Getting involved

The wide range of areas in which research is conducted at the UCL Ear Institute is what makes it a groundbreaking establishment. Within the same institute examples of work being conducted are: stem cell applications for hearing recovery, genetic predictors of hearing impairment, understanding the function of the cochlear and auditory nerves, hearing aid and cochlear implant trials, and the development of new speech perception tests. We pride ourselves on our ability to collaborate across topic area because we know that if we combine our expertise that our impact will be greater than the sum of our individual research activities.

If you would like to get involved in any of our work please get in touch. Projects exist from completing a one off questionnaire to regular listening experiments, DNA sample donations to hearing aid trials. For children we have listening games and training programmes.

If you wish to take part in one of our studies, please visit the participate section of our website: www.ucl.ac.uk/participate
**Jobs, courses and seminars**
Grays Inn Road Short Courses (GIR) and Advanced Audiology Masterclasses running in 2013/2014

- GIR: Presentation Skills for Medics (10 June 2013)
- Masterclass: IMPACT! Changing Perspectives for Management (17–19 Sept 2013)
- Joint GIR/Newcastle: Course for the Intercollegiate FRCS Examination in Otolaryngology (25 - 27 Sep 2013)
- GIR: Nose Week: The Rhinoplasty & Facial Plastics Course (7 - 8 Oct 2013)
- GIR: Nose Week: An Endoscopic Approach to Rhinosinusitis (9-12 Oct 2013)
- Masterclass: Advances in Cochlear Implants (15-17 Oct 2013)
- GIR: A Practical Approach to Airway Management (22nd Nov 2013)
- GIR: Advances in the Medical and Surgical Management of Snoring & OSA (27 Nov 2013)
- Masterclass: Rehabilitation for Adults with Acquired Hearing Loss (4 - 6 Dec 2013)
- GIR: Practical Revision Course for the DO-HNS (14-16 Jan 2014)
- Masterclass: Tinnitus & Hyperacusis (21-23 Jan 2014)
- Masterclass: Advanced Amplification and Aural Rehabilitation (4-7 Mar 2014)
- Masterclass: Vestibular Rehabilitation (9 - 11 April 2014)

We’re currently moving all of our short course/masterclass bookings online which means that soon delegates can book and pay for courses quickly and simply!

While this list is up-to-date at time of publication, we will be adding to this list in the near future so please do check our website for current information.

You can go to specific course pages by clicking their title or go to:
http://www.ucl.ac.uk/ear/courses/shortcourses

Recent feedback from Masterclass in Vestibular Rehabilitation

“Thank you for a wonderful course. In about 20 years of attending courses your Masterclass was among the very few that was really helpful.”

Valeriu Buza MD PhD
ENT SAS Doctor East Surrey Hospital
Surrey and Sussex NHS Healthcare Trust.
New Starters

Aneeka Degun
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Aneeka Degun is an Audiologist who has joined UCL in April 2013 to work with staff members at the Ear Institute and The Royal National Throat, Nose and Ear Hospital to gather and prioritise requirements for a new project called OpenENT.

The initial aim of the project is to explore and develop a framework for an electronic patient database for patients with hearing impairment and other associated symptoms.

The OpenENT database will provide the opportunity for clinicians and researchers to access patient characteristics for audit and research.

At this exploratory stage of the project Aneeka will be collaborating with members of the UCL Ear Institute and RNTNEH to share requirements, ideas and expertise.

Nick Haywood
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Nick Haywood joined the Ear Institute in December 2012 to work as a postdoc on a project with David McAlpine, Torsten Marquardt and Debi Vickers.

The Advancing Binaural Cochlear Implant Technology (ABCIT) project is funded by the EU, and is in collaboration with partners at the University of Oldenburg, HörtTech, and Neurelec. The overall goals of the project are to investigate new ways of improving the binaural information provided to bilateral implant users, with the aim of integrating these findings into future cochlear implant designs. Nick’s work at the Ear Institute will primarily examine; 1) objective (EEG) measures of binaural processing in bilateral cochlear implant listeners, and 2) psychophysical evaluation of novel pre-processing and stimulation strategies.

Jaime
Undurraga
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Jaime has also joined the Ear Institute as a post doc on the ABCIT project. During his previous research project (at the University of Leuven) he investigated the effects of alternative pulse shapes and stimulation modes in cochlear implant users by means of both auditory evoked potentials and behavioral measures together with Prof. Dr. Astrid van Wieringen, Prof. Dr. Jan Wouters, and Dr. Robert P. Carlyon.

Currently, Jaime’s research at the Ear Institute will examine the use of auditory evoked responses and behavioral measurements in bilateral cochlear implant users in order to find methods to assess binaural processing.
In The Media

Prof David McAlpine writes a piece for the Mail Online
David discusses the potential link between people struggling to follow conversations around them due to hearing loss and the onset of dementia.

You can read the full article at Mail Online:

“Losing your hearing is a bit like going to a foreign country where you speak only a bit of the language.

You struggle to understand the conversations around you, and just trying to get by leaves you exhausted.

This is exactly what happens to people who suffer hearing loss...”

Featured Paper

Vibration-detection component in human olfaction

Working in conjunction with scientists and perfume chemists from Athens and with the support of the Ear Institute, we show in this paper a very strange thing: contrary to most theories of receptor activation, changing the mass of atoms within a molecule without changing its shape changes the way it smells. This is the first time that this effect has been shown in humans[1] it has been shown in Drosophila and is another piece of evidence for a very controversial theory of smell known as the inelastic electron tunnelling (IET) hypothesis.

Simply put, the IET hypothesis (first proposed by[2] Luca Turin in 1996 whilst at UCL) posits a quantum mechanism within the olfactory receptor which allows it to detect the bonds within an odorant molecule, rather than the standard model of induced conformational change. If these findings of the experiments are due to a receptor-level event then there must be a vibration detection mechanism in human olfaction.

References

1. Franco et al 2010: http://www.pnas.org/content/108/9/3797.full
2. Turin 1996: http://chemse.oxfordjournals.org/content/21/6/773.short

http://dx.plos.org/10.1371/journal.pone.0055780

“Losing your hearing is a bit like going to a foreign country where you speak only a bit of the language.

You struggle to understand the conversations around you, and just trying to get by leaves you exhausted.

This is exactly what happens to people who suffer hearing loss...”
More Recent Publications


Research updates

Gap Junction Communication in the Drosophila Ear
Nerissa Kirkwood
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In our laboratory we use Drosophila to study various aspects of hearing. The fly’s hearing organ, Johnston’s organ, is located in the second segment of the antennae (A2) and acts as a near-field sound detector. It contains various types of support cells next to the mechanosensory chordotonal neurones that transduce deflections of the sound receiver (third antennal segment, A3 and feathery arista) into electrical signals. Studies of Johnston’s organ have revealed a large number of structural and functional similarities between the Drosophila and mammalian ear making the Drosophila ear a useful model to study hearing. This is aided by the fact that there are powerful genetic tools at our disposal to manipulate and study genes of our choosing.

One of the subjects we study is the role of gap junction communication in the ear. Intercellular communication via gap junction channels (GJCs) is essential for the maintenance of normal auditory function in humans with mutations in the GJC protein connexin 26 identified as the predominant cause of inherited, sensorineural deafness. GJCs exist between different types of supporting cells within the mammalian cochlea. Across species, GJCs are the products of two multigene families. Connexins are unique to chordates while innexins/pannexins encode gap-junction proteins in both chordates and non-chordates with eight innexins in Drosophila.

We use Drosophila to investigate the importance of innexins within the ear for both the development of Johnston’s organ and acute adult auditory function. Using genetic approaches we selectively knocked-down expression of the GJC proteins and assessed the integrity of the fly ears by examining both mechanical and electrical responses. Our studies have revealed that expression of innexin 2 is essential for ear development. Innexin 2 also contributes to the maintenance of the sound evoked action potentials in the adult Drosophila ear. The expression pattern of innexin 2 suggests restriction to the basal attachment support cells, as opposed to the sensory neurones, indicating a support cell gap junction network important in sound evoked action potential maintenance. These results provide a further parallel between fly and mammalian ears, where GJC is between the supporting cells within the cochlea as opposed to the sensory hair cells. This opens the door for further study of this crucial communication network.

Estrogen related receptor gamma (ESRRG) and genetic susceptibility to age-related hearing loss

Age-related hearing loss (ARHL) is a complex disease and a significant economic burden. There are clear gender differences in susceptibility to ARHL, it is more common, more severe, and with earlier onset, in men than women. Historically this gender difference has been attributed to greater occupational noise exposure in men than women, but it is now clear this sex difference exists in cohorts with low history of noise exposure. In an attempt to answer the fundamental question: “why are women less susceptible to ARHL than men?” we have focussed some of our investigations on genes associated with estrogen; the female sex hormone. We have been following up a genome-wide association study into adult hearing status by linking hearing data in the 1958 British Birth Cohort with existing genetic data on the same individuals as part of an on-going collaboration with Prof. David Strachan (St Georges Hospital) and Prof. Adrian Davis (UCL EI). Our study, as with others, did not reach genome wide significance, but analysis of these data using a London ARHL cohort recruited from the adult hearing aid clinics at the RNTNEH coupled with functional analysis has provided evidence that the estrogen-related receptor gamma (ESRRG) gene is associated with susceptibility to ARHL in women. An additional key discovery from this study was the finding mice lacking the ESRRG gene exhibit a hearing loss that is already significantly worse in females compared to males at 12 weeks of age; this work was performed in collaboration with Prof. Hannes Maier from Hannover University. In summary, our data adds to a growing repertoire of data indicating a critical role for estrogen, estrogen receptors (ERs) and estrogen related receptors (ERRs) in maintaining and protecting the inner ear and hearing function.

This work was funded by the Haigh Fellowship in age related deafness, Deafness Research UK; Research into Ageing and the Teresa Rosenbaum Golden Charitable Trust.

PhD Updates
PhD congratulations to:
• Nicole Stanley (DRUK, Forge & Taylor)
• Shaza Saleh (Vickers & Saeed)

Also to Greg Ball (AoHL studentship – Gale) who has submitted his thesis and is waiting for his viva.

And to the following students after their successful PhD upgrades:
• Peggy Lange
• Katherine Wood
• Anahita Mehta

New Students welcomed in February to April; Larissa Cuenoud, Fitim Fetahu, Natalie Bohm.
Other News

Greg Ball is a Runner Up in UCL Graduate School Research Poster Competition 2012/13

Congratulations to Greg Ball, who is only a couple of months from his PhD Viva, for winning a runners up prize in the the UCL Graduate School Research Poster Competition.

http://www.grad.ucl.ac.uk/comp/2012-2013/poster/

Prof Martin Birchall receives Sparks Star status!

Sparks, the Children's medical research charity, have launched a new scheme to recognise inspirational people - brave children living with medical conditions and those who make life easier for the children and families they are working to help!

They have awarded Prof Martin Birchall the Sparks Star status for making a positive difference to the children and families they exist to help!

Find out more at:
http://www.sparks.org.uk

Guess the ear

Congratulations to the winner of last issue’s prize of a box of chocolates, Denise Goldman from the UCL Ear Institute who correctly guessed that it was Dr Nico Daudet's ear pictured! It’s on it’s way!

Below is a picture of another of the Ear Institute’s Principal Investigators’ ears... but whose?

If you think you know then why not email kate.faxen@ucl.ac.uk before 1st July 2013 to be entered into a prize draw. The winner will be announced in the next newsletter.

Donate

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

Or make donations specifically for microtia research at the Ear Institute via this link:

https://www.ucl.ac.uk/online-giving/giving-to?PROJECT_CODE=23

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
by 1st July 2013 please.