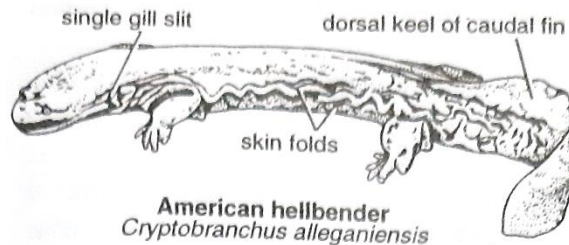


## Suborder 1. Cryptobranchoidea

- 1) Most primitive, aquatic
- 2) Adults have no eyelids and gills
- 3) Premaxillary spine short
- 4) Angular and prearticular separate
- 5) Fertilization external

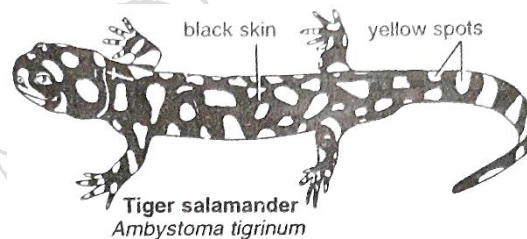
Example. *Cryptobranchus*, *Megalobryanchus*



## Suborder 2. Ambystomatoidea

- 1) Adults terrestrial, eyelids present
- 2) Angular fused with prearticular
- 3) Premaxillary spine large
- 4) vertebrae amphicoelous
- 5) Fertilization internal

Example. *Ambystoma*

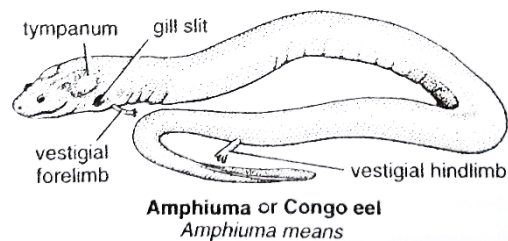


## Suborder 3. Salamandroidea

- 1) vertebrae opisthocoelous
- 2) Three sets of cloacal glands
- 3) Teeth on prevomer and palate
- 4) Fertilization internal

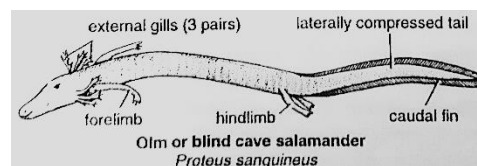
Example. Triton and Triturus

(newts), *Salamandra* (salamander), *Amphiuma* (congo eel)



## Suborder 4. Proteida

- 1) Aquatic otom dwellers
- 2) Permanent larval forms
- 3) No eyelids
- 4) Adults have 3 pairs of external gills and 2 pairs of gill-slits
- 5) Skull cartilaginous
- 6) No maxillae
- 7) Jaws have teeth



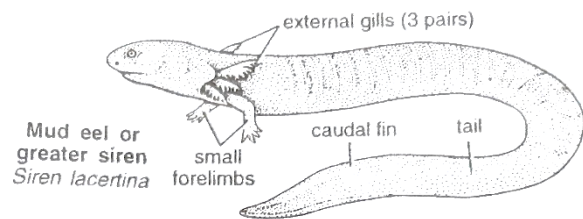
## Amphibia Classification

Examples. *Proteus* (olm), *Necturus* (mud-puppy)

### Suborder 5. Meantes

- 1) Aquatic permanent larval forms
- 2) Forelimbs small, hind limbs absent
- 3) 3 pairs of external gills
- 4) No eyelids, no cloacal glands
- 5) Jaws with horny coverings

Examples. *Siren* (mud-eel),  
*Pseudobranchius*



### Order 3. Anura or Sakientia

- 1) Specialized Amphibia
- 2) Tail absent in adults
- 3) Hind limbs adapted for leaping and swimming
- 4) Adults have no gills or gill openings
- 5) Tympanum present
- 6) Eyelids well formed
- 7) Skin scaleless, loosely fitting
- 8) Mandibles toothless
- 9) vertebral column small made up of 5-9 presacral vertebrae and a slender urostyle
- 10) Fertilization always external
- 11) No neoteny
- 12) Complete metamorphosis
- 13) About 2200 species of frogs and toads
- 14) It has 5 suorders

### Suborder 1. Amphicoela

- 1) Vetrebrae amphicoelous
- 2) Number of presacral vertebrae 9
- 3) Ribs free
- 4) 2 relict tail muscles
- 5) Fertilization internal

Examples. *Leopelma*, *Ascaphus*

### Suborder 2. Opisthocoela

- 1) Vertebrae opisthocoelous
- 2) Scapula small
- 3) Ribs free in adult or larva

Examples. *Alytes* (mid-wife toad), *Pipa*, *Xenopus*, *Discoglossus*

### Suborder 3. Anomocoela

- 1) Vertebrae procoelous or amphicoelous
- 2) Free ossified ribs absent
- 3) Upper jaw with teeth

Example. *Scaphiopus*

### Suborder 4. Procoela

- 1) Vertebrae procoelous
- 2) Presacral 5-8
- 3) Urostyle with 2 condyles
- 4) No free ribs

Examples. *Bufo* (common toad), *Hyla* (tree toad), *Gastrotheca* (marsupial frog), *Dendrobates*

### Suborder 5. Diplasiocoela

- 1) First 7 vertebrae procoelous
- 2) 8<sup>th</sup> vertebra amphicoelous
- 3) Sacral or 9<sup>th</sup> vertebra convex anteriorly and has 2 condyles posteriorly
- 4) Pectoral girdle fused to sternum (firmisternum)
- 5) Ribs absent

Examples. *Rana* (common frog), *Polypedates* or *Rhacophorus* (tree frog)