

Case 1. Tissue from a cat.

**MICROSCOPIC DESCRIPTION:** Cerebrum at level of adenohypophysis **(1 pt)**: Effacing and markedly expanding one hemisphere **(1 pt)** is a mildly infiltrative, poorly demarcated, unencapsulated, moderately cellular, multicystic neoplasm **(2 pt)**. The neoplasm is composed of nests and packets **(2pt)** of polygonal **(1 pt)** cells on a fine fibrovascular stroma **(1 pt)**, however, in some regions, neoplastic cells palisade in long rows “tiger stripes”. Neoplastic cells have distinct cell borders **(1 pt)** with a moderate amount of a finely granular eosinophilic cytoplasm **(1 pt)**, and rarely, have large hyaline pink granules in their cytoplasm (“gliofibrillary oligodendocytes”). Nuclei are irregularly round and often hyperchromatic **(1 pt)**, with moderate anisokaryosis **(1 pt)**; larger nuclei exhibit finely clumped chromatin and one small eosinophilic nucleolus. Mitoses are rare. **(1 pt)** Cellular density is highest in central parts of the neoplasm and here are multiple large areas of necrosis and dropout **(1 pt)**. Scattered throughout the neoplasms are rare small aggregates of mineral (microcalcifications). In the adjacent white matter, there is mild spongiosis, rare dilated axons (spheroids) and Gitter cells. **(1 pt.)**

**MORPHOLOGIC DIAGNOSIS:** Cerebrum at level of midbrain: Oligodendroglioma **(4 pt)**

**O/C:** **(1 pt)**

Case 2. Tissue from a horse.

**MICROSCOPIC DESCRIPTION:** Bone: Effacing this section of bone, there is an unencapsulated, infiltrative, moderately and variably dense, well-demarcated, multilobular neoplasm **(2pt)**. Neoplastic cells are arranged in vague streams and bundles **(1pt)** with rosettes **(1pt)** and pseudorosettes **(1pt)**, on a moderate fibrovascular stroma **(1pt)**. Cells are polygonal **(1pt)** with indistinct cell borders and a moderate amount of finely vacuolated eosinophilic cytoplasm **(1pt)**. Nuclei are irregularly round to oval with finely stippled chromatin and one to two small eosinophilic nucleoli **(1pt)**. There is mild anisokaryosis **(1pt)**. Mitoses are rare **(1pt)**. Rosettes surround both a finely fibrillar eosinophilic fibrillar matrix **(1pt)** (Homer-Wright) or have an empty lumen (Flexner-Wintersteiner) or a single capillary (pseudorosette). Throughout the neoplasm, and the adventitia surrounding vessels is thickened and hyalinized. There are large areas of necrosis **(1pt)** and hemorrhage (admixed with hemosiderin-laden macrophages scattered throughout the neoplasm. There are trabeculae of woven bone **(1pt)** radiating off of remaining unresorbed fragments of lamellar bone.

**MORPHOLOGIC DIAGNOSIS:** Bone: Primitive neuroectodermal tumor. **(5 pt)**

O/C: **(1pt)**

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Case 3. Tissue from a sheep.

**MICROSCOPIC DESCRIPTION:** Cerebrum: Within the superficial cortex, affecting both the grey and underlying white matter, there are bilateral **(1pt)** but asymmetrical areas of cavitation (liquefactive) **(1pt)** necrosis **(1pt)** which measure up to a centimeter in diameter. Areas of cavitation are often traversed by small anastomosing trabeculae of hypercellular perivascular neuropil **(1pt)**. The surrounding neuropil is loosely arranged, often with prominent small vacuoles (spongiosis) **(1pt)** and is markedly hypercellular with numerous macrophages **(1pt)** which are often foamy (Gitter cells) **(1pt)**, astrocytes **(1pt)**, fewer lymphocytes, and increased numbers of microglial cells (gliosis) **(1pt)** within the neuropil. Scattered throughout this area, neurons are markedly decreased in number, and remaining neurons are often dark and angular (necrosis) **(1pt)**, and are occasionally surrounded by two to four lymphocytes (satellitosis). There are numerous dilated axons (spheroids) **(1pt)** in the underlying white matter, and some scattered throughout the grey matter as well. There are scattered small aggregates of crystalline mineral measuring up to 25um in diameter throughout the neuropil **(1pt)** (ferrugination). There is a prominent band of proliferating blood vessels within the superficial grey matter oriented parallel to the overlying meninges **(1 pt.)** The overlying meninges, as well as Virchow-Robins spaces within the neuropil is moderately expanded by edema as well as large numbers of histiocytes, with fewer lymphocytes and rare plasma cells **(1pt)**. The endothelium lining blood vessels is markedly hypertrophied (reactive endothelium).

**MORPHOLOGIC DIAGNOSIS:** Cerebrum: Necrosis, bilateral, focally extensive, with marked gliosis, mineralization, spheroid formation, and lymphohistiocytic meningitis. **(3pt)**

**CAUSE:** Ovine bunyavirus (Schmallenberg virus) **(2pt)**

**O/C: (1pt)**

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Case 4. Tissue from a sheep.

(This isn't a great descriptive slide and tough to assign 20 points. Plus, there is a lot of artifact within the white matter, resembling edema.)

**MICROSCOPIC DESCRIPTION:** Cerebrum, frontal lobes: Diffusely, neuronal axons **(3pt)** within the cerebrum contains 10-20 um diameter **(3pt)** round to oblong, often bulbous structures with a blue-gray, finely granular core **(3pt)** surrounded by a 2-4 um wide light amphophilic, finely granular zone and further outlined by a 1um thin zone of eosinophilic material (peripheralized axoplasm) **(3pt)**. There is a mild diffuse increase in glial cells throughout the section **(3pt)**. Rarely, the basement membrane of small vessels is mineralized.

**MORPHOLOGIC DIAGNOSIS:** Cerebrum, frontal lobes: Polyglucosan bodies, numerous. **(4pt)**

**O/C: (1pt)**