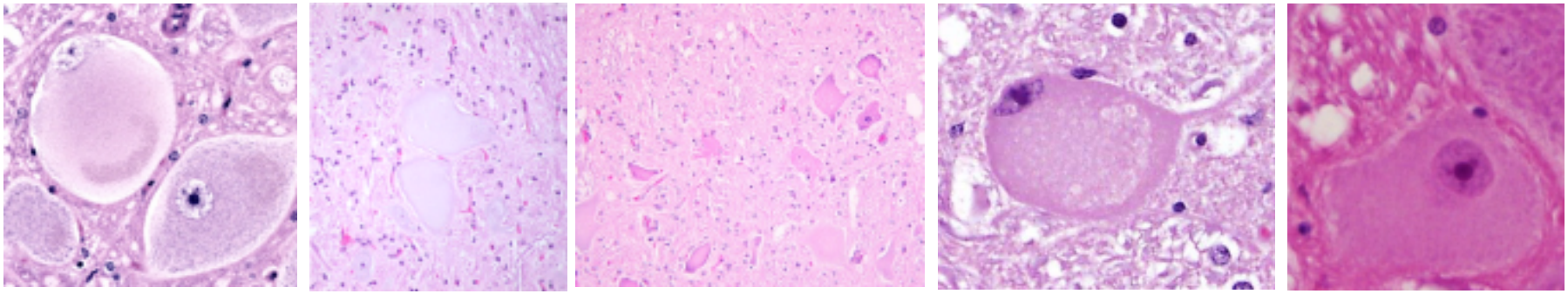
Macroscopic examination and CNS sampling for histology



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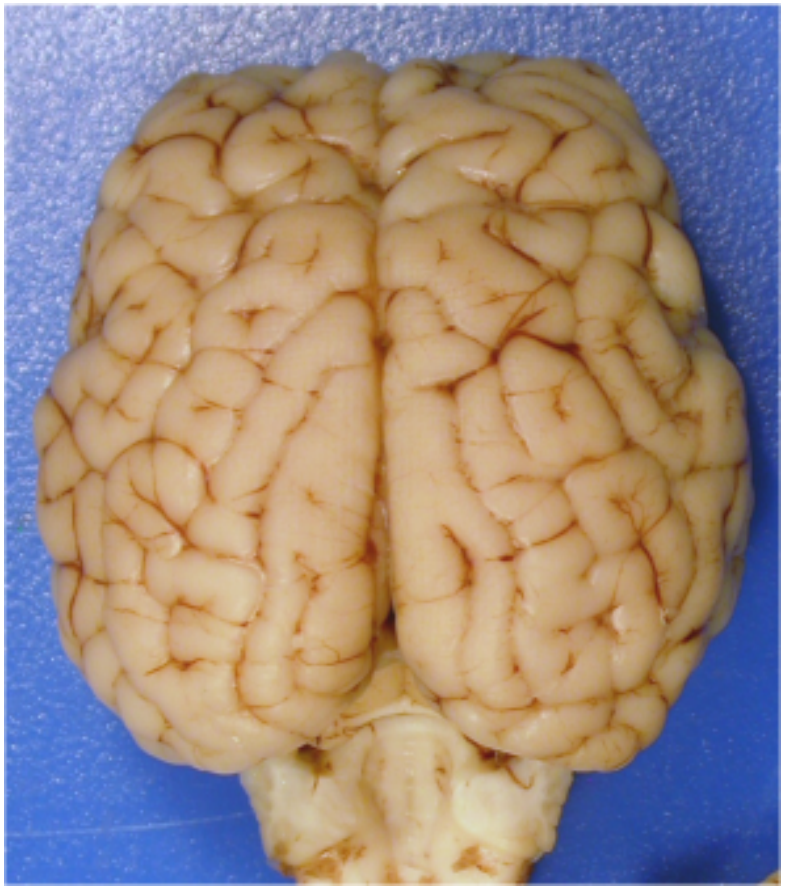
Macroscopic examination

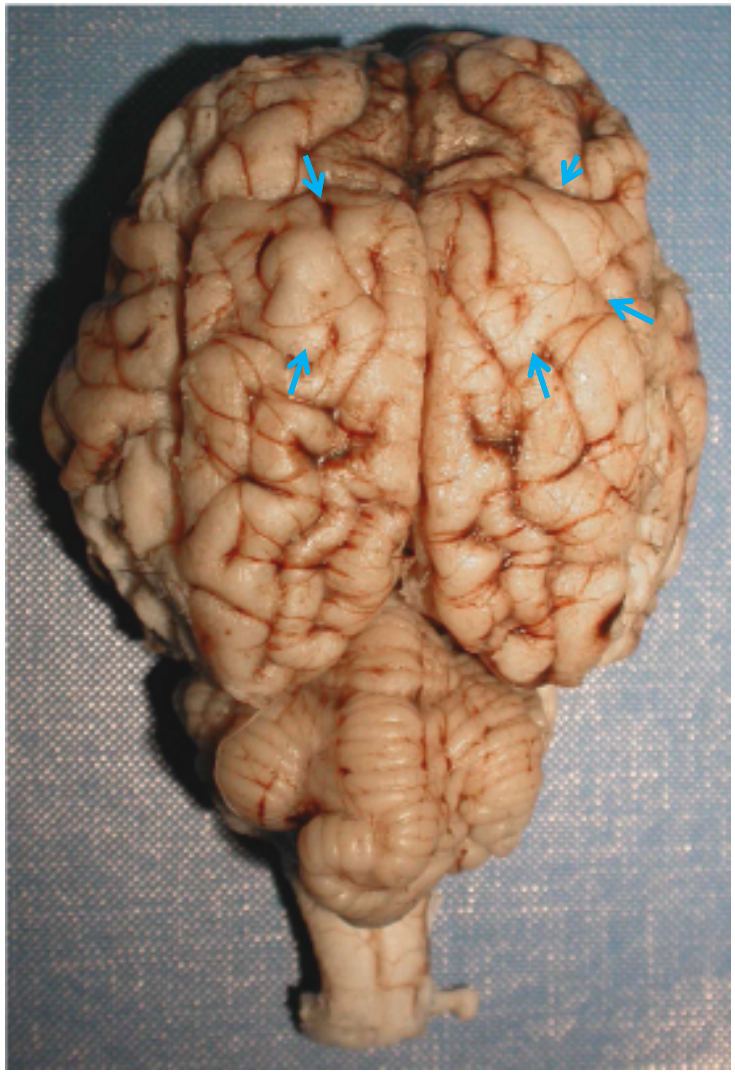
External and cut surfaces:

Anatomy, relative proportions (dimensions/weight), symmetry, discolouration, altered consistency / softening

- Meningeal vasculature
- Cerebral gyri
- Evidence of tentorial herniation / midbrain compression? (see ppt on cerebral oedema)
- Evidence of cerebellar herniation? (see ppt on cerebral oedema)
- Ventricular system

Flattening of cerebral gyri

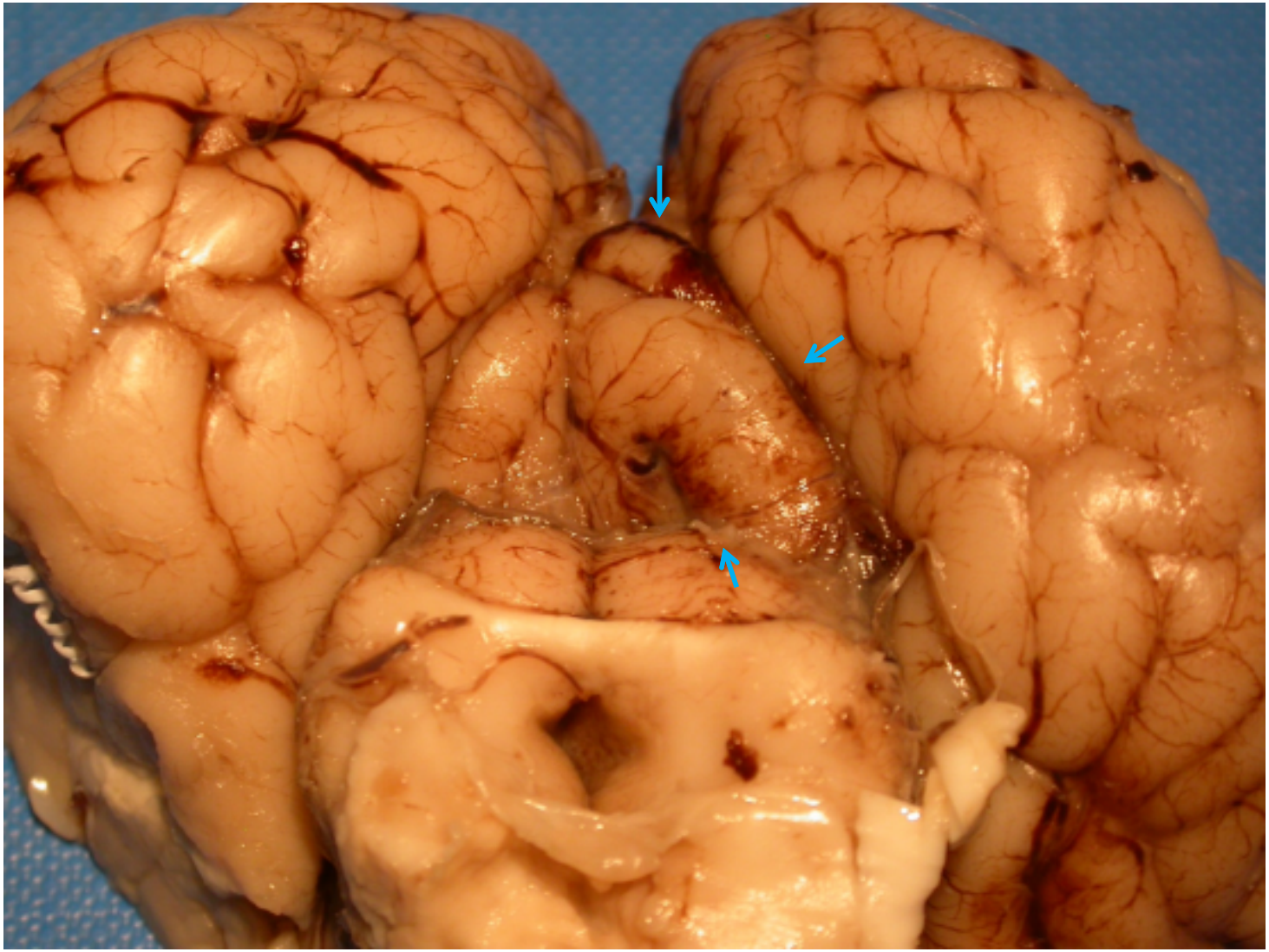




Flattening and swelling of gyri, right (arrows), sheep, cerebrocortical necrosis.

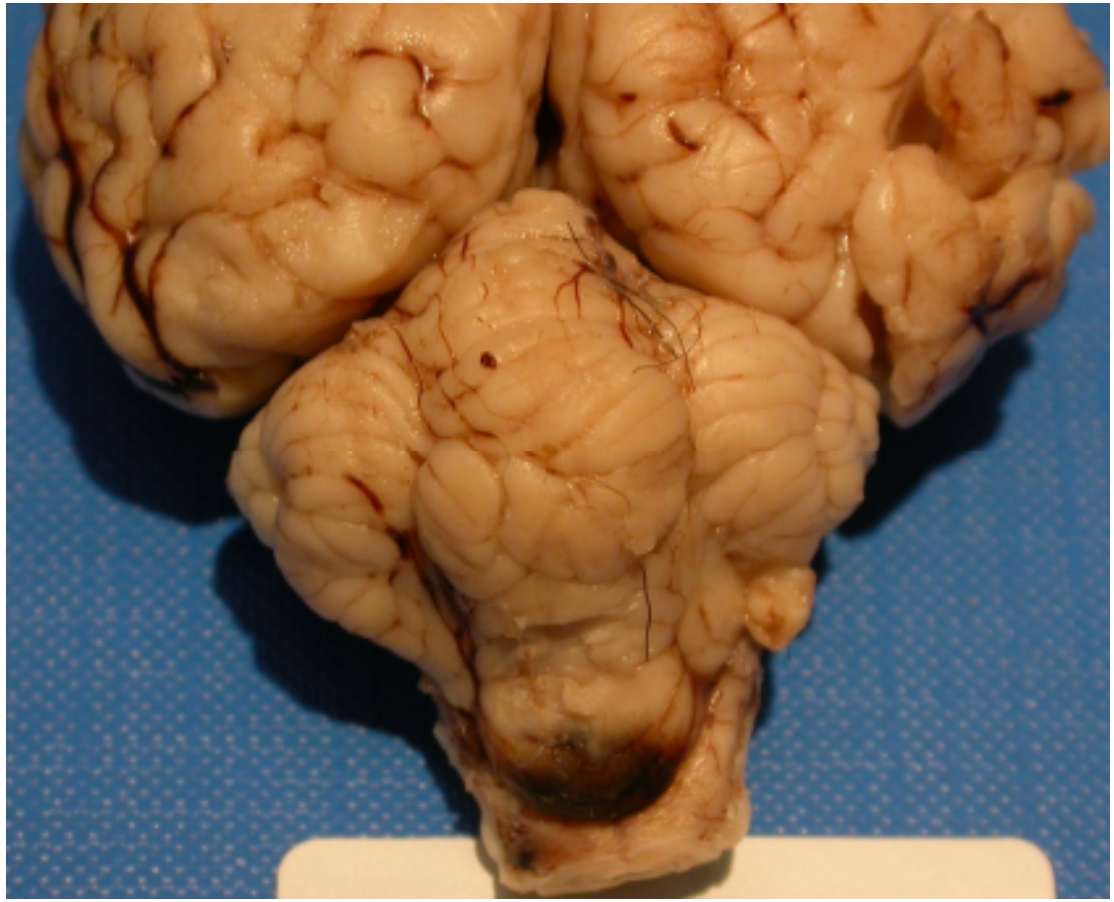
Normal brain (left) for comparison

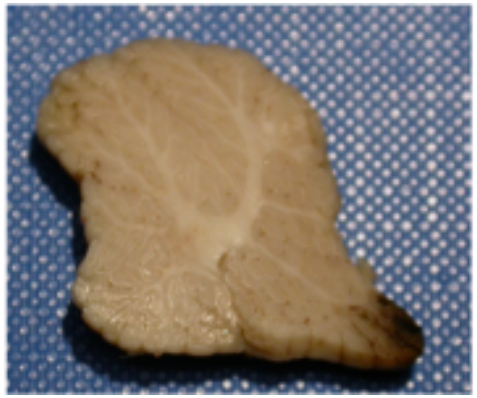
Tentorial herniation



Disbudding injury, calf, right cerebral hemisphere. Note congestion and haemorrhage in herniated portion of cortex (arrows)

Cerebellar herniation (see also ppt on cerebral oedema)





Transect

- cerebellar peduncles (at slight angle upwards from ventrolateral to dorsomedial angle)
- caudal aspect of obex

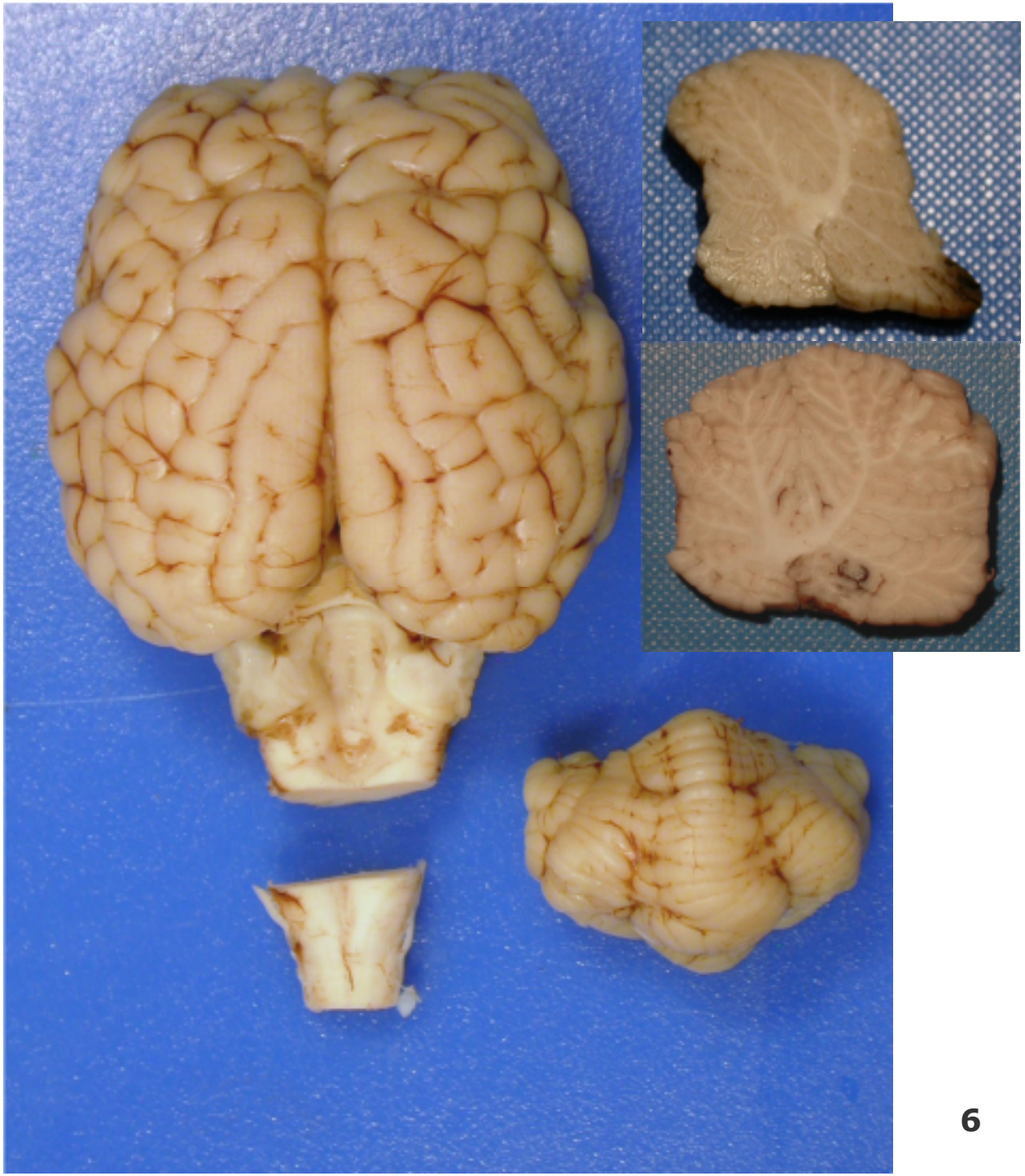
Weigh

- whole brain
- cerebellum

Cerebellar: whole brain ratio (postnatal):

Sheep : 10-12%

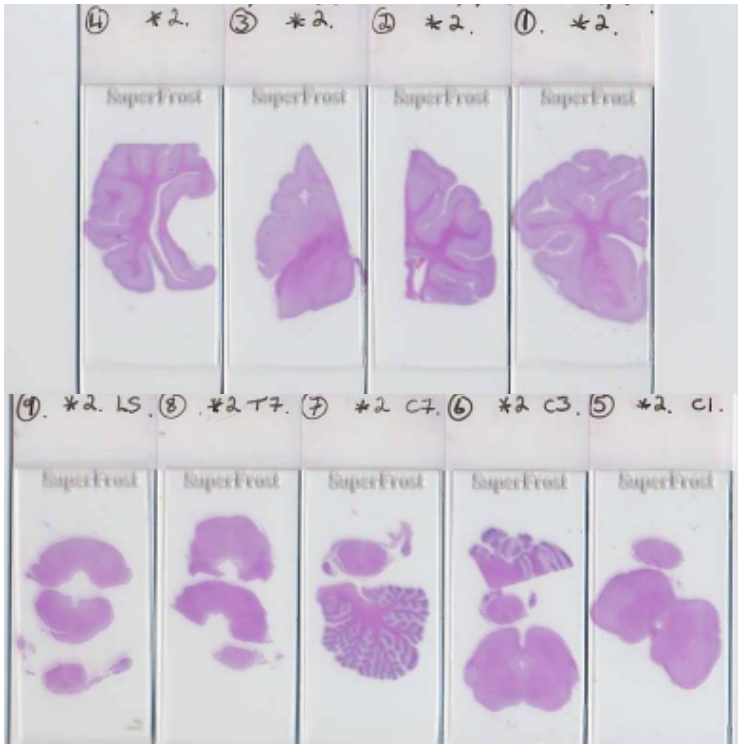
Cattle : 9-10%



Standardised sampling procedure

Advantages

- Ensures all main areas examined routinely
- Same sites available for each case
  - Case comparison
  - 'Normal' age etc matched tissues available for comparison
- Ideally everyone in the lab uses same sites…

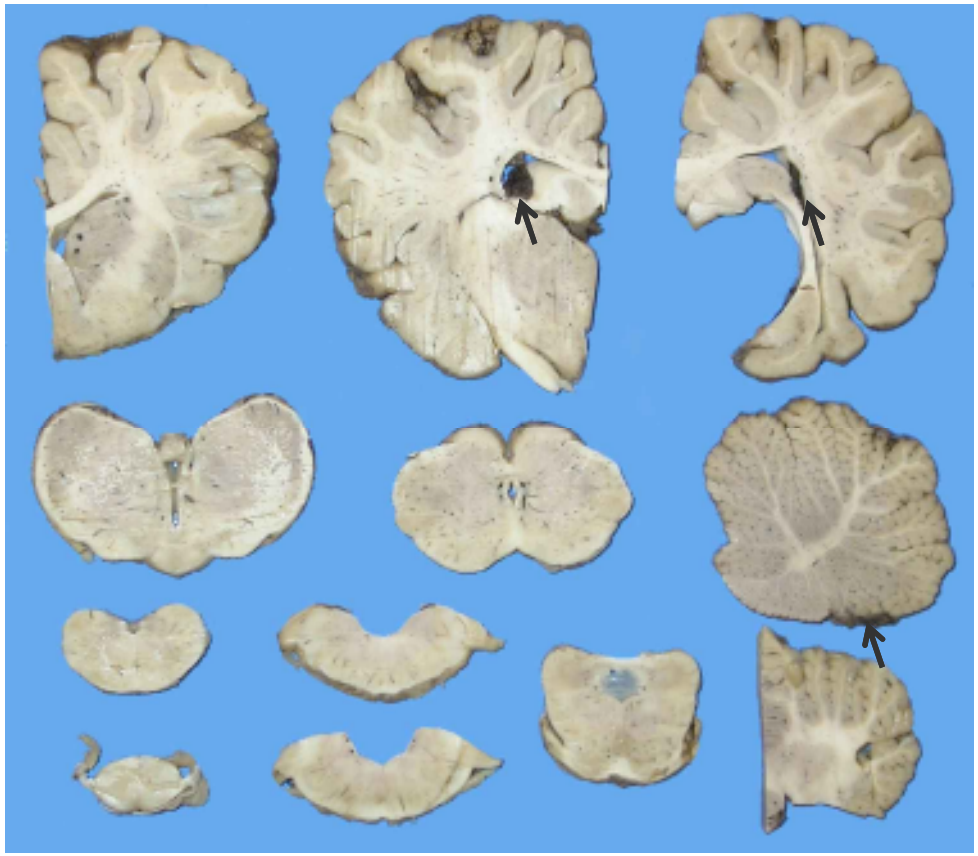


Disadvantages

- Cost, time (?)
- Perhaps have a 'two tier' system depending on history

Systematic approach to sampling :

- Whole brain and cerebellar weights
- Standardised sections of major areas of neuraxis



Coronal sections

1 Frontal CC: ansate sulcus (RIGHT)

2 Parietal CC / rostral thalamus: optic tract (LEFT)

3 Occipital CC / hippocampus: posterior aspect corpus callosum (RIGHT)

4 Caudal thalamus: lateral geniculate

5 Rostral midbrain: medial geniculate

6 Caudal midbrain: caudal colliculus

7 Cerebellum hemisphere centre roof

8 Rostral medulla : rostral aspect trapezoid body

9 Rostral medulla : caudal aspect trapezoid body

10 Caudal medulla: obex

11 ‘Spinal cord’ rostral C1

Sagittal sections

12 Cerebellum vermis midline

Note

Include choroid plexus (arrows)

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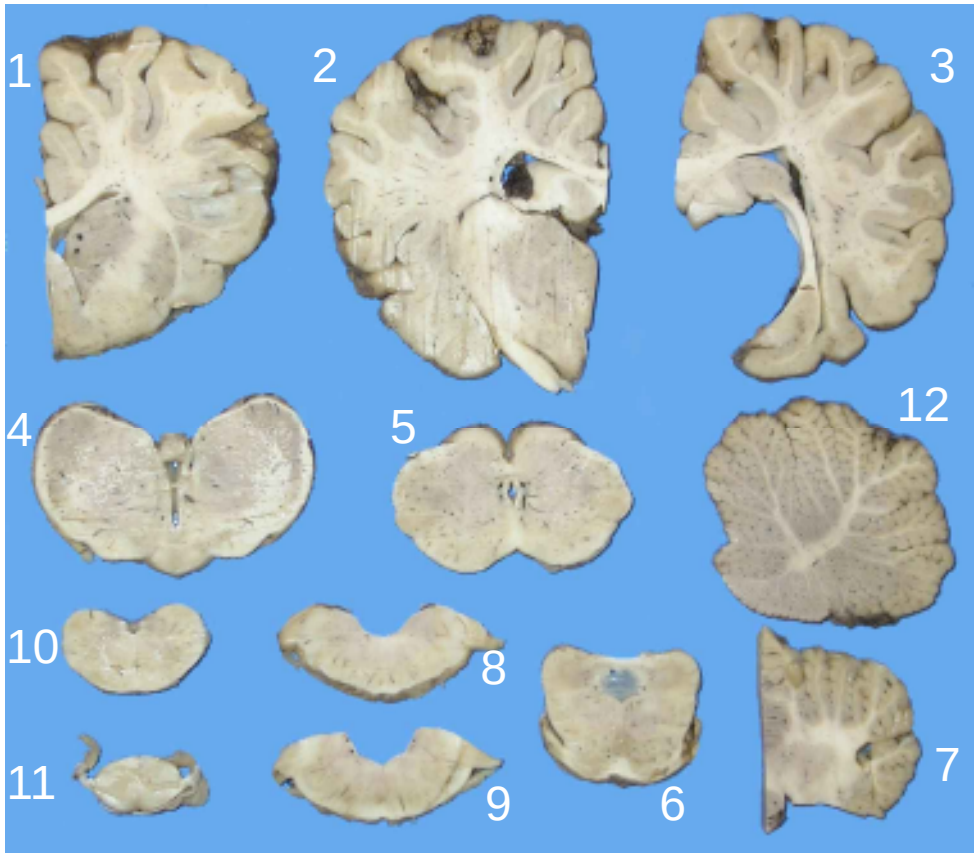
- Whole brain and cerebellar weights
- Standardised sections of major areas of neuraxis



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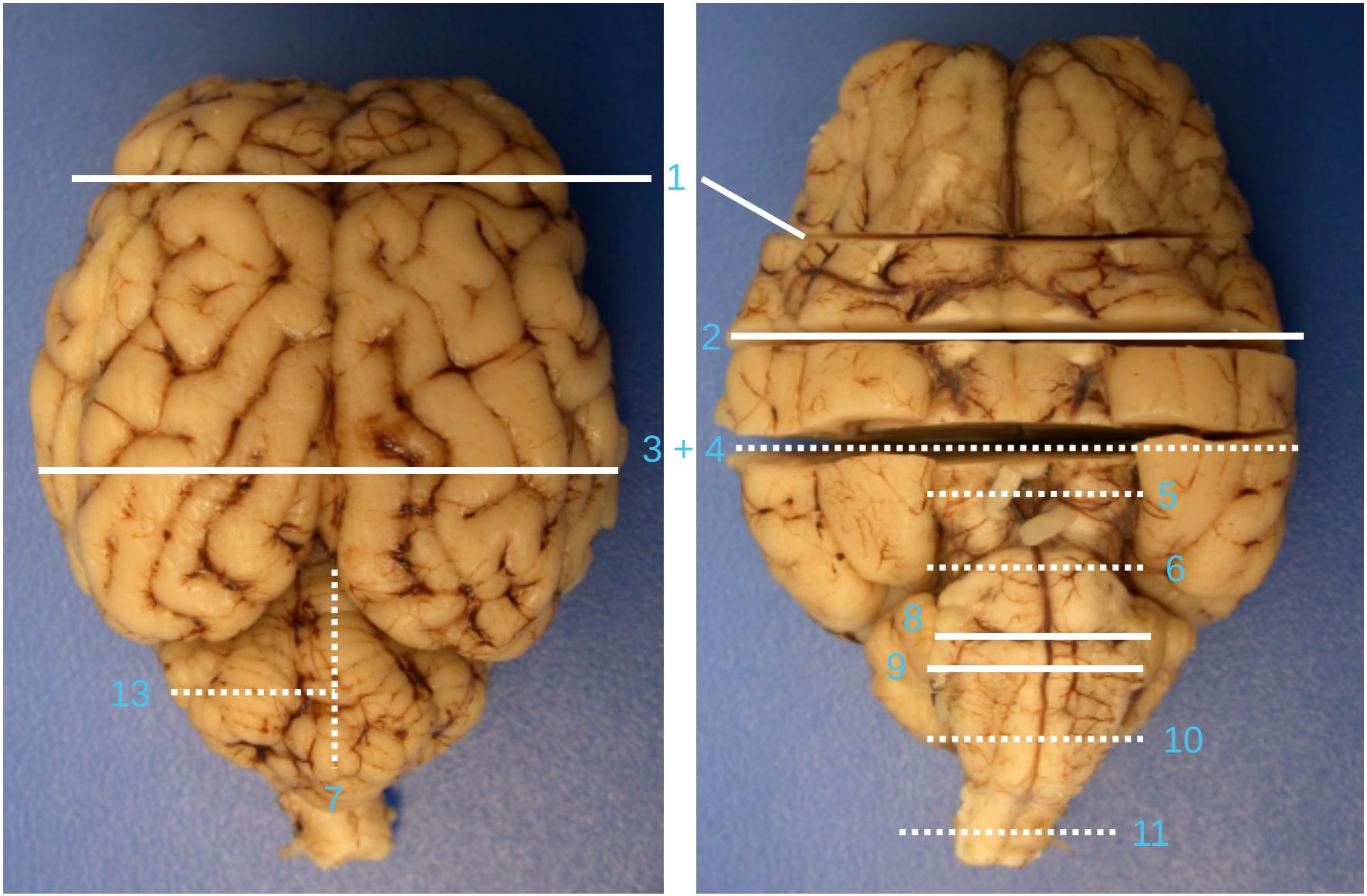
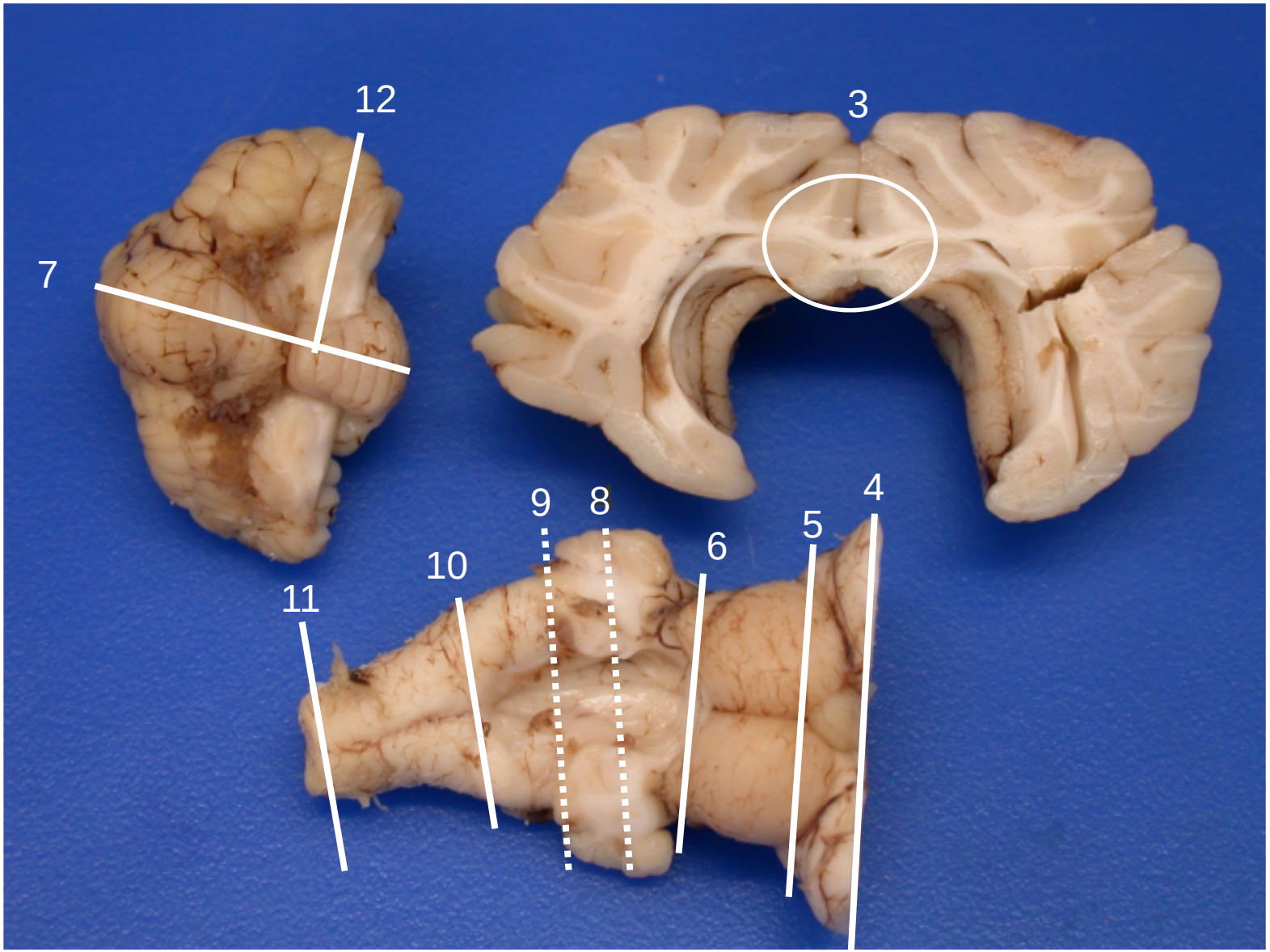


Solid lines – samples best selected from that aspect

Dotted lines – samples best selected from other aspect (next image)


12
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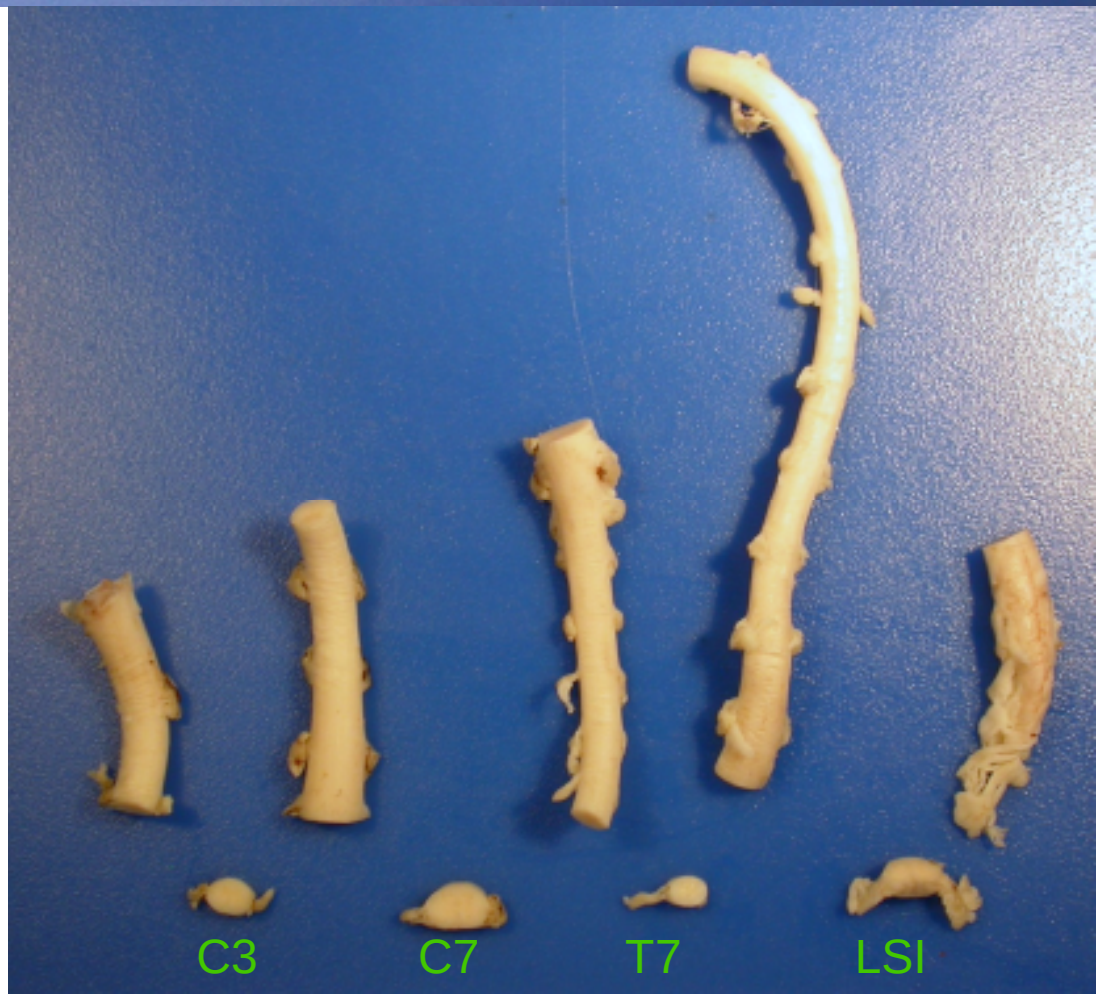
Spinal cord

Preliminary samples, unless clinical history suggests lesion site

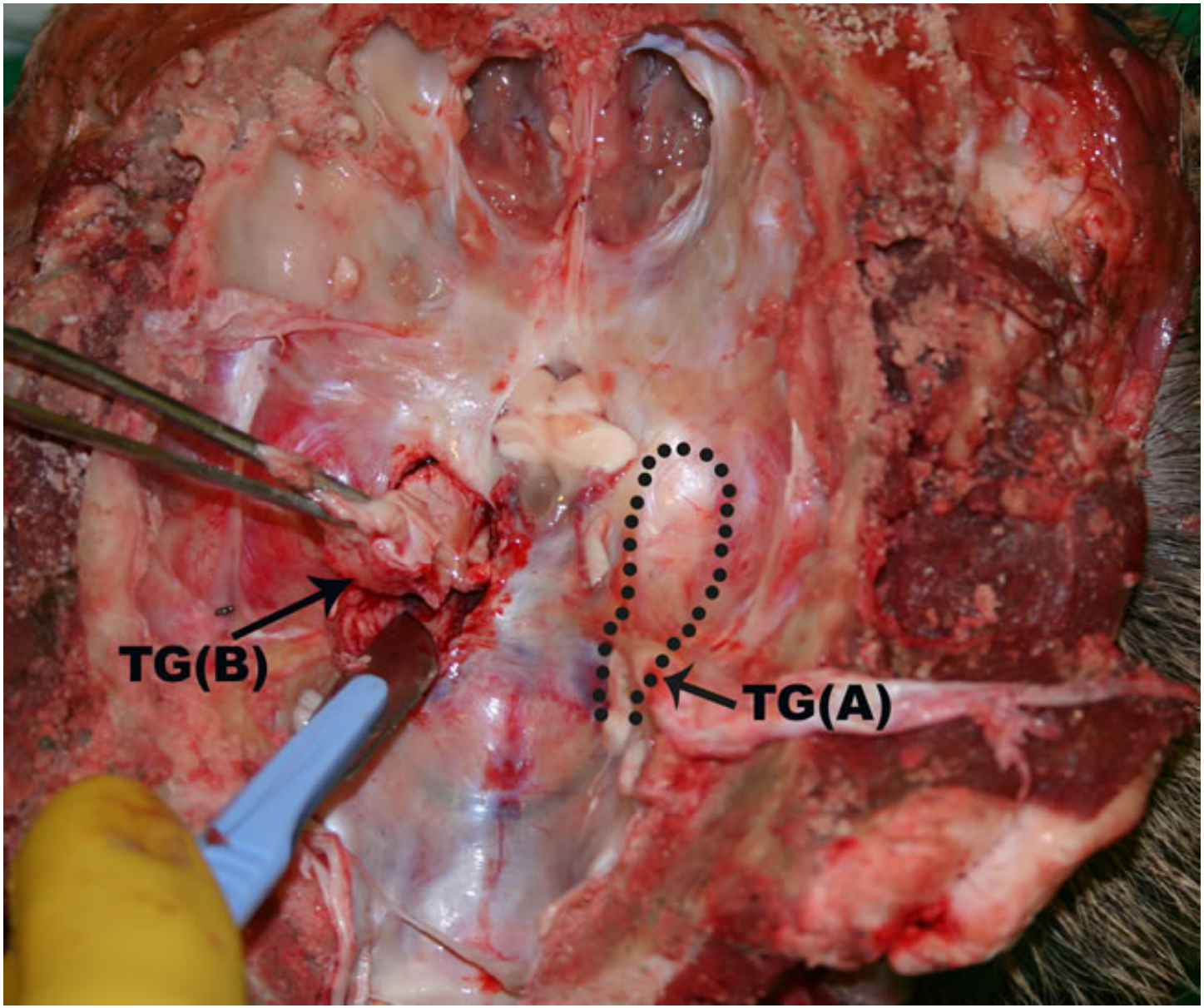
Transverse sections

- C1 (from medulla)
- C3
- C7
- T7
- lumbosacral

NOTE that the remaining segments can be easily distinguished and re-oriented for further sampling if required



Trigeminal ganglion sampling



Retain frozen tissue
Particularly if infectious or toxic aetiology suspected

Ensure appropriate safety precautions are observed

Possible samples

- Rostral cerebral cortex (after weighing brain, or weigh sample)
- Cerebellar hemisphere (after weighing brain, or weigh sample)
- Trigeminal ganglion
- Cervical spinal cord