WSC 2018-2019 Conference 19
Case 1. Tissue from a soft-shelled turtle.

MICROSCOPIC DESCRIPTION: Heart, ventricular **(2pt.)** myocardium. Scattered throughout the spongy myocardium are numerous trematode **(2pt.)** eggs **(2pt.)** ranging from 10-14um in length with a 2um thick brown shell **(1pt.)** with a flattened end **(1pt.)**, a lateral-projecting spine **(1pt.)** and an enclosed miracidium **(2pt.)**. These eggs are often surrounded by one or more multinucleated giant cell macrophages **(2pt.)** and epithelioid macrophages. Trematode eggs are present solely within the lumina of myocardial capillaries **(1pt.)**. Cardiomyocytes adjacent to these poorly formed granulomas are often swollen, hyalinized, and there is loss of cross striations **(1pt.)** (degeneration) **(1pt.)**.

MOROPHOLOGIC DIAGNOSIS: Heart, ventricular myocardium: Trematode eggs **(1pt.)**, intravascular and intrahistiocytic **(1pt.)**, with mild multifocal cardiomyocyte degeneration.

CAUSE: Any genus of Spirorchid trematode is fine (I like *Learedius learedi* – it's very Shakespearian) **(1pt.)**

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

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Case 2. Tissue from a leopard tortoise.

MICROSCOPIC DESCRIPTION: Colon **(1pt.)** : Approximately 80% of colonic glands are expanded, filled with mucin and inflammatory debris consisting of numerous heterophils, hemorrhage, fibrin, and abundant mucin, and the mucosa is segmentally replaced by a brightly eosinophilic necrotic coagulum **(1pt.)** which is composed of abundant karyorrhectic cellular debris, hemorrhage **(1pt.)**, fibrin, edema, bacterial colonies **(1pt.)** yeasts and pseudohyphae, and numerous heterophils **(1pt.)** with rare multinucleated macrophages. Scattered throughout the coagulum are moderate numbers of 20-30um **(1pt.)** amebic trophozoites **(2pt.)**, with amphophilic smudgy cytoplasm, occasional cytoplasmic vacuoles, and nucleus with a single prominent nucleolus (endosome) **(2pt.)**. The inflammation, necrosis, and trophozoites multifocally extend into the underlying submucosa **(1pt.)** and rarely muscularis; the submucosa is diffusely and markedly edematous and infiltrated by moderate numbers of heterophils and macrophages. **(1pt.)** Submucosal vessels are congested and occasionally contain non-occlusive fibrin thrombi. **(1pt.)** Multifocally and randomly, mucosal epithelial cell nuclei contain variable numbers of eosinophilic zoites **(1pt.)** which measure 1x3um , and rare megaschizonts are present.

MORPHOLOGIC DIAGNOSIS: Colon: Colon: Colitis, necrotizing **(1pt.)**, multifocal to coalescing, subacute, severe with numerous amebic trophozoites **(1pt.)**, and intranuclear apicomplexan zoites and schizonts. **(1pt.)**

CAUSE: *Entamoeba invadens* **(1pt.)** Intranuclear coccidia **(1pt.)** (*Cyclospora* sp.)

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

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Case 3. Tissue from a tiger.

(There is some variability within submitted slides).

MICROSCOPIC DESCRIPTION: Lung: There is diffuse inflammation centered both on airways and affecting the interlobular septa. Airways are expanded filled with neutrophils **(1pt.)** admixed with innumerable viable and degenerate neutrophils, cellular debris, and multifocal colonies of loosely arranged 2-3um bacilli. Lining epithelium is attenuated, cuboidal, deciliated, and multifocally necrotic and sloughed into the lumen. **(1pt.)** There is marked expansion of smooth muscle surrounding airways of all sizes. **(1pt.)** There are moderate numbers of lymphocytes and plasma cells, as well as macrophages containing anthracotic pigments in the peribronchial fibrous connective tissue. Alveoli are filled **(1pt.)** with large numbers of macrophages (often debris-laden) and viable and degenerate neutrophils, rare eosinophils, admixed with small amounts of hemorrhage and fibrin **(1pt.)**. Alveolar septa are markedly expanded by variable combinations and concentrations of congestion, edema, circulating and emigrating neutrophils and macrophages, collagen, and there are multifocal fibrin thrombi. **(1pt.)** Alveolar septa are often lined by Type II pneumocytes. **(1pt.)** Multifocally, type II pneumocytes contain 2-6um round to irregular eosinophilic cytoplasmic viral inclusions. **(1pt.)** Similar inclusions are present within airway epithelium **(1pt.)**, and rarely within alveolar macrophages. Rarely, epithelial cells contain 2-5 um eosinophilic viral inclusions which peripheralize chromatin. There are rare multinucleated Type II pneumocytes (viral syncytia). There are multifocal areas of coagulative septal necrosis **(1pt.)**, as well as disordered and extensive fibrosis with plump fibroblasts. **(1pt.)** Primarily associated with these areas, but also scattered throughout the remainder of the section, macrophages and type II pneumocytes contain 6-8um apicomplexan intracytoplasmic cysts **(1pt.)** containing numerous 2-3um zoites. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, bronchointerstitial **(1pt.)**, necrotizing **(1pt.)** and fibrinosuppurative **(1pt.),** diffuse, severe, with numerous intraepithelial intracytoplasmic and intranuclear viral inclusions **(1pt.),** viral syncytia and intraepithelial and intrahistiocytic apicomplexan zoites. **(1pt.)**

CAUSE: Canine morbillivirus **(1pt.)** and *Toxoplasma gondii* **(1pt.)**

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Case 4. Tissue from an American paddlefish.

MICROSCOPIC DESCRIPTION**:** Stomach **(1pt.)** Multifocally within the intestinal wall, there are multiple granulomas **(1pt.)** which are centered on cross and tangential sections of 400um **(1pt.)** wide larval **(2pt.)** ascarids **(1pt.)** with a smooth cuticle, a pseudocoelom, polymyarian coelomyarian musculature **(1pt.)** , butterfly-shaped lateral cords **(1pt.)** with associated excretory cells, a triradiate esophagus with eosinophilic glandular cells, a large gastrointestinal tract with uninucleate columnar epithelium with a low brush borders **(1pt.)** and a large glandular cecum. The nematodes are immediately surrounded by variable, often large numbers of macrophages **(1pt.)** and eosinophilic granulocytes **(1pt.)** , erythrocytes, small amounts of fibrin, and cellular debris. Peripheral to this are moderate numbers of epithelioid macrophages, fewer lymphocytes proliferating endothelial cells and fibroblasts, and peripheral to this, dense hyaline collagen **(1pt.)** throughout which is interspersed large numbers of lymphocytes and plasma cells **(1pt.)** and fewer eosinophilic granulocytes and rare hemosiderin-laden macrophages. Granulomas extend transmurally to the serosa. The submucosa is diffusely fibrotic as well, with infiltrates of moderate numbers of granulocytes, lymphocytes, and plasma cells with also extend in lesser numbers into the lamina propria. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Stomach, muscularis and serosa: Granulomas **(1pt.)** , numerous with larval ascarids **(1pt.)** and mild chronic granulocytic and lymphoplasmacytic gastritis **(1pt.)**

CAUSE: Any species of Anisakidae **(2pt.)** (*Hysterothylacium dollfusi)*

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