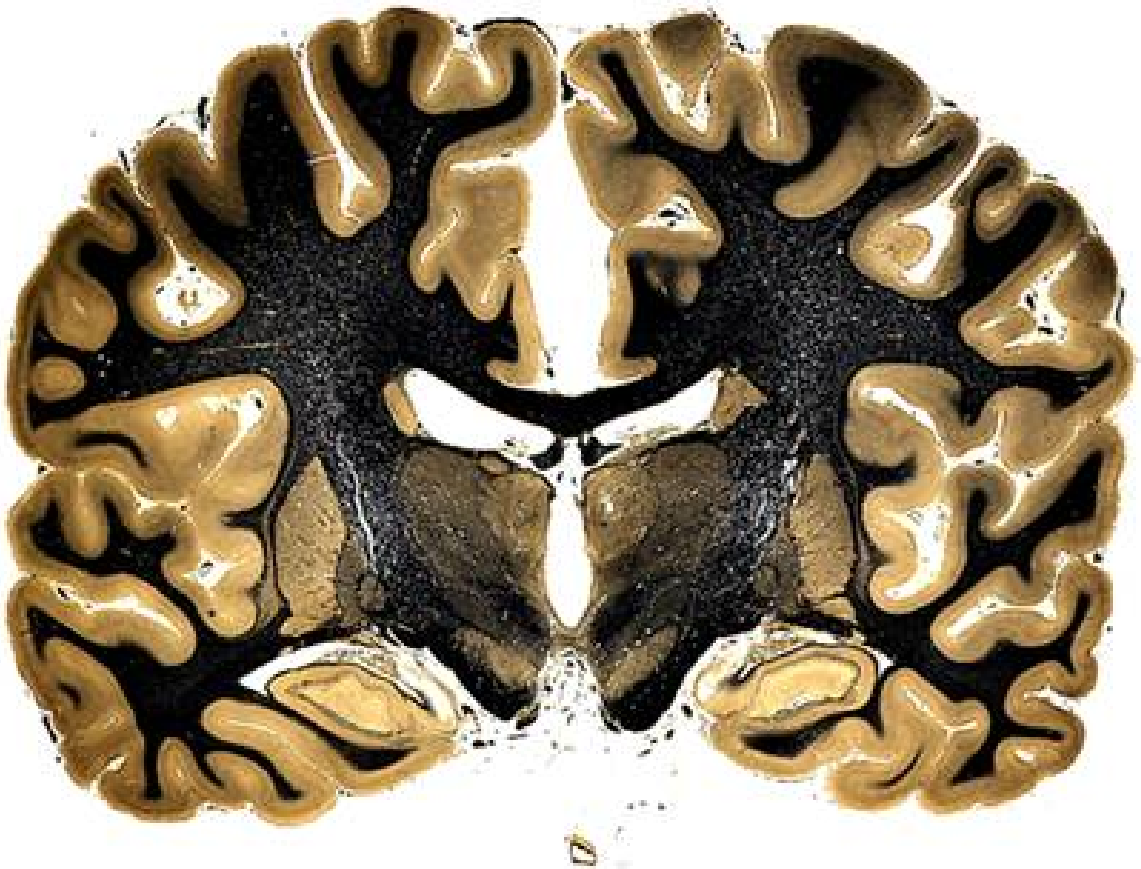
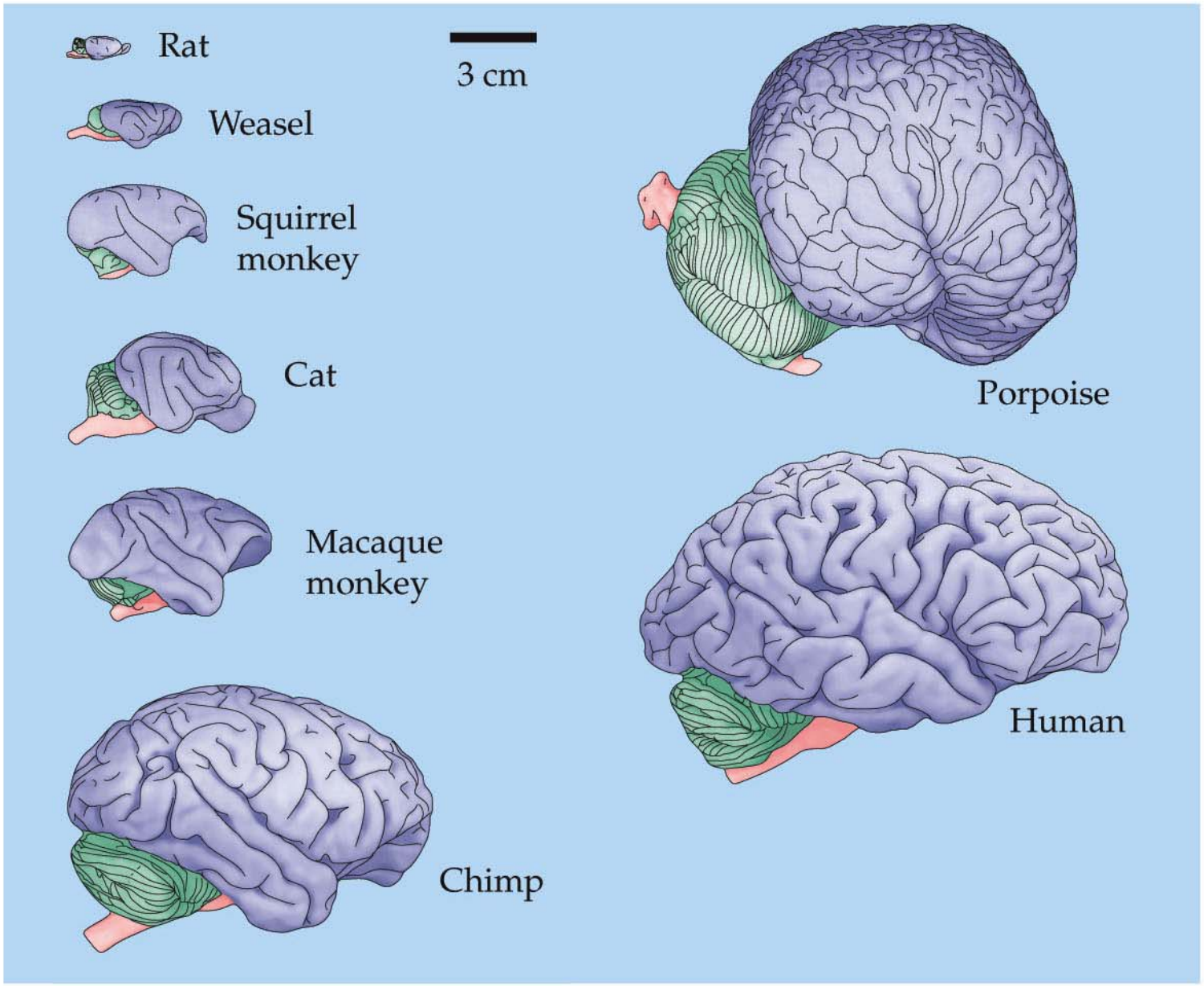
Telencephalon/Cerebral Cortex - Anatomy

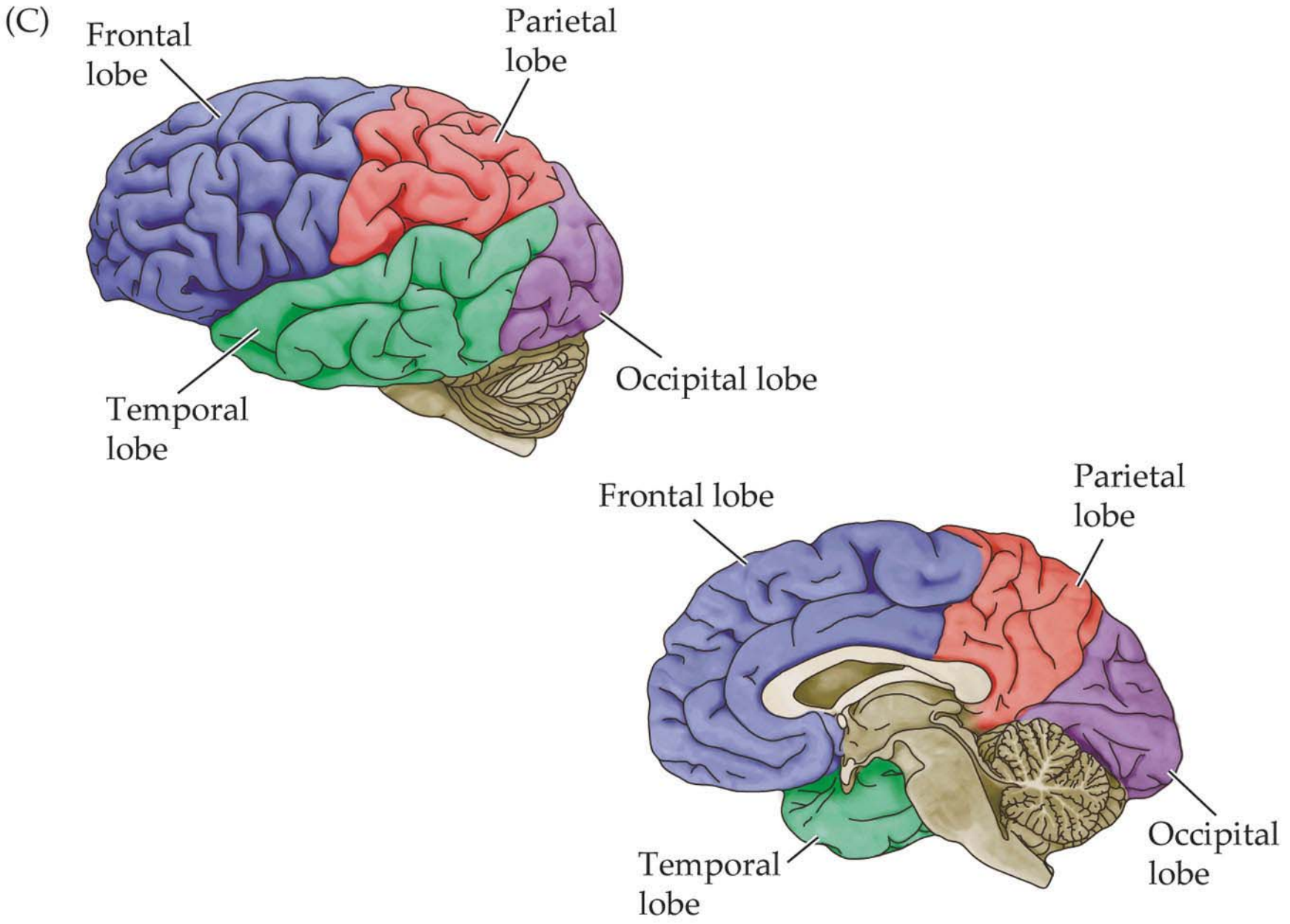
YAKOVLEV-HALEEM COLLECTION
SPECIMEN STD-IIIA SECTION 2000



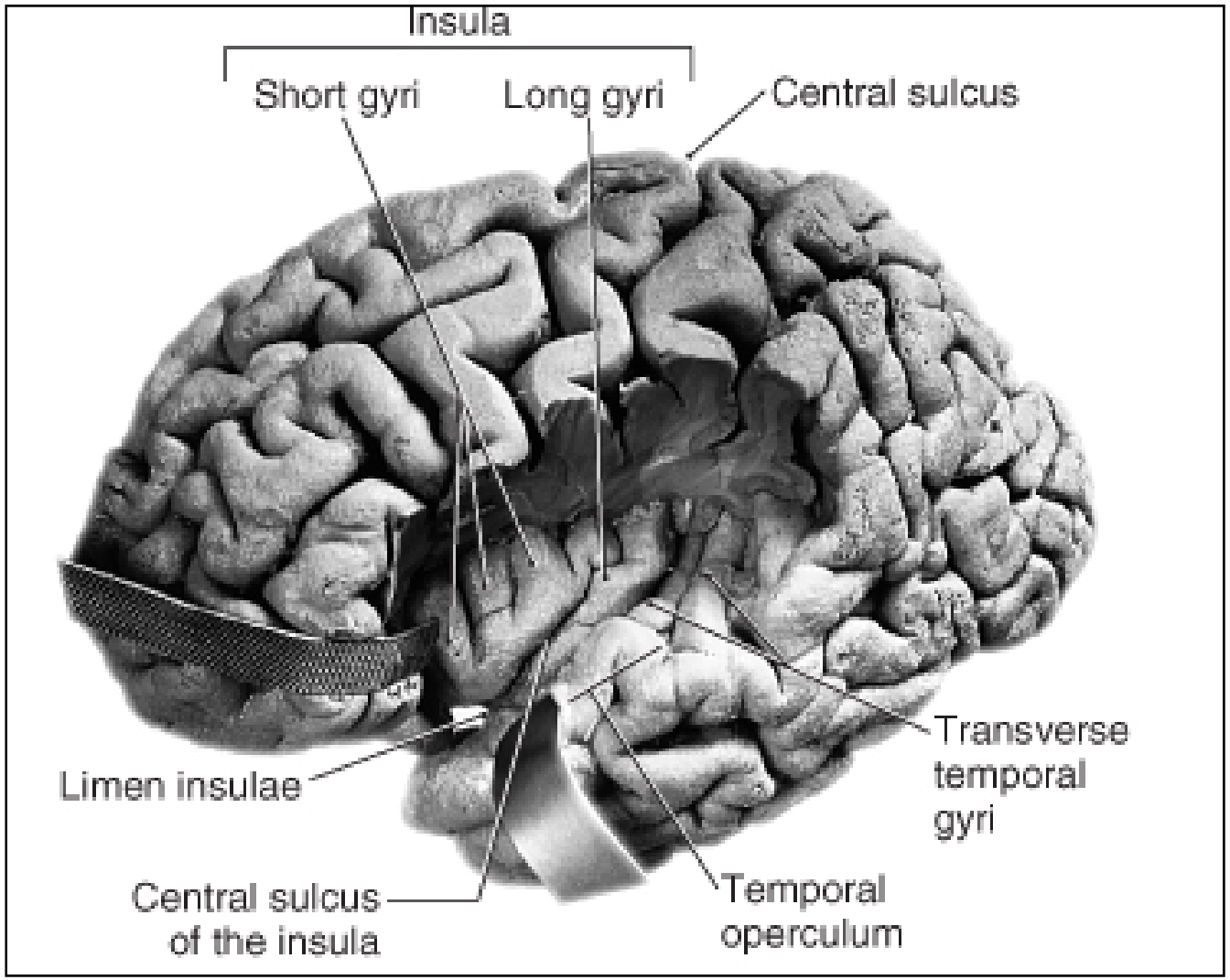
Box 26D Brain Size and Intelligence



1.12 Gross anatomy of the forebrain. (Part 3)

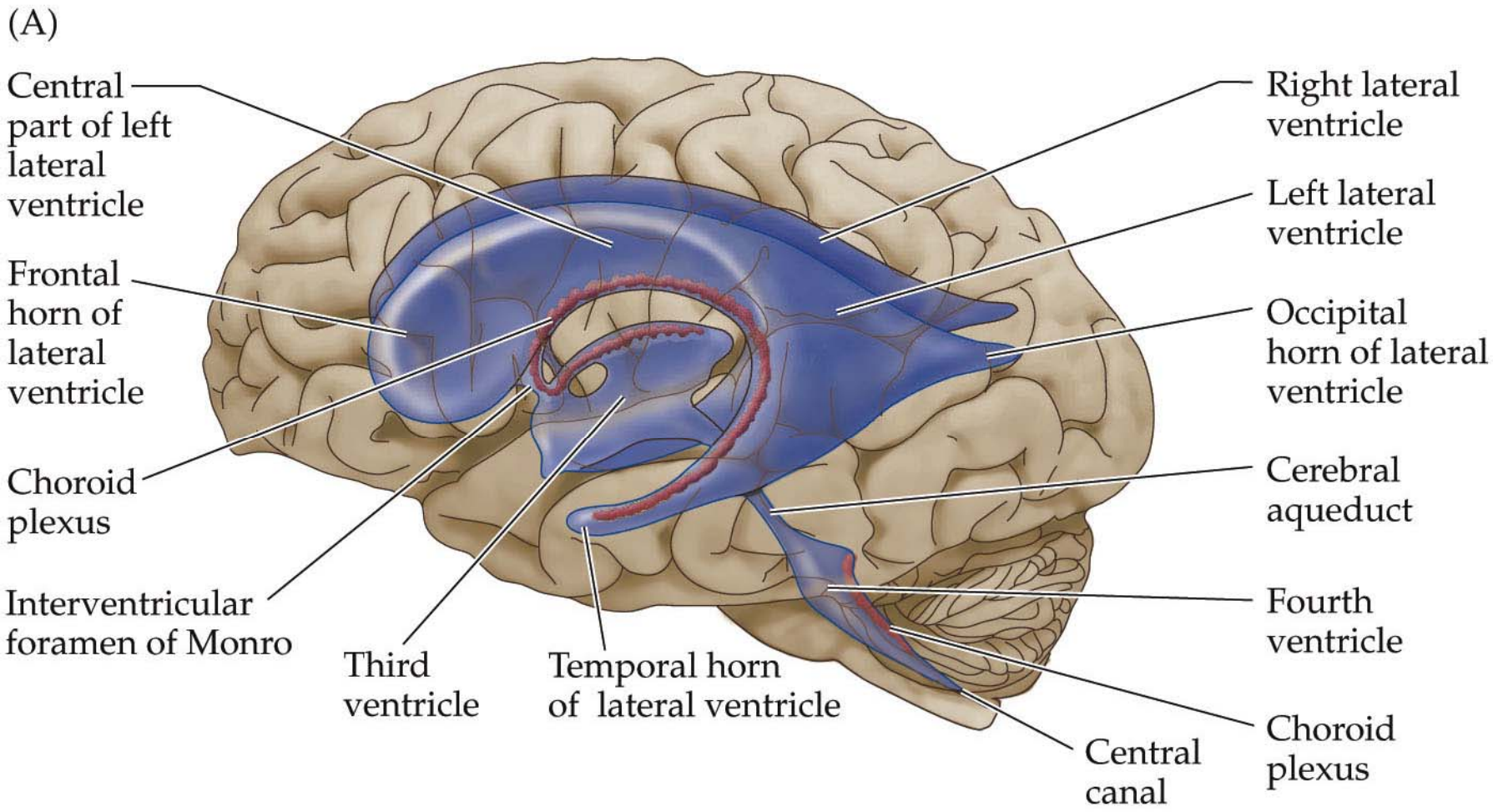


NEUROSCIENCE, Third Edition, **Figure 1.12 (Part 3)**



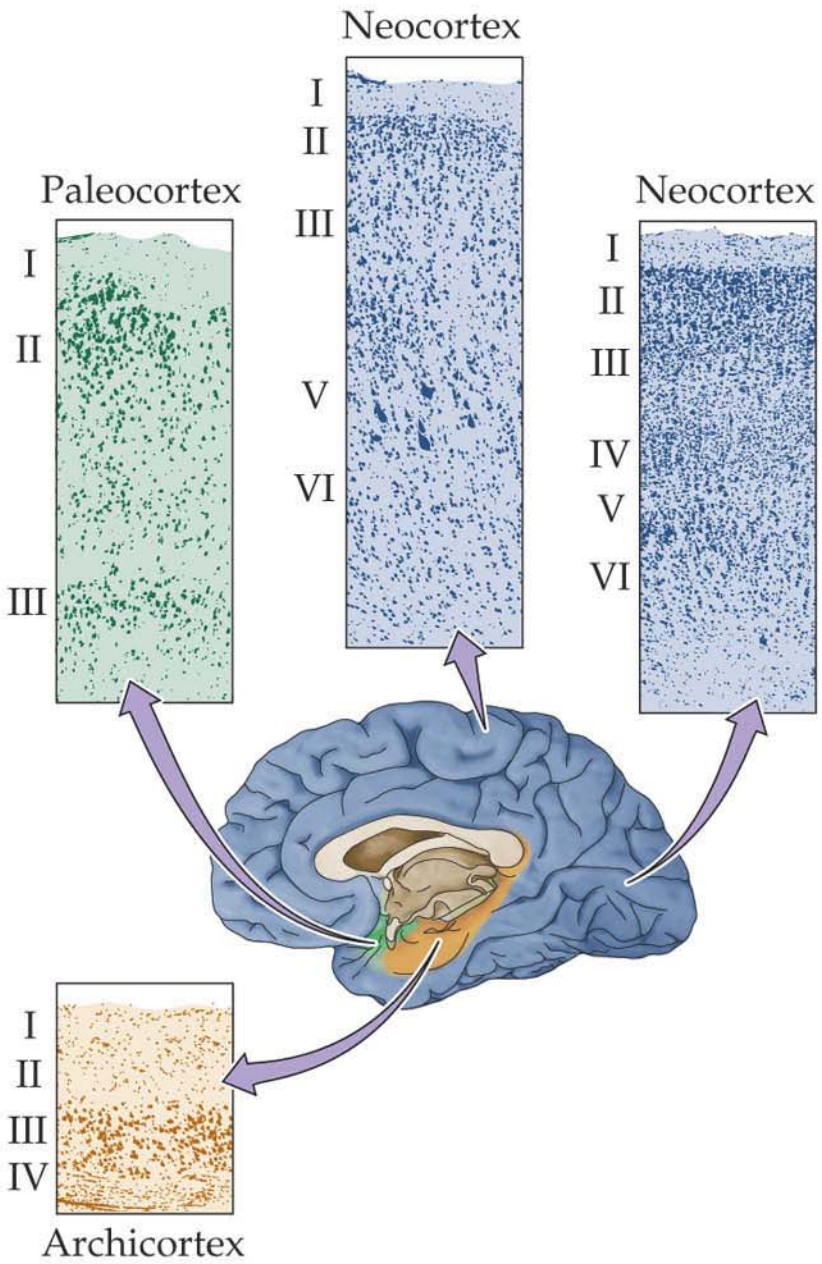
Haines, Fund. Neuro., Fig 16-10

Figure A21 The ventricular system of the human brain (Part 1)



***NEUROSCIENCE, Fourth Edition,* Appendix, Figure A21 (Part 1)**

Box A A More Detailed Look at Cortical Lamination



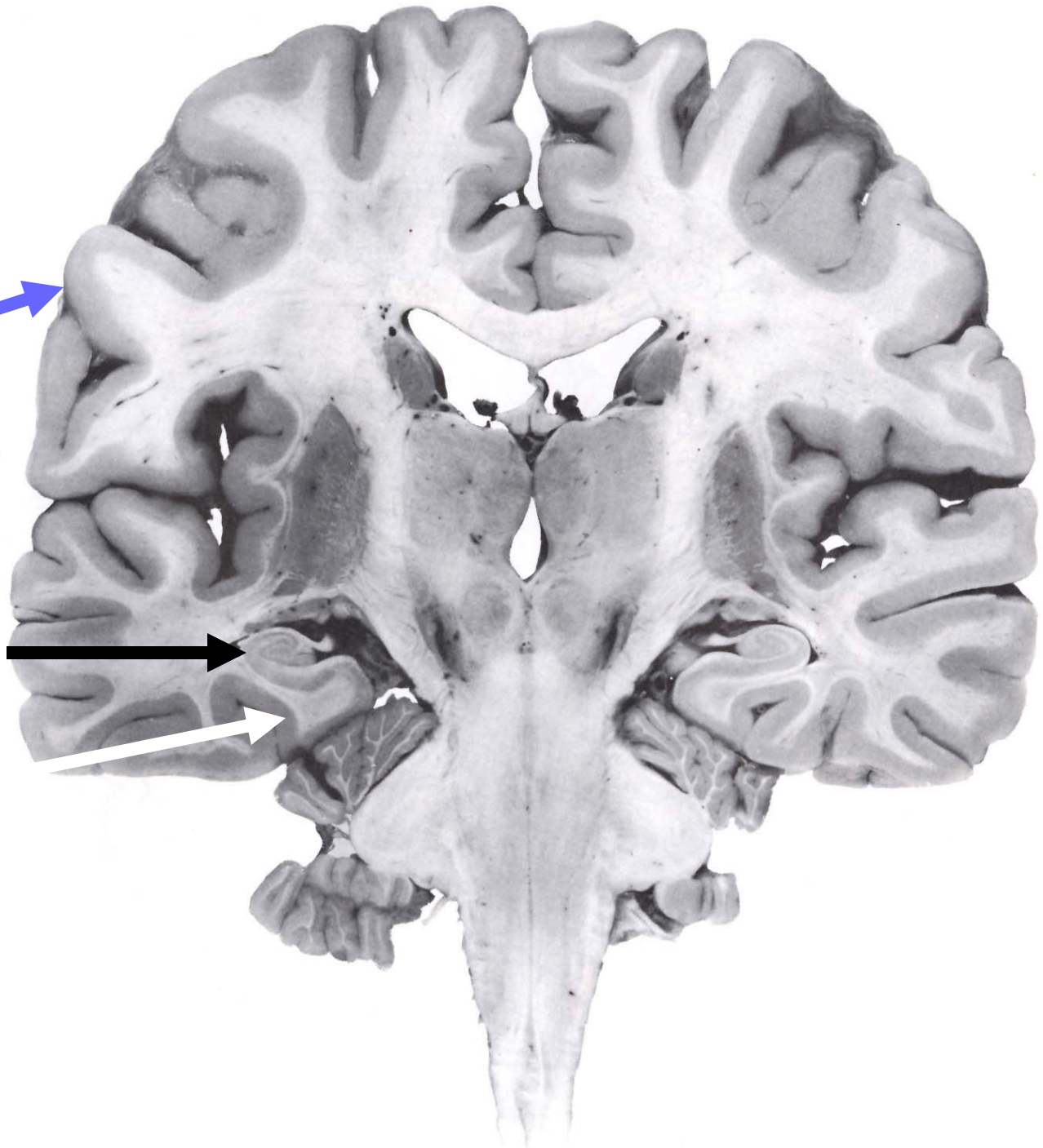
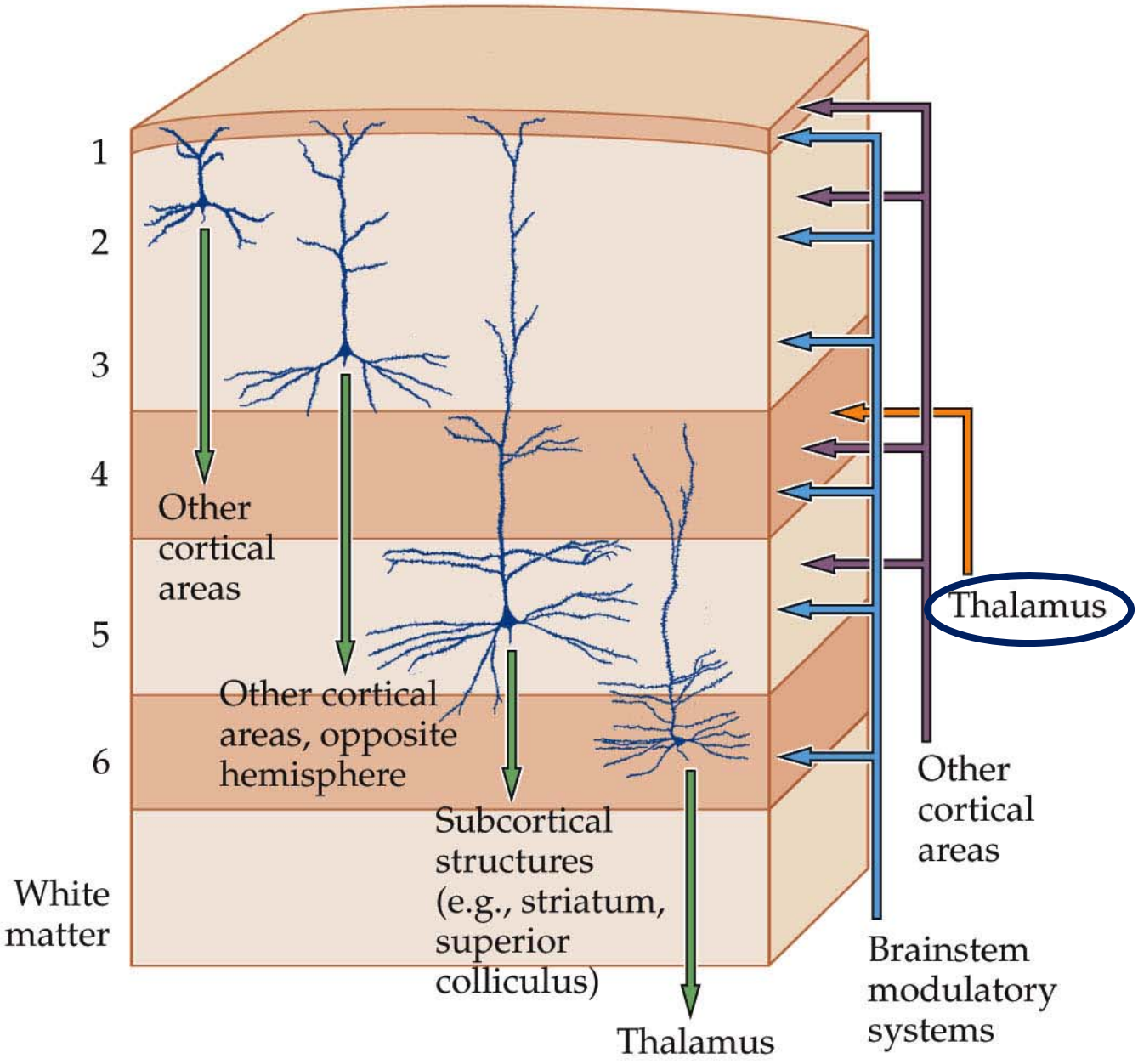
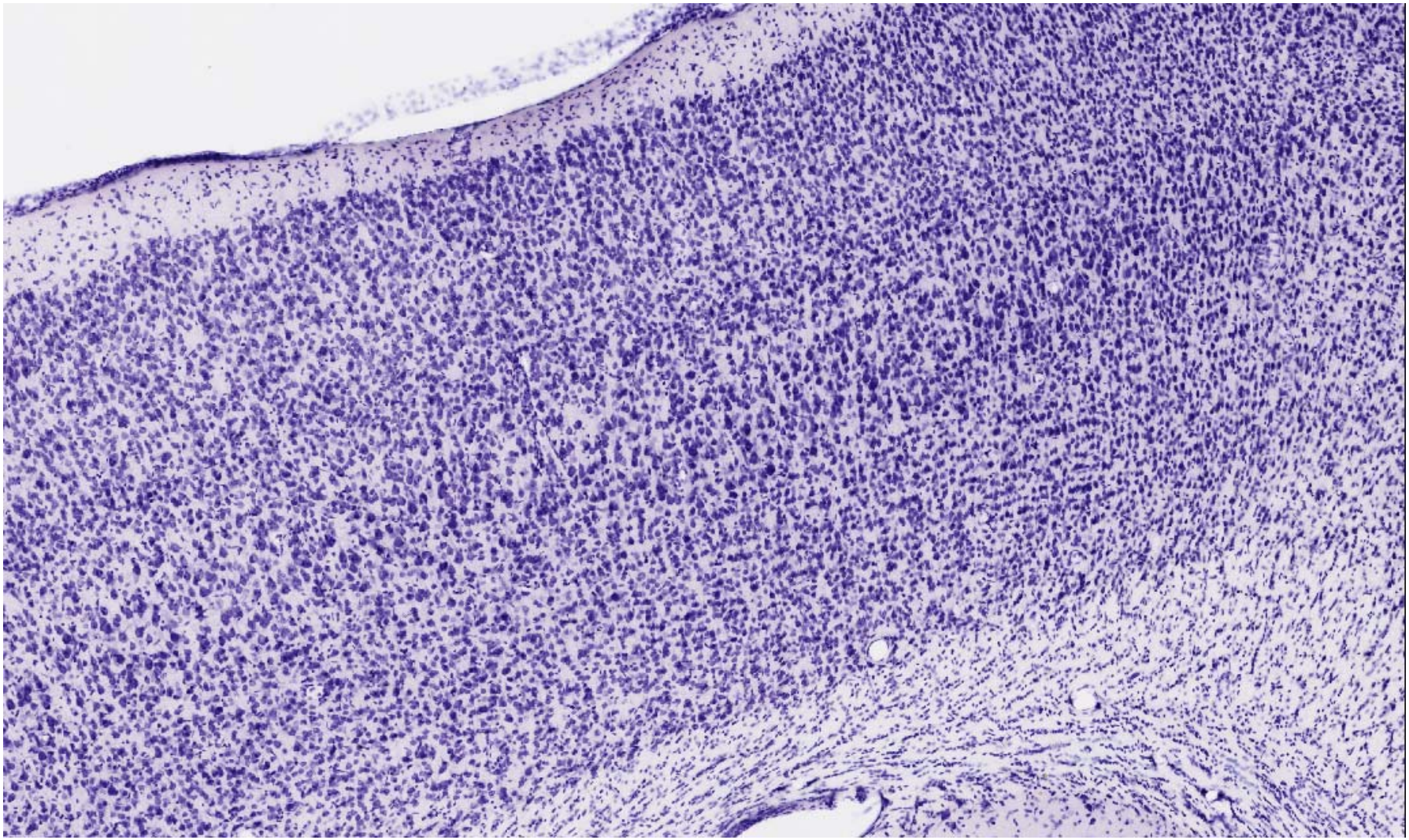

Neocortex
Archicortex
(Hippocampus)
Paleocortex

Figure 26.3 Canonical neocortical circuitry

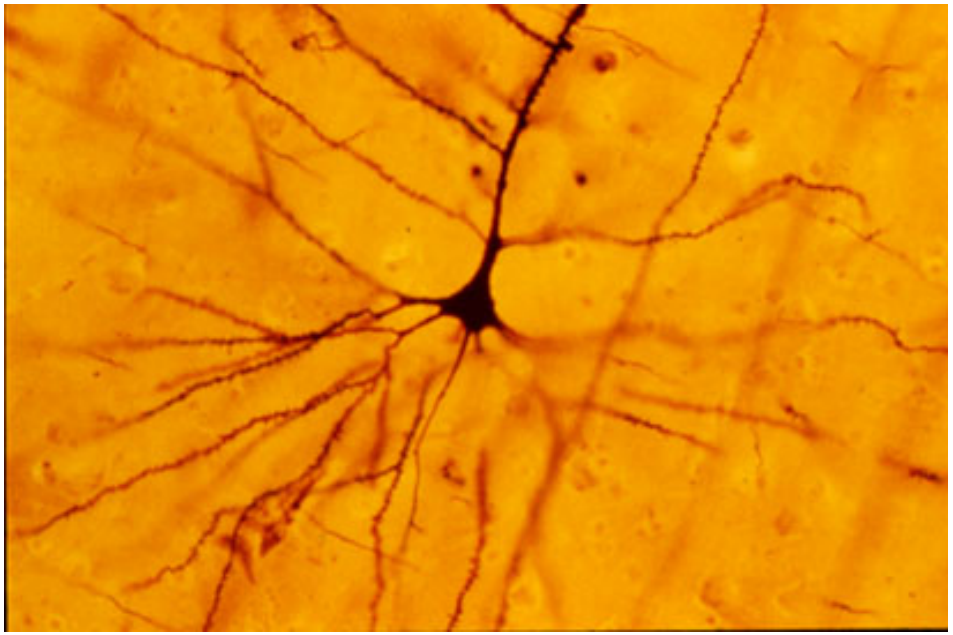


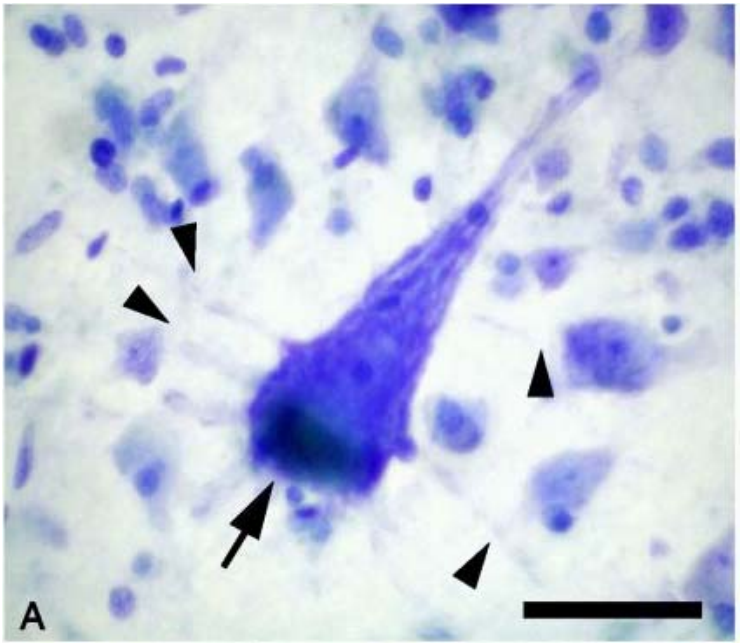
NEUROSCIENCE, Fourth Edition, Figure 26.3

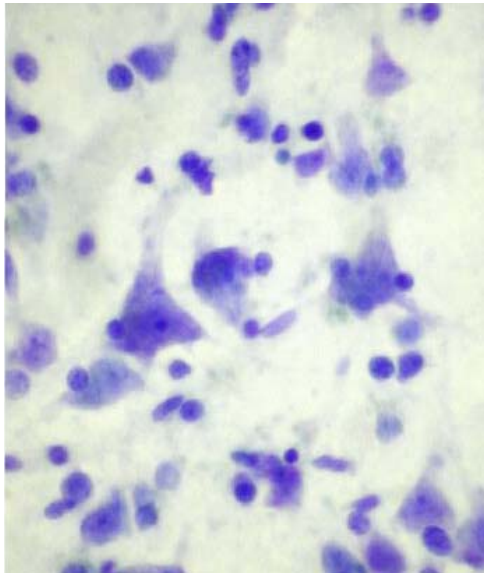
Rat Neocortex 10X4

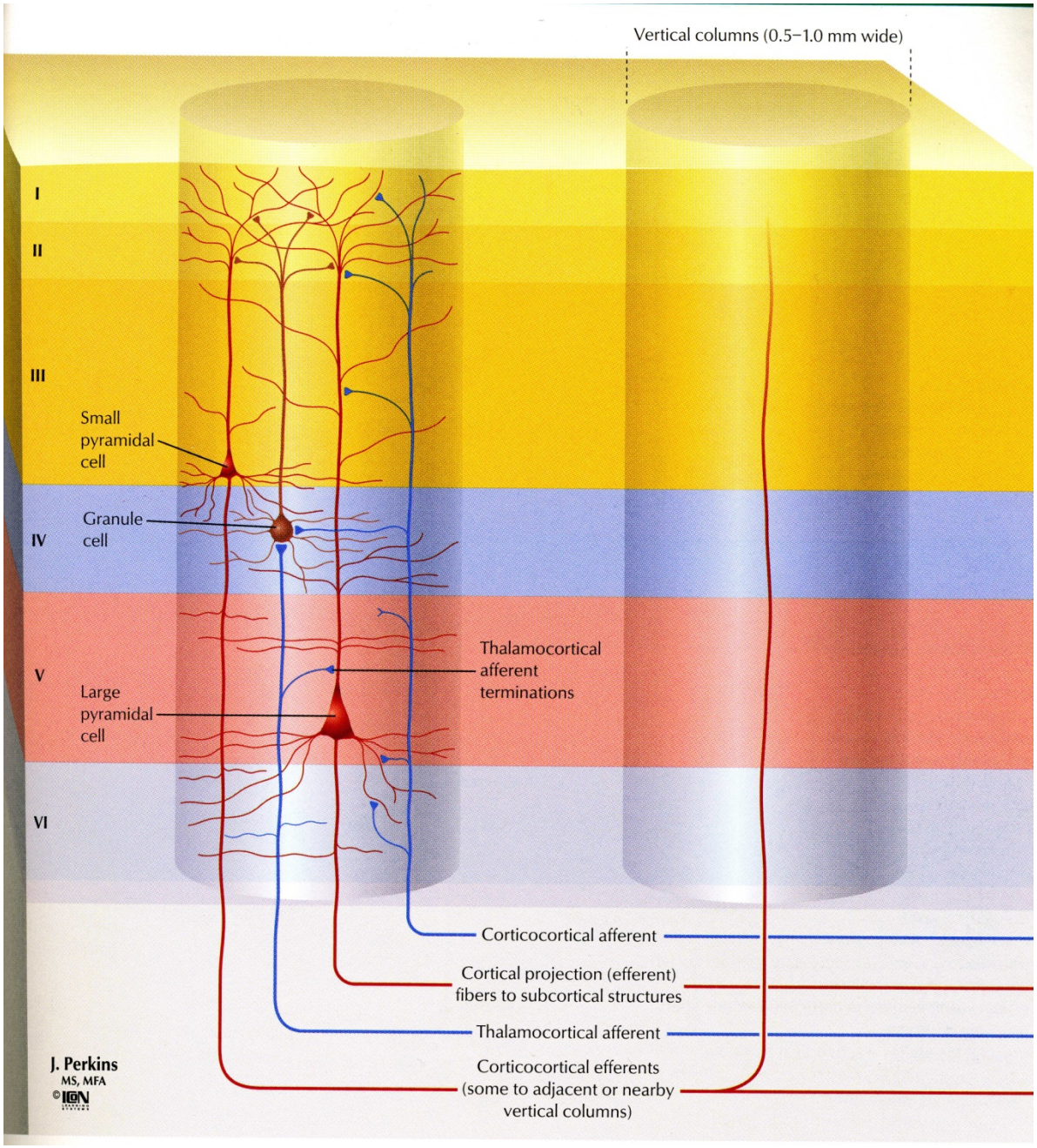


Betz cell Primary motor cortex

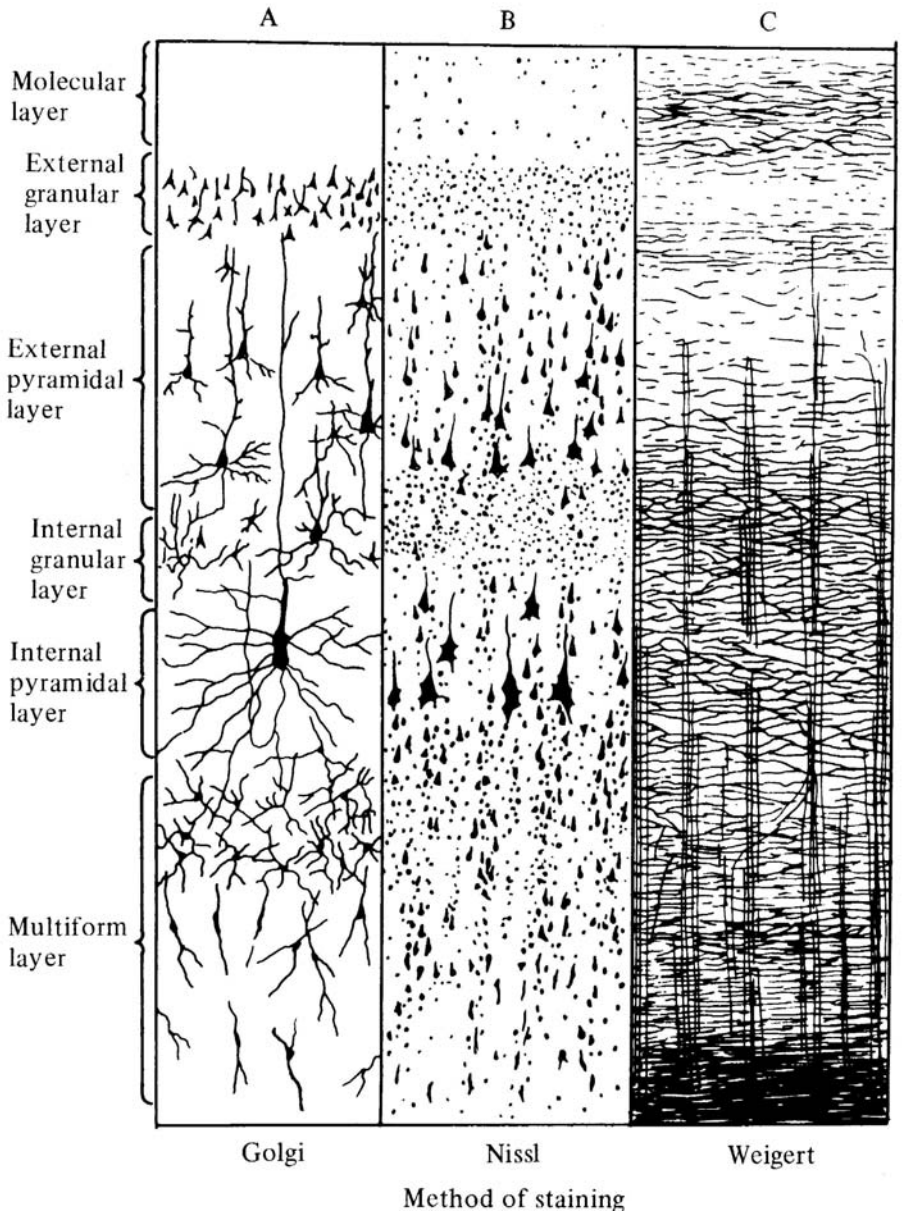




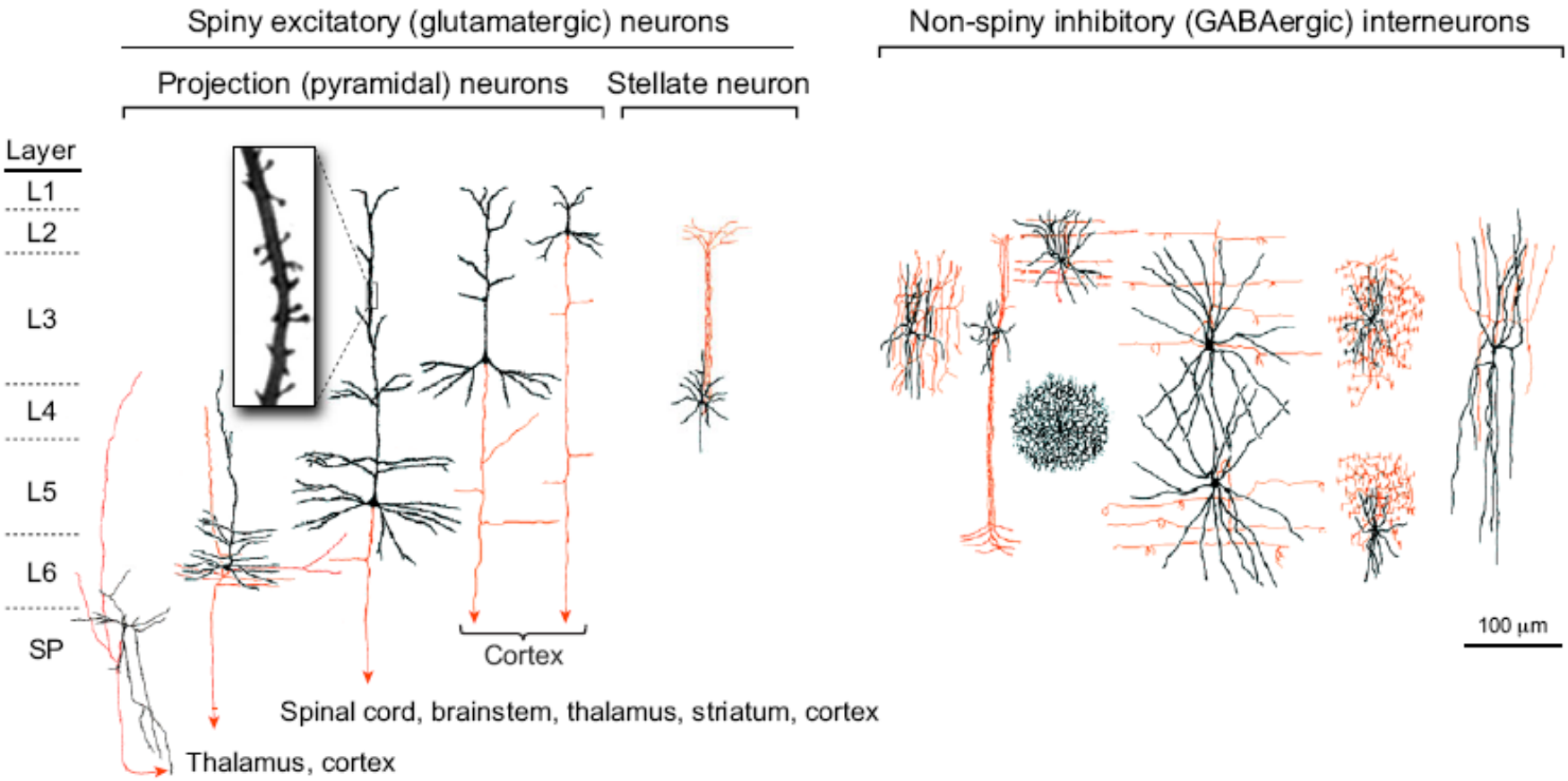



Vertical columns (0.5–1.0 mm wide)
I
II
III
IV
V
VI
Small pyramidal cell
Granule cell
Large pyramidal cell
Thalamocortical afferent terminations
Corticocortical afferent
Cortical projection (efferent) fibers to subcortical structures
Thalamocortical afferent
Corticocortical efferents (some to adjacent or nearby vertical columns)
J. Perkins
MS, MFA
©IGN

Methods to study cellular elements of the cortex



Pyramidal (glutaminergic) cells and interneurons (GABAergic) cells



Adapted from Kwan et al, 2012 from Jones, 1986

Lewis et al., 2005, Nature Rev. **CORTICAL INHIBITORY NEURONS and Schizophrenia**

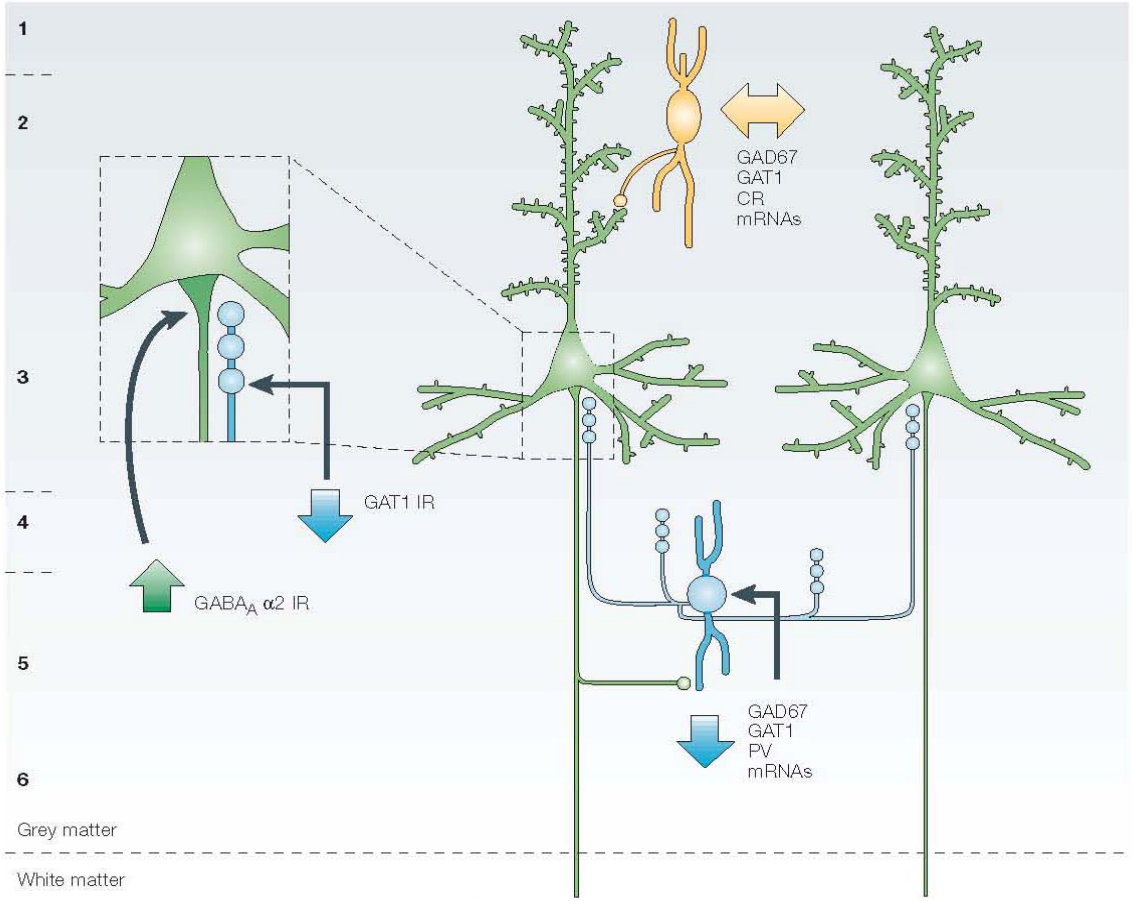
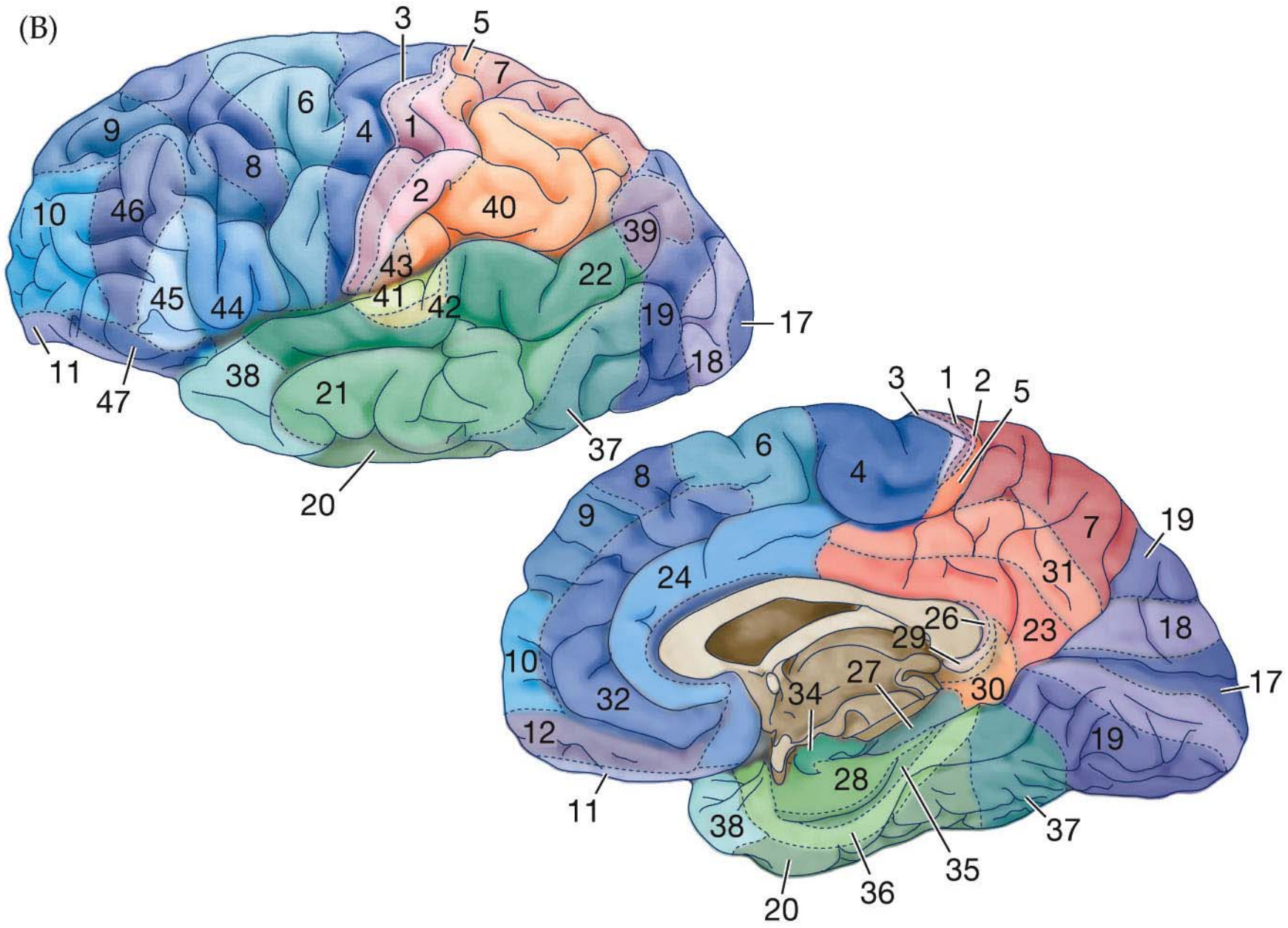


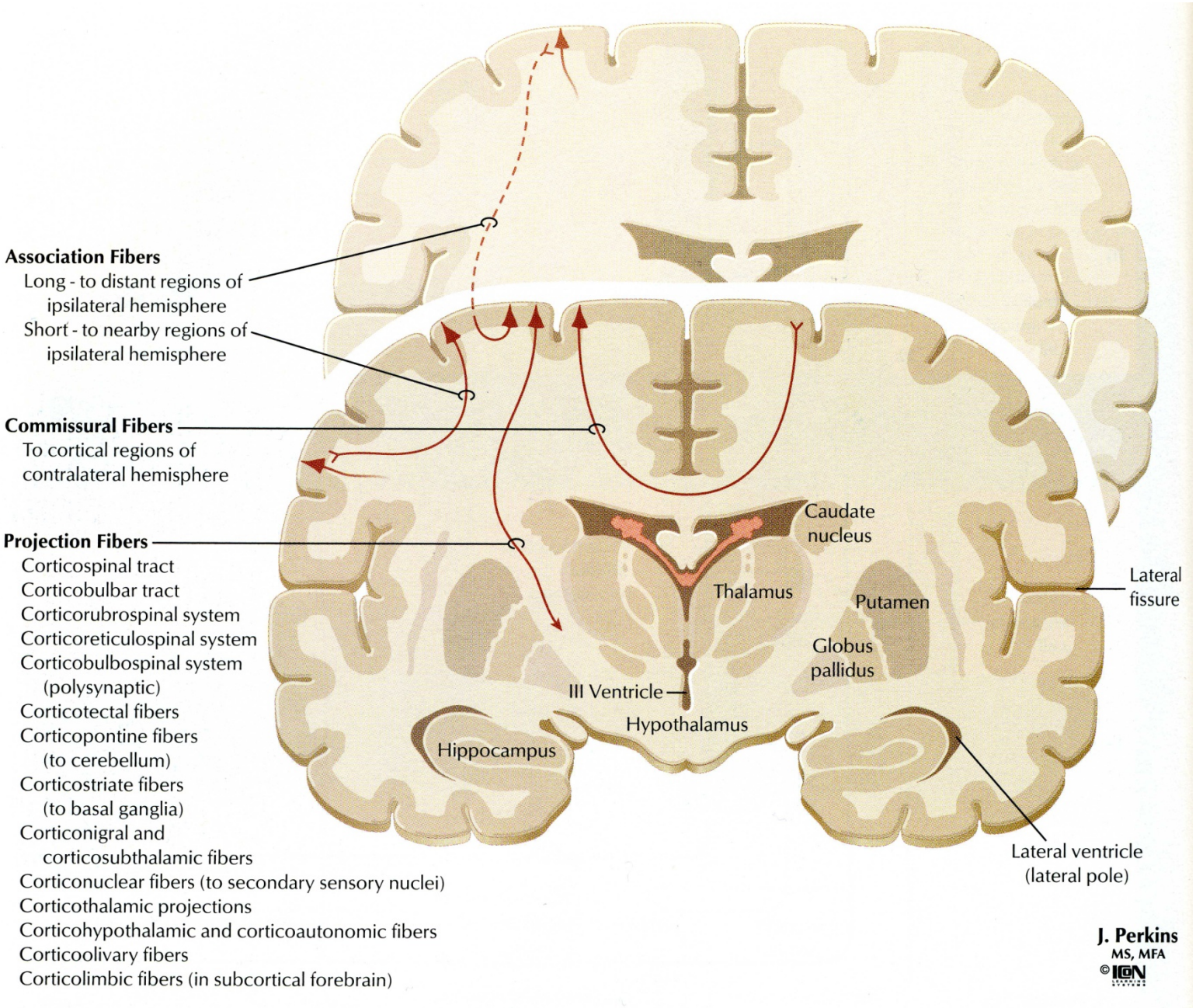
Figure 6 | **Schematic summary of alterations in GABA circuitry in the dorsolateral prefrontal cortex of individuals with schizophrenia.** Reduced levels of gene expression in chandelier neurons (blue) are associated with a decrease in immunoreactivity (IR) for GABA (γ-aminobutyric acid) transporter 1 (GAT1) in the axon cartridges of these neurons and an upregulation of $GABA_A$ (GABA type A) receptor α2 subunit immunoreactivity in the postsynaptic axon initial segment of pyramidal neurons (green). Gene expression in calretinin (CR)-expressing subpopulations of GABA neurons does not seem to be altered (yellow). GAD67, 67 kD isoform of glutamic acid decarboxylase; PV, parvalbumin; 1–6, layers of dorsolateral prefrontal cortex.

Figure 26.2 The structure of the human neocortex (Part 2)

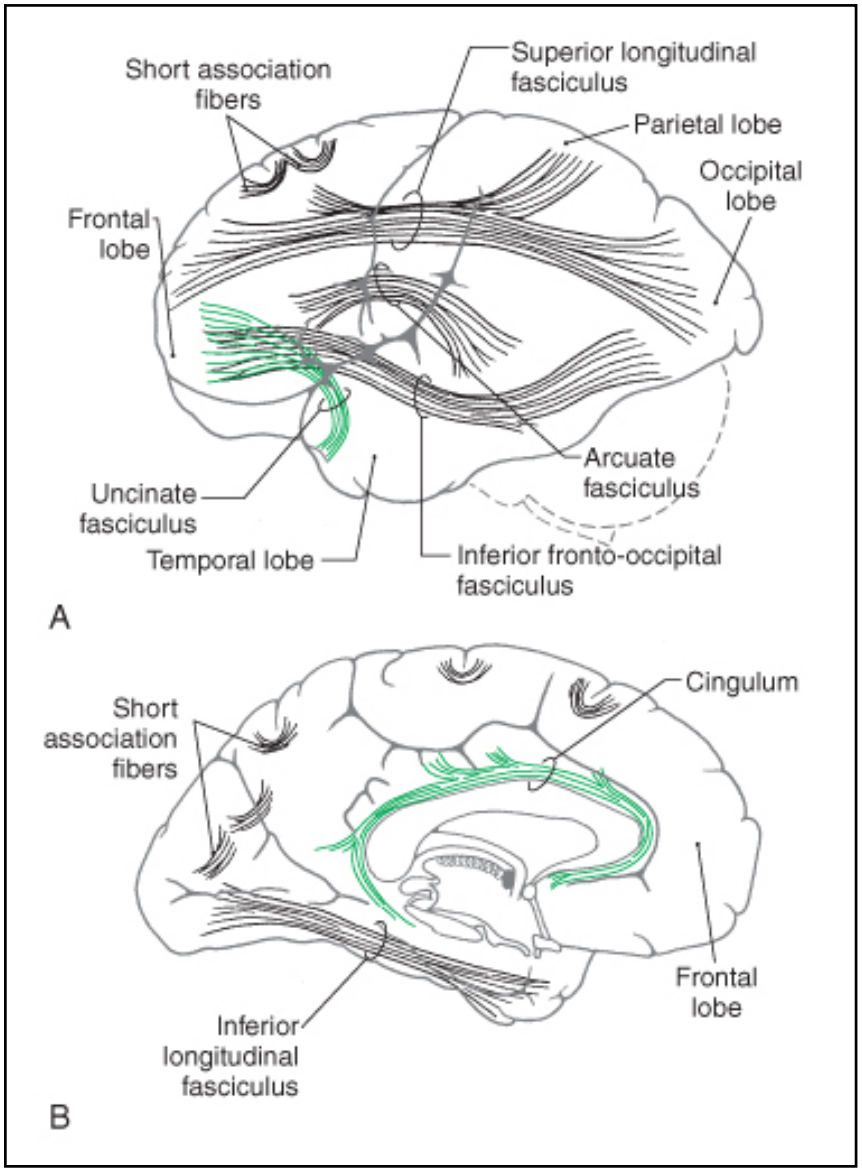


NEUROSCIENCE, Fourth Edition, Figure 26.2 (Part 2)

Fiber systems



Main association bundles

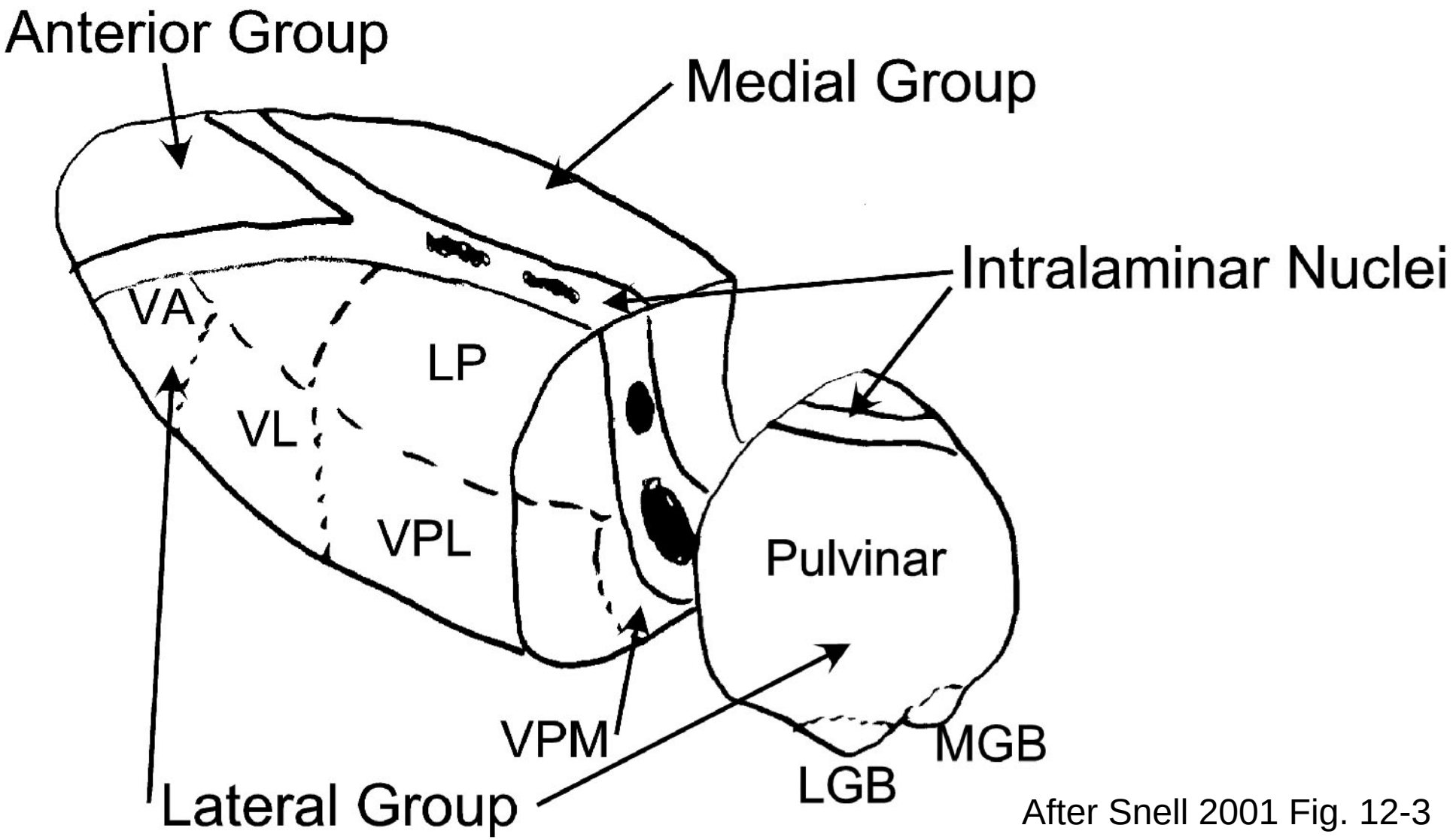


lateral view

medial view

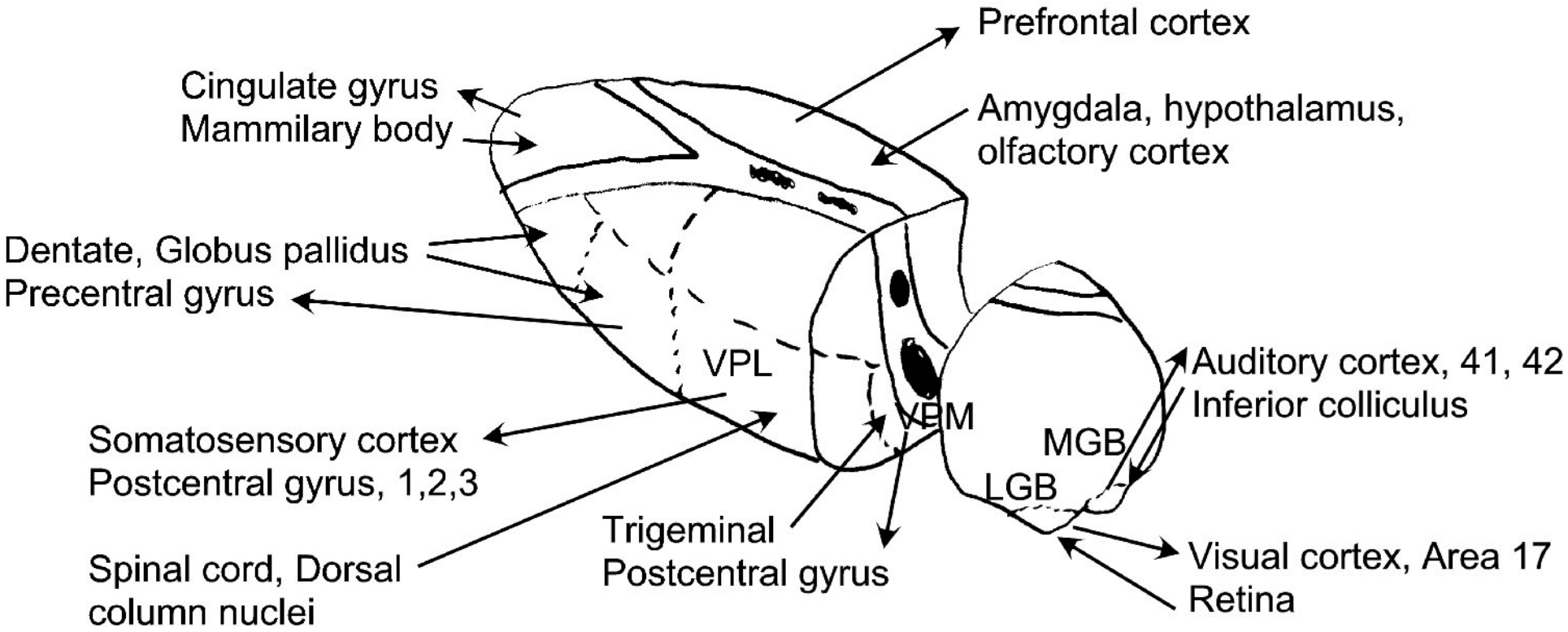
Haines
Fund. Neuro.
Fig 16-13

Subdivisions of Dorsal Thalamus



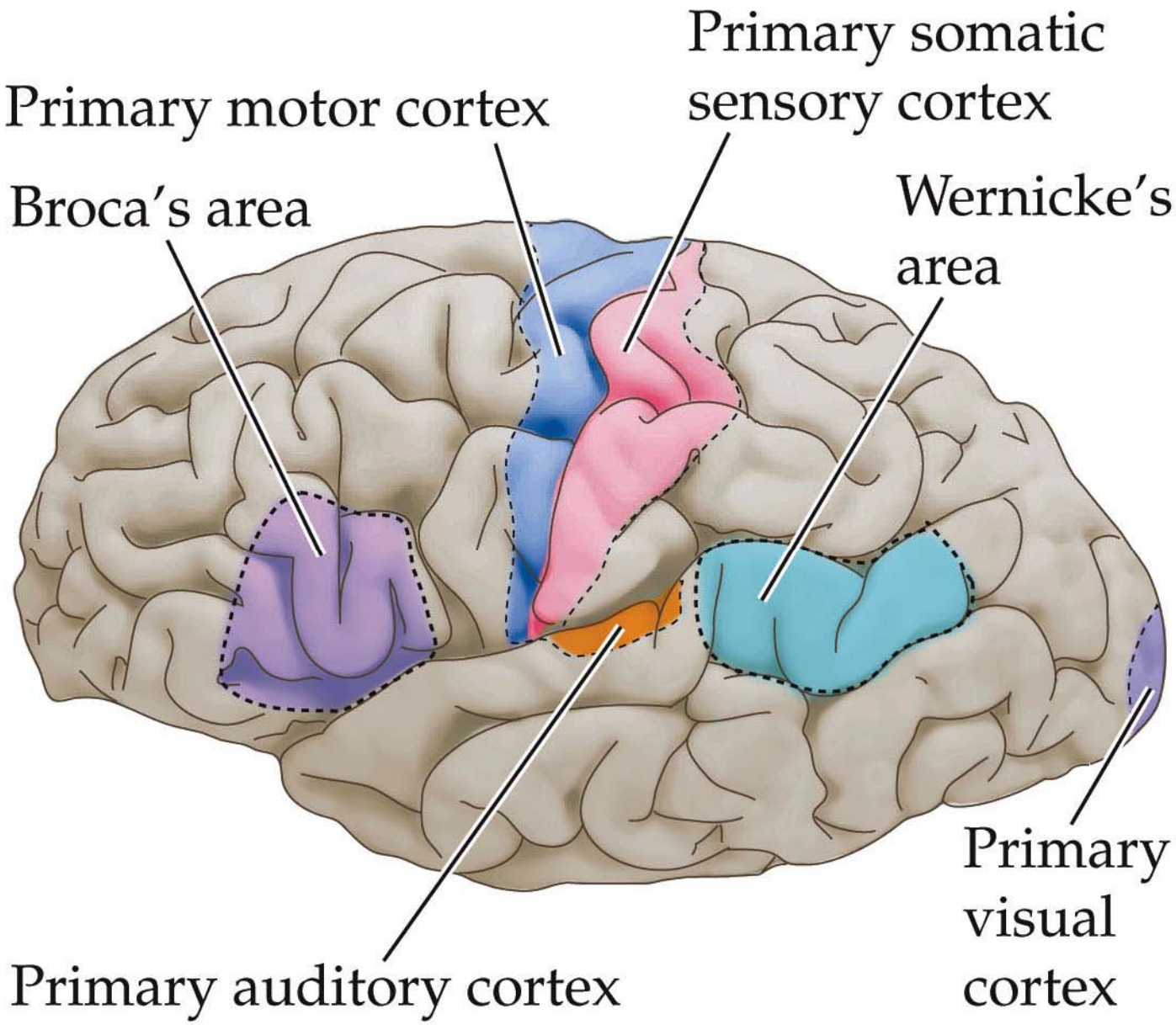
After Snell 2001 Fig. 12-3

Inputs and Outputs of Dorsal Thalamus



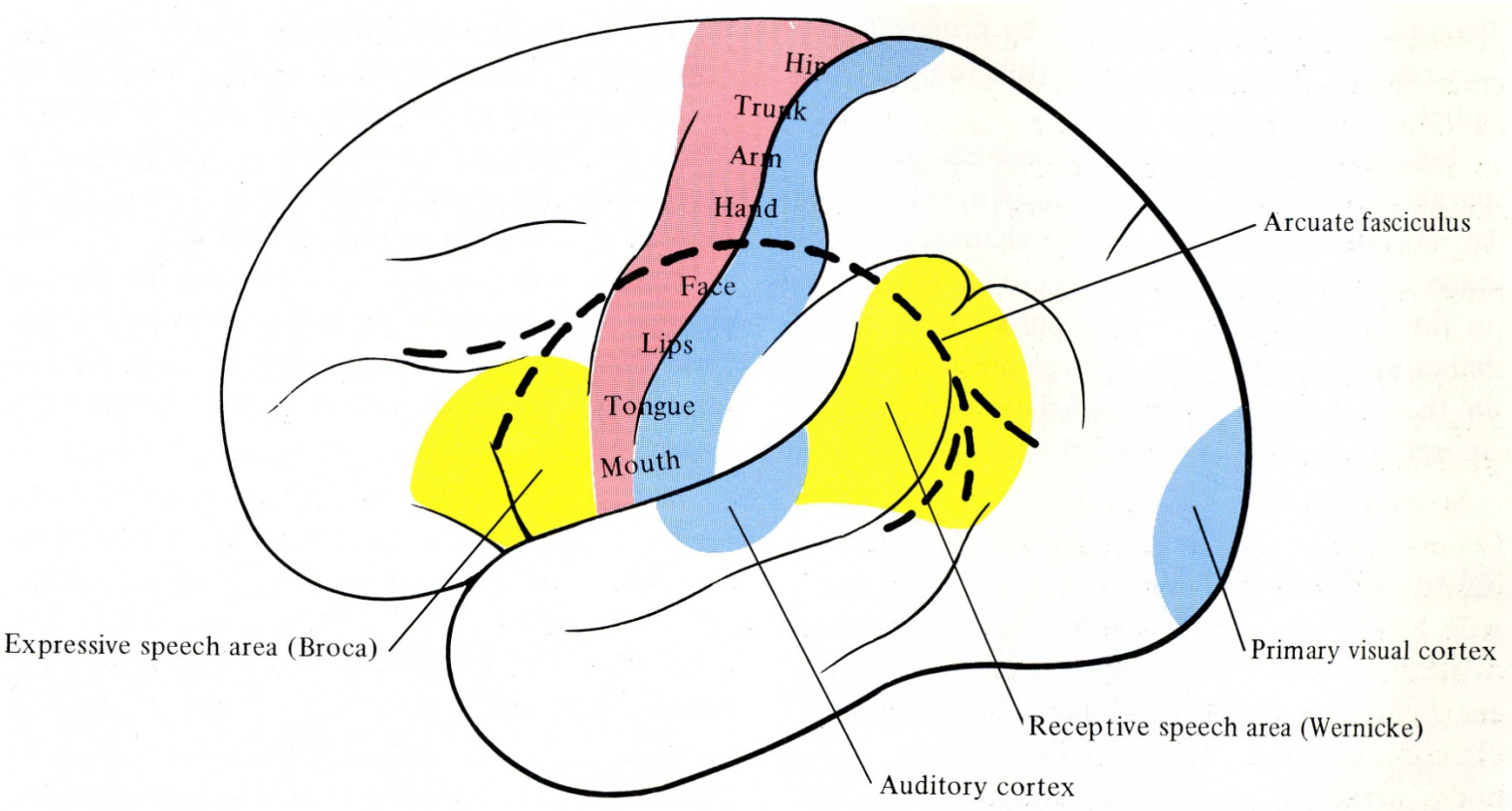
After Snell 2001 Fig. 1

Figure 27.1 The major language areas of the brain



NEUROSCIENCE, Fourth Edition, Figure 27.1

Homunculus in Motor and Sensory Cortex



Primary somatosensory areas: 3,2,1

Primary Motor areas: area 4

Specific sensory:

Visual 17, 18, 19

Auditory 41,42

Association cortex; Limbic: cingulate, posterior orbital cortex

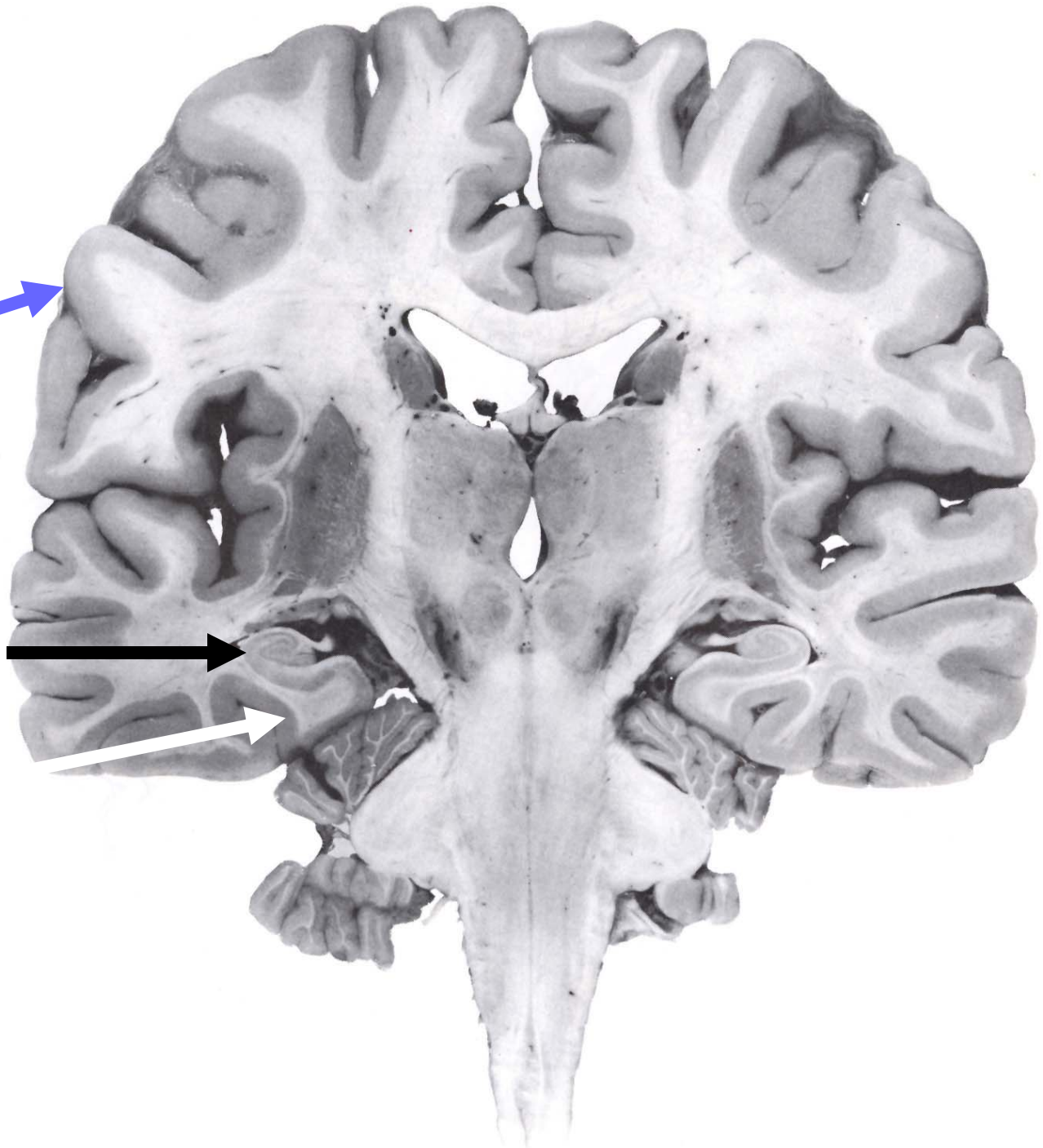
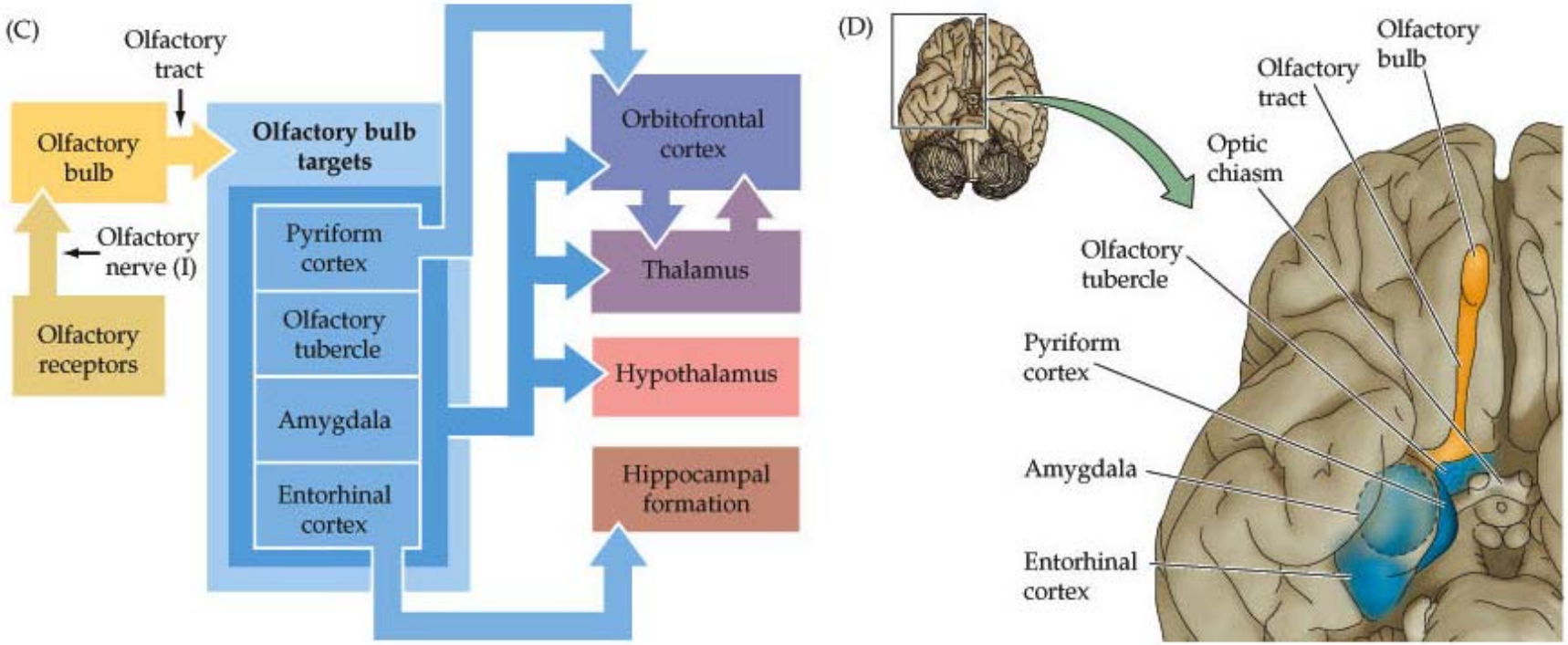
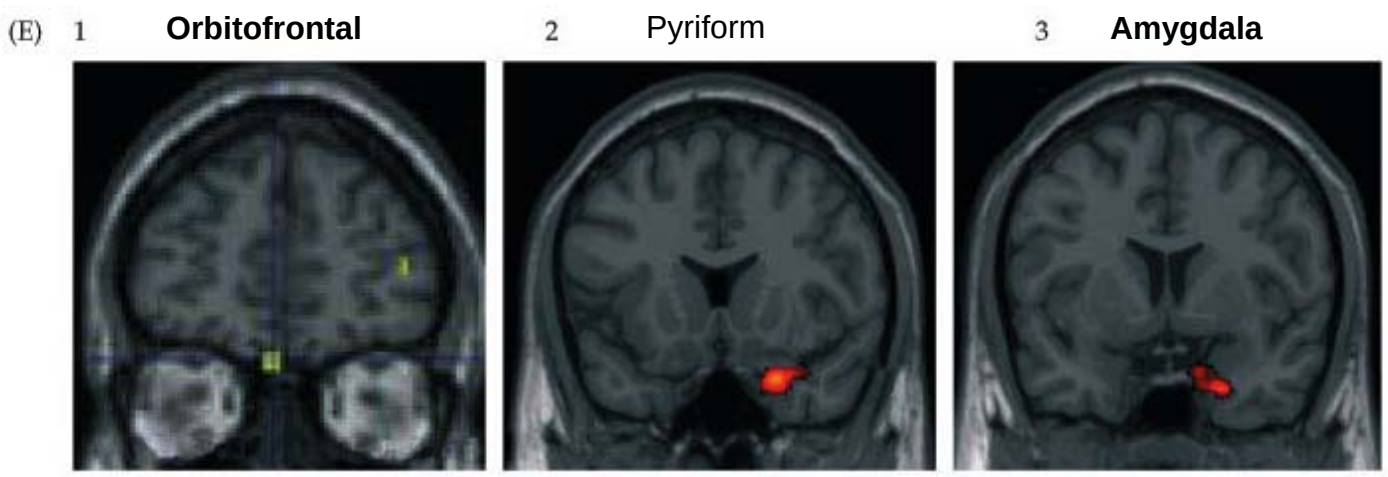

Neocortex
Archicortex
(Hippocampus)
Paleocortex

Figure 15.1 Organization of the human olfactory system





NEUROSCIENCE, Fourth Edition, Figure 15.1

Hippocampus -Archicortex

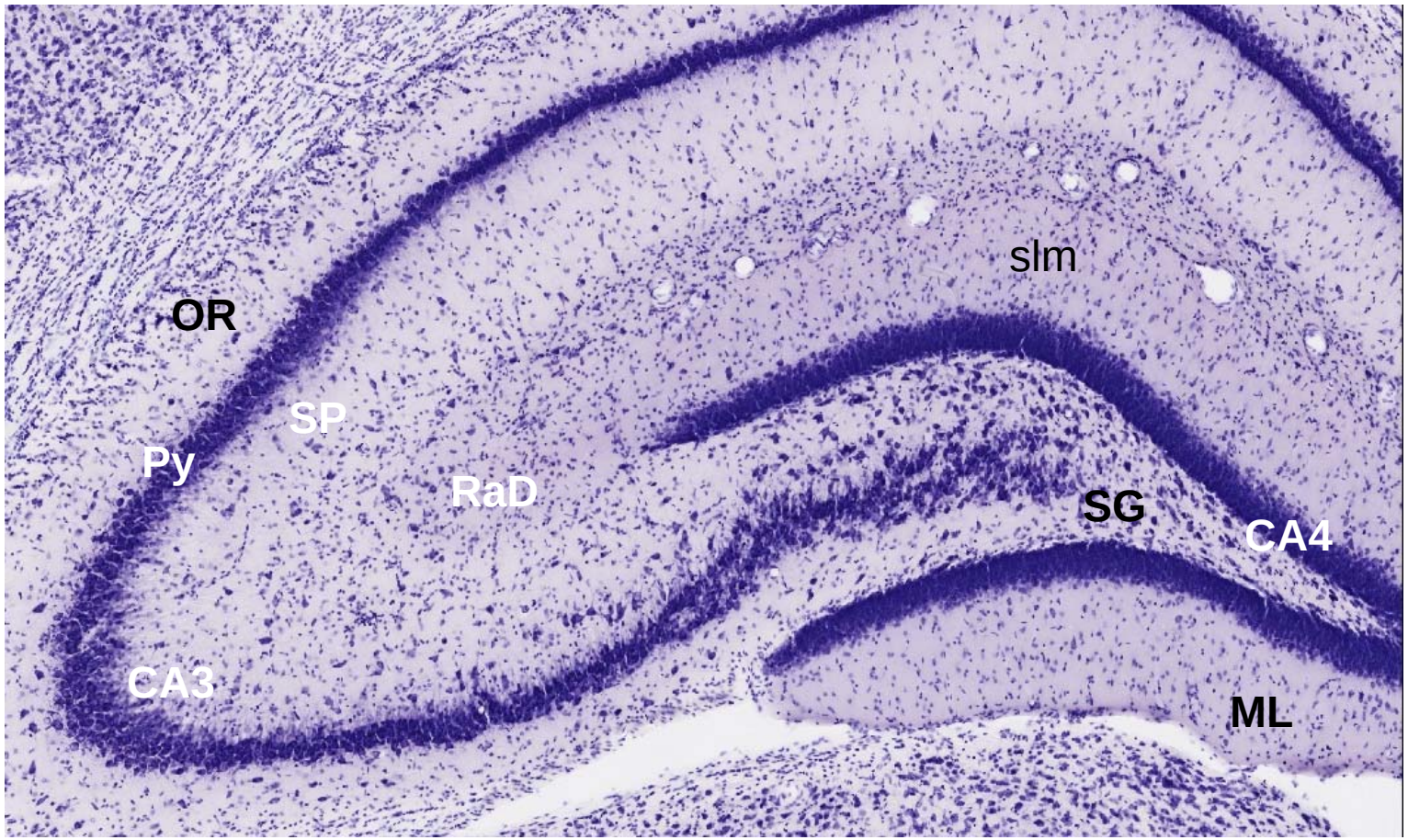
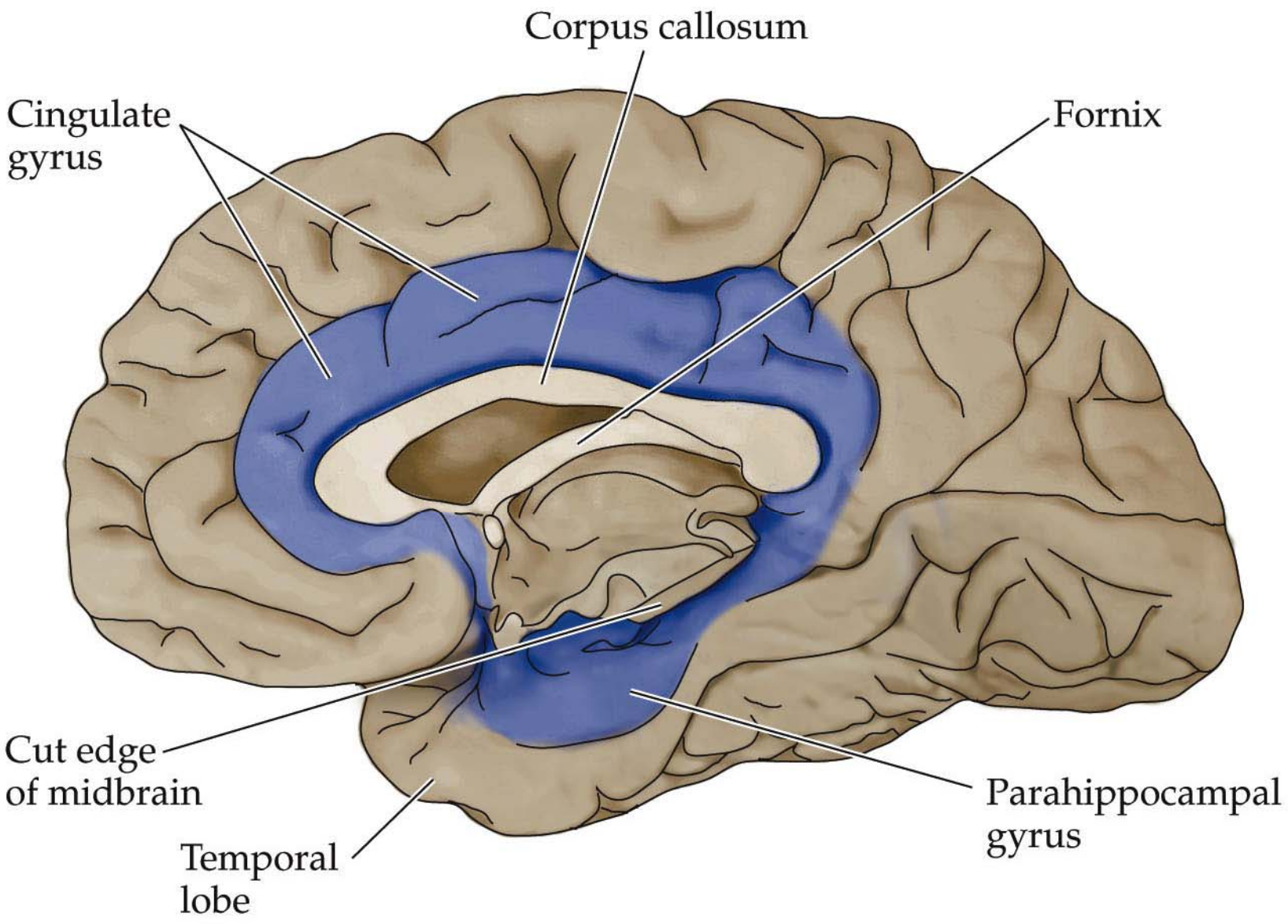
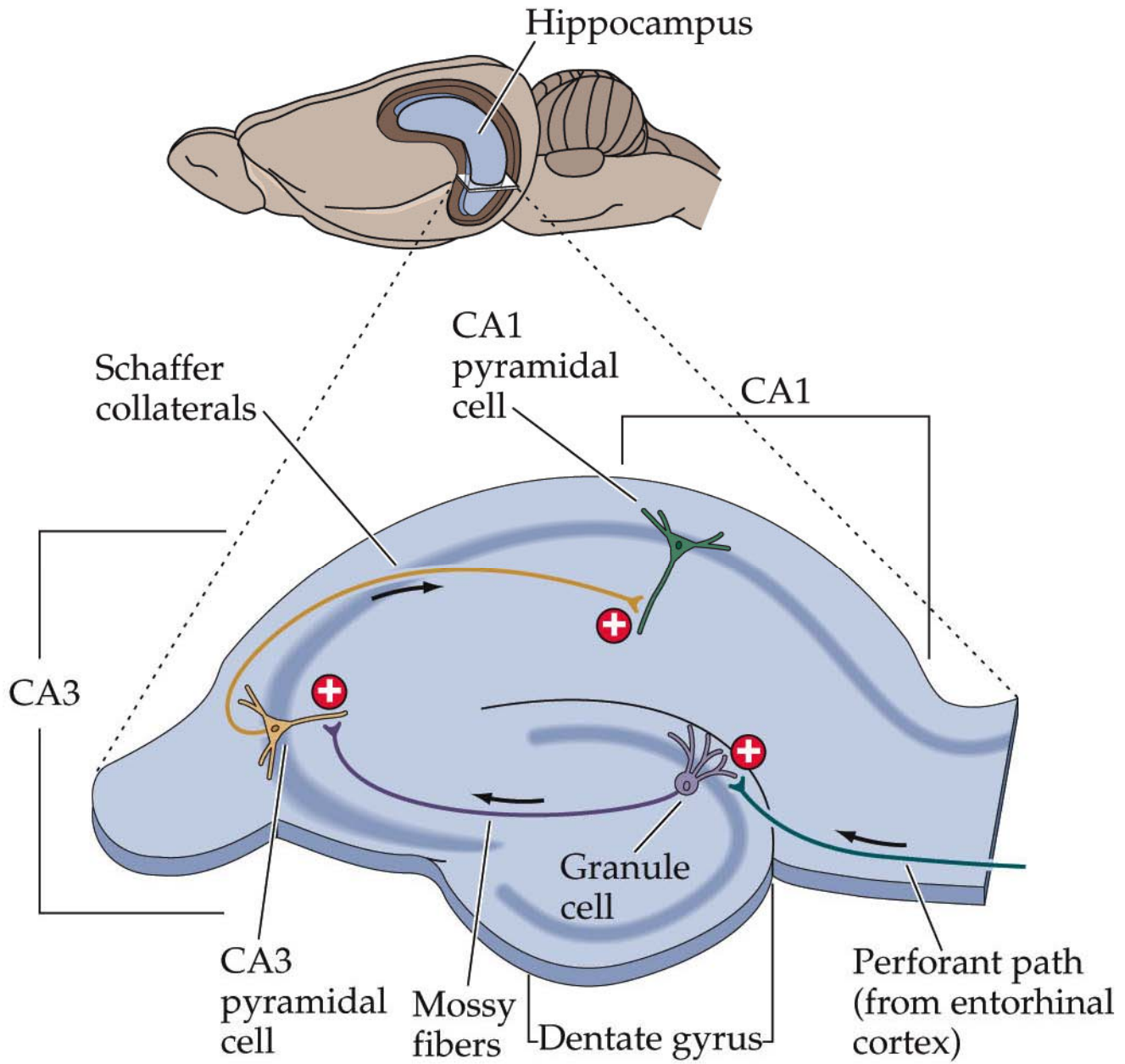


Figure 29.3 Elements of the so-called limbic lobe



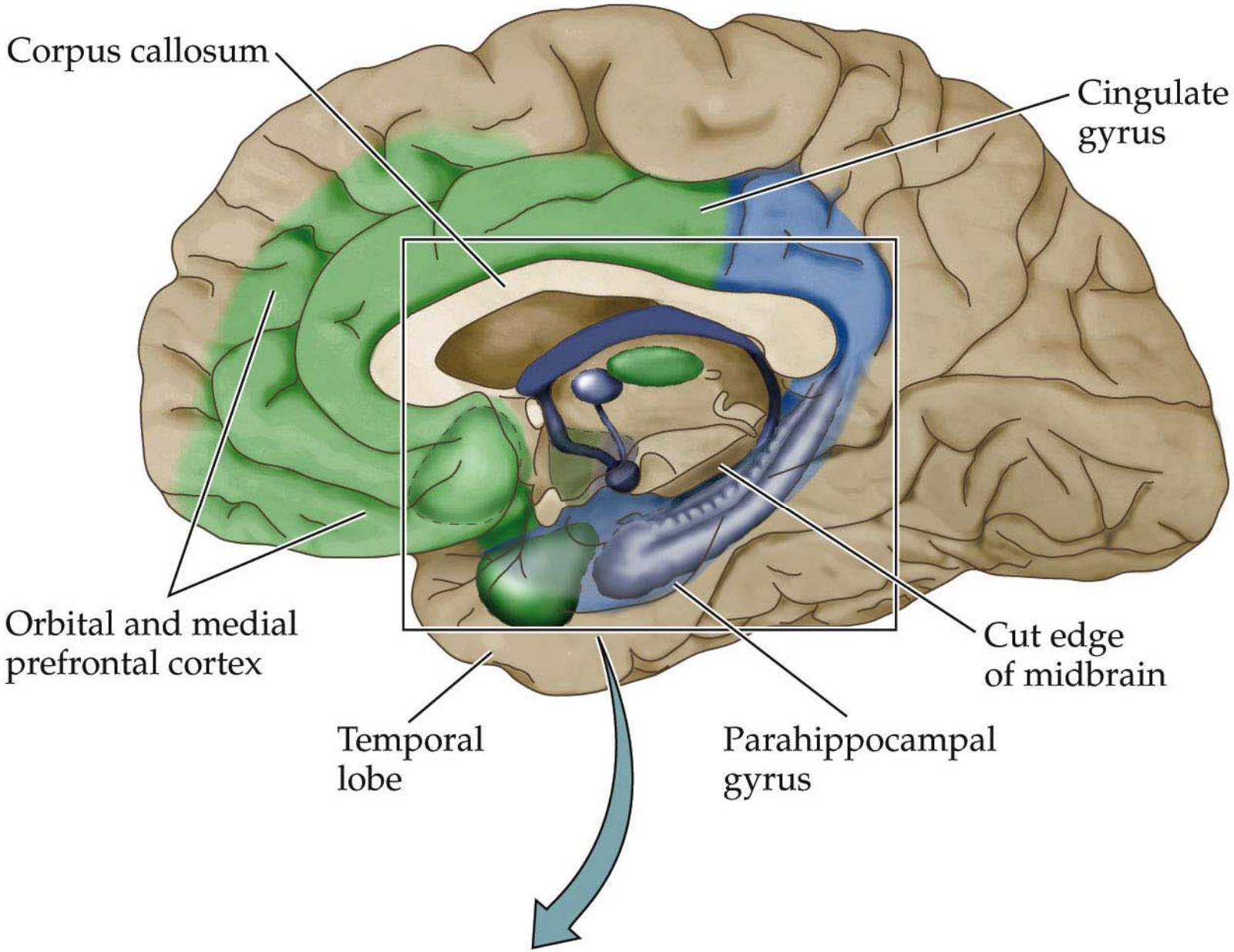
NEUROSCIENCE, Fourth Edition, Figure 29.3

Figure 8.6 The rodent hippocampus



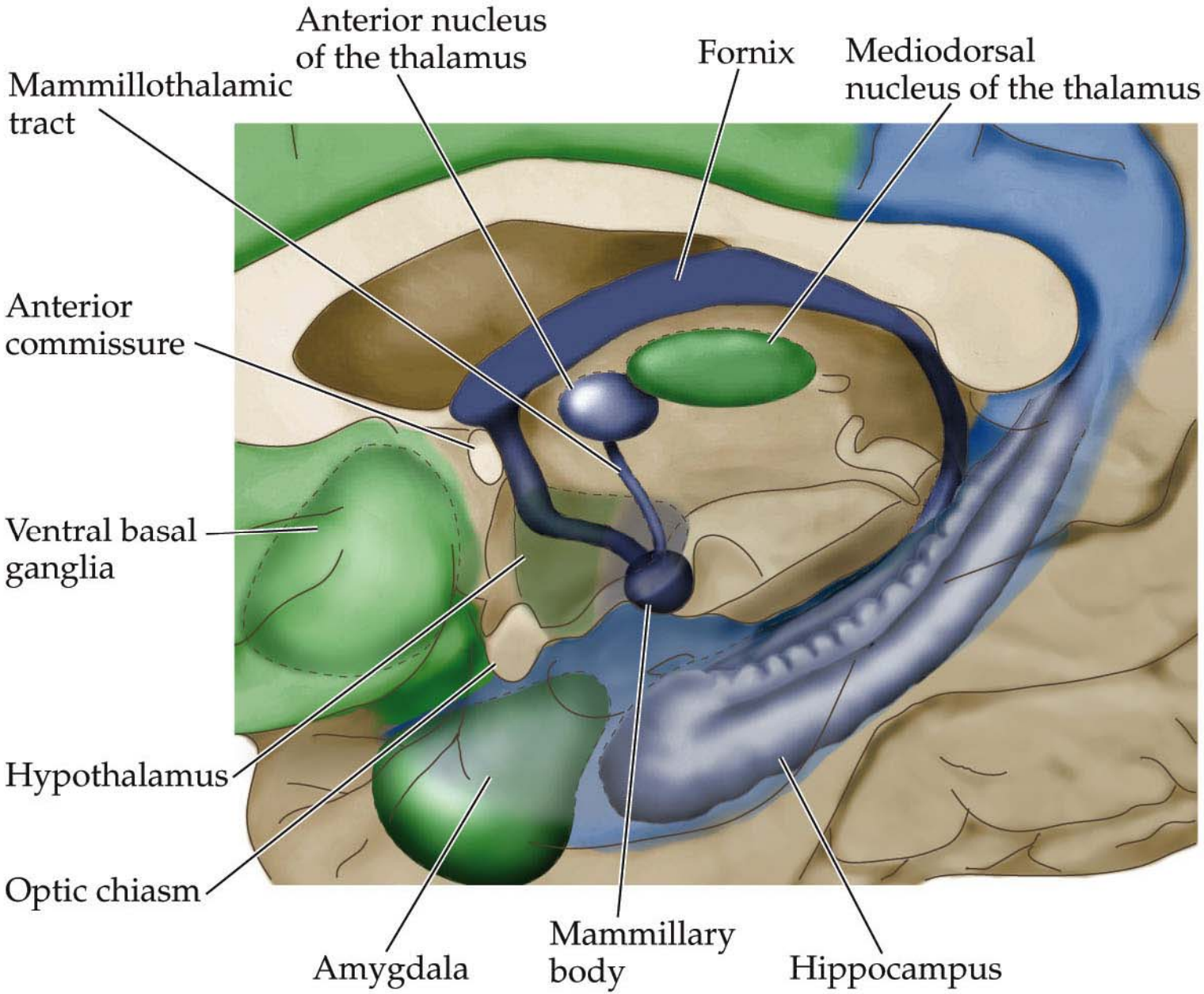
NEUROSCIENCE, Fourth Edition, Figure 8.6

Figure 29.4 Modern conception of the limbic system (Part 1)



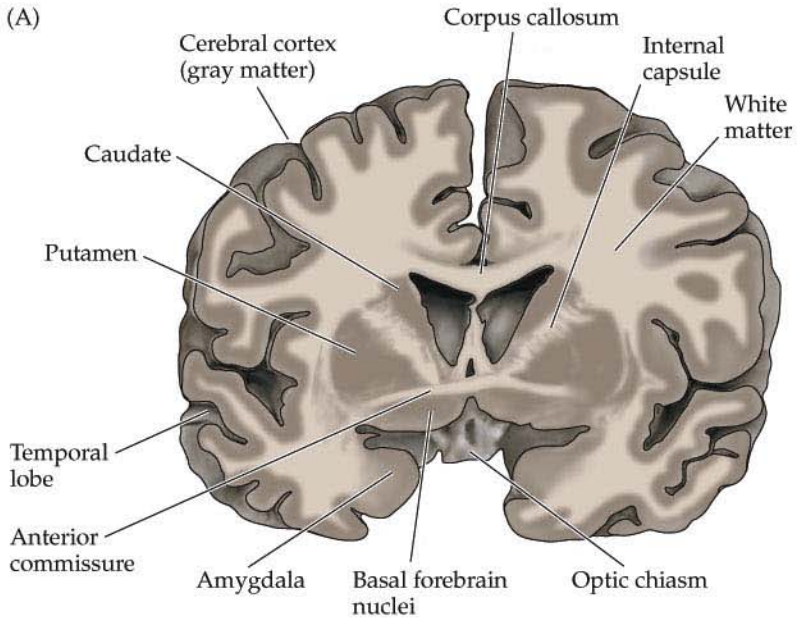
***NEUROSCIENCE, Fourth Edition,* Figure 29.4 (Part 1)**

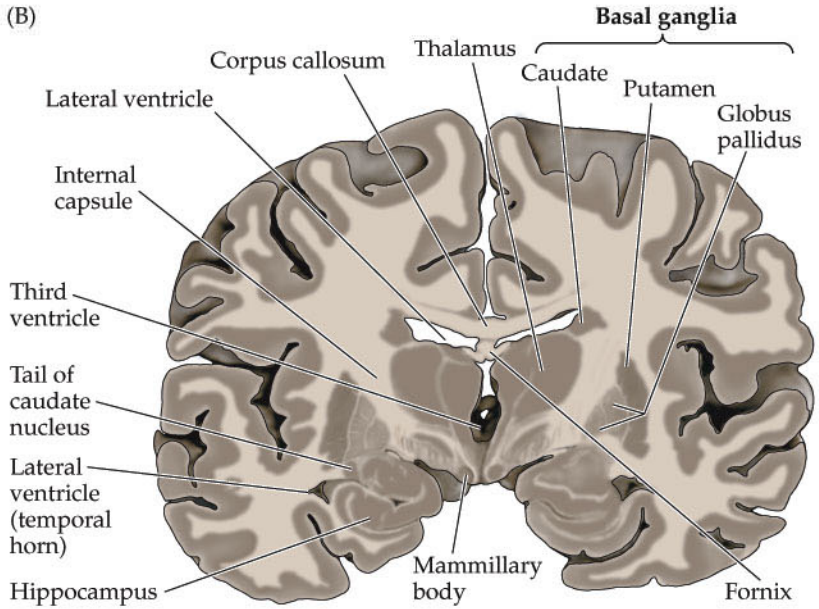
Figure 29.4 Modern conception of the limbic system (Part 2)

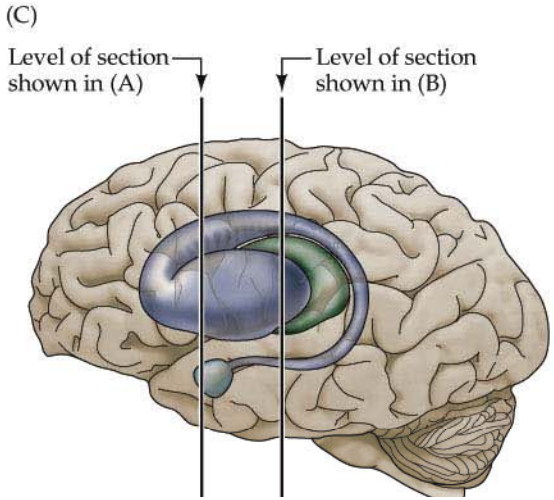


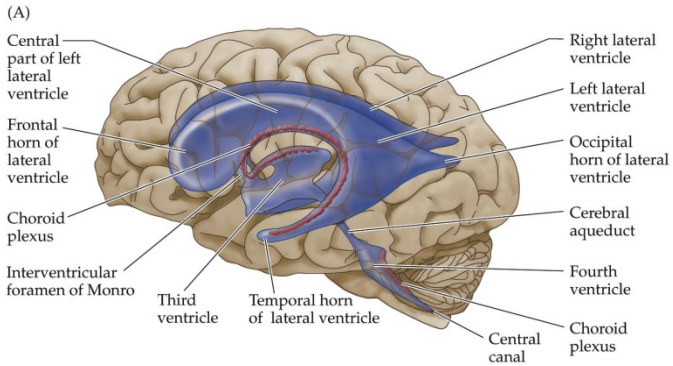
NEUROSCIENCE, Fourth Edition, Figure 29.4 (Part 2)

Figure A14 Internal structures of the brain seen in coronal section









NEUROSCIENCE, Fourth Edition, **Appendix, Figure A21 (Part 1)**

NEUROSCIENCE, Fourth Edition, **Appendix, Figure A14**

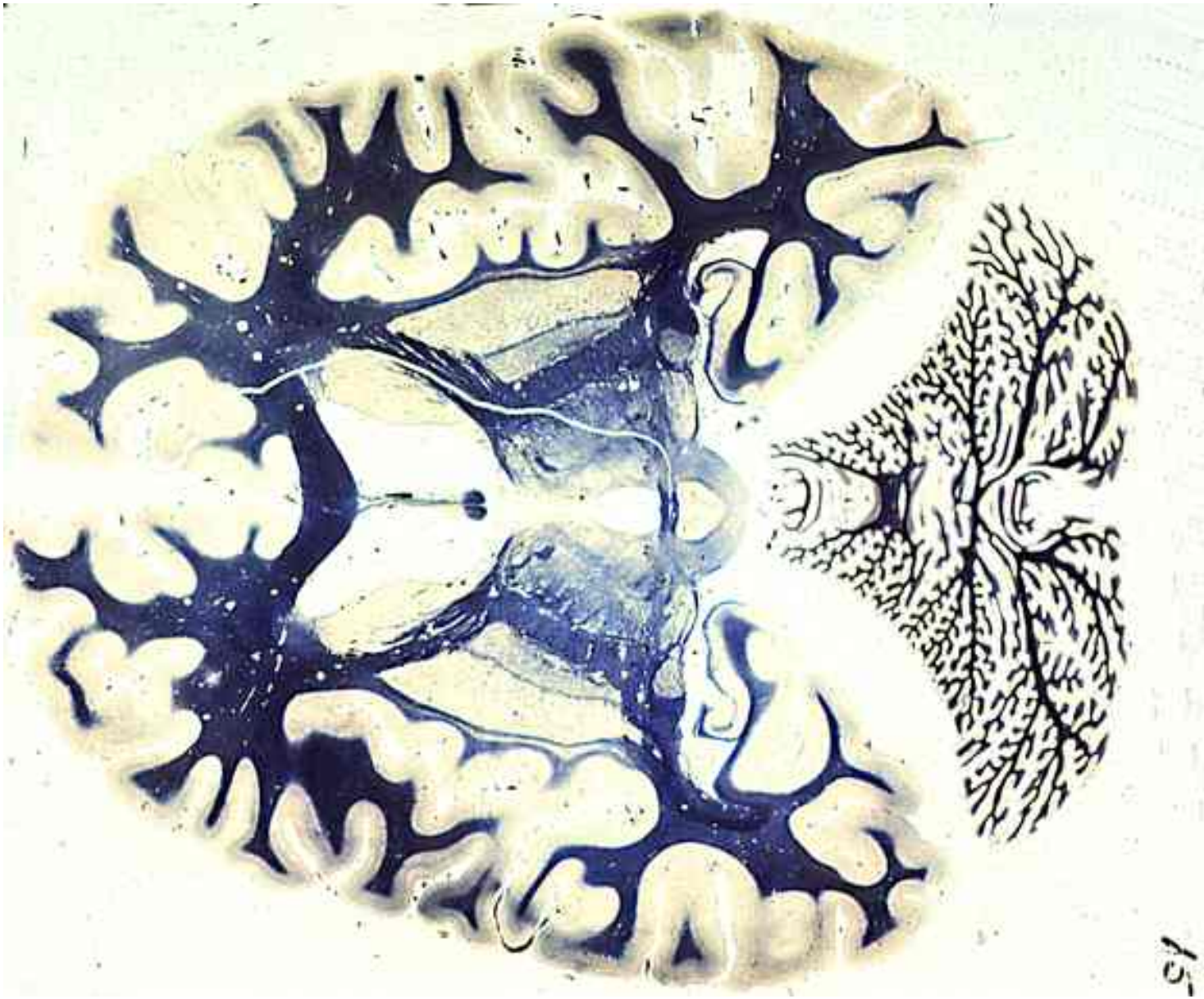


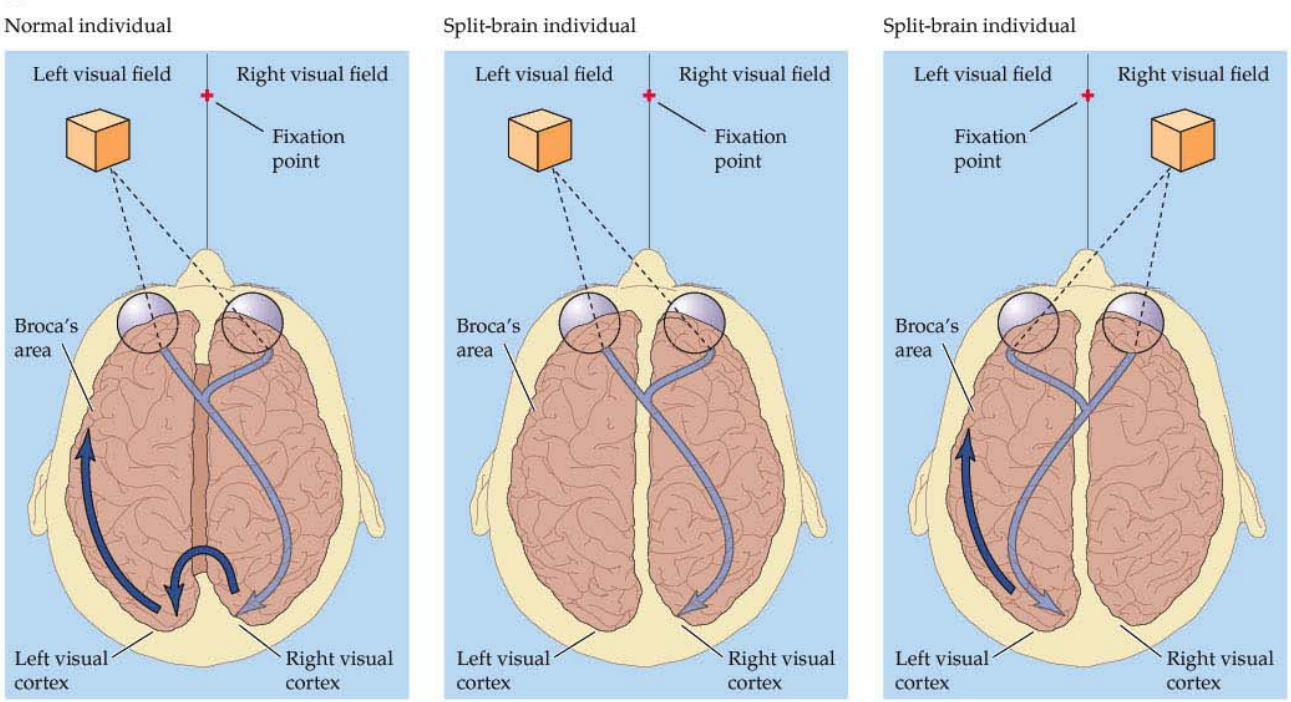
Figure 27.3 Confirmation of hemispheric specialization for language

(A)

(C)

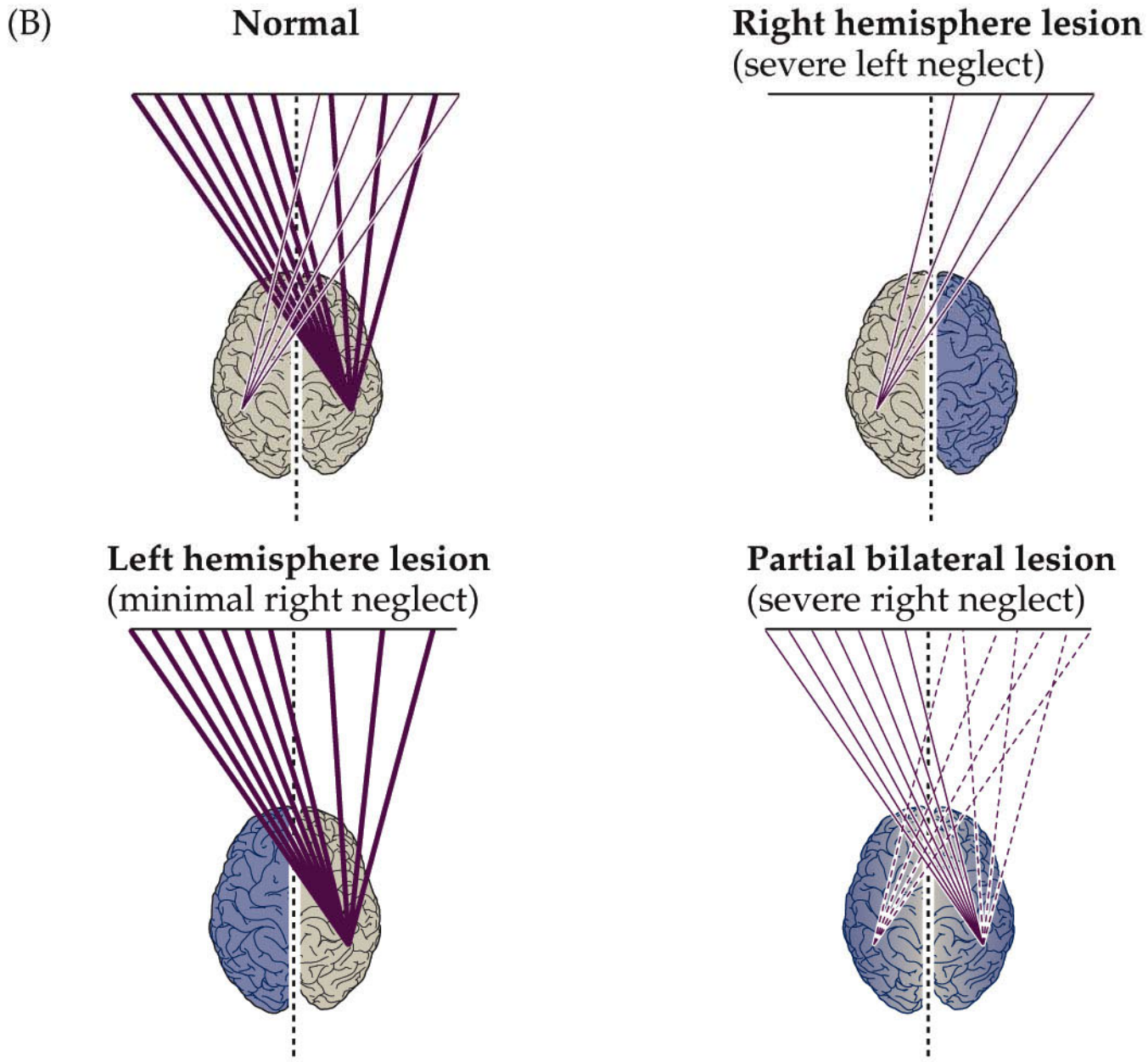
Left hemisphere functions	Right hemisphere functions
Analysis of right visual field	Analysis of left visual field
Stereognosis (right hand)	Stereognosis (left hand)
Lexical and syntactic language	Emotional coloring of language
Writing	Spatial abilities
Speech	Rudimentary speech

(B)



NEUROSCIENCE, Fourth Edition, Figure 27.3

Figure 26.6 Neuroanatomy of neglect syndromes (Part 2)



***NEUROSCIENCE, Fourth Edition,* Figure 26.6 (Part 2)**

Figure 26.5 Visuospatial tasks performed by individuals with contralateral neglect syndrome

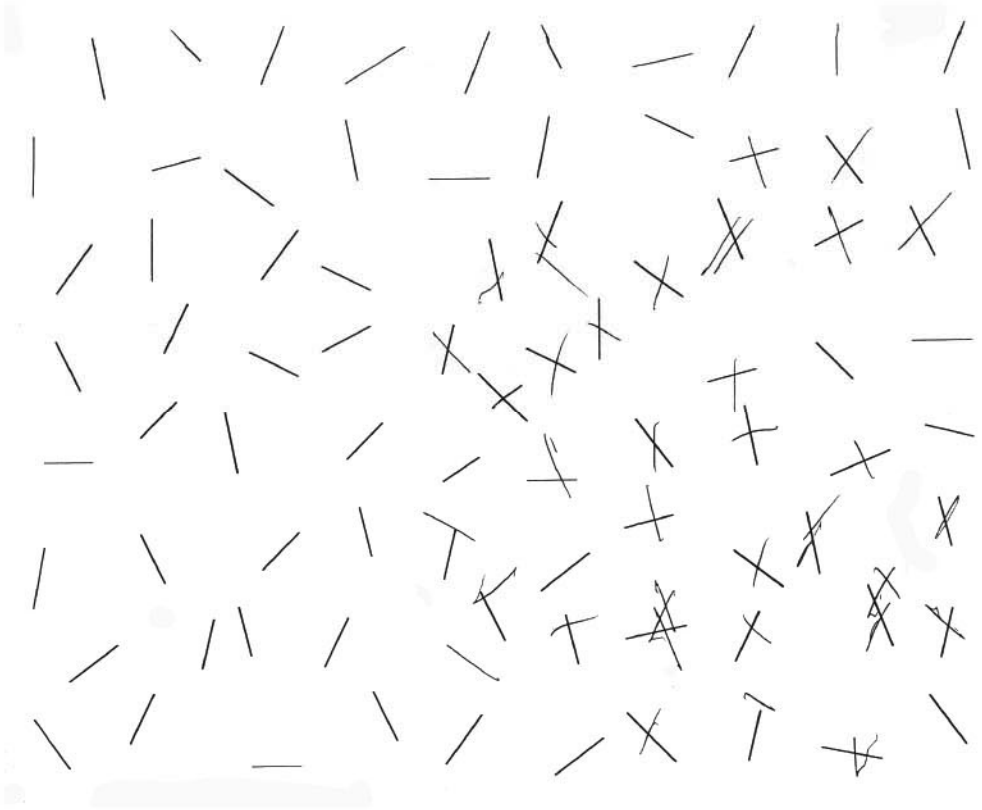
(A) "Draw a house"

Model

Patient's copy

(B) "Bisect the line"

(C) "Cancel the line"



- Anosognosia- does not recognize defect
- Sterognosia, Asterognosia, Agnosia- cannot recognize objects (touch)
- Apraxia-cannot perform a motor task (salute for example)
- Aphasia- speech (motor, sensory)