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## Sense organs 2

### The ear

#### Definition / general

- Sense organ for hearing and balance
- Divided into external ear, middle ear and temporal bone and inner ear
- External ear conducts sound vibrations to tympanic membrane; middle ear conducts sound to auditory portion of inner ear.

### External ear

- **Pinna:** resembles skin elsewhere with keratinized, stratified squamous epithelium, dermal adnexal structures, subcutaneous fibroconnective tissue, fat and elastic fibrocartilage which provides support
- **External auditory canal:** lined by thin keratinized stratified squamous epithelium covering scant fibrous stroma along entire canal and covering external tympanic membrane
  - Outer third contains ceruminous glands (modified apocrine glands) deep within dermis that produce cerumen; glands are in clusters of cuboidal cells with intensely eosinophilic cytoplasm with apical snouts and containing golden yellow, granular pigment and secretory droplets along luminal border;

glands are surrounded by myoepithelial cells; outer canal contains cartilage not bone

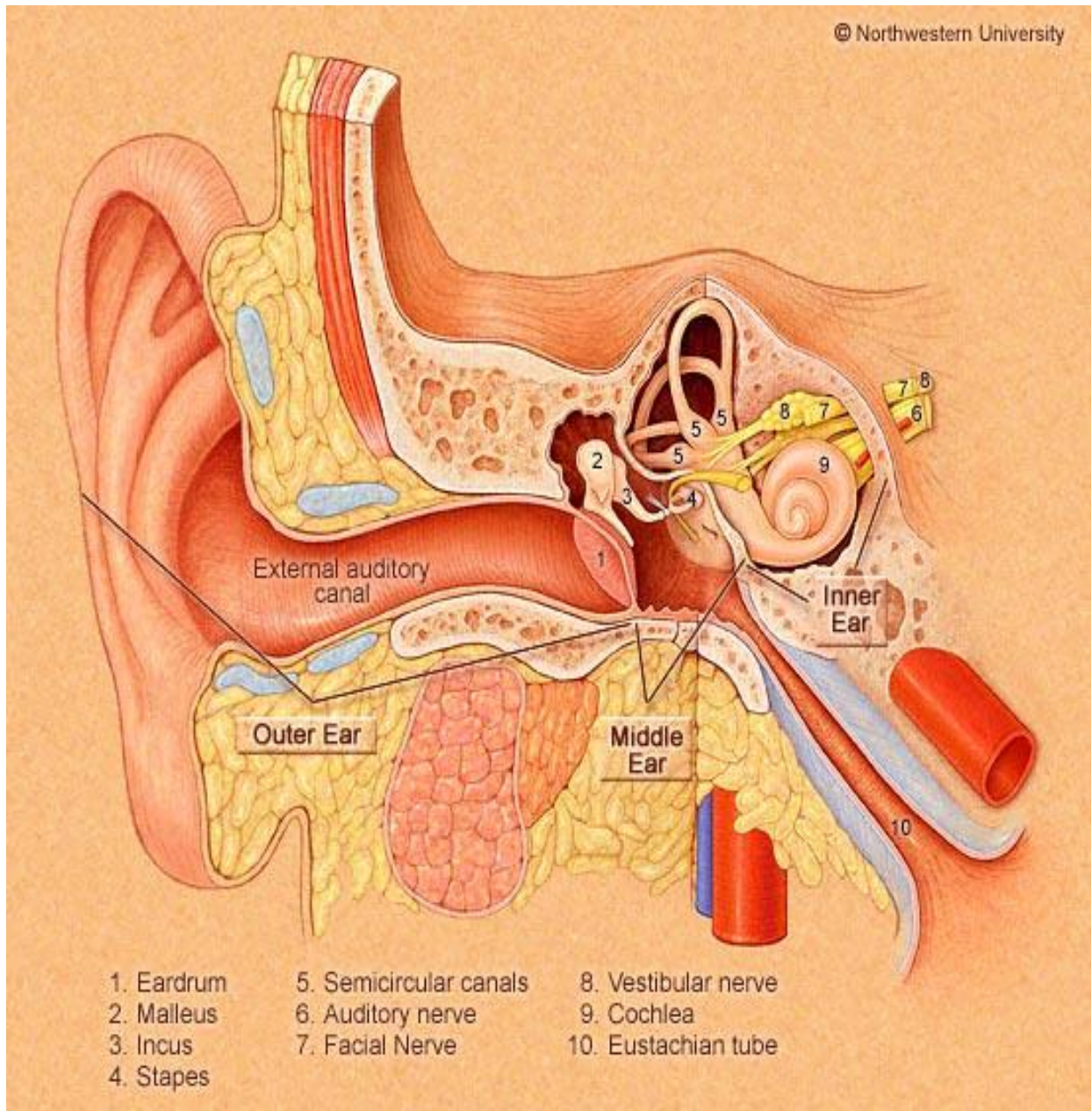
- Inner two thirds has very thin epidermis which lacks rete pegs, no / reduced number of ceruminous glands and dermal adnexa; contains bone not cartilage
- **Cerumen:** watery fluid devoid of lipids; drains from glands into ducts which open into hair sacs of ear canal hairs; fluid mixes with sebaceous gland secretions to produce cerumen (wax)
- **Tympanic cavity:** thin fibrous structure lined by attenuated keratinizing squamous epithelium on external canal side.

## Middle ear

- Eustachian tube: respiratory epithelium that becomes pseudostratified as it approaches nasopharynx; lymphoid component, prominent in children, is called Gerlach tubal tonsil; no glands
- Tympanic membrane: thin fibrous structure lined by flat, single layer of cuboidal epithelium on middle ear side
- Mastoid: flat, single, cuboidal epithelium
- Ossicles: typical synovial joints

## Inner ear

Vestibular labyrinth is lined by flat to low columnar epithelium overlying vascular stroma



**External, middle and inner ear**