Fact-Sheet

Hearing4all.connects

Innovating Hearing Health Technology from Ear to Brain to Society

Applicant universities
University of Oldenburg (UOL, Managing University),
Hannover Medical School (MHH),
Leibniz University Hannover (LUH)

Participating institutions
Hörzentrum Oldenburg gGmbH, Fraunhofer Institute for Digital Media Technology IDMT, Oldenburg Branch for Hearing, Speech and Audio Technology (Fraunhofer IDMT/HSA), Jade University of Applied Sciences Wilhelmshaven/Oldenburg/Elsfleth, Laser Zentrum Hannover e.V.

Duration of funding and funding amount applied for
2026 – 2032 / 53.5 million euros

Spokespersons
Prof. Dr. Christiane Thiel (UOL),
Prof. Dr. Andrej Kral (MHH),
Prof. Dr. Holger Blume (LUH)

Number of principal investigators
25, 13 of whom are at the University of Oldenburg

Number of participating researchers
Around 350 from the fields of engineering, medical physics, ear, nose and throat medicine (ENT), psychology, neuroscience and linguistics, among others

Background

More than 30 years of hearing research in Oldenburg | Funded as a Cluster of Excellence with partners from Hannover since 2012 | Renewal of the Cluster of Excellence in 2018 | Cluster is the driver of the „Auditory Valley" research and development network, which has grown through the founding and integration of institutions focused on hearing in the region | Many years of research on biomedical and technical solutions for hearing loss | Currently almost every hearing aid worldwide contains innovations based on Hearing4all research.

What it's all about?

The Hearing4all scientists focus on five research areas:

1. Genotypic and phenotypic measures for a generalised auditory profile

Comprehensive hearing tests will be combined with genetic information to create individual hearing profiles. Researchers will study genetic causes of hearing loss, among other methods, using fruit flies that are bred to carry human disease genes.

Objectives

To develop new and improved diagnostics, predictions and treatments for hearing loss | To better understand genetic, physiological, psychological, physical and cognitive factors linked to hearing loss.

2. Advanced hearing devices

Artificial intelligence can be used to help hearing device and implant technologies distinguish more effectively between relevant sound and background noise, adapt to users' individual preferences and better process speech. Researchers are also exploring to what extent the function of cochlear implants in particular can be improved by, for example, combining them with neuromodulatory approaches (e.g. externally triggered nerve impulses) or supplementary biological therapies.

Objective

To improve hearing outcomes for users of hearing aids and implants.

3. Data-driven personalisation of hearing support

Containing the information of more than 10,000 patients, the Hearing4all database is one of the world's largest hearing research data repositories. The scientists plan to integrate this wealth of information in a comprehensive database and establish a global standard for audiological data. These large data sets can be used to train artificial intelligence models. A central component is the Virtual Hearing Clinic (VHC), an app that accompanies users in daily life and provides valuable data on their hearing situation.

Objectives

To establish an international data standard for audiology | To use AI to predict hearing loss probabilities and make recommendations for treatment

4. Hearing health technology

The ear is a good location for placing sensors that gather information about health factors such as gait speed, speech behaviour and vital signs. Hearing4all researchers aim to equip hearing devices with such functions, turning them into early-warning systems for diseases. For example, a sudden decline in gait speed, can be an early indication that a person will develop dementia at a later stage.

Objective

To develop hearing devices that go beyond improving hearing and act as comprehensive hearing health systems on the ear"

5. From hearing to understanding for participation in society

In this area, the researchers plan to investigate the importance of hearing in more realistic contexts than has previously been the case, for example by using mobile technology to conduct hearing research in locations beyond the lab, such as the workplace or public spaces. To gain access to people and everyday acoustic environments they will convert a van into a „Hearing4all-connects-lab". The scientists will also investigate the impact of multilingualism on hearing comprehension and how hearing loss affects social interactions.

Objective

To bring hearing research closer to the real-life environments beyond standardised lab situations.

The research areas are supported by the Translational Research Centre, which ensures that scientific discoveries can be transferred into clinical and practical applications.

Cooperation partners
Hanse-Wissenschaftskolleg – Institute for Advanced Study, Delmenhorst; HörSys GmbH Hannover, KIZMO GmbH, Oldenburg; Hearing Institute, Institut Pasteur (Paris, France); Ear Institute (University College London, UK); Australian Hearing Hub, Macquarie University (Australia); Department of Microelectronics and Electronic Systems of the Universitat Autònoma de Barcelona (Spain)

Contact
Prof. Dr. Christiane Thiel, Phone: 0441/798-3641, Email: christiane.thiel@uol.de

Press release, images and video material:
https://uol.de/exzellenz/presse