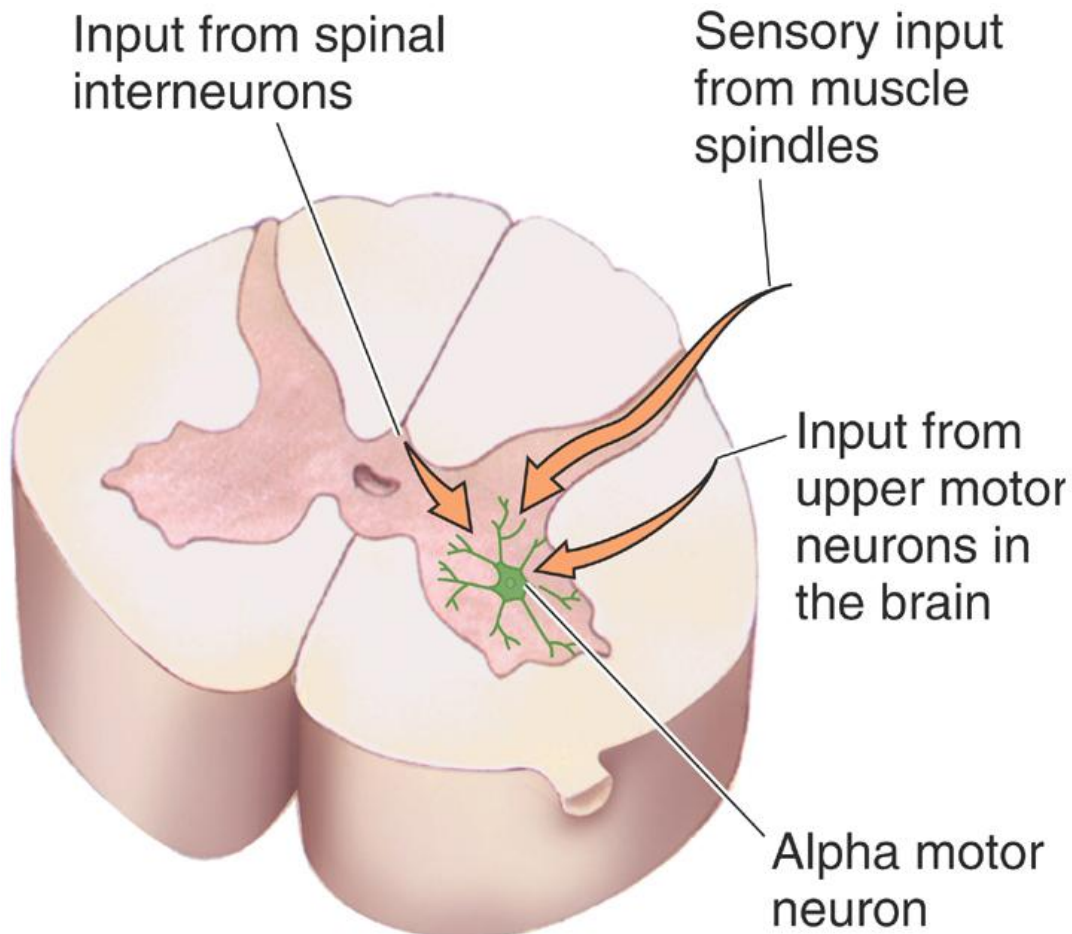
Unitatea motorie – un motoneuron și totalitatea fibrelor musculare pe care le inervează



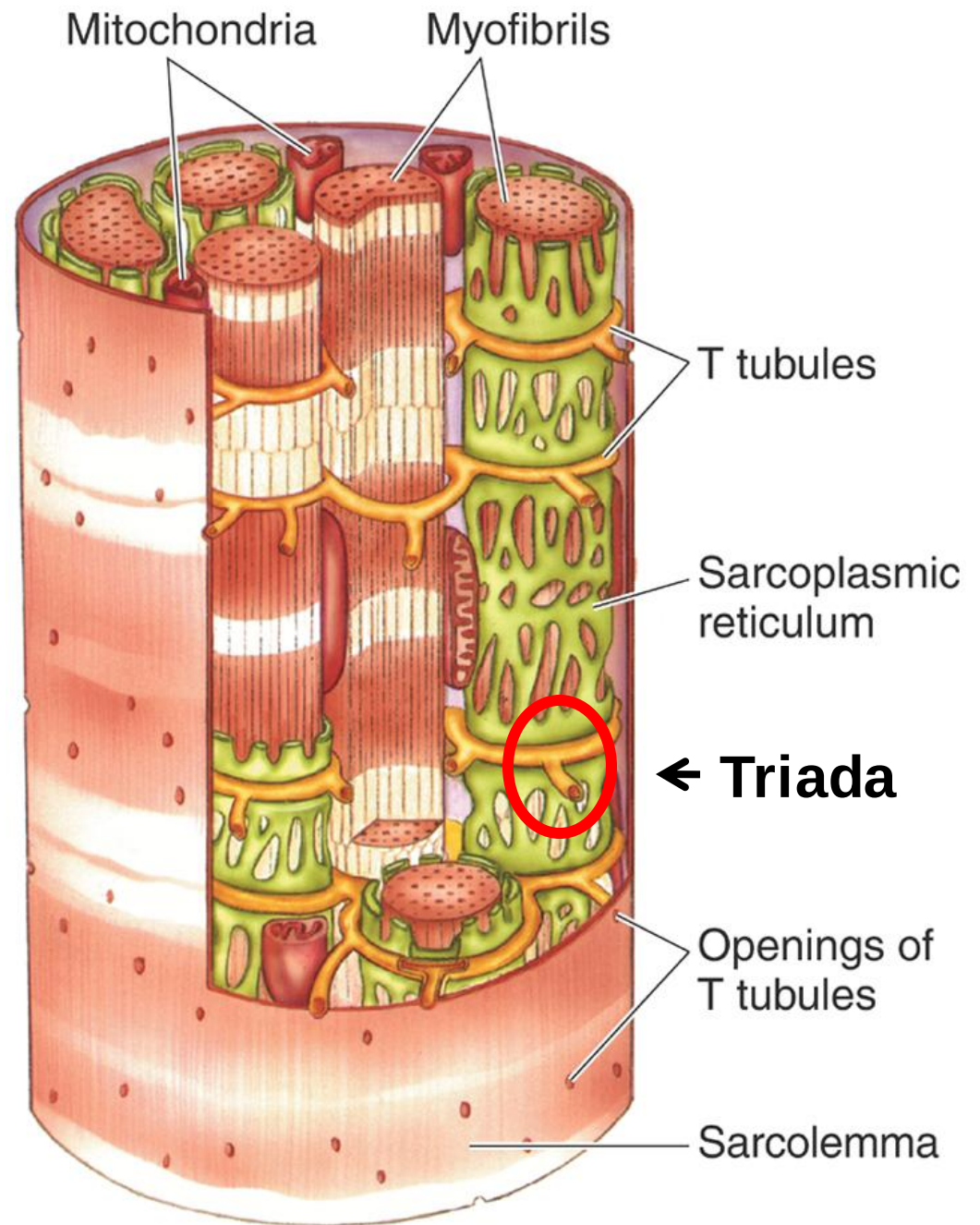
Grup motor –totalitatea motoneuronilor care inervează același mușchi



Sursele de input pentru motoneuronii α din coarnele ventrale ale măduvei



Structura fibrei musculare scheletice



Sarcomera – unitatea structurală a miofibrilei

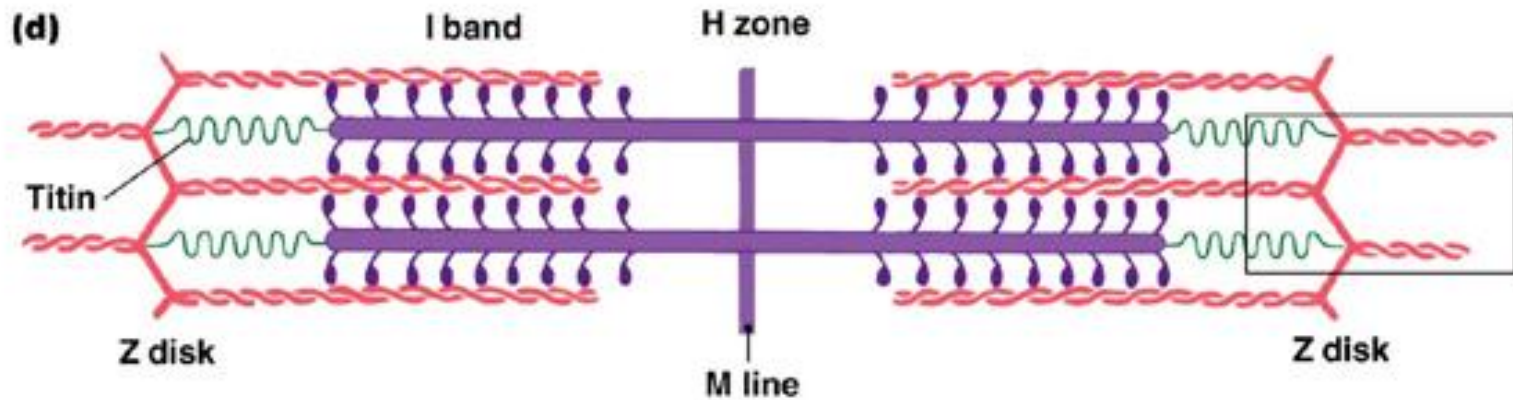
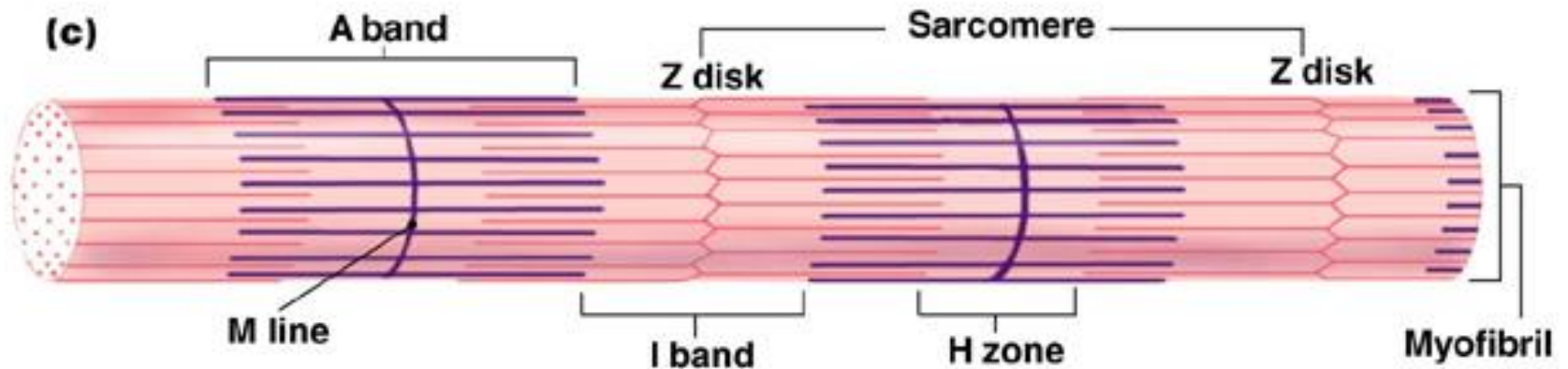
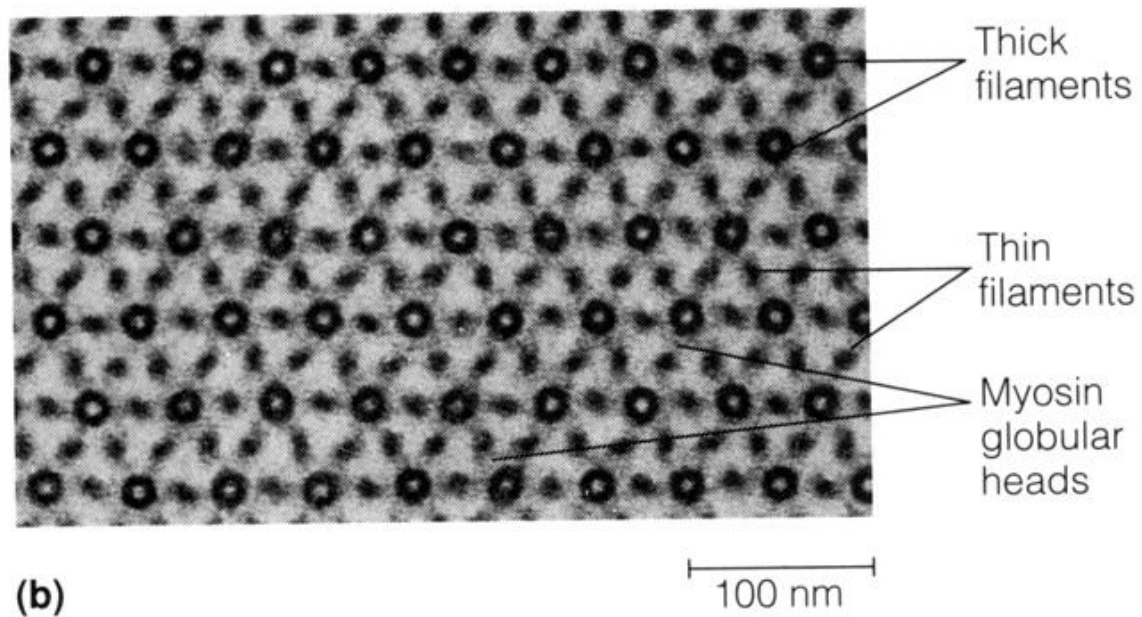
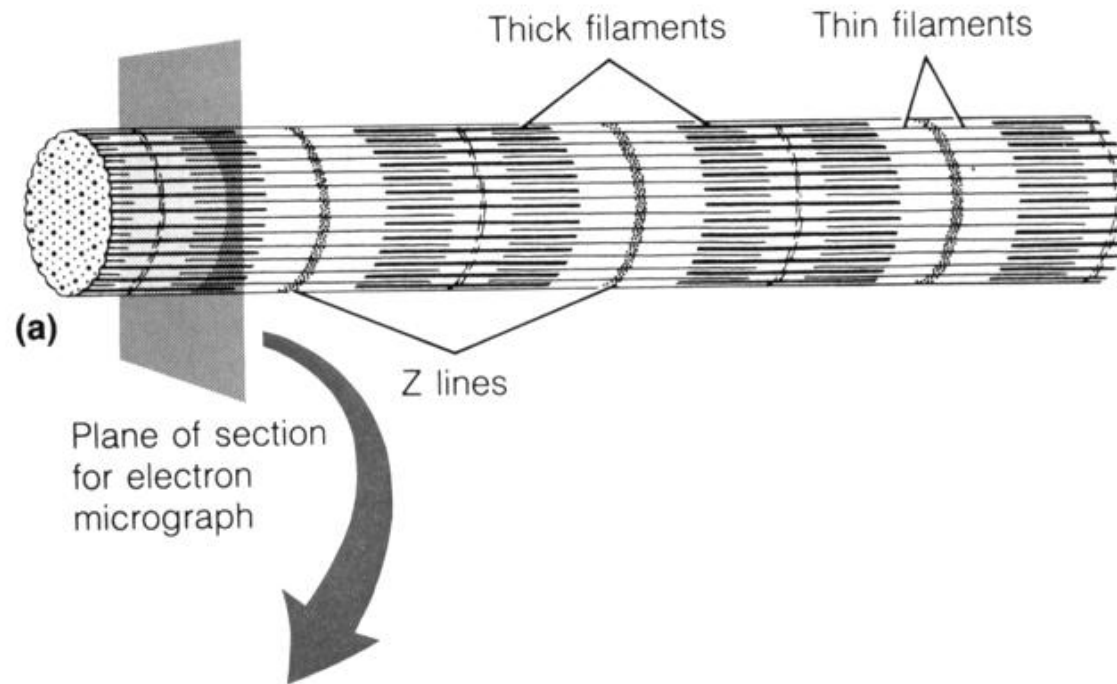
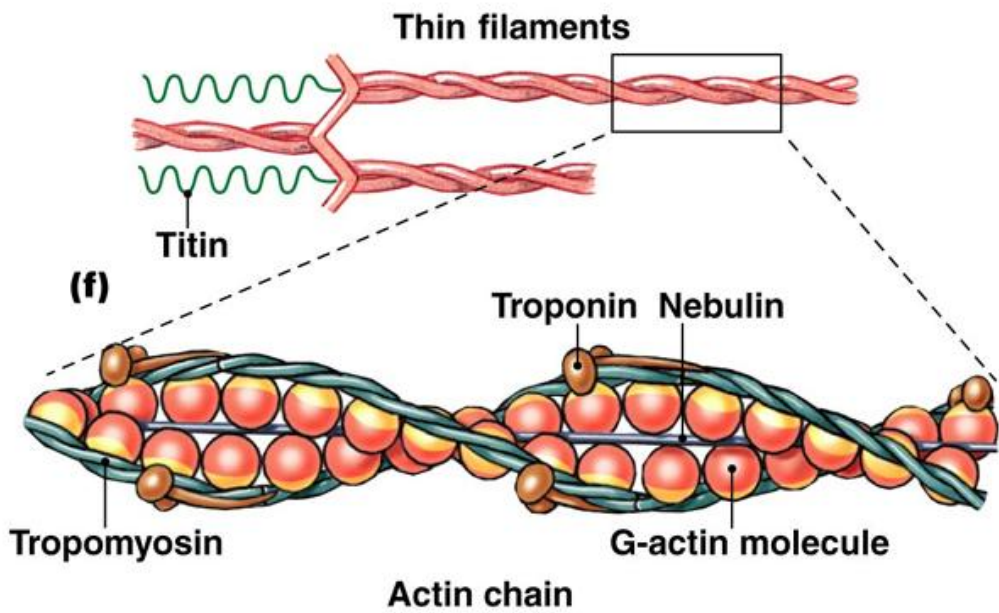


Fig. 12-3



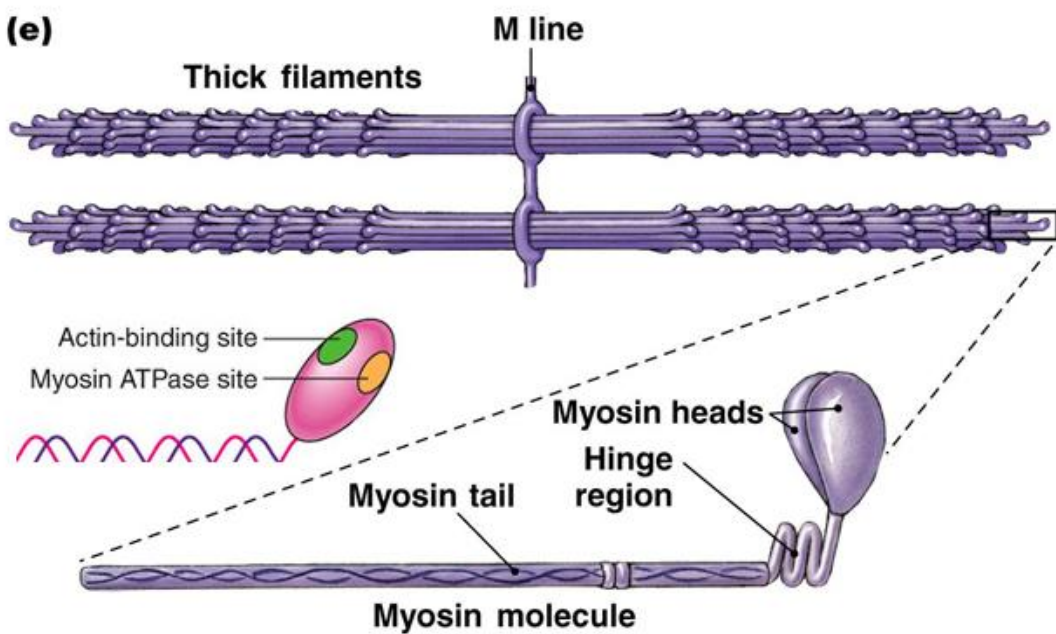
Filamentul
subtire de actina



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Fig. 12-3

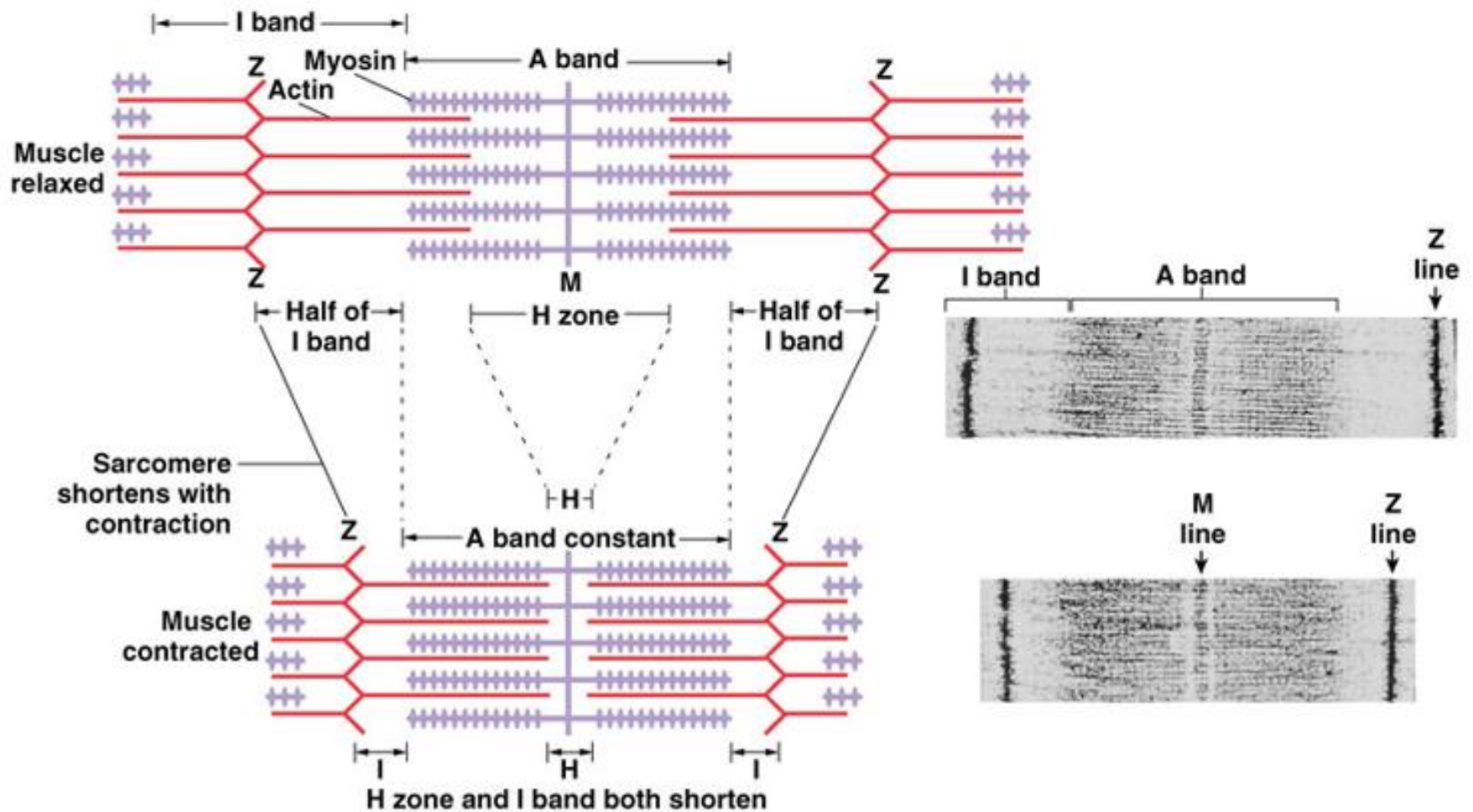
Filamentul gros de
miozina



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Fig. 12-3

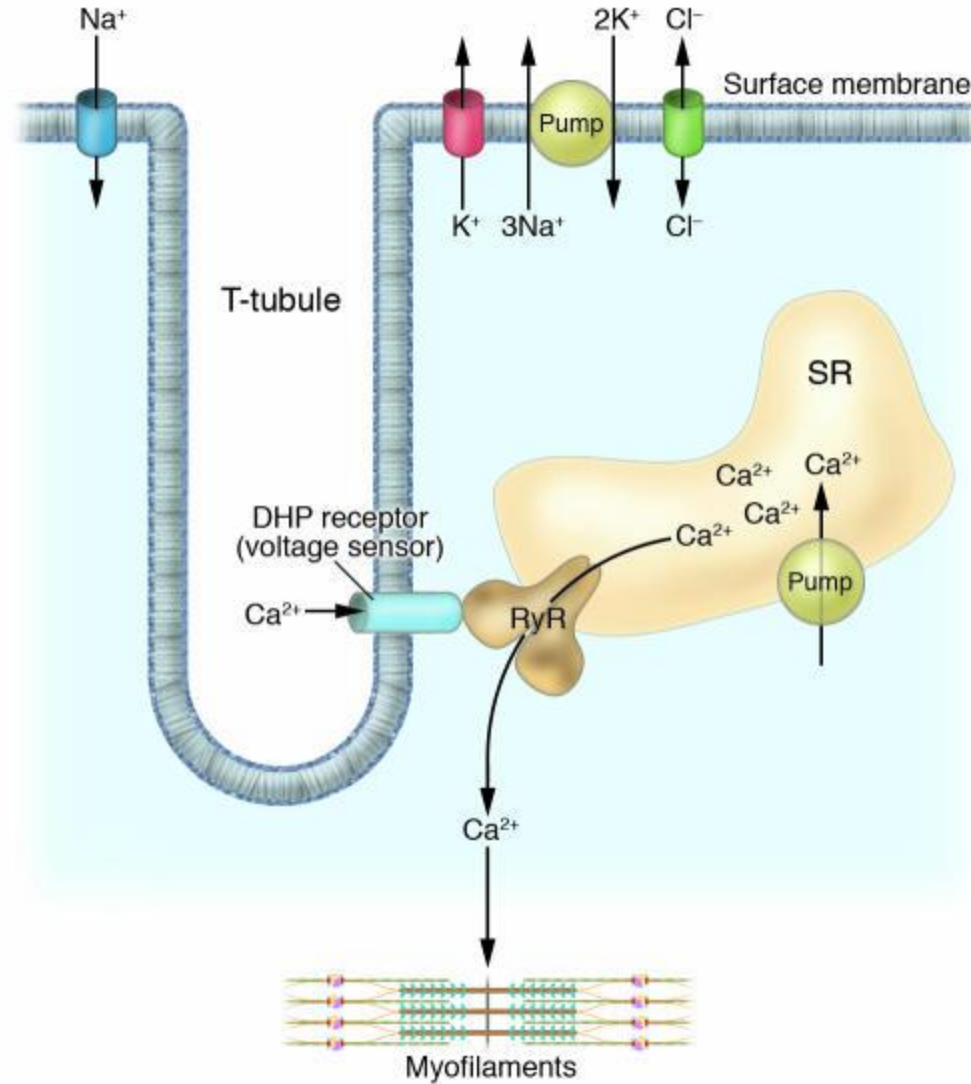
Contractia musculara – scurtarea sarcomerei



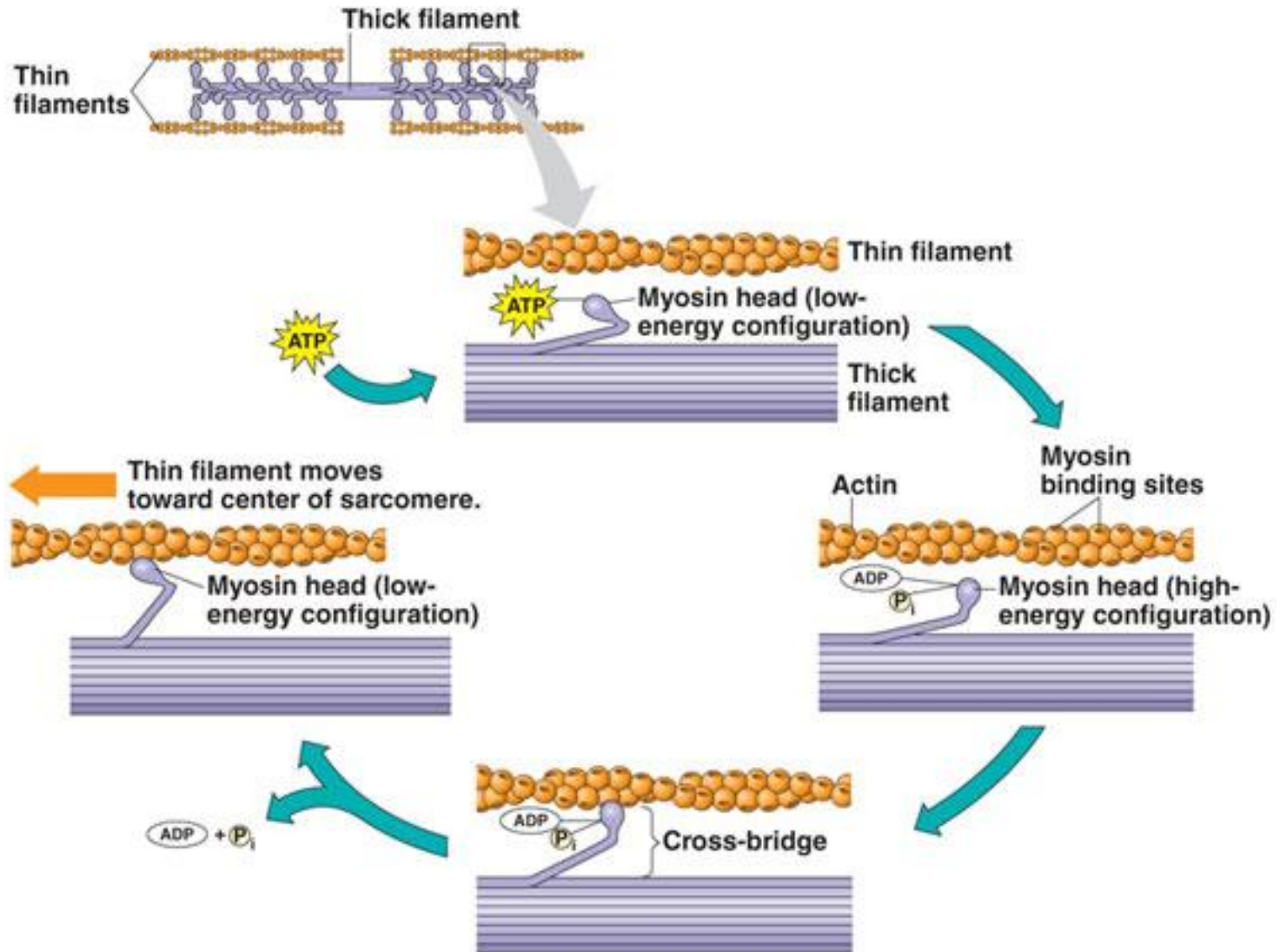
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Fig. 12-8

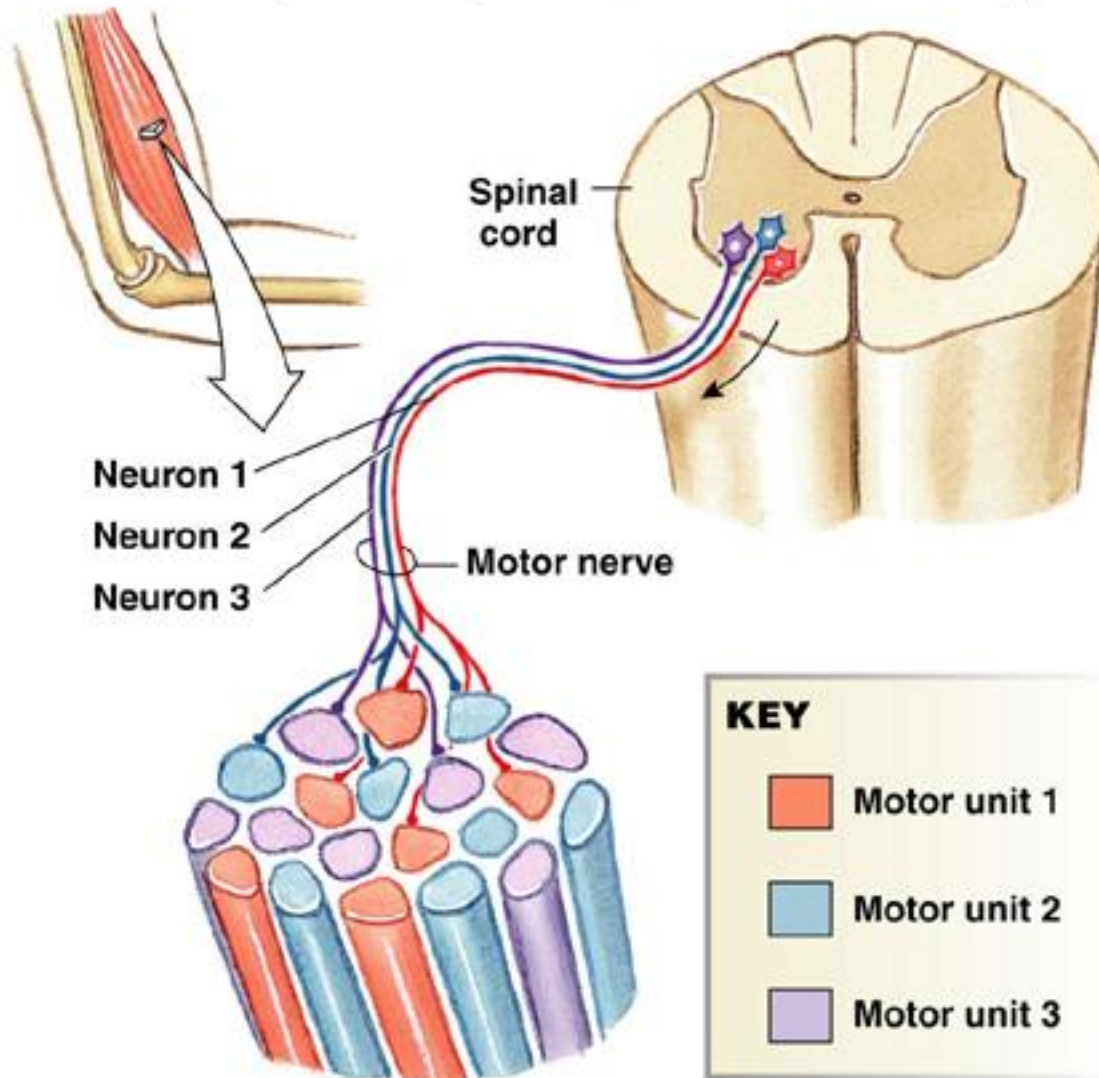
Cuplarea excitație-contrație în mușchiul scheletic



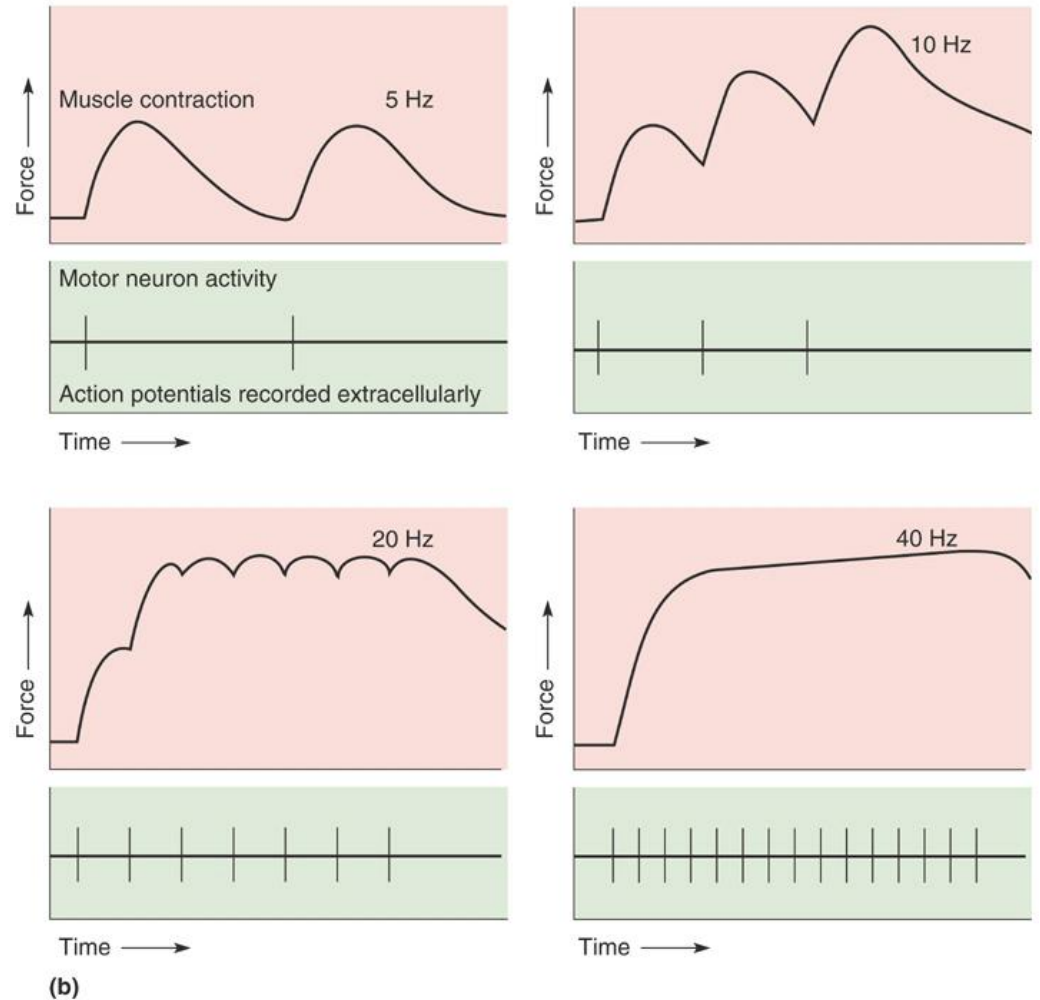
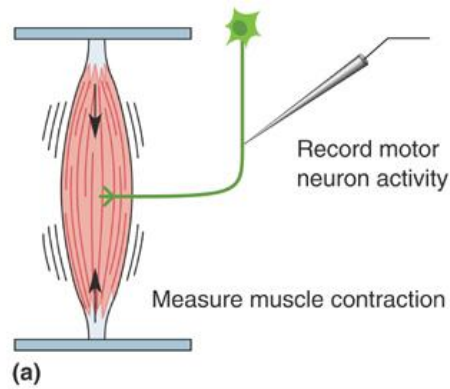
Teoria alunecării filamentelor



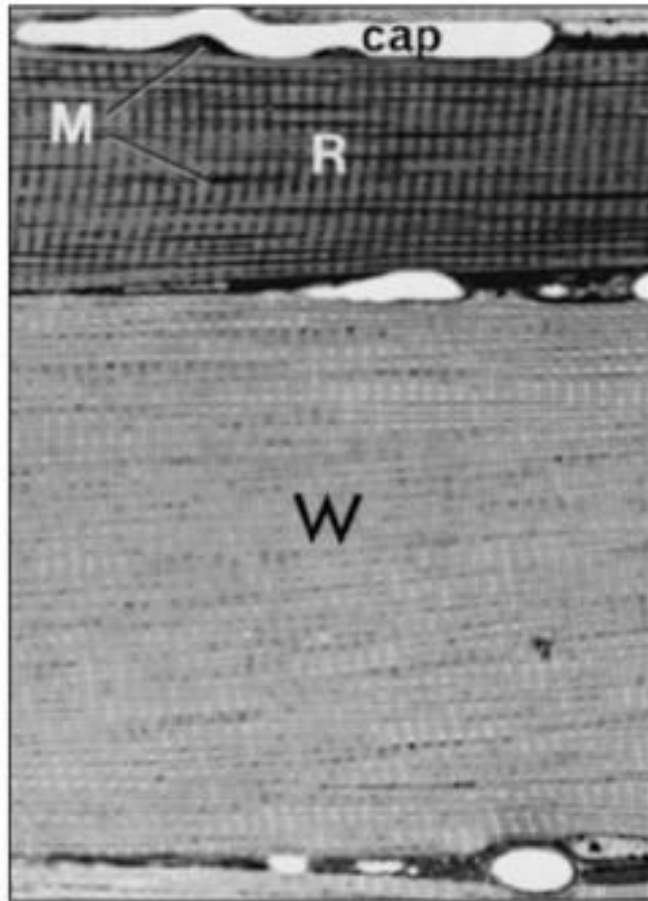
One muscle may have many motor units of different fiber types.



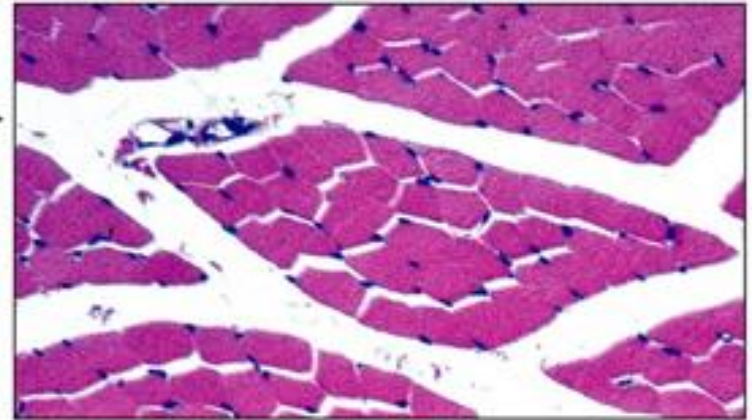
Secusă – sumare –
tetanus incomplet –
tetanus complet



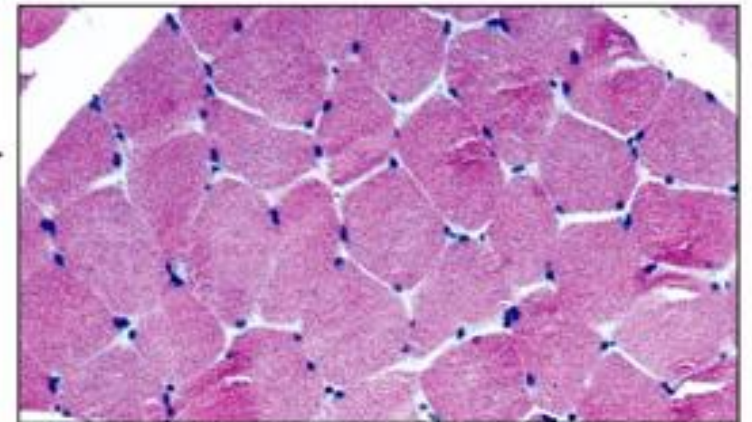
Tipuri de fibre musculare – lente si rapide



← **Slow-twitch
oxidative
muscle fibers**
Note smaller
diameter darker
color due to
myoglobin;
fatigue resistant

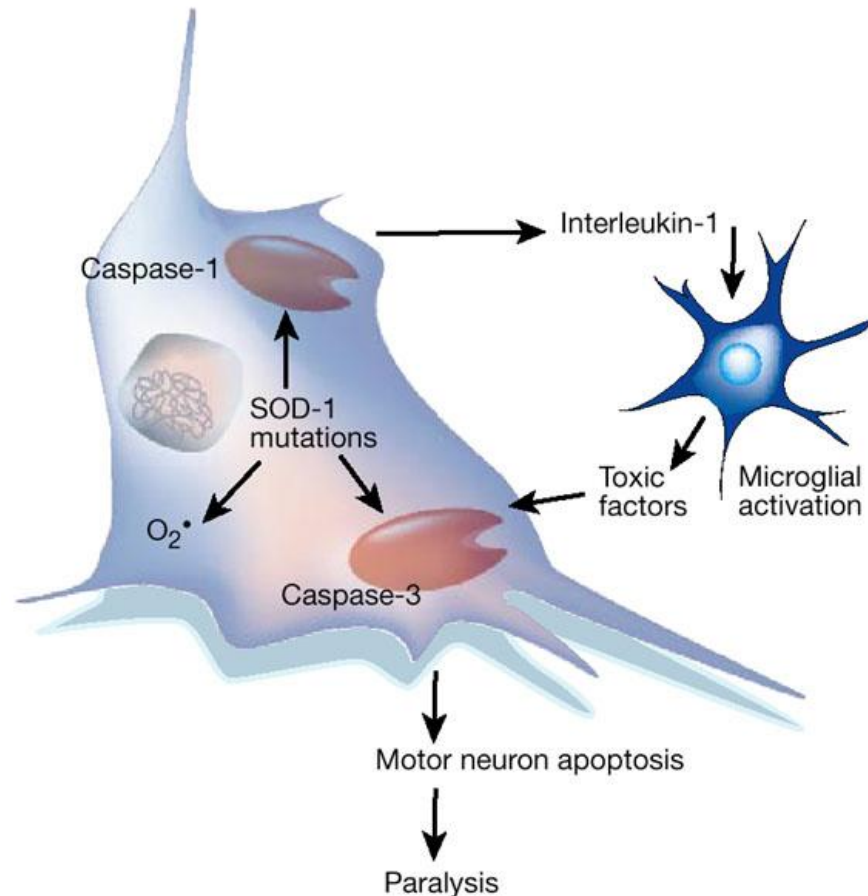


← **Fast-twitch
glycolytic
muscle fibers**
Larger diameter,
pale color,
easily fatigued



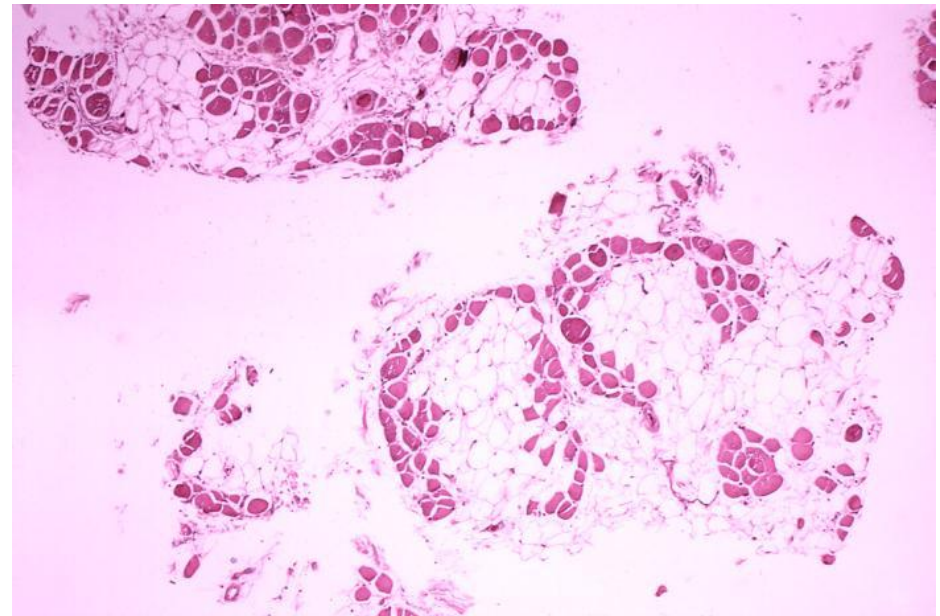
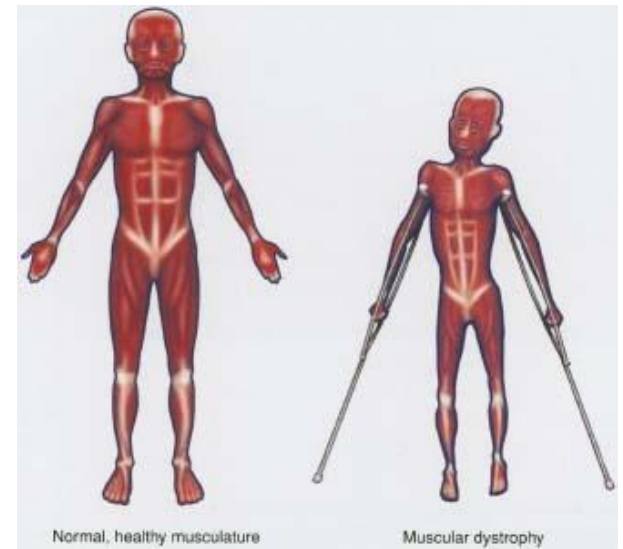
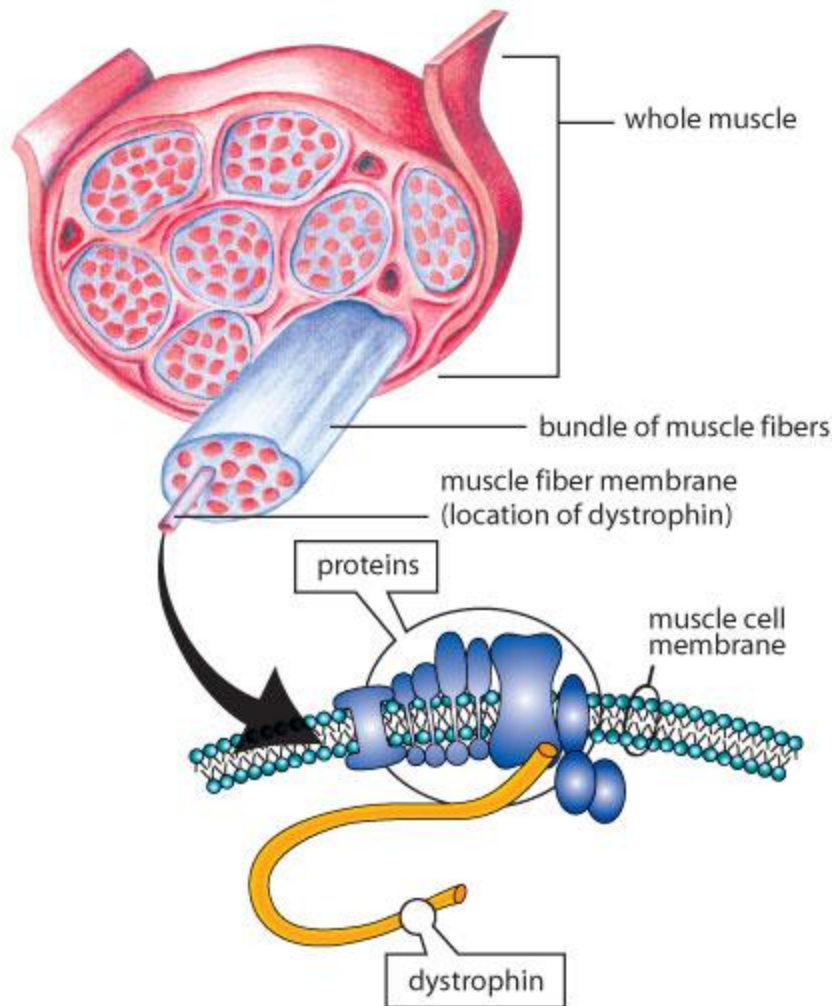
Boli neurodegenerative

Scleroza laterală amiotrofică – maladia Lou Gehrig

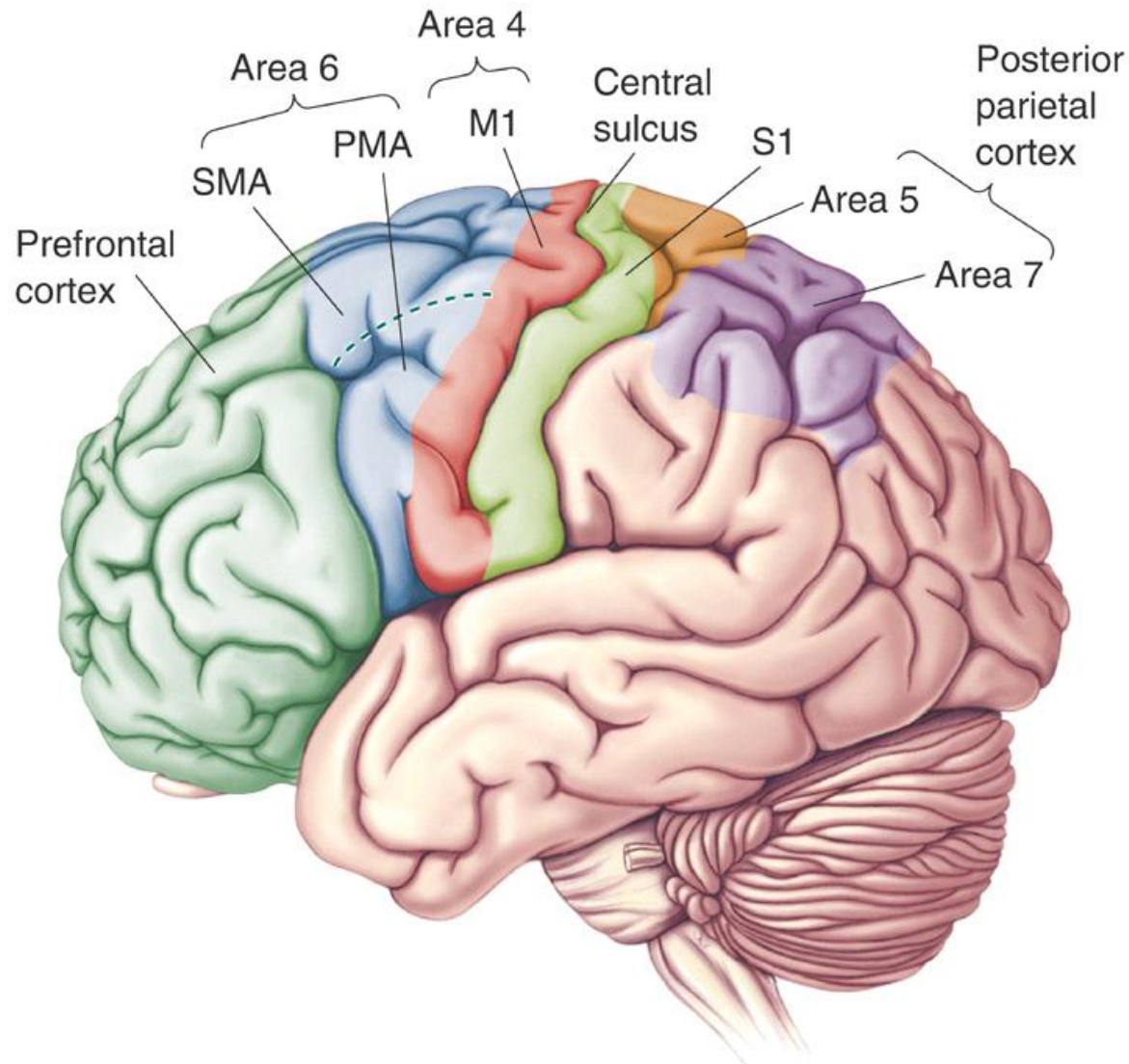


Degenerarea motoneuronilor din SNC – neuronii răspunzători de generarea mișcării voluntare; În lipsa semnalelor nervoase, mușchii se atrofiază; 10% din cazuri – mutații ale SOD – superoxid dismutaza; 90% - sporadice (infecții, traume, agenți toxici)

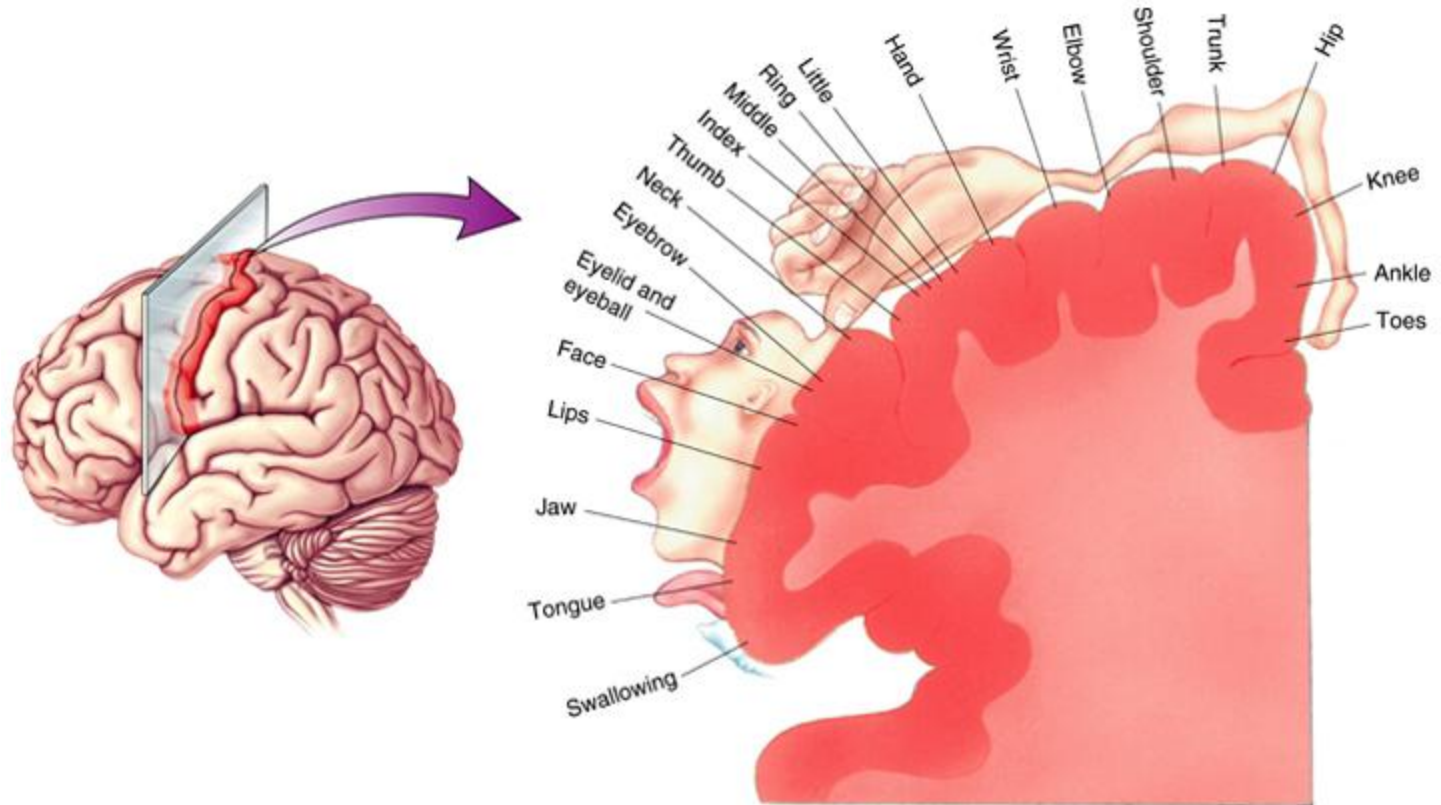
Distrofia musculară Duchenne



Arii corticale implicate în planificarea și controlul mișcării voluntare



Cortexul motor primar



Neuroscience: Exploring the Brain, 3rd Ed, Bear, Connors, and Paradiso Copyright © 2007 Lippincott Williams & Wilkins

-organizarea somato-topică a cortexului motor primar

Căile motorii descendente

cortex

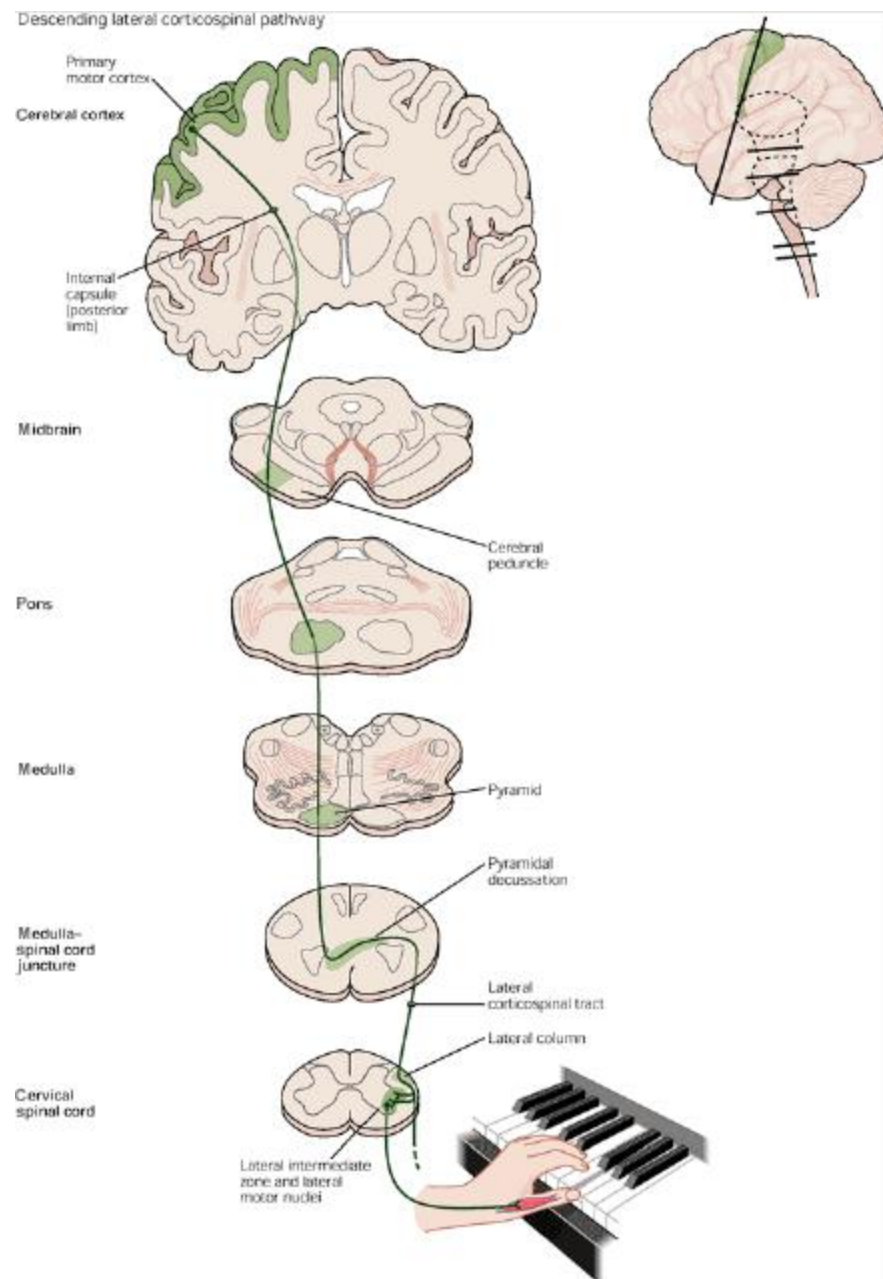
mezencefal

puntea lui Varolio (trunchi cerebral)

bulbul rahidian (medula oblongata)

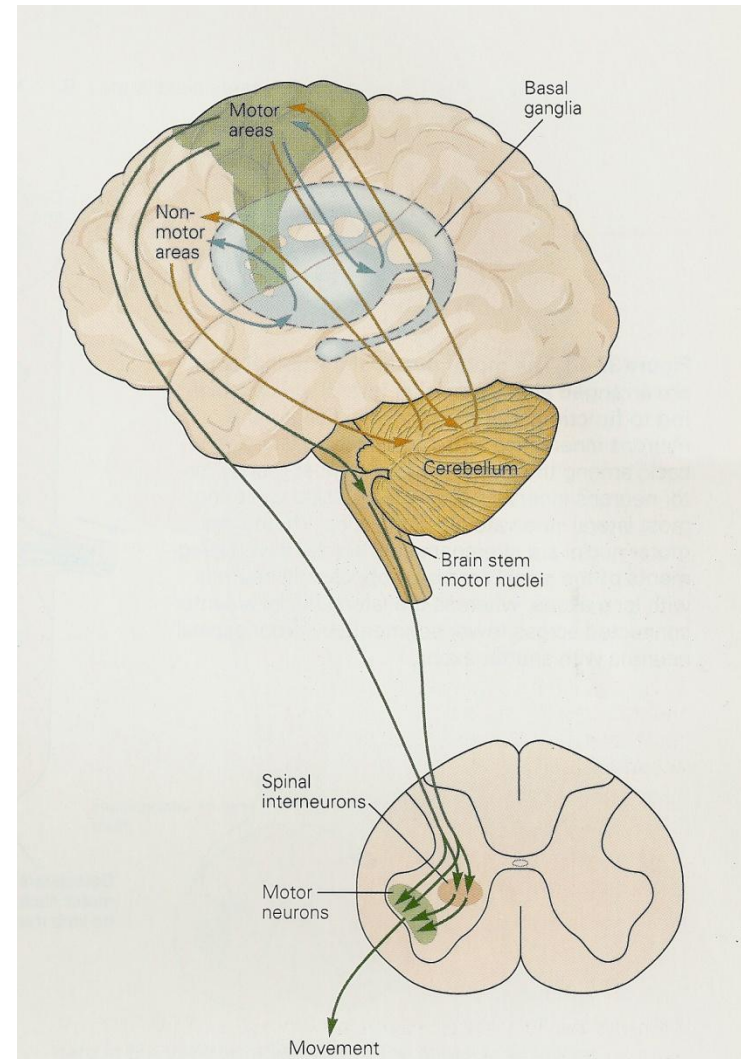
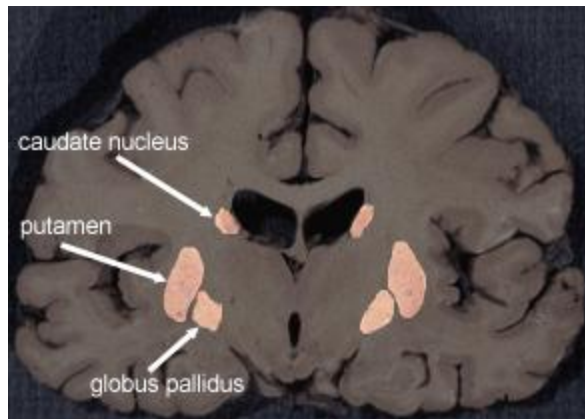
granița dintre bulb și măduvă

măduva spinării, segmentul cervical



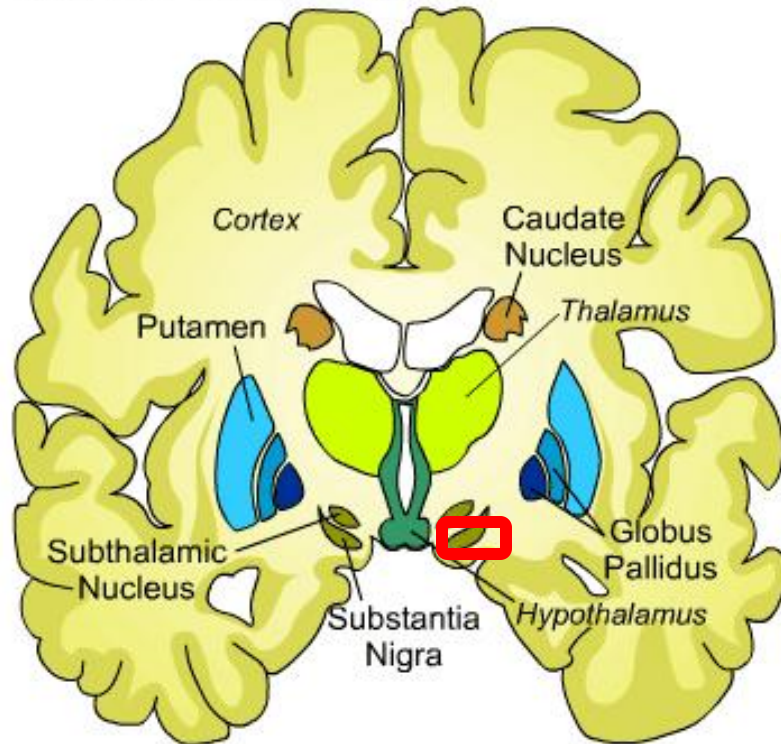
Căile motorii descendente

- Două tipuri de proiecții descendente – cortex-măduvă și trunchi-măduvă
- cerebelul și ganglionii bazali au rol de modulare

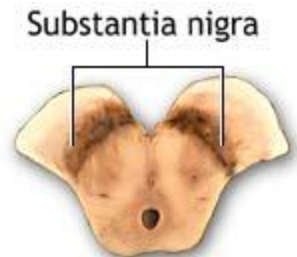


Maladia Parkinson

Figure AB-18: Basal Ganglia



Cut section of the midbrain where a portion of the substantia nigra is visible

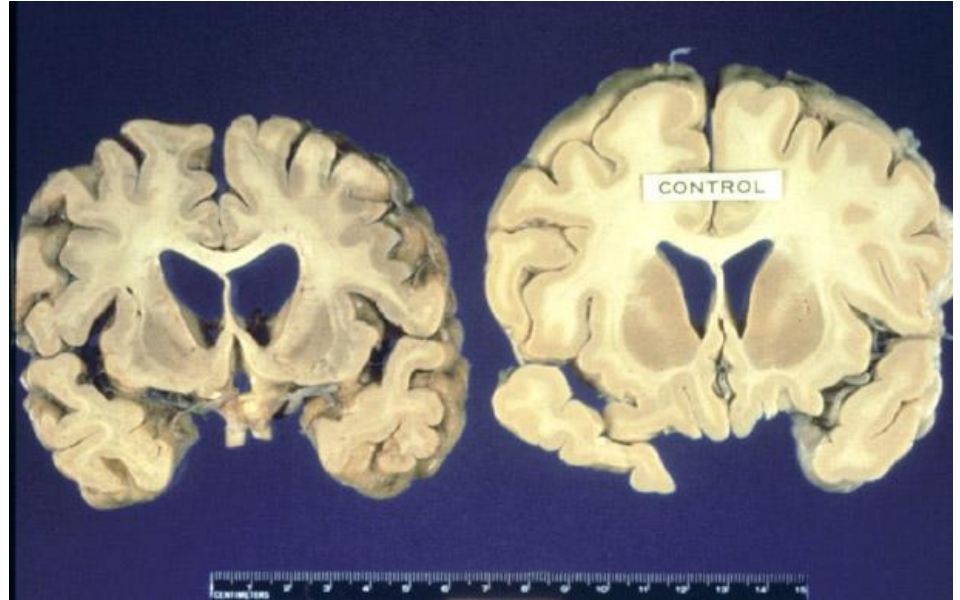


Diminished substantia nigra as seen in Parkinson's disease



Maladia Parkinson – degenerare ($> 80\%$) a neuronilor dopaminergici din *substantia nigra* (ganglionii bazali) – reducere a stimulării cortexului motor – bradikinezie și chiar akinezie

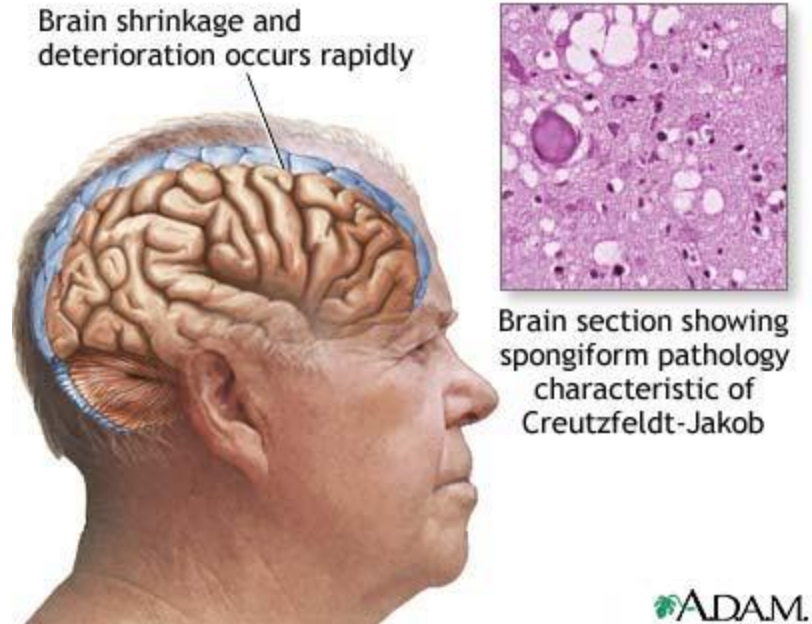
Maladia Huntington



-mişări anormale, necoordonate, asemenea unui dans (coree), declin al abilităților mentale; apoptoza și deteriorare progresivă a ganglionilor bazali

Maladia Creutzfeldt-Jakob

Maladia Kuru – Papua - Noua Guinee



Encefalopatia spongiformă bovină - BSE

Maladia Creutzfeldt-Jakob – prionică – degenerare spongiformă a cortexului cerebral și cerebelar – ataxie cerebelară, crize de tip epileptic, demență progresivă