

Hearing Loss/Disorders:

At birth, humans can hear over the frequency range $20\text{ Hz} - 20\text{ KHz}$.

As we grow older, we experience “natural” hearing loss (Presbycusis), particularly in the higher frequency range. (See age-related hearing plots below...)

Very loud sounds can temporarily and/or permanently damage sensitive hearing nerves in the cochlea. Repeated acoustic trauma can cause permanent (and profound) hearing loss or deafness.

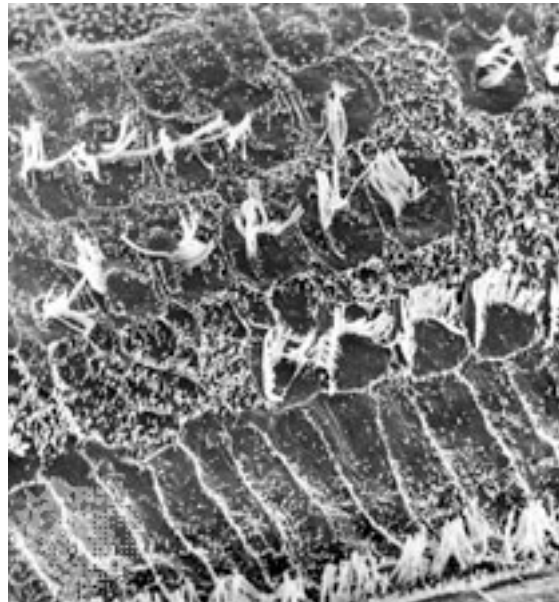
If you have ever experienced a temporary hearing loss due to loud sounds – you have had a warning! *n.b.* the stereocilia do regenerate (daily), but if the hair cells are damaged/die, there is no regrowth of hair cells!

- * tinitis – ringing in the ears (can be due to more than one cause)
- * ear infections can also lead to hearing loss, especially in young children & infants.
- * loud explosions (artillery shells – military)
- * determining factor of damage to hearing is product of exposure time \times loudness level
- * Hearing loss due to over-stimulation of hair cells – causes excito-toxicity – too much Ca^{2+} poisons neurons in the auditory nerve...

Extreme Acoustic Trauma - Guinea Pig Stereocilia Damage to 120 dB Sound Pressure Levels:



Before Exposure



After Exposure

Protect your hearing – it’s all you’ve got!!!