p = 0.01). Multivariate linear regression analysis showed LIDA to be the strongest predictor of Google ranking (Page rank decreasing by 0.10572 per LIDA score; p = 0.01).

Conclusion: As websites with better Google ranking were only weakly associated with higher quality rankings patients would benefit from being directed to reliable websites by clinicians. There is currently a gap in the available resources repository of otological information aimed at patients.

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Stem cell and their potential for hearing preservation (K853)

ID: 853.1

Stem cells and their potential for the restoration of hearing

Presenting Author: **Marcelo Rivolta**

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Learning Objectives: To present the current advances produced in our laboratory of the application of human pluripotent stem cells in the treatment of hearing loss.

The manipulation of human embryonic stem cells has open new horizons for regenerative medicine, especially for incurable conditions like deafness. Hopes have been fuelled further by the potential to generate patient-specific, induced-pluripotent stem cells (iPSCs).

Pluripotent stem cells need to be driven into the desired cell lineages. In our laboratory, we initially tackled this problem by isolating stem cells from the human fetal cochlea, and used them to unravel the basic signals involved in producing sensory cells. We then developed a method to generate otic cells from human embryonic stem cells (hESCs) using molecules that induce the formation of the ear *in vivo*. In this way we generated otic progenitors that can produce sensory hair cell-like cells and auditory neurons. When hESC-derived otic progenitors were transplanted into an animal model of auditory neuropathy, they survived, engrafted and differentiated into neurons. Moreover, they connected with the hair cells and the brain and, more remarkably, they elicited a functional recovery represented by improved ABR thresholds. We are now exploring if hESC-derived auditory neurons could interact with experimental cochlear implants. We have also developed iPSC lines using different techniques and we are adapting the methods developed for hESC for their use with iPSCs.

The field is still at an early stage, but the progress already achieved is substantial. Although the use of stem cells for hearing loss is likely to be initially limited to some conditions, this will probably change with the development of more efficient ways of producing sensory cells and with the improvement of delivery and grafting techniques. In summary, the presentation will revise the recent advances produced by our laboratory and the impact that this new technology could have in the future ways we treat this condition.

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Cholesteatoma imaging: current value and possibilities (K855)

ID: 855.1

Cholesteatoma: Pre- & Postoperative imaging

Presenting Author: **Jan Casselman**
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Learning Objectives: - Know the value of CT (CBCT) and non-EPI DWI in the diagnosis of cholesteatoma - Be familiar with the cholesteatoma mimickers and know how to avoid false positive and negative results - Be aware of the strenght of MR in the post-operative follow-up.

For many years CT was the only available technique. Its accuracy was however low as it failed to visualise new and residual lesions in partially or completely non-aerated middle ears and post-operative cavities.

Characterization of lesions in the middle ear with MR became possible in well-, partially- and non-aerated middle ears. Cholesteatomas do not enhance, scar tissue and/or granulation tissue in postoperative cavities sometimes enhances only after 30 to 40 minutes. Therefore scar tissue can only be distinguished on contrast-enhanced T1W images made 45 minutes after contrast injection. However this technique is time consuming and requires gadolinium injection and false positive and negative results were reported.

Cholesteatomas have a very characteristic high signal intensity on non-EPI DWI images. High resolution non-EPI DWI is able to detect lesions down to 2 mm. False negatives are rare and are due to movement or metal artefacts, auto-evacuation etc.

Studies showed that non-EPI DWI is the only sequence needed, making cholesteatoma screening very short (< 8 min.) and obviating the need for contrast materials.

After CWU surgery, the bony walls of the EAC are still intact and therefore post-operative clinical inspection is limited. Hence the need for imaging to detect residual cholesteatoma.

The value of this technique is even more crucial in patients who were treated with a "bone obliteration technique" or "mastoid/middle ear/external auditory canal exclusion technique". Post-operative inspection or second look surgery is not a real option in these patients. The accuracy of pre- and post-op non-EPI DWI is high is therefore replacing CT and second look surgery throughout the world. Finally today excellent software is available which allows matching of non-EPI DWI and Cone Beam CT images. These images provide the surgeon with all necessary information in one