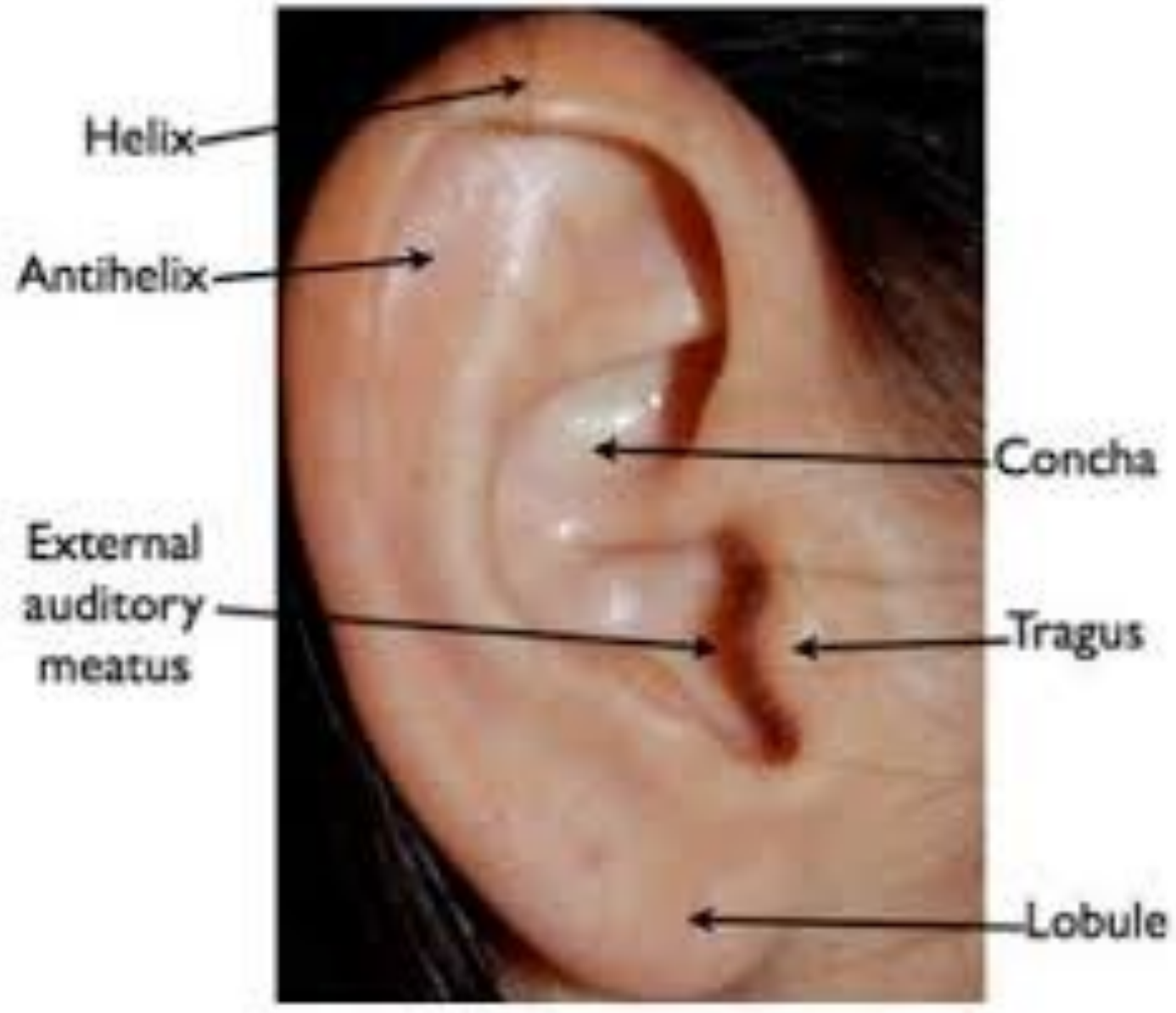
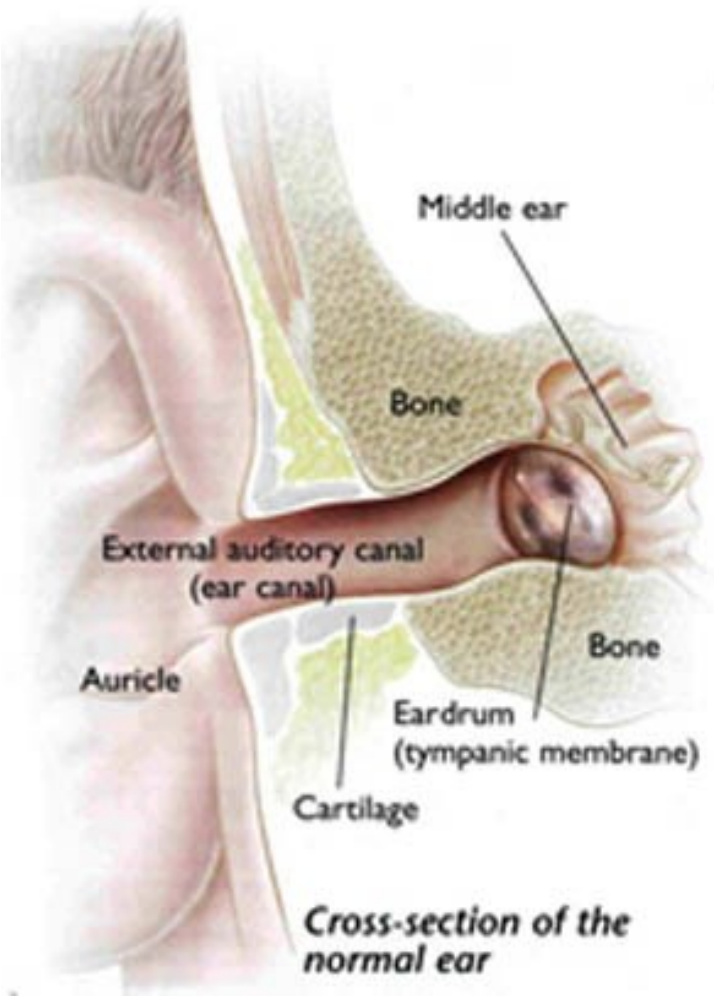
The anatomy of the outer ear is important to learn for many reasons. As a hearing aid consultant you must be able to identify the anatomical parts, medical disorders, and have general knowledge of the ear itself. Having this information and being able to discuss it in layman terms to a patient is vital to your success.

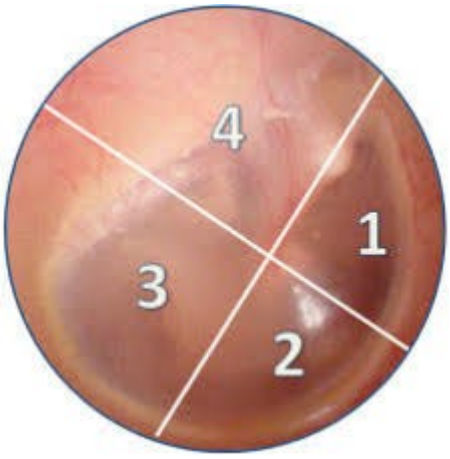
The outer part of the ear is often referred to as the **auricle** or **pinna**. This part of the ear is shaped like a funnel and it collects sound vibrations (acoustic energy). Below is a diagram of the most common terms of the outer portion of the ear. Be familiar with these names which could be necessary in order to fit custom instruments and ear molds properly. The **helix, concha bowl, and tragus** are important to inspect on each patient to decide whether a custom instrument or behind the ear would be a better solution.



The **external auditory meatus** is also known as the ear canal. It is located directly behind the tragus and can vary in length in adults. It is typically one inch in length and about .25 inches in diameter. The outer part of the canal is cartilaginous (skin tissue) and the inner is osseous (bone) covered in a thin layer of skin. The cartilaginous portion contains tiny hairs (**cilia)** which help the natural secretion of wax. Wax producing **(ceruminous glands)** and oil producing **(sebaceous glands)** are also in the outer canal. The point where the canal begins to transition to bone is the narrowest point known as the **isthmus** which is just past the second bend of the canal. Once past the isthmus, the canal again becomes larger. Running along the bottom of the canal is the **Vagus Nerve** that if stimulated by an otoscope, etc can cause a cough reflex in the patient known as the **Arnold's Reflex**.



Once the acoustic energy travels through the canal, it makes contact with the **tympanic membrane**, better known as the ear drum. The TM is divided into four quadrants as seen on the diagram to the right and is held in place with the **Annular Ring** which is water and air tight. It consists of three layers which make it very resilient. The first layer is comprised of the skin from the outer canal, the middle layer is fibrous layer forming a concentric banding of tissue and the inner layer is a mucous membrane. The tissue on the lower 4/5 of the drum is tight and is called the **pars tensa** while the tissue on the upper 1/5 is more flaccid and is called the **pars flaccida**. A **cone of light** (politzer's triangle) is visible @ 5:00 on the right TM and 7:00 on the left.



1– Anterior

2– Inferior

3– Posterior

4– Superior

Ear canals resonate between 2000 and 3000 Hz. When combined with the resonance of the pinna (2000-5000 HZ) the resonance average of the outer ear is around 2700 Hz. As sound travels from the pinna through the canal it makes contact with the eardrum and vibrates it a specific amount of times per second. The eardrum attaches to the **malleus** bone in the middle ear at the **umbo**.