

# Module 3: Developmental and Vascular Organization of the Brain

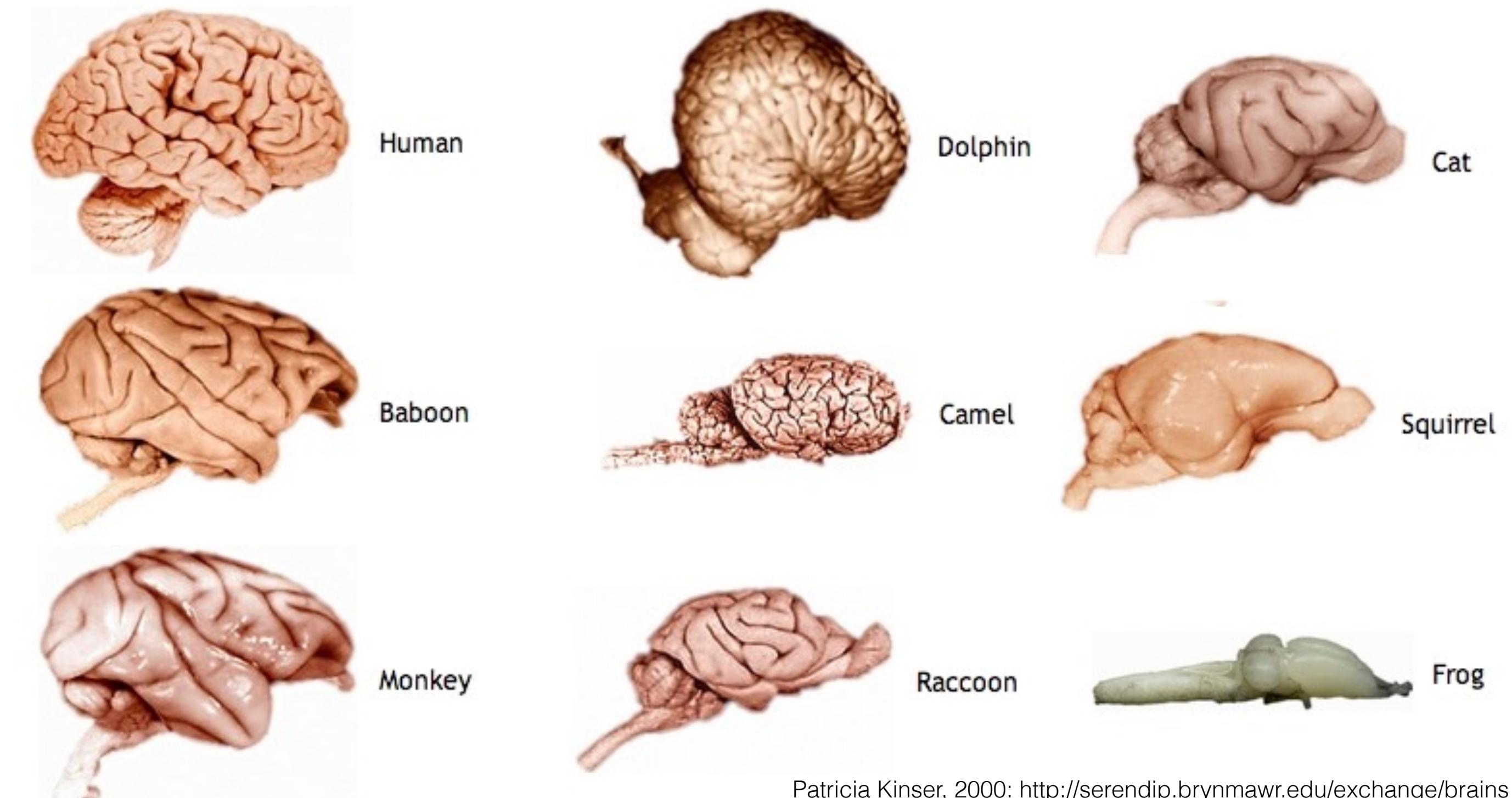
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# Cross-Species Organization of the Brain

Cross Species Brain Organization:

- Great variability in size and shape

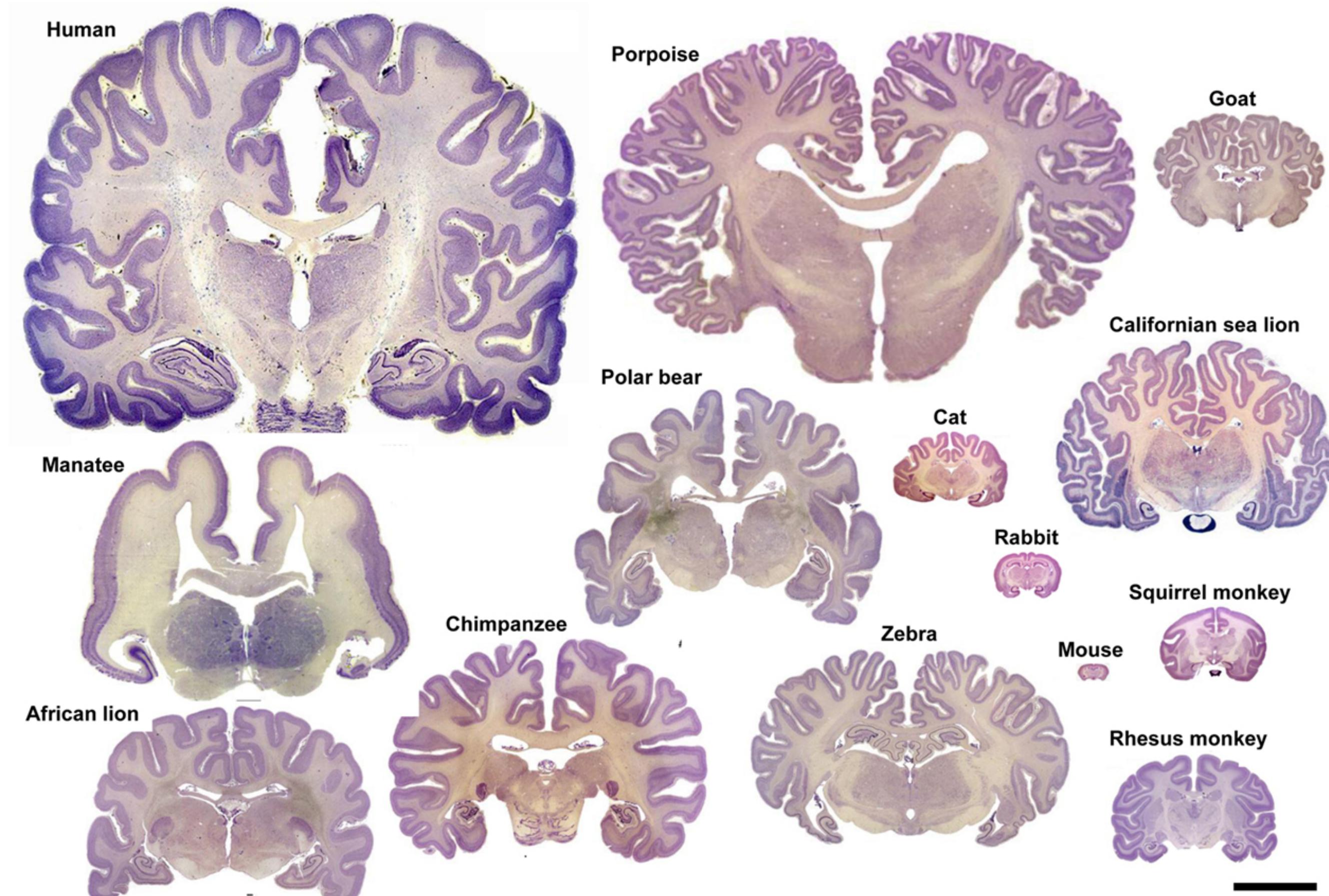


Patricia Kinser, 2000: <http://serendip.brynmawr.edu/exchange/brains>

# Cross-Species Organization of the Brain

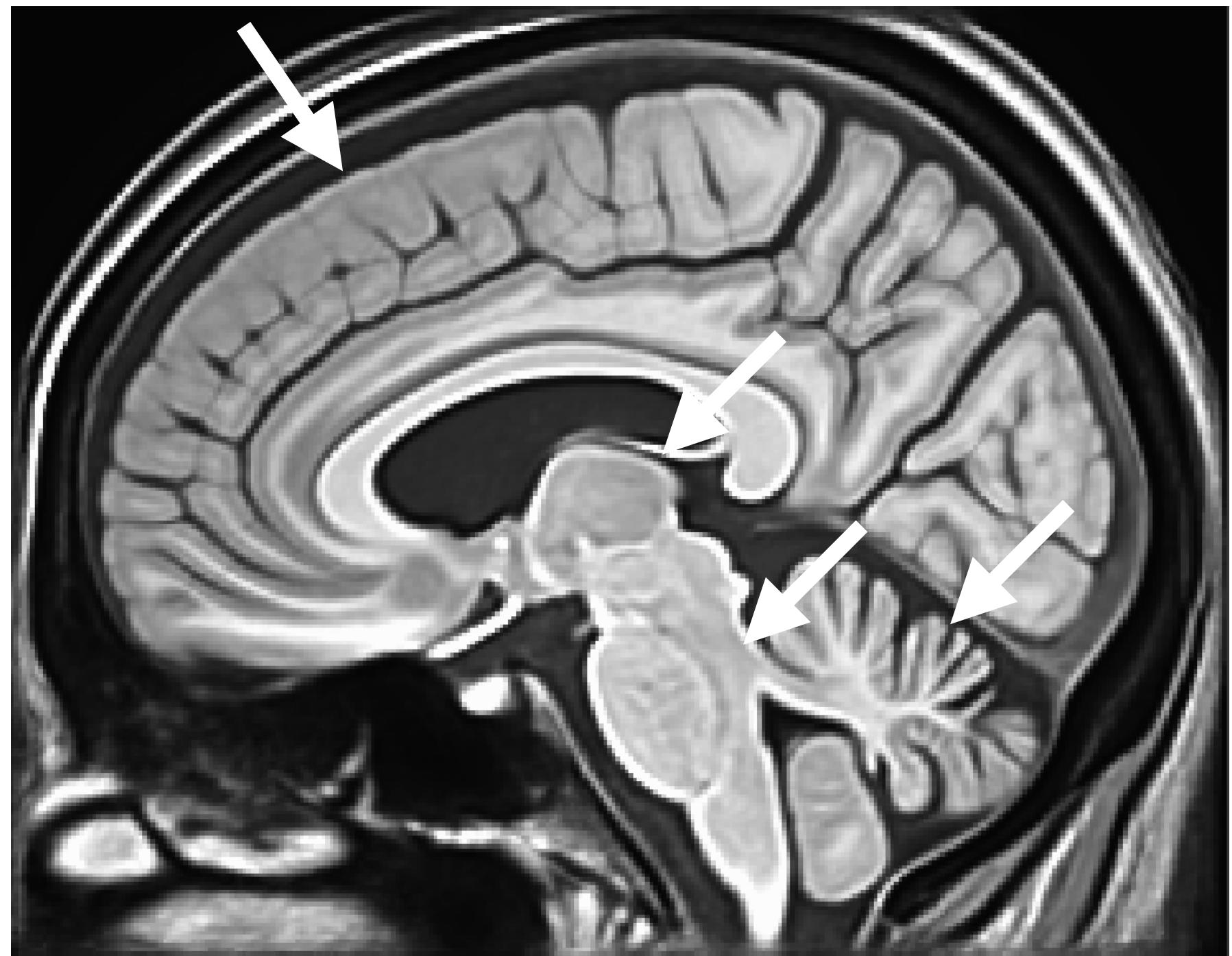
## Cross Species Brain Organization:

- Great variability in size and shape
- Great overlap in organization

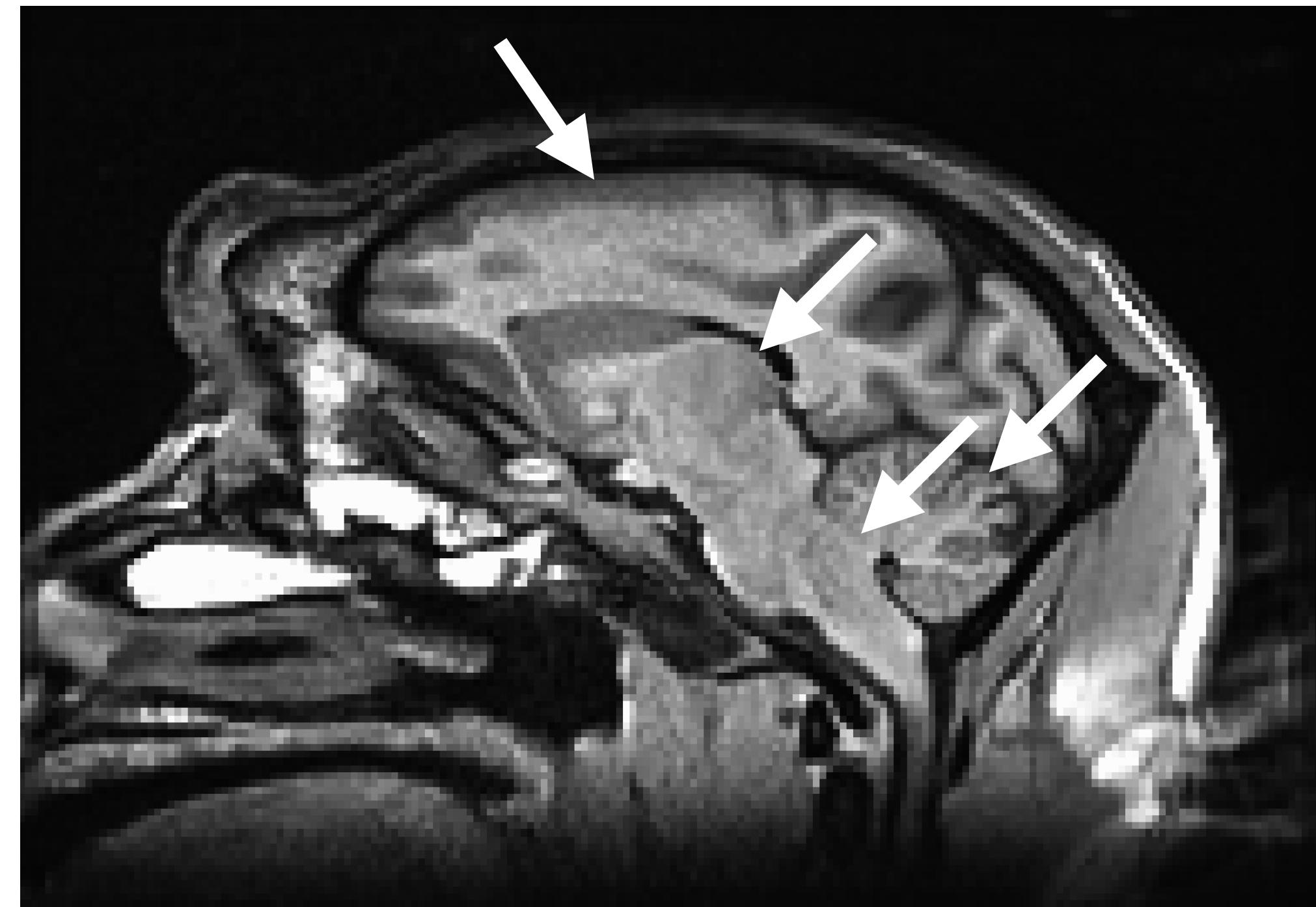


# Cross-Species Organization of the Brain

Human



Monkey



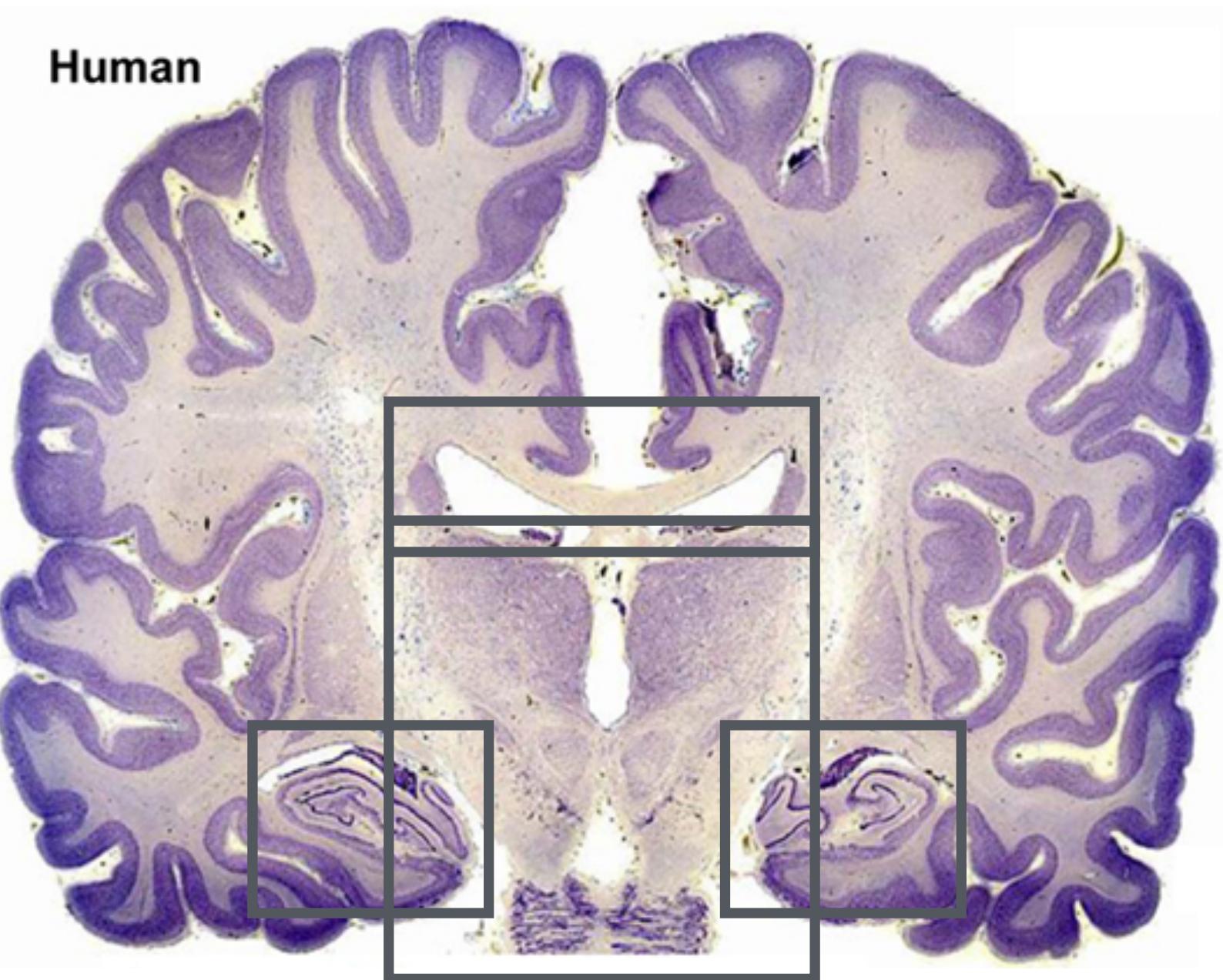
Cortex

Brain stem

Thalamus

Cerebellum

# Cross-Species Organization of the Brain



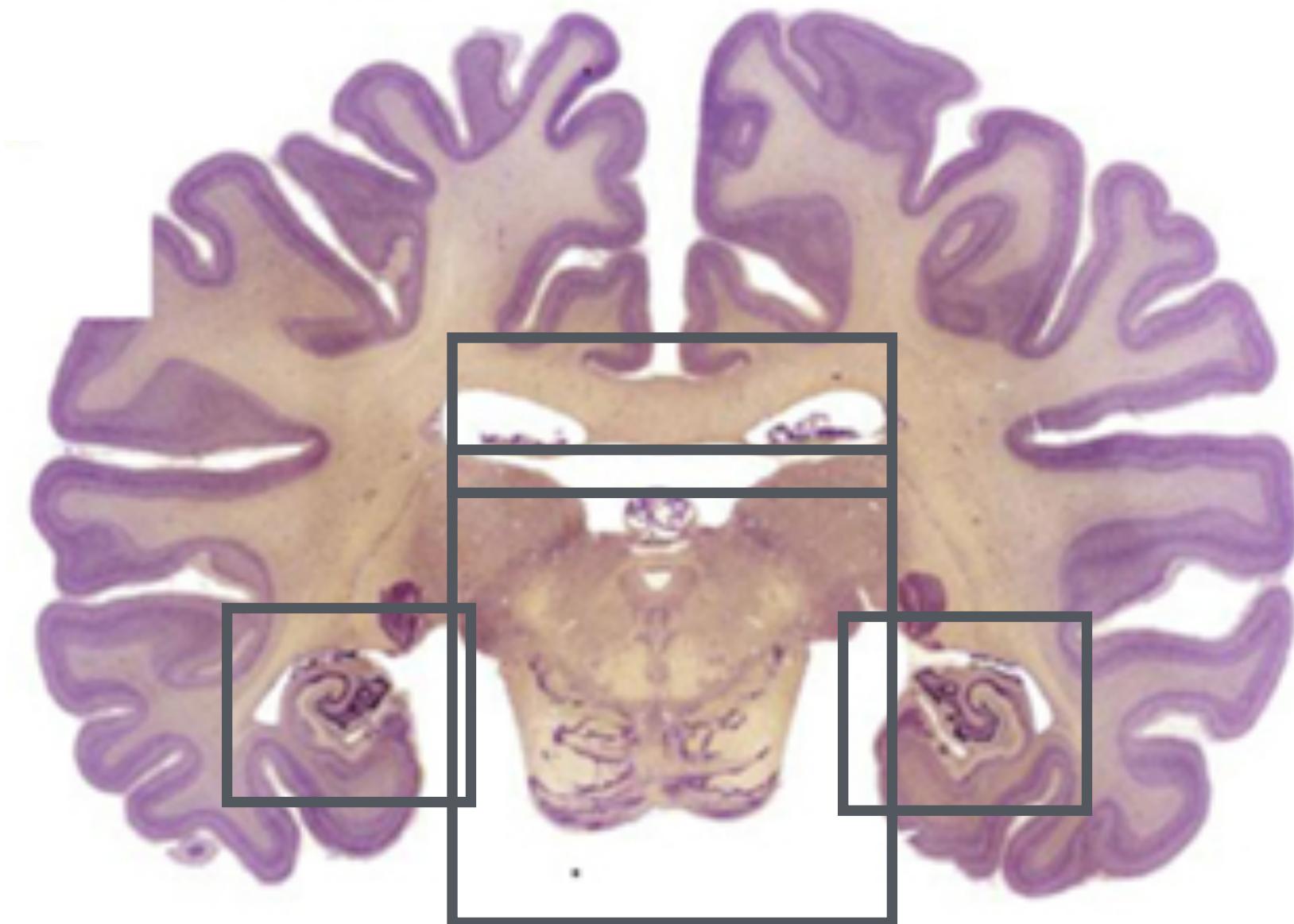
Human

Corpus Callosum

Hippocampus

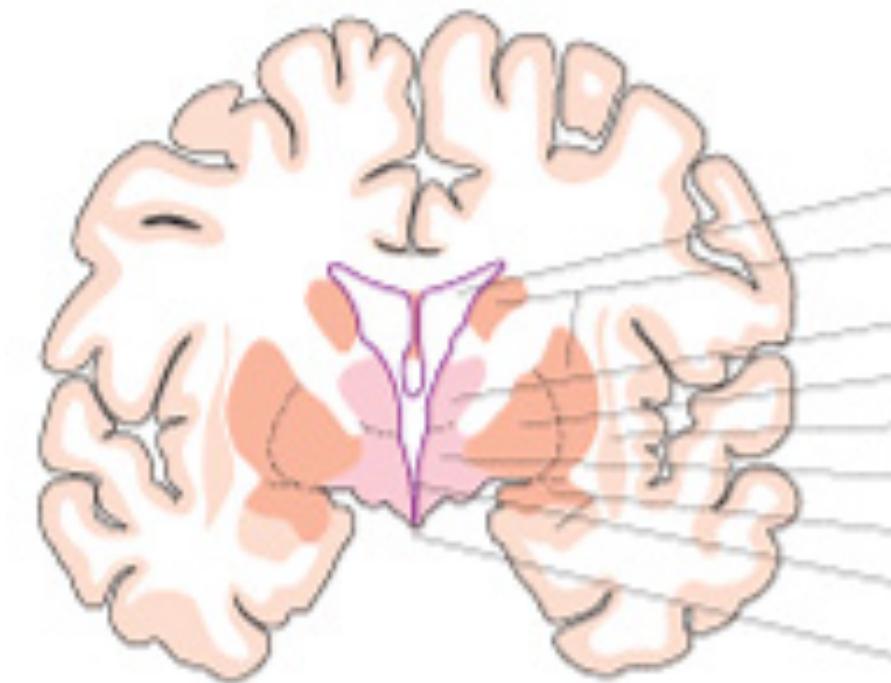
Thalamus and  
midbrain

**Chimpanzee**



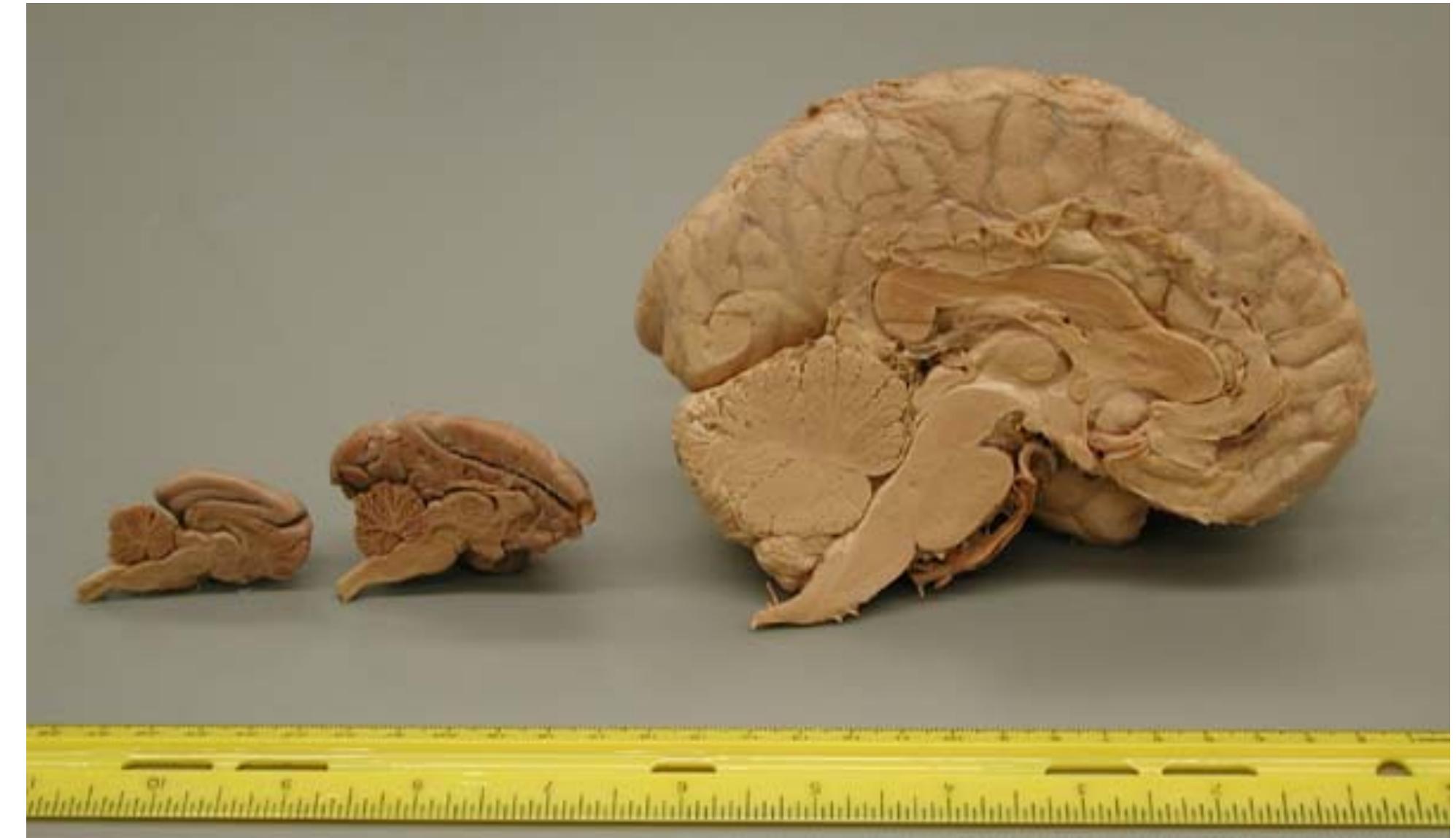
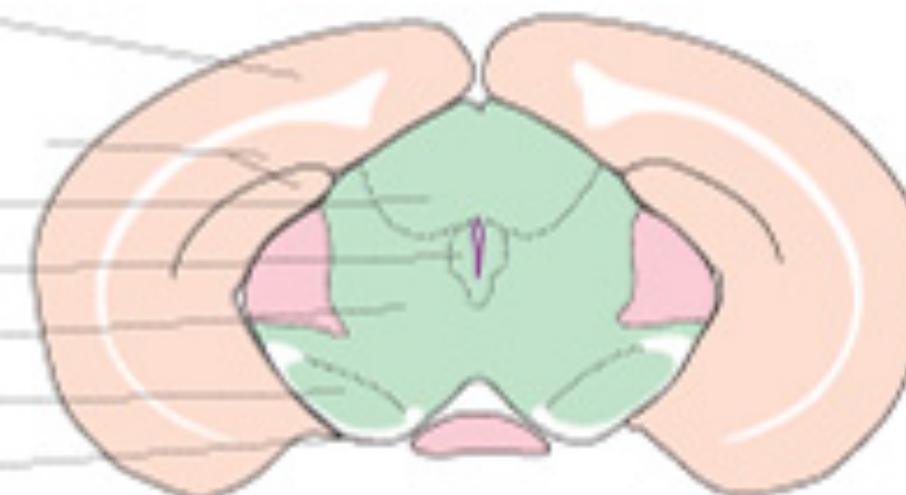
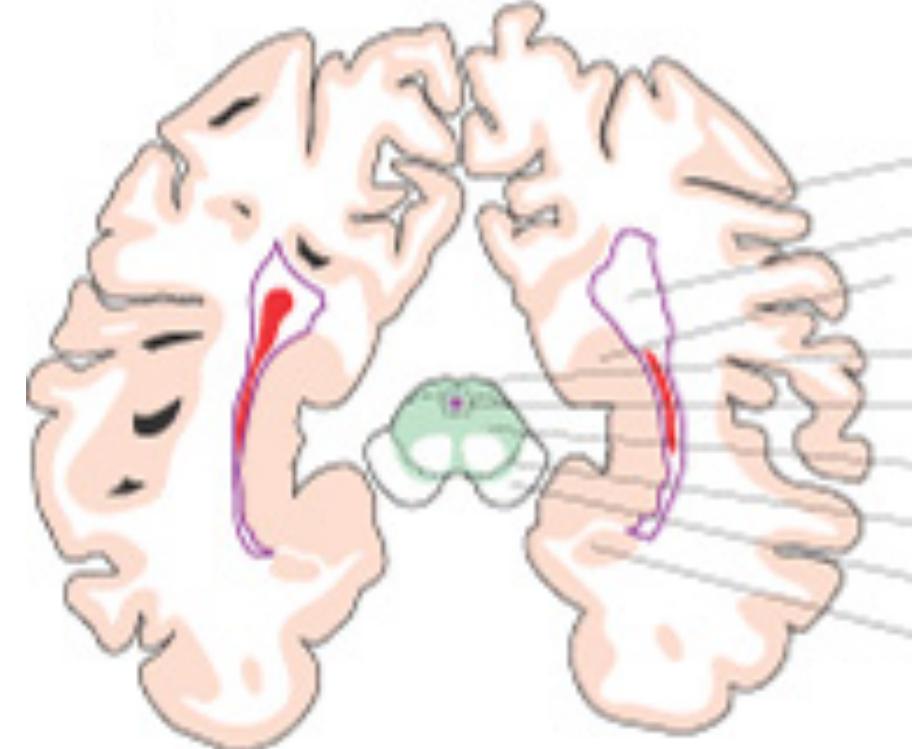
# Cross-Species Organization of the Brain

Human



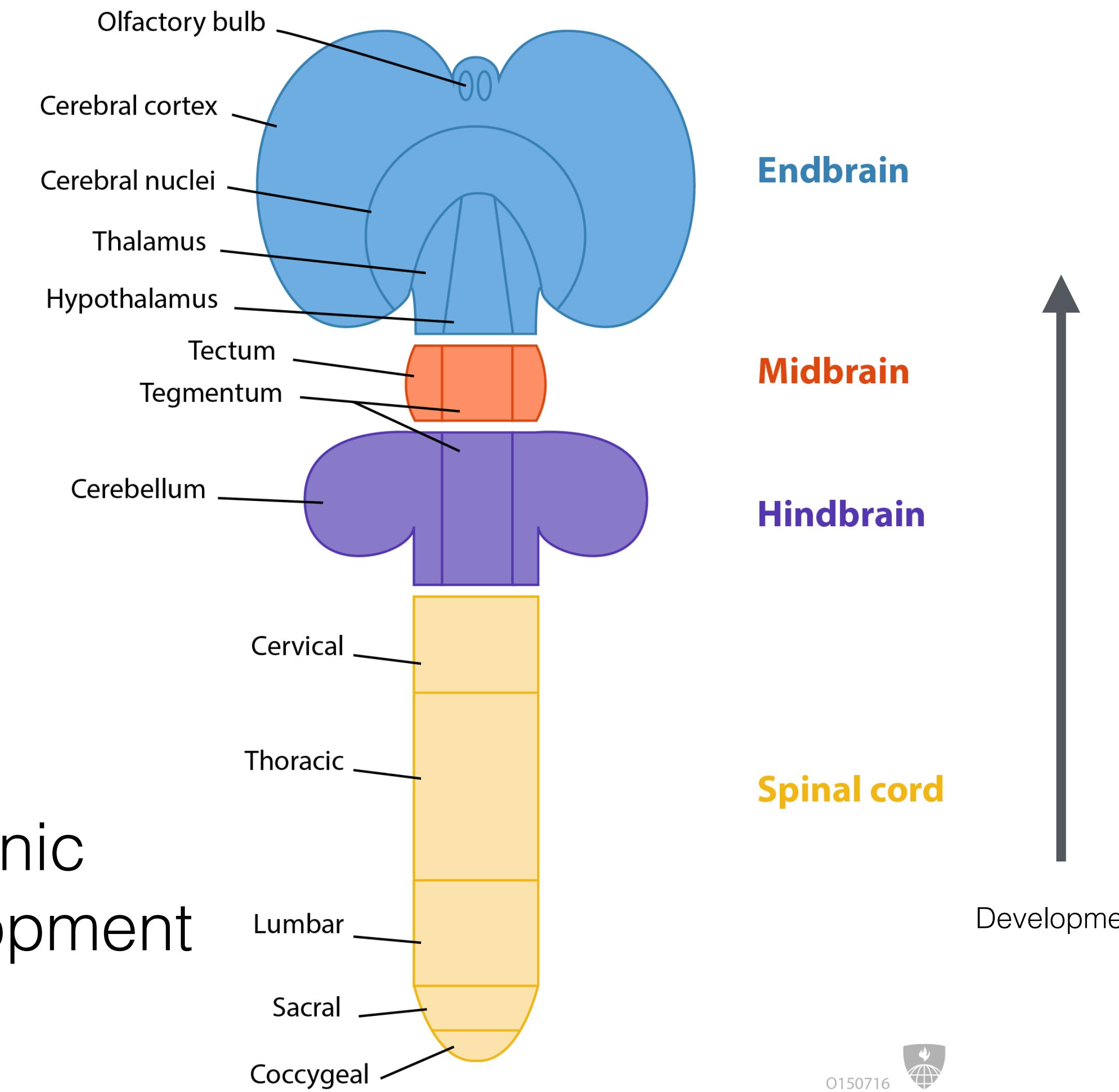
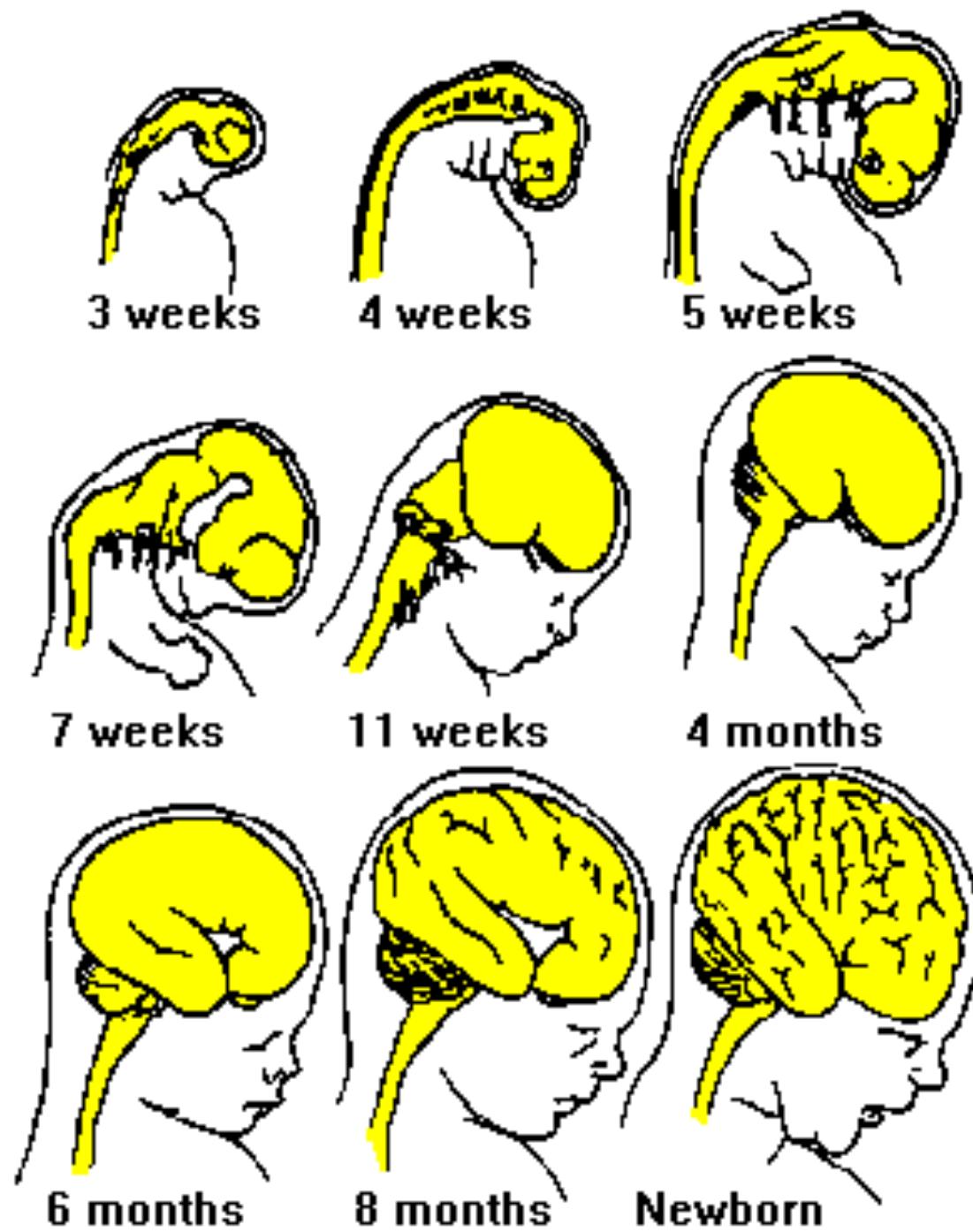
Mouse

Third ventricle  
Lateral ventricle  
Dorsal striatum  
Thalamus  
Globus pallidus  
Claustrum  
Hypothalamus  
Amygdalar region  
Third ventricle  
Infundibulum



- Great similarities in brain organization but significant differences in cortex size across species
- Allows for cross-species comparison

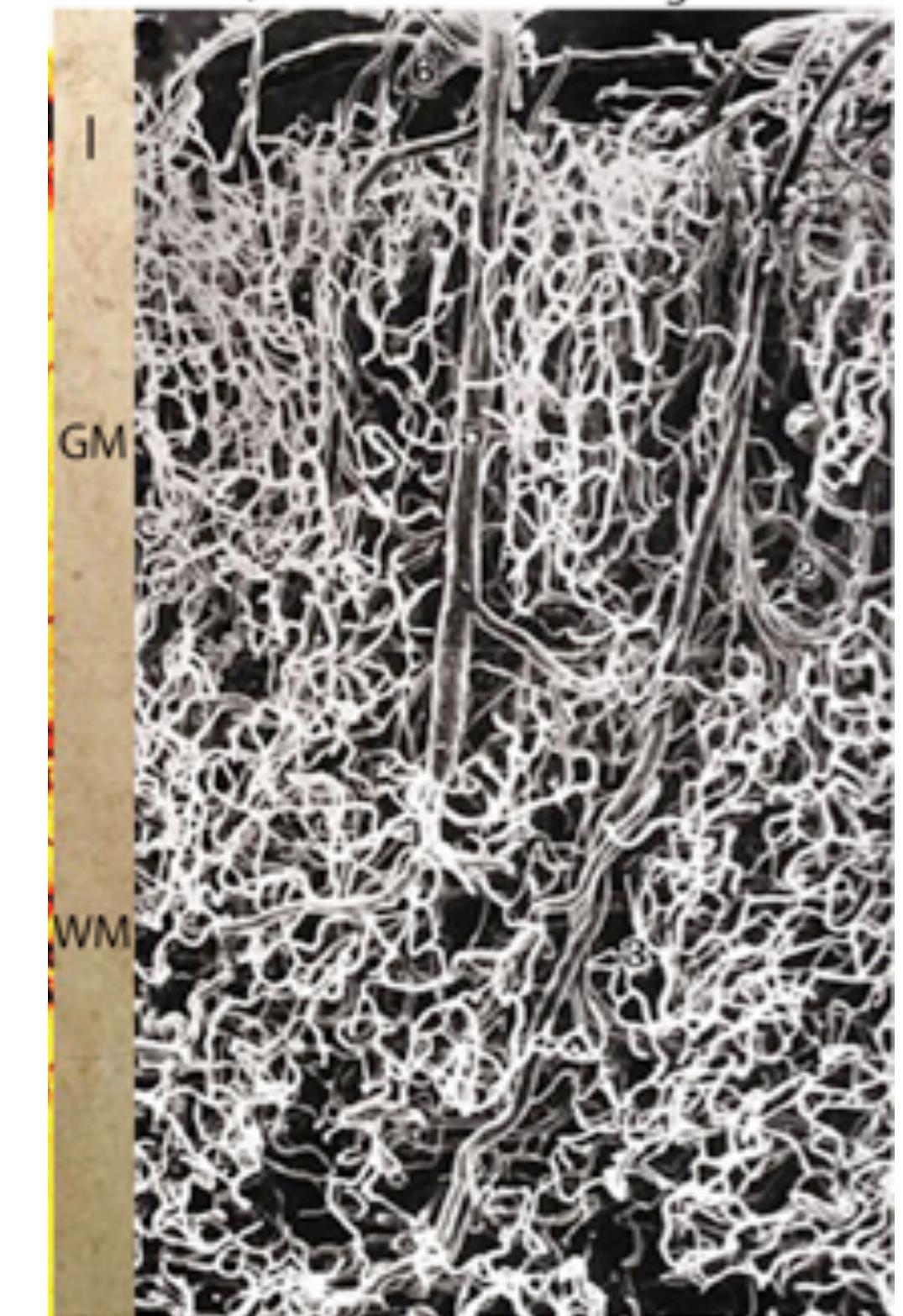
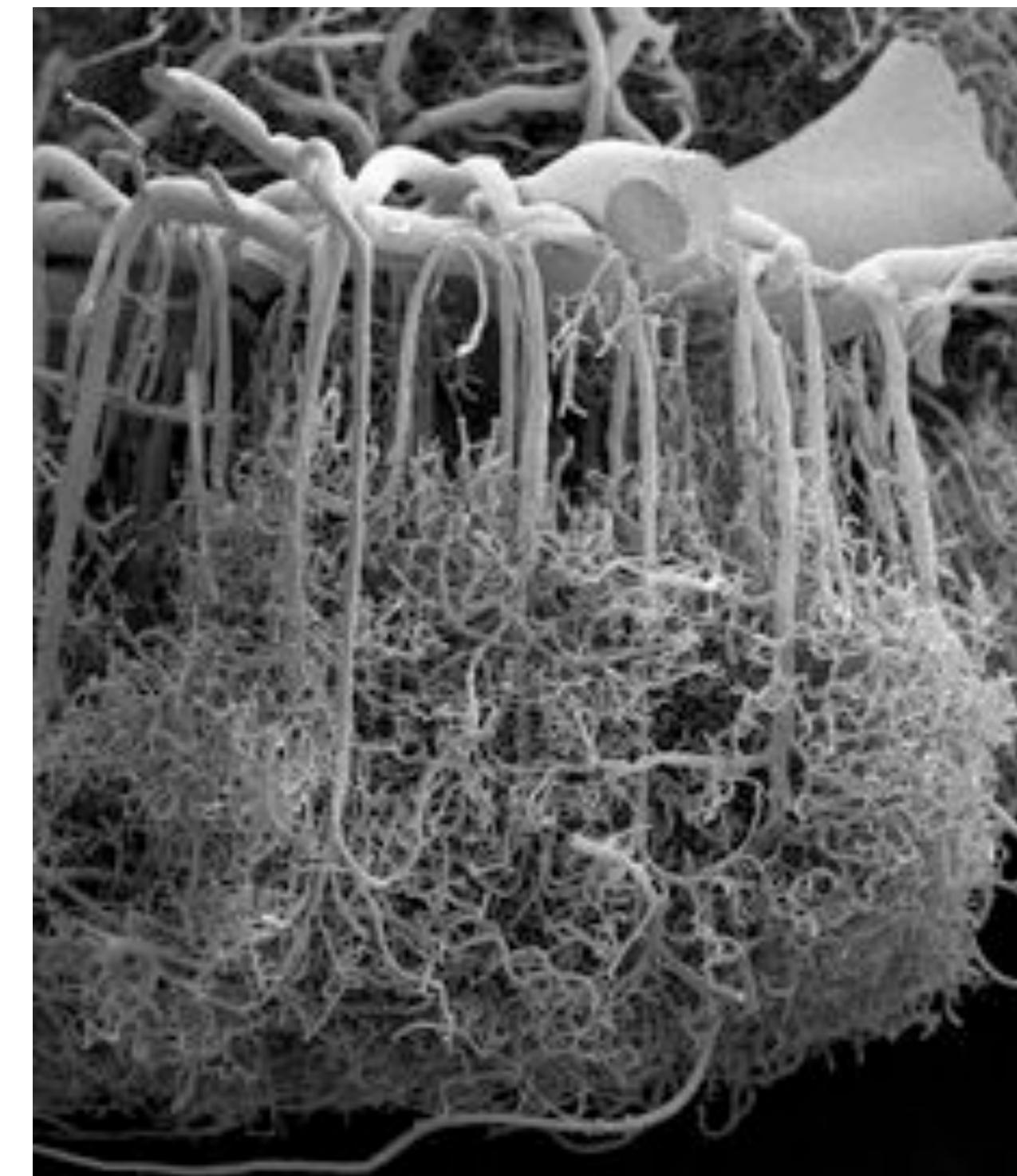
# Developmental Organization of the Brain



Development of the brain from the embryonic neural tube progresses through the development of hindbrain and midbrain and finally the development of the large human cortex

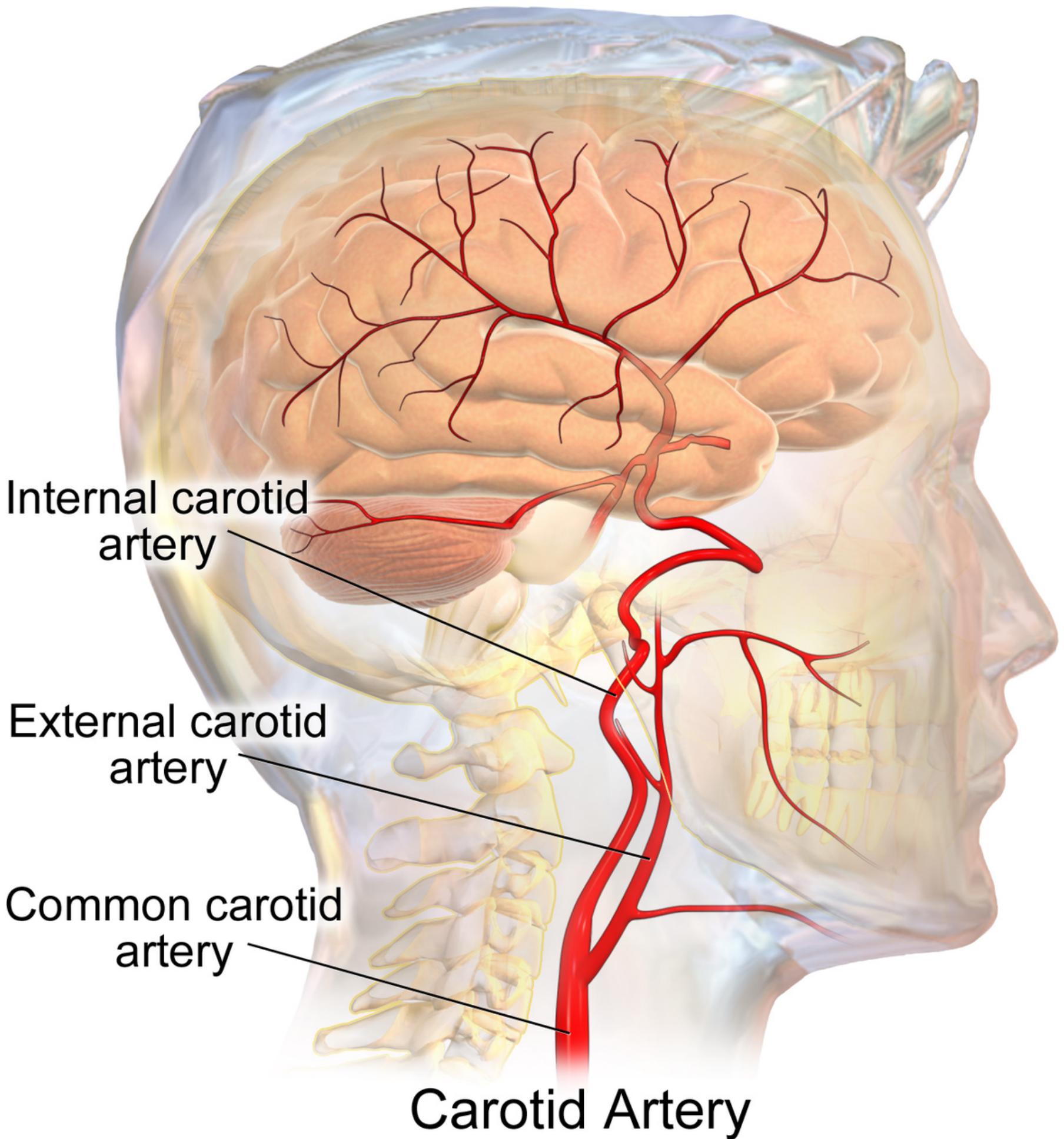
# Vascular Anatomy

The brain consumes a tremendous amount of energy and oxygen which is supplied by a highly intricate system of arteries and veins.



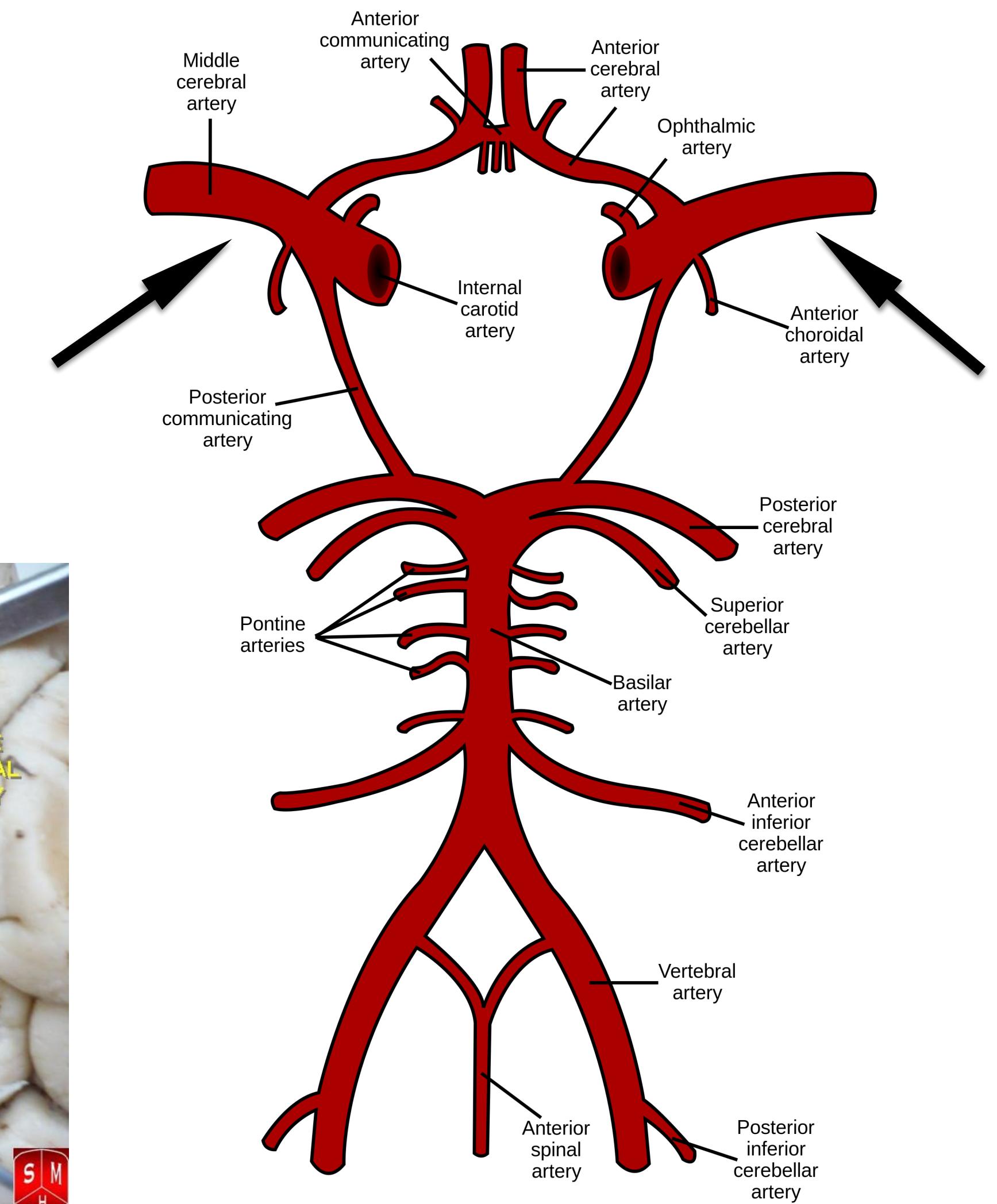
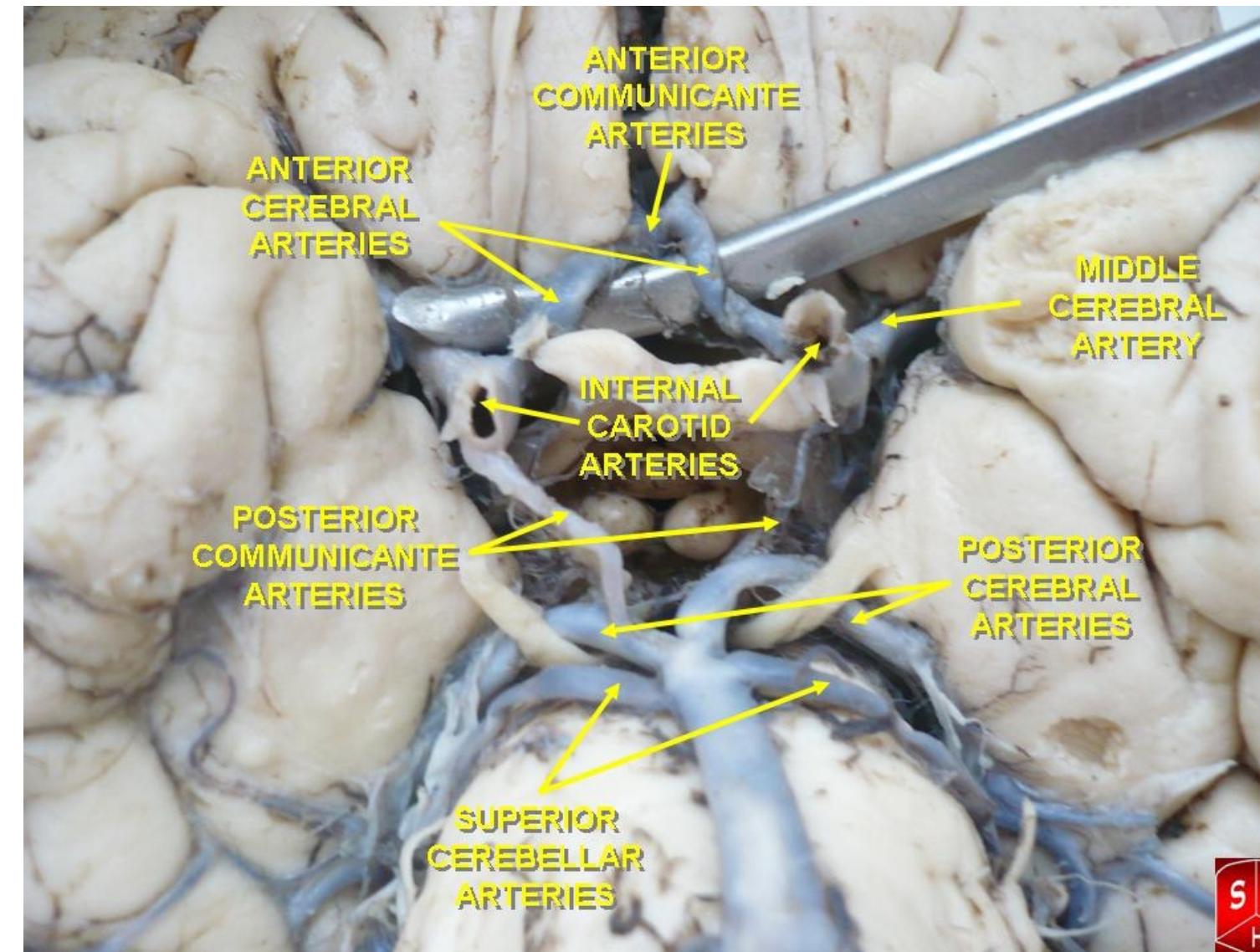
# Vascular Anatomy

- Blood is supplied through the internal carotid artery which originates from the aorta



# Vascular Anatomy

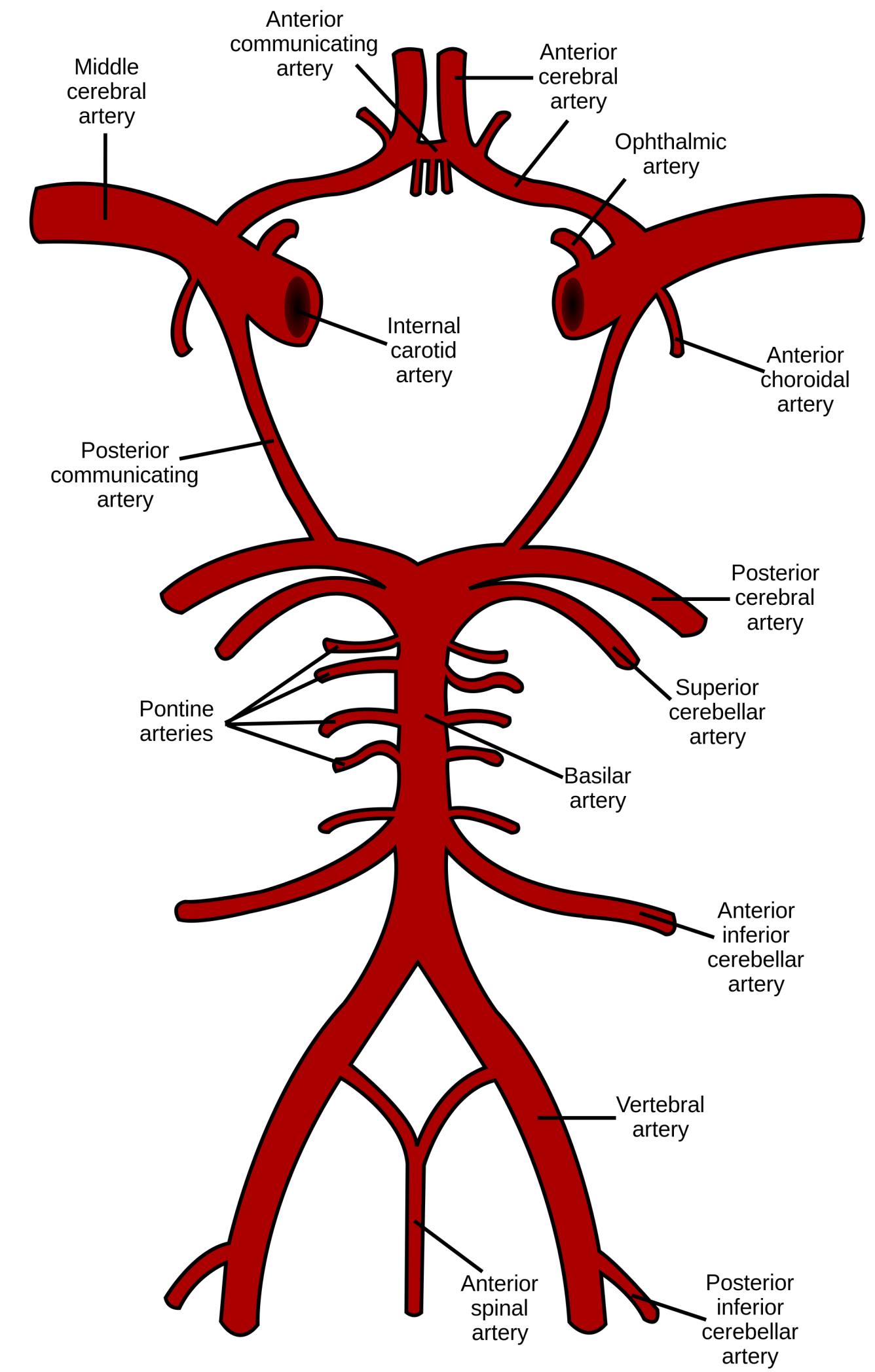
- Blood is supplied through the internal carotid artery which originates from the aorta
- Blood enters the brain through the Circle of Willis



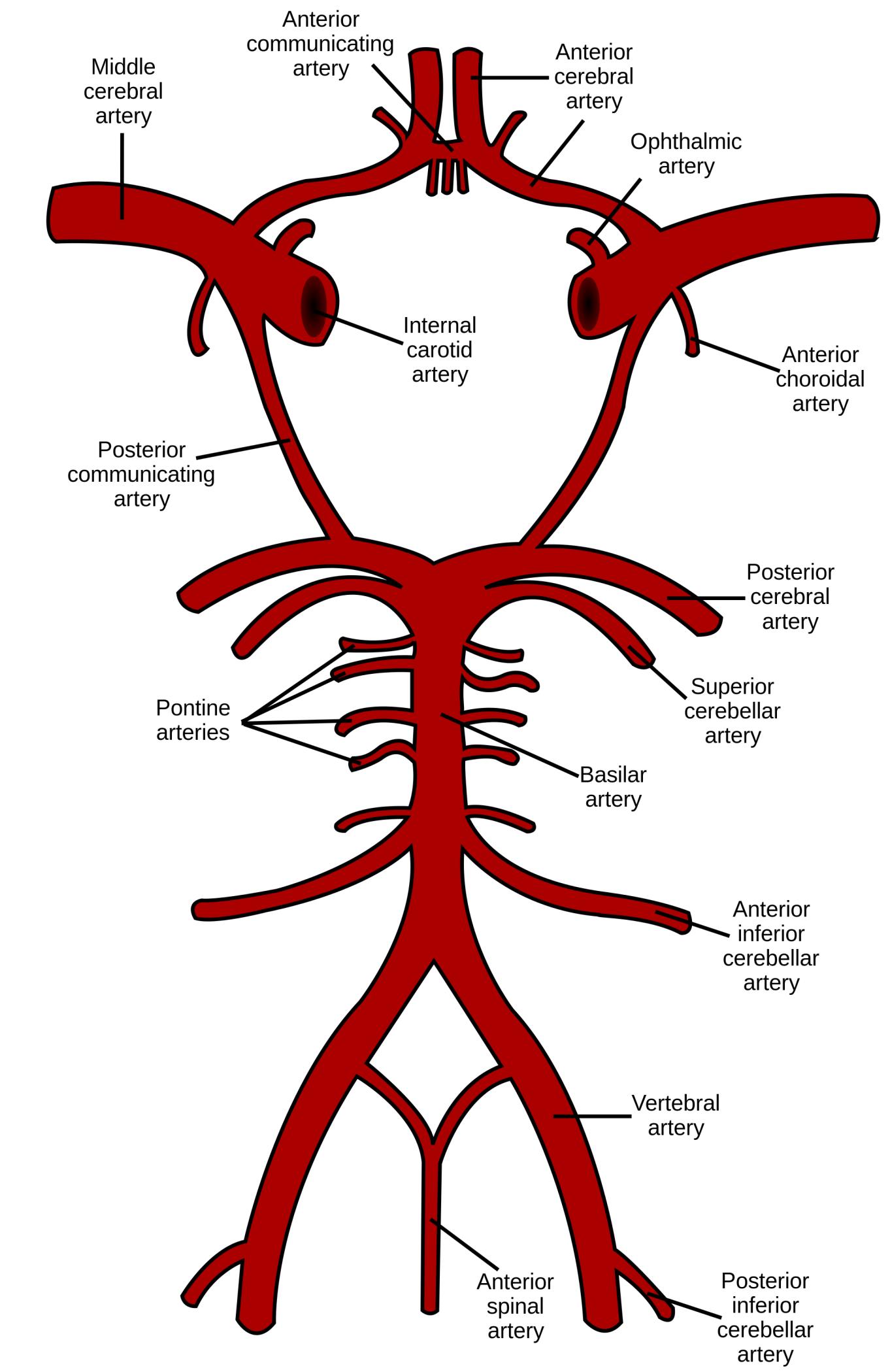
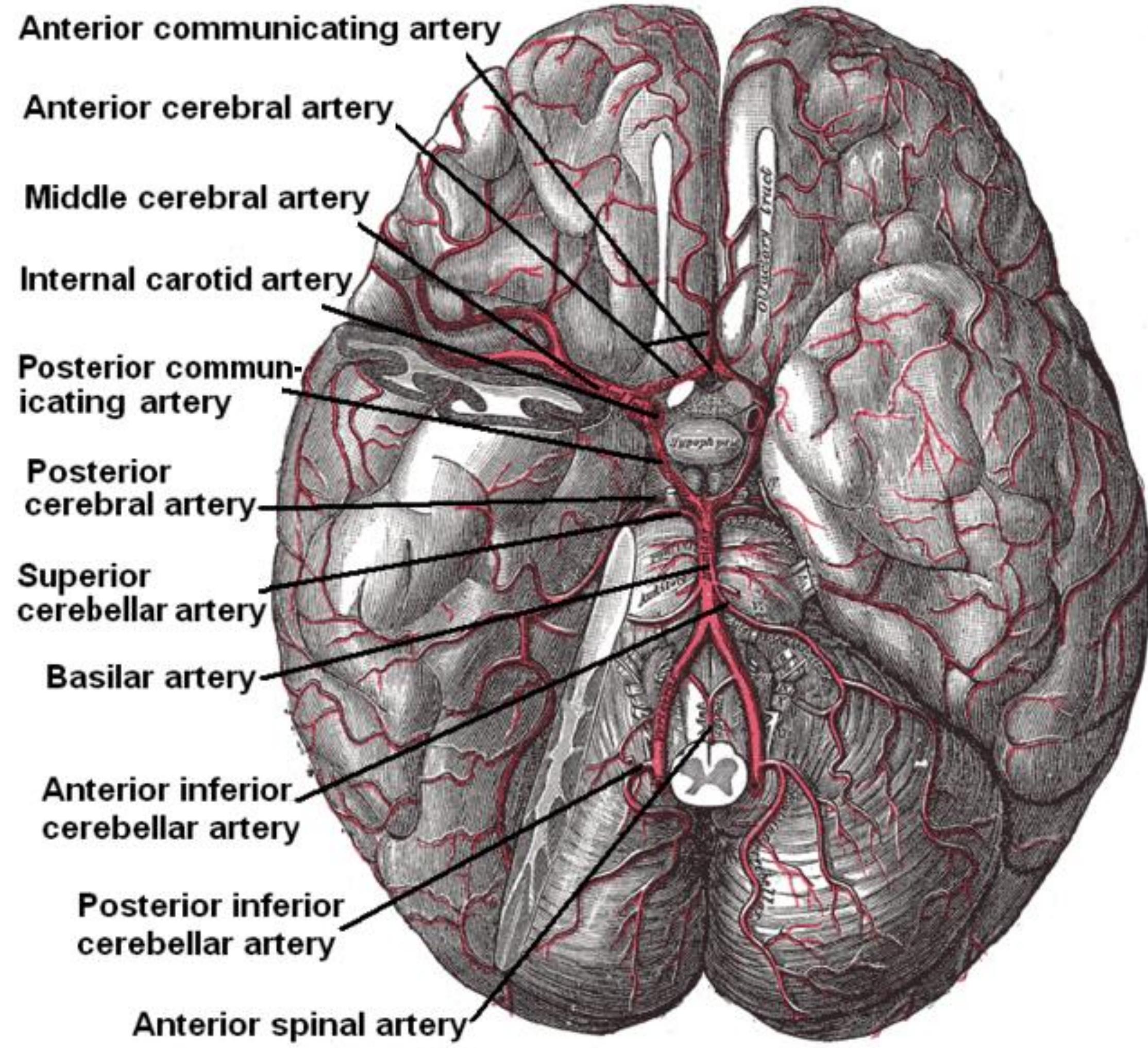
# Vascular Anatomy

## Circle of Willis:

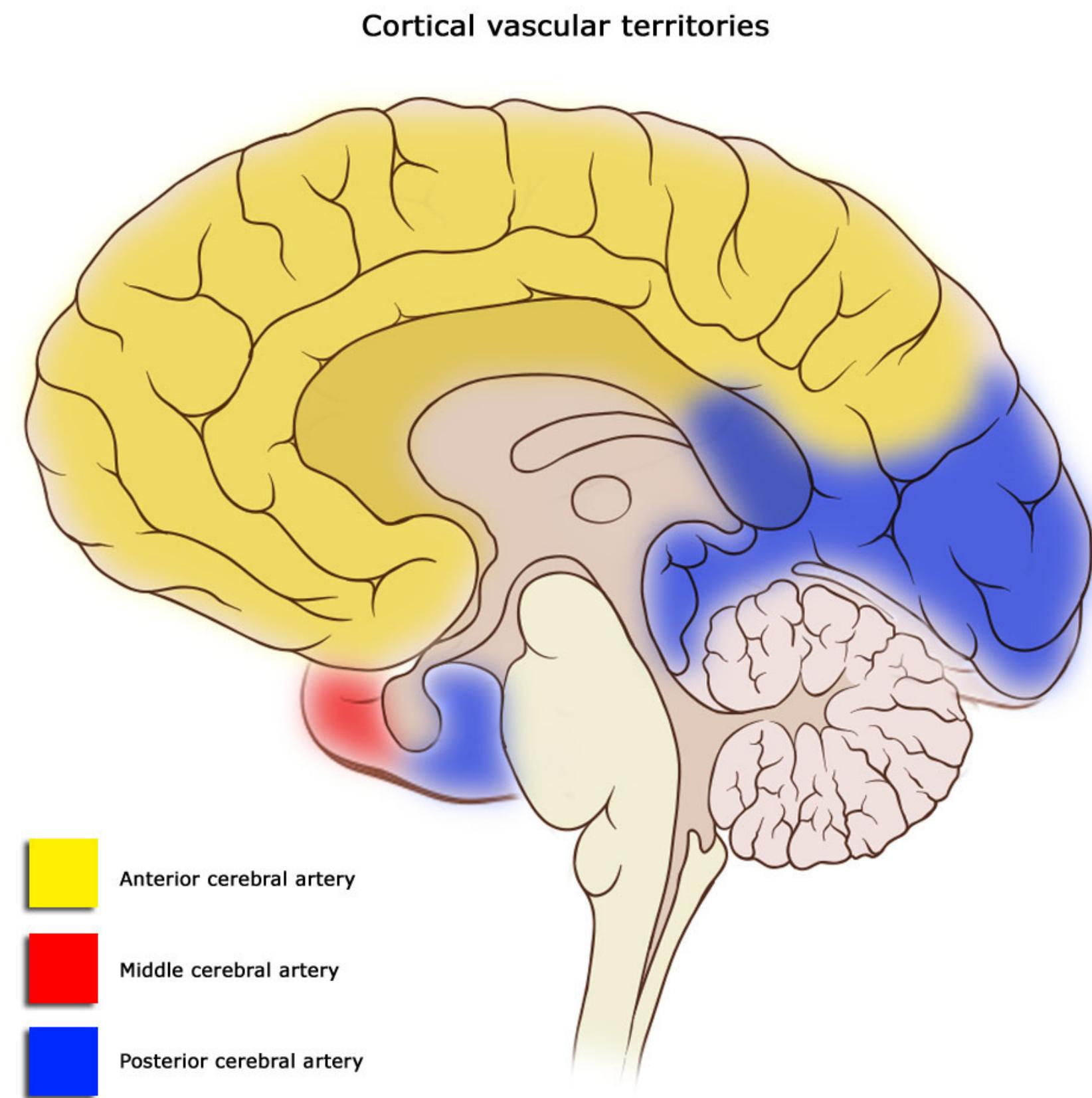
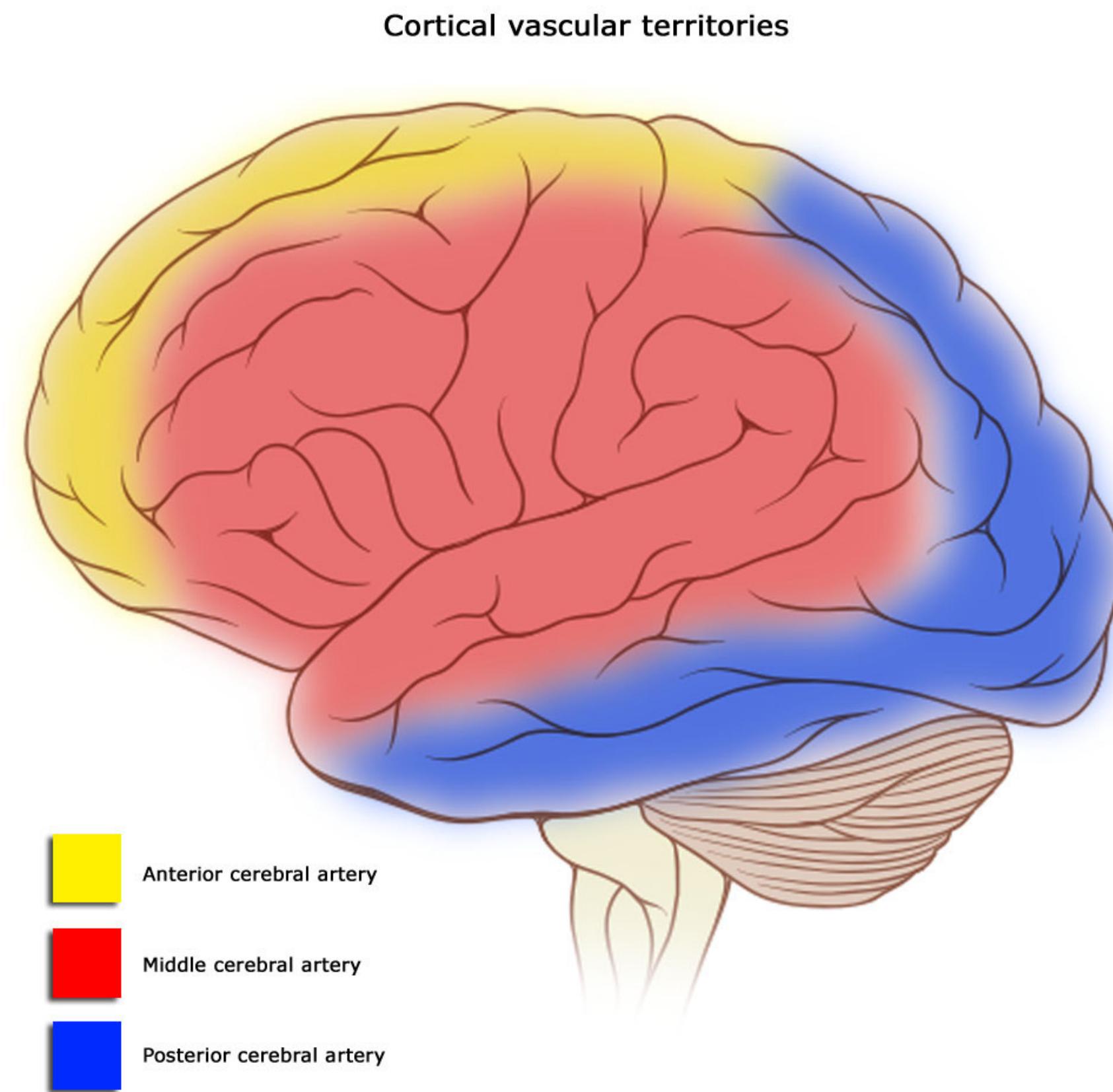
- Anterior cerebral artery
- Middle cerebral artery
- Posterior cerebral artery
- Superior cerebellar artery
- Pontine arteries
- Anterior inferior cerebellar artery
- Vertebral artery
- Posterior inferior cerebellar artery



# Vascular Anatomy



# Vascular Anatomy



Each of the arteries originating from the Circle of Willis supplies a specific brain region