Amphibian Diseases and Pathology

Debra L. Miller, DVM, PhD
Associate Professor/Veterinary Pathologist
Veterinary Diagnostic and Investigational Laboratory
The University of Georgia, College of Veterinary Medicine

Adjunct Associate Professor
Center for Wildlife Health
Department of Forestry, Wildlife and Fisheries
The University of Tennessee, Knoxville

Definitions:

- Pathology = absence from normal.
- Disease = a condition that impairs normal function
- Pathogen = organism that is capable of causing disease (viruses, bacteria, fungi, parasites)
- Not all pathogens cause disease all of the time
- Not all diseases are caused by pathogens (ex: diabetes, most cancers)

PLEASE REALIZE:

- Symptom is used in HUMAN medicine NOT for animals
  - Things we feel and the patient describes to the physician
- Signs occur in Humans and Animals
  - Things we can measure or observe
Gross External Changes (what you might find in the field)

- Swollen body or legs: edema
- Red coloration: erythema
- Red depressions where skin is missing: ulcerations
- Scrapes and scabs: abrasions
- Missing limbs: malformations, necrosis of distal limbs, trauma
- Sheets of missing skin on limbs: degloving
- Thickened or unshed skin: Proliferation of the skin
- Bumps: parasitic or other organisms cysts
- Loss of pigment in teeth of tadpoles
Proliferation/thickening of skin
Excessive shedding

Missing Limbs

Degloving
**SEASONAL or ABNORMAL?**

**Gross Internal Changes: what you might see on necropsy**

- Swollen pale liver: Fatty change
- Tan spots in organs (esp. liver, kidney): possible necrosis
- Round cysts or lumps: Granulomas or parasitic cysts
- Red organs: possible hemorrhage or congested vessels

**Pale organs**
Tan areas on organs

Cysts and Nodules

Hemorrhages
Histopathological Changes: what you might see under the microscope

- Increase in Melanomacrophage Centers
- Granulomas
- Necrosis (dead cells/organs) or degeneration (compromised cells/organs including fatty change in liver)
- Hemorrhage or congested vessels
- Bacteria
- Fungi
- Viral Inclusions
- Parasites

Common response: Increased pigment (melanomacrophages)
Common response = Granuloma formation

Necrosis

Normal Muscle Degeneration
Vacuolar Change

Liver

Normal

Hemorrhage, Congestion

Bacteria
Questions?

LAB TIME: Organ Review