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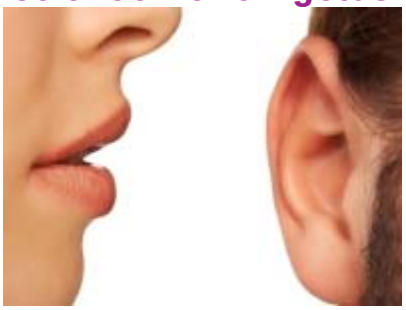

In the science news this week, we take a look at pioneering research in the surgical removal of brain tumours, Professor Winston's call to raise awareness of the benefits of animal testing. New research into the science of unpleasant sounds and finally... Halloween is evidence that women can mentally control the timing of childbirth.

Glowing tumours help surgeons

Researchers from the University of Cambridge are in the process of testing a new procedure that causes brain cancers to glow, assisting the accuracy of surgeons during operations.

Using a trial of 60 patients with glioblastoma, the patients were given the drug 5-amino-levulinic acid (5-ALA), which causes a build-up of fluorescent chemicals in the tumour.

Once this has occurred, it should clearly outline the tumour, ensuring that the entire tumour is removed and that no extra tissue is removed unnecessarily.

Dr Colin Watts, who is leading the trial at the University of Cambridge, told the BBC that surgeons "don't want to take too much functional tissue away".

Once the tumour is removed, the surgeons place a thin ‘drug soaked wafer’ in the void left by the tumour that slowly releases chemotherapy drugs over four to six weeks to kill any remaining cancerous cells.

Dr Watts said: "One of the problems with chemotherapy is we don't actually know the extent a drug penetrates a tumour because of the blood brain barrier."

By applying the drug directly to the tumour it should be at a higher dose.

Robert Winston defends animal testing in the House of Lords

Professor Robert Winston, who sits on the Council of the British Science Association, has called for medicines that have been tested on animals to carry

stamps similar to those found on cigarette packets in the House of Lords this week.

He has made this stand in order to raise awareness about the benefits the work can have and to highlight that taking medicines which had not been trialled in this way would be "unthinkable".

According to the Telegraph, he said: "I do not think we can argue that there is any substitute for animal research.

"Animal research has contributed hugely to physiological medical research in virtually every field. We need to say very clearly it would be unthinkable to take any drug which has not been tested on an intact animal."

"In fact, there is a case for having legislation to make it clear that a particular drug has only been possible for human consumption because of animal testing. This could be stamped on the packet, rather like a cigarette packet."

Professor Winston also praised the regulations and controls on animal experimentation in this country, and added that the standard of care for animals in British labs is "remarkably better than in almost any other jurisdiction".

The science of sound

The sound of chalk squeaking on a blackboard in an unpleasant childhood memory for many people, but it was never known exactly why sounds like this cause some people excruciating pain.

However, a new study published in ScienceNOW has shed more light on the situation.

Musicologists Michael Oehler of the Macromedia University for Media and Communication in Cologne, Germany, and Christoph Reuter of the University of Vienna subjected some willing participants to sounds such as fingernails raking against a chalkboard, chalk squeaking against slate, styrofoam squeaks and scraping a plate with a fork in order to find a more specific answer.

After the initial listening test, the researchers applied a number of modifications to the sounds, removing or attenuating various frequency ranges and selectively extracting either the tonal, musical-pitch parts or the scraping, growling, noiselike parts of the sound.

To add a psychological test to the study, some of the participants were told the true source of the sounds, whereas others were told that the sounds were part of contemporary musical compositions. They then rated the pleasantness or unpleasantness of the sounds while the researchers measured physical indicators of distress: the listeners' heart rate, blood pressure, and the electrical conductivity of their skin according to ScienceNOW.

The results found that a listener's skin conductivity changed significantly when the person heard 'unpleasant', demonstrating a measurable physical reaction.

Interestingly, they also found that the frequencies responsible for making a sound unpleasant were commonly found in human speech, which ranges from 150 to 7000 hertz (Hz). The offending frequencies were in the range of 2000 to 4000 Hz.

Physically their skin conductivity changed consistently regardless of whether they were told it was part of a musical composition or the true origin of the sound, but psychologically, being told the sound came from a musical composition, meant that they rated it as less unpleasant than if they knew it actually was fingernails on a chalkboard.

It is hoped that the future of this research could help engineers know which frequencies to modify or mask in order to make annoying sounds, such as whining vacuum cleaners, screeching factory machinery, or grating construction equipment, more pleasing to the ears.

And finally…

Born on Halloween? Apparently not so much…

Published in the journal Social Science & Medicine this week, a study by Yale School of Public Health has found that women are capable of influencing the timing of their babies' births in contrast to the current medical orthodoxy on the subject.

According to the research that analyses 2.5 million births in the US over an 11 year period, fewer children are born on Halloween due to the associations with death, evil and skeletons on this day that might subconsciously put women off giving birth.

"The study raises the possibility that the assumption underlying the term 'spontaneous birth', namely, that births are outside the control of pregnant women, is erroneous," Dr Levy told New Scientist magazine.

"We know that hormones control birth timing, and mothers do often express a desire to give birth on a certain day," she says. "But the process that allows those thoughts to potentially impact the timing, we don't know."

In contrast to Halloween, the study also found that the likelihood of women giving birth on Valentine's Day was on average 5% higher than on other days during the week before or the week after.

It was 3.6% higher for natural, non-induced births and 12.1% higher for Caesarean section births.

According to the Guardian, the chance of deliveries occurring on Halloween was on average 11.3% lower than during the days in the week before and after.