Re: Why is the cochlea in our ears shaped like a spiral?

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Low frequency detection needs space.
Like large musical instruments generally produce larger wavelengths.
Large creatures make deeper sounds.
Large antennas make long radio waves.
But in the head, space is premium commodity.
So it is natural that an amplification mechanism favoring larger wavelenths is used.
Long wave radio receivers use coils with graphite cores to amplify signals.
I wonder if that is the same principle.
Some sea shells are used as flutes, since it acts as a resonance chamber.
They make some brass instruments coil to make them small enough to play.
Basically when you need a long instrument to fit a small chamber, you coil it, like DNA too.

"Sam Wormley" <swormley1@xxxxxxxxx> wrote in message news:yplRf.820688$x96.109621@xxxxxxxxxxxx

> Inner−ear mystery solved
> http://physicsweb.org/articles/news/10/3/8/1
>
> 13 March 2006
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> Why is the cochlea in our ears shaped like a spiral? According to new work by scientists in the US, the spiral shape makes us more sensitive to low frequency sounds. Daphne Manoussaki of Vanderbilt University in Nashville, Tennessee, together with Emilios Dimitriadis and Richard Chadwick at the National Institutes of Health in Bethesda, Maryland, have calculated that the spiral shape can affect the wave mechanics that take place inside the cochlea. It increases the strength of vibrations produced by sound waves, especially at low pitch (Phys. Rev. Lett. 96 088701).
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> The cochlea is a small seashell−shaped organ in the inner part of the ear where sound vibrations are converted into nerve impulses. These are then sent to the brain as electrical signals. The human cochlea occupies a volume of about 1 cubic centimetre and operates at frequencies between 20 hertz and 20 kilohertz. It can detect sounds

over a range of 120 decibels.

See: http://physicsweb.org/articles/news/10/3/8/1

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