Anatomy and Physiology of the Reptile Mouth

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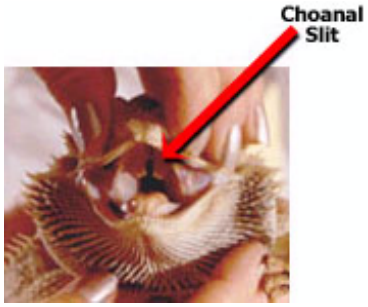
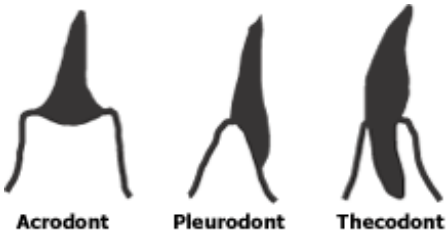
The oral cavity is formed by the anterior-most parts of the gastrointestinal system and respiratory system and includes the mouth and the internal choanae. Most reptiles have little in the way of a secondary palate. It is best developed in species that lack cranial kinesis (movement of the snout relative to the braincase). Some aquatic turtles and crocodilians have the best developed separation of air and food passages. Lizards, snakes, and tuataras lack even a partial secondary palate. All snakes and most lizards have kinetic skulls.



The tongues of reptiles are as varied as the species and range from exceptionally protrusible (as in chameleons), to the virtually fixed tongues of freshwater sliders (*Trachemys spp.*) and crocodilians, and the forked tongues of snakes and monitor lizards (*Varanids*), to the mobile fleshy tongues of geckos and tortoises. The tongue has many functions including the capture of prey, the transport of food to the back of the mouth, providing taste (in some species), and in squamates, it can then deliver scents to the vomeronasal organ in the roof of the mouth (Schwenk 2000).

All turtles lack teeth. Snakes, lizards, crocodilians, and tuataras all have teeth. The teeth vary in their form, their attachment, and whether they are shed. Generally, the teeth of herbivorous species are broadly flattened with crushing surfaces. Those of most carnivorous reptiles are tapered to sharp points. Often, the teeth in the front of the mouth have recurved tips, which facilitate the puncture of prey during the strike, and reduce the chance of the prey escaping. Some snakes have fangs that deliver venom, in either the anterior of the mouth or near the temporomandibular joint (rear-fanged snakes).

Teeth may be attached in sockets (thecodont), on the alveolar surface of the jaw (acrodont), or on the inner side of the jaws (pleurodont) (Kardong 2002). Few reptiles have thecodont teeth. These are replaced within the same socket. Crocodilian teeth are thecodont. Snakes typically have acrodont teeth; each tooth resides on the occlusional surface of the jaws in a very shallow socket. Replacement teeth arise adjacent to the active teeth. Most lizards have pleurodont teeth, but there are many exceptions, including chameleons and bearded dragons. Tuataras also have acrodont tooth attachments. The teeth of reptiles usually are similar throughout the mouth. However, the tuatara, crocodilians, and venomous snakes have heterodont dentition with more than one tooth type per arcade (Romer and Parsons, 1986).



Oral glands (loosely termed salivary glands) include the premaxillary, palatine, nasal, lacrimal, Duvernoy's, Harderian, posterior, sublingual, lingual, infralabial, and mandibular glands (Kardong 2002). Not all of the oral glands are found in all reptile species. The infralabial, supralabial, lingual, sublingual, premaxillary, nasal, and palatine glands all produce mucus which lubricates the mouth and aids in food transport. The lacrimal and Harderian glands lubricate the eyes and vomeronasal organs via ducts that connect the eyes to the mouth. The Duvernoy's gland is present in all snakes and produces a serous material that is released on the maxillary teeth. This gland is modified in the venom gland in poisonous snakes. Oral glands are found in all terrestrial reptiles but are typically lost or very reduced in aquatic species. The notable exceptions are the sea snakes and crocodilians.

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