Tips for Neuropathology

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1. *General expectations of the rotation:* There will be a lot of self-directed learning in this rotation. For context, I spent 5-6 hours each day reading and studying. As a medical student, I did not contribute at all to the service—this is OK, the expectation is that you show up, ask questions, and learn.
2. *Tips to do well/honour the rotation:* There are minimal expectations of a medical student. Things that will earn you brownie points include reading up on neuroanatomy and patient history, especially before brain dissection days. Other things include being a nice human being, be engaged, communicate clearly, and show interest.
    a. The highest yield thing for brain cuts in terms of patient profile is to read the anatomic pathology report if available. It usually contains all you need to know, especially if you're running short on time.
    b. Make sure you go out of your way to chat with your preceptors for teaching sessions. I got the most out of it when I had specific topics or slides I wanted to see, e.g., learning to interpret slides on primary brain tumours.
    c. It's ok to get questions wrong but learn from it for next time you get asked.
3. High yield topics:
    a. High yield things preceptors ask you during brain cuts include the function and location of the **primary visual cortex, basal ganglia, mammillary bodies, hippocampus, lateral geniculate nucleus, cerebral and cerebellar peduncles, substantia nigra**. Other high yield items include structures of the limbic system (Papez circuit), hypothalamus, anterior commissure, ventricular system, amygdala, subthalamic nucleus, midbrain / pons / medulla, red nucleus, locus coeruleus, decussation of the superior cerebellar peduncle, inferior olivary nucleus, dentate nucleus, cerebellar vermis, tectum, tegmentum, periaqueductal grey, key landmarks to differentiate C/T/L/S spine sections.
    b. Know that cerebrum is usually cut coronally and brainstem is usually cut axially (or radially).
    c. Common stains: H&E, LFB, cytokeratin, S100, reticulin, desmin, trichrome.
    d. Primary brain tumours. Characteristics of metastatic tumours.
4. If you're asked to interpret slides, a general approach includes:
    a. Extraaxial vs intraaxial -> tissue involvement (WM vs GM) -> growth pattern -> low power features -> cell cytology -> pure description, diagnostic features -> +ves then -ves -> histo stains -> immuno -> molecular ± EM (EM b4 molecular)
    b. Have a diagnosis and differential. Go through stains you would like to order as well as things to check on sequencing, e.g., IDH1 and 1p/19q status with oligodendrogliomas.