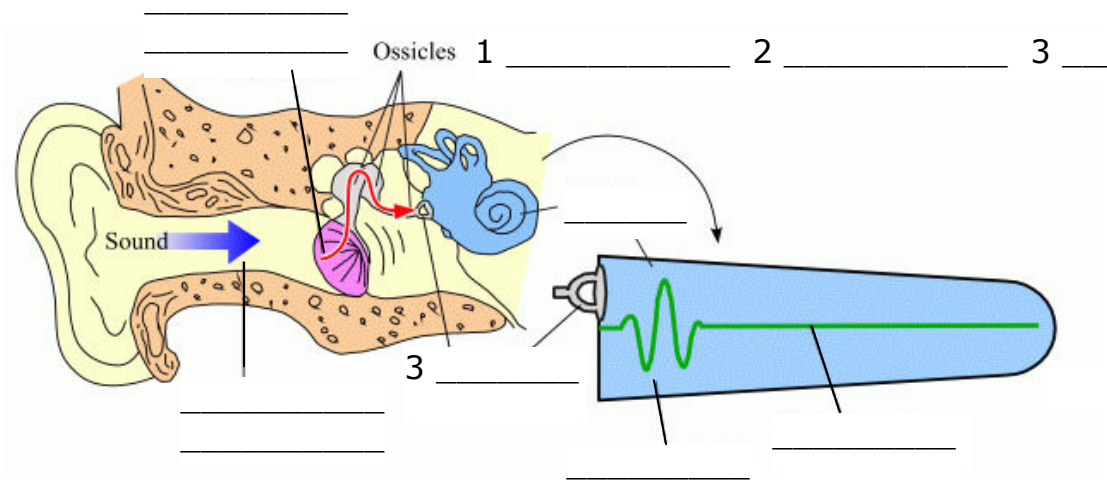
9.01 Introduction to Neuroscience
Fall 2007

9.01 Recitation 10/31/07
Section 3

- **Exam 1**
  - Monday 11/5, 2:30-4p
  - Location: TBA
  - Coverage: chapters 7-11 (*not including* neuroanatomy appendix) and 13-14, and Problem Set 2 (make sure you understand the problem set!)
  - Format: multiple choice, short answer, essay

- *Read the book and take good notes.*
- *Do practice problems from the Brown website and OCW!*
  - http://www.brown.edu/Courses/BN01
  - http://ocw.mit.edu/OcwWeb/Brain-and-Cognitive-Sciences/9-01Fall-2004/Exams/index.htm
- *Review/Q&A session:* Saturday 11/3, 2-4p, (9.01 classroom)

Audition



Base: Apex:

Inner hair cells

Outer hair cells

Auditory pathway

Spiral ganglion → Ventral cochlear nucleus → Superior olive* → Inferior Colliculus → MGN →

*:

Neural coding

- Stimulus intensity

- Tonotopy

- Phase locking

Sound localization

- Interaural time delay

- Interaural intensity difference

- Binaural neurons

- Pinna

1. Which is the most rostral of the following auditory nuclei?
(a) Medial geniculate nucleus
(b) Inferior colliculus
(c) Dorsal cochlear nucleus
(d) Ventral cochlear nucleus

2. The most caudal structure in which cells of the auditory system are binaurally sensitive is:
(a) Cochlear nuclei
(b) Superior olive
(c) Inferior colliculus
(d) Medial geniculate nucleus

3. If you open a K^+ channel on the stereocilia of an inner hair cell, the cell will _____. If you open a K^+ channel on the cell body of an inner hair cell, the cell will _____.
(a) Depolarize; depolarize
(b) Hyperpolarize; hyperpolarize
(c) Depolarize, hyperpolarize
(d) Hyperpolarize, depolarize

Motor System

Lower motor neurons

- Alpha motor neurons

- Distribution:

- Control of muscle force:

- Muscle contraction sequence:

1.
2.
3.
4.
5.

- Gamma motor neurons

Reflexes

- Myotatic (stretch) reflex

- Crossed-extensor reflex

Central pattern generator

Descending Spinal Tracts

- Lateral pathways

- Corticospinal tract
- Rubrospinal tract

- Ventromedial pathways

- Vestibulospinal tracts
- Tectospinal tract
- Pontine reticulospinal tract
- Medullary reticulospinal tract

Cortical control

- M1 (primary motor cortex)
    - Neural coding for movement:
- PMA
- SMA
- Area 5, Area 7
- Prefrontal cortex

Basal ganglia

- Motor loop

Cerebellum