

## Crown 85 Winter 2016

## Visual Perception: A Window to Brain and Behavior

## AUDITION: A Comparative Sensory System

**OVERVIEW:** The auditory system is our second example of a sensory system. Although not as rich or varied in the information it processes, the auditory system will illustrate the similarities among sensory systems. As with our study of the visual system we will analyze audition in terms of 1) properties of the stimulus, 2) capture and transduction, 3) central processing, and 4) perceptual phenomena. Comparing these aspects of vision and audition will be an important goal.

**LOOKING:** [Journey into the World of Hearing:](#)

[How the Ear Works](#)

[What do I hear?](#)

- [What is Sound?](#)
- [Perception Overview](#)
- [Music perception](#)

[How do I hear ?](#)

- [Hearing an Overview](#)
- [The Ear](#)
- [The Auditory Brain](#)

[Animations of Auditory Phenomena](#)

**LISTENING:** [Auditory Illusions](#)

1. To what properties of sound waves do each of the following refer:
  - a. pitch
  - b. loudness
  - c. dB
  - d. pure tone (sinusoid)
  - e. overtone
  - f. timbre
  - g. echoes
  
2. Be able to identify the following parts of the ear and brain and know the functions which they perform. For the items marked with an \*, be able to name a part of the eye which has an analogous function.
 

<ol style="list-style-type: none"> <li>a. pinna</li> <li>b. ear canal or external auditory meatus</li> <li>c. ear drum or tympanic membrane</li> <li>d. *ossicular chain (malleus, incus, stapes)</li> <li>e. *cochlea</li> <li>f. oval window</li> <li>g. basilar membrane</li> </ol>	<ol style="list-style-type: none"> <li>h. tectorial membrane</li> <li>i. *hair cells</li> <li>j. *auditory nerve</li> <li>k. *muscles of the middle ear (tensor tympani, stapedius)</li> <li>l. *auditory cortex</li> <li>m. *tonotopic map</li> </ol>
--	--

3. What is tinnitus?
4. Distinguish conduction deafness from nerve deafness.
5. What are the differences between the place and frequency theories? Which is correct?
6. What is the volley principle and why is it important to the frequency theory?
7. What is binaural localization? How do phase and loudness cues contribute to our ability to localize sound?