



* The spiral shape of the cochlea enhances sensitivity to low frequency sounds by ~ 20 dB!

Energy propagating in acoustic waves of perilymph fluid thus accumulates against the outside edge of the cochlear chamber. This effect is the strongest at the far end (*i.e.* center) of cochlea – where low frequency sounds are sensed. Analogous/related to the so-called “whispering gallery mode” effect – whispers travel along the curved walls of a large chamber, and remain strong enough to be heard clearly on the opposite side of the room!

D. Manoussaki, *et al.*, Phys. Rev. Lett. 96, 088701 (2006).

* Note that:

$$20 \text{ dB} = 10 \log_{10}(G_s) \Rightarrow \log_{10}(G_s) = 20/10 = 2 \Rightarrow G_s = 10^2 = 100.$$

i.e. 20 dB corresponds to a signal gain $G_s = S_{out}/S_{in} = 100\times$ in the low frequency region!!!