

Limbic Lobe, Hippocampal Formation, Amygdala

Objectives:

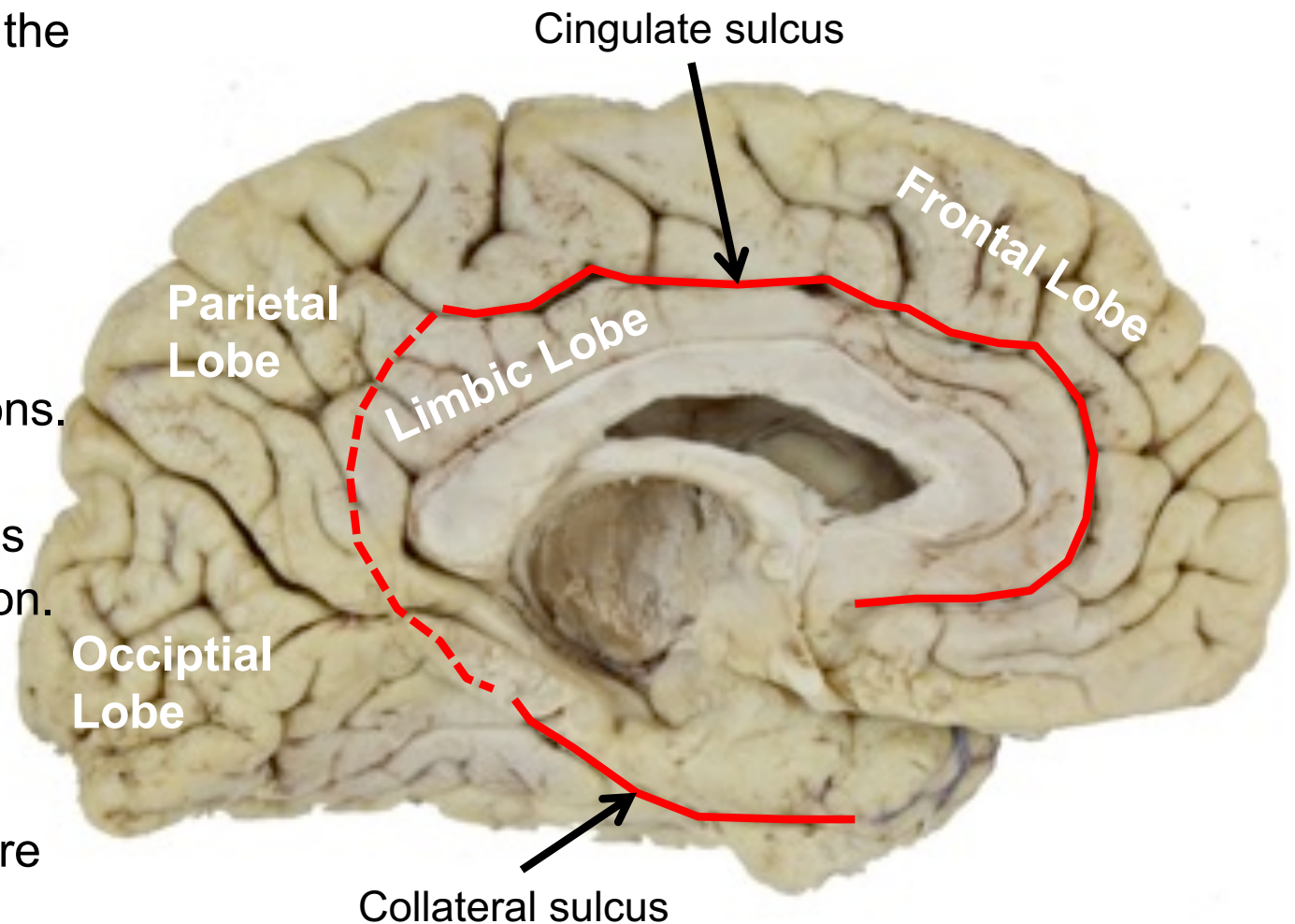
Identify the gyri and sulci that comprise the limbic lobe of the cerebral cortex.

Locate the hippocampal formation, fornix and amygdala in dissected specimens and brain sections.

Learn the basic subdivisions of the hippocampal formation.

Specimens Required:

Limbic dissected hemisphere
Coronal sections



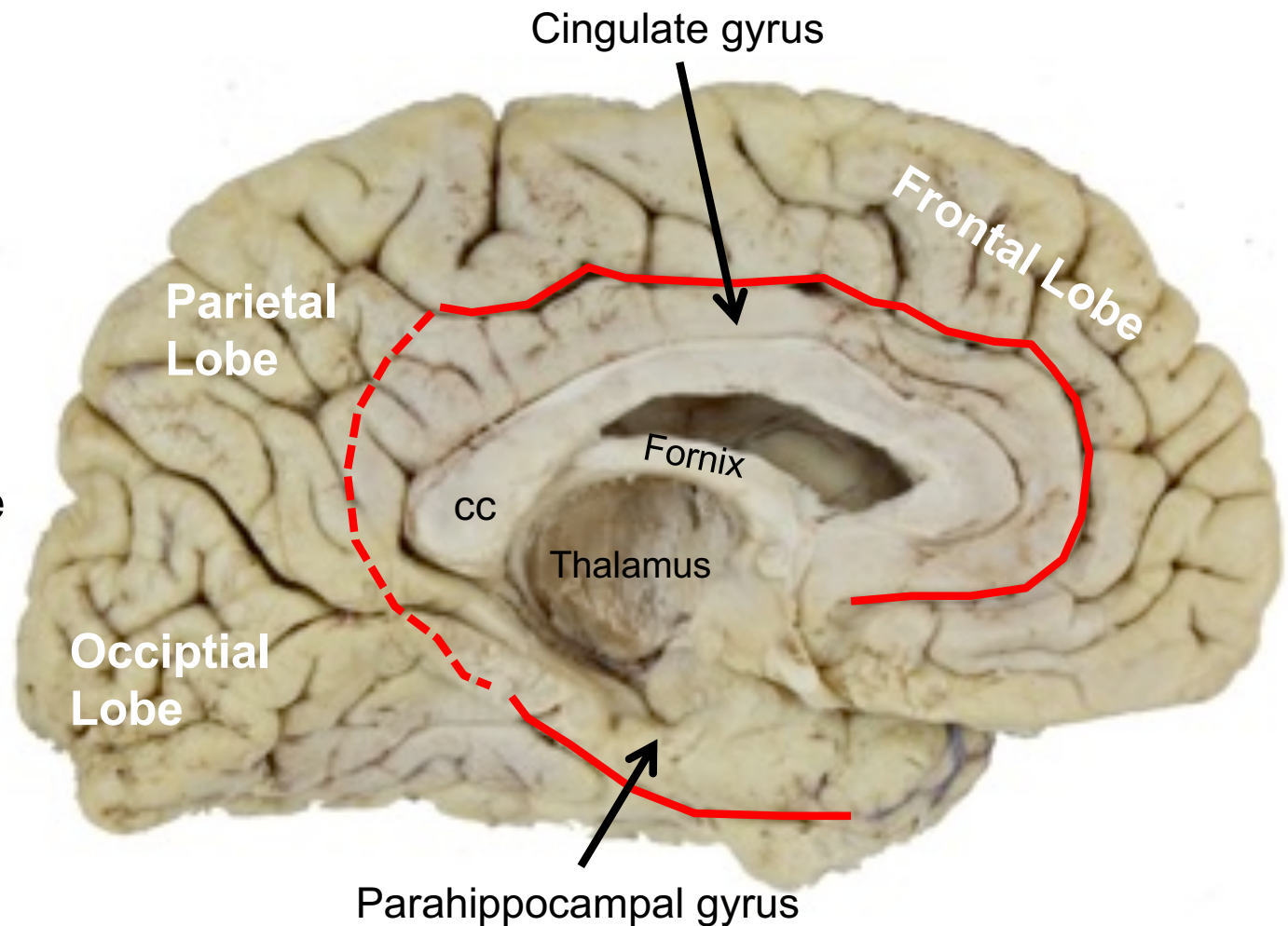
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medial view of
the left cerebral
hemisphere

The limbic lobe of the cortex consists primarily of the cingulate and parahippocampal gyri.

The fornix connects the hippocampal formation with the hypothalamus.

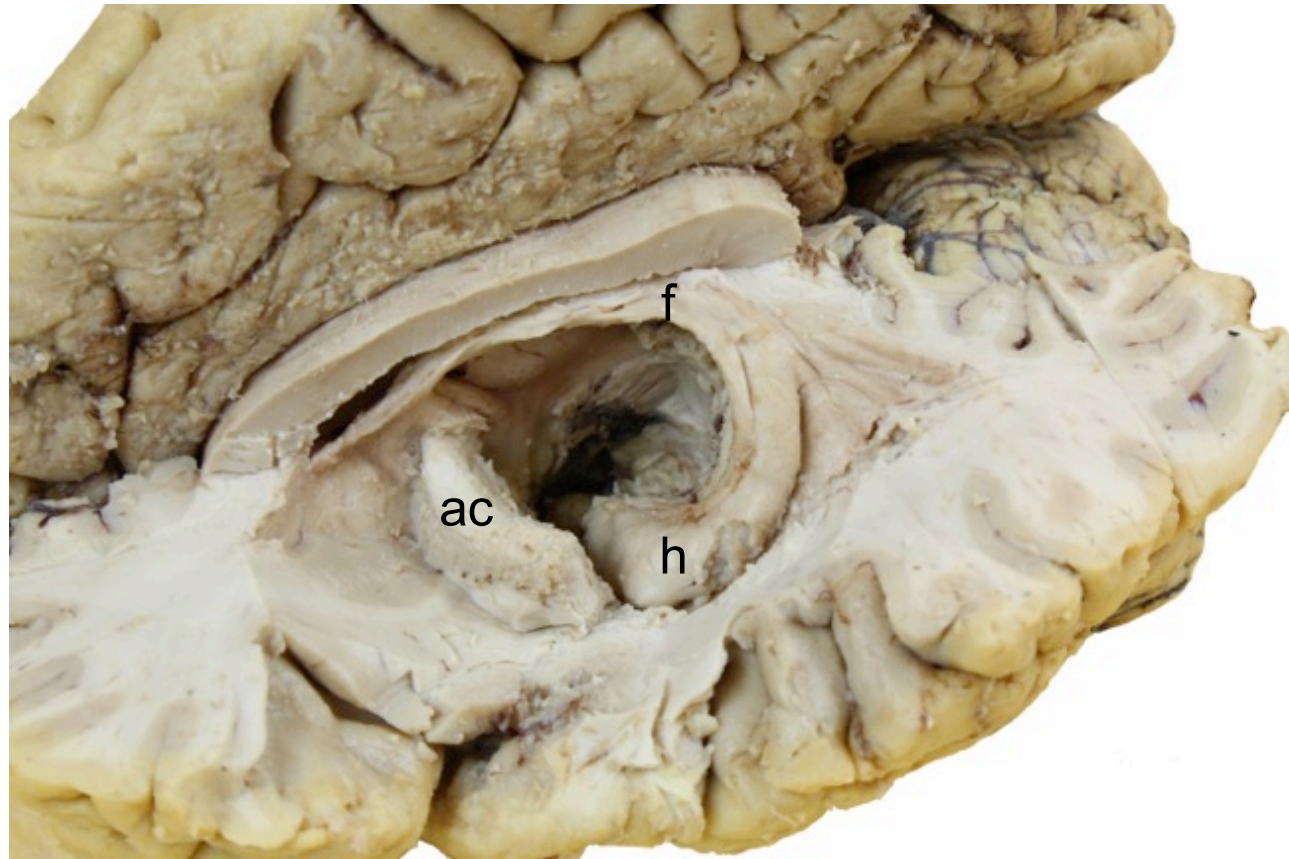
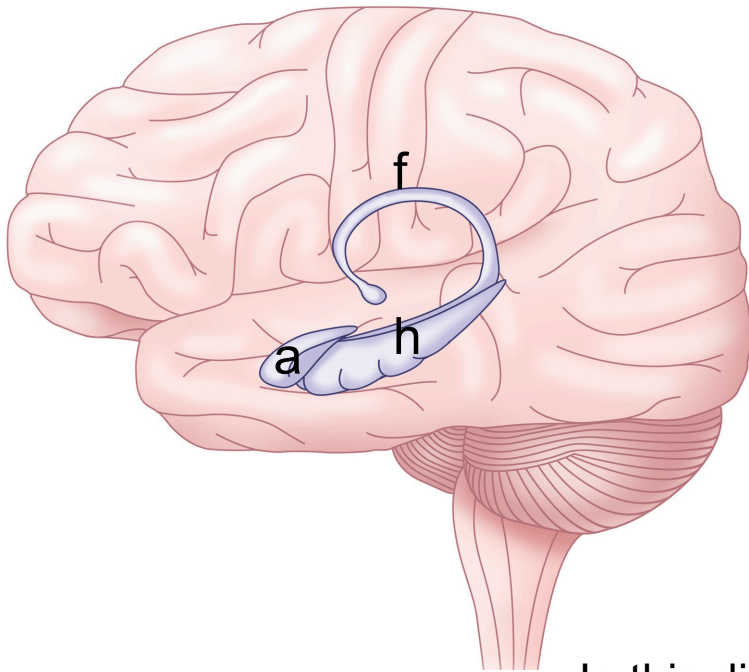
From the temporal lobe, the fornix curves around the thalamus and approaches the midline under the caudal part of the corpus callosum.



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The **h**ippocampal formation and the **a**mygdala are often described as being “inside” the telencephalon.

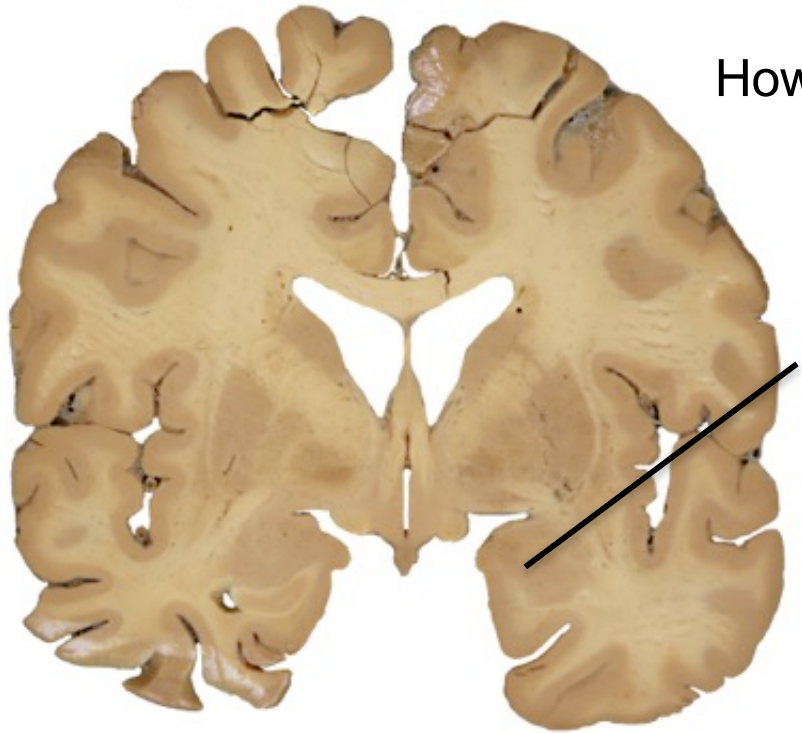
The hippocampal formation may be viewed in the floor of the inferior horn of the lateral ventricle. f = fornix



In this dissection, the amygdala is obscured by the **a**nterior **c**ommisure.

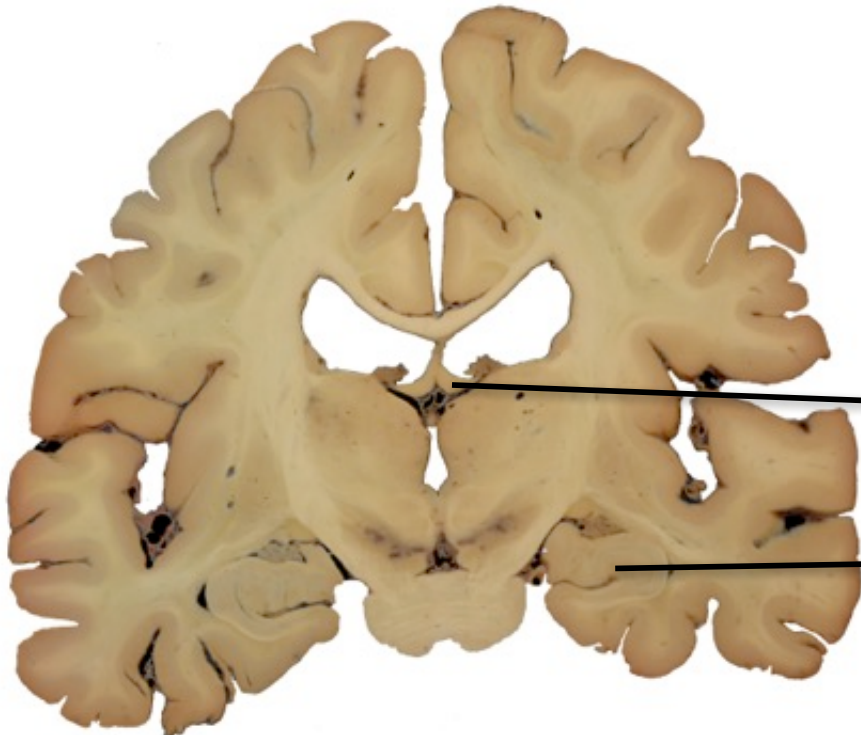
However, the amygdala and hippocampal formation are cortical areas that are continuous with surface cortical structures.

A



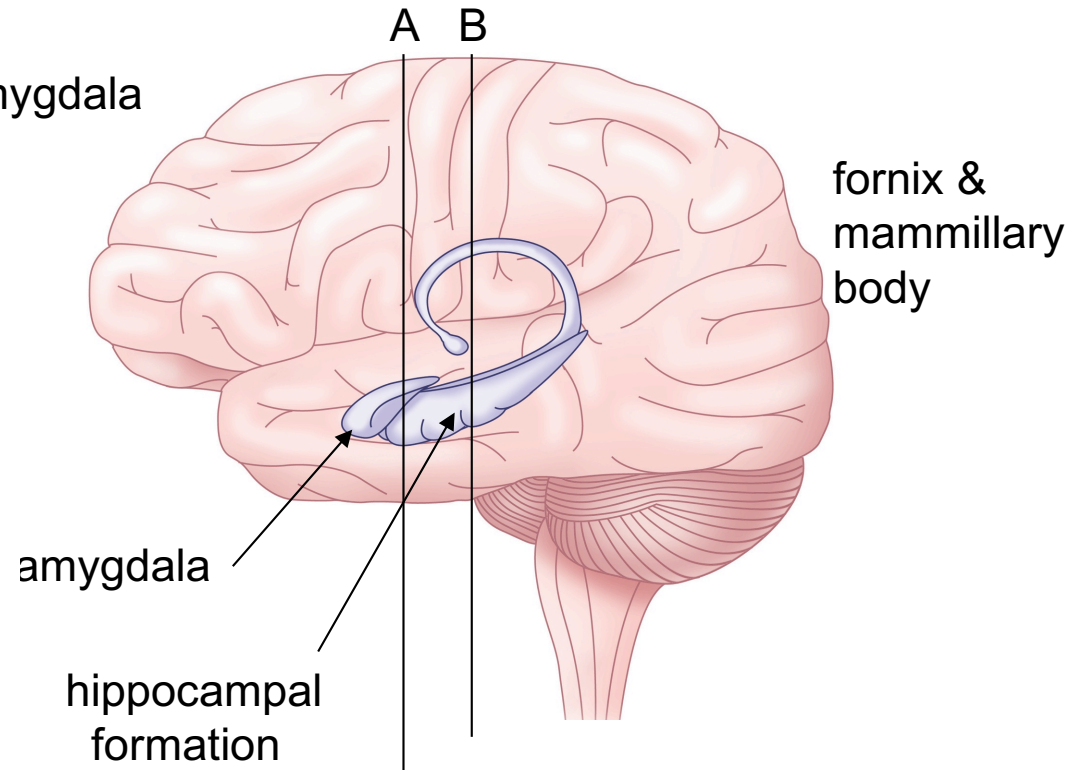
amygdala

B



fornix

hippocampal formation



fornix &
mammillary
body

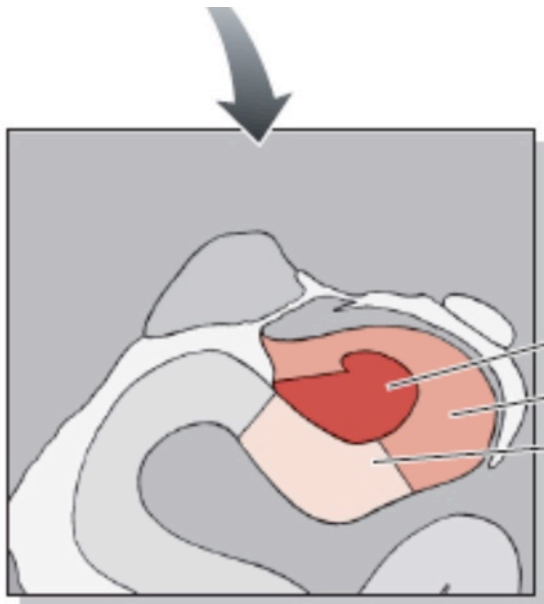
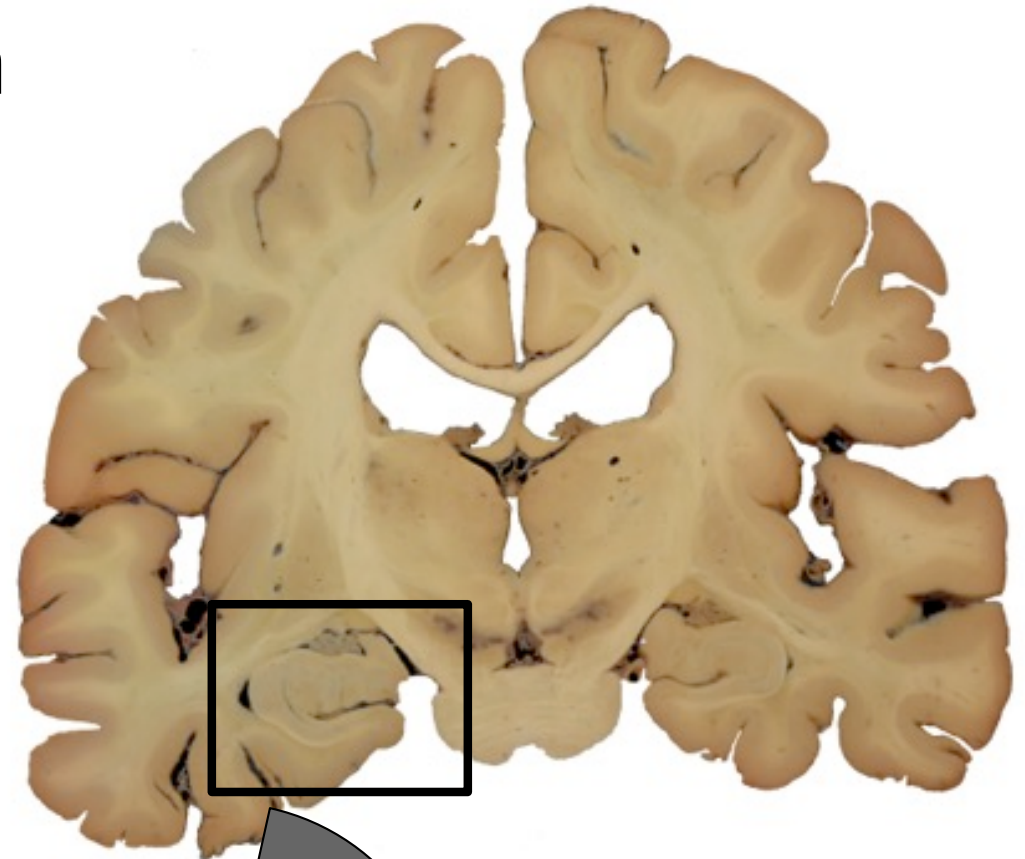
amygdala

hippocampal
formation

Hippocampal Formation

The hippocampal formation has three parts. These are cortical areas that are folded into one another at the medial edge of the parahippocampal gyrus.

1. dentate gyrus
2. hippocampus
3. subiculum



Hippocampal formation:

Dentate gyrus

Hippocampus

Subiculum

Amygdala

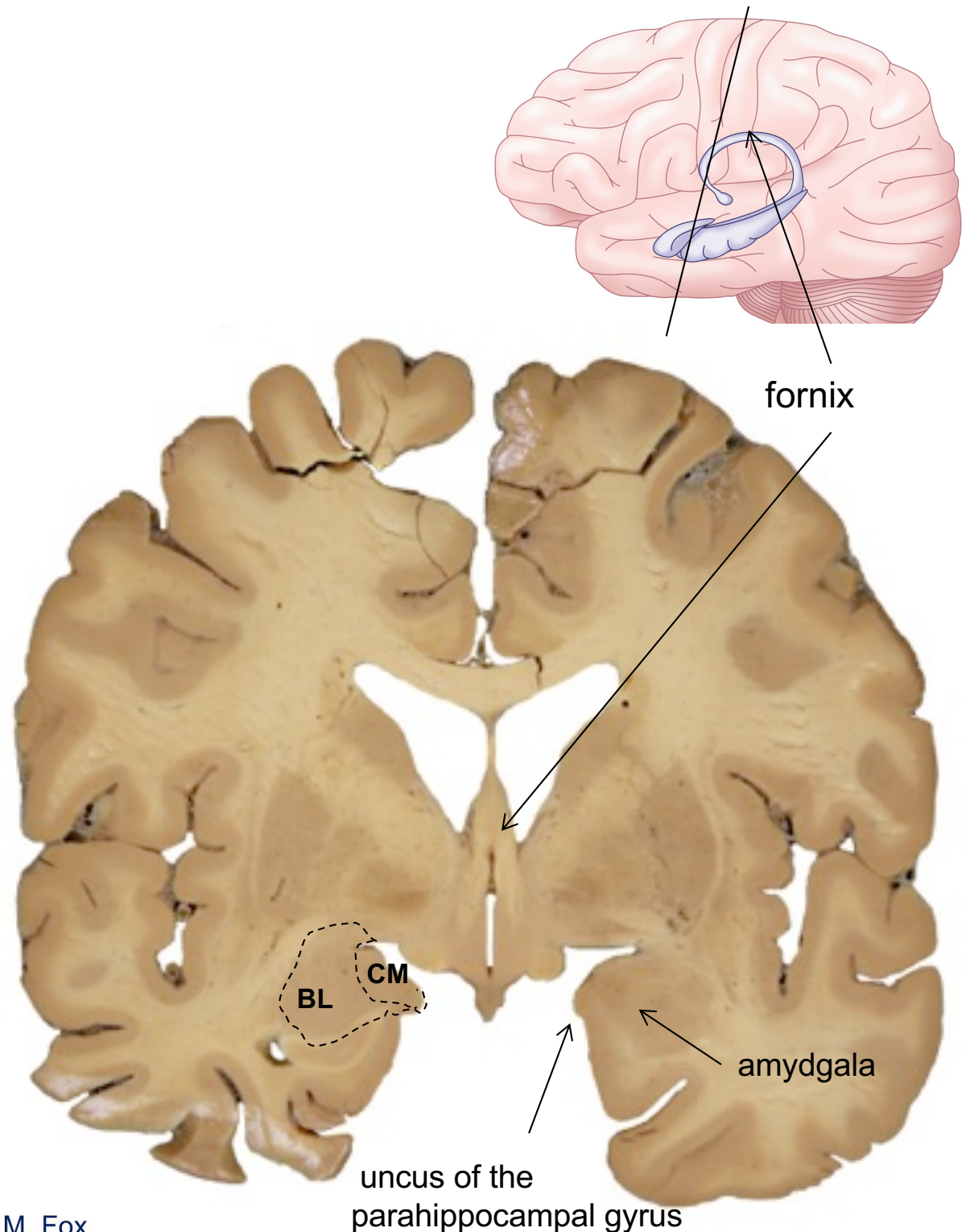
A coronal slice through the brain reveals the amygdala.

The amygdala is a matrix of many nuclei divided into two “divisions”:

1. Basolateral (BL)
2. Corticomedial (CM)

The BL and CM nuclei differ in their connections (and therefore their functions) and in their neurotransmitters.

(Note that this section cuts through the fornix as it enters the hypothalamus in the wall of the third ventricle.)



Question

For questions 1-4, indicate whether the statement is true (T) or false (F).

- _____ 1. The hippocampal formation is in the cingulate gyrus.
- _____ 2. The hippocampal formation is a cortical structure.
- _____ 3. The amygdala is deep to the uncus.
- _____ 4. The amygdala is a cortical structure.
- _____ 5. The parahippocampal gyrus is one of the subdivisions of the hippocampal formation.
- _____ 6. What are the 3 components of the hippocampal formation?

Answers

1. F
2. T
3. T
4. T
5. F
6. Hippocampus, subiculum, dentate gyrus