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# Individual Hearing Loss: Characterization, Modelling, Compensation Strategies

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## Abstract

It is well-established that hearing loss does not only lead to a reduction of hearing sensitivity. Large individual differences are typically observed among listeners with hearing impairment in a wide range of suprathreshold auditory measures. In many cases, audiometric thresholds cannot fully account for such individual differences, which make it challenging to find adequate compensation strategies in hearing devices. How to characterize, model, and compensate for individual hearing loss were the main topics of the fifth International Symposium on Auditory and Audiological Research (ISAAR), held in Nyborg, Denmark, in August 2015. The following collection of papers results from some of the work that was presented and discussed at the symposium.

## Keywords

individual differences, hearing loss characterization, auditory modelling, hearing aids, cochlear implants

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This special issue of *Trends in Hearing* presents papers based on work that was presented at the International Symposium on Auditory and Audiological Research (ISAAR) held in Nyborg, Denmark, in August 2015. The main topic of the symposium was “Individual Hearing Loss – Characterization, Modelling, Compensation Strategies”. ISAAR (formerly “Danavox Symposium”) takes place every other summer with the support of the Danavox Jubilee Foundation. The founder of the Danavox hearing aid company, Gerd Rosenstand, established the Foundation in 1968 on the occasion of the 25th anniversary of the Danavox company, whose name was later changed to GN Danavox and is today known as GN ReSound. The objective of the Danavox Jubilee Foundation is to support and encourage audiological research and development.

Since 1968, the funds of the foundation have been used to support a long-running series of international symposia within the area of audiology. The funds are managed by a board consisting of hearing researchers and audiological specialists who are entirely independent of GN ReSound. At the symposia, run by an organizing committee appointed by the board members, leading experts give presentations on their most recent research. Each symposium has an overall topic. Over the years,

symposium topics have covered evoked response audiometry, ear molds, speech audiometry, electroacoustic characteristics of hearing aids, evaluation of children with hearing disability, audio-visual perception of speech, binaural effects, time resolution in the auditory system, reading processes and hearing-impaired students, hearing-aid fitting, presbycusis, hearing-aid technology, Menière’s disease, cochlear implants, auditory models, genetics of hearing, brain and learning, auditory signal processing, speech perception and auditory disorders,

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auditory plasticity, and many other themes (see [www.isaar.eu](http://www.isaar.eu) for a list of previous symposia). In addition to the presentation of the scientific topics, one of the major aims of ISAAR is to promote networking and dialogue within the auditory and audiological community. ISAAR enables young scientists to approach more experienced researchers and vice-versa and supports links across disciplines and academic backgrounds.

In the beginning, the Danavox Symposium took place annually. From 1977 until today, the symposium has taken place every other year. In 2007, the Danavox Symposium was renamed the “International Symposium on Auditory and Audiological Research,” or ISAAR. The 2015 symposium was the 5th ISAAR and 26th symposium in the overall series. Different perspectives on new developments, hot topics, and future challenges were presented and discussed around several subtopics, including individual differences in impaired auditory perception, genetics of hearing loss, supra-threshold deficits and neural degeneration in the presence of normal hearing thresholds, modelling of individual hearing loss, as well as novel hearing rehabilitation and compensation strategies in state-of-the-art hearing instruments. Two hundred colleagues from all over the world contributed with 30 talks and 53 poster presentations.

Many of these contributions can be found as written articles in the ISAAR proceedings. These symposium proceedings have been published as books ever since the first symposium in 1969. They are an important source of information for the audiological community and have found their way onto many bookshelves. Subject to availability, the proceedings books may be ordered from the ISAAR website ([www.isaar.eu](http://www.isaar.eu)). All proceedings papers are also freely available for download from the GN ReSound Audiological Library ([www.audiological-library.gnresound.dk](http://www.audiological-library.gnresound.dk)).

For the first time at ISAAR 2015, all authors of accepted proceedings papers were offered the opportunity to submit an extension of their work to a special issue of *Trends in Hearing*. All submitted manuscripts for this special issue underwent a rigorous peer-review process as regular research articles. On behalf of the ISAAR board and organizing committee, we are happy to introduce the published papers as part of this first ISAAR special issue of *Trends in Hearing*. We would like to thank all authors for their contributions as well as the Editor-in-Chief, Andrew Oxenham, for making the publication of this special issue possible and for his help with the editorial work. We hope that you will enjoy this collection of papers. Happy reading and happy learning!