

**Tissue Engineering in the Auditory System:
Paving the way from basic science to clinical practice.
The Ear Foundation.**

June 2nd 2011, London (United Kingdom).

Conference report by Vincent Van Rompaey (Antwerp, Belgium).

Introduction

I was very pleased to read the first announcement of this symposium on the current state of the art in otologic tissue engineering. The international faculty of experts in the field assembled by professor Gerard O'Donoghue and doctor Marcelo Rivolta was very promising. I want to express my gratitude to the organizing committee and the European Science Foundation for being awarded a travel grant and to support young researchers to attend this kind of landmark translational meetings.

Conference report

The meeting was organized in the historic building of the Royal Society at the intersection of Pall Mall and Waterloo Place overlooking St James's park. A marvelous location on a sunny cloudless day.

The first speaker was professor Robin Ali (London, United Kingdom) who reported on the current state of the art in transplantation of rod precursor cells in the eye. The title "Lessons from the Eye" was well-chosen as this presentation demonstrated that tissue engineering in ophthalmology was ahead of otologic research. The discussion of animal behavioral models also indicated the difficulties of outcome analysis in animal sensory organs.

The second speaker was professor Helge Rask-Andersen (Uppsala, Sweden) summarizing recent advances in cochlear ultrastructure and neuronal morphology. Controversial and unpublished results were discussed and provided an intriguing insight in the opinion of this eminent speaker. Although cochlear anatomy was presumably well-known to all attendees, I think we were all confronted with some novelties to extend our knowledge on the ultrastructure of this fascinating organ.

The third speaker was professor Andrew Forge (London, United Kingdom) summarizing his lab's work on injury to the organ of Corti. The pathophysiology was discussed extensively and left us with the notice that a significant amount of work was still needed in this field to allow for future therapies to reduce damage to the organ of Corti. Nevertheless, a rather optimistic prospect was suggested for regeneration of vestibular hair cells.

The fourth speaker was professor Robert Shepherd (Melbourne, Australia), who has an extensive experience in medical bionics. His talk discussed the preservation of spiral ganglion cells by using locally applied neurotrophines and electrical stimulation. This therapy appears to be very promising.

The fifth speaker was one of the organizers, doctor Marcelo Rivolta (Sheffield, United Kingdom), reporting on his experience with human auditory stem cells. I believe this presentation was the most optimistic one, probably due to the relative

advances made in the last couple of years. The possibility to induce neuronal sprouting artificially entails a huge potential in case of auditory neuropathy of spiral ganglion cells.

The sixth speaker was professor Juichi Ito (Kyoto, Japan) discussing his experience with insulin growth factor-1 (IGF-1) as a biodegradable hydrogel in patients with sudden sensorineural hearing loss. I am looking forward to the results of the fase II trial comparing locally applied IGF-1 versus locally applied corticosteroids in patients with sudden sensorineural hearing loss.

The seventh speaker was professor Alessandro Martini (Padova, Italy) discussing nanoparticles and the NanoEar project. The preliminary results were promising and I am eager to read on the upcoming advances in this groundbreaking field.

The final speaker was professor Andrej Kral (Hannover, Germany) discussing the role of central auditory pathways. I found this presentation the most inspiring one because the central pathways are not generally reported in otologic literature and we tend to miss out on these publications. Professor Kral's presentation has sparked an interest in the research on central mechanisms explaining the influence of the central nervous system measures on optimal timing of early cochlear implantation.

Professor Alain Uziel (Montpellier, France) coordinated the round table with all speakers excellently, emphasizing the clinical impact of the work presented.

Summary

In summary, this has proven an excellent conference, which met my expectations generously. I will be eager to follow-up on the literature produced by these eminent researchers and await the following meeting on tissue engineering.

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