can you hear me now?

nanoCI
nanotechnology based cochlear implants

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SEVENTH FRAMEWORK PROGRAMME

NANOCI receives funding under the 7th Framework Programme of the EU

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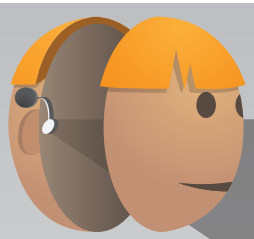
TOWARDS MORE *"NATURAL"* HEARING

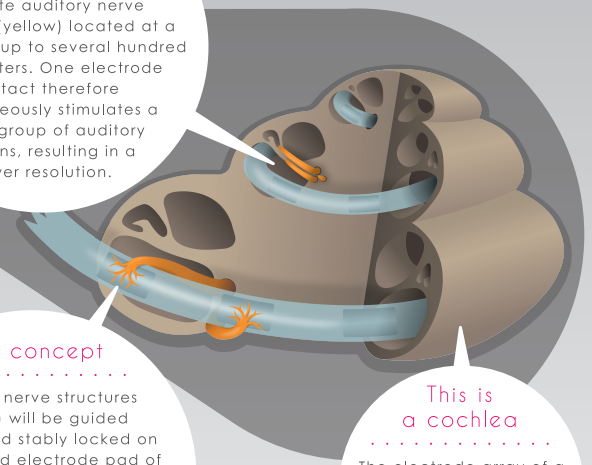


Over 60 million of citizens in the EU suffer from hearing loss. In the most severe cases, hearing can only be restored by surgically implanting a neuroprosthesis (cochlear implant), which directly stimulates the auditory nerve. Current devices are highly effective and widely used, however some limitations remain.

NANOCI aims at improving cochlear implant systems by combining principles of regenerative medicine, nanotechnology and biomedical engineering in an ambitious and well-balanced approach.

State of the art

Current cochlear implants stimulate auditory nerve structures (yellow) located at a distance of up to several hundred micrometers. One electrode contact therefore simultaneously stimulates a larger group of auditory neurons, resulting in a lower resolution.



Our concept

Auditory nerve structures (yellow) will be guided towards and stably locked on the modified electrode pad of the NANOCI electrode array. If successful, smaller groups of neurons will be stimulated from one electrode pad, resulting in a higher resolution.

This is a cochlea

The electrode array of a cochlear implant has been inserted for stimulation of the auditory nerve structures.

A normal hearing ear allows a perception of sounds with a very high resolution. Current cochlear implant systems have a limited resolution due to the distance of the stimulating electrode to the auditory nerve structures. Within the NANOCI project, we aim at generating a gapless man:machine interface in the inner ear, allowing a higher resolution and more "natural" hearing.

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