REPTILES & AMPHIBIANS LECTURE 1

Kingdom: Animalia
Phylum: Chordata
Superclass: Tetrapoda

Class: Amphibia
Orders: Anura, Caudata & Apoda

Class: Reptilia
Orders: Testudines, Rhynchocephalia, Squamata & Crocodilia

Amphibian Integument

- Dermal scales lost.
- Abundant epidermal glands- may be multicellular. Epidermis has incipient Stratum corneum (conservation).
- Other modifications include thickened patches giving 'warty' appearance or callous tips to fingers.

1. Anura: No tails, broad body, skin adaptations. *Frogs and toads.*
2. Caudata (Urodela): Elongated bodies, tails, smooth moist skin. *Salamanders & newts.*
3. Gymnophiona (Apoda): Burrow, wormlike, small eyes, teeth. *Caecilians.*

Respiratory System- Amphibians

- Small organisms may rely on diffusion through body surface in aquatic environments.
- In water, evolved gills. On land, respiratory surfaces required more protection, so evolved tracheae and lungs.

External Gills= Highly branched and folded elaborations, provide large surface area for gas exchange with water. Consists of thin, delicate membranes vulnerable to damage. In most aquatic invertebrates & larval amphibians.

Mexican Axolotl: Mature 'tadpole' but can reproduce.

Internal Gills= Depends on life stage/ paedomorphic traits. Highly vascularised and specialised. Very fine filaments containing capillaries. Water moves over filaments and microfilaments, dissolved oxygen diffuses into capillaries and CO_2 diffuses out into water.

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Cutaneous Respiration:

- Amphibians do not have stratum corneum. No keratinisation. Epidermis extremely permeable to gases and water.
- Mode of underwater respiration on land. Skin in smooth, moist, glandular. Highly vascularised. Moisture maintained via secretion of mucus. It is responsible for 90% of amphibian respiration.

Pulmonary Respiration:

- Two nostrils connected directly with the mouth cavity. Air enters mouth by way of nostrils. Floor of mouth is raised; air is forced into the lungs.

Buccopharyngeal Respiration:

- Only 0.9% of respiration. The buccopharyngeal membrane of the mouth is used for gas exchange.

Lungs: Internal thin-walled cavities for gas exchange.

- Inner partitions which are richly supplied with blood vessels. Elastic, connected to mouth via glottis.

Respiratory System- Reptiles

- Air enters via nares. Nasal cavities.
- Choana= internal opening to nasal passage at roof of mouth.
- Glottis= base of tongue