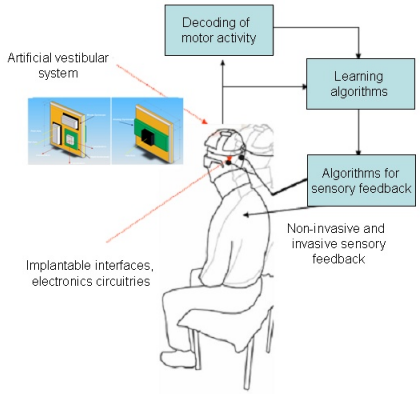
The main goal of the CLONS project is to develop suitable technological solutions to increase the quality of life of people affected by vestibular disorders.

An innovative closed-loop sensory neural prosthesis will be developed and tested in animal models and in selected humans.

This neural prosthesis will be able to restore vestibular information by stimulating the semicircular canals thanks to the information provided by inertial sensors embedded in a device attached to the head and donned by the user.



The CLONS system concept

The effectiveness of the CLONS neural prosthesis will be tested in animal models and during the final part of the project in selected human volunteers.

Project outcomes will allow the achievement of increased neuroscientific, clinical, and technological knowledge, guidelines for the development of other bidirectional interfaces and neural prostheses, as well as roadmaps for future development of hybrid bionic systems.

www.clons-project.eu

The CLONS Consortium

Seven partners from EU and USA

Scuola Superiore Sant'Anna, Pisa, Italy (coordinator)
College de France, Paris, France
University College London, United Kingdom
University Hospital Geneva, Switzerland
Fraunhofer Institute for Biomedical Engineering, St. Ingbert, Germany
Massachusetts Ear and Eye Infirmary, Boston, United States
Swiss Federal Institute of Technology, Zurich, Switzerland

Project co-ordinator:
Silvestro Micera, Ph.D.
ARTS Lab, Scuola Superiore Sant'Anna
P.za Martiri della Libertà, 33 - 56127 Pisa, Italy
Phone work:: +39-050-883454
Fax: +39-050-883497
http://www.sssup.it

Project start: 2009
Project duration: 4 years

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CLONS

CLOsed-loop Neural prostheses for vestibular disorderS

Project funded by the EU commission
FP7-ICT-2007.8.0 FET Open
Project number 225929

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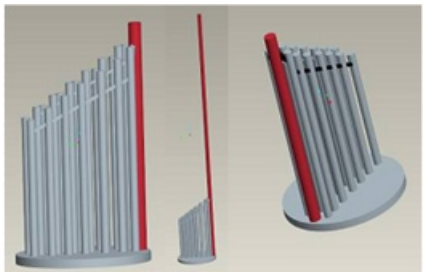
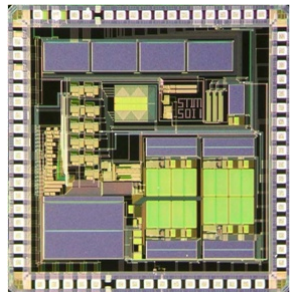
CLONS neuroprosthesis will be composed of the following modules:

Artificial system attached to the head that mimics the function of the natural vestibular system

Intra-vestibular stimulation/recording interfaces, like multi-site stimulation electrodes, able to create connections with neurons innervating the vestibular periphery



New mathematical and computer models of the vestibular organs used together with the artificial sensors



Implantable circuitry for the connection between the implant and the external components

Algorithms to decode measured responses evoked by the vestibular prosthesis, to deliver sensory feedback, and to guide the “tuning” of the vestibular prosthesis (“learning algorithms”)

At the end of the third year, the possibility of carrying out chronic implants in humans will be evaluated taking into account the results achieved during the experiments with animal models.

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