

Case 1 – Tissue from an owl.

MICROSCOPIC DESCRIPTION: Liver (there is mild autolysis): Throughout the section there are multifocal to coalescing randomly scattered areas of necrosis **(2pt)**, often coagulative **(2pt)**. Within these areas, hepatocytes are often intact and swollen, obliterating sinusoids, with a diffuse loss of differential staining and nuclei. **(2pt)** In other areas of necrosis, hepatocytes are shrunken or fragmented and hypereosinophilic with rrehectic nuclear remnants. **(2pt)** There are small amount of cellular debris admixed within these areas. **(1pt)** At the periphery of necrotic areas, hepatocyte nuclei are swollen with peripheralized chromatin **(1pt)** and contain a single eosinophilic irregularly round viral inclusion often surrounded by a clear halo. **(2pt)** There are large colonies of bacilli **(1pt)** scattered throughout the section which are surrounded by hypereosophilic hepatocytes, but there is no reaction to their presence.

MORPHOLOGIC DIAGNOSIS: Liver: Hepatitis, necrotizing **(1pt)**, random **(1pt)**, multifocal to coalescing, moderate, with numerous intranuclear viral inclusions **(1pt)**

Name the disease: Columbid herpesvirus **(2pt)**

Name the likely source: Pigeon **(1pt)**

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

Case 2 – Tissue from a flamingo.

MICROSCOPIC DESCRIPTION: Non-feathered skin: **(1pt)** The epidermis is focally and markedly thickened **(1pt)** by extensive areas of hyperplasia **(1pt)** forming long fronds up to a centimeter in length. **(1pt)** There is marked thickening of the stratum spinosum **(1pt)** with markedly swollen keratinocytes (ballooning degeneration) **(1pt)** containing a 15-30 um **(1pt)** eosinophilic intracytoplasmic viral inclusion body **(1pt)** (Bollinger body). Centrally within the fronds are large areas of coagulative necrosis **(1pt)** characterized by retention of tissue architecture, loss of differential staining, small amounts of karyorrhectic and cellular debris, with as well as areas of dropout. The intervening and subjacent dermis is markedly edematous, congested, and hemorrhagic, **(1pt)** contain small numbers of heterophils, and subjacent to the mass, there are proliferating fibroblasts and small caliber vessels. **(1pt)** Dermal vessels often contain fibrinocellular thrombi. The surface and periphery of the proliferating are ulcerated and often replaced by a bright eosinophilic coagulum of hemorrhage, fibrin, cellular debris, and occasional bacterial colonies. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Non-feathered skin: Dermatitis, necrotizing **(1pt)** and proliferative **(1pt)** , focally extensive, severe, with ballooning degeneration **(1pt)** , and eosinophilic intracytoplasmic viral inclusion bodies. **(1pt)**

CAUSE: Avian poxvirus **(3pt)**

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

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Case 3 – Tissue from a macaque.

MICROSCOPIC DESCRIPTION: Pancreas **(1pt)**: There is multifocal to coalescing necrosis**(1pt)** of the pancreas ranging from coagulative to lytic, which encompasses up to 95% of the parenchyma. **(1pt)** In areas of coagulative **(1pt)** necrosis, acinar tissue retains architecture but loses differential staining with a mildly edematous stroma and small amount of cellular debris. In other areas, lytic **(1pt)** necrosis is characterized by total loss of parenchyma and replacement by numerous viable and degenerate neutrophils admixed with abundant cellular debris. In areas adjacent to cellular debris, remaining acinar cells shrunken and often contain vacuolated cytoplasm **(1pt)**, and a decreased number of zymogen granules. (degeneration) **(1pt)** Numerous degenerating acinar cells have nuclei which are swollen and filled with an eosinophilic homogenous viral inclusion which peripheralizes the chromatin. **(2pt)** Massive numbers of largely degenerate neutrophils and accompanying cellular debris, hemorrhage, fibrin, and edema infiltrate necrotic parenchyma **(1pt)** as well as extend into surrounding pancreatic stroma and adjacent mesenteric fat. Pancreatic ducts are intact, but often contain a small to moderate amounts of viable and degenerate neutrophils, cellular debris, and fibrin. Occasionally, ductal epithelial nuclei contain intranuclear inclusions as well. There is multifocal thrombosis of pancreatic vessels. **(1pt)** Rare areas of viable acinar tissue is composed of cells with markedly reduced amounts of zymogen granules (atrophy) **(1pt)**. Within the adjacent mesenteric fat, there are medium number of neutrophils and macrophages, marked edema, lymphatic dilation, along with hemorrhage and polymerized fibrin, and occasional saponification. **(1pt)** At the edges of the section, the mesentery is markedly hemorrhagic with large mats of fibrin, infiltrating inflammatory cells, and proliferating fibroblasts. There is moderate medullary histiocytosis of the adjacent lymph node, infiltration of low numbers of inflammatory cells, and reactive high venous endothelium.

MORPHOLOGIC DIAGNOSIS: Pancreas: Pancreatitis **(1pt)**, necrotizing **(1pt)**, diffuse, severe, with mild necrotizing steatitis and numerous intranuclear viral inclusions **(1pt)**.

Cause: Simian adenovirus 23 **(2pt)**

Name an associated condition: SIV **(1pt)**

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

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Case 4 – Tissue from a sheep.

MICROSCOPIC DESCRIPTION: Lung: Multifocally arising from the alveolar epithelium, replacing 50% of pulmonary parenchyma **(1pt.)** and compressing adjacent alveoli are numerous nodular, unencapsulated, well-demarcated, moderately cellular expansile neoplastic foci ranging up to 5mm. **(2pt.)** Neoplasms are composed of one or more layers of cuboidal to columnar epithelial cells **(1pt.)** which form acinar or papillary projections into alveolar lumina **(1pt.)** and are supported by a fine fibrovascular stroma. **(1pt.)** Neoplastic cells have distinct cell borders, a moderate amount of finely granular, occasionally vacuolated amphophilic to lightly eosinophilic cytoplasm **(1pt.)**, and round to oval nuclei with finely-stippled chromatin, and 1-3 variably distinct nucleoli. **(1pt.)** The mitotic rate is less than 1 per 10 HPF. **(1pt.)** There are small foci of necrosis and hemorrhage within several of the nodules **(1pt.)**, and the stroma of the neoplasms is often infiltrated by low numbers of lymphocytes, plasma cells, macrophages and neutrophils. **(1pt.)** Multifocally, alveolar septa adjacent to neoplastic nodules are mildly expanded by the previously-described inflammatory cells. **(1pt.)** Multifocally, alveolar and bronchiolar lumina adjacent to neoplastic nodules contain variable combinations and concentrations of degenerate and nondegenerate neutrophils, foamy alveolar macrophages, fibrin, and edema. **(1pt.)** The pleura is moderately expanded by increased clear space and ectatic lymphatics (edema) and scattered previously-described inflammatory cells. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Lung: Pulmonary adenocarcinoma **(3pt.)**

CAUSE: *Betaretrovirus* (Jaagsiekte sheep retrovirus [JSRV]) **(2pt.)**

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