What’s inside

It’s been a few months since the last issue of All Ears hit your inboxes, which means that we have lots of things to brag about inside Issue 6!

Hear about the IEB workshop in Kyoto, discover what happened when three of our PhD students climbed the BT Tower and read an insider’s view of SoapBox Science. We also have our usual lists of publications, grant successes and PhD updates.

And, new to this issue, as a treat for those who make it through to the end; a festive/eary wordsearch (with a chance to win a prize).
New starters
Elizabeth White joined the evidENT team in May as a Clinical Trials Recruitment Officer, with over ten years’ experience in the field of clinical research. She graduated from Waikato University with a BSc in Science International. Her career in clinical research started working for a private Clinical Research Organisation that specialised in Phase I trials. Since then she has held a variety of posts in academic, NHS and commercial endeavours. She has spent several years working within Local Clinical Research Networks focusing on clinical research into Stroke and Parkinson’s Disease. Within the evidENT team she assist’s with the set-up of clinical trials, but mainly focuses on the recruitment of patients to UKCRN Portfolio supported ENT clinical research.

Marianne Simmonds joined the evidENT team in May as the administrator to the NIHR ENT Specialty Group (chaired by evidENT team lead Professor Anne Schilder). She also works closely with Dr Natalie Bohm supporting the GENERATE project; developing a UK national research agenda for ENT, Hearing and Balance.

Cian Hughes was appointed as an NIHR Academic Clinical Fellow in Otolaryngology in October and will combine research as part of the evidENT team at the UCL Ear Institute with Surgical Training in the London Deanery. During his research time with evidENT he will be focusing on electronic health records research; using routine clinical data for surgical outcomes research, and the use of linked primary and secondary care data to explore the prognosis of common ENT conditions.

Jobs, courses and seminars
CPD course coming up in the new year

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<tr>
<th>Course Title</th>
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<tr>
<td>Masterclass: Counselling for Hearing Healthcare</td>
<td>Audiologists</td>
<td>10 week course</td>
<td>12 Jan 2015</td>
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<td>Professionals</td>
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<td>Masterclass: Paediatric Assessment</td>
<td>Audiologists</td>
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<td>Masterclass: Paediatric Habilitation</td>
<td>Audiologists</td>
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<td>Advanced Amplification and Aural Rehabilitation</td>
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<td>GIR: Presentation Skills for Medics</td>
<td>Medics &amp; Audiologists</td>
<td>1 day course</td>
<td>23 Mar 2015</td>
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<tr>
<td>Masterclass: Vestibular Rehabilitation</td>
<td>Audiologists</td>
<td>3 day course</td>
<td>22 Apr 2015</td>
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In the media
The worrying rise of hidden hearing loss

Professor David McAlpine explains how we start losing our hearing as babies, and by mid-40s most people will have some hearing loss that affects their day-to-day life. Read the full article in the Daily Mail Online:

Regenerating Man: Past, Present, and Future: Martin Birchall at TEDxWarwick 2014

Professor Martin Birchall discusses the progress made in regenerative medicine and explores what it might be like in the future. “That was the first time that a transplant an organ built from stem cells had ever been performed in a person and it seemed to work first time. It was a major breakthrough for science and technology,” says Martin.

http://www.youtube.com/watch?v=odtGzu03iDg

Grants awarded

Maria Chait shares in €4M Euro grant to investigate whether brain signals can be used to steer hearing aid hardware

Maria Chait shared in €4M Euro grant (€1M to Maria) in a EU H2020 grant entitled ‘Cognitive Control of a Hearing Aid (COCOHA) with partners including ENS in Paris and Oticon. The COCOHA project revolves around a need, an opportunity, and a challenge. Millions of people struggle to communicate in noisy environments particularly the elderly: 7% of the European population are classified as hearing impaired. Hearing aids can effectively deal with a simple loss in sensitivity, but they do not restore the ability of a healthy pair of young ears to pick out a weak voice among many, that is needed for effective social communication. That is the need. The opportunity is that decisive technological progress has been made in the area of acoustic scene analysis: arrays of microphones and beamforming algorithms, or distributed networks of handheld devices such as smart phones can be recruited to vastly improve the signal-to-noise ratio of weak sound sources. Some of these techniques have been around for a while, and are even integrated within commercially available hearing aids. However their uptake is limited for one very simple reason: there is no easy way to steer the device, no way for the user to tell it to direct the processing to the one source among many that he or she wishes to attend to. The COCOHA project proposes to use brain signals (EEG) to help steer the acoustic scene analysis hardware, in effect extending the efferent neural pathways that control all stages of processing from cortex down to the cochlea, to govern also the external device. To succeed we must overcome major technical hurdles, drawing on methods from acoustic signal processing and machine learning borrowed from the field of Brain Computer Interfaces. On the way we will probe interesting scientific problems related to attention, electrophysiological correlates of sensory input and brain state, the structure of sound and brain signals. This is the challenge.

Joerg Albert receives £500K BBSRC Grant

Fantastic news from Joerg Albert on being awarded a BBSRC grant to the tune of half a million pounds! Congratulations Joerg and also to Ryan Kavlie who is now set to stay with us at the Ear Institute, working with Joerg on the project - ‘The Transcriptomic and Biophysical Basis of Mechanosensory Submodality: A Drosophila Model Organ Study’. This project examines the molecular and cellular composition
of different mechano-sensory organs in the Johnston’s Organ, part of the fly’s second antennal segment linked to the processing of sound, wind and gravity. By now, everyone at the Ear Institute is aware of the fascinating and highly relevant aspects of sensory processing in flies, and the importance of the fly as a model system for understanding development and disease. Following on from his recent ‘Science’ paper, Joerg’s grant success is evidence not only of the interesting nature of this relatively simple (although still complex) animal, but also of his talent in communicating the relevance of fly models to many aspects of sensory function, from sensory ethology to models of deafness.

**Sally Dawson receives £160K Action on Hearing Loss grant**

Sally received a £160K AOHL grant to study the Genetic Basis of Otosclerosis, with Shak Saeed, following on from Joey Ziff’s PhD work.

**Jennifer Linden receives £6K from the Royal Society**

The Royal Society International Exchanges grant is for travel and research expenses associated with a collaboration with Conny Kopp-Scheinflug of the University of Munich in Germany. Jennifer and Conny are going to look at the role of an auditory brainstem nucleus called the superior paraolivary nucleus in abnormal auditory processing in mouse models of neurodevelopmental disorder.

**Prof Andy Forge receives a £400K BBSRC Project Grant**

This grant will be used to look at “3D ultrastructural analysis of the subcellular organisation of inner hair cells and of their innervation during ageing”. Prof Forge will be working with Anwen Bullen, Jonathan Ashmore and Carolyn Moores over 3 years.

**Dr Ruth Taylor £75K from Dunhill**

Ruth will be using her Dunhill Medical Trust Project Grant to investigate “Repopulating vestibular epithelia with sensory cells to ameliorate age-related balance dysfunction” over 15 months.

**Anwen Bullen wins £30K Action on Hearing Loss Pauline Ashley Award:**

She will be looking at the organisation of inner hair cells and their innervation following noise exposure: searching for the basis of “hidden hearing loss” over 6 months.

**Featured papers**

**Non-invasive brain imaging on small animals**

Hearing requires the ears, but also the brain. The decoding of the ongoing complex acoustic patterns from the world involves neural processing within auditory cortex, much of which is still poorly understood. Magnetoencephalography (MEG), which measures the tiny magnetic fields produced outside the skull by currents within the brain, is a tool of choice to probe cortical activity in human subjects. Here, we used a specially-designed MEG system to record similar magnetic activity from the cortex of a guinea pig. We found that the anaesthetized animal produced responses to changes in ongoing sound streams that were qualitatively similar to those recorded in humans.
Such results are useful because of the wealth of knowledge about the intricate neural mechanisms behind such macroscopic responses that can be accrued from more invasive electrophysiological experiments in animals. Small animal MEG serves as a stepping stone between non-invasive brain imaging in human, and invasive electrophysiology in animal models.


Changing Candidacy for Bilateral Cochlear Implants in Children

A recent study funded by Action on Hearing Loss supported Dr Rosemary Lovett to work as a post-doctoral researcher with Dr Deborah Vickers at the Ear Institute and Professor Quentin Summerfield at York University.

This study was designed to use up-to-date evidence to inform decisions regarding candidacy and compare outcomes for children with bilateral cochlear implants to those for children with bilateral hearing aids, with the aim of developing audiometric criteria for candidacy for bilateral cochlear implantation in children, in the UK.

In the UK, children are considered candidates for bilateral implantation if their unaided pure-tone thresholds exceed 90 dB HL at 2 and 4 kHz (National Institute for Health and Care Excellence, 2009).

There are limited data to support the audiometric criteria and the published evidence available was based on earlier generations of cochlear implant, unilateral rather than bilateral implants, and/or analogue rather than digital hearing aids (e.g. Boothroyd, 1993; Leigh et al 2011). Policy-makers struggle to define the minimum degree of hearing impairment at which children should be offered bilateral CIs, rather than bilateral HAs.

We tested seventy-one children, aged 46 to 86 months (mean 64 months). Twenty-eight used bilateral cochlear implants and 43 used bilateral digital hearing aids.

We tested their speech perception abilities in quiet and in noise using the “Crescent of Sound” equipment in a sound proof booth (Kitterick et al., 2011).

We found, using a conservative 4:1 odds ratio, that better outcomes with CIs were associated with an unaided 4-frequency pure-tone audiogram of 80 dBHL or poorer in both ears or a 2-frequency pure-tone audiogram of 85dBHL or poorer in both ears. More commonly now-a-days health economists use a 3:1 estimate which would result in a 5 dB reduction in the pure-tone average threshold calculation.

If adopted by policy-makers, these recommendations would expand provision of cochlear implants for children in England and Wales.

Article References


Other recent publications

Al-Malky G, Suri R, Sirimanna T, Dawson SJ. (2014) Normal hearing in a child with the m.1555A>G mutation despite repeated exposure to aminoglycosides. Has the penetrance of this pharmacogenetic interaction been overestimated? INTERNATIONAL JOURNAL OF PEDIATRIC OTORHINOLARYNGOLOGY


Belliaveau L, Lyamzin DR, Lesica NA. (2014) The neural representation of interaural time differences in gerbils is transformed from midbrain to cortex. The Journal of Neuroscience ; Society for Neuroscience


Blacker, TS; Mann, ZF; Gale, JE; Ziegler, M; Bain, AJ; Szabadkai, G; Duchen, MR. (2014) Separating NADH and NADPH fluorescence in live cells and tissues using FLIM. Nature Communications


Cosentino S, Marquardt T, McAlpine D, Culling JF, Falk TH . (2014) A model that predicts the binaural advantage to speech intelligibility from the mixed target and interferer signals. JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA

Joint decorrelation, a versatile tool for multichannel data analysis. NeuroImage, 98(C), 487–505.


PhD/MDRes updates

Congratulations to the following new Doctors of Philosophy!
- Ghada Al-Malky
- Stefano Cosentino
- Dmitry Lyamzin

Upgrades

Sara Weber and Claudia Goncalves both had successful upgrades on their projects, “Id4: an inhibitory role in hair cell formation?” and “Understanding the role of stress granules in the inner ear” (respectively).

Welcoming new students:

Soraya Dunn, Theofilos Petsas, Matthieu Recugnat, Camile Tardieu, Tara Zinnamin, Ross Harper, Janos Hodsagi, and to Dr Logan Manikam who has begun his PhD on Respiratory Tract Infections In Children With Down’s Syndrome: Towards Better Management Using Health Informatics. Following his successful application to NIHR Research Training Fellowship Programme, he is now working at the Farr Institute of Health Informatics Research supervised by Profs Anne Schilder, Monica Lakhanpaul and Andrew Hayward.

A word from Sound Seekers

Dear Ear Institute friends and colleagues,

Season’s greetings from all of us at Sound Seekers! We hope that 2014 has been a good year for you and that 2015 will be even better.

We are issuing an end of year plea. We have been at the Ear Institute for nearly two years now, and we don’t think we have been very successful in engaging you lovely ear people with our work (sad
face). But we sit metres away from each other, and we’re all involved in the same line of work (ie. improving the lives of people with hearing loss), so we’re not giving up! We just want to take the opportunity to remind you that we would really appreciate your involvement with our activities, which could mean:

- coming to fundraising events (eg we had a fundraising gig in November and a Christmas concert in December)
- ‘like’ us on Facebook and follow us on Twitter - share things we post that you find interesting
- help us grow our network - tell colleagues who work in hearing loss about us, link us up with useful contacts
- if you’re doing an event like running a marathon or jumping out of an aeroplane (with a parachute), consider fundraising for us
- be available to offer us advice and support if needed

Thank you! A tangible way you can support us as early as January 2015 is to come to the premiere of our short film ‘Hear in Malawi’ on 15th January 2015 at 1pm in the Ear Institute Lecture Theatre. We will ask for a small donation for entrance and are keen to get as many people through the door as possible as all donations will be doubled by UK Aid. This will be our last fundraising event for the aid match appeal, which lasts until 20th January only. Please come along!

With all best wishes for a very merry Christmas and happy new year,

Lucy, Emily, Stuart (outgoing), Sophie and Alice (incoming)

Other news

IQR complete

After completing our IQR last week, the initial feedback has been positive. There will of course be recommendations for improvements, but the panel commended us on the strong collegiate perspective to our education programmes, the great progress made in the last five years, and encouraged us to continue the good developments we have made. This couldn’t have been done without you all, but an especially big thank you to Priya and to Robert for their dedication and hard work over the last months in putting together what is a complex and significant body of information – and this at a time when many other things were happening too.

Book: Living with Hearing Loss

Hot off the press! “An up-to-date, comprehensive book on how to manage hearing loss, by three experienced audiologists”, two of whom are from the Ear Institute! Congratulations Cherilee and Lucy!

Jenny Bizley discusses her soapbox stand in June

SoapBox Science (www.soapboxscience.org), now in its 4th year, takes place annually on London’s Southbank. The general idea is that scientists interact directly with the public by standing on ‘soapboxes’ for an hour or so while talking about their work. The event’s mission is to help eliminate gender inequality in science by raising the profile, and challenging the public’s view, of women and science. It’s a great idea – although not necessarily
something I’d ever envisaged doing. However, Drs Seirian Sumner and Nathalie Pettorelli, the event’s founders, are very persuasive and this year I’d more or less run out of excuses as to why I shouldn’t do it, so I applied for and was accepted onto the London event.

Despite it being June, the day of the event was cold and threatening to be wet. As I was scheduled for the last slot of the afternoon I spent some time listening to other people’s talks and generally trying not to freeze. Four soapboxers participate at anyone time, with the idea being that people can mingle between different people and topics. The prospect of standing in a public place and attempting to draw people in, without really having any control over what might happen next is a little unnerving to say the least! You definitely don’t want to be the person that everyone walks past; being left talking to yourself was everyone’s biggest fear. Fortunately there was a crowd from the beginning that grew throughout the session. As it was a Sunday, there was a good mix of kids and adults. I armed myself with a number of props – a model ear always helps when you’re talking about hearing! I borrowed some beeper boxes from Medical Sciences to run some basic spatial hearing demos and had Doris the Donkey to demonstrate auditory-visual integration. In the end it was great fun and I’d definitely recommend doing it!

Jennifer Bizley

Inner Ear Biology Workshop: Kyoto, Japan

In November several members of the Ear Institute attended the Inner Ear Biology Workshop in Kyoto, Japan. This was an extraordinary meeting of the IEB, as the first of its kind outside of Europe. The main meeting was preceded by satellite symposia on “Stem Cells” and “Genetics of Hearing”. Within the main 4-day meeting the dedicated sessions included Ototoxicity, Omics, Inner Ear Damage, Cochlear Implants, Tinnitus, Physiology, Regeneration, and Gene Therapy. Jonathan Gale gave a Keynote Lecture on “Cell Death & Repair in Hair Cell Epithelia”. The social program included authentic Japanese dining experiences, a traditional Noh theatre performance, and a concert held within the Kiyomizu Temple (a UNESCO World Heritage Site). The Workshop was a great success, with >400 attendees, and the hosts should be applauded for their excellent organisation and for the warm welcome extended to all participants.

Dan Jagger
BSA Balance Interest Group (BIG) Biennial Conference at the Ear Institute

On the 7th November 2014 the Ear Institute hosted the BSA BIG Biennial Conference which was organised by the BIG steering committee and led by Dr Ghada Al-Malky. The conference was very well attended with around seventy national and international delegates coming from a wide range of specialties with interest in Balance Disorders, including Clinical Audiology, Audiovestibular medicine (AVM), Physiotherapy and Nursing.

The overarching theme of the conference was ‘Balance Testing- Past, Present & Future’ with a programme filled with exciting and interesting topics presented by experts in different fields related to Balance disorders. As part of the ‘Past theme’, Dr Diego Kaski, a neurologist at Imperial College & Charing Cross Hospital, talked about Heroes and Villains in Balance testing across history; as part of the ‘Present theme’, Dr Veronica Kennedy, Consultant AVM at the Royal Bolton NHS Trust, talked about Balance Assessment in Children, Dr Andrew Wilkinson, Clinical Scientist at Southmead Hospital, talked about the current status of Balance Services in the UK and Dr Jas Sandhu, Academic Foundation Doctor at University of Sheffield Teaching Hospitals, talked about the role of VEMPs in assessing the Otolithic organs. Last but not least, as part of the ‘Future theme’, Prof Andy Forge from the Ear Institute gave an excellent talk on the the mechanisms of sensory vestibular epithelial cell repair, survival and regeneration with guidelines into how this knowledge can aid in future protection/treatment of vestibular disorders. Dr Peter West, Consultant AVM at Portsmouth Queen Alexandra Hospital, provided a comprehensive and practical overview on bedside-testing of dizzy patients and the rest of the BIG committee members all contributed to the afternoon workshops. The Conference was also very well supported by sponsors from all four major companies in the UK that provide Balance testing equipment (Biosense, GNotometrics, Interacoustics and Guymark).

The delegate feedback was extremely positive and everyone enjoyed and benefitted from this event. This was a good example of how the Ear Institute collaborates with the different professional bodies in Audiology and of its continuously growing contributions to dissemination of knowledge and support of the profession through the BSA and BAA.

Ghada Al-Malky

The Ear Institute launches two new MSc programmes.

Since September, the Ear Institute has been running two new MSc courses:

Medical Otology and Audiology has been created by Professor Shak Saeed, Dr Doris Bamiou and Mr Peter Andrews. The programme is for practising ENT Surgeons, Audiovestibular Physicians, Paediatricians, General Practitioners, Neurologists and Trainees with an interest in otology and audiology.

Students taking the one-year programme will have the option to specialise in either ENT Practice or Audiovestibular Medicine and will have the opportunity to undertake clinical observations at UCL’s partner hospitals.
**Audiological Science with Clinical Practice** is a new, innovative, 2-year course which combines all the theoretical and clinical knowledge, understanding and skills required to practice as an Audiologist and a Hearing Aid Dispenser in the UK in one single graduate qualification. The course includes 12 months’ in-service clinical training.

Both Medical Otology and Audiology and Audiological Science with Clinical Practice are available as MSc and Postgraduate Diplomas and both programmes will be accepting their first students in September 2014.

Full information about both programmes can be found on UCL’s online prospectus or by contacting Robert Heller at the Ear Institute on robert.heller@ucl.ac.uk

**Promotions/new jobs**

Congratulations go to Doris Bamiou, Joerg Albert and Jenny Bizley, all of whom have been promoted to Reader. Fantastic achievements and well deserved. I would note that senior promotions is taken very seriously and the Provost is a key member of the committee meeting that decides these. Apparently the committee was impressed with the quality of those being put forward by the Ear Institute – testimony to the excellence of the candidates and a credit to all of you.

Congratulations again to our three candidates.

**Bjorn Christianson moves to UCL-C**

Bjorn will be working as Consultancy Manager for the Sensory Systems and Therapies programme supporting the endeavours of the Ear Institute, the Institute of Ophthalmology and the Institute of Cognitive Neuroscience. As many of you can vouch, it has been fantastic working with Bjorn since he first joined Jen Linden’s lab from Caltech. In preparation for his new role, Bjorn has been upping the ante on the fashion stakes recently, and I for one have been feeling the pressure. Expect to see him suited and tied (is that the right term?) more often from now on!

**David McAlpine**

**The British Academy of Audiology Conference – 2014: Today’s Vision, tomorrow’s reality**

In November 2014, Drs Priya Singh and Cherilee Rutherford formed the scientific panel for the BAA conference. This resulted in a diverse and cutting edge scientific programme for which Priya and Cherilee received a great deal of praise.

The quality of the keynote speakers was extremely high with speakers such as Brian Fligor, Doug Beck, Marshall Chasin, Carol Flexer and Valerie Looi taking the podium. The conference was inspirational to all attendees from the well-accomplished researchers to up-and-coming students. We were extremely proud when the poster prize was awarded to Razun Miah for his work looking at “pitch perception in children with cochlear implants”. One of
the most valuable achievements of the conference was to bring together leading clinicians and leading researchers to discuss ideas and promote translational research and excellence in practice. Congratulations to Priya and Cherilee, such a wonderful success.

Debi Vickers

Sara, Warren & Fitim climb BT tower!

In October, three of our PhD students signed up to climb the BT Tower stairs to raise money for Action on Hearing Loss. Sara Weber, Warren Bakay and Fitim Fetahu raised more than £600 between them. Sara had this to say about her experience:

“It was a rewarding experience, it was a beautiful sunny day and the view from the tower was amazing. I could even see the Institute and thought of people back at work. We got a massage up there and Prosecco.. hm, what else? It was the last BT tower climb, sadly. Next we’ll have to do skydiving”

Well done you three!

Wordsearch

There are 18 words hidden in our slightly festive (but mainly auditory) wordsearch. 17 of the words are listed below, but keep an eye out for the secret 18th word and if you find it, send me an email for your chance to win a prize!

Entries to: kate.faxen@ucl.ac.uk (to be received by 31st March 2015 please)

CHRISTMAS
COCHLEA
COFFEE
CONNEXINS
DEAFNESS
EAR
INCUS
LARYNX
MISTLETOE


Donations can be made to the Ear Institute from our website or via the following link:

https://www.ucl.ac.uk/online-giving/giving-to?PROJECT_CODE=18

Submissions

If you would like to submit something for the next newsletter please email:

• kate.faxen@ucl.ac.uk and
• d.vickers@ucl.ac.uk