

Harmonization of protocols for the manual tracing of the hippocampus - an EADC-ADNI joint effort

AUTHOR-CERTIFIED PROTOCOL FEATURES AND TRACINGS

Watson C, Andermann F, Gloor P et al. *Anatomic basis of amygdaloid and hippocampal volume measurement by magnetic resonance imaging*. Neurology 1992; 42:1743-50.

In the following section you can find:

- 1) An excerpt of the Survey of anatomical landmarks according to Watson et al.'s criteria.
- 2)The hippocampal tracing on consecutive coronal slices of a 1.5T ADNI control subject (**2A**) and AD patient (**2B**).

1) Excerpt of the Survey of anatomical landmarks according to Watson et al.'s criteria.

Plane				
axis of the left hippocampus				
Start tracing				
from head to tail				
Areas explicitly included	Areas explicitly excluded	Most anterior slice	Most posterior slice	
Subiculum, uncal sulcus, hippocampus proper, dentate gyrus, fimbria, and alveus.	Parahippocampal gyrus, entorhinal cortex, crus of fornix, isthmus of the cingulate gyrus.	The most anterior section in which the hippocampus is visible	Slice where the crus of fornix was visible in full profile	
BOUNDARIES				
	Lateral border	Inferior border	Medial border	Superior border
HEAD	Gray matter/white matter interface (which is readily apparent) or the inferior horn of the lateral ventricle	Gray matter/white matter interface (which is readily apparent)	A line following the same inclination of WM of PG connect the subiculum to the quadrigeminal cistern	Uncal recess of inferior horn of lateral ventricle. If the uncal recess is not visible: - a line was drawn connecting the inferior horn to the sulcus at the inferior margin of the semilunar gyrus - alveus - a straight horizontal line was drawn connecting the plane of the inferior horn with the surface of the uncus.
BODY	Gray matter/white matter interface (which is readily apparent) or the inferior horn of the lateral ventricle	Gray matter/white matter interface (which is readily apparent)	A line following the same inclination of WM of PG connect the subiculum to the quadrigeminal cistern	The interface between the hippocampus/alveus/fimbria and the inferior horn of the lateral ventricle
TAIL	Gray matter/white matter interface (which is readily apparent) or the inferior horn of the lateral ventricle	Gray matter/white matter interface (which is readily apparent)	A line following the same inclination of WM of PG connect the subiculum to the quadrigeminal cistern	The interface between the hippocampus/alveus/fimbria and the inferior horn of the lateral ventricle and/or the subarachnoid space of the transverse cerebral fissure (or choroidal fissure)

2A)CTRL

118

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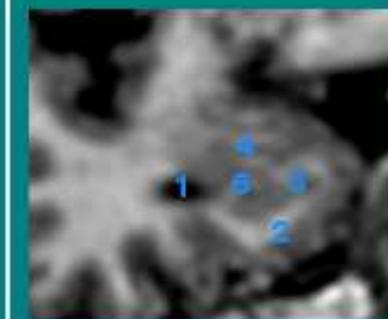
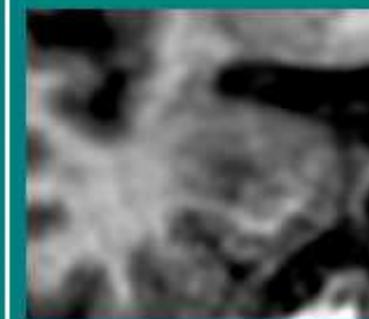
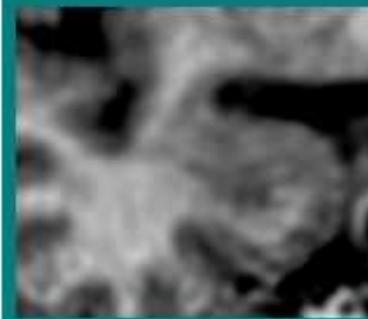
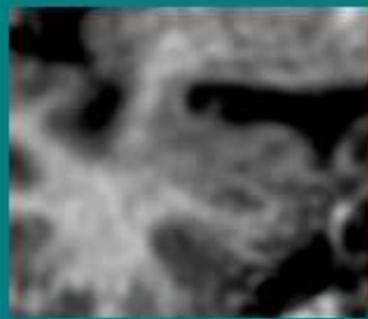
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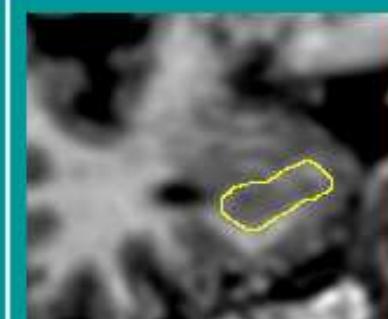
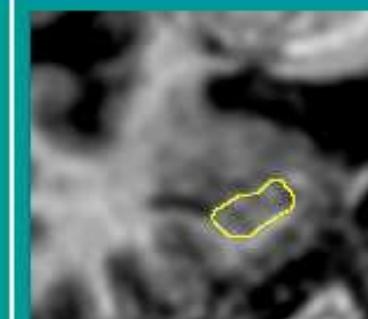
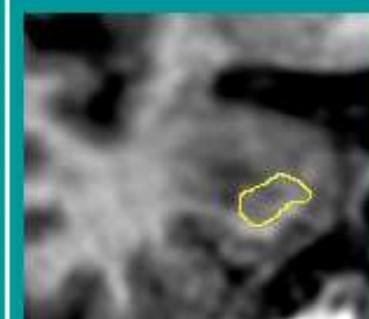
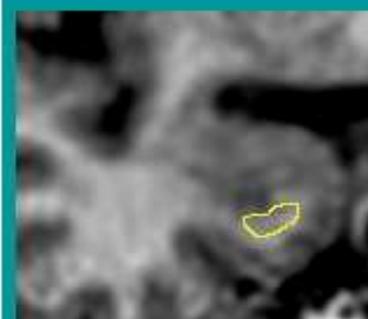
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Anatomical
section

Native MRI



Tracing



Notes

Most anterior slice: the most anterior section in which the hippocampus is visible.

Sagittal
view

1=Temporal horn of the lateral ventricle
2=Parahippocampal gyrus
3=Hippocampal head
4=Amygdala
5=Alveus

2A)CTRL

Anatomical section	123	124	125	126	127
Native MRI					
Tracing					
Notes			<p>1=Temporal horn of the lateral ventricle 2=Parahippocampal gyrus 3=Hippocampal head 4=Amygdala 5=Alveus</p>		

2A)CTRL

128

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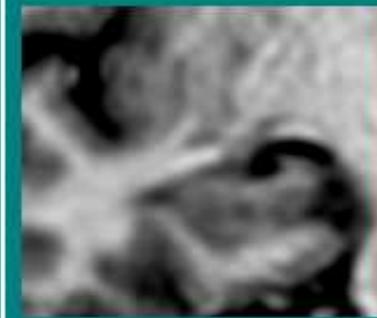
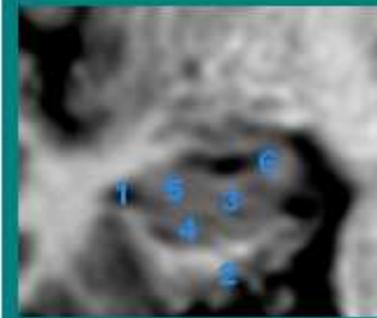
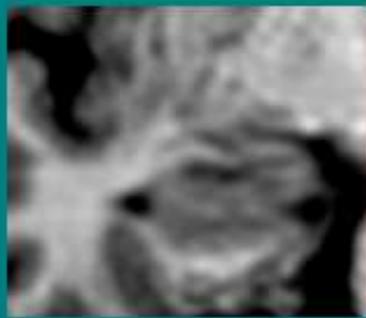
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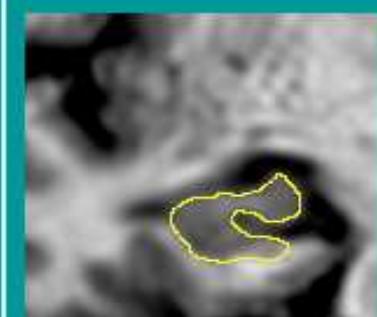
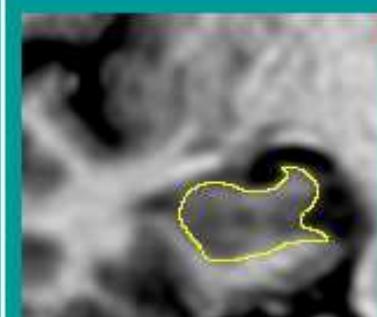
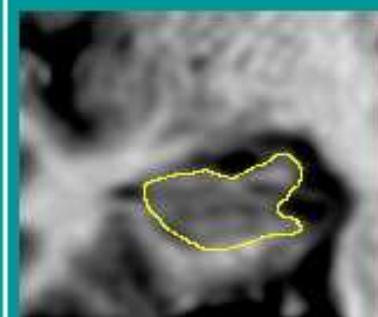
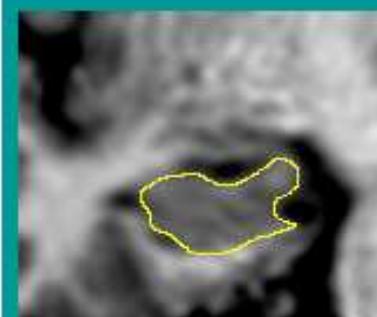
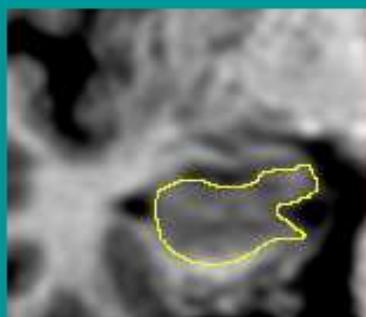
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Anatomical
section

Native MRI



Tracing



Notes

1=Temporal horn of the lateral ventricle
2=Parahippocampal gyrus
3=Gyrus dentatus
4=Subiculum
5=Cornu Ammonis
6=Vertical digitation

1=Temporal horn of the lateral ventricle
2=Parahippocampal gyrus
3=Gyrus dentatus
4=Subiculum
7=Alveus
8=Iimbria

2A)CTRL

Anatomical section	133	134	135	136	137
Native MRI					
Tracing	A grayscale MRI slice showing a bright, irregularly shaped region outlined by a yellow polygonal tracing.	A grayscale MRI slice showing a bright, irregularly shaped region outlined by a yellow polygonal tracing.	A grayscale MRI slice showing a bright, irregularly shaped region outlined by a yellow polygonal tracing.	A grayscale MRI slice showing a bright, irregularly shaped region outlined by a yellow polygonal tracing.	A grayscale MRI slice showing a bright, irregularly shaped region outlined by a yellow polygonal tracing.
Notes					

2A)CTRL

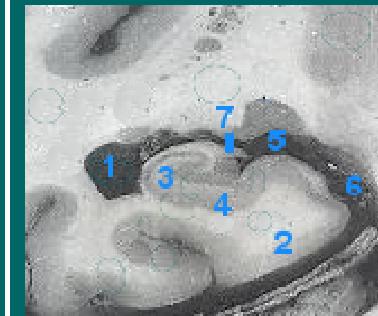
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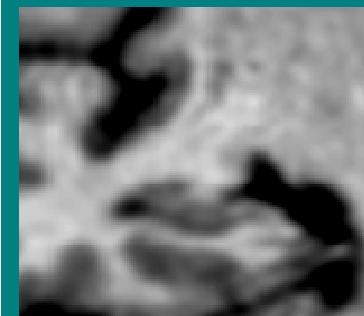
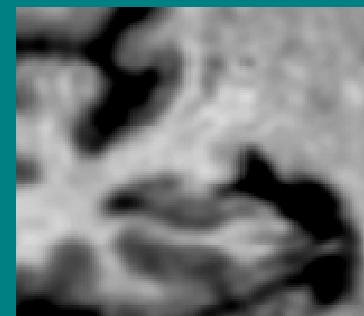
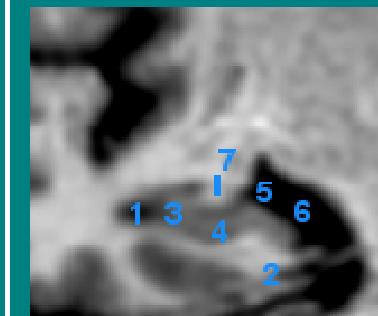
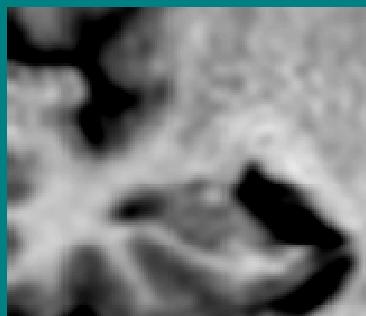
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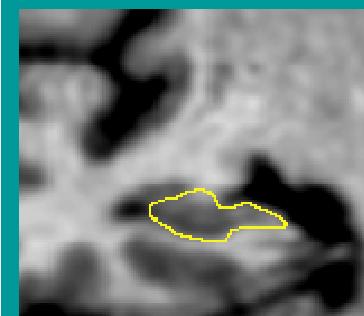
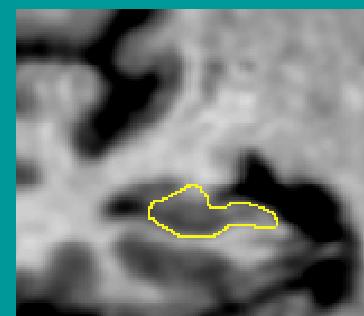
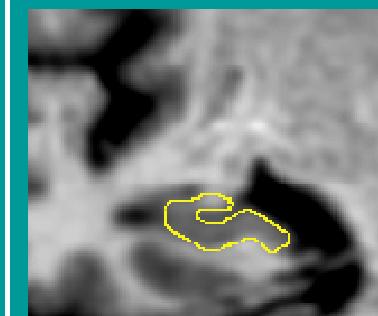
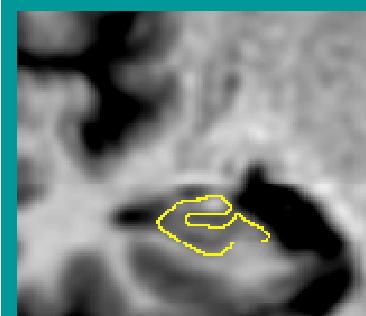
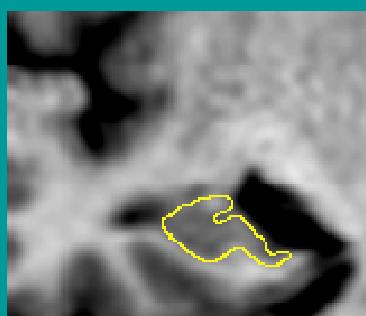
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Anatomical
section

Native MRI



Tracing



Notes

- 1=Temporal horn of the lateral ventricle
2=Parahippocampal gyrus
3=Gyrus dentatus
4=Subiculum
5=Choroidal fissure
6=Ambient cistern
7=Fimbria

2A)CTRL

Anatomical section	143	144	145	146	147
Native MRI					
Tracing					
Notes					

2A)CTRL

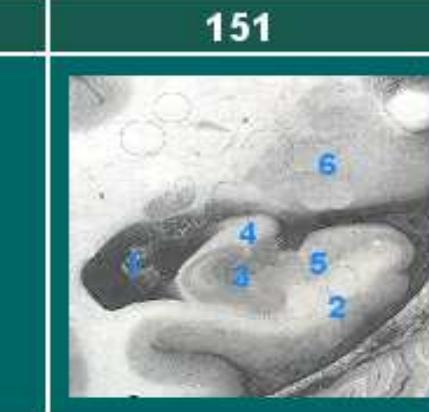
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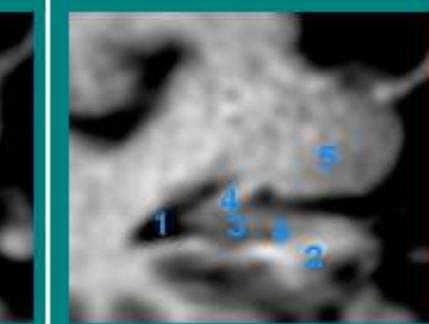
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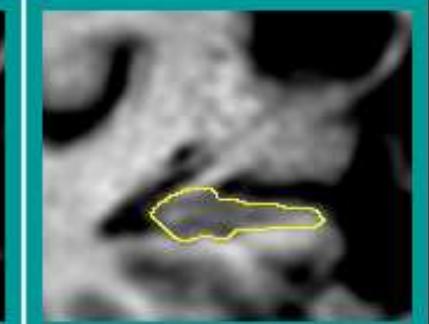
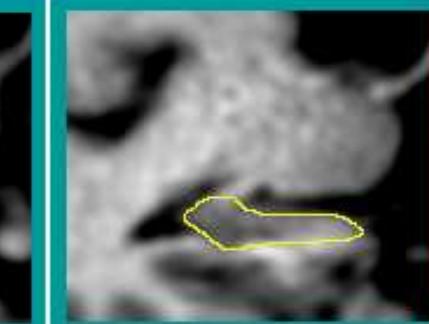
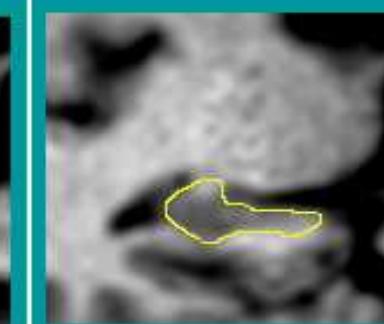
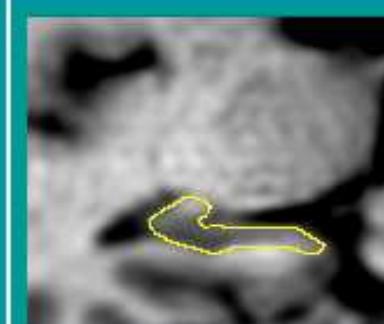
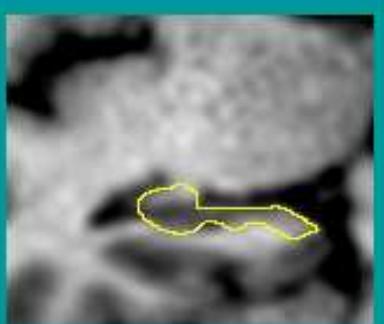
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Anatomical
section

Native MRI



Tracing



Notes

- 1=Temporal horn of the lateral ventricle
- 2=Parahippocampal gyrus
- 3=Gyrus dentatus
- 4=Fimbria
- 5=Subiculum
- 6=Pulvinar

2A)CTRL

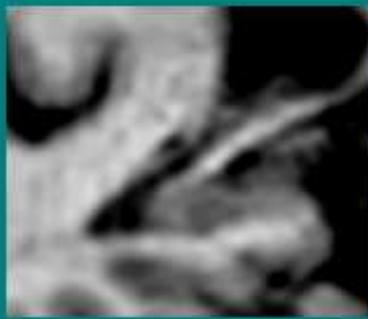
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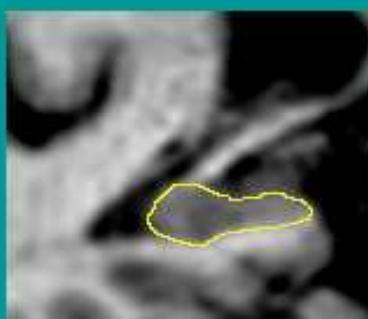
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Anatomical
section

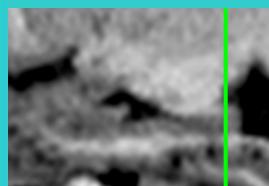
Native MRI

Tracing

Notes



Most posterior slice: Slice where the crus of fornix was visible in full profile.

Sagittal
view

1=Temporal horn of the lateral ventricle
2=Cornu Ammonis
3=Gyrus dentatus
4=Fornix
5=Isthmus
6=Parahippocampal gyrus

2B) AD

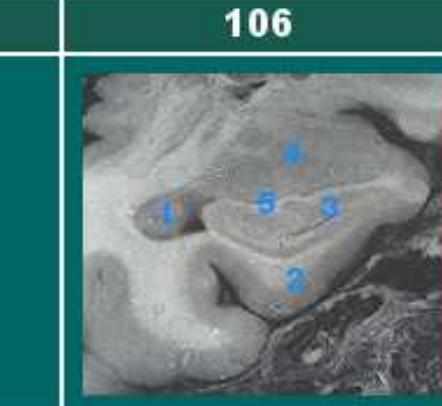
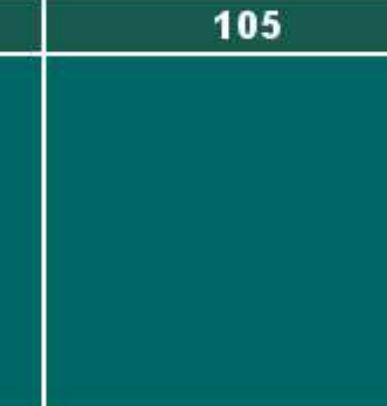
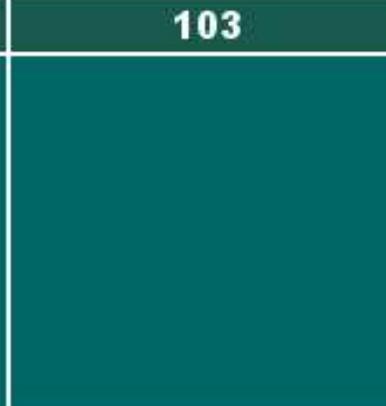
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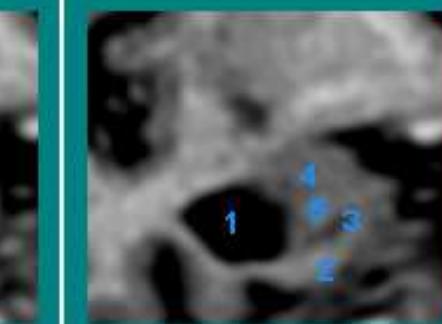
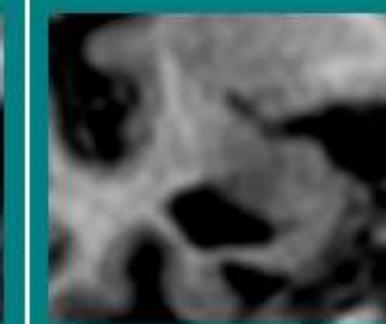
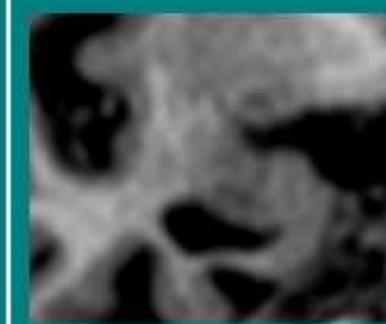
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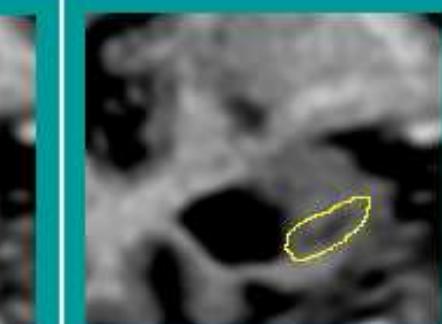
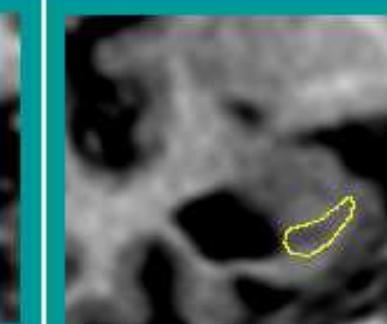
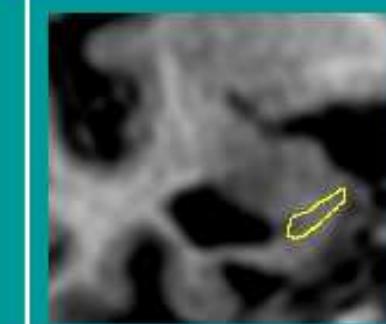
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Anatomical
section

Native MRI



Tracing



Notes

Most anterior slice: the most anterior section in which the hippocampus is visible.



1=Temporal horn of the lateral ventricle
2=Parahippocampal gyrus
3=Hippocampal head
4=Amygdala
5=Alveus

2B) AD

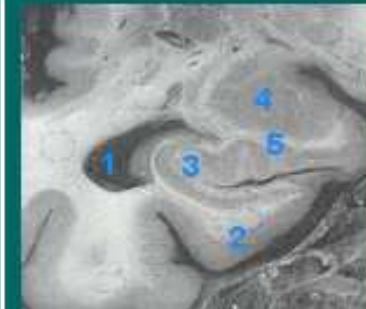
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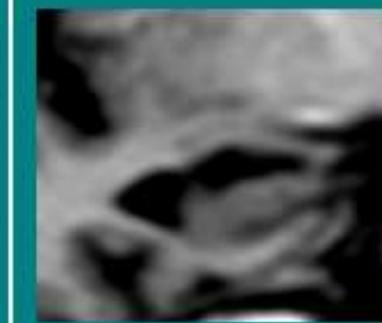
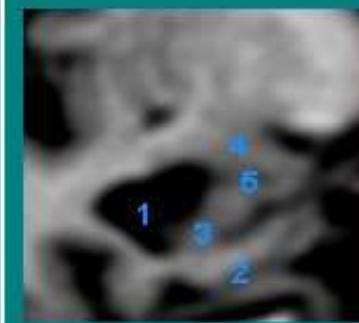
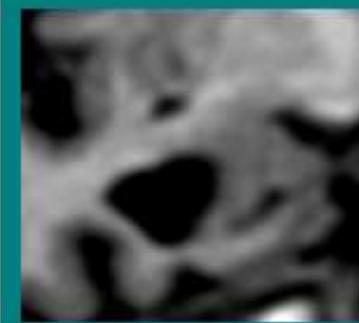
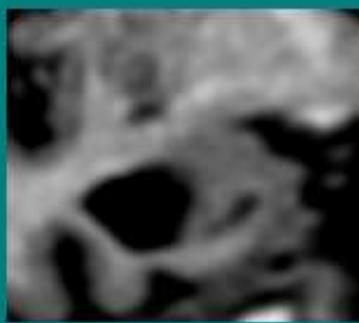
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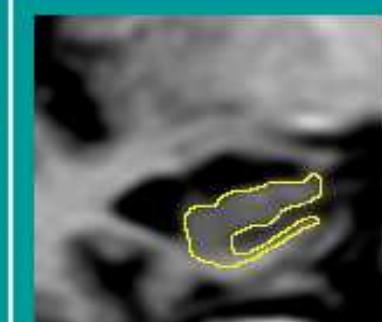
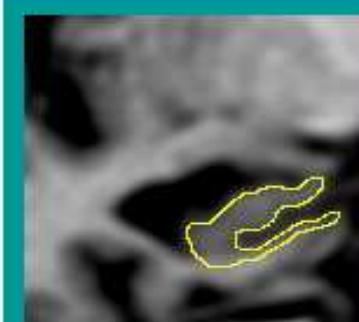
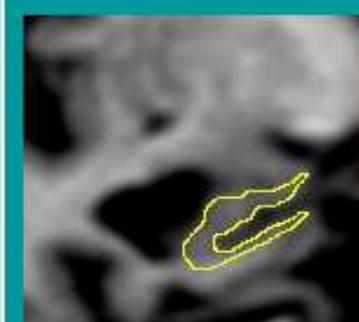
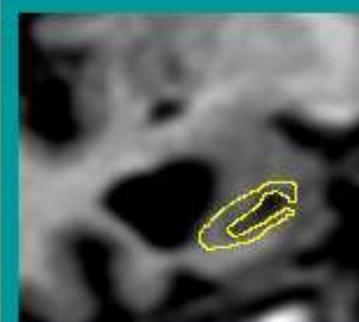
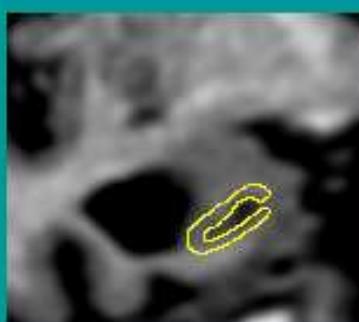
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Anatomical
section

Native MRI



Tracing



Notes

- 1=Temporal horn of the lateral ventricle
2=Parahippocampal gyrus
3=Hippocampal head
4=Amygdala
5=Alveus

2B) AD

Anatomical section

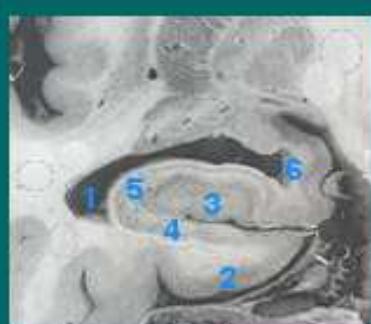
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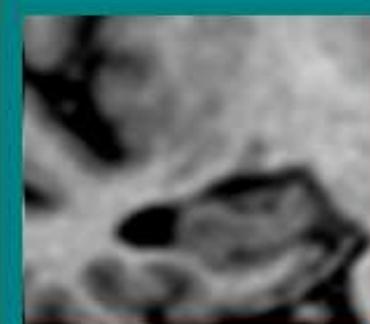
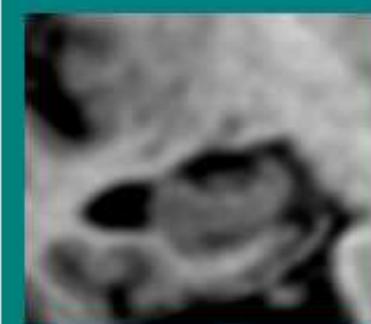
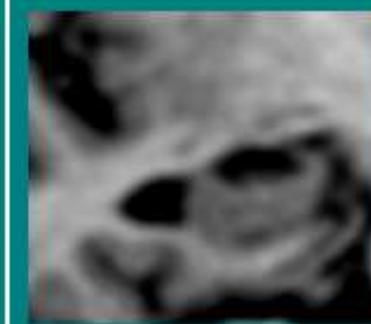
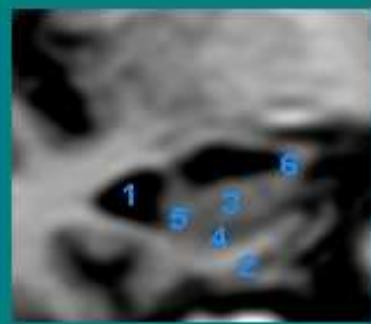
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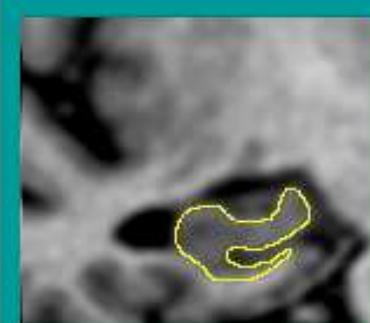
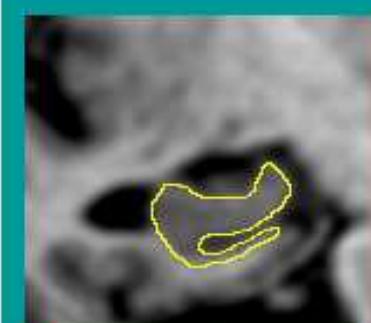
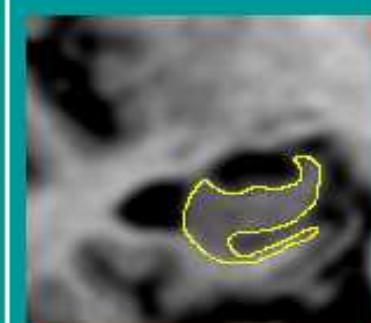
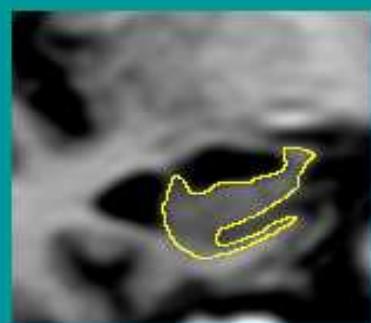
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Native MRI



Tracing



Notes

- 1=Temporal horn of the lateral ventricle
- 2=Parahippocampal gyrus
- 3=Gyrus dentatus
- 4=Subiculum
- 5=Cornu Ammonis
- 6=Vertical digitation

2B) AD

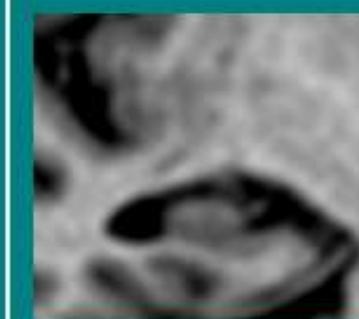
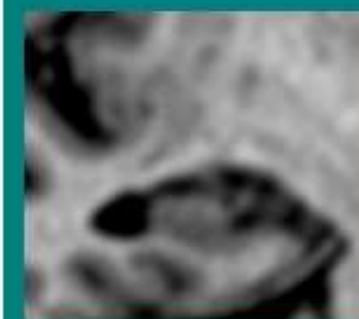
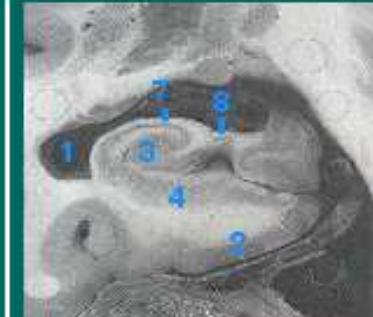
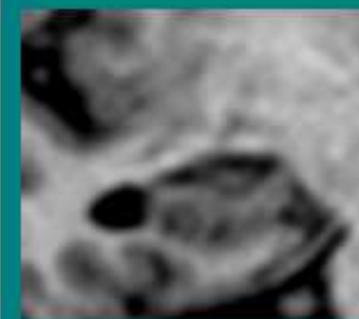
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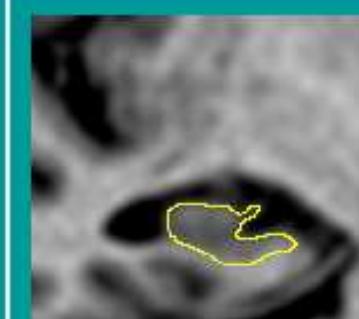
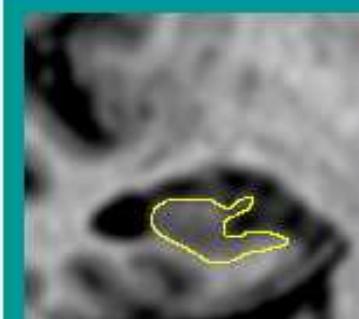
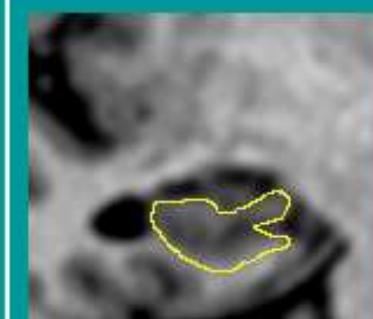
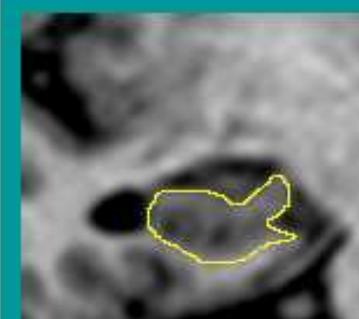
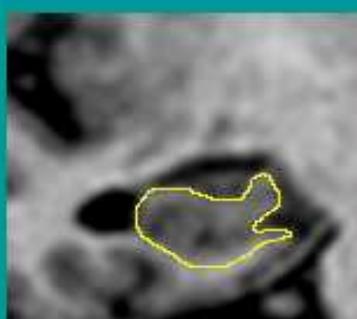
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Anatomical
section

Native MRI

Tracing

Notes



- 1=Temporal horn of the lateral ventricle
2=Parahippocampal gyrus
3=Gyrus dentatus
4=Subiculum
7=Alveus
8=Flimbria

2B) AD

Anatomical section	122	123	124	125	126
Native MRI					
Tracing					
Notes					

2B) AD

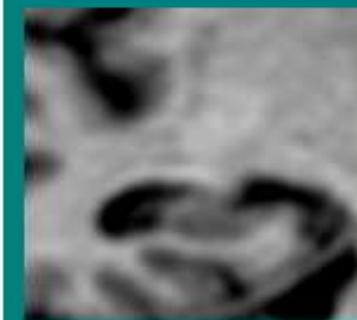
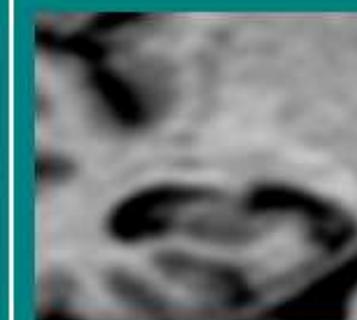
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Anatomical
section

Native MRI

Tracing

Notes

2B) AD

Anatomical section	132	133	134	135	136
Native MRI					
Tracing					
Notes					

2B) AD

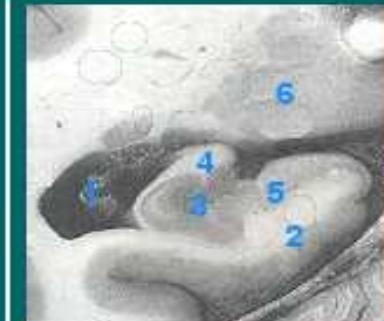
137

138

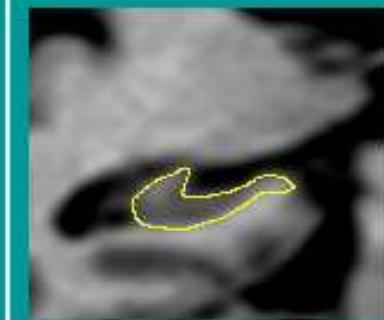
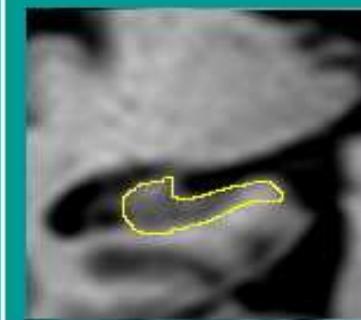
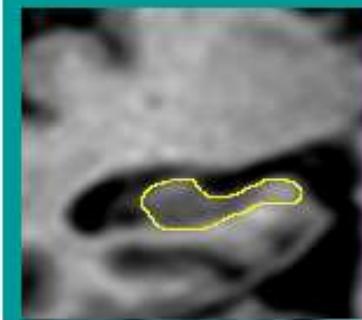
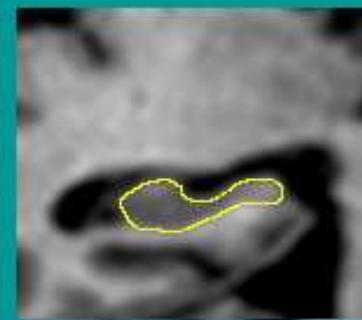
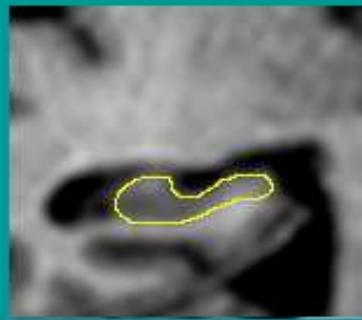
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140

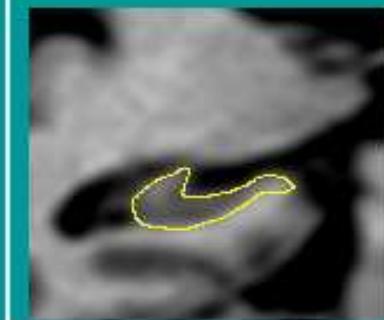
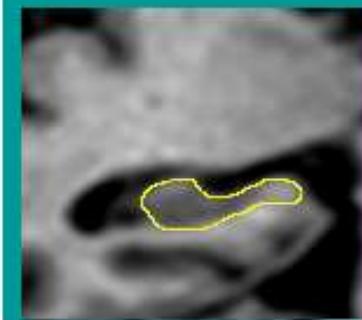
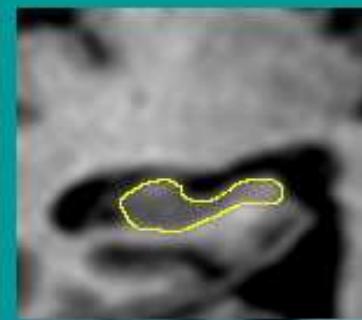
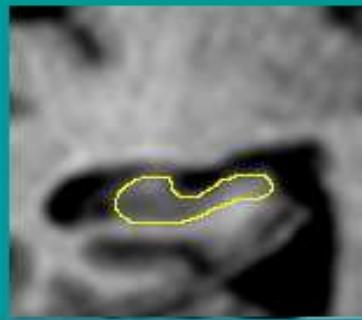
141

Anatomical
section

Native MRI



Tracing



Notes

- 1=Temporal horn of the lateral ventricle
- 2=Parahippocampal gyrus
- 3=Gyrus dentatus
- 4=Fimbria
- 5=Subiculum
- 6=Pulvinar

2B) AD

142

143

144

145

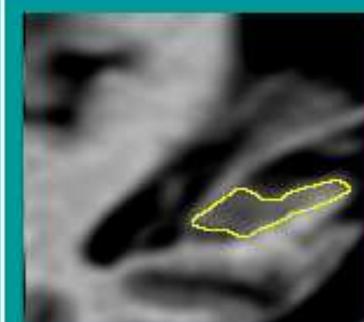
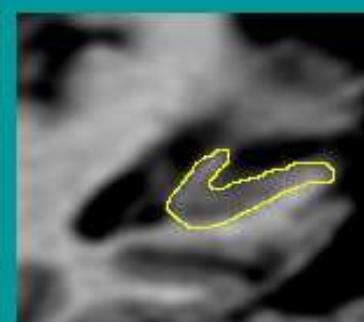
146

Anatomical
section

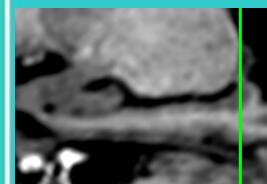
Native MRI

Tracing

Notes



Most posterior slice: Slice where the crus of fornix was visible in full profile.



Sagittal
view