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The Cluster of Excellence at the Auditory Valley

Contact:

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www.hearing4all.de

2017 Hannover 54<sup>th</sup> Workshop on Inner Ear Biology and Symposium

Interventions in the ear: From inner ear biology to advanced therapy of hearing loss

## 13<sup>th</sup> - 16<sup>th</sup> September 2017



Hannover Medical School Germany

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Venue:

Hannover Medical School Carl-Neuberg-Str. 1 D-30625 Hannover

Germany

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## **Sponsors**

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### Dear Participants,

We take over the relay and continue the tradition of the meeting that has the longest history in auditory research.

The first Inner Ear Biology meeting took place in Nov. 6-7, 1964. It was organized by Prof. S. Rauch and Prof. A. Meyer zu Gottesberge in Düsseldorf, Germany. This was 7 years before the first Society of Neuroscience meeting and 12 years before the first meeting of the Association for Research in Otolaryngology took place.

In 2017, we again want to provide a platform for an excellent scientific conference. Due to the strong cochlear implant program here in Hannover we want to bridge basic research into clinical application and demonstrate you also research programs in the field of auditory rehabilitation. The whole research and development chain has been built up over the last 30 years with basic research, translation into medical products and clinical research for the use of new products in patients. The Hannover team welcomes you at the research facilities and let you also enjoy Hannover and its surroundings. In the oral presentations, we tried to conver all essential topics of inner ear research. The meeting will include the Symposium "Interventions in the ear: From inner ear biology to the therapy of hearing loss". Some of the submissions were organized into special sessions on "Hearing and light" and "Bioinspired signal processing". There will be in addition an ARO-sponsored symposium entitled "Developmental consequences of hearing loss".

We organize this IEB workshop also in memory of our colleague Günther Reuter who passed away recently. He did not only contribute to the auditory science and built up the Laboratories of Experimental Otology in Hannover, but was also an excellent mentor of many our students.

We welcome you in Hannover!





Prof. Prof. h. c. Dr. med. Thomas Lenarz Chairman, Department of Otorhinolaryngology, Hannover Medical School





Prof. Dr. Dr. Andrej Kral Chaired Professor of Auditory Neuroscience, Hannover Medical School

## Organizing committee



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Prof. Dr. Dr. Andrej Kral

Prof. Prof. h.c. Dr. Thomas Lenarz



Prof. Dr. Hannes Maier



Prof. Dr. Ing. Waldo Nogueira



Dr. Gerrit Paasche



Dr. Verena Scheper



PD Dr. Athanasia Warnecke

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Venue: MHH, Building J2

### Hosts:

Prof. Prof. h.c. Dr. med. Thomas Lenarz Prof. Dr. Dr. med. Andrej Kral

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Hannover Medical School, Germany

### Venue

### Building J2 Floor H0



Discovery of CDH23 as a Significant Contributor to age- related Sensorineural Hearing Loss in Koreans	Hye-Rim Park*, Min Young Kim, Jin- Hee Han, Seung-Min Lee, Doo-Yi Oh, Bong-JikKim, Byung Yoon Choi	P-53
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### **Poster presentations**

- Posters will be on display during the entire workshop
- Poster size: A0 (portrait configuration)
- Presentation at poster board only
- · Presenting author is responsible for setting up and removing the poster
- Presenting authors are requested to be at their poster(s) according to the designated schedule (see workshop program). In addition, it would be recommended they leave a note at their posters indicating their availability when visiting other posters.
- Fixation material will be provided
- The IEB Workshop is not responsible for posters and materials left after the workshop.

### **Oral presentations**

- Time for presentation: 12 minutes with an additional 3 minutes for discussion (except ARO sponsored session and symposium)
- Adhesion to the allocated speaking time will be strongly enforced; session chairpersons will be urged to monitor time management strictly
- Authors are requested to submit the presentation on USB-stick or CD at the Media Check at least 2 hours before their session starts
- Presentations will be on PC (NOT Mac)
- Formats: Powerpoint 2003 or newer
- The use of own laptops will not be allowed.

### Internet access

• Internet access will be available (further information on site).

### Few organizational notes:

- Hannover's taxi drivers do not accept credit cards!
- Currency in Germany is € (Euro). A cash machine is located at MHH main entrance
- Germany Time: Central European Summer Time (CEST) = GMT + 2
- Power supply: In Germany the power sockets are of type F. This socket also works with plug C and plug E.



More information: www.ieb2017.com



## MHH – Leading medical center in Germany

The Department of Otorhinolaryngology at Hannover Medical School (MHH) is internationally renowned for hosting the world's largest cochlear implant (Cl) programme to treat severely hearing impaired patients. To date, more than 8,000 people have received a Cl here. One of our priority areas, therefore, is provision of hearing systems – from the development of the devices themselves to lifelong support for our patients. Together, the German Hearing Center Hannover and the scientific laboratories form the joint platform for these activities.

Other priority areas include hearing-aid fitting (and improving this process), the early identification of hearing loss in children, diagnosis and treatment of innerear diseases including tinnitus, skull base surgery including treatment of acoustic neu¬roma, tumour surgery using modern laser surgical and endoscopic techniques, di¬seases of the nose and sinuses, covering allergology, environmental medicine and plastic/reconstructive techniques.

Our Department has six wards with a total of 90 beds. Each year we treat around 25,000 outpatients and just under 6,000 inpatients. A highly motivated and specialised team is available, with more than 200 staff – including 30 doctors, 20 nurses, nine education professionals and speech therapists, 20 technical staff and 30 scientists.

Our case numbers: more than 500 cochlear implants, 85 middle-ear implants and 100 acoustic neuromas in 2016.

A nationwide first at MHH's ENT Department: in autumn 2011, for the first time in Germany (and only the fourth time in the world) a patient was successfully implanted with MED-EL's new 'bone bridge' system. In 2015 we were the first in Germany to implant successfully the first Oticon Medical CI.



Development of a setup for the in-vitro modelling of the auditory pathway by the application of differentiated neuronal stem cells.	Kristen Rak*, Johannes Völker, Christine Völker, Philipp Schendzielorz, Andreas Radeloff, Rudolf Hagen	P-34
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## International center in hearing research

The Department of Otolaryngology is among the international leaders in hearing research. Its range of research activities covers the causes, diagnosis and therapy of all kinds of hearing impairment. One particularly important field is the functional restoration of hearing using auditory implants. These include cochlear implants which replace the inner ear, central auditory implants in the midbrain and brainstem region (to treat neural deafness) and implantable hearing aids to correct conductive and sensorineural hearing loss. Research here includes work on new electrodes to regenerate the inner ear, local pharmacotherapy for hearing im-pairment, develop ment of new ossicular prostheses, and signal processing in the auditory system.

With the Laboratories of Experimental Otology (LEO), the Institute of Audioneurotechnology (VIANNA) and the German Hearing Center Hannover (DHZ) – the facility for clinically related Research and clinical studies in collaboration with industry – our department covers the entire innovation chain from basic research to translational and clinical research as well as product development. In collaboration with leading international manufacturers, this enables the findings of fundamental research to be implemented and utilised in novel methods. New types of cochlear implant electrode designed to preserve hearing in the partially deaf, the auditory midbrain implant and physiologically based speech-processing algorithms are worthy of mention here.

The research groups at VIANNA, 64 scientists of different scientific fields and research groups of global leading companies in the field of auditory prostheses focus on basic mechanisms of hearing and deafness, the design and development of auditory prostheses and the translation of scientific findings into clinical practice. The Institute brings together scientists from the natural and engineering sciences, as well as medical professionals from the fields of otolaryngology, neurophysiology, neurosurgery and neurology. The spectrum of research

methods ranges from quantum optics, biomechanics, electrotechnology, electrophysiology, neurophysiology and neurobionics, to imaging and image processing, histology, molecular biology, in vitro and in vivo techniques and signal processing. This trans-disciplinary collaboration under one roof creates the conditions that are necessary to facilitate further developments in VIANNA's targeted field: medical technology.



## Hearing4all: You can hear the future

Goal of the Cluster of Excellence Hearing4all of the German Reserarch Society (DFG) is to improve hearing for all persons concerned in all situations, at all times. It includes scientists at the University of Oldenburg, the Hannover Medical School and the Leibniz University in Hannover.

This aim is of great importance, given that 18 percent of the German population – in particular, more than 50 percent of those above 65 years of age - has a hearing impairment requiring treatment. With better individual hearing diagnostics, individualised hearing aids have become possible. Using such individual support facilitates communication for the hearing impaired in an essential way – be it at work, in traffic or at home. To reach this aim, innovative concepts for hearing aid and hearing implant processing are being developed, helping not only the severely hearing impaired, but everybody by putting an individualised "hearing aid" into every smartphone, TV set, and stereo.

We are working on improving audiological diagnostics, and developing improved rehabilitative strategies based on that. Our work focusses on fundamental, modelbased research for diagnostics and auditory profiling of human hearing, be it normal hearing or even severely impaired. Using a model-based approach enables us to individualize treatment of hearing loss with adequate hearing instruments, adapting to individual needs and to the acoustic environment.









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Monitoring of the inner ear function during and after cochlear implant insertion using cochlear microphonics	Sabine Haumann*, Andreas Büchner, Hannes Maier, Thomas Lenarz	P-22

### Posters overview

Title	Author	Number
Neuro-otological treatment for patients with dementia and hearing loss in psychiatric hospital	Kensuke Kiyomizu*, Keiji Matsuda, Koji Torihara, Sho Kanzaki, Ryuichiro Takeda, Yasushi Ishida, Kensei Yoshida, Tetsuya Tono	P-1
Induction of mitophagy in the HEI-OC1 auditory cell line and activation of the Atg12/LC3 pathway in the Organ of Corti	Cristian Setz*, Yves Brand, Soledad Levano, Daniel Bodmer	P-3
The organ of hearing and human hearing Part 2: Frequent perceptions standards	Evgeny L. Ovchinnikov, Sergey S. Yashin*	P-4
The organ of hearing and human hearing Part 3: Age frequenzy standards	Danil S. Tarasenko*, Sergey S. Yashin, Mikhail Davydkin-Gogel, Anastasiya Krivonos, Evgeny L. Ovchinnikov	P-5
The antioxidant N-Acetyl- L-Cysteine (NAC) as a pharmacological candidate for agerelated hearing loss	Sergio Gonzalez-Gonzalez*, Aurore Marie, Susanna Malmstrom, Sylvie Cosnier-Pucheu	P-6
Deficiency of mitochondrial tRNA modification causes progressive hearing loss.	Toru Miwa*, Ryosei Minoda	P-7
The organ of hearing and human hearing Part 1: Biophysical substantiation of age standards	Evgeny L. Ovchinnikov	P-8
The organ of hearing and human hearing Part 4: Age morphological standards	Sergey S. Yashin*, Danil S. Tarasenko, Mikhail M. Davydkin- Gogel, Anastasiya Krivonos, Evgeny L. Ovchinnikov	P-9
Central auditory processing on HTLV-I: A case report	Aline Castro*, Ludimila Labanca, Luciana Resende, Denise Gonçalves	P-10
Auditory training to remediate auditory processing disorder: Effectiveness and the role of adherence	Aline Castro*, Ludimila Labanca, Patricia Mancini, Luciana Resende	P-11

## **Discover Hannover**

Welcome to one of the most important international trade fair locations in the world and a modern pulsating city with lots to discover! A modern state capital with groundbreaking architecture and a model infrastructure, surrounded by idyllic little towns and villages – this is the Hannover location with all its delightful contrasts.

Hannover's strengths as a business location are its innovative companies, ist international flagship fairs and its economic stability. The academic world, business and government pool their resources to put pep into the economy of the city that was home to the all-round genius Leibniz. The "Germany 2020" study by the Zukunfts institut, a Frankfurt-based institute for prognostics, presents Hannover as "soundly based and future-driven", with "creative entrepreneurs, excellent conditions for education and research and a talent for keeping up with decisive trends". Museums such as the Wilhelm Busch Museum, home to Max and Moritz, theatres where world-famous stars appear and a celebrated State Opera offer outstanding cultural experiences. Equally attractive are the Herrenhausen Gardens, the maritime atmosphere of the Maschsee Lake, the great diversity of sporting events and open-air concerts, and the many fairs and popular festivals. Passers-by linger in the picturesque Old Town, and the exotic landscapes of the Adventure Zoo enchant the whole family. Keen shoppers can roam through one of Germany's largest pedestrian zones or enjoy the idyllic atmosphere of the Region's half-timbered towns. All round the city, recreational areas such as Lake Steinhude or the Deister Hills offer a wide diversity of leisure activities.



### "Red Thread" Hannover

The Red Thread is painted on the pavement, is 4200 metres long, and weaves its way through the inner city joining up 36 prime attractions. This is a floorline visitors' guide of a



different kind. All you have to do is follow the Red Thread! This "do it yourself" city tour is accompanied by an informative brochure which describes all of the interesting buildings and monuments you meet along the way, and is also full of interesting historical background. Furthermore the brochure describes an "ExtraTour" which is a 45 minutes refreshing detour to the banks of Lake Maschsee.

## **Useful numbers**

**Congress office** Regina Müller mobile + 49 (0) 176 1532 3936

**Tourist Information** · Ernst-August-Platz 8 · 30159 Hannover Phone + 49 (0) 511 / 123 45-111 www.hannover.de E-mail: info@hannover-tourismus.de

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Hannover Main Station · Ernst-August-Platz 1 · 30159 Hannover Phone + 49 (0) / 180 5 99 66 33 www.bahn.de

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## **Congress dinner**

Congress Dinner will be on Friday, September 15<sup>th</sup>, 2017 at Herrenhausen Palace.

The summer residence of the Royal House of Hanover was destroyed in the Second World War. Now it has been rebuilt on the original site to the original plans and filled with life for modern times.

# Program



Venue:

Schlossküche Herrenhausen Alte Herrenhauser Straße 3 30419 Hannover

www.schlosskueche-herrenhausen.de



### **Special Events**

## Science meets art

Thursday, September 14<sup>th</sup>, 2017, visit of Wilhelm Busch Museum

The Wilhelm Busch German Museum of Caricature and Critical Graphic Art offers amusing satire for young and old.







Venue:

Wilhelm Busch · Deutsches Museum für Karikatur und Zeichenkunst

Georgengarten 30167 Hannover

www.karikatur-museum.de



## **Program overview**

### Wednesday, September 13th

13:00 – 13:30	Welcome
13:30 – 15:15	Special session "Hearing and light"
15:15 – 16:00	Symposium Advanced Bionics
16:00 – 17:45	Scientific session: "Development and genetics"
19:00	Welcome reception at Hannover Zoo

### Thursday, September 14th

08:00 - 10:00	ARO symposium: "Developmental consequences of hearing loss"
10:30 – 12:30	Scientific session: "Inner ear biology I"
12:30 – 13:30	Symposium MED-EL
13:30 – 15:30	Scientific session: "Auditory prostheses"
16:30 – 18:00	Scientific session: "Protection and regeneration"
18:00 – 19:00	Visit of the laboratories and facilities at the Institute of
	AudioNeuroTechnology (VIANNA) and German Hearing Center
19:30	Science meets art: Fingerfood at Wilhelm Busch Museum

### Friday, September 15<sup>th</sup>

08:00 – 10:30	Live surgery of auditory implants and transmission
11:00 – 13:00	Scientific session: "Bioinspired signal processing"
14:00 – 15:15	Scientific session: "Therapeutic interventions"
15:15 – 16:00	Business meeting
16:30 – 18:15	Scientific session: "Inner ear biology II"
19:00	Congress dinner at Herrenhausen Palace

### Saturday, September 16th

08:00 – 17:30 Symposium: "Interventions in the ear: From inner ear biology to advanced therapy of hearing loss"

## Workshop on inner ear biology

10.00	D 1 1 11
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10.00	neusuation

13:00 Welcome

Thomas Lenarz and Andrej Kral, Chairs of IEB 2017 Christopher Baum, President of Hannover Medical School

### Hearing and light

Moderators: Hannes Maier & Tobias Moser

- 13:30 O-1 **Optical cochlea implants** Claus-Peter Richter
- 13:45 O-2 **Towards the optical cochlear implant: Optogenetic** stimulation of the auditory nerve *Tobias Moser*
- 14:00 O-3 Intracochlear pressure generated by pulsed laser emission Peter Baumhoff\*, Nicole Kallweit, Andrej Kral
- 14:15 O-4 **A model based sound coding strategy for laser stimulation in cochlear implant users with residual hearing** *Waldo Nogueira, Torben Fiedler, Peter Baumhoff, Darshan Shah, Andrej Kral, Andreas Büchner, Hannes Maier, Benjamin Krüger*
- 14:30 O-5 **The optoacoustic stimulation of the peripheral hearing organ** Gentiana I. Wenzel\*
- 14:45 O-6 **Optogenetic stimulation on adult cochlea of guinea pig** Ning Yu, Chen Liu\*, Qing-qing Jiang, Da-xiong Ding, Shi-ming Yang, Ping LV, Shu Fang
- 15:00 O-7 **Cochlear optogenetics drives avoidance behavior in normal hearing and deaf gerbils** Alexander Dieter\*, Christian Wrobel, Daniel Keppeler, Gerhard Hoch, Marcus Jeschke, Tobias Moser
- 15:30 Coffee Break & Symposium Advanced Bionics

## Welcome reception

The Welcome reception will be on Wednesday, September 13<sup>th</sup> 2017, at "Meyers Hof" (Zoo Hannover)

Enjoy regional, Lower Saxon cuisine in a magnificent half-timbered house dating back to 1669. Get comfy amongst thick oak beams, old family photos and an open fire. A feast for all the senses!

Almost every dish is prepared fresh on site by the chefs at Gasthaus Meyer, who buy as many ingredients as possible from the local region.



Venue:

Gasthaus Meyer Adenauerallee 3 30175 Hannover

www.zoo-hannover.de



## Tour through DHZ and VIANNA

#### German Hearing Center - All under one roof

At the German Hearing Center Hannover (DHZ), people with hearing impairments of all kinds receive all-round guidance, care and support - on a life-long basis! The ENT Department at Hannover Medical School and the DHZ are internationally renowned for having the world's largest cochlear implant (CI) programme, with some 8,000 CI recipients since the first implantation and around 500 new CI patients every year. Not to mention other patients who receive other hearing systems.

All under one roof, the DHZ provides the latest diagnostic methods and therapies, all-round technical guidance and support, and auditory training by education professionals and speech therapists, as well as fitting hearing systems - at the highest international level.

Tour German Hearing Center Hannover (DHZ): Thursday, September 14th

### VIANNA - Institute of AudioNeuroTechnology

VIANNA is the centre for translational research in the field of neurpoprosthetics with a particular focus on auditory prostheses. The institute has a dual leadership which reflects the close relationship between basic research headed by Prof. Andrej Kral and translational research headed by Prof. Thomas Lenarz, chairman of the department of Otolaryngology. The research groups include 65 scientists of different scientific fields such as engineering and natural sciences, and research groups of global leading companies in the field of auditory prosthesis focus on basic mechanisms of hearing and deafness, the researched design and development of auditory prosthesis and the translation into new products.

VIANNA is also home of the Centre of Excellence Hearing4all. It is located in the new NIFE building close to the main campus of MHH.

Tour VIANNA: Thursday, September 14th





German Hearing Center Hannover (DHZ

info@hoerzentrum-hannover.de

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Moderators: Anke Lesinski-Schiedat & Jose Manuel Juiz Gomez

16:00	O-8	<b>Conditional Sox2 deletion defines residual inner ear</b> <b>development</b> Martina Dvorakova*, Romana Bohuslavova, Bernd Fritzsch, Israt Jahan, Tetyana Chumak, Josef Syka, Gabriela Pavlinkova
16:15	0-9	Molecular characterization and prospective isolation of human fetal inner ear prosensory domain progenitor cells Marta Roccio*, Michael Perny, Megan Ealy, Hans Ruedi Widmer, Stefan Heller, Pascal Senn
16:30	O-10	How impaired SGN axon bifurcation affects sound processing in the auditory brainstem Steffen Wolter*, Dorit Möhrle, Dennis Zelle, Marlies Knipper, Peter Pilz, Hannes Schmidt, Lukas Rüttiger
16:45	O-11	Deciphering gene expression dynamics of vestibular hair- bundle morphogenesis from single-cell snapshot data using CellTrail maps Daniel C. Ellwanger*, Mirko Scheibinger, Matthew R. Avenarius, Rachel A. Dumont, Peter G. Barr-Gillespie, Stefan Heller
17:00	0-12	<b>Pluripotent stem cells in disease modelling of GJB2 related hearing loss</b> Ichiro Fukunaga, Ayumi Fujmoto, Kaori Hatakeyama, Osamu Minowa, Katsuhisa Ikeda, Kazusaku Kamiya*
17:15	0-13	<b>Trends in genetic diagnostics of hereditary hearing loss</b> Ronald Pennings*, Celia Zazo Seco, Mieke Wesdorp, Ilse Feenstra, Hannie Kremer, Lies Hoefsloot, Margit Schraders, Helger Yntema
17:30	O-14	<b>FRMPD4 is associated with X-linked non-syndromic</b> <b>hearing loss</b> Barbara Vona*, Daniel Liedtke, Kristen Rak, Radoslaw Katana, Lukas Jürgens, PingkalaiR Senthilan, Indrajit Nanda, Cordula Neuner, Michaela AH Hofrichter, Linda Schnapp,Jörg Schröder, Ulrich Zechner, Stefan Herms, Per Hoffmann, Tobias Müller, Marcus Dittrich, Oliver Bartsch, Peter M Krawitz, Eva Klopocki, Wafaa Shehata-Dieler, Martin C Göpfert, Thomas Haaf
18:45		Bus from MHH to Hannover Zoo
19:00		Welcome reception, Hannover Zoo

Hannover Medical School, Germany

## ARO-sponsored symposium



Developmental consequences of hearing loss Moderators: Andrej Kral & Hinrich Staecker

- 08:00 O-15 **Cellular and molecular studies of a critical period for afferentdependent neuron survival in the cochlear nucleus** *Edwin W Rubel*
- 08:30 O-16 **Restoring cortical inhibition improves perception following** early hearing loss Dan Sanes
- 09:00 O-17 **Prediction and monitoring of cochlear implant outcome using** functional near infrared spectroscopy Douglas Hartley
- 09:30 O-18 Effects of early hearing experience on functional activation and connectivity in primary and higher-order cortical field Yusuf Prasandhya
- 10:00 Coffee Break & Poster viewing (P1 P23)

### Inner ear biology l

Moderators: Gerrit Paasche & Huib Versnel

10:30 O-19 **A rescuable auditory synaptopathy in mice lacking CLARIN-1** Didier Dulon\*, Samantha Papal, Alice Emptoz, Mateo Cortese, Said Safieddine, Aziz El-Amraoui, Christine Petit



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Sat	turc	ay,	16 <sup>th</sup>	Sep	tem	ber 2	2017

12:00	S-8	Developing molecular therapeutics for human inner ear disease Hinrich Staecker	10:45	O-20	Autonomous and evoked Ca2+ signals in inner hair cells and coupling to Ca2+ waves in the developing mouse cochlea Tobias Eckrich, Kerstin Blum, Ivan Milenkovic, Stefan Münkner, Jutta Engel*
12:30	S-9	Pendrin and inner ear development Philine Wangemann	11:00	0-21	The development and maintenance of hair cell stereocilia rootlets by isoform specific functions of TRIOBP Tatsuya Katsuno, Inna A. Belyantseva, Ronald S. Petralia, Ya-Xian Wang, Keisuke Ohta, Kazuya Ono, Makoto Ikeya, Gavin P. Riordan, Joseph Duda, Elizabeth Wilson,
13:00		Lunch Break with packed lunches			Tracy Fitzgerala, Atteeq U. Rehman, Ayesha Imtiaz, Jyuichi Ito, Thomas B. Friedman, Shin-ichiro Kitajiri
14:00	S-10	The use of electroporation therapy to improve the electro- neural interface of the cochlear implant Jim Patrick	11:15	0-22	Angulin proteins ILDR1 and ILDR2 regulate alternative pre- mRNA splicing through binding to splicing factors TRA2A, TRA2B, or SRSF1 Yueyue Liu, Hongyun Nie, Chengcheng Liu, Xiaoyan Zhai, Qing Sang, Yanfei Wang, Deli Shi, Lei Wang, Zhigang Xu*
14:30	S-11	Multiple uses with potential clinical significance			,,,,,,
		Douglas Fitzpatrick	11:30	0-23	Abnormal actin elongation activity of a novel hearing-loss Dia1 mutant revealed by single-molecule speckle
15:00	S-12	Hearing devices bypassing the middle ear, stimulating the cochlea acoustically; a classification for patients with conductive hearing impairment			<b>microscopy</b> Takushi Miyoshi* , Yuzuru Ninoyu, Naoki Watanabe, Shin-ichiro Kitajiri, Takehiko Ueyama
		Ad Snik	11:45	0-24	<b>On Structure and function in outer hair cells</b> Einat Shapira*, Eitan Kimmel, Remy Pujol
15:30		Coffee Break	12:00	0-25	Measurement of cochlear partition volume compliance using a microfluidic chamber system
16:00	S-13	<b>Biomechanical characteristics of hearing</b> Alex Huber			Jong-Hoon Nam, Jessica Huhnke, Daniel Marnell, Jonathan Becker
16:30	S-14	<b>Restoring hearing with a new auditory midbrain implant</b> Hubert Lim	12:30		Lunch Break with packed lunch boxes & Symposium MED-EL
17:00	S-15	Optogenetic studies of evoked potentials and behavior using a novel auditory brainstem implant based on light			Auditory prostheses
		Daniel Lee			modelators, montas Lenarz & Luwrence Lustry
17:30		Summary & Conclusion Andrej Kral	13:30	O-26	New cochlear implant map based on subjective pitch match between acoustic and electrical stimuli in unilateral or highly asymmetric deafness Walter Di Nardo, Roberta Anzivino, Anna Pita Estoni, Gastano, Paludatti*
17:45		Farewell			waller Di Narao, nobel la Anzivino, Anna Alla retorii, Guetano raiduetti

### Saturday, 16<sup>th</sup> September 2017

13:45	0-27	From the cochlea to the brain: how temporal processing is impacted by infection and training? Aline Castro*, Denise Gonçalves, Fabrice Giraudet, Luciana Resende, Paul Avan	Symposiur Interventio		
14:00	O-28	Clinical evidence of binaural hearing in children with unilateral hearing loss Martijn Agterberg, Ad Snik, John Van Opstal	to a	dvar	nceo
14:15	O-29	The decision between direct acoustical cochlear stimulation and cochlear implantation: A retrospective analysis of results Eugen Kludt*, Andreas Büchner, Thomas Lenarz, Hannes Maier	<i>Moderate</i> 08:00	ors: Thom	as Lenai <b>We</b>
14:30	O-30	Spiral ganglion neurons cultured on advanced micro- electrode arrays Damir Kovacic*, Viktorija Radotic, Dries Braeken	08:10	S-1	Int the Tho
14:45	0-31	Future directions for cochlear implantation - restoring the spiral ganglion population with stem cells	08:30	S-2	<b>Co</b> Law
45.00	0.00	Leila Abbas*, Daniela Cacciabue-Rivolta, Daniel Smyth, Wolfram Dueck, Marcelo Rivolta	09:00	S-3	Dir
15:00	0-32	Three-dimensional force profile during cochlear implantation depends on individual geometry and insertion trauma Ersin Avci*, Tim Nauwelaers, Volkmar Hamacher, Andrej Kral	09:30	S-4	Chri The fur
15:15	0-33	Anodal transcranial direct current stimulation modulates auditory cortex structural plasticity in a model of noise- induced hearing loss (from central auditory prostheses)			<b>im</b> Helg
		Fabiola Paciello*, Maria Vittoria Podda, Rolando Rolesi, Sara Cocco, Diana Troiani, Anna Rita Fetoni, Claudio Grassi, Gaetano Paludetti	10:00	S-5	Tei Ior Dya
15:30		Coffee Break & Poster viewing (P24 - P46)	10:30		Co
16:00		Poster viewing (P47 - P69)	11.00	5 6	Tea
			11:00	2-0	op Ann
			11:30	S-7	Us spa reg

## ons in the ear: From inner ear biology d therapy of hearing loss

arz & Andrej Kral

08:00		Welcome
08:10	S-1	Interventions in the ear: From inner ear biology to advanced therapy of hearing loss Thomas Lenarz
08:30	S-2	Cochlear gene therapy for Usher III Lawrence Lustig
09:00	S-3	<b>Direct cortical effects of deafness genes: an insight into the contrasted results of hearing restoration</b> <i>Christine Petit</i>
09:30	S-4	The microanatomy and ultrastructure of the human cochlea – functional aspects with special reference to cochlear implantation Helge Rask-Andersen
10:00	S-5	<b>Temporary neurotrophic drug delivery to the inner ear for long-term effects</b> <i>Dyan Ramekers</i>
10:30		Coffee Break
11:00	S-6	<b>Translating hearing health discoveries: challenges and opportunities</b> <i>Anne Schilder</i>
11:30	S-7	Use of single cell gene expression data for reconstruction of spatial and temporal aspects of the developing, mature, and regenerating inner ear Stefan Heller

Inner ear biology II Moderators: Andrej Kral & Agnieszka Szczepek							
16:30	O-53	NO-sensitive guanylate cyclase isoforms NO-GC1 and NO- GC2 contribute to noiseinduced inner hair cell synapto- pathy Dorit Möhrle*, Katrin Reimann, Steffen Wolter, Markus Wolters, Ksenya Varakina, Evanthia Mergia, Nicole Eichert, Hyun-Soon Geisler, Peter Sandner, Peter Ruth, Andreas Friebe, Robert Feil, Ulrike Zimmermann, Doris Koesling, Marlies Knipper, Lukas Rüttiger					
16:45	O-54	The synaptic ribbon is critical for sound encoding at high rates and with temporal precision Philippe Jean*, David Lopez de la Morena, Susann Michanski, Lina Maria Jaime Tóbon, Rituparna Chakrabarti, Maria Magdalena Picher, Jakob Neef, SangYong Jung, Mehmet Gültas, Stephan Maxeiner, Andreas Neef, Carolin Wichmann, Nicola Strenzke, Chad Grabner, Tobias Moser					
17:00	O-55	Impaired sound encoding in PSD-95 knockout mice Gulnara Yamanbaeva*, Sangyong Jung, Man Ho Wong, Nicola Strenzke					
17:15	O-56	<b>The role of IGF1-related pathways in the aging of the ear</b> Desislava Skerleva*, Hiroe Ohnishi, Tomoko Kita, Tatsuya Katsuno, Stefan Stoyanov, Norio Yamamoto, Juichi Ito, Koichi Omori, Takayuki Nakagawa					
17:30	O-57	Age-related changes in cochlear nuclei microglia and macrophages in the rat Paola Perin*, Roberto Pizzala					
17:45	O-58	Subgroups of meniere's patients with different patho- morphological and clinical traits as identified by temporal bone MR-imaging Andreas Eckhard*, David Bächinger, Catrin Brühlmann, Tim Honegger, Vincent Wettstein, Bernhard Schuknecht, Alexander Huber, Arianne Monge Naldi					
18:00	O-59	<b>The effects of vestibular galvanic stimulation improving balance control of patients with myelopathy</b> Ludimila Labanca*, Tatiana R Silva, Fabrice Giraudet, Paul Avan, Denise U Gonçalves					
18:30		Bus to Herrenhausen Palace					
19:00		Congress Dinner at Herrenhausen Palace					

		Albert Edge
16:45	O-35	<b>Exploring new approaches to reduce cisplatin ototoxicity</b> <i>Eric Bielefeld</i> *
17:00	O-36	<b>Olfactory stem cell derived hair cell progenitor</b> Louise Straatman, Ronak Rahmanian, Anat Yanai, Cathy Garnis, Brian Westerberg, Kevin Gregory-Evans
17:15	O-37	Mesenchymal stem cells for prevention of ototoxicity induced by cisplatin Laura Astolfi*, Edi Simoni, Filippo Valente, Erica Gentilin, Valeria Franceschini, Alessandro Martini
17:30	O-38	Autophagy protects auditory hair cells against neomycin- induced damage Zuhong He, Lingna Guo, Qiaojun Fang, Xia Gao, Renjie Chai*
17:45	O-39	Netrin1 mediates the protection of cochlear hair cells by IGF1 through its canonical receptor, UNC5B Norio Yamamoto*, Kouhei Yamahara, Takayuki Nakagawa, Juichi Ito, Koichi Omori

**Protection and regeneration** Moderators: Athanasia Warnecke & Edwin Rubel

16:30

O-34

Lgr5-positive cells act as hair cell progenitors in the cochlea

- 18:00 Visit of the laboratories and facilities at the Institute of AudioNeuro-Technology (VIANNA) and German Hearing Center (DHZ)
- Bus to Wilhelm Busch German Museum of Caricature and Critical Graphic Art 19:00
- Science meets Art: Fingerfood at Wilhelm Busch Museum 19:30

### Friday, 15<sup>th</sup> September 2017

Live surgery			12:45	2:45	0-47	<b>A predictive model of blast induced hearing loss</b> Allen F Ryan, Alex Fantozzi, Elena Cardenez, Eduardo Chavez, Arwa Kurabi
08:00		Live surgery of auditory implants and transmission from	1:	3:00		Lunch Break with packed lunches
		the operating theatre of the ORL-department at Hannover Medical School into the lecture hall	1:	3:30		Poster viewing (P92 - P115)
10:30		Coffee Break & Poster viewing (P70 - P91)				<b>Therapeutic interventions</b> Moderators: Verena Scheper & Marlies Knipper
	<b>Bioinspired signal processing</b> Moderator: Waldo Nogueira & Hubert Lim		14	4:00	O-48	Functional appraisal of the auditory nerve following clinically feasible gelfoam treatment with various neurotrophic compounds in deafened guinea pigs
11:00	O-40	Roles of the contralateral medial olivocochlear efferent reflex demonstrated with cochlear implants Enrique Lopez-Poveda	14	4:15	O-49	Henk A. Vink*, Dyan Ramekers, Hans G.X.M. Thomeer, Sjaak F.L. Klis, Huib Versnel Beneficial effect of ProteinY* on hearing loss during experimental pneumococcal meningitis
11:15	O-41	Bio-inspired sound coding strategies for cochlear implants based on temporal fine structure				Silvia Erni*, Michael Perny, Rolf Jan Rutten, Pascal Senn, Denis Grandgirard, Stephen L. Leib, Marta Roccio
11:30	0-42	Peter Nopp Simple physiological model of spike-conducting axons and its application to auditory nerves Go Ashida	14	4:30	O-50	Bone morphogenetic protein 4 promotes the survival and preserves the structure of flow-sorted Bhlhb5+ cochlear spiral ganglion neurons in vitro Shan Sun*, Muhammad Waqas, Huawei Li, Renjie Chai
11:45	O-43	<b>Optogenetic stimulation of the cochlea</b> — <b>first models</b> Werner Hemmert	14	4:45	O-51	Time course of oxidative stress and apoptosis in the auditory receptor after Kanamycin treatment in the rat Alejandro Gibaja-Casado, Juan C Alvarado, Jose M Juiz*
12:00	0-44	Modelling the brainstem response to cochlear implant stimulation Ray Meddis	1!	5:00	O-52	<b>Platinum-induced hidden hearing loss</b> Marion Souchal*, Fabrice Giraudet, Paul Avan
12:15	O-45	Neuronal network simulations in the cochlear nucleus and its implications for CI and ABI stimulation Andreas Bahmer	1:	5:15		Business Meeting
12:30	O-46	Model-guided development of a noninvasive approach to evaluate cochlear Synaptopathy Viacheslav Vasilkov, Sarah Verhulst	10	6:00		Coffee Break