WSC 2016-2017 Conf 25, Case 1

Tissue from a zebrafish.

MICROSCOPIC DESCRIPTION: Skeletal muscle, mandible and abdominal wall **(1pt.)**: Bilaterally, approximately 10% of the muscle fibers are shrunken, fragmented, and hypereosinophilic **(1pt.)** (degeneration) **(1pt.)** and occasionally infiltrated by low numbers of histiocytes **(1pt.)** (necrotic) **(1pt.)** There is hyperplasia and hypertrophy of satellite nuclei around affected muscle fibers. **(1pt.)** Approximately 40% of muscle fibers contain or more stages of a microsporidian **(1pt.)** parasite. **(1pt.)** Myocytes contain or ore more uninucleate immature sporoblasts **(1pt.)** with a single basophilic nucleus which often fills the meront which has a thin refractile wall. **(1pt.)** These myocytes may also include one or more mature intracytoplasmic 25-40 um microsporidian schizonts **(1pt.)** with a thin eosinophilic refractile wall and numerous clear to amphophilic spores. **(1pt.)** In necrotic myofibers, schizonts are ruptured and spores are free within the cytoplasm or in the extracellular spaced. **(1pt.)** Occasional spores are engulfed by infiltrating histiocytes.

MORPHOLOGIC DIAGNOSIS: Skeletal muscle, mandile: Myocyte degeneration **(1pt.)** and necrosis **(1pt.)**, multifocal, moderate with mild histiocytic inflammation **(1pt.)** and numerous intracytoplasmic microsporidian sporoblasts and spores. **(1pt.)**

CAUSE: *Pleistophora hyphessobryconis* (full credit for *Pleistophora* sp.) **(1pt.)**

WHAT TYPE OF SPECIAL STAIN WOULD BE APPROPRIATE: GRAM-STAIN, LUNA, or GIEMSA all **(1pt.)** are good.

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

WSC 2016-2017 Conf 25, Case 2

Tissue from a pufferfish.

MICROSCOPIC DESCRIPTION: Gill: There is marked nodular to segmental **(1pt.)** hypertrophy and hyperplasia of the lamellar epithelium **(1pt.)** with synechia formation **(1pt.)** as well as fusion **(1pt.)** of secondary lamellae, resulting in the formation of pseudocysts **(1pt.)**. Hyperplastic epithelium is infiltrated by moderate numbers of histiocytes and neutrophils with rare lymphocytes, **(1pt.)** and there is multifocal necrosis **(1pt.)**, as evidenced by the presence of degenerate and necrotic inflammatory cells admixed with cellular debris and hemorrhage. Similar material fills and expands pseudocysts, which also contain moderate numbers of entrapped bacteria. **(1pt.)** Scattered throughout the gills and occasionally entrapped in pseudocysts are multiple life stages of dinoflagellates. **(1pt.)** Tomonts **(1pt.)** range up to 40um, with septation and division into up to 16 dinospores, which contain a single deeply basophilic opaque nucleus and numerous eosinophilic granules. Trophonts **(1pt.)** are round to oval and range up to 125 um in diameter with numerous eosinophilic and a thin basophilic birefringent wall. Occasionally a single opaque basophilic nucleus is visible. Multifocally, lamellar epithelium is expanded by up to 60um by innumerable intracytoplasmic bacilli. **(2pt.)**

MORPHOLOGIC DIAGNOSIS: Gill: Branchitis, proliferative **(1pt.)** and necrotizing **(1pt.)**, multifocal, moderate, with marked lamellar epithelial synechiation and fusion **(1pt.)**, numerous dinoflagellate life stages **(1pt.)**, and rare chlamydial inclusions.

CAUSE: *Amyloodinium* sp **(1pt.)**. and *Epitheliocystis* sp. **(1pt.)**

NAME THE DISEASE: Marine Velvet

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

WSC 2016-2017 Conf 25, Case 3

Tissue from a seahorse.

MICROSCOPIC DESCRIPTION: Kidney: The kidney is largely effaced by multifocal to coalescing areas of granulomatous inflammation **(2pt.)** often with a necrotic core **(1pt.)**. One large necrotic granuloma effaces up to 40% of the kidney in some sections. Within areas of necrosis, large numbers of necrotic histiocytes and neutrophils are admixed with macrophages with phagocytized cellular debris **(1pt.)** , abundant cellular debris, and numerous filamentous bacilli **(2pt.)**. The remaining renal parenchyma is infiltrated by moderate numbers of macrophages **(1pt.)** which often form small aggregates. **(1pt.)** Tubular epithelium is often degenerate and atrophic **(1pt.)**, and tubules are often ectatic and contain low numbers of inflammatory cells and sloughed epithelium admixed with cellular debris. **(1pt.)** Vessels contain increased numbers of inflammatory cells. The adjacent mesentery is edematous and infiltrated by moderate numbers of macrophages and lymphocytes as well. **(1pt.)** Multifocally, myocytes within the abdominal wall are hypereosinophilic, shrunken **(1pt.)**, fragmented, and occasionally infiltrated by histiocyte s, which expand the adjacent interstitium. **(1pt.)** Within the intestinal wall, there is a focal granuloma **(1pt.)** composed of a thick wall of epithelioid macrophages which contains a cross section of a cestode **(1pt.)** parasite with a ridged cuticle, numerous somatic cell nuclei, a spongy body cavity with small round calcareous corpuscles, and an anterior sucker. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: Kidney: Nephritis, necrogranulomatous **(1pt.)**, with multifocal histiocytic rhabdomyositis and numerous filamentous bacilli. **(1pt.)**
2. Intestine: Granuloma, focal, with adult cestode. **(1pt.)**

CAUSE: *Nocardia sp.* **(1pt.)**

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

WSC 2016-2017 Conf 25, Case 4

Tissue from a salmon.

MICROSCOPIC DESCRIPTION: Skeletal muscle: There is extensive degeneration of the outer red muscle layer **(1pt.)** with hyalinization, marked change in fiber size, atrophy, and fragmentation, **(1pt.)** with hypertrophy and hyperplasia of satellite cells **(1pt.)**, and infiltration of the intervening fibrous connective tissue with low numbers of lymphocytes and macrophages **(1pt.)**. Similar changes are present to a lesser extent in the underlying white muscle **(1pt.)**, in whjch myofibers often contain large clear cytoplasmic vacuoles (myofibrillolysis) **(1pt.)**, and are infiltrated by one more multiple macrophages. Occasionally, myotubes are devoid of cytoplasm, containing only macropahges and few granulocytes. **(1pt.)**

Heart: Multifocally, the epicardium **(1pt.)** and the interstititium **(1pt.)**, primarily at the interface between the outer compact and inner spongy layer **(1pt.)**, is infiltrated by moderate numbers of lymphocytes. . Mutifocally, cardiac myocytes are brightly eosinophilic and mildly shrunken (degeneration) with nuclear pyknosis (necrosis) **(1pt.)**.

Mesentery with pyloric ceca: There is subtotal loss of the exocrine pancreas **(1pt.)**. Small remnant foci of exocrine pancreas are infiltrated by low to moderate numbers of lymphocytes **(1pt.)**, and contain moderate amounts of cellular debris (necrosis). Islets of Langerhans are undamaged. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: 1. Pancreas: Necrosis and loss, diffuse, severe. **(1pt.)**
2. Heart, epi- and myocardium: Myocardium, lymphocytic, multifocal, moderate with rare myofiber necrosis. **(1pt.)**
3. Skeletal muscle: Degeneration and necrosis, multifocal to coalescing mild to moderate. **(1pt.)**

CAUSE: Salmonid alphaherpesvirus **(2pt.)**

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