Lesson 7.1: The Eye
Lesson 7.2: The Ear
Lesson 7.3: Smell and Taste
Lesson 7.1

The Eye
The Eye

• anatomy of the eye
  – external
  – internal
• vision
• injuries, diseases, and disorders of the eye
External Structures of the Eye

- tarsal glands
- ciliary glands
- conjunctiva
- lacrimal glands

A. Anterior view
B. Lateral view
Extrinsic Muscles

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>superior rectus</td>
<td>upward eye motion</td>
</tr>
<tr>
<td>inferior rectus</td>
<td>downward eye motion</td>
</tr>
<tr>
<td>lateral rectus</td>
<td>lateral eye motion</td>
</tr>
<tr>
<td>medial rectus</td>
<td>medial eye motion</td>
</tr>
<tr>
<td>superior oblique</td>
<td>downward and lateral eye motion</td>
</tr>
<tr>
<td>inferior oblique</td>
<td>upward and lateral eye motion</td>
</tr>
</tbody>
</table>
Internal Structures of the Eye

- humors
  - aqueous
  - vitreous
- tissue layers
  - sclera
    - cornea
  - choroid
    - pupil
    - iris
  - retina
    - rods and cones
Internal Structures of the Eye
Vision

• retina
• impulse
• optic nerve
• brain
• optic chiasma
• optic tracts
• occipital lobe
## Vision Disorders

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>myopia</td>
<td>nearsightedness</td>
<td>elongated eyeball</td>
</tr>
<tr>
<td>hyperopia</td>
<td>farsightedness</td>
<td>shortened eyeball</td>
</tr>
<tr>
<td>presbyopia</td>
<td>age-related farsightedness</td>
<td>stiffness of the lens</td>
</tr>
<tr>
<td>astigmatism</td>
<td>blurred vision</td>
<td>irregular curvature of cornea or lens</td>
</tr>
<tr>
<td>amblyopia</td>
<td>lazy eye</td>
<td>abnormal dominance of one eye</td>
</tr>
<tr>
<td>diplopia</td>
<td>double vision</td>
<td>abnormal alignment of the eyes</td>
</tr>
<tr>
<td>strabismus</td>
<td>crossed eyes</td>
<td>muscles in one eye do not coordinate with those in the other eye</td>
</tr>
<tr>
<td>color blindness</td>
<td>inability to distinguish colors</td>
<td>disorder of the cone cells in the retina</td>
</tr>
<tr>
<td>night blindness</td>
<td>difficulty seeing at night</td>
<td>disorder of the rod cells in the retina</td>
</tr>
</tbody>
</table>
Eye Diseases

- conjunctivitis
  - also known as *pink eye*
- cataracts
- glaucoma
- macular degeneration
- diabetic retinopathy
- vitreous floaters
Fill in the blanks with: choroid, cornea, cones, or vitreous.

1. The pupil is part of the _______________ tissue layer.

2. The two humors are aqueous and _______________.

3. The retina contains the rods and _______________.

4. The clear part of the sclera is the _______________.
Lesson 7.2

The Ear
At the end of the lesson you will be able to...

- Describe the major anatomical structures of the outer ear, the middle ear, and the inner ear.
- Explain the process by which hearing occurs, from the transmission of sound waves to the perception and interpretation of sound.
- Explain the role of the inner ear in helping your body to maintain equilibrium, or balance.
- Describe some common causes of deafness.
- Describe some common ear infections.
The Ear

- anatomy of the ear
- functions of the ear
- disorders and infections of the ear
Anatomy of the Ear

- external ear
  - auricle, auditory canal, and tympanic membrane
- middle ear
  - ossicles
  - hammer, anvil, and stirrup
  - Eustachian tube
- internal ear
  - cochlea, vestibule, and semicircular canals
Anatomy of the Ear
Functions of the Ear

• hearing
  – cochlear duct
    • Inside the organ of Corti
  – hair cells
    • [https://www.youtube.com/watch?v=bB3x7kp9El8](https://www.youtube.com/watch?v=bB3x7kp9El8)
    • Short stiff = high pitch
    • Long flexible = low pitch

• equilibrium
  – semicircular canal
Disorders and Infections of the Ear

- deafness
- Tinnitus – damaged hair cells
- external otitis (swimmer’s ear)
- otitis media (middle ear infection)
- labyrinthitis (inner ear infection)
Review and Assessment

True or False?
1. External otitis is swimmer’s ear.
2. The ossicles are in the external ear.
3. Hair cells are responsible for equilibrium.
4. The cochlea is part of the inner ear.
5. Labyrinthitis is an inner ear infection.
Smell and Taste

- olfactory sense (sense of smell)
- injuries and disease of the nose
- gustatory sense (sense of taste)
- disorders of the tongue
Olfactory Sense

- olfactory region
- olfactory receptor cells
- olfactory hairs
- olfactory filaments
- olfactory nerve
- olfactory bulb
Olfactory Sense

A. Olfactory region

- Nasal cavity
- Olfactory bulb
- Olfactory nerve
- Bone

B. Olfactory epithelium

- Olfactory filaments of the olfactory nerve
- Supporting cell
- Olfactory receptor cell
- Olfactory hairs
- Odor molecules

Mucous layer
Injuries and Disorders of the Nose

- rhinitis
  - inflammation of nasal membrane
- septum problems
  - deviated septum
Gustatory Sense

- taste buds
- papillae
- gustatory cells
- gustatory hairs
- taste pores
- tastants
Disorders of the Tongue

- infection
  - severely bitten tongue during a traumatic accident
  - tongue piercing
- injury
- abnormal growth
  - hairy tongue
  - burning mouth syndrome
Match these words with 1–4 below: gustatory, gustatory hairs, olfactory hairs, rhinitis.

1. inflammation of the nasal membrane
2. sense of taste
3. part of taste bud
4. part of sense of smell