

# THE BIONIC EAR SHOW

is an educational, fun and interactive show that promotes safe listening. During the show you can learn how the sound travels through the ear to the brain, become a sound wave and much more

deafness research uk

# BIONIC EAR show



## OUTER EAR



The visible part of the ear (Pinna) is as unique as a fingerprint unless you are an identical twin!

The average nightclub pumps up the volume to 110 decibels, loud enough to rock your body! Use ear plugs to protect your hearing without distorting the music!

The folds of the Pinna help you identify whether sound is coming from above or below.

You can tell where sound is coming from to within an angle of 1 degree.

## MIDDLE EAR

The Hammer, Anvil and Stirrup are the smallest bones in your body.

Deafness Research UK scientists are at the cutting edge of research into deafness, tinnitus and hearing related problems. Together we can make deafness a thing of the past.

The bones in the middle ear can vibrate up to 2,000 times a second! (2000hz)

The ear canal is shaped like a traffic cone, large at one end and small at the other. This helps direct sound onto the ear drum.



## INNER EAR



The cochlea (part of the Inner ear) is 3.5cm long and the same diameter as a 5 pence piece.

Sounds above 85 decibels at work mean you MUST wear ear protection. It's the law!

You have two types of sensory cells in the cochlea, 13,000 outer hair cells that detect the sounds...

...and 3,000 inner hair cells that make the signal stronger.

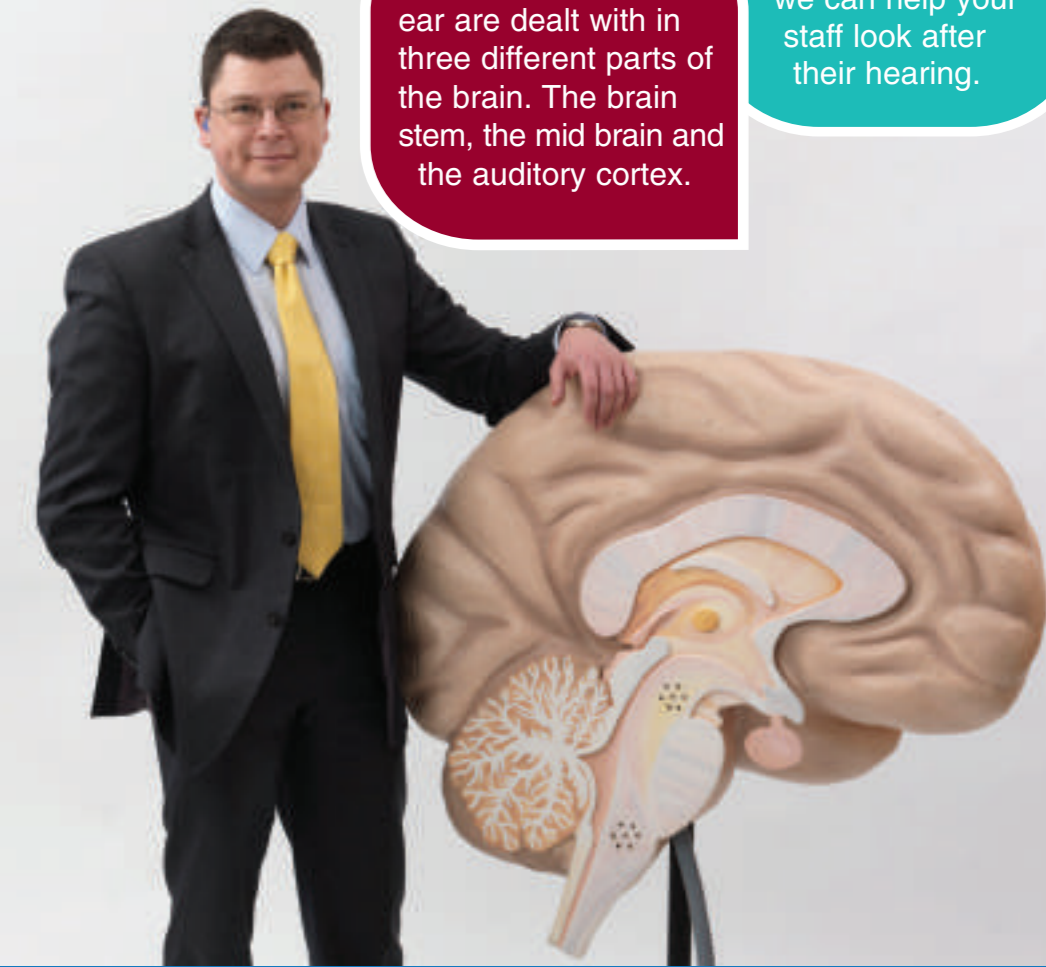
## BRAIN

Linking all these hair cells are 30,000 nerves going directly to the brain.

The left side of the brain specialises in speech so a stroke can leave you able to hear, but unable to understand language.

We are currently booking shows for companies, get in contact to see how we can help your staff look after their hearing.

The signals from the ear are dealt with in three different parts of the brain. The brain stem, the mid brain and the auditory cortex.



## ABOUT DEAFNESS RESEARCH UK

Deafness Research UK is the only national charity in the UK dedicated to finding cures for deafness and other conditions such as tinnitus.

There has never been a more exciting time for research. We are on the threshold of truly revolutionary developments in genetics, pharmacology, digital technology, and many other disciplines which, over the next decade, could dramatically improve the quality of life for millions of deaf and hard of hearing people in this country and around the world.

Scientists are now predicting that, within the next five to ten years they will be able to slow the advancement of the most common forms of deafness – age-related hearing loss. Within the next ten to fifteen years there could even be a cure for deafness and Deafness Research UK is at the forefront of this work.

Our scientists are also identifying genes that cause deafness and counselling the families affected; making hearing aids and cochlear implants more effective; investigating the causes of childhood glue ear so that non-surgical treatments can be developed and much more besides.

If you are diagnosed with either a hearing loss or tinnitus, contact Deafness Research UK's Advisory Service by calling our national freephone number: 0808 808 2222 or email us at: [info@deafnessresearch.org.uk](mailto:info@deafnessresearch.org.uk)

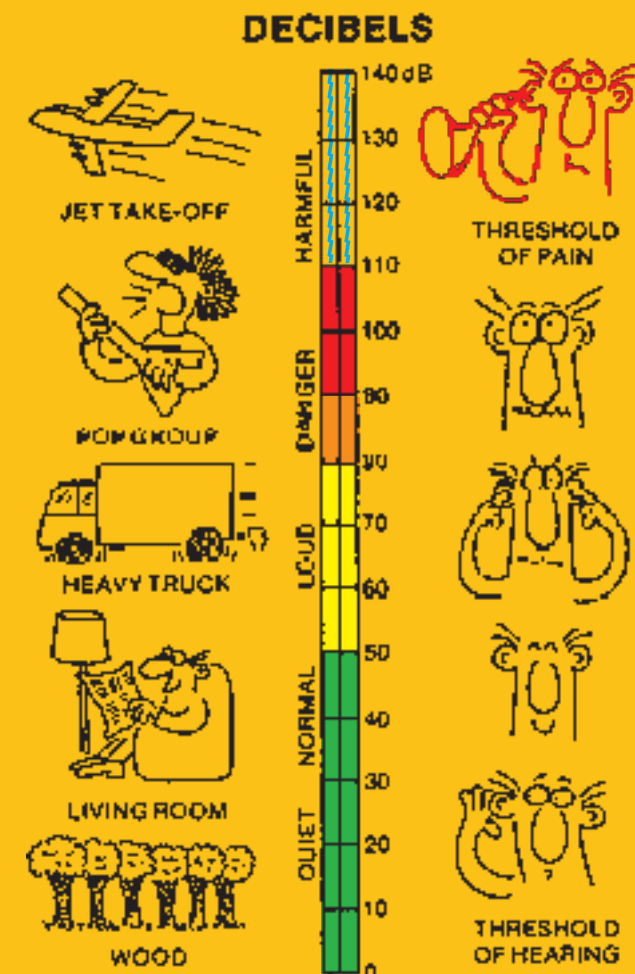
**TO BOOK THE BIONIC EAR SHOW PLEASE CALL LAURA ON 020 7679 8951 OR EMAIL HER AT [bionicearshow@deafnessresearch.org.uk](mailto:bionicearshow@deafnessresearch.org.uk)**

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## NOISE LEVELS



Noise is measured in decibels (dB). Human hearing roughly covers the range of 0 to 140 dB where 0 dB is the sound of a pin dropping and 140 dB that of a jet engine taking off. The dB scale is logarithmic like that of say the Richter scale which measures earthquakes. Please make sure you protect your ears properly when exposed to loud noise.

## NOISE AND MP3 PLAYERS

The ear can usually cope with sounds of up to 80 dB without risk of damage; this is equivalent to a street with lots of trucks going by. At 85dB the exposure time before risk of damage is 8 hours (or approximately a standard working day) so if you are in a work environment where the noise level is higher than this then you need to be wearing hearing protection. At 100 dB the exposure time is only 15 minutes before possible damage. Personal music players generally have a maximum volume of 100db (depending on the model). Turn down the volume! Even a small reduction can help you protect your hearing!



If you can hear the music through someone's headphones then they are listening at too loud a volume. If someone two metres away has to shout for you to hear them, then the noise levels are way too high. After a night out, if your ears are ringing, this could indicate that damage may have occurred. In this case it is a good idea not to go anywhere that's too noisy for a few days to give your ears time to recover.

**With sensible precautions you can maintain your amazing hearing system for years to come!**

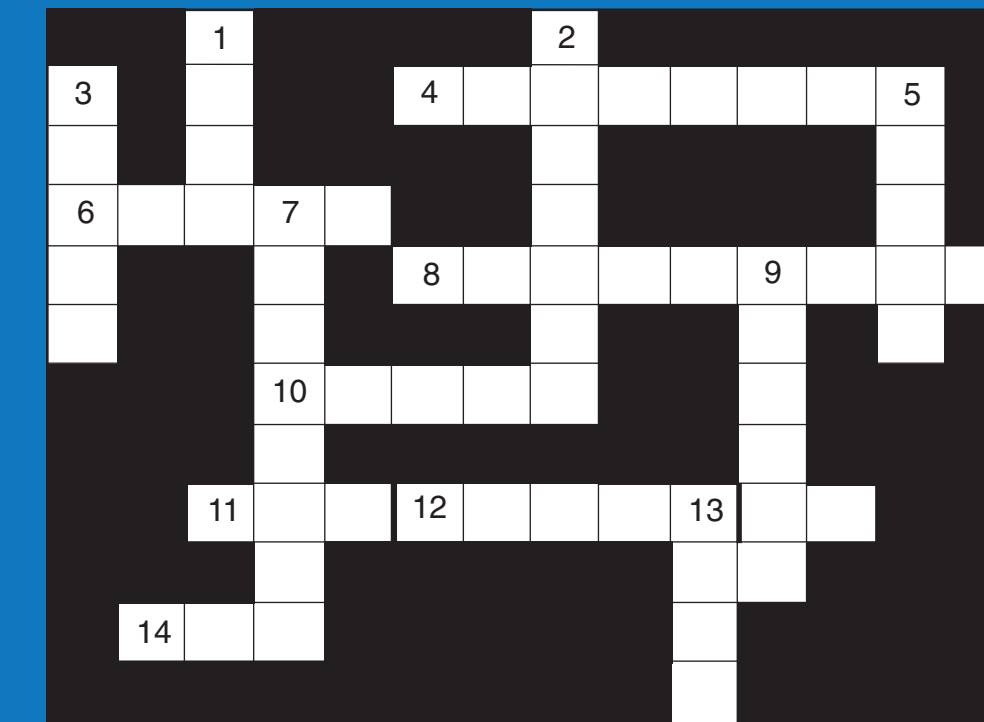
## TEN TOP TIPS

1. If you have problem ears, keep them dry!
2. Never poke anything into your ears – including cotton buds.
3. Protect your ears from loud noise.
4. To keep ears clean – wash the visible part of the ear (the pinna).
5. Rinse hair in fresh water when bathing.
6. Put a drop/spray of olive oil into each ear once a week if you have dry, itchy ears.
7. Avoid the common problem of ear pain when flying by chewing gum, swallowing water or yawning regularly, particularly while the plane is descending.
8. Don't ignore an ear problem.
9. If you suspect your hearing is not what it used to be, consult your doctor as soon as possible.
10. Don't be afraid to discuss any concerns you might have about your ears with a health professional.

**If you think you may have a problem with your hearing, contact Deafness Research UK's Advisory Service on 0808 808 2222**

## CROSSWORD

Complete the crossword and send it to us with your contact details. One randomly selected, correct answer will appear on our website [www.bionicearshow.org](http://www.bionicearshow.org) each month.



DOWN

1. What do you "beep" inside the car? (4)
2. Greek snail shell (7)
3. Presenter of the Bionic Ear Show (5)
4. Waves that wash over your ears (5)
5. Something big in the room (8)
6. Tool you find in the middle ear (6)
7. Loud noise in the night (4)

ACROSS

1. Tubes in the ear drum to cure glue ear (8)
2. Three that vibrate in the middle ear (5)
3. Ring, ring? (9)
4. Outside of the ear (5)
5. Karate Kid took this on and off (3)
6. Tenth of a bell, sound (7)
7. As blind as a... (3)