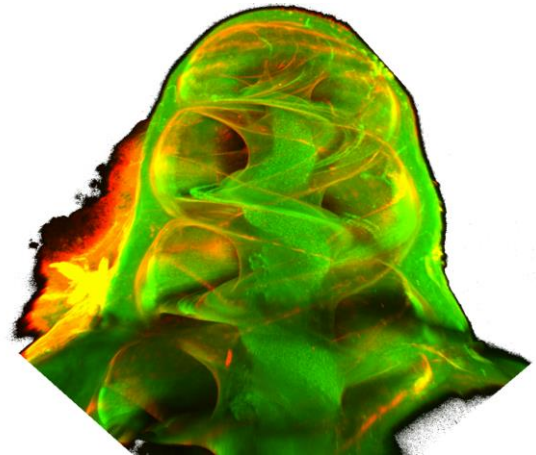


## ACTION Project

The aim of the project is to develop a novel type of cochlear implant. This is a medical device which is used to restore auditory sensations for hearing-impaired listeners.

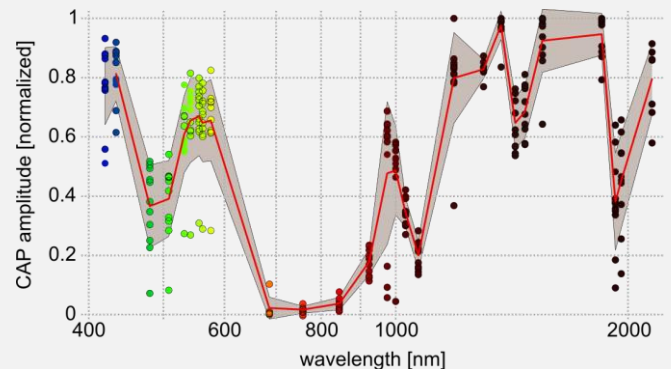
The implant consist of several parts, most important is the electrode, which is placed into the inner ear, namely into the cochlea. Currently available solutions use electric stimulation in order to trigger the available spiral ganglion neurons. ACTION will instead use optoacoustic stimulation to trigger the available residual hair cells. To this end, very small lasers - so called VCSELs - will be placed into the cochlea to stimulate the hair cells using the optoacoustic effect.



### Investigations at MHH

At MHH optimal laser parameters for optoacoustic stimulation via laser light are analysed in experimental studies. Several parameters have to be taken into account, for example the wavelength, the optical power, the pulse duration or the pulse energy of the laser pulse. Experiments performed so far have shown that optical pulse peak power plays a major role in stimulating the cochlea and have identified suitable ranges for other laser parameters. Furthermore, the investigations have led to a better understanding of the mechanism behind the optical stimulation. Another important task at MHH is the testing of the VCSEL implants that will be inserted into the cochlea.

For additional information, please contact [info@action-project.eu](mailto:info@action-project.eu) or visit our website at [www.action-project.eu](http://www.action-project.eu)



### Project Partners

MED-EL, CSEM SA, Medizinische Hochschule Hannover, Teknologian tutkimuskeskus VTT Oy, SUSS MicroOptics SA, VERTILAS GmbH, STMicroelectronics