


Daniel Malagon

Amphibian Anatomy and Physiology




Who is Daniel Malagon?


- Undergraduate Senior
- Took this class two years ago
- Undergraduate Researcher in Gray Lab

What is Anatomy and Physiology?

Anatomy



Physiology



What is Anatomy and Physiology?

Anatomy

- The individual components (organs, skeleton, etc.) of an organism that work together to keep it alive.

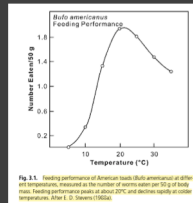
Physiology

- How these individual components work together to keep an organism alive.

This lecture is what I imagine the average herpetologist remembers from his/her Amphibians Class.

Consequences of an Ectothermic Lifestyle

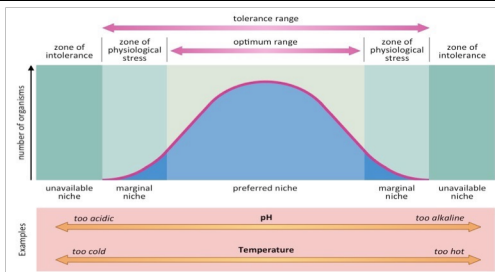
- Metabolism
- Shedding rate
- Locomotion
- Growth rate
- Feeding voracity
- Larval development
- Calling rate/frequency



Consequences of a Water-Dependent Lifestyle



Survival of amphibians is limited by water and temperature.





Amphibian Locomotion and Body Plans



Lateral Undulation
Concertina Undulation



"Jumping"

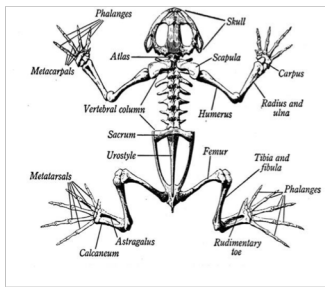


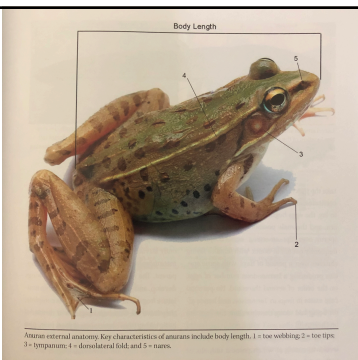
Lateral Undulation

Amphibian Locomotion and Body Plans

Anuran Anatomy

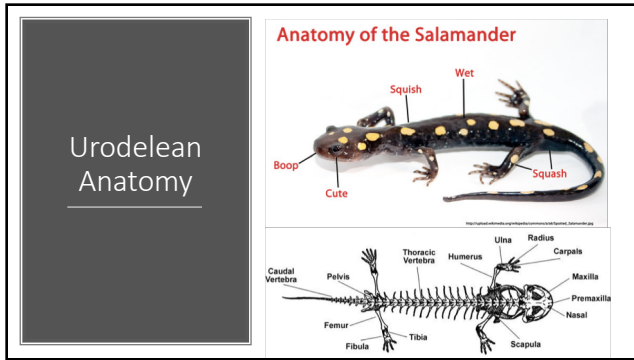
- Powerful Hind Limbs
- Urostyle
- Powerful Leg Tendons
- Reduced Skull
- Front Legs & Pectoral Girdle
- Shortened vertebral column

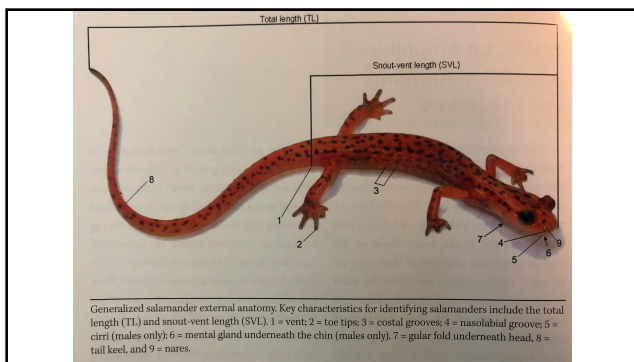


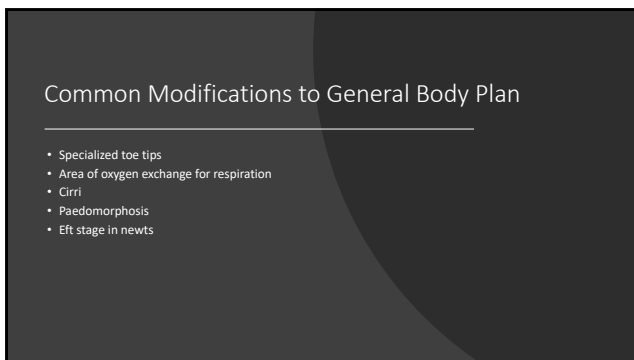


Common Modifications to General Body Plan

- Gliding
- Swimming
- Burrowing
- Hopping
- Specialized toe tips







What is a Caecilian?

- Limbless
- Fossorial
- Understudied clade
- Wedge shaped skulls
- 212 known species
- Tropical

Phylogenetic Diagram of Amphibians



Chapter 40 Amphibians

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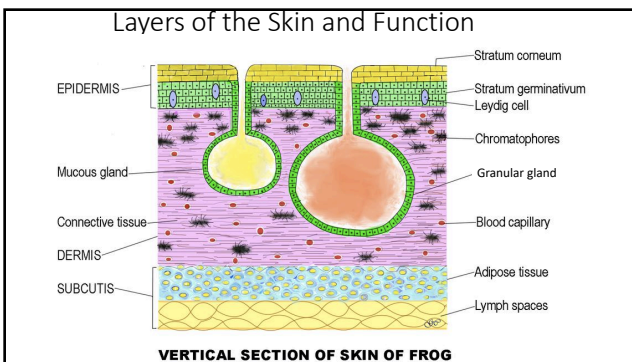
Caecilian Anatomy



Caecilian Anatomy



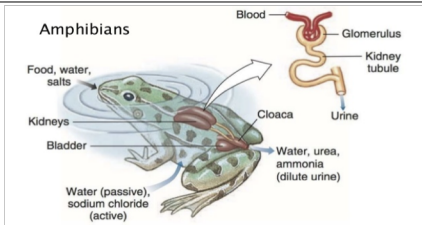




Types of Glands

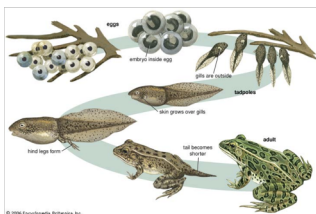
<p style="text-align: center; margin-bottom: 5px;">Mucous</p> <ul style="list-style-type: none"> Secrete mucous that keep amphibian skin moist More numerous More widely distributed on body 	<p style="text-align: center; margin-bottom: 5px;">Granular</p> <ul style="list-style-type: none"> Secrete various substances that serve as defensive chemicals Maintain mucosome ideal for host
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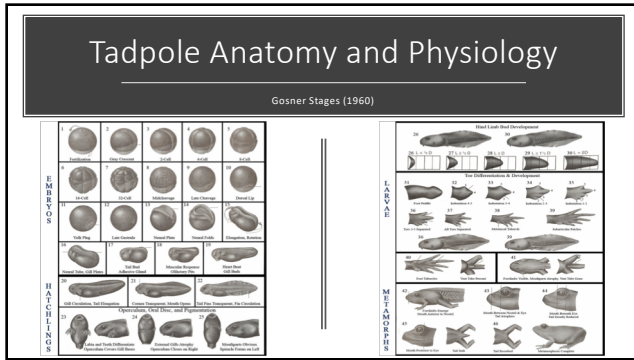
Osmoregulation

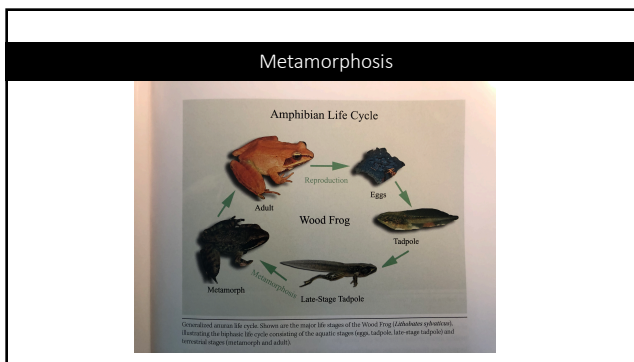


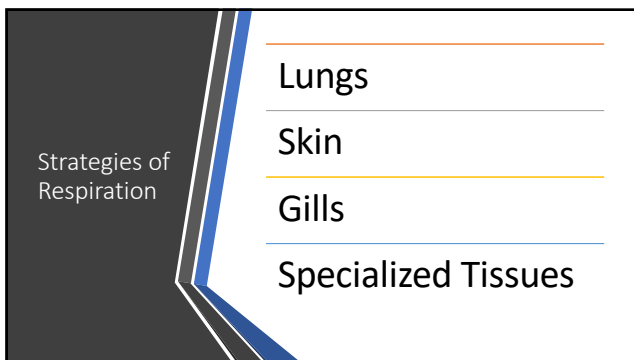


A & P of Metamorphosis



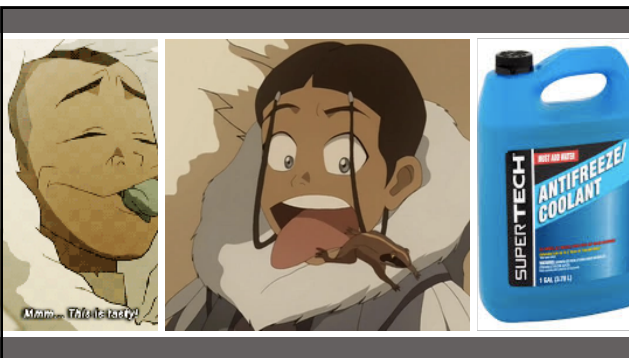






Unique examples of
Amphibian A & P

Gastric Brooding
Frog









Waxy Monkey Frog

- <https://www.youtube.com/watch?v=5dkUToJCGaU>
- Unique 3rd type of gland that excretes lipid-rich mucus to help reduce evaporative water loss



