

Case 1. Tissue from an alligator.

**MICROSCOPIC DESCRIPTION:** Lung: Within the approximately 10% of the section which is viable **(1pt.)**, the connective tissue stroma and faveolae **(1pt.)** are moderately expanded by edema **(1pt.)**, moderate numbers of lymphocytes**(1pt.)**, histiocytes **(1pt.)**, and plasma cells **(1pt.)**, and fewer heterophils admixed with small amounts of cellular debris and hemorrhage. There are multifocal areas of bronchiolar epithelial necrosis **(1pt.)**, which is replaced by moderate to large numbers of degenerate heterophils **(1pt.)** and fewer histiocytes, admixed with cellular debris and numerous cross and tangential profiles of a 2-4um **(1pt.)** septate fungal hyphae **(1pt.)** with non-parallel walls and non-dichotomous acute angle branching **(1pt.)**. There are numerous conidiophores budding off of the hyphae. Areas of necrosis extend down into the connective tissue stroma. Airways are multifocally filled with edema fluid and small amounts of hemorrhage. **(1pt.)** There is diffuse congestion of parenchymal capillaries. The remainder of the section exhibits diffuse coagulative necrosis **(1pt.)** with eosinophilia, loss of differential staining and maintenance of architecture. There is diffuse proliferation of fungal elements **(1pt.)** within both the airways, where they form dense mats at the air-tissue interface, as well as in the underlying connective tissue. Within the necrotic areas, fungal hyphae are encased in a 2-3um layer of bright pink material (fibrin) **(1pt.)**. Within the necrotic area, fungal hyphae are encased in mats of robust basophilic bacilli. There is abundant fibrin and edema along the pleural surface.

**MORPHOLOGIC DIAGNOSIS:** Lung: Pneumonia, bronchointerstitial **(1pt.)**, necrotizing **(1pt.)**, multifocal to coalescing, severe, with innumerable fungal hyphae and bacteria. **(1pt.)**

**CAUSE:** Any fungus in the Aspergillaceae **(1pt.)** \*Just no zygomycetes\* (Actually *Beauveria bassianum*, but this isn't a mycology test.)

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

Case 2. Tissue from a snake.

**MICROSCOPIC DESCRIPTION:** Cross section of head of internal choanae: The oral mucosa and submucosa is effaced by a dense, irregular proliferation of granulation tissue **(1pt.)** which contains large numbers of macrophages **(1pt.)** in sheets with fewer heterophils **(1pt.)** (occasionally in small aggregates), lymphocytes and plasma cells admixed with abundant cellular debris and multifocal hemorrhage, which invades and replaces alveolar bone and teeth, and palatine bone and cartilage **(1pt.)** and abuts the lower aspect of the turbinate bones **(1pt.)**. The ventral aspects of turbinate bones is scalloped and eroded and there are focal areas of proliferating woven bone scattered through this area. **(1pt.)** At the periphery of the oral cavity, the glandular mucosa lining the oral cavity is multifocally ulcerated, and the inflammatory infiltrate invades the underlying soft tissue and skeletal muscle. **(1pt.)** Columnar respiratory epithelium **(1pt.)**, salivary gland epithelium **(1pt.)**, and epidermal cells **(1pt.)** contain 1-3 well-demarcated round brightly eosinophilic protein inclusions **(1pt.)** within their cytoplasm. There is multifocal swelling and occasional necrosis of salivary gland epithelium.

**MORPHOLOGIC DIAGNOSIS:** Oral cavity: Stomatitis, necrotizing **(1pt.)** and histiocytic **(1pt.)**, chronic, focally extensive, severe with deep ulceration, granulation tissue formation, and bone loss **(1pt.)**.

Epithelial cells, epidermis, salivary gland, and nasal cavity: Intracytoplasmic protein inclusions, numerous. **(2pt.)**

**NAME THE CONDITION(S):** Boid inclusion disease **(1pt.)**, necrotic stomatitis **(1pt.)**

**CAUSE(S):** Boid arenavirus **(1pt.)**, Aeromonas hydrophila (or other gram-negative)

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

Case 3. Tissue from a langur.

**MICROSCOPIC DESCRIPTION:** Soft tissue including skeletal muscle: Skeletal muscle bundles are separated and mildly compressed **(1pt.)** by multiple uni-or multilocular pseudocysts **(1pt.)** which contain one to multiple sections of a larval **(1pt.)** cestode **(2pt.)** which has a 4 µm thick, eosinophilic ridged tegument **(1pt.)**, a fibrillar, eosinophilic spongy parenchyma **(1pt.)** containing stellate somatic cells, numerous 10µm diameter round to oval, basophilic calcareous corpuscles **(1pt.)**, and an invaginated scolex **(1pt.)** with an armed rostellum and multiple muscular suckers which border a large empty bladder on some sections. **(1pt.)** Several of the cestode larvae are degenerate, stain poorly, and are multifocally mineralized. **(1pt.)** The surrounding cysts have a dense fibrous cyst wall ranging up to 100µm which is composed of mature collagen and fibroblasts and contains aggregates of lymphocytes with fewer histiocytes and plasma cells and rare hemosiderophages, largely in perivascular areas and at the outside edges of cyst walls. **(1pt.)** Several of the cysts which contain degenerate cestodes are lined by a rim of plump cuboidal to columnar epithelioid macrophages **(1pt.)** which often have multiple nuclei. Within the cyst wall, there are several small granulomas **(1pt.)** which contain few multinucleated giant cell macrophages admixed with low numbers of histiocytes, lymphocytes, and plasma cells. The fascial tissue between muscle bundles is markedly edematous, and there is mild atrophy of skeletal muscle fibers adjacent to the cysticerci. **(1pt.)**

**MORPHOLOGIC DIAGNOSIS:** Skeletal muscle: Cysticerci **(2pt.)**, multiple, with mild chronic granulomatous inflammation. **(1pt.)**

**CAUSE:** *Cysticercus longicollis*, *Taenia crassiceps* **(1pt.)**

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

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CASE 4. Tissue from a cynomolgus macaque.

(This is not a descriptive slide – note the changes and drive on to a more productive use of 15 minutes of your time.)

MICROSCOPIC DESCRIPTION: Lung: Multifocally, alveolar capillaries are expanded up to 60um by an accumulation of one or more macrophages and rarely giant cells, whose cytoplasm is expanded by an amphophilic crystalline matrix. Similar cells are present in mildly increased numbers within some alveoli. There is a mild circulating monocytosis which is best demonstrated within the pulmonary veins. There is patchy anthracosilicosis.

MORPHOLOGIC DIAGNOSIS: Lung: Pneumonia, interstitial, histiocytic, diffuse mild with multinucleated macrophages and abundant intracytoplasmic amphophilic foreign material.

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