

The Brain

Learning Outcomes:

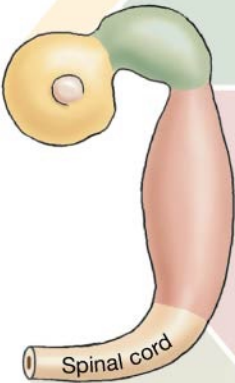
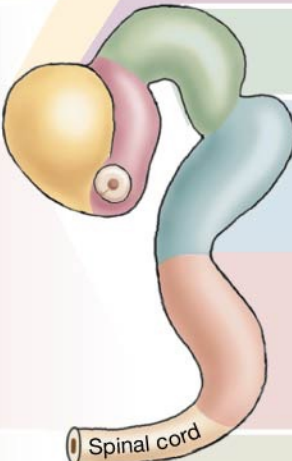
1. Identify the major regions of the brain and identify their functions
2. Compare and contrast the structures that protect and support the brain
3. Identify the anatomical structures that form the thalamus and hypothalamus and list their functions
4. Identify the components of the cerebellum and list their functions

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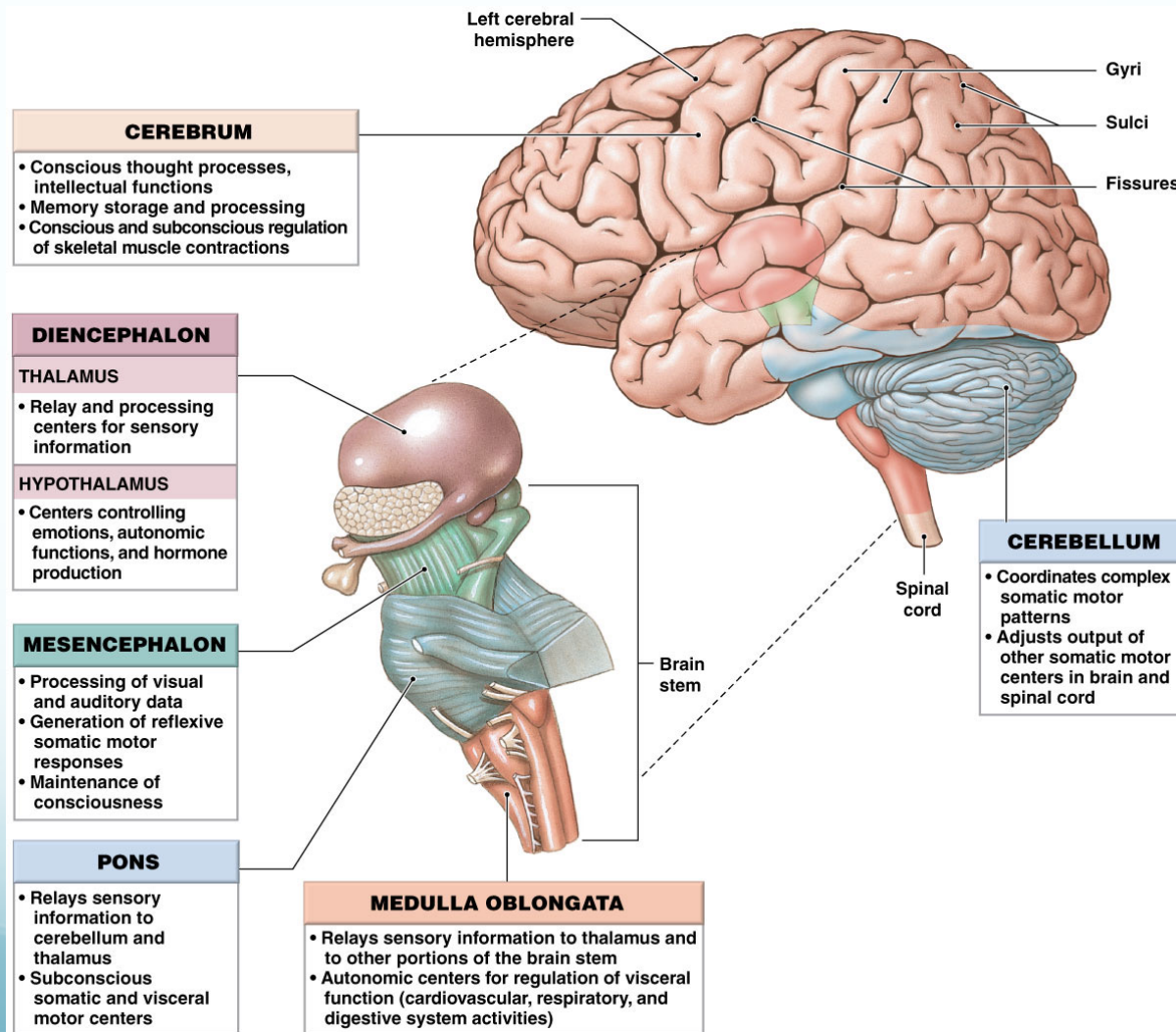
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Development of the Human Brain

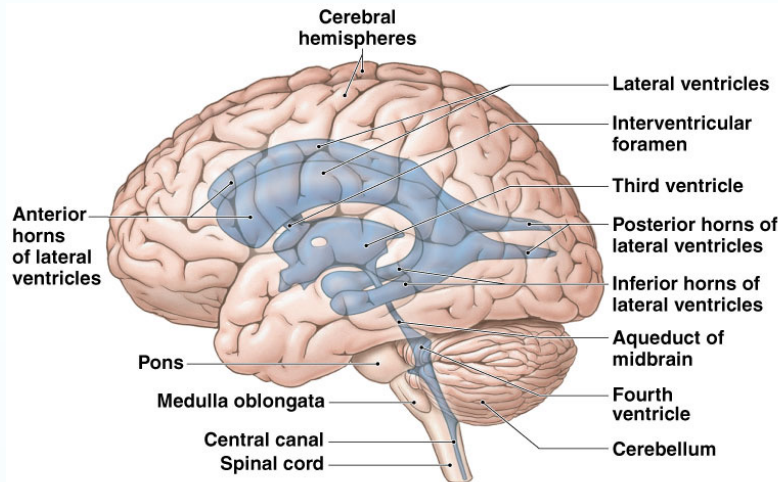
Table 16.1 Development of the Human Brain (See also Chapter 28, for embryological summary)

Primary Brain Vesicles (3-week embryo)	Secondary Brain Vesicles (6-week embryo)	Brain Regions at Birth	Ventricles
 <p>Prosencephalon</p> <p>Mesencephalon</p> <p>Rhombencephalon</p> <p>Spinal cord</p>	Telencephalon	Cerebrum	Lateral ventricle
	Diencephalon	Diencephalon	Third ventricle
	Mesencephalon	Midbrain	Cerebral aqueduct
	Metencephalon	Cerebellum and Pons	Fourth ventricle
	Myelencephalon	Medulla oblongata	Fourth ventricle
	 <p>Spinal cord</p>		

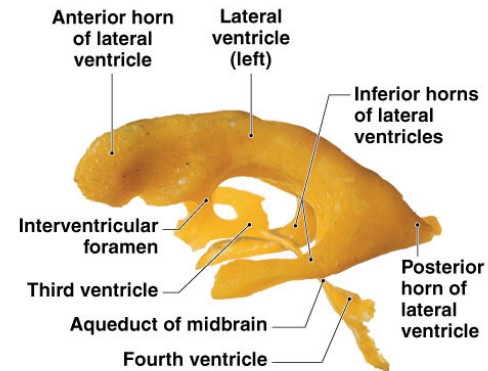
Major Divisions of the Brain



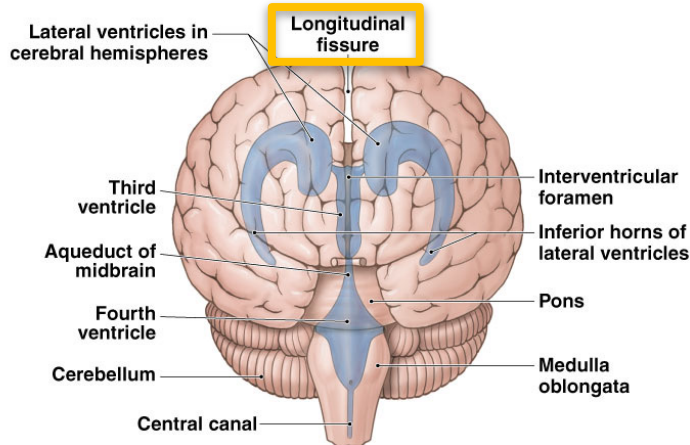
Ventricles of the Brain



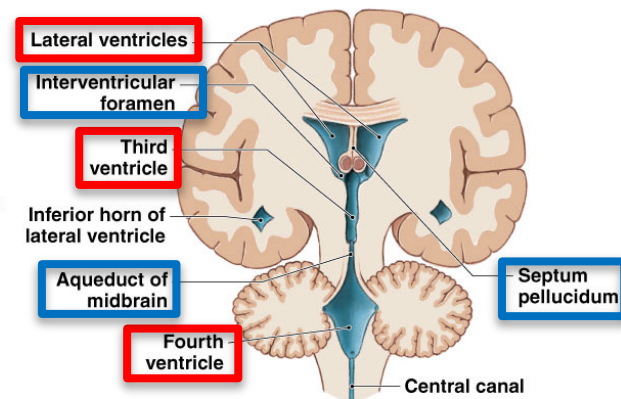
a Orientation and extent of the ventricles as seen in a lateral view of a transparent brain



b Lateral view of a plastic cast of the ventricles

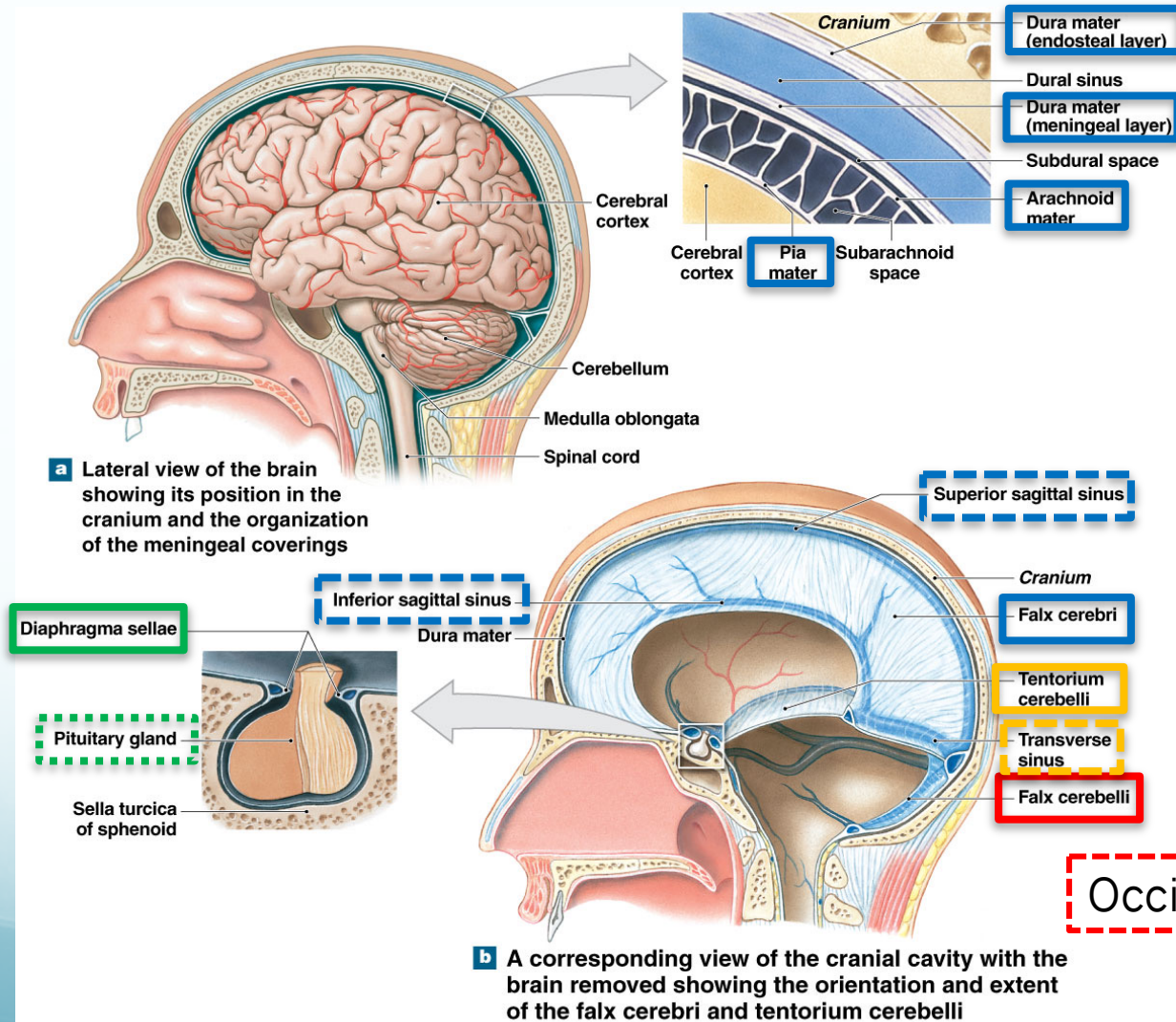


c Anterior view of the ventricles as seen through a transparent brain

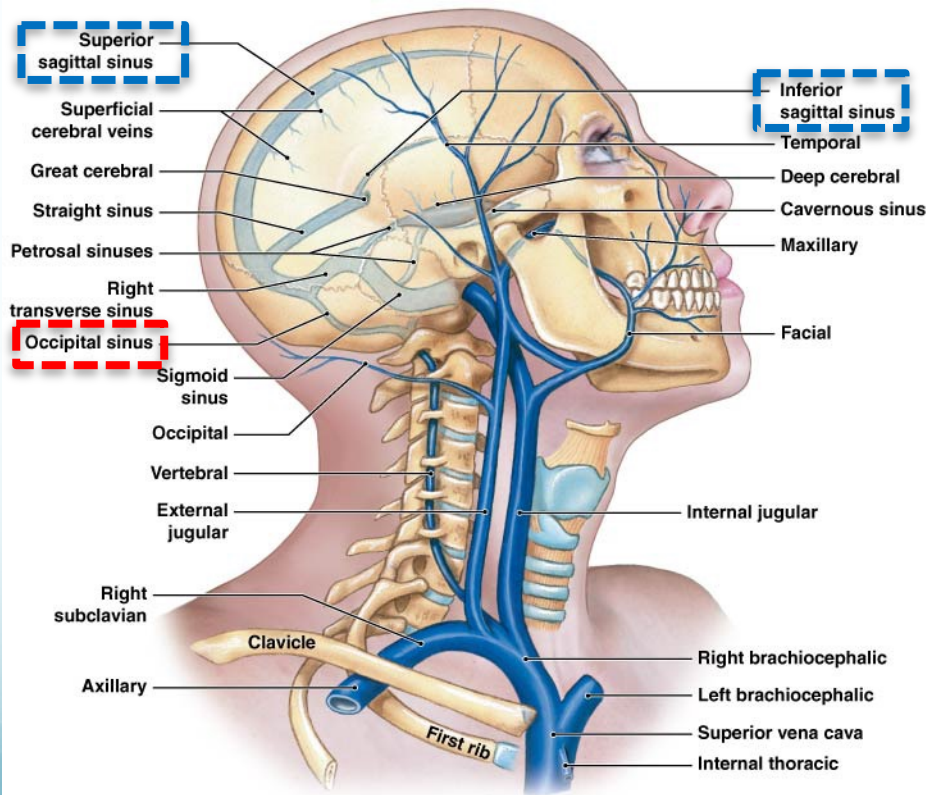


d Diagrammatic coronal section showing the interconnections between the ventricles

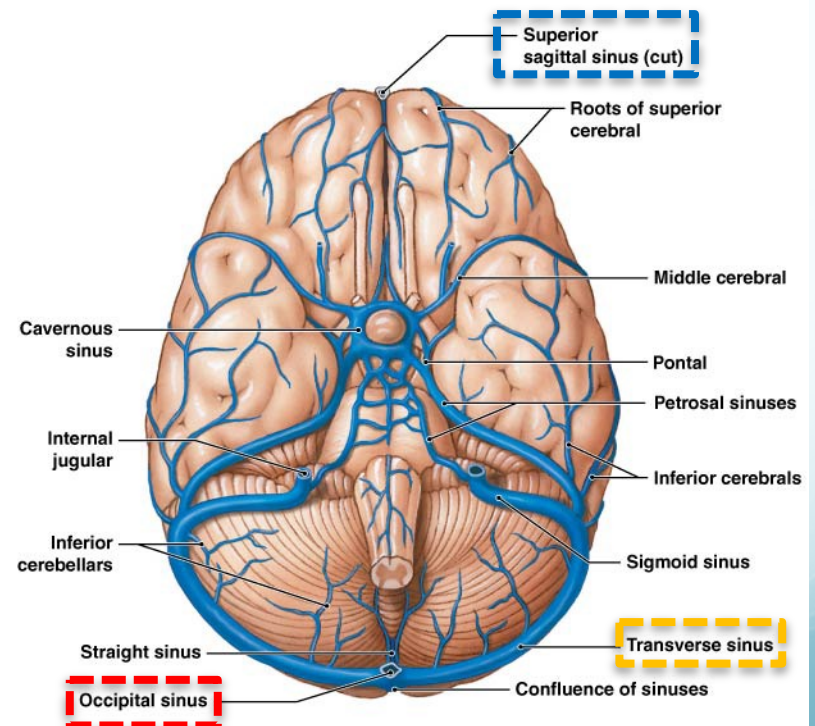
The Cranial Meninges



Sinuses

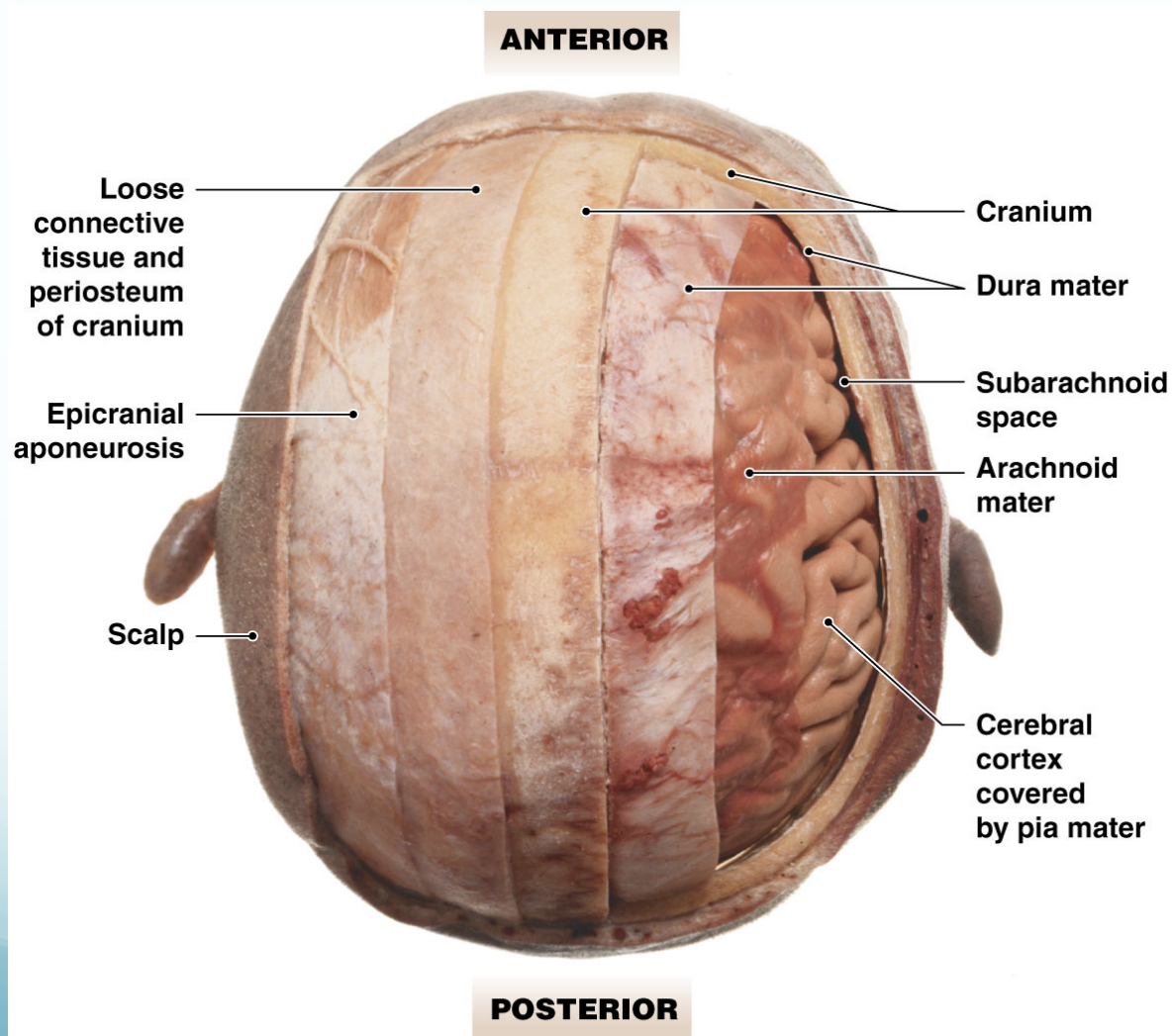


a An oblique lateral view of the head and neck showing the major superficial and deep veins.

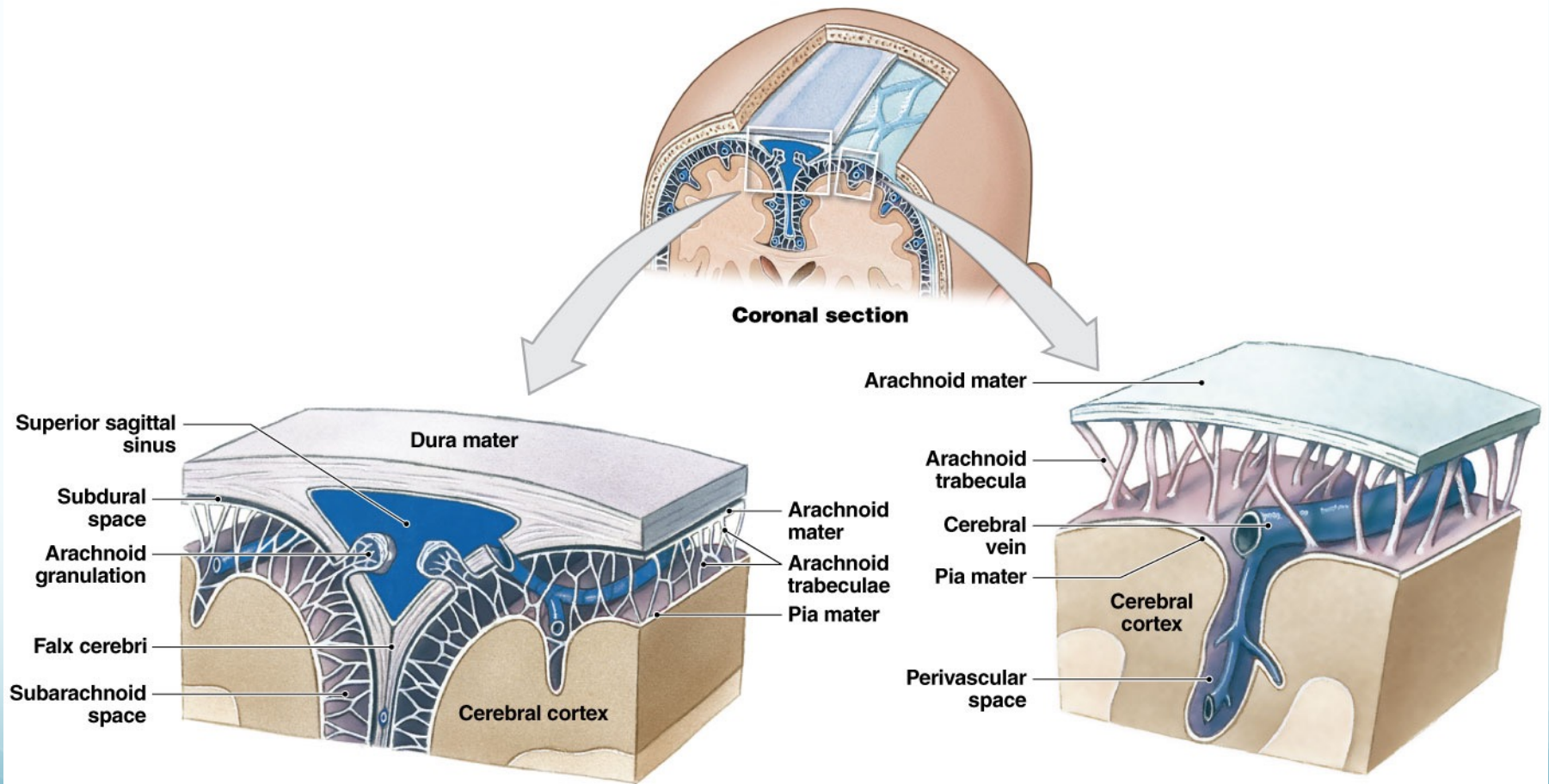


b An inferior view of the brain showing the major veins. Compare with the arterial supply to the brain shown in Figure 22.13a.

Cranial Meninges



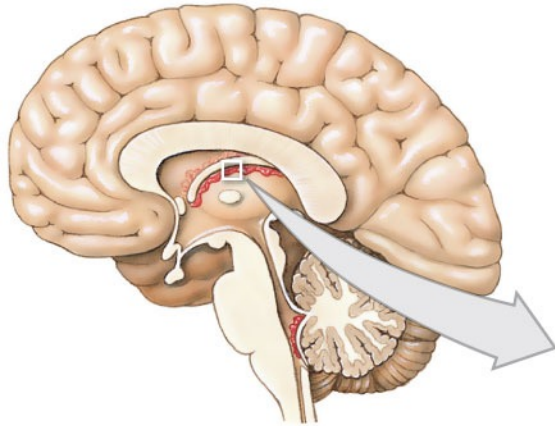
Cranial Meninges



a This view shows the organization and relationship of the cranial meninges to the brain.

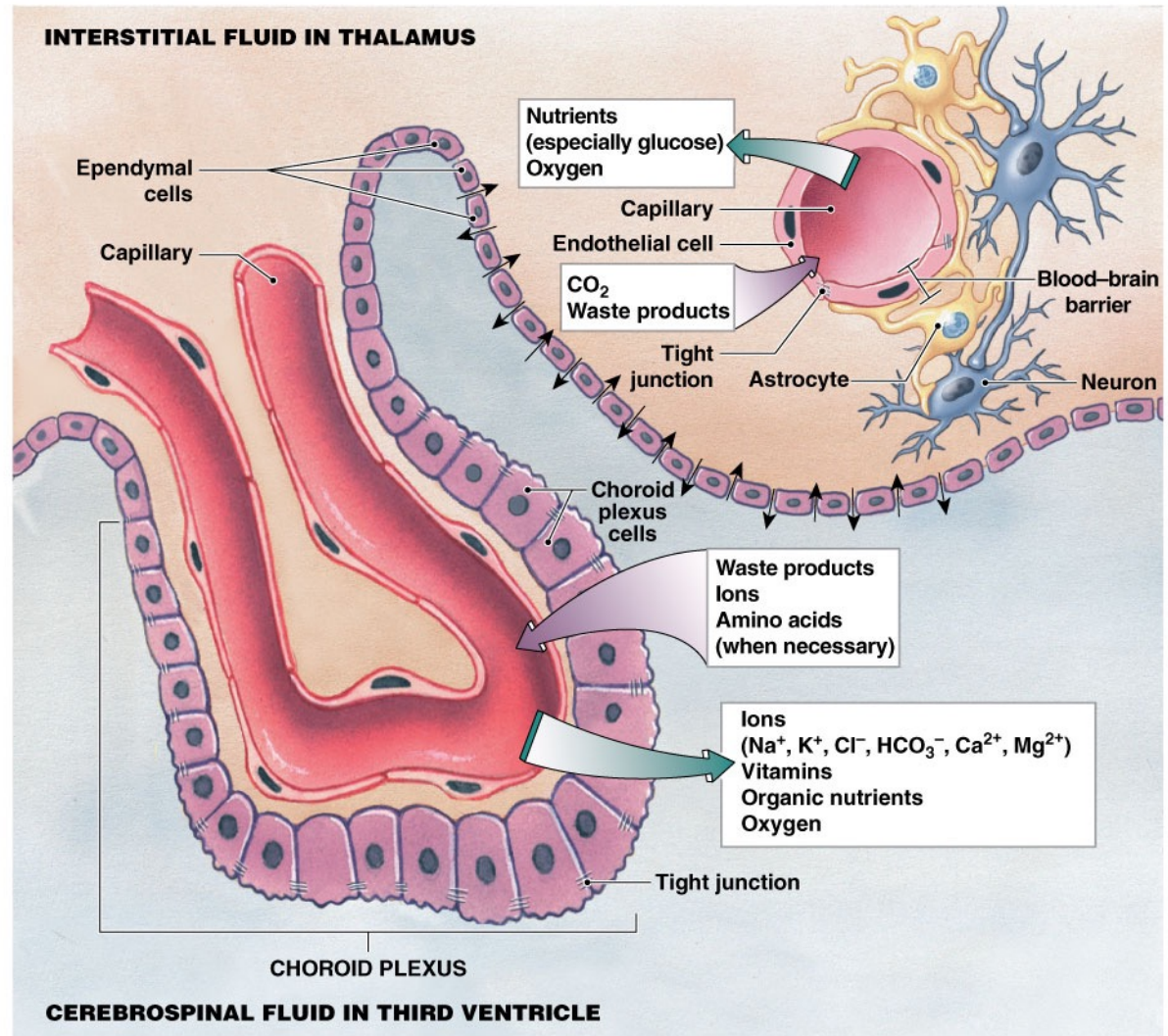
b A detailed view of the arachnoid membrane, the subarachnoid space, and the pia mater. Note the relationship between the cerebral vein and the subarachnoid space.

Choroid Plexus and Blood-Brain Barrier



a The location of the choroid plexus in each of the four ventricles of the brain

- b** The structure and function of the choroid plexus. The ependymal cells are a selective barrier, actively transporting nutrients, vitamins, and ions into the CSF. When necessary, these cells also actively remove ions or compounds from the CSF to stabilize its composition.



Circulation of Cerebrospinal Fluid

