



## **Bony fishes**

Meckel's cartilage forms articular and becomes part of the lower jaw. Hyoid arch is modified for the movement of operculum and functioning of the lower jaw. Symplectic helps in jaw suspension. Last branchial arch shows sign of degeneration as the number of gills is reduced to 4 pairs.

## **Amphibia**

Larval frogs have 6 visceral arches and the last 3 bear gills. In urodeles having gills third, fourth and fifth epibranchials support gills while their basibranchials and ceratobranchials are reduced to two pairs. Hyomandibular modifies as columella of the middle ear cavity in frogs and toads. The air breathing hyobranchial apparatus of frogs and toads is made by the fusion of 2nd, 3rd and 4th visceral arches.

## **Reptiles**

Quadrate and epipterygoid bones of the skull are modifications of pterygoquadrate, and articular of the lower jaw is a modified meckel's cartilage. Hyoid arch forms a small hyoid plate that also extends forward to support the tongue. One of two ceratobranchials may form the posterior cornu of the hyoid plate.

## **Birds**

Modification is similar to reptiles except that there is only one cornu of the hyoid plate that is modified from the third visceral arch.

## **Mammals**

Pterygoquadrate breaks into alisphenoid and incus, the former becomes part of the skull and the latter joins the ear ossicles. Meckel's cartilage modifies into malleus and hyomandibular into stapes of the middle ear cavity. Larynx of mammals evolved from the fourth and fifth visceral arches. Thyroid cartilage is a modification of 4th and 5th visceral arches while arytenoid and cricoid cartilages are modified fifth visceral arch.