Contrary to conventional wisdom, short-term hearing loss after sustained exposure to loud noise does not reflect damage to our hearing: instead, it is the body’s way to cope.

The landmark finding could lead to improved protection against noise-induced hearing loss in future.

The research, led by University of New South Wales Professor Gary Housley, has found that “reversible hearing loss” is a physiological adaptation mechanism, allowing the cochlea (the auditory portion of the inner ear) to perform normally when exposed to noise stress.

“This explains why we lose our hearing for hours or days after we have been exposed to a rock concert, for example. The adaptation mechanism has been switched on,” says Professor Housley, from the Translational Neuroscience Facility, School of Medical Sciences, who worked with researchers from the University of Auckland and the University of California, San Diego.

The research, published in the prestigious journal Proceedings of the National Academy of Science (PNAS), found that as sound levels rise, the cells in the cochlea release the hormone ATP, which binds to a receptor, causing the temporary reduction in hearing sensitivity.

In the lab, the researchers made the remarkable finding that those mice
without the receptor showed no loss of hearing sensitivity when exposed to sustained loud noise. However, these mice were much more vulnerable to permanent noise-induced hearing loss at very high noise levels.

This correlates with a finding in an earlier paper from the group, which reveals a genetic cause of deafness in humans involving the same mechanism. Two families in China with a mutation in the ATP receptor have shown rapidly progressing hearing loss that is accelerated if they work in noisy environments.

Now that the team has shown the receptor is protective, the researchers are hoping to target this pathway to better protect the ear against noise in loud environments.

While this research has found that the cochlea can deal with loud sound on occasion, constant loud noise can lead to irreversible damage, through the loss of high frequency hearing.

“It’s like sun exposure,” explains Professor Housley. “It’s not the acute exposure, but the chronic exposure, that can cause problems years later.”

Another lead investigator of the study, Professor Allen Ryan, from the University of California, San Diego says: “If the efficiency of this gene varies between individuals, as is the case for many genes, it may go some way to explaining why some people are very vulnerable to noise, or develop hearing loss with age and others don’t.”

But even those who don’t have a family history of hearing loss have cause for concern.

“Because our hearing sensitivity adapts, we can withstand loud noise, but we can’t sense the absolute intensity of the sound and if we exceed the safe sound upper limit, we will damage our hearing – despite this protective adaptation mechanism we have discovered,” says Professor Housley from the School of Medical Sciences. “This is clearly the case for personal music devices, these deliver much higher sound levels into our ears than naturally occurred as our hearing sense evolved.”

UNSW Media Office
Just two handfuls in size and made of billions of nerve and glial cells, the living brain controls our thoughts, movements, behaviour and emotions. It is the seat of our consciousness, yet scientists are still discovering how the living brain actually works.

The book is organized into nine sections: Structure and Function; Development; The Senses; Movement and Actions; The Social Brain; Mind, Consciousness, Mood and Psychosis; Brain Plasticity, Injury and Repair; Drugs and the Brain Aging and Disease.

"The Brain Book" was favourably reviewed this March by The Vancouver Sun. Please click here to read the review.
Tell me about your experience studying through the EAP. What kind of support has been provided?

The coordinators have been really helpful and accommodating, making sure that if I can’t attend things that I can tick them off when I can. The uni’s been a big help in terms of working with me and with training commitments.

What was the application process like?

Through the Sydney Swans, I got in contact with Helen [Bryson], who played a bit of a mentoring role in helping me get set up with uni. Obviously with training taking up a lot of time, she’s been a great help in terms of being able to work out how things will go, how I can get to certain things and stuff like that.

What made you choose Exercise Physiology?

I suppose having an interest in sport, it was something which I could be involved in, something to study that would require a bit of physical activity was appealing. That’s what sort of jumped out at me and this subject [the first-year unit, Introductory Exercise Physiology] has a bit of a practical component to it as well. I like that side of things.

In an average week how often are you on campus?

Not too often, to be honest. I get to lectures and stuff whenever I can. The compulsory things, such as labs and tutorials, I try and get to them if footy permits. I always try and make sure I’m at those things and try and do as best I can at those things.

And for the things you can’t get to, does the EAP help you to find alternative arrangements?

Exactly. So with Exercise Physiology, the course I’m doing, Fiona Naumann she heads the course. She played a role in helping me, being flexible, working
with me to make sure I could get everything done and completed. And then Nancy van Doorn, who heads the unit I’m doing, she’s been able to give me an extension when we’ve been travelling with footy, and just being flexible with her help – and even Jordan [Lockyer, another Swans player who has started the BExPhys this year] and I, we went and did a one-on-one session because we missed one of the labs with Nancy and she was able to help us.

Have you spoken to other Swans players who have studied at UNSW through the EAP?

Yeah. Basically they just said the uni is really helpful in helping you work through things, making sure things work efficiently. That’s the main thing – the staff are just really happy to help.

How long will it take to finish your degree?

I think the degree is four years full time and at the moment I’m only doing one unit. Eventually, I’ll start picking up more units each semester. I’ll take more than the average student doing full time uni to finish. Hopefully I can pick up a few more units each semester and try and tick it off as soon as possible.

You debuted for Sydney Swans on Saturday [1 June 2013]. Were you happy with how it went?

Yeah, I was coming off a few injury setbacks in the last year or so, so I was happy to just be able to play. One of my teammates, Tommy Walsh, unfortunately got injured and came off. I came on as the sub player and just tried to contribute and play my role for the team, have an impact. I was really happy that we got a good win against a good team like Essendon.

How long have you been playing football?

Probably since I was about three or four years old, ever since I can remember. And it just built up through playing school footy and club footy and eventually making a few representative teams and then got drafted by the Swans, and things have flowed from there.

Was that here in Sydney?

No. I grew up in Melbourne, playing footy in Melbourne, and then I played for a few years in Perth before I got drafted.

When did you realise it was something you wanted to pursue at the elite level?

I was pretty young. Once I started to make a few rep teams and things like that, I knew that I wanted to play footy and try and play at the highest level. Probably about the age of 15 or 16, I thought this is what I really wanted to do.
Fiona grew up in Melbourne in a family of aviation devotees. Her father was an aeronautical engineer and pilot, her mother an air hostess and keeping up the tradition, her brother is a qualified pilot now working in air traffic control. In a less obvious way Fiona too has embraced the convention of flight.

After graduating from the University of Melbourne Fiona decided to leave behind the cold climate that did little to inspire her. She has been on a nomadic path ever since. Her first port of call was Paradise on the Sunshine Coast. It was here she met her husband, who she describes as "a buffed Special Forces" soldier.

In May 2013 The UK Telegraph listed Sydney as 1 of the best 10 cities in the world to live. This is no surprise, Sydney has for a long time been considered a desirable destination. There is always a queue of people knocking on the door for entry. Fiona Naumann was not one of those people. All she could see from her Perth home was congestion, high prices and a frenetic pace. In a surprising turn of events her move to Sydney has proven to be one of the best career decisions.

Like many, Fiona is raising a family at the same time that she is establishing her academic career. Her first priority has had to be her children and with a husband in the military she had to be both parents to them at times. "My husband has had over a dozen deployments and the older the children get, the harder the impact is on them," she says. "I just try and establish a normal home-life and routine for us all, and make their needs my first concern. It was particularly hard when he was on tour in Iraq and Afghanistan with so much information about these zones being accessible."

Being a military wife has certainly had its challenges and Fiona has had to watch as colleagues leapt over her on their academic track. She describes her academic career as a slow burn, but she wouldn't change a thing. "Raising a family is a privilege and I wanted to do it well. Also, how many people can say they got to hang out with the Navy Seals for a few years," she says.

Research wise Fiona started out in the field of osteoporosis prevention. "My role was to inspire young children to get active and strengthen their bones. I suppose this interest stemmed from my time as a Physical Education teacher. When we all moved to the US, for a military posting, I shifted to researching the role of exercise for cancer rehabilitation. The recuperative and rejuvenating

S Dacre
potential of exercise is astounding. I was inspired by the improved health outcomes for patients and I knew I could make a difference in people’s lives.”

The move to Sydney couldn’t have come at a better time. As her children grow up Fiona has been able to refocus on her research ambitions. In addition to the work she has been doing in the field of the rehabilitative medicine she has added clinical education to her resume. “Clinical learning, teaching and assessment is emerging in the exercise physiology field and the improvements just keep coming,” she says. “I’m relishing the opportunity and challenge of becoming a leader in this field and to guiding my profession in its use.”

Fiona lives and breathes her research, it’s more a personal philosophy than a career. “Exercise is essential to me and I ensure it makes it into every day. I get up at 5am so I can achieve that. Funnily enough, it’s taken me quite a few years to realise that this isn’t normal,” says Fiona. “I teach a 6am cycle class at the gym and will continue to do so until I can no longer whip the participants’ butts. I also coach the UNSW Junior hockey. It’s so rewarding giving back to a sport I have enjoyed most of my life. I must love it – I coach my daughter’s School hockey team as well.”

Fiona has been fortunate to be able to take her passion for exercise and build a career from it. “My dad put me on this path,” she says. “He has been a driving influence. He was demonstrative as a parent and very proud of my achievements – to the point of embarrassment sometimes. But his enthusiasm was infectious and sparked a desire in me to do even better. He was especially thrilled when I did some research with RAAF fighter pilots. We did some quantifying of loading through the neck, during aerial combat. We then worked with the pilots to strengthen their necks and prevent G-induced injuries. The best part of the research was getting to fly with the boys. Once they located a flight suit small enough to fit me that is. I’m proud to say I didn’t pass out or throw up.”

Passion is something that Fiona would like to pass on to her students. “I’m motivated to do what I do by being able to improve the quality of human life. Cancer is a terrible disease and the treatment for it is particularly gruelling. Anything that I can do to make even the slightest difference for a patient is enough for me. I want the students to graduate from UNSW with the same passion to assist people manage their health and well-being as I have.”

“I want my children to be passionate about what they do as well. I love my career and wouldn’t change a single aspect. I want my kids to look back at their life and say the same thing.”

There are a couple of things that Fiona would change however. She would learn to say no. “As I want to help the world, I’m incapable of saying no to people. This does come at a cost.” The other thing she would change, “well, I would like to be a little taller and a little younger.”

**Fact Box**

Dr Fiona Naumann is a Senior Lecturer and Program Authority in Exercise Physiology. She is currently investigating the benefits of exercise intervention for ovarian cancer patients. She works collaboratively with the NSW Cancer Survivors and the UNSW Lifestyle Clinic.
Bright young things are not just flappers and socialites from the 1920’s seeking thrills and chasing dreams in a devil-may-care style – we have a number of them right here in SoMS. This year the International Brain Research Organisation (Asia Pacific Regional Committee) invited a select group of twenty-four PhD students or early career researchers to attend the IBRO/APRC Advance Neuroscience Imaging Course.

To be eligible to apply for attendance at the 3 day course, participants needed to be registered and presenting their work at the annual conference held by the Australasian Neuroscience Society. From the number of applications received for the twenty-four spots 5 staff from TNF were accepted – Amanda Craig, Kristina Froud, Anne Harasta, Jeremy Pinyon and Andrew Tosolini.

The imaging course was held at the Monash Biomedical Imaging Facility and the Australian Synchrotron in Melbourne. The aim of which is to be the catalyst for the best scientific research and innovation in Australasia through the understanding the world at a micro, nano and atomic scale.

The TNF staff, lodged in the Guest House attached to Australian Synchrotron, were provided with an intensive three days exploration into imaging.

“This was a fantastic introduction into MRI, positron emission tomography, multi-photon microscopy and applications for the synchrotron,” said Jeremy. “As a researcher in the sensori-motor group I’m excited by the potential of these imaging techniques to provide a functional readout for the effectiveness of the gene therapies that we are developing.”

In the rapidly changing world of imaging at an imperceptible scale the Australian Synchrotron will contribute to the future of science in our region. As will scientists of the calibre of the TNF team.
The Royal College of Pathologists of Australasia (RCPA) and key medical media came together on the 28th May 2013 to celebrate the inaugural Pathology Day. Events were held around the globe. A number of SoMS pathologists embraced the Pathology Day as an opportunity to showcase the strength of their department, in particular Simone Van Es and Gary Velan.

“We wanted to take the opportunity to teach everyone about diseases and their underlying pathological processes,” said Simone. “It was also important to point out that medical pathologists are responsible for disease diagnosis in so many cases.”

Simone came up with a creative approach to engage students, staff and the public. She developed 2 quizzes: one was paper-based and explored general pathology themes and the second online quiz was designed for students from the Medicine and Medical Sciences programs that delved into a complex medical scenario. Playing at being a detective, students needed to unravel the mystery through interpreting macroscopic pathology, histopathology, radiological images, haematology, clinical chemistry and microbiology. ‘Clues’ in the form of posters were displayed around the Museum of Human Disease that could assist with diagnosis and the clock was ticking. Within 36 hours the students needed to come up with a final diagnosis - pseudomembranous colitis.

Forty eight students completed the complex diagnosis challenge of which 9 obtained full marks.

The feedback from the students suggested that they were truly engaged with the quiz and appreciated the time and effort that Simone had gone to in providing them with such an interesting medical conundrum.

It is only fitting therefore that Simone took out top honours for the day from the RCPA. Their congratulatory note read -

Congratulations Dr Simone Van Es and indeed all the team at the University of New South Wales. Competition was strong and judging difficult. Simone’s entry stood out for originality with the design of the quiz, systematic organisation of the day (and build up to it) which attracted a large number of participants.
What's On At
The Museum of Human Disease

A heart will beat more than 3 BILLION times in a lifetime – mostly those beats will all be ignored. Maybe you will notice the beats as you fall in love, or stand at the edge of the bungy bridge. Maybe you will listen when the cardiologist explains why you need to be careful with what you eat.

But mostly we never give them a second thought those vital heart beats. That’s why we at the UNSW Museum of Human Disease along with our supporters have decided to make it easy to think about your heart beat.

Across Australia musician Simon Barker and others will improvise their music to the sounds of heart beats. With the support of The Australian Government, Inspiring Australia, 3M Littmann stethoscopes, PhillipsLifehealthcare, Macquarie Health Services and The Heart Foundation the Museum will offer a musical interpretation of the sounds of our most tenacious organ.

iHeart Music is a National Science Week event (August 9-18) which involves recording audience heart beats at venues across Australia, playing the recordings to Musicians here at The Museum of Human Disease at UNSW – who improvise tunes which are live streamed via video conference or web streaming back to the original venue.

To date the venues involved are;
- Imaginarium Science Centre
- Scitech Discovery centre
- Market of the Mind Fed Square
- Science at the Markets at Queen Victoria Markets
- Ballarat University, Ballarat
- CSIRO Discovery Centre, Canberra, ACT,
- UNSW Rural Clinical Schools in Albury, Coffs Harbour and Port Macquarie
- Royal Institution Australia, Adelaide,
- Discovery Science Centre, Bendigo Victoria,
- UNSW RCS Albury
- UNSW RCS Port Macquarie
- UNSW Museum of Human Disease
- Brisbane Digital Hub

Each venue would have people interpreting the key messages of – Heart Health, the importance of Healthy Heart choices and checkups, and the role of technology in assisting diagnosis and treatment of disease.

This Inspiring Australia initiative is supported by the Australian Government as part of National Science Week.

Current supporters;
- Australian Government through inspiring Australia
- Heart Foundation
- Phillips Life Health
- Macquarie Health Services
- Cosmos Magazine
- 3M

Derek Williamson
10 Things You May Not Know About Julie Ash

Where did you grow up?
I grew up in Forestville on the North Shore.

What languages can you speak?
I can speak German fairly fluently (with an Aussie accent of course), and more recently have been studying Indonesian.

How many cities have you lived in?
I have lived in Auckland and Christchurch for one year, London one year and Zurich for 8 years .... hence the German as a second language.

Have you ever met a famous person?
I shook hands with US President Bill Clinton in Thailand while working on the Boxing Day Tsunami in 2005.

If you could live anywhere in the world for a year, where would it be?
I think I would head back to Switzerland as it is so centrally placed in Europe, that it gives you the opportunity to travel over any one of its borders and into another country within an hour.

What was the last book you read?
The last book I read was a Swedish crime novel by Camilla Lackberg called ‘The Mermaid’. I have also read ‘The Ice Princess’ by the same author and currently reading another one called ‘The Drowning’. The trilogy ‘The Girl with the Dragon Tattoo’ by Stieg Larsson are responsible for taking me down this road.

Complete the statement: “I recommend ......”
The Boathouse restaurant in Xlendi on the Island of Gozo in Malta for lunch – absolutely fabulous location and yumm!

What is one thing that most people wouldn’t know about you?
That I was a part of the Forensic team who was deployed to Norfolk Island to attend their first murder in 150 years back in 2002.

What is the one thing you would really like to learn how to do?
I would really love to learn how to play the piano, particularly the tune ‘Fur Elise by Beethoven. Anyone want to teach me?

My last meal would be .... Without a doubt, my very last meal would most definitely be lobster mornay!

Fact Box
Julie is the Manager of Clinical Anatomy and Surgical Skills Unit (CASSU). She is a practicing member of the Australian Institute of Embalmers (AIE), the British Institute of Embalmers (BIE) and the Australian and New Zealand Forensic Science Society.
You can contact Julie on j.ash@unsw.edu.au or on 9385 2480.
N Kwai, R Arnold, C Wikerema, C Lin, A Poynten, M Kiernan and A Krishnan

“Effects of Axonal Ion-Channel Dysfunction on Quality of Life in Type 2 Diabetes” Diabetes Care, doi:10.2337/dc12-1310.

This is Natalie Kwai’s first research paper from her PhD work. The study investigated nerve function, using nerve excitability techniques, in type 2 diabetic patients and their relationship to neuropathy specific quality of life measures. The research has provided the first evidence that altered axonal sodium channel function correlates with the development of neuropathic symptoms in diabetic patients. This is an important finding as it suggests that excitability techniques, applied in the clinical setting, may be used as a biomarker of treatment response in diabetic patients receiving neuropathic pain treatments.

E F Diezmos, S L Sandow, I Markus, D Shevy Perera, D Z Lubowski, D W King, P P Bertrand and L Liu s


Erica Diezmos is a first year PhD student and this article is based on her honours work done in SOMS. This research provides a direction for further study into the role of pannexins, a recently discovered membrane protein channel, in inflammatory bowel diseases. Its significance lies in the fact that the mechanism of inflammation in this disease has not been fully elucidated, and because marked differences in pannexin expression were found associated between disease and normal tissue, as well as between ulcerative colitis and Crohn’s disease, it may be a key factor in the pathophysiology of inflammatory bowel diseases.

F Luciani, M Sanders, S Oveissi, K Pang, and W Chen
I’m sure by now you have heard the news about Peter Gunning’s appointment as the Associate Dean of Research. Peter brings a wonderful track record of research success to the role, as well as an infectious enthusiasm for science and scientific thinking. Both SoMS and UNSW Medicine will benefit greatly from the innovative approaches he will bring to the role.

Peter officially takes up the appointment on the 1st July 2013.

As the Associate Dean (Research), Professor Gunning will be responsible for advising the Deputy Vice-Chancellor (Research) and the Dean on research matters relevant to UNSW Medicine. He will also serve on Faculty and University Committees and drive interdisciplinary Faculty initiatives.

Professor Gunning is the Head of the Oncology Research Unit in the Department of Pharmacology, School of Medical Sciences. His research is focussed on the development of new therapeutic strategies for the treatment of childhood cancer and other diseases of childhood. These strategies target the skeleton of the cancer cell and build on the principles of cell architecture that his group has discovered over the last 20 years. He is also using chemotherapy as a means to promote the selective engraftment of muscle stem cells into damaged and regenerating muscles. Professor Gunning has published over 100 primary research articles and has recently edited the first book devoted to his field of research. Previous appointments have included leadership roles as Chair of the Division of Research at The Children’s Hospital at Westmead, Chair of the Westmead Research Hub Executive, Member of Board of NSW Cancer Institute and Chair of the Board of Bio-Link, a company established by the NSW Government to support commercialisation of biomedical intellectual property.

Congratulations Peter.
Latest Library News

Library systems upgrade - Sirius

Due to system upgrades from 1st July 2013, Sirius will no longer be available. Its core functionality is available through the Library’s other systems - SearchFirst, Find Databases and MyLibrary.

- Saved lists of databases, e-journals and queries will need to be recreated. Information on how to do this is available here
- If you require further assistance please contact Kate Dunn, kate.dunn@unsw.edu.au; 51012

New system for recording UNSW publications

UNSW will soon be introducing a new system, ROS, to manage information about the University’s research outputs. All academic staff will have a record in ROS and will be able to log in and manage their publications.

ROS will offer a number of functionalities to support you:

- Streamlined, and in most cases automated, publications data entry
- Impact measurements, including H-indexes, citation counts and Altmetrics
- Uploading accurate publication information to the UNSW Research Gateway
- Easy export options to create publication lists for CVs, grants and promotion applications
- Collection of data for HERDC and other research assessment exercises
- For further information please contact your Outreach Librarian Kate Dunn, kate.dunn@unsw.edu.au; 51012

Huffington Post

The profile of the Museum of Human Disease continues to rise, thanks in part to publications such as the on-line Huffington Post. A recent article titled 'Top 10 Quirky Museums' featured the Museum of Human Disease at number 9.

The Huffington Post reaches 185 million consumers daily. Traffic on the website averages 19 minutes per visit. Click on the picture below if you would like to be redirected to the newspaper article.
In April this year Jenny Lauschke was focking up to attend a gala AMA NSW function, where she was named the NSW Minister for Health/Cutch & Neale Junior Medical Officer of the Year.

Jenny completed a degree in Medicine at UNSW and was known to many in the School of Medical Sciences through her studies and her work with Professor Phil Waite as a research assistant. She says, “I was nominated for this honour by the Hunter New England Health network. It was for the work I have been doing with them over the past 2 years and particularly with the network prevocational education forum and the council for prevocational training. I worked with them in my role as vice-president of the resident association on 2 main issues: mental health support for young doctors and improving the workforce management issues namely rostering and after-hours conditions for a small rural hospital.”

Naturally Phil Waite is delighted at the success her former student and employee is enjoying. “She did it all. Jenny helped with surgery, post-op care, histology, immune-histochemistry and generally she was amazingly useful,” said Phil. “Jenny’s dedicated work led to several publications for the Neural Injury Research Unit. Not only was she a huge asset to the lab but we have kept in touch, and celebrated her award when she returned from the Solomon Islands.”

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From SoMS Student To Celebrated Doctor

For more information or to send comments, suggestions, events notifications and items for future editions please contact: The School of Medical Sciences, Head of School Office. Tel: 02 9385 2531 or email s.dacre@unsw.edu.au