Cortical Lobes

Objectives:

To learn the names, locations and boundaries of six lobes of the cerebral cortex

Specimens Required:

Whole brains

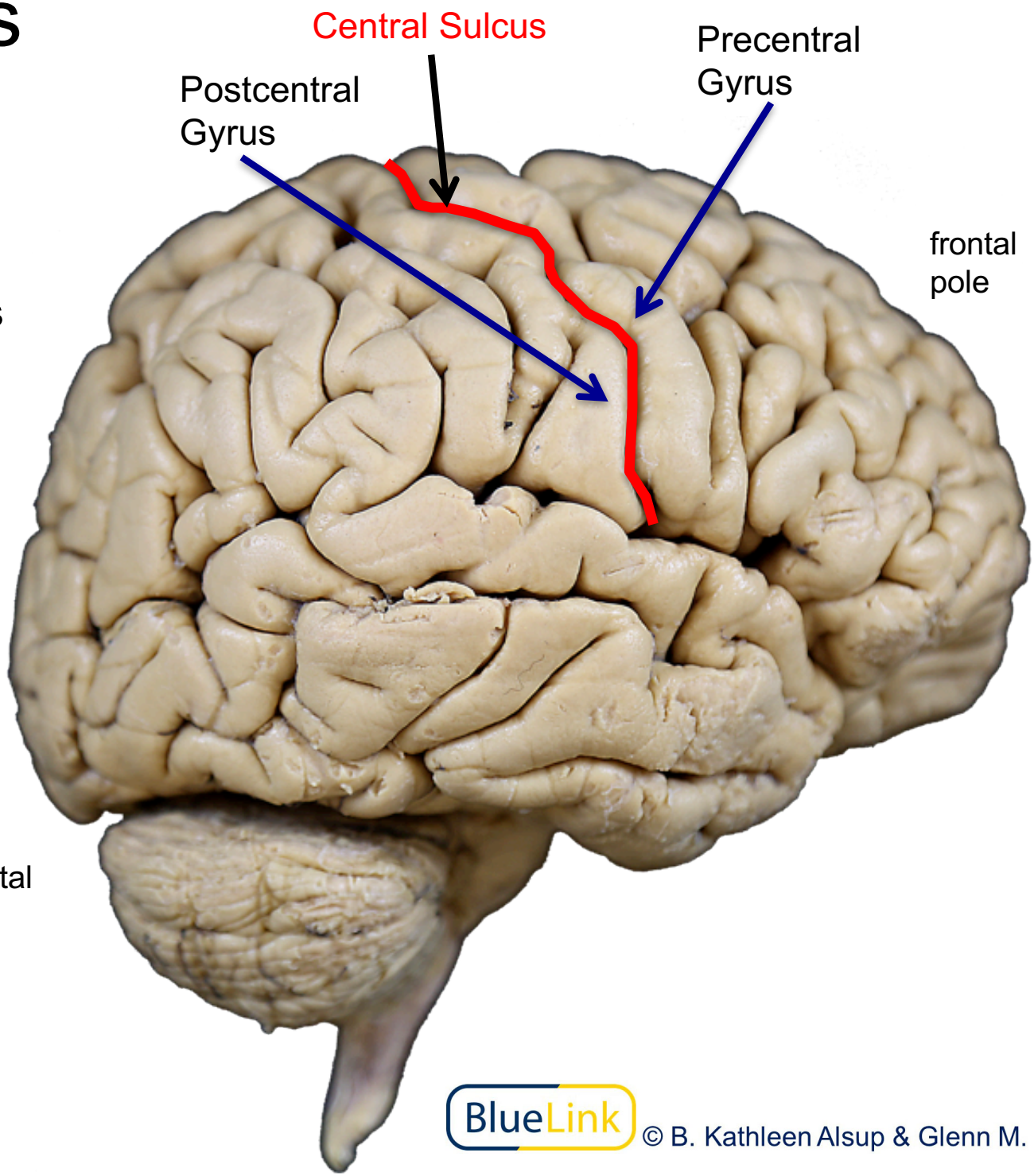
Hemisected brains

Insular dissections

Cortical Lobes

The outer surface of the hemisphere, the **cerebral cortex**, is folded into ridges called **gyri**, shallow grooves called **sulci**, and a few deeper grooves, called **fissures**.

For example, the **central sulcus** is flanked by the **precentral gyrus** and **postcentral gyrus**.

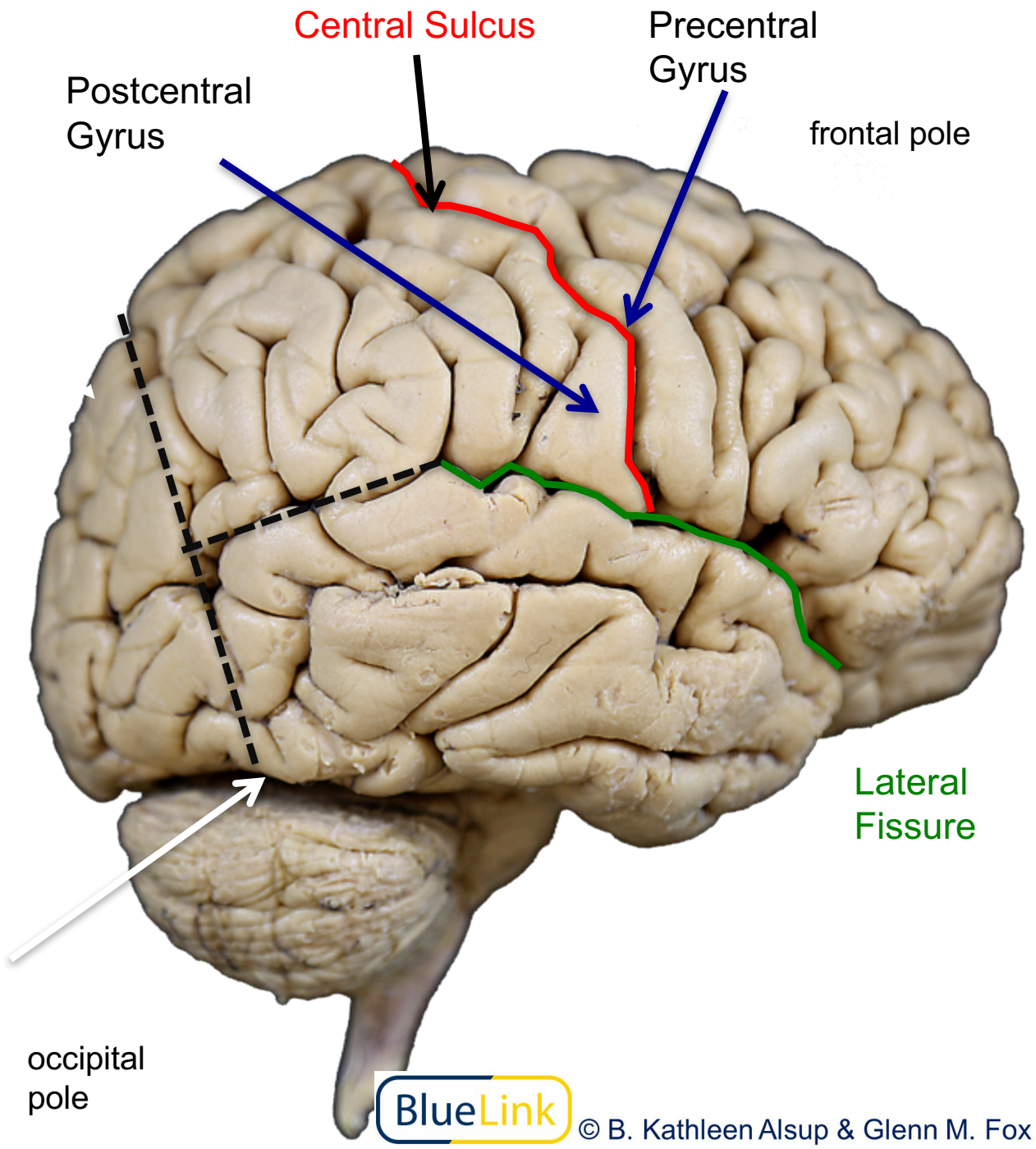


Cortical Lobes

Four landmarks define the boundaries of the cortical lobes on the lateral surface of the cerebral hemisphere

1. Central Sulcus
2. Lateral Fissure
3. Preoccipital Notch
4. Parieto-occipital Sulcus

*(Only its superior end is seen on the lateral surface. This sulcus is on the **medial** surface of the hemisphere.)*



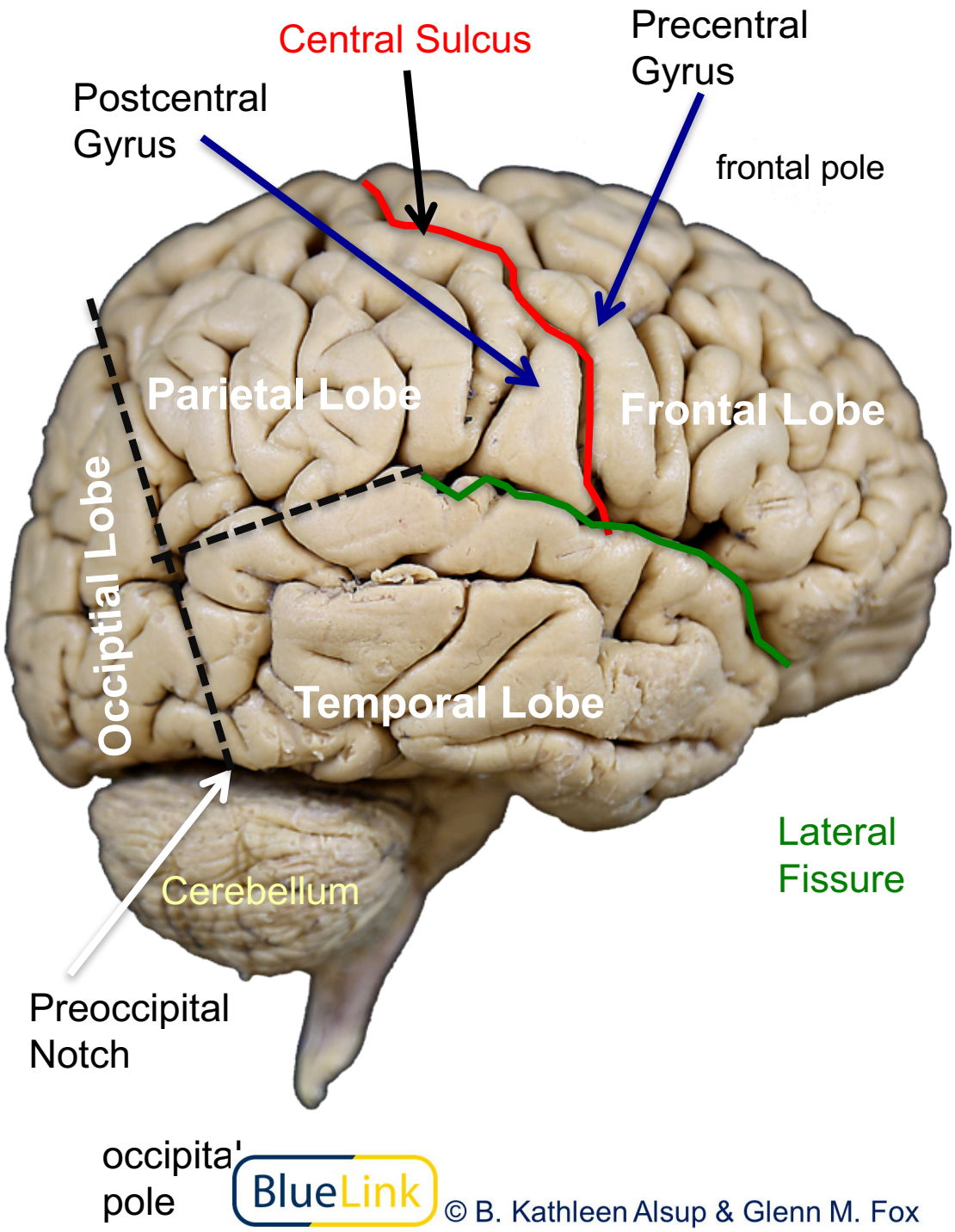
Cortical Lobes

1. The **frontal lobe** is bounded by the central sulcus and the lateral fissure.

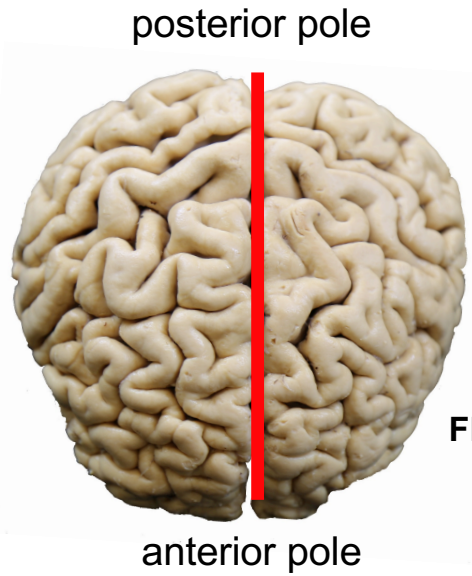
2. The **parietal lobe** is bounded by the central sulcus and by two lines: one that connects the parieto-occipital sulcus with the preoccipital notch and one that connects this line with the lateral fissure.

3. The **temporal lobe** is bounded by these two lines and the lateral fissure.

4. The **occipital lobe** is separated from the parietal and temporal lobes by the line between the parieto-occipital sulcus and the preoccipital notch.



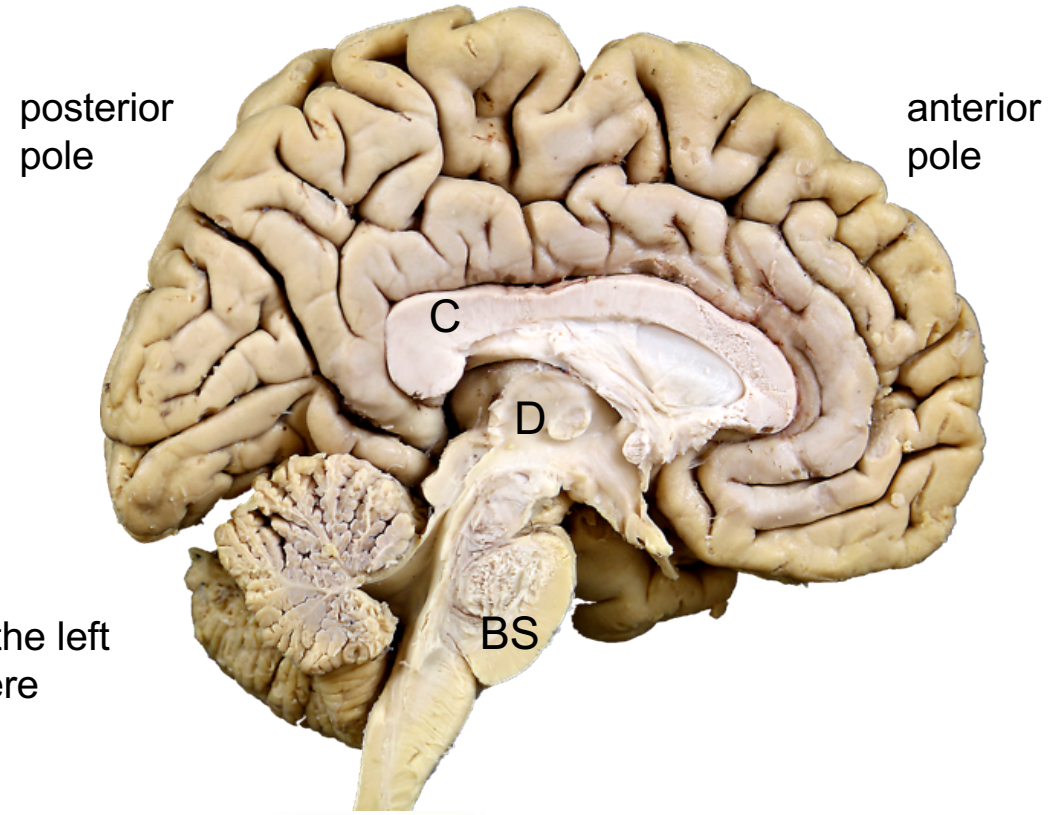
Cortical Lobes



The medial surface of the hemisphere is viewed by cutting a sagittal section through the whole brain.

1. The brain is cut from the anterior pole to the posterior pole n the plane indicated by the red line.

2. This requires cutting through the **c**orpus callosum, **d**iencephalon and **b**rain **s**tem.



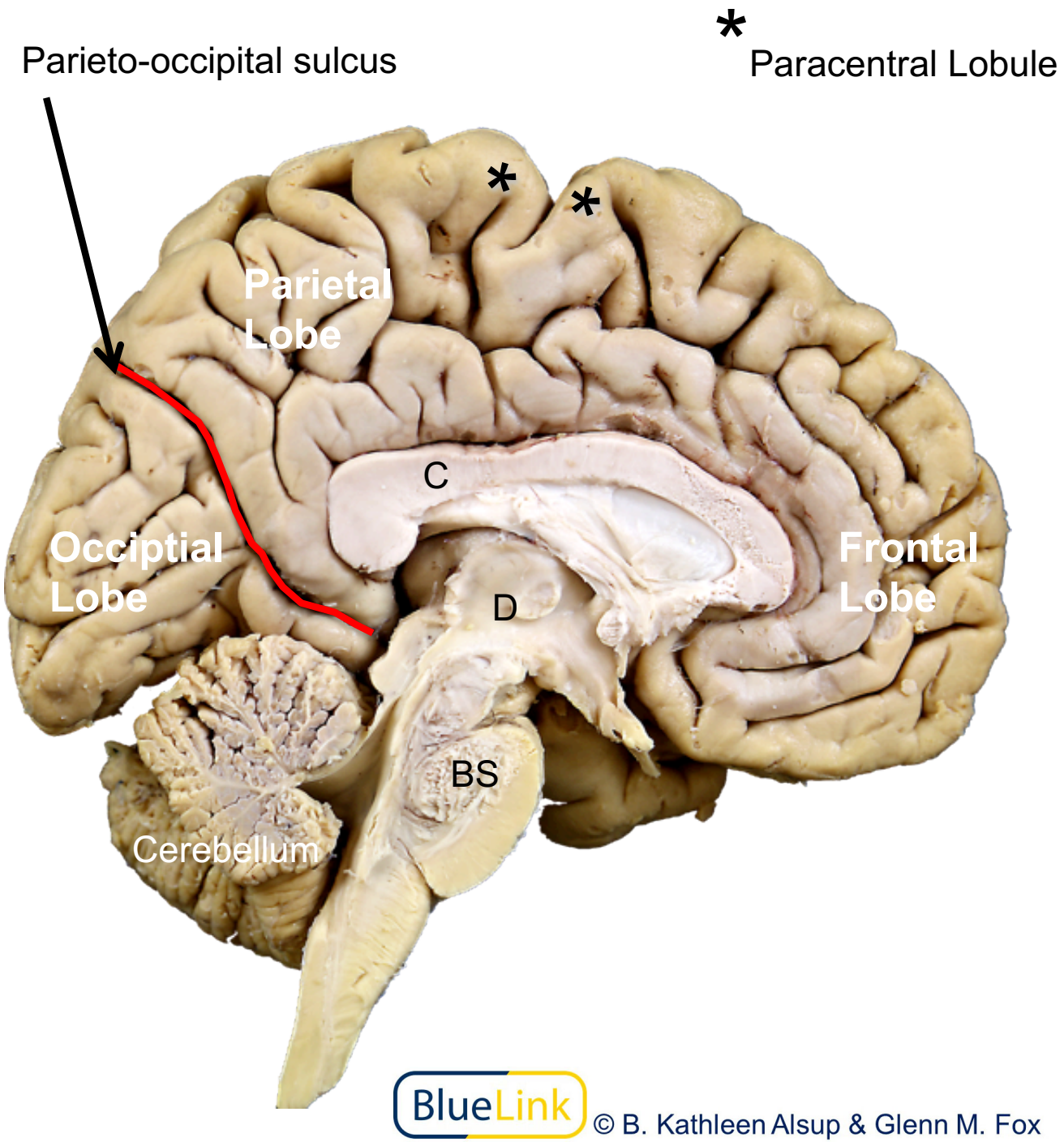
medial surface of the left
cerebral hemisphere

Cortical Lobes

On the medial surface of the left hemisphere we see only the superior end of the central sulcus but a full view of the parieto-occipital sulcus.

At the superior end of the central sulcus, the precentral and postcentral gyri come together to form the paracentral lobule.

The parieto-occipital sulcus divides the parietal and occipital lobes on the medial surface.

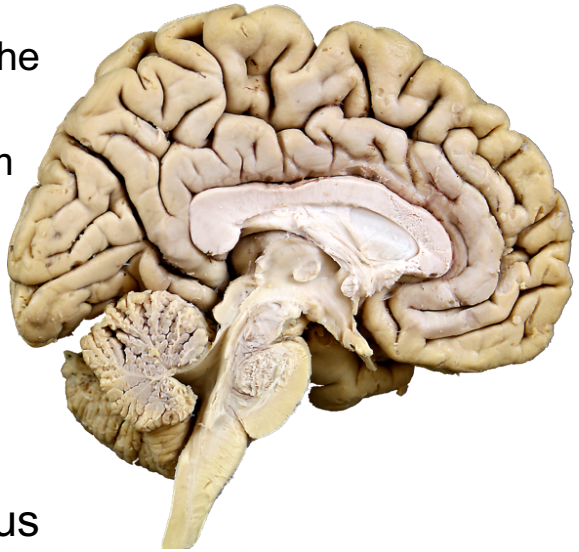


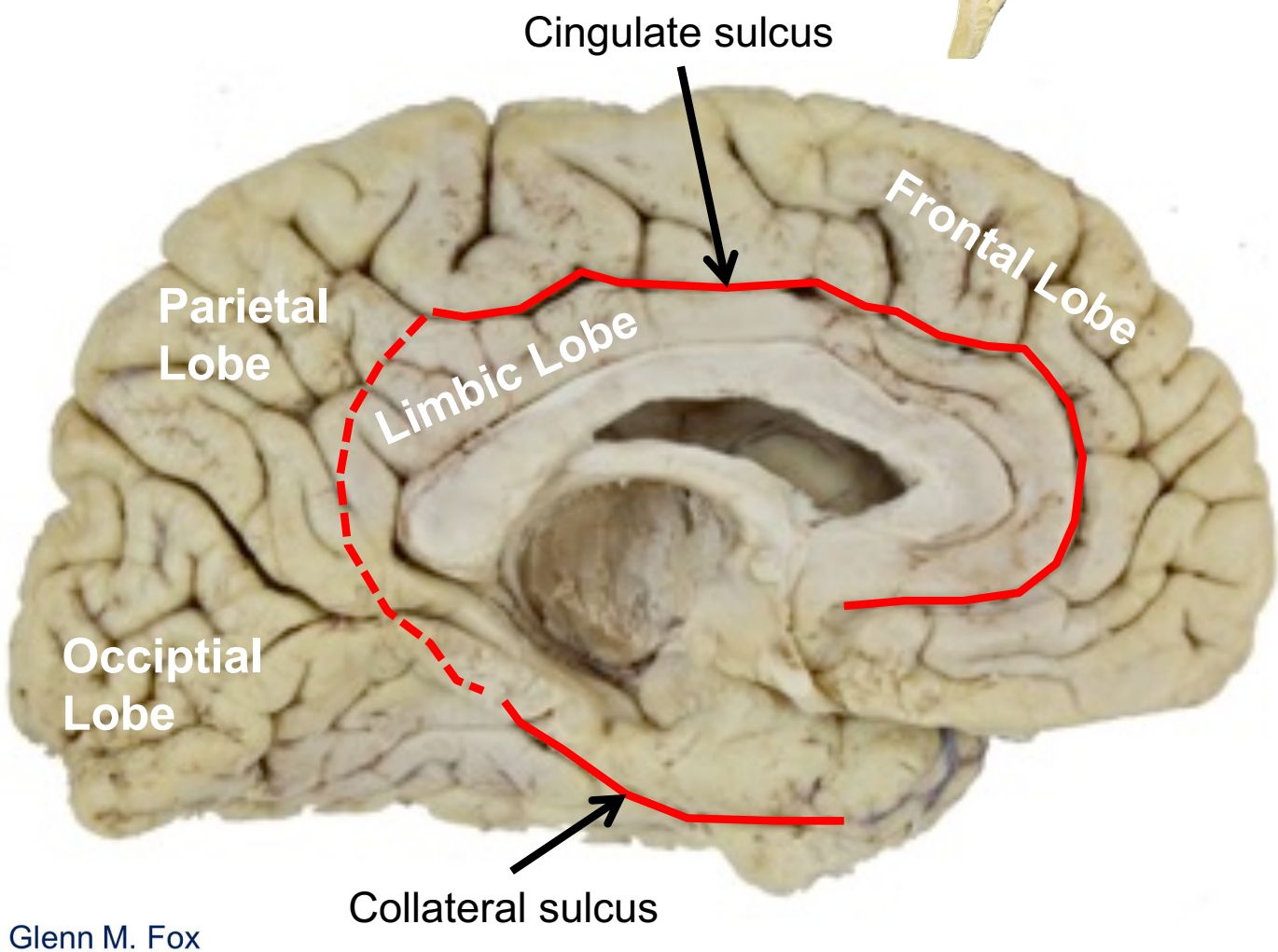
Cortical Lobes

This view allows us to see the limbic lobe, a continuous ring of cortex surrounding the corpus callosum and diencephalon.

Its boundaries are the cingulate sulcus and the collateral sulcus.

To view the fifth lobe of the cortex we remove the diencephalon, brain stem and cerebellum.



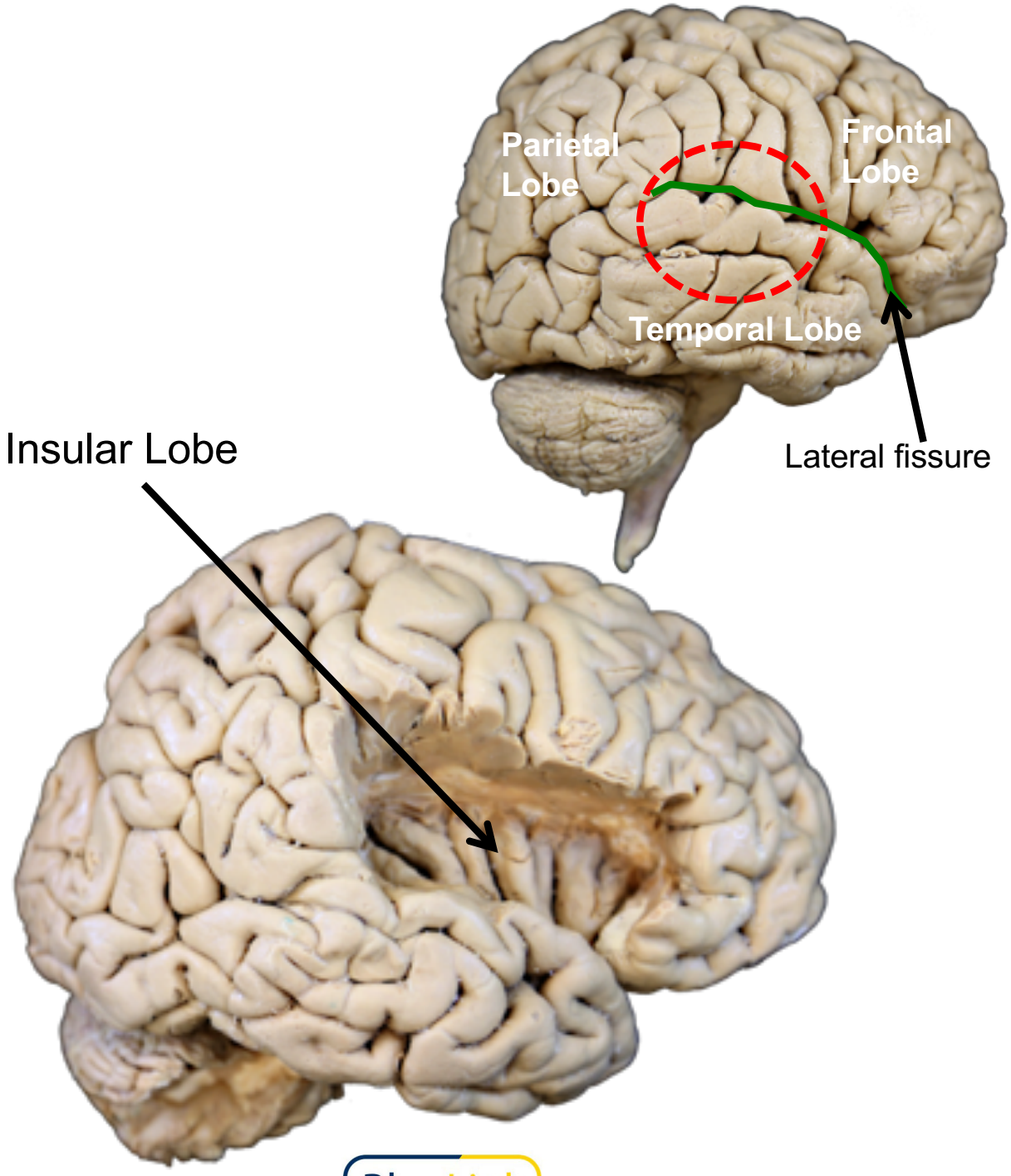


Cortical Lobes

The sixth lobe of the cerebral cortex is the insula, or island lobe.

This lobe is covered by the growth of the frontal, parietal and temporal lobes during fetal development, so that in the adult brain, it is only visible by pulling or cutting away the overlying edges (opercula) of these lobes.

The insula is essentially the floor of the deep lateral fissure.



Question I

A

B

C

D

For each cortical lobe (1 - 6), indicate the view(s) of the brain (A - D) on which all or part of this lobe is seen.

1.Temporal _____
2. Parietal _____
3. Limbic _____

4. Occipital _____
5. Frontal _____
6. Insular _____

Cortical Lobes

Question II

Match the following cortical landmarks (A - D) with the descriptions of cortical lobe boundaries (1 - 6). A landmark may serve as a boundary in more than one of these descriptions or none of them.

A. Lateral Fissure
B. Parieto-occipital sulcus
C. Collateral sulcus
D. Preoccipital notch
E. Central sulcus
F. Cingulate sulcus

_____ 1. Separates the limbic lobe from the frontal lobe
_____ 2. Separates the limbic lobe from the temporal lobe
_____ 3. Separates the frontal lobe from the temporal lobe
_____ 4. Separates the occipital lobe from the parietal lobe
_____ 5. Separates the limbic lobe from the parietal lobe
_____ 6. Separates the frontal lobe from the parietal lobe

Cortical Lobes

Question I

1. A, C, D
2. A, B, C, D
3. B, C
4. A, B. C, D
5. A, B, C, D
6. D

Question II

1. F
2. C
3. A
4. B
5. F
6. E