

Case 1. Tissue from a dog.

MICROSCOPIC DIAGNOSIS: Liver: At one edge of the section is a 1.5 cm nodular, infiltrative, well-demarcated, unencapsulated densely cellular neoplasm **(1pt.)**. The neoplasm is composed of large numbers of neoplastic lymphocytes **(1pt.)** which are arranged in sheets **(1pt.)** on pre-existent stroma, and are partially surrounded by a compression capsule of hepatic stroma. **(1pt.)** Neoplastic lymphocytes have distinct cell borders, are 1.5x the diameter of RBC **(1pt.)**, and have a small amount of granular eosinophilic cytoplasm (with an approximately 3:1 N/C ratio **(1pt.)**). Nuclei are irregularly round with coarsely clumped chromatin and inapparent nucleoli with mild anisokaryosis. **(1pt.)** Mitoses average 1 per 2.37mm². **(1pt.)** Scattered through the neoplasm are numerous megakaryocytes. **(1pt.)** Autolysis has resulted in hyperchromatic and partially fragmented nuclei in both populations of cells. There is multifocal hemorrhage and areas of necrosis scattered throughout the neoplasm. **(1pt.)** Within the adjacent liver, there is extensive necrosis and loss of centrilobular hepatocytes **(1pt.)** and occasionally bridging central-central fibrosis with loosely arranged collagen and plump fibroblasts. **(1pt.)** Within centrilobular areas, there are multifocal areas of moderate hemorrhage, and numerous hemosiderin-laden macrophages. **(1pt.)** There are also infiltrates of small to moderate numbers of neoplastic lymphocytes within effaced centrilobular areas. Portal areas are often expanded by low to moderate numbers of neoplastic lymphocytes, **(1pt.)** often adjacent to markedly congested vessels, as well as moderate dilation of portal lymphatics (edema) and low to moderate numbers of hemosiderin laden macrophages. The hepatic capsule is undulant with loss of subcapsular hepatocytes, dilation of subcapsular lymphatics, and fibrosis, which connects with deeper centrilobular areas. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Liver: B cell lymphoma (malignant plasma cell tumor), nodular, small cell, low grade **(4pt.)**

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

Case 2. Tissue from a dog.

MICROSCOPIC DIAGNOSIS: Haired skin: Within the superficial dermis and extending into the underlying panniculus **(1pt.)**, there is a .75cm well-demarcated, unencapsulated, moderately cellular, nodular infiltrative neoplasm **(2pt.)**. The neoplasm is composed of sheets **(1pt.)** of neoplastic lymphocytes **(1pt.)** on a pre-existent stroma **(1pt.)**. Neoplastic cells are up to 4x the diameter of an erythrocyte **(1pt.)** (large cell) .have indistinct cell borders with small amounts of homogenous eosinophilic cytoplasm **(1pt.)**. Nuclear cytoplasmic ratio is 5:1 or greater **(1pt.)** – nuclei are irregularly round with coarsely clumped chromatin and 1-2 large eosinophilic nucleoli. **(1pt.)** There is moderate anisocytosis and anisokaryosis. **(1pt.)** Mitotic figures average 30 per 2.37mm². **(1pt.)** Neoplastic cells exhibit profound erythrophagocytosis **(1pt.)** with up to 2-6 non-degenerated erythrocytes within neoplastic cells. Neoplastic cells are present in perivascular areas within the adjacent dermis and panniculus, as well as distending adjacent lymphatics. **(1pt.)** The overlying dermis is edematous and contains scattered neoplastic cells. **(1pt.)** The epidermis is thrown into few and irregularly spaced papillary projections with minimal orthokeratotic hyperkeratosis. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Haired skin: B-cell (plasmablastic) lymphoma, **(1pt.)** non-epitheliotropic, large cell **(1pt.)**, high grade **(1pt.)** with prominent erythrophagocytosis. **(1pt.)**

O/C: (1pt.)

Case 3. Tissue from a dog.

MICROSCOPIC DIAGNOSIS: Cerebrum **(1pt.)**: At one edge of the section, communicating with the meninges **(1pt.)**, there is a focal, well-demarcated, mildly infiltrative, moderately cellular, nodular 1cm neoplasm. **(2pt.)** The neoplasm is composed of round cells **(1pt.)** arranged in sheets **(1pt.)** on a pre-existent stroma **(1pt.)**. Neoplastic cells have indistinct cell borders with small to moderate amounts of finely granular eosinophilic cytoplasm. **(1pt.)** Nuclei are irregularly round with coarsely clumped chromatin and 1-2 large basophilic nucleoli. **(1pt.)** Anisocytosis and anisokaryosis are marked, **(1pt.)** and there are numerous bi- and multinucleated cells. **(1pt.)** Mitoses average 2-3/2.37mm² field. **(1pt.)** Vessels throughout the neoplasm and in the adjacent parenchyma are congested and lined by hypertrophic endothelium. The adjacent parenchyma exhibits mild spongiosis and gliosis. **(1pt.)** Neoplastic cells extend into and expand the adjacent meninges, **(1pt.)** as well as Virchow-Robins' spaces locally. In more peripheral areas of the meninges, rare neoplastic cells are mixed with macrophages, lymphocytes, and plasma cells. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Cerebrum: Histiocytic sarcoma **(4pt.)**

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

Case 4. Tissue from a horse.

MICROSCOPIC DESCRIPTION: Liver: Scattered throughout the sinusoids and often associated with areas of congestion are moderate numbers of large neoplastic lymphocytes **(1pt)** which range up to 45um in diameter **(1pt)**. Neoplastic cells are present within the sinusoids and do not aggregate **(1pt)**, and have distinct cell borders with variable amounts of lightly vacuolated amphophilic to basophilic cytoplasm **(1pt)**. Nuclei are irregularly round, often indented on multiple sides **(1pt)**, and have coarsely clumped chromatin. Nuclei are often pleomorphic **(1pt)** with karyomegaly and multilobulated **(1pt)** and multinucleated **(1pt)** forms are common. Rare mitoses are present within circulating neoplastic round cells. **(1pt)** These cells often contain one or more red blood cells within their cytoplasm (erythrophagocytosis). **(1pt)** There are multifocal areas of hemorrhage within the parenchyma which contain numerous neoplastic lymphocytes; and similar cells are populous within all vessels. **(1pt)**

Lung (poorly preserved): Neoplastic and erythrophagocytic lymphocytes as previously described are present in moderate numbers within alveolar septa **(1pt)** , but are decreased in numbers in small arterioles and rarely seen in larger vessels. There is multifocal congestion scattered through the section, and scattered fibrin thrombi **(1pt)** within alveolar capillaries. There is patchy alveolar edema and hemorrhage and mildly increased numbers of alveolar macrophages which occasionally have intracytoplasmic hemosiderin pigment. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Lung, liver: Intravascular lymphoma. **(4pt)**

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