WSC 2015-2016, Conference 13
Case 1. Tissue from a cardinal tetra

MICROSCOPIC DESCRIPTION Skin: The epidermis overlying the scales is ulcerated **(1 pt.)** and the underlying dermis multifocally and markedly expanded **(1 pt.)** by low numbers of elongate **(1 pt.)** mesomycetozoal (fungal OK) **(1 pt.)** cysts **(2pt.)** which contain numerous round 4um spores **(1 pt.)**. The spores have a thick cell wall, large vacuole, and peripheralized nucleus. **(1 pt.)** The cyst has a thick 2-3um hyaline eosinophilic wall **(1 pt.)**, and occasionally the wall is ruptured, with extrusion of spores into the underlying dermis. The underlying dermis is infiltrated by low numbers of granulocytes **(1 pt.)** and macrophages **(1 pt.)**. At the base of the anal fin, in an area of ulceration, there are low numbers of round 10-20um **(1 pt.)** ciliates **(2 pt.)** with granular cytoplasm and a prominent hypochromatic nucleus. **(1 pt.)**

MORPHOLOGIC DIAGNOSIS*:* Skin: Dermatitis, ulcerative and granulocytic, multifocal, moderate, with multiple mesomycetozooan cysts and ciliates. **(3 pt.)**

CAUSE: *Dermocystidium* sp. and *Tetrahymena sp (*ciliates)

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

WSC 2015-2016, Conference 13
Case 2. Tissue from an Atlantic salmon.

MICROSCOPIC DESCRIPTION: Gill: Primarily at the gill tips **(1pt)**, secondary lamellae are multifocally and segmentally expanded and fused **(1pt)**, primarily as a result of hypertrophy and hyperplasia **(1pt)** of epithelium, which fills the lamellar sulcus **(1pt)** and extends along the lamellae, often effacing lamellar architecture. There are numerous mitotic figures within the proliferating epithelium **(1pt)**. There is diffuse, moderate hyperplasia of goblet cells **(2pt)**, and disordered growth in areas of epithelial hyperplasia, especially at the gill tips. In less affected areas, there are lamellar synechiae **(1pt)**, in which individual lamellae are fused, forming dlated pseudocysts in between. There are multifocal areas of necrosis **(1pt)** within the primary lamellae, with infiltration of small numbers of granulocytes and leakage of bright eosinophilic protein. Multifocally, lamellar capillaries are markedly (aneurysmally) dilated **(1pt)**, and often contain fibrin thrombi **(1pt)** and small amounts of cellular debris. There is lifting of epithelium **(1pt)** along the edges of some lamellae which may represent either edema or a processing artifact. Scattered throughout the areas of hyperplasia as well as in the interlamellar spaces, there are low number s of a 10-12um amebae **(2pt)** with markedly vacuolated cytoplasm and often centrally placed hyperchromatic nuclei. **(1pt)**

MORPHOLOGIC DIAGNOSIS: Gill: Branchitis, proliferative, multifocal, moderate with lamellar fusion and adhesion and moderate numbers of amebae. **(4 pt)**

CAUSE: *Neoparamoeba perurans*

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

WSC 2015-2016, Conference 13
Case 3. Tissue from a lumpfish.

MIROSCOPIC DESCRIPTION: Kidney: Renal architecture is effaced by large sheets of blastic lymphocytes **(1pt)** and smaller macrophages **(1pt)** which markedly expand the renal interstitium and separate, surround, and replace the majority of nephrons **(2pt)**. Blastic lymphocytes range from 8-12um in diameter with large nuclei, prominent nucleoli, and a moderate mitotic rate **(2pt)**. There is extensive necrosis **(1pt)** within the lymphocytic and histiocytic populations and focal areas of infarction **(1pt)**. Large numbers of these cells contain a cytoplasmic **(1pt)** or occasionally intranuclear vacuole **(1pt)** contain 8 or more 2-3um eosinophilic microsporidian spores **(2pt)** with paired refractile bodies at one end. There are also aggregates of spores within the extracellular space. Multifocally, tubules are mildly ectatic and individual or small rafts of lining epithelium are swollen and eosinophilic (degenerate) **(1pt)** or shrunken and pyknotic (necrosis) **(1pt)**.

MORPHOLOGIC DIAGNOSIS: 1. Kidney, lymphoid tissue: Necrosis, diffuse, with marked hyperplasia and numerous intranuclear, intracytoplasmic, and free microsporidia. **(2pt)**

2. Kidney: Nephritis, histiocytic, diffuse, moderate, with tubular degeneration, necrosis, and loss, and intrahistiocytic intranuclear, intracytoplasmic, and free microsporidia. **(2pt)**

CAUSE: *Nucleospora cyclopteri*

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

WSC 2015-2016, Conference 4
CASE 4. Tissue from a goldfish.

MICROSCOPIC DESCRIPTION: Kidney: There is diffuse necrosis **(2pt.)** of hematopoietic tissue **(1pt.)** throughout the kidney; necrotic hematopoietic cells are admixed with moderate amounts of edema and cell debris. The amount of hematopoietic tissue is increased (hyperplasia) **(1pt.)** and expands the interstitium between remaining nephrons. Moderate numbers of hematopoietic cells have nuclei which are expanded by a large basophilic intranuclear **(1pt.)** viral inclusion **(2pt.)** which peripheralizes the chromatin. Within areas of necrosis, there is multifocal hemorrhage erythrophagocytosis, and macrophages contain abundant granular eosinophilic debris and/or hemosiderin. **(1pt.)** There is multifocal necrosis affecting occasional tubules **(1pt.)** within the kidney; and small numbers of regenerative tubules **(1pt.)**. Occasional tubular epithelium cells contain an intranuclear viral inclusion **(1pt.)** as previous described. Occasional vessels in areas of necrosis have necrotic walls and luminal fibrin thrombi. **(1pt.)**

MORPHOLOGIC DIAGNOSIS: 1. Kidney, lymphoid tissue: Necrosis, diffuse, with moderate hyperplasia and numerous intranuclear viral inclusions. **(2pt)**

2. Kidney, tubular epithelium: Degeneration, necrosis, and regeneration, multifocal, mild to moderate, with rare intranuclear viral inclusions. **(2pt)**

CAUSE: Cyprinid herpesvirus-2 **(2pt)**

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