

Eril Lester and Doug Adams
Neuroscience 430
Modeling Assignment

Outline

Neuroscience Concept: Audition, specifically the operation of the tympanic membrane and hair cells of the cochlea.

Model: Tightly stretch a piece of plastic wrap over a large bowl. The plastic represents the eardrum. Place about 20-30 grains of uncooked rice on the top of the plastic wrap. Bang a cookie sheet near the plastic wrap to vibrate the “eardrum.” The band produces sound waves (changes in air pressure) that cause the plastic sheet to vibrate, causing the rice grains to move, demonstrating the way sound waves move the eardrum. Have another bowl with a hole in the plastic wrap to demonstrate the decreased response of a punctured eardrum to sound waves. Another bowl with a paste of flour, baking soda and water smeared over the plastic wrap will demonstrate the decreased functioning of an eardrum covered in lots of earwax or infection. Secondly, make a poster featuring a large comb cut at a diagonal that will represent the hair cells of the cochlea, and a picture of the brain connected to the comb by string. Manual manipulation of the comb will produce a noise much like the tympanic fluid manually moves the stereocilia of the hair cells. A string will attach the comb to the temporal lobe, roughly illustrating the auditory nerve.

Materials:

- Plastic wrap
- Container with wide opening
- Uncooked rice
- Baking soda, flour, water paste
- Poster board with picture of brain
- Comb cut at a diagonal