OTOSTEM

Project ID: 603029
Funded under: FP7-HEALTH

Human stem cell applications for the treatment of hearing loss

From 2013-11-01 to 2017-10-31, closed project

Project details

<table>
<thead>
<tr>
<th>Total cost:</th>
<th>EUR 7 892 595,60</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU contribution:</td>
<td>EUR 5 999 784</td>
</tr>
<tr>
<td>Coordinated in:</td>
<td>Germany</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Topic(s):</th>
<th>HEALTH.2013.1.4-1 - Controlling differentiation and proliferation in human stem cells intended for therapeutic use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call for proposal:</td>
<td>FP7-HEALTH-2013-INNOVATION-1 See other projects for this call</td>
</tr>
<tr>
<td>Funding scheme:</td>
<td>CP-FP - Small or medium-scale focused research project</td>
</tr>
</tbody>
</table>

Objective

Hearing impairment is the most frequent human sensory deficit and is mainly caused by the irreversible loss of neurosensory cells in the cochlea. The lack of human otic cell models represents a significant roadblock that has hampered the development of drug-based or cell-based therapies for the treatment of hearing loss. In a collaborative effort under this proposal we wish to devise approaches to generate human otic progenitors and differentiated otic cells from different human stem cell sources. We have devised guidance protocols for mouse and human embryonic and reprogrammed stem cells toward inner ear cell types that make use of principles of early germ layer formation and otic induction. A limitation is the efficacy of otic progenitor cell generation. Purification techniques for human otic progenitors from ES/iPS cell sources and in addition from native human otic tissues from fetal and adult stages will will serve the dual purpose for one to enable the development of novel bioassays for drug screens, as well as generating cells with decreased tumorigenicity for cell transplantation studies in in vivo animal models. New hit compounds identified from screening efforts will be tested and validated further in established organ culture models. The scope of this stem cell technology development requires a collaborative team effort, with groups that have substantial combined experience in human ES/iPS cell work, inner ear stem cell biology, high-throughput assay development, and in translating research findings into the clinic as well as into the biotechnology realm. Within the consortium there exists an established translational route from bench to bedside for the commercial development of human otic stem cell derived technology towards inner ear medical applications aiming at the restoration of hearing function.

Related information

<table>
<thead>
<tr>
<th>Result In Brief</th>
<th>‘Hearing loss in a dish’ model tests new treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Summaries</td>
<td>Final Report Summary - OTOSTEM (Human stem cell applications for the treatment of hearing loss)</td>
</tr>
</tbody>
</table>
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Subjects

Life Sciences

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