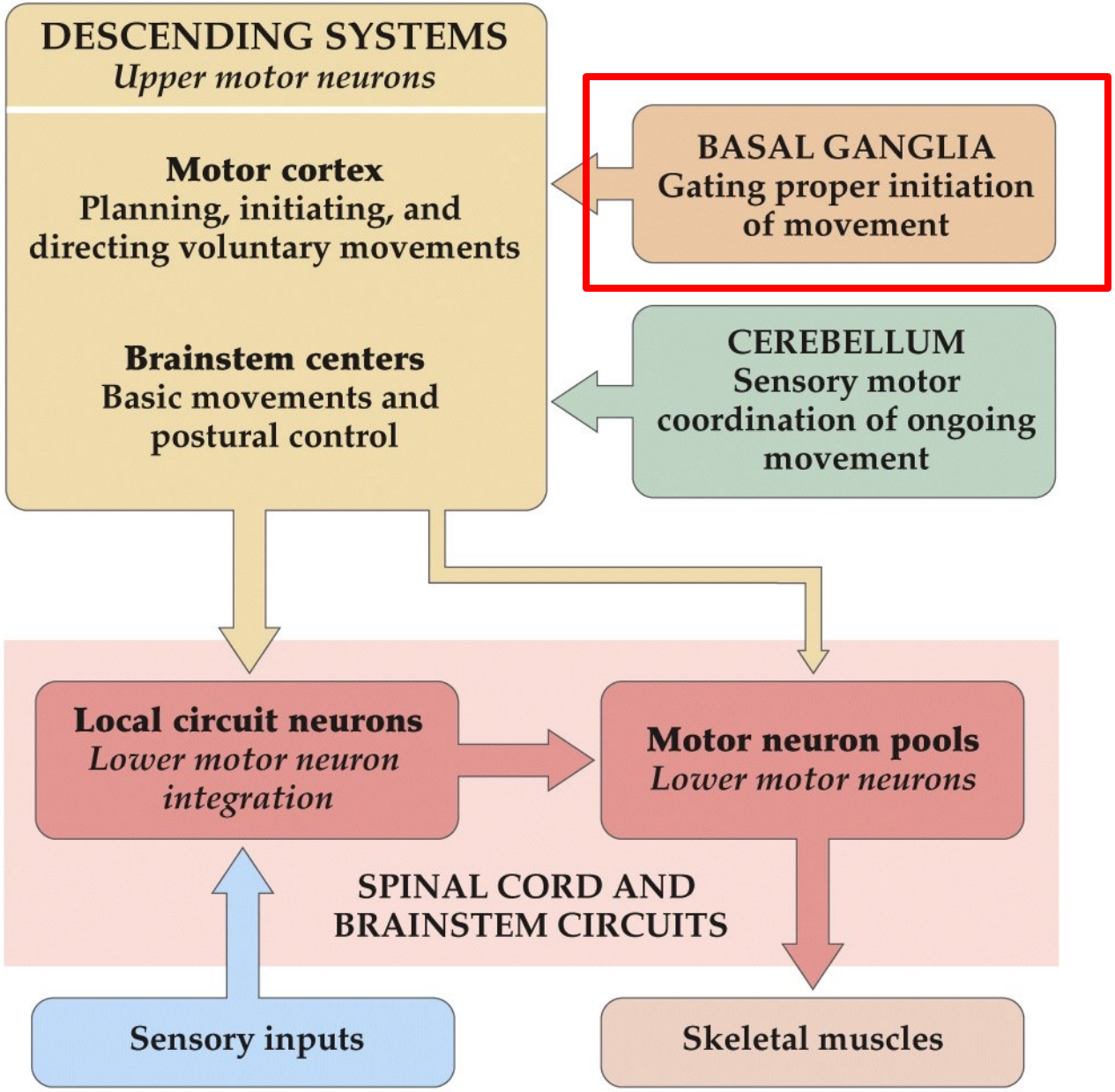
BMD ENG 301
Quantitative Systems Physiology
(Nervous System)

Basal Ganglia
2022_v1

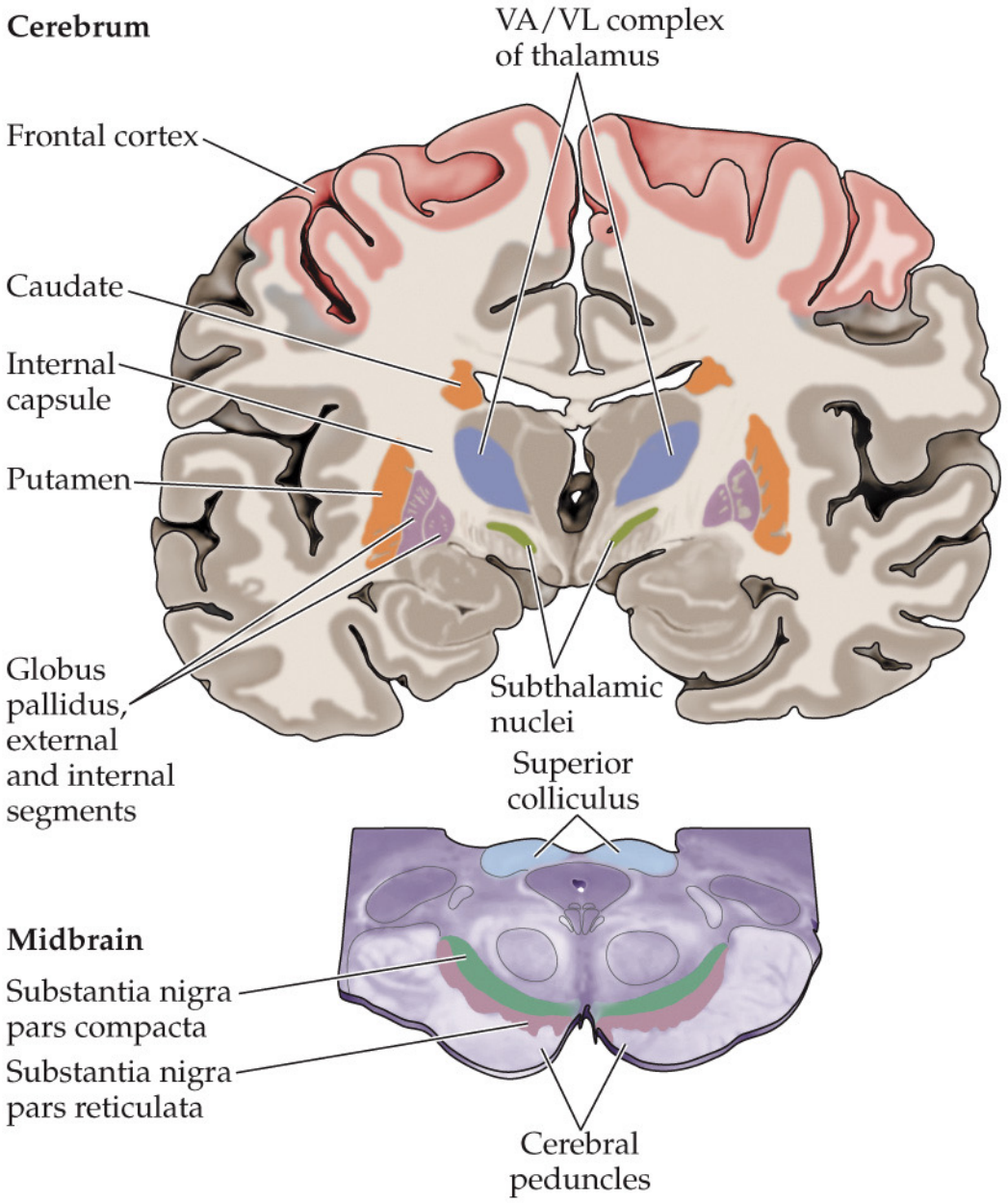
Professor Malcolm MacIver

Organization of neural structures involved in the control of movement



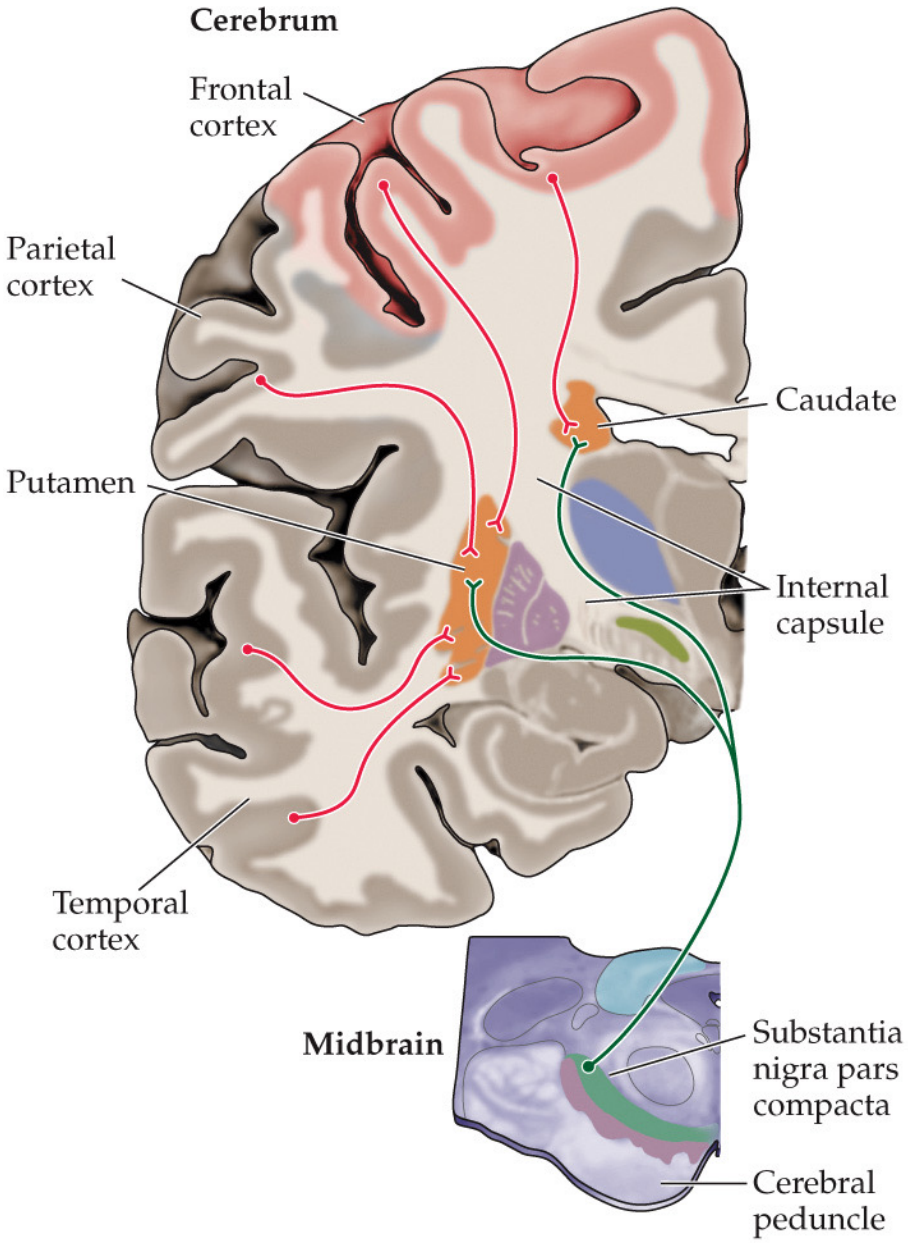
NEUROSCIENCE 5e, Figure 16.1

Motor components of the basal ganglia



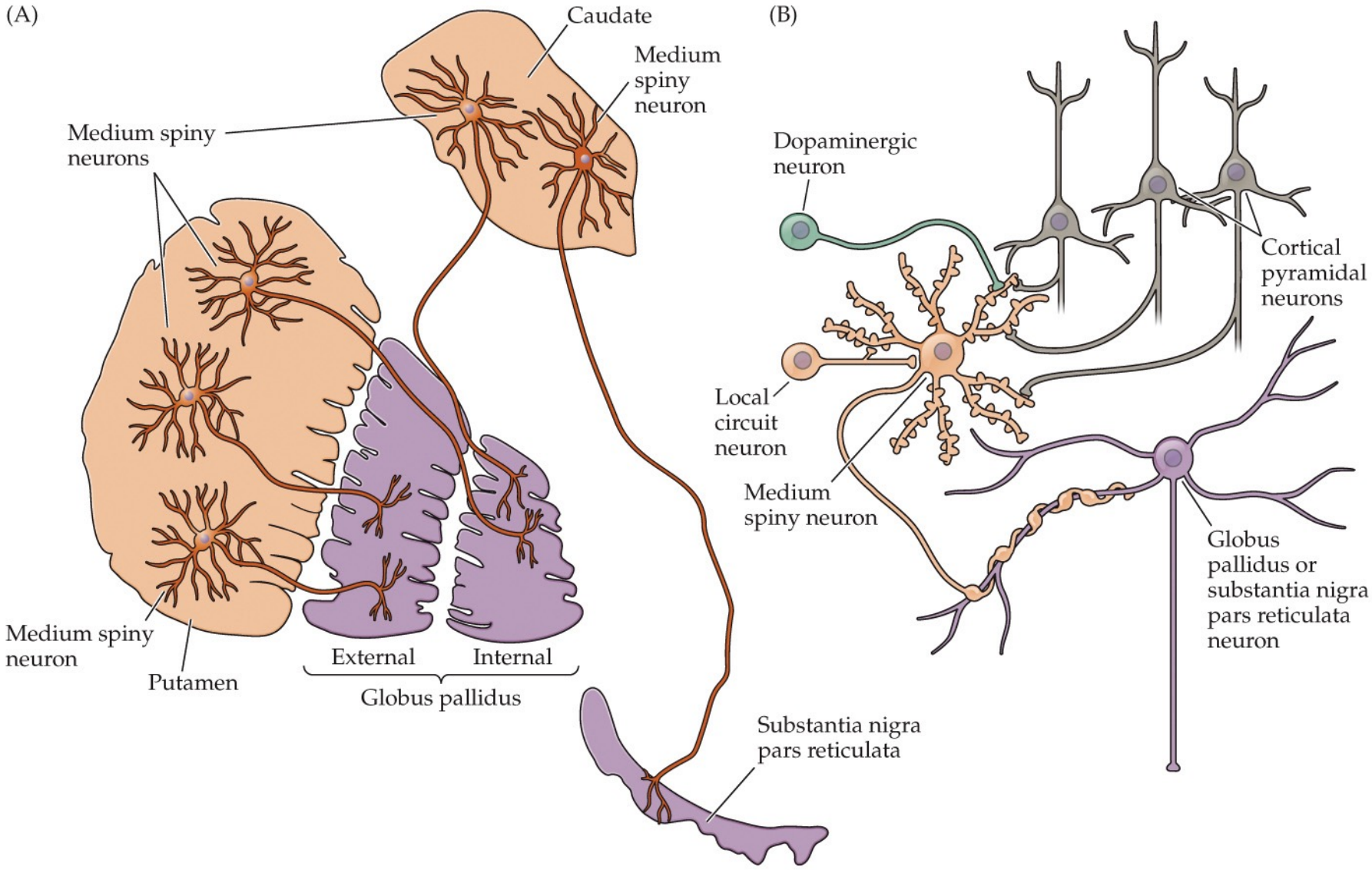
NEUROSCIENCE 6e, Figure 18.1

Anatomical organization of the inputs to the basal ganglia



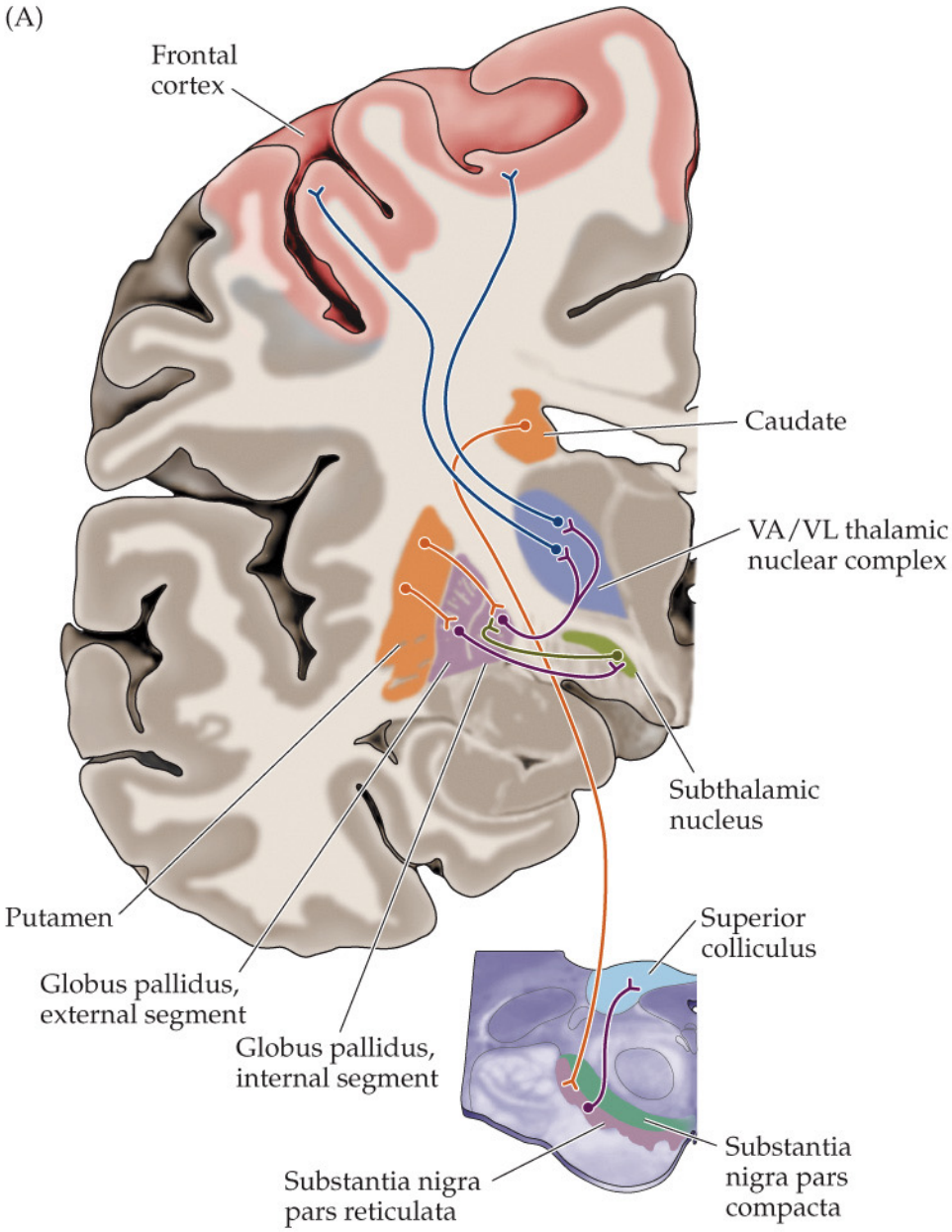
NEUROSCIENCE 6e, Figure 18.2

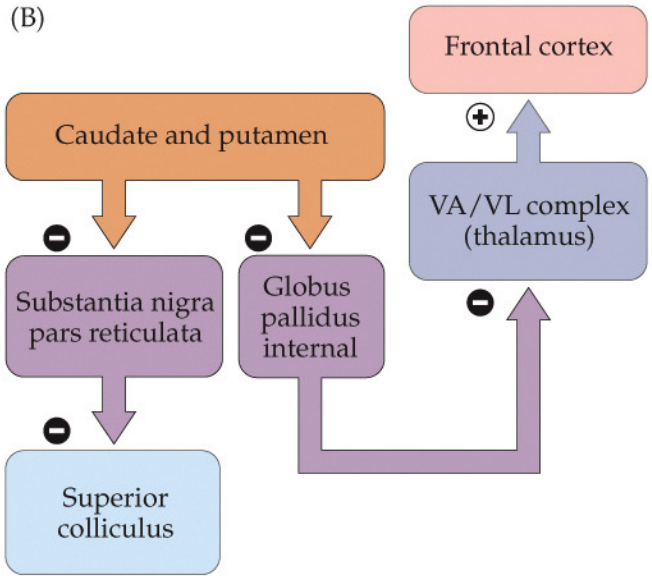
Neurons and circuits of the basal ganglia



NEUROSCIENCE 6e, Figure 18.3

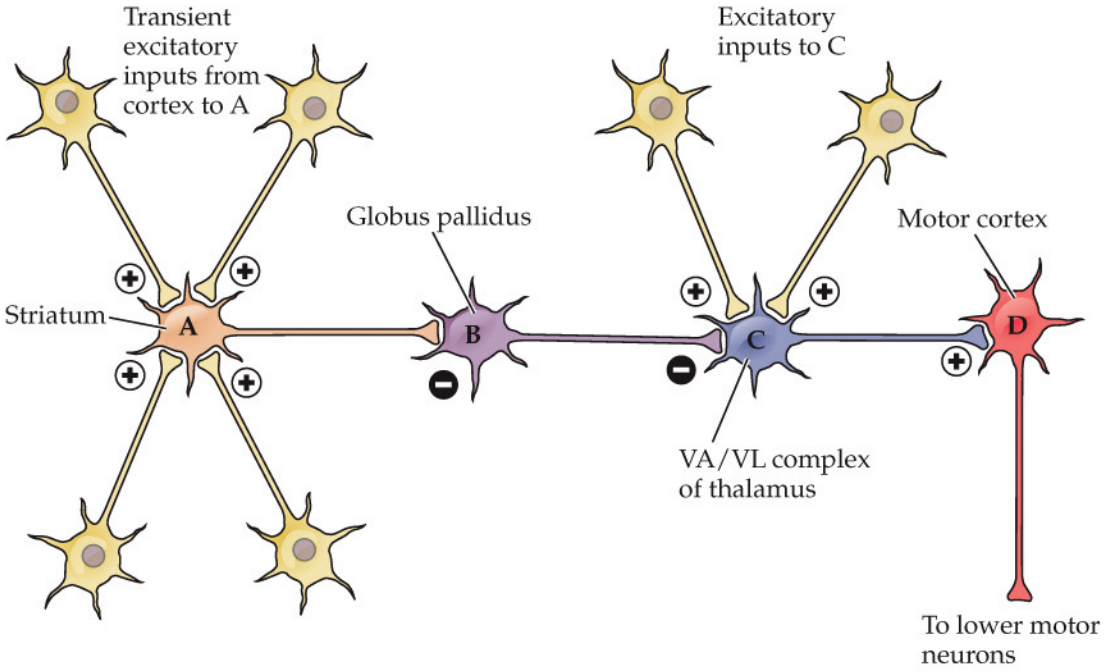
Functional organization of the intrinsic circuitry and outputs of the basal ganglia

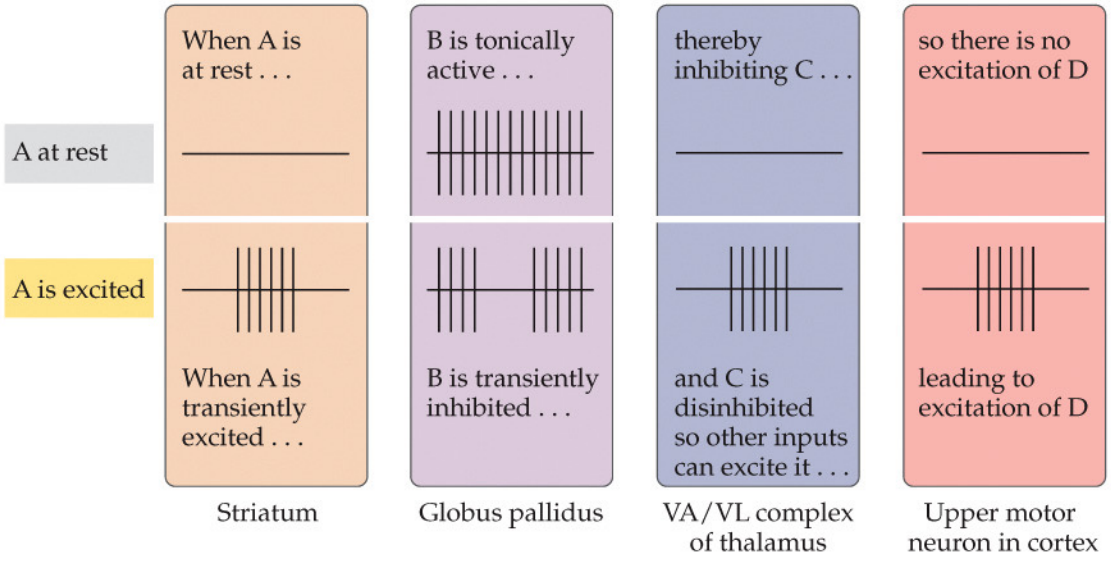




NEUROSCIENCE 6e, Figure 18.4

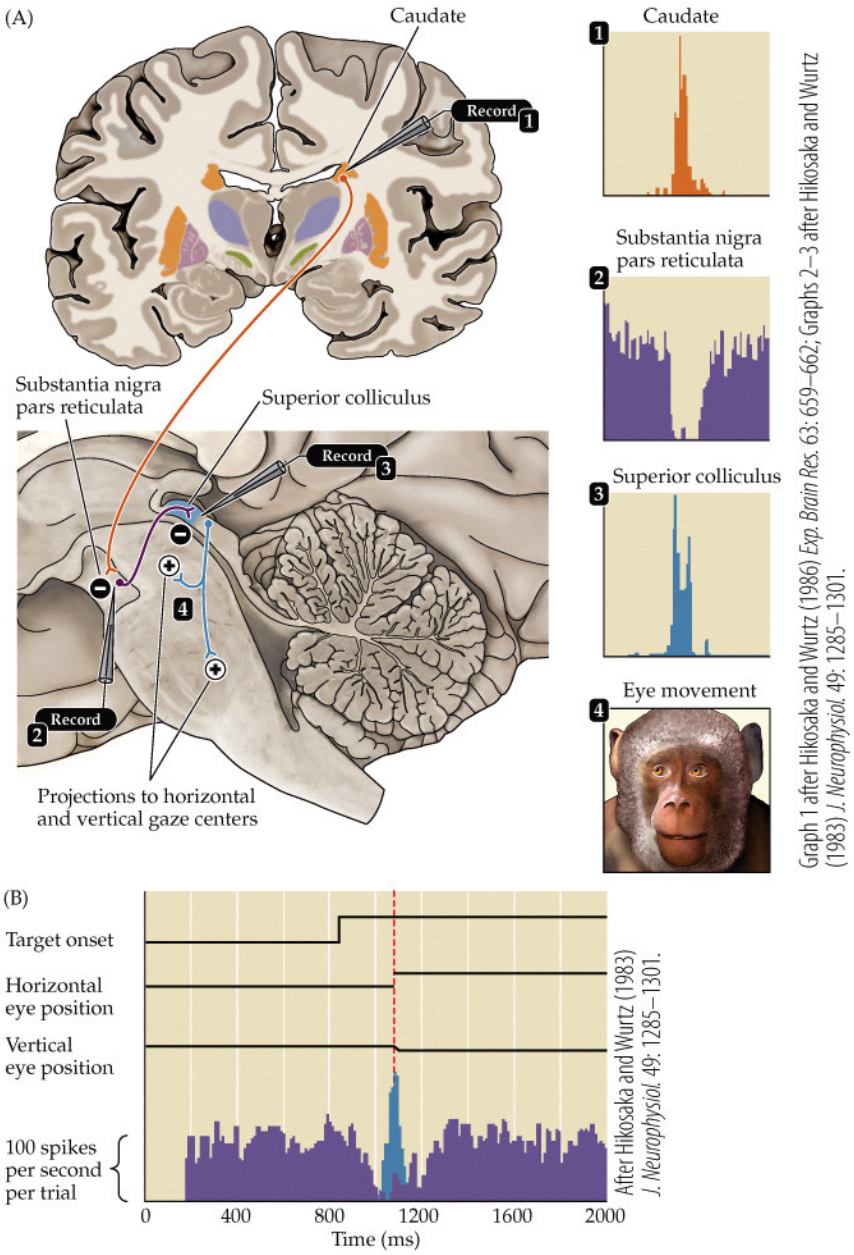
A chain of nerve cells arranged in a disinhibitory circuit





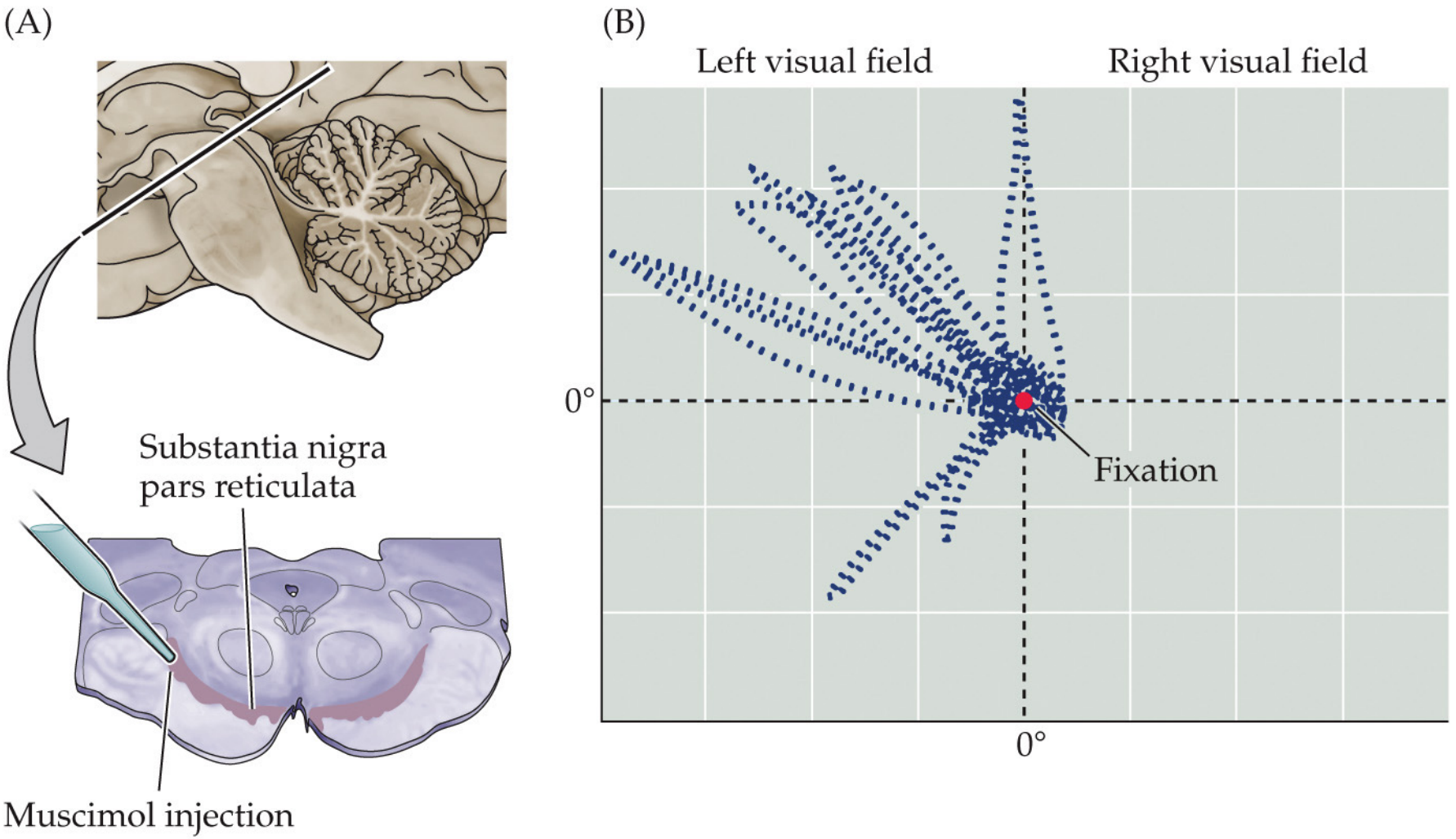
NEUROSCIENCE 6e, Figure 18.5

The role of basal ganglia disinhibition in the generation of saccadic eye movements



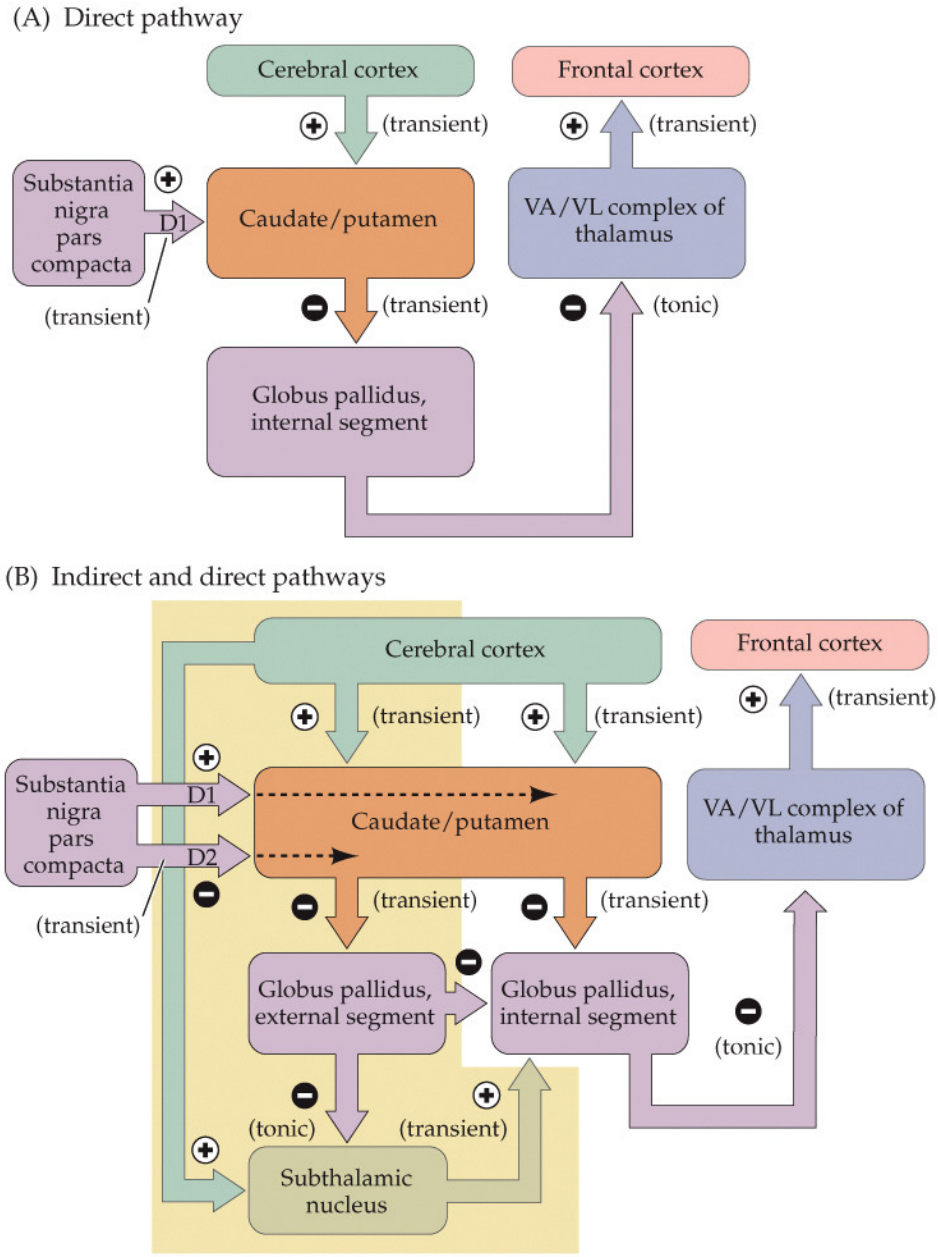
NEUROSCIENCE 6e, Figure 18.6

A GABA agonist produces involuntary movements resembling hyperkinesia

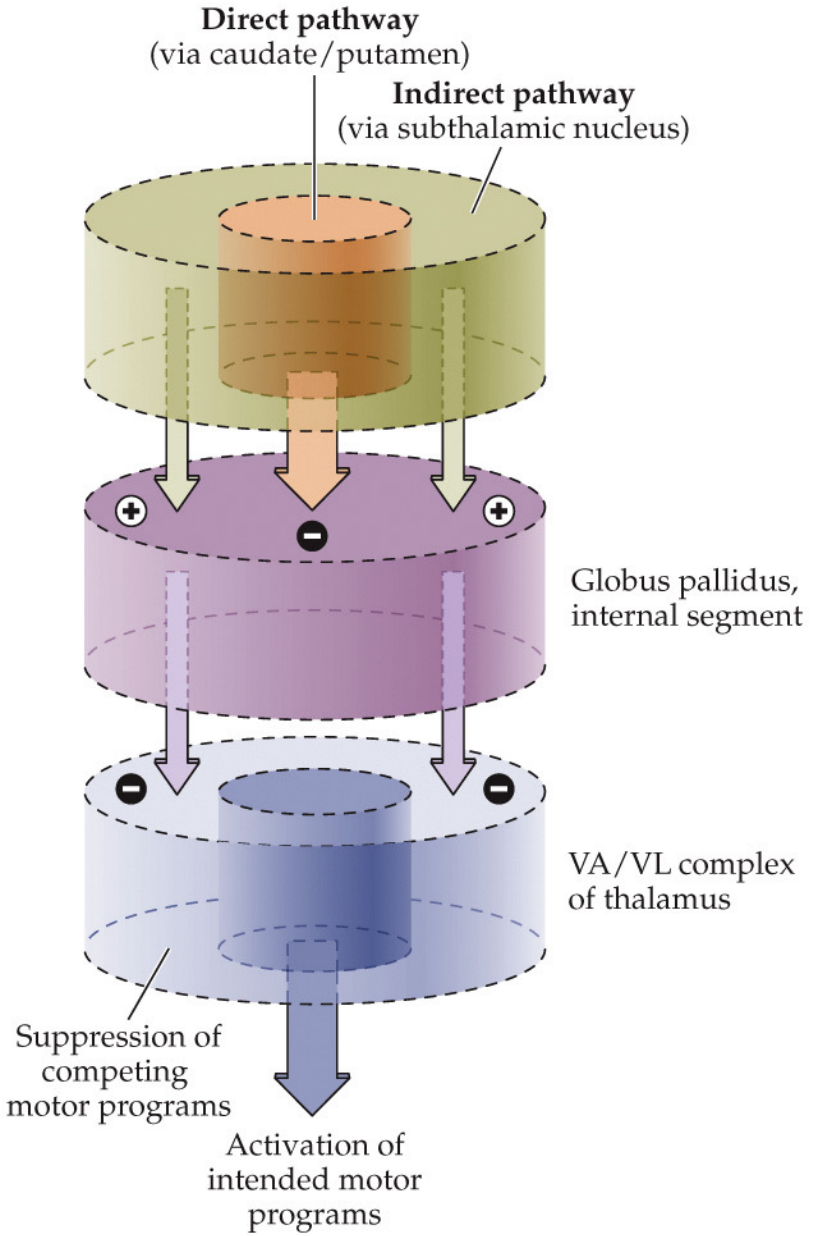


NEUROSCIENCE 6e, Figure 18.11

Disinhibition in the direct and indirect pathways through the basal ganglia



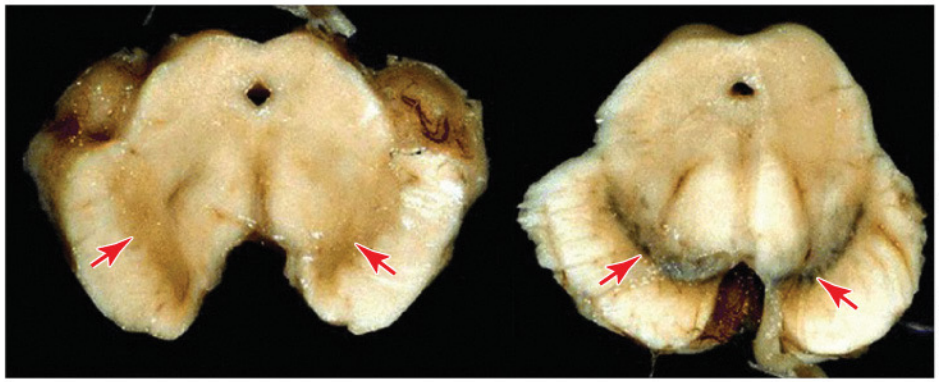
NEUROSCIENCE 6e, Figure 18.7



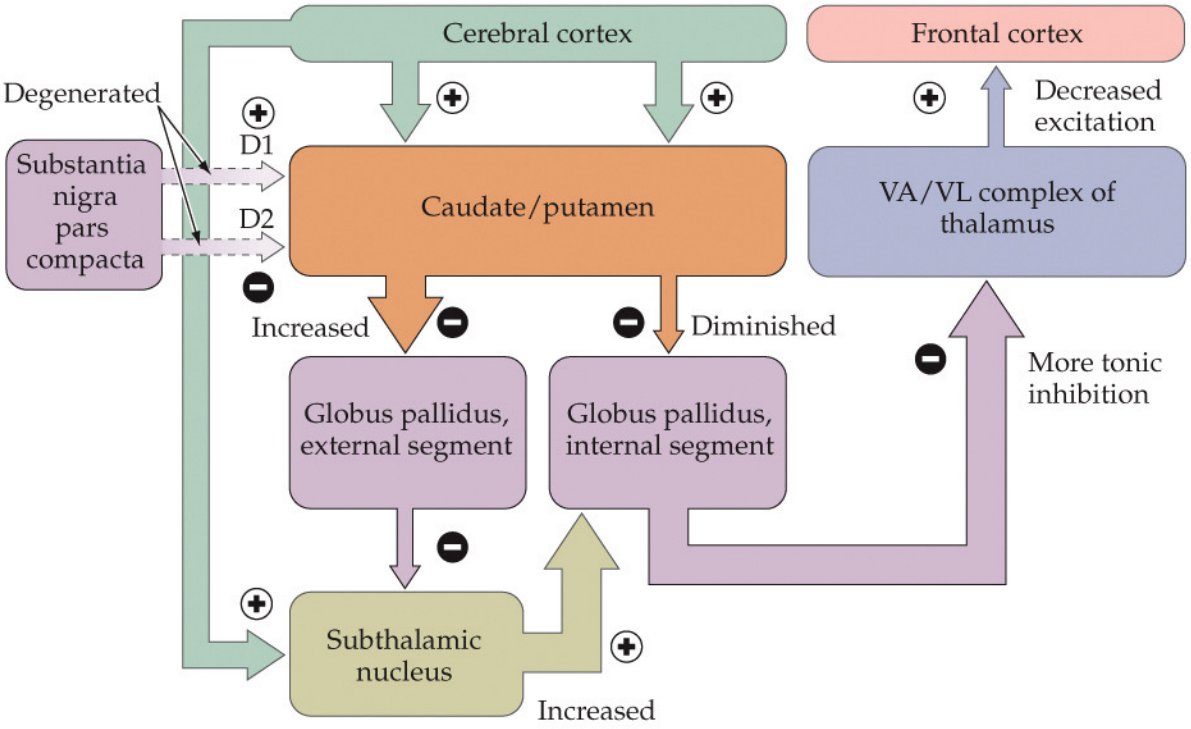
NEUROSCIENCE 6e, Figure 18.8

Parkinson's Disease

(A) Parkinson's Without Parkinson's



(B) Parkinson's disease (hypokinetic)

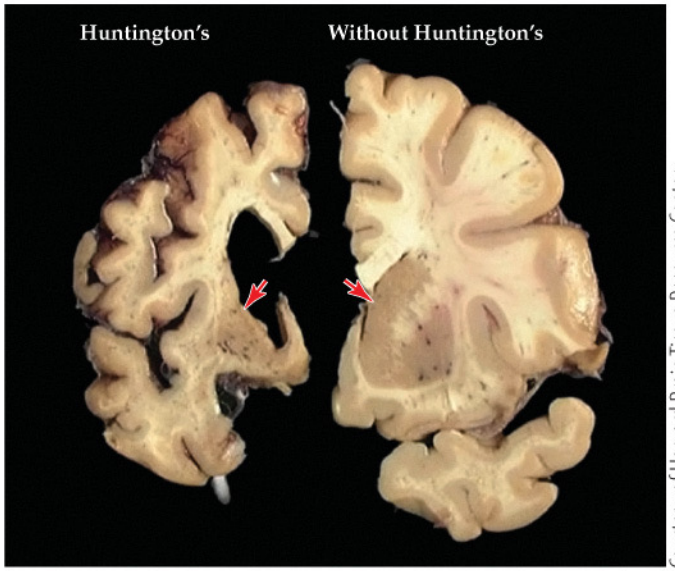


After DeLong (1990) *Trends Neurosci.* 13: 281–285.

NEUROSCIENCE 6e, Figure 18.9

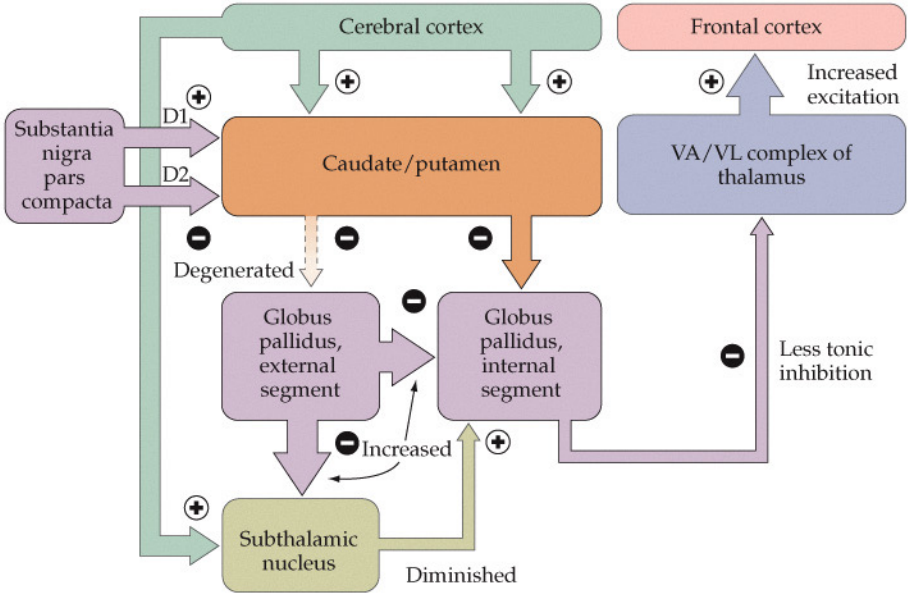
Huntington's Disease

(A)



Courtesy of Harvard Brain Tissue Resource Center.

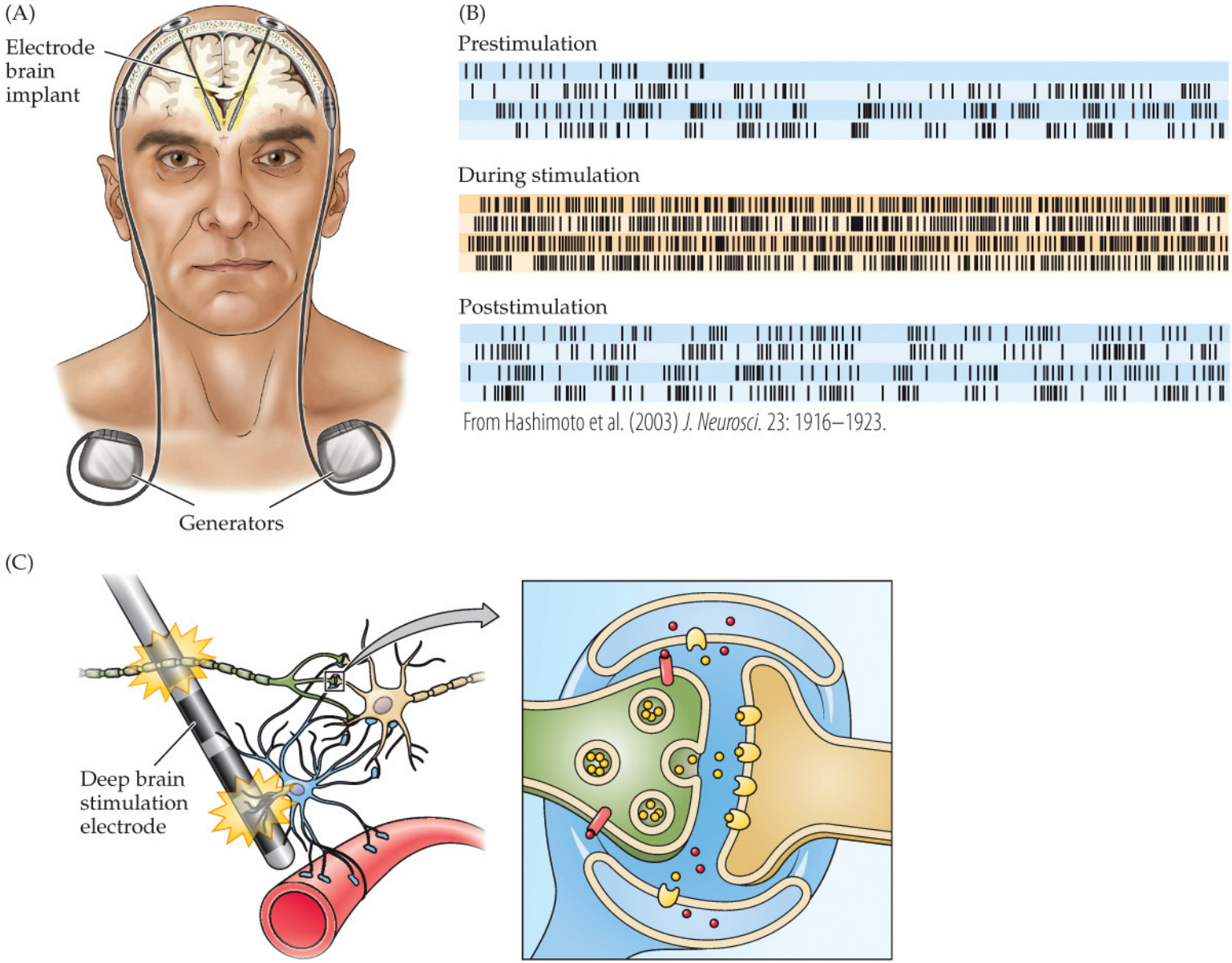
(B) Huntington's disease (hyperkinetic)



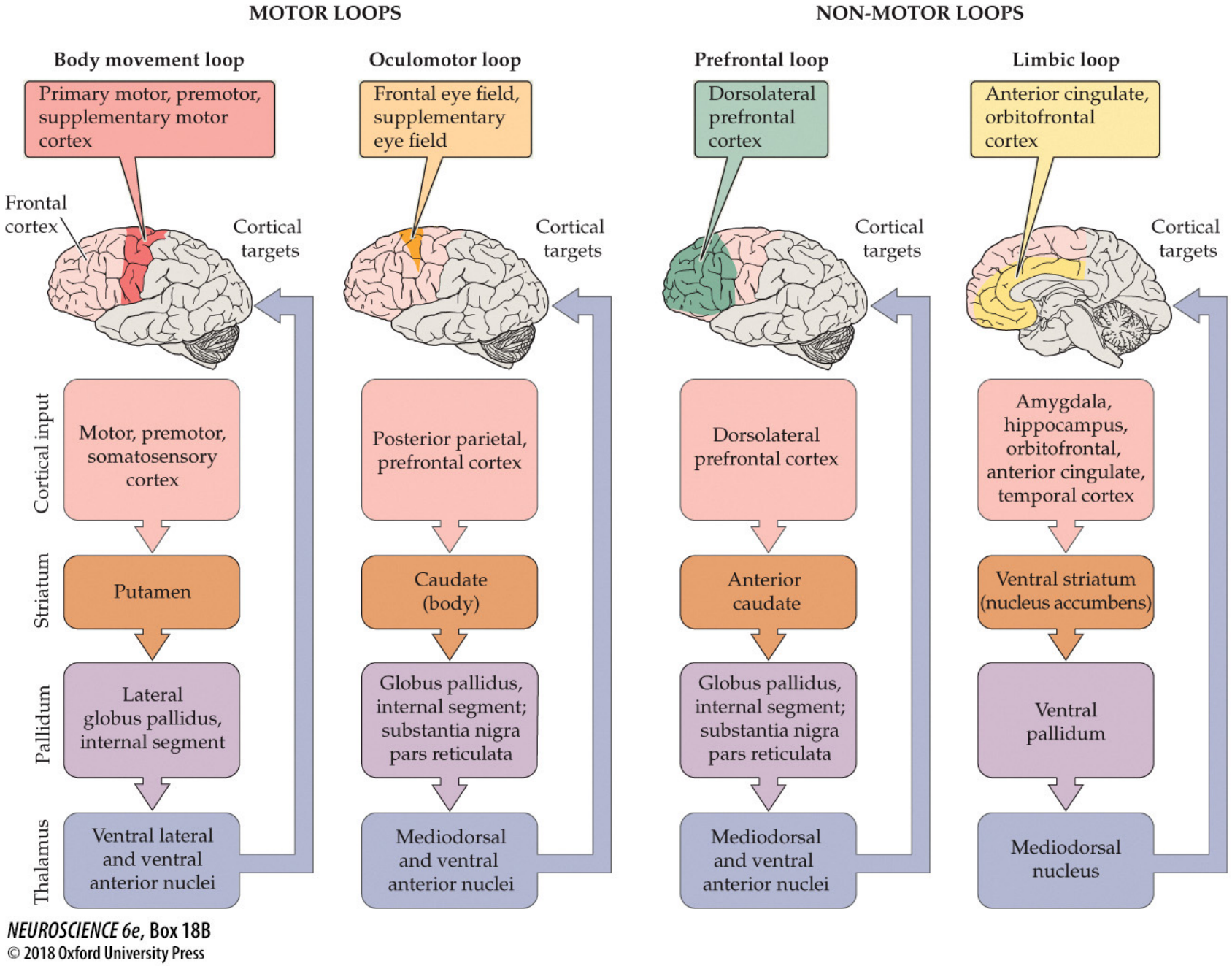
After DeLong (1990) *Trends Neurosci.* 13: 281–285.

NEUROSCIENCE 6e, Figure 18.10

Deep brain stimulation



Basal ganglia loops and non-motor brain functions



NEUROSCIENCE 6e, Box 18B