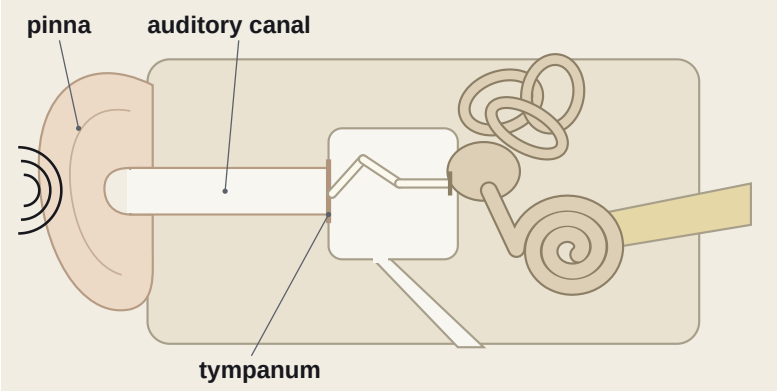
A9 · The ear: hearing and balance · Notes

Goals: Name the parts of the outer, middle and inner ear, and give the job of each. Describe how the organ of Corti starts action potentials. Trace sound from the pinna to the brain. Explain how the semicircular canals help you keep your balance.

Name: _____ Date: _____

Slide 1 of 5 · The outer ear

In lesson A8, the eye changed light into action potentials. Today the ear does the same with sound. It also keeps your balance.



Key ideas

The _____ collects sound waves.

The _____ carries them inward.

The _____ is a thin sheet. It _____ when sound hits it.

Example

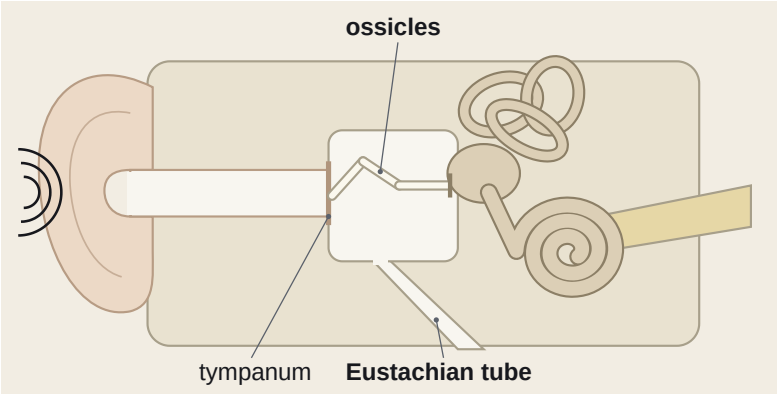
Name the three parts of the outer ear, in the order sound reaches them.

Try it

State what the tympanum does when sound waves reach it.

Slide 2 of 5 · The middle ear

On the last slide, sound made the tympanum vibrate. Behind the tympanum is a small space filled with air: the middle ear.



Key ideas

The _____ are three tiny bones. They cross the middle ear.

They pass the vibrations along and make them _____.

The _____ joins the middle ear to the throat.

It keeps the air _____ the same on both sides of the tympanum.

Example

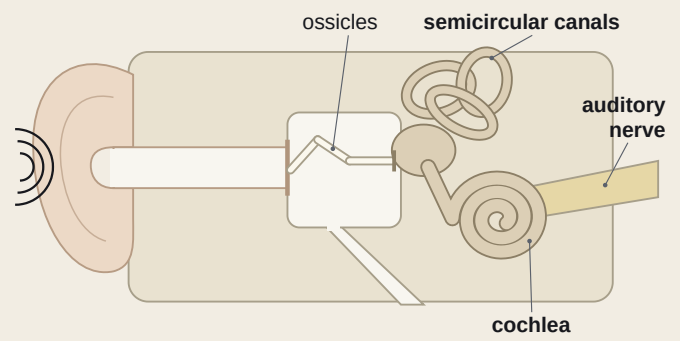
State the job of the ossicles.

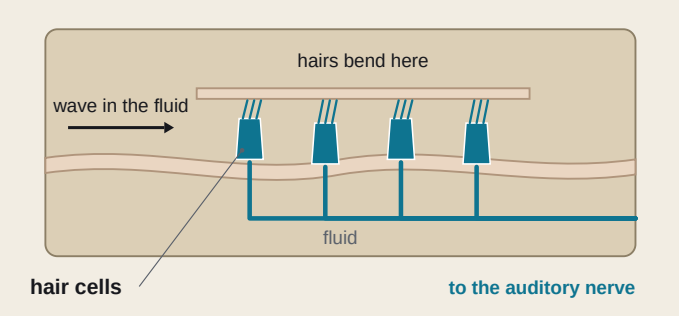
Try it

State the job of the Eustachian tube.

Slide 3 of 5 · The inner ear: the cochlea and the organ of Corti

On the last slide, the ossicles carried stronger vibrations to the inner ear. The inner ear is filled with fluid, not air.





Key ideas

The _____ is coiled like a snail shell. It is the part for hearing.

Inside it is the _____, which holds _____.

A wave in the fluid bends the hairs. The hair cell starts action potentials.

The _____ carries them to the temporal lobe.

Example

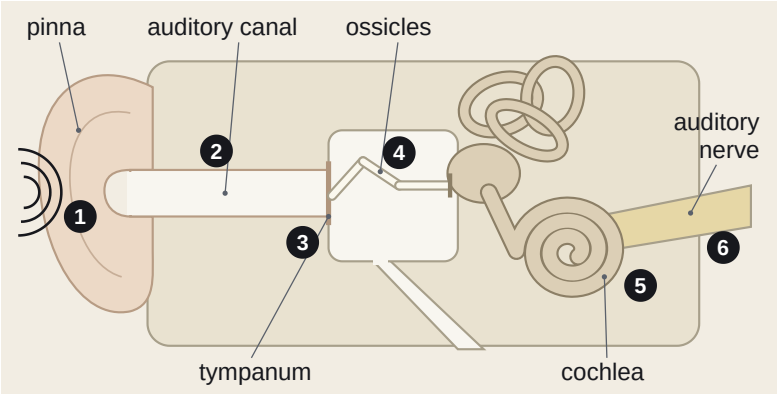
Describe how a hair cell starts action potentials.

Try it

Name the lobe of the cerebrum where the sensation of sound happens.

Slide 4 of 5 · Method: trace sound from the pinna to the brain

You have now met every part that sound passes on its way to the brain. Here the path becomes six steps.



Key ideas

Sound passes the pinna, the auditory canal and the _____.

The _____ make the vibrations stronger.

In the _____, hair cells bend.

The _____ carries action potentials to the temporal lobe.

Example

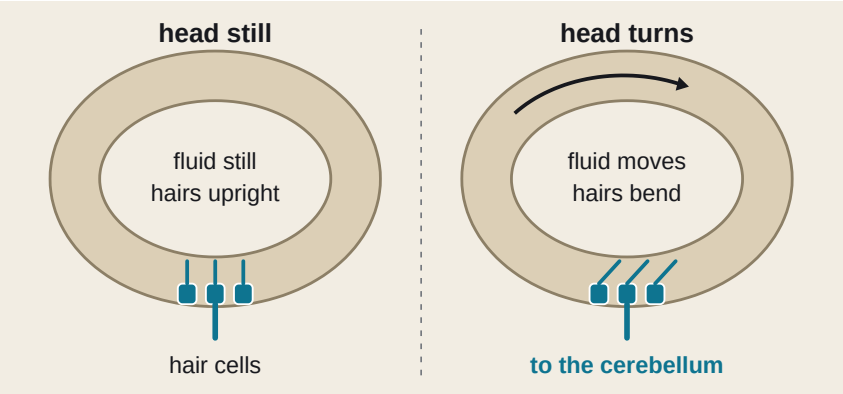
List the six parts that carry sound from outside the ear to the brain.

Try it

Use the six steps. The ossicles cannot move. Explain why the ear hears poorly.

Slide 5 of 5 · Balance: the semicircular canals

On slide 3, the inner ear had a second part: the three semicircular canals. They have nothing to do with hearing.



Key ideas

The _____ are filled with fluid.

When you turn your head, the fluid moves and bends the hairs of _____.

Action potentials go to the _____.

The cerebellum uses them to keep your _____.

Example

Name the part of the brain that receives action potentials from the semicircular canals.

Try it

The semicircular canals of both ears are damaged. The cochlea is healthy. Predict the effect on hearing and on balance.