

Case 1 – Tissue from a green tree python.

MICROSCOPIC DESCRIPTION: Lung**(1pt)**: Faveolar septa are markedly expanded up to 300um. **(1pt)**There is marked diffuse disorganized **(1pt)** hyperplasia **(1pt)** of faveolar epithelium which is up to five cell layers thick. Hyperplastic epithelial cells are often swollen, with abundant intracytoplasmic edema **(1pt)**, and occasionally are eosinophilic, shrunken, with pyknotic or karyorrhectic nuclei (necrosis) **(1pt)**. There is infiltration of the faveolar epithelium with low numbers of heterophils. **(1pt)** There is also type II pneumocyte hyperplasia at the depths of the faveolar crypts **(1pt)**, with multifocal necrosis **(1pt)**, and attenuation of adjacent pneumocytes to cover defects **(1pt)**. The faveolar septa are diffusely congested and edematous **(1pt)**, with multifocal hemorrhage and infiltration of moderate numbers of heterophils **(1pt)**, macrophages, lymphocytes and fewer plasma cells **(1pt)**. The airway space between faveoli contains abundant edema fluid, mucus, sloughed and necrotic epithelium, as well as numerous degenerate heterophils admixed with abundant cellular debris. **(2pt)**

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, interstitial **(1pt)**, proliferative **(1pt)** and heterophilic **(1pt)**, diffuse, severe.

CAUSE: Ball python nidovirus **(2pt)**

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

Case 2 – Tissue from an alpaca.

MICROSCOPIC DESCRIPTION: Small intestine: Within the section, crypt epithelium contains multiple forms of an apicomplexan parasite; schizonts **(1pt)**, gamonts **(1pt)**, and oocysts **(1pt)** are all represented. Developing schizonts measure up to 90um and a 4-5 thick wall and a central mass of numerous basophilic zoites **(2pt)**. Developing microgamonts range up to 175um also with a 4-5um hyaline wall and zoites which are deeply basophilic and oriented serpentine or circular arrangements **(2pt)**, often with deeply basophilic round concretions (wall-forming bodies) within the cytoplasm. **(1pt)** 50um oocysts are present within crypt epithelium **(1pt)** or free in the lumen with a 6-8um deeply basophilic wall, a visible micropyle and micropylar cap and basophilic granular cytoplasm. **(2pt)** The intestinal epithelium is moderately hyperplastic with numerous mitotic figures which range 2/3 of the way up the villi. **(1pt)** The lamina propria is markedly expanded by large numbers of lymphocytes **(1pt)**, plasma cells **(1pt)**, and fewer macrophages.

MORPHOLOGIC DIAGNOSIS: Small intestine: Enteritis, lymphoplasmacytic **(1pt)**, diffuse, moderate, with mild crypt hyperplasia **(1pt)** and numerous intraepithelial schizonts, gamonts and oocysts **(1pt)**.

CAUSE: Eimeria macusaniensis **(2pt)**

O/C: (1pt)

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Case 3 – Tissue from a macaque.

MICROSCOPIC DESCRIPTION: Adrenal gland: Approximately 60% of the gland, to include all levels of the cortex and the medulla are effaced by large areas of lytic necrosis **(1pt)** which is infiltrated by large numbers of viable and degenerate neutrophils **(1pt)** and epithelioid macrophages **(1pt)**, throughout which are scattered fewer foreign body-type multinucleated macrophages **(1pt)** and lymphocytes, which are all separated and surrounded by abundant necrotic cells, and eosinophilic and granular cellular debris. **(1pt)** Areas of inflammation also contain proliferating vessels and areas of hemorrhage. Within the cytoplasm of macrophages, multinucleated cells, rare neutrophils and also extracellularly, are moderate numbers of 3-6 diameter **(1pt)** yeasts **(2pt)** which range from and are variably round to ellipsoid. **(1pt)** Remaining cells of the adrenal cortex are either compressed and atrophic, or occasionally swollen with numerous intracytoplasmic lipid droplets. **(1pt)** The adrenal capsule is congested and multifocally infiltrated by low to moderate numbers of lymphocytes. There is atrophy of periadrenal fat.

Cerebrum (section of diencephalon at the level of the hippocampus): There are several randomly scattered foci of inflammation **(1pt)** composed of epithelioid macrophages and fewer neutrophils and multinucleated foreign-body type giant cells admixed with moderate amounts of cellular debris, hemorrhage, fibrin, and edema. Surrounding neuropil contains moderately increased numbers of microglia and mild astrocytosis. **(1pt)** One focus of inflammation extends along the internal capsule. Within these areas, macrophages also contain yeasts as described above.

MORPHOLOGIC DIAGNOSIS: 1. Adrenal gland: Adrenalitis, necrotizing and pyogranulomatous, multifocal to coalescing, severe, with numerous intra- and extracellular yeasts. **(3pt)**

2. Diencephalon: Encephalitis, pyogranulomatous, multifocal, moderate, with rare intracellular yeasts. **(2pt)**

CAUSE: Sporothrix schenckii (Histoplasma capsulatum OK) **(2pt)**

O/C: (1pt)

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Case 4 – Tissue from an African green monkey.

MICROSCOPIC DESCRIPTION: Testis: Within the fused vaginal tunics **(2pt.)**, there are four cross and tangential sections of an adult acanthocephalid **(2 pt.)** with a diameter of up to 2mm **(2pt.)**, characterized by a thin outer cuticle **(2pt.)** and a thick hypodermis **(2pt.)** (up to 125 um) composed of a cross and longitudinally arranged layers of muscle containing lacunae **(1pt.)**, outer circular and inner longitudinal muscle layers **(2pt.)**, and a pseudocoelom containing lemnisci with compressor muscles **(1pt.)** . One section contains a retracted proboscis and spines. **(2pt.)**

MORPHOLOGIC DIAGNOSIS: Testis, vaginal tunics: Multiple adult acanthocephalids **(3pt.)**

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