Year in Review  By Sue Baker-Finch

With the end of another busy year drawing near, it is worth taking a few moments to reflect on our achievements in 2012.

As IHMRI’s Chief Operating Officer since the establishment of the institute, I am in a good position to appreciate IHMRI’s development from the early days and also to get a bird’s eye view of health and medical research at the University of Wollongong (UOW), within the Illawarra Shoalhaven Local Health District (ISLHD) and across the Illawarra region.

I can see that growing health and medical research in the region is delivering many benefits, not only in terms of better health services and better outcomes for our population, but also in terms of strengthening our regional reputation for innovation and job creation.

Not many people know this, but the health care and social assistance sector employs over 25,000 health professionals regionally; a high proportion compared to the rest of NSW. As IHMRI grows and develops, we will continue building relationships with this highly-skilled workforce, expand it even further with jobs created through new research endeavours and make discoveries with commercial potential to further boost the region’s economy.

In my day-to-day conversations with regional stakeholders, I often find myself explaining that, while it takes time to build a new research institute, IHMRI is providing new opportunities for academics and clinicians to get involved in research. And, apart from the occasional setback that always comes with ambitious new ventures, I feel confident that we are on the right track, and with the full support of our founding partners, the ISLHD and UOW, that track will lead us to great success.

Soon after commencing his appointment as university Vice-Chancellor in January 2012, Professor Paul Wellings CBE referred to IHMRI as one of the “jewels” in the university’s crown. In June, he presented his vision for the university at an IHMRI networking evening, noting that high-quality health and medical research is vital in helping the UOW achieve its goal of getting into the top one per cent of universities worldwide (it is currently in the top two per cent).

Continued on page 2...
In 2012, we have been seeing a stronger research culture emerge and flourish within the ISLHD, with numerous clinical service improvement projects established, many more clinicians actively engaged with university researchers and a number of very well attended IHMRI workshops and seminars hosted at The Wollongong Hospital.

One of our major achievements this year was to consolidate our research themes to focus on priority health issues and population health in our region. This involved a survey of IHMRI Research Network members. We found that 22 per cent of network members are from the ISLHD, 23 per cent work within other health, community and government organisations and 50 per cent work at the university.

Clearly, the network remains an effective vehicle in connecting across these contexts and in promoting and supporting a strong research culture in the Illawarra generally. We are proud of the progress we are making in facilitating multi-disciplinary collaborations.

Several of these collaborations and achievements are noted IHMRI’s 2011-12 annual report, which has just been published and can be accessed via the IHMRI website.

Two significant IHMRI-supported projects this year are ‘Health Connect: A Chronic Disease Prevention Program for the Illawarra Shoalhaven Population’ and the Illawarra Born birth cohort study; both of which will commence recruitment in 2013. The first population health symposium was held in November (see page 9) and is one of many major events run by IHMRI this year.

Also of particular note this year is the growth in IHMRI’s Clinical Research and Trials Unit, with several sponsored trials completed and a new round of trials currently recruiting (see page 14).

Multidisciplinary research projects are also encouraged and supported through our grants program. I also note with particular delight that a community-based donor is again supporting Summer Scholarships for Dementia Research (page 3).

The big picture is about looking at what’s possible and I look forward to seeing what’s possible in 2013.

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Record numbers for Personality Disorders conference

Judging by the record number of registrants to the 6th Annual Conference on the Treatment of Personality Disorders, more and more mental health professionals are interested in learning about the best way to identify, manage and treat personality disorders.

Supported by IHMRI and organised by the team behind the Project Air Strategy for Personality Disorders, the conference attracted 180 mental health professionals to the university campus in November and was run under the theme of ‘Guidelines-based practice’.

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Open by the Director of MH-Kids (NSW Health), Associate Professor Beth Kotze, the keynote address, entitled: Rethinking personality disorder diagnosis, was delivered by Professor Roger Mulder, Chair of Psychiatry at the University of Otago (NZ), editor of Personality and Mental Health, co-chair of the WHO Committee on Personality Disorders and a member of the ICD-11 Classification Committee for Personality Disorders.

As part of their efforts to develop resources to improve the capacity of mainstream mental health services to identify, manage and treat personality disorders, the Project Air team recently developed new guidelines which were discussed in relation to new guidelines published by the National Health and Medical Research Council and UK National Institute for Clinical Excellence.

Other speakers included family psychiatrist, Dr Annemarie Bickerton, occupational and family therapist, Jan Giffin, consultant psychiatrist and President of the International Society for the Study of Personality Disorders, Associate Professor Andrew Chanen, Project Air Director, Professor Brin Grenyer, University of Sydney researchers, Dr David Hawes and Dr Rebekah Helyer and UOW researcher, Rachel Bailey.

Congratulations to all involved in this very successful event.
Flavoursome flavonoids under investigation

Held in late November and supported by IHMRI, the Annual Scientific Meeting of the Nutrition Society of Australia attracted a large audience and explored themes such as: essential nutrients, nutritional bio-markers, core foods versus fortified foods, food supply and diet quality and translating/communicating nutritional science.

One of the plenary speakers was IHMRI researcher Dr Andrew Jenner who spoke about the health benefits of flavonoids; a class of over 8,000 phenolic phytochemicals that are widespread in human food, especially in fruits and vegetables, seeds, nuts, grains, spices and beverages such as wine and tea.

It is estimated that people consume between 0.15 and 1g of dietary phenols daily; approximately two thirds of which are flavonoids.

Dr Jenner is collaborating with Associate Professor Karen Charlton, Associate Professor Victoria Traynor, post graduate student Katherine Caldwell and Associate Professor Steven Roodenrys to examine flavonoid intake and potential neuroprotection in the older population.

“Considerable evidence indicates that flavonoids have high antioxidant capacity and may protect against diseases such as cancer, cardiovascular disease and neurodegeneration,” explains Dr Jenner. “They also have anti-inflammation, antimicrobial and vasodilatory effects.

“Despite the evidence, the exact human mechanisms of dietary flavanoid bioactivity is not well understood. Flavonoids are not fully absorbed and, following uptake, they undergo extensive metabolism to produce a large variety of metabolites. Consequently, plasma levels of flavonoids are low and may not reach the threshold required to achieve a health benefit. It is therefore important to examine human flavonoid metabolism.”

At IHMRI, Dr Jenner and other researchers have recently developed a reliable, sensitive gas chromatography–mass spectrometry technique to accurately quantify over 75 phenolics, which should lead to new discoveries.

“This technique is now being applied to plasma collected from elderly volunteers to examine flavonoid intake and its role in neuroprotection,” adds Dr Jenner.

Stay tuned for updates on this research.

Six students win Summer Scholarships for Dementia Research

In aiming to attract prospective higher degree research students with an interest in dementia and to provide them with research experience and an opportunity to evaluate and demonstrate their research potential, in 2011-12 IHMRI offered its first round of Summer Scholarships for Dementia Research.

Four scholarships were offered in the first year and now, thanks to the continued and generous support of local donor, Mr Richard Harris, another six scholarships have been offered to the following students:

- Vincent Carroll: Supporting wandering in dementia care in an Australian context: testing a UK assessment tool and identifying an intervention to test in a future study.
- Mariam Chaalan: Utility of electroencephalography (EEG) in an Australian tertiary teaching hospital for individuals.
- Hannah Coyle: Computerised and virtual reality training programs for individuals living with dementia.
- Phuong Do-Ha: Contribution of metabolism-related genes to neuronal dysfunction in a cell-based model of Alzheimer’s disease.
- Robyn Gillespie: Content design and pilot testing of a medication management information resource tool to guide Culturally and Linguistically Diverse family caregivers of a person living with dementia.
- Monica Mao: Lay understanding about dementia: the views and experiences of older people living in residential accommodation.

We look forward to reporting on the outcomes of these studies, as they progress.
 Surprise win for B12 researcher

IHMRI PhD student, Peter Zhao, admits he was “shocked and surprised” when he heard “Dr Zhao from Australia” called out as the sole poster winner at the recent Vitamin B12 International Symposium in Nancy, France.

Peter’s winning poster proposed a new concept of functional vitamin B12 deficiency arising from lysosome dysfunction associated with ageing and neurodegenerative disease.

He attended the conference with his supervisor, IHMRI Policy Advisor (Scientific) Professor Brett Garner, but neither were expecting to win, “as most of the delegates, including the scientific committee members, were from Europe and North America and there were about 30 posters presented during the conference,” explains Peter.

The announcement came during a session break when many people, including Professor Garner, had temporarily left the room.

“Suddenly, the chairman announced my name. I was shocked as I knew I was competing with other PhD students and post docs around the world whose labs are very good at B12 research. After I recovered, I walked onto the stage to receive the winner’s certificate from the chairman. Of course, Brett was very happy, but also sad that he missed the moment,” says Peter.

The award, which carries a 250 Euro cash prize, means Peter’s paper will now be considered for publication in the journal *Biochimie*.

“The award encourages me to gain further insights into lysosome vitamin B12 metabolism. I would not have achieved this award without the full support of IHMRI, Professor Garner and other lab members,” adds Peter.

Safety award for IHMRI’s Technical Services team

IHMRI’s laboratory-based researchers are supported by a highly-skilled Technical Services team who manage the day-to-day operations of the PC2 laboratories and provide a range of specialist technical services.

Consistently recognised for the high-standard with which they manage the laboratories and the associated health and safety issues, the team were recently presented with a Safe Work Australia Workplace Health & Safety award by University of Wollongong (UOW) Vice-Chancellor, Professor Paul Wellings.

Tanya Levchenko, Clare Atkinson, Katie Cicero and Linda Deitch won the award for the “Best Team Contribution to Improving Health and Safety” in recognition of their work developing a best practice training program for the management of biological spills in the laboratory. The program, which incorporates a high-quality movie, was deemed “a fantastic resource for other laboratories and institutions to use”.

Congratulations to the team and the other university recipients who continue to uphold the highest standard of health and safety at UOW.

GPs learn the art of writing winning grant proposals

The Illawarra and Southern Practice Research Network (ISPRN) was launched in 2011 to build research capacity within general practices.

In 2012, ISPRN continued to grow in strength and numbers, with almost 45 individuals now registered.

In late November, ISPRN hosted its first research development workshop at the Sebel Harbourside in Kiama.

Run in collaboration with members of IHMRI’s Health Care Delivery (HCD) theme, it attracted GPs, practice nurses, practice managers and academics who, under the guidance of HCD scientific and clinical leaders, Professor Andrew Bonney and Dr Bruce Ashford, discussed the art of writing winning grant proposals with a view to becoming more actively involved in research.
Proof: Men and women really do think differently

We’re all familiar with the phrase “men are from Venus, women are from Mars”. Now, it appears, Dr Mei Han has found evidence.

A National Health and Medical Research Council (NHMRC) Australia-China Exchange Fellow based at IHMRI, Dr Han is studying schizophrenia and following a line of inquiry which suggests that cognitive deficits, as opposed to clinical categories, may better represent the underlying pathogenesis of schizophrenia.

“Cognitive deficits have been identified as core features of patients with schizophrenia. Understanding the characteristics of these cognitive deficits, which differ based on gender, can point to areas of altered neurobiology,” explains Dr Han.

Previous evidence suggests that gender differences among patients with schizophrenia have included age at onset, symptom severity, treatment response, course of illness and outcome.

“However, the difference of cognitive impairment in gender is still not well understood. That is why I decided to study this topic,” adds Dr Han.

With NHMRC and Australian Schizophrenia Research Institute funding, Dr Han worked with researchers in China and the US to study the cognitive function of 200 male and female schizophrenic patients and 271 healthy controls who took a range of memory, language, reading and visual-spatial tests.

With the support of her supervisor, Professor Xu-Feng Huang, she crunched the numbers and found that immediate memory, language, delayed memory and total Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) scores were lower in schizophrenia patients of both genders. But males had significantly lower immediate memory, delayed memory and total RBANS scores than female patients, with the healthy controls showing similar gender differences.

The results, published in the journal Progress in Neuro-Psychopharmacology & Biological Psychiatry, may change the way doctors look after male schizophrenic patients and may lead to the development of gender-specific medications.

From here, Dr Han will continue investigating whether the gender differences of cognitive deficits in schizophrenia are also associated with genetic variants and medication treatment.
Welcome Dr Kim Alexander

Dr Kim Alexander has recently joined IHMRI as a Senior Research Fellow on IHMRI’s flagship population health project: ‘Health Connect: A Chronic Disease Prevention Program for the Illawarra Shoalhaven Population’.

Dr Alexander’s PhD thesis, completed in 2007, explored the social aspects of agricultural change in Laos. She subsequently gained extensive experience in water-related research and contributed to significant water and climate change projects in Indonesia, Vietnam and the Philippines.

She was employed by the University of Melbourne and Charles Sturt University and worked on a wide range of community projects in regional and rural Australia before joining the CSIRO as Research Scientist, where she focused on multi-disciplinary and multi-institutional participatory research in rural and urban communities, both nationally and internationally.

Dr Alexander believes she is well placed to apply her varied research experiences and skills to support the Health Connect project, which will commence recruitment in 2013.

NHMRC grant supports excellence in antipsychotic research

The head of IHMRI’s Antipsychotic Research Laboratory, Associate Professor Chao Deng, has had a very productive year, with five more articles on antipsychotics, schizophrenia and obesity/metabolism published in refereed journals.

In October, Associate Professor Deng and key collaborator, Professor Xu-Feng Huang (Director of IHMRI’s Centre for Translational Neuroscience), received the news that they had won a National Health and Medical Research Council (NHMRC) project grant. From 3727 applications, their application was ranked category 6, placing it in the top nine per cent of applications.

Over the next three years, the research team, which includes IHMRI researchers, Dr Katrina Green, Professor Nagesh Pai and Dr Alexander Szabo, will conduct three large studies focusing on the role of muscarinic M3 receptors in insulin dysregulation caused by antipsychotic drugs. They will also conduct an animal study to trial a new drug which may reduce the side-effects of these antipsychotics.

“The project will provide fundamental knowledge for the design and facilitation of clinical trials to treat or prevent antipsychotic-induced glucometabolic dysfunction,” explains Associate Professor Deng.

“Since antipsychotic treatment is generally lifelong for individuals with schizophrenia, preventing the metabolic side-effects associated with these drugs is essential, not only for effective treatment of schizophrenia, but to improve the individual’s quality of life.”

This year’s grant success is the fourth consecutive NHMRC project funding awarded to the antipsychotics team and provides further evidence of IHMRI’s strength in this area.
Australia-India Early Career Fellowship announced

Around the time that Prime Minister Julia Gillard was in India seeking greater economic, political and strategic ties, IHMRI’s Dr Vidiya Ramachandran was being awarded an Australia-India Early Career Fellowship to pursue further research into human-specific pathogen Streptococcus pyogenes.

The competitive fellowship, awarded by the Australian Academy of Science, will enable her to travel to Mumbai in 2013 to collaborate with clinical microbiologist Professor Mohan Karamarkar at the Seth G S Medical College and KEM Hospital.

Dr Ramachandran will study the causes of streptococcal infection in Mumbai in 2013.

Using immunohistology techniques, their work is investigating the molecular link between streptococcal infection and acute post streptococcal glomerulonephritis (APSGN), an inflammatory kidney disease rife in some Indigenous communities and in developing countries such as India. Professor Karamarkar’s laboratories will be used to screen a large collection of streptococcal strains isolated from skin infections. Kidney biopsies will also be analysed for the presence of proteins that could be implicated in these infections.

Back at IHMRI, Dr Ramachandran will continue collaborating with biologists Dr Jason McArthur and Dr Martina Sanderson-Smith on the project, which will produce data to improve our understanding of the role of S. pyogenes strains and proteins in APSGN pathogenesis.

It is also anticipated that the project will pave way for future collaborations involving a student/researcher exchange between the two institutions.

Design and dementia – how a home-like environment can help

Members of IHMRI’s Ageing and Chronic Conditions theme recently learned about fascinating research conducted by Professor Richard Fleming on how environmental design can help people with dementia.

Director of the university’s NSW/ACT Dementia Training Study Centre, Professor Fleming’s presentation, which can be downloaded from the IRT’s website (see below), included highlights from a trial of humour therapy in Australian residential aged care facilities and delivered the results of a study into the relationship between a home-like environment and quality of life for 286 residents in 27 aged care facilities.

Using the Dementia Quality of Life Questionnaire measurement system, Professor Fleming found that wellbeing was significantly enhanced when the following 10 principles of design were applied:

1. unobtrusively reduce risks
2. provide a human scale
3. allow people to see and be seen
4. reduce unhelpful stimulation
5. optimise helpful stimulation
6. support movement and engagement
7. create a familiar space
8. provide opportunities to be alone or with others
9. provide links to the community
10. respond to a vision for a way of life.

While many of these findings are well-known to researchers, Professor Fleming noted in his presentation that this knowledge is not always put into practice. He then discussed what can be done to make sure that it is.

His presentation can be found at: www.irt.org.au/research.asp
Equipment in focus: Agilent 2100 Electrophoresis Bioanalyser

A new bioanalyser that will be used to test the quality and quantity of genetic material including DNA and RNA has been commissioned and installed in IHMRI’s laboratories on level 2. It will be employed in studies on diseases such as Alzheimer’s disease, dementia, addiction, schizophrenia, obesity and cancer.

The new Agilent 2100 Electrophoresis Bioanalyser is a microfluidics-based platform for sizing, quantification and quality control of DNA, RNA and proteins on a single platform.

It will enable researchers to check the quality of their samples in-house, saving significant time and money outsourcing services to Sydney.

One of the main users, Dr Francesca Fernandez, is already using the equipment for an IRT-funded project looking into the prevention and early diagnosis of Alzheimer’s disease using gene expression profiling in a case-control elderly population in the Illawarra.

“We are using the bioanalyser to check our RNA samples before using it in a microarray,” she explains.

“The multistep microarray procedure, for the simultaneous measurement of many genes, is dependent on the quality and integrity of the starting product, so we will save time and money by having the bioanalyser to check this.

“It can also be used as a quality control and quantisation device before undertaking the construction of genetic ‘libraries’ for DNA sequencing analysis,” adds Dr Fernandez.

Second round of funding for Motor Neurone Disease research

Thanks to the Motor Neurone Disease Institute of Australia (MNDIA), a successful collaboration between IHMRI researchers, Professor Mark Wilson, Dr Heath Ecroyd, Dr Andrew Aquilina, Dr Justin Yerbury and Dr Ian Blair (ANZAC Research Institute) will continue in 2013.

The group have been investigating protein aggregation and chaperones as key players in MND, with the first year of funding (2012) enabling them to make significant progress.

Dr Yerbury, who has just completed a MNDIA Bill Gole Fellowship, says that although all cases of MND are associated with protein aggregates, their precise make-up remains a mystery.

“This year we have been able to show that we can isolate the aggregate particles, and very soon will profile their protein content. This will give us vital information that may help us understand how they form, and may even uncover the proteins underlying the cause of the disease,” he says.

Dr Yerbury is also commencing an Australian Research Council Discovery Early Career Researcher Award fellowship to undertake studies aimed at determining how known genetic defects cause protein aggregation, cell dysfunction and death in familial MND.

“The outcomes will provide a new understanding of these processes and may contribute towards the ultimate development of new therapies,” says Dr Yerbury.

Technique to improve contact lenses

The benefits of wearing contact lenses can be outweighed by the discomfort they cause and their constant wear and tear – and subsequent replacement. These issues are thought to be caused by the deposition of biological material onto the lenses.

With the support of the Brien Holden Vision Institute, IHMRI-based researcher, Dr Simon Brown, Liam Huxtable (UOW), Professor Mark Willcox (UNSW), Professor Stephen Blanksby (UOW) and ARC Future Fellow, Dr Todd Mitchell (UOW), have been characterising the lipid composition of these deposits directly from used contact lenses utilising liquid extraction surface analysis coupled to tandem mass spectrometry.

Their work, which shows that this method is, indeed, a rapid and comprehensive way of characterising these deposits, has just been published as a rapid communication in the Royal Society of Chemistry’s journal, Analyst.
Population health symposium builds regional connections

IHMRI’s first-ever population health symposium was held in early December, attracting 65 cross disciplinary researchers drawn from the UOW, the Illawarra Shoalhaven Local Health District, private practice, community and Indigenous organisations throughout the Illawarra.

The purpose was to build relationships, share knowledge, discuss opportunities and engage support for regional population health studies, including IHMRI’s population health flagship, Health Connect: A Chronic Disease Prevention Program for the Illawarra Shoalhaven Population and the Illawarra Born birth cohort study; both of which will commence recruitment in 2013.

Delegates heard from UOW Deputy Vice-Chancellor, Professor Judy Raper, Health Connect’s Chief Scientific Investigator, Professor Linda Tapsell, and Illawarra Born Scientific Director, Professor Brin Grenyer, before Professor Berit Heitmann, an internationally-recognised epidemiologist from Copenhagen University Hospitals, delivered the keynote: What makes a population study?

Panel discussions on the tools and techniques typically employed in cohort and intervention studies followed, as did further discussions on regional population health research and how all stakeholders can work together to ensure research findings are translated into improved health outcomes.

Based on the success of this symposium, it is anticipated that it will become an annual event, with data from the Health Connect and Illawarra Born projects likely to be presented.
Turning to computers for diet advice

Feeling overweight and concerned about the risk of disease, many Australians turn to their GPs for advice on dietary matters. The hectic environment of a GPs surgery coupled with limited knowledge of nutrition, means that patients are not always getting the kind of detailed advice they need to make significant change.

Aware of the rapid adoption of computers and internet-based programs to manage diet and nutrition, NHMRC Research Fellow, Dr Yasmine Probst and Population Health Scientific Leader, Professor Linda Tapsell, recently investigated the effectiveness of a website called DietAdvice in helping people manage their food intake.

They set out to describe the acceptance of DietAdvice in a primary health-care setting, recruiting GPs who referred patients with metabolic syndrome to the website. Ten patients answered questions about their usual food intake with the information electronically accessed by 10 dietitians who developed individualised dietary advice for each patient.

Computer literacy was a problem for some patients and most expressed a preference for face-to-face interviews. However, dietitians felt that DietAdvice could save time prior to dietary education and counselling.

The team concluded, in a paper published in Nutrition and Dietetics, that automated technologies are likely to play a significant part in the future of dietetics.

IHMRI Network member and clinician Andrew Dalley also assisted on the project.

Inaugural Proteostasis and Disease Research Symposium

The inaugural Proteostasis and Disease Research Symposium was held at the Novotel Wollongong in late November, attracting around 80 local, national and international delegates.

Organised by the Proteostasis & Disease Research Centre and run over three days, the jam-packed program included sessions on protein trafficking, the stress response and disease, protein folding and aggregation, chaperone proteins and protein degradation.

The conference attracted leading international researchers from the University of Florence (Italy), University of Cambridge (UK) University College London (UK) and US institutions including Stanford University, Northwestern University, University of California and the Scripps Research Institute, California.

Many strong abstracts were submitted, with six students chosen to present their work in a student session which was one of the highlights of the symposium.

Student prizes were awarded to Annabel Minard (Garvan Institute), Saskia Polling (University of Melbourne) and Prajwal Ciryam (University of Cambridge). In addition, 30 posters were presented; many by students based in IHMRI’s headquarters.

The program provided plenty of time for informal discussion and sight-seeing (including a visit to IHMRI’s headquarters for delegates) with the organising committee concluding that the event had achieved its goal of bringing Australian and international proteostasis researchers together.
IHMRI students receive prestigious scholarships

In October, two IHMRI-based students, Natalie Matosin and Jessica Andrews, received the news that they had won Ian Scott Scholarships to pursue further research into the neurodevelopment of schizophrenia.

The competitive scholarships, named in honour of the founder of the Australian Rotary Health Research Fund, are offered to recent graduates working in the area of mental illness and awarded on the basis of academic record, scientific excellence, research feasibility, relevance and the quality of the intended supervisors.

Both Natalie and Jessica are PhD students within IHMRI’s Centre for Translational Neuroscience and both say they were inspired to pursue a research career by their undergraduate lecturer and active IHMRI researcher, Dr Kelly Newell.

“Dr Newell was my undergraduate lecturer for neuroscience,” explains Natalie. “She was really passionate about the subject and an amazing teacher, so I wanted to work with her on her research.”

Under Dr Newell’s supervision, Natalie completed an Honours degree, which received first class Honours, ‘Top Honours student in the Medical Science degree’ and a Research Scholarship from the UOW’s School of Health Sciences.

Her PhD extends her Honours project, which focuses on uncovering the molecular pathology of schizophrenia; specifically, a brain protein called metabotropic glutamate receptor 5 (mGluR5) as a novel therapeutic target for schizophrenia.

In the third year of her undergraduate degree, Jessica undertook a Fundamentals of Neuroscience subject lectured by Dr Newell.

“I found the subject fascinating and I just loved how much there was to know about the brain and how much we are yet to discover,” she says.

She too went on to complete an Honours project (supervised by Dr Francesca Fernandez), receiving first class Honours and ‘Top Honours Student’ in the School of Health Sciences.

Her studies focus on a protein called Lingo-1 and some of its signalling partners in the pathophysiology of schizophrenia.

“This group of proteins are important for normal brain development and if they are altered in schizophrenia, as I found as a part of my Honours work, then this could have implications for the development of schizophrenia,” she explains.

Thanks to the scholarship, both students will be financially supported for their duration of their PhDs.

Study to define lived experience of mental illness

The Australian Mental Health Commission recently acknowledged that, on a national scale, there is no consistent or regularly connected qualitative information about people’s real and whole-of-life experience of mental health.

Now, with the help of Dr Lindsay Oades and other researchers, a new project known as the National Contributing Life Project will develop a methodology, process and framework to qualitatively compile and report on the experiences of Australians with mental health issues.

Director of the Australian Institute of Business WellBeing, Dr Oades will help to develop a survey that will go beyond health services to focus on people’s daily lives and their perceptions of what they need to live - and the lives they want to live.

The data will build a more rounded picture of service and support outcomes and will be reported in the annual National Report Card on Mental Health and Suicide Prevention.

The project team - Leanne Craze, Dr Oades, Cath Roper (University of Melbourne), Douglas Holmes (St Vincent’s Inner City Mental Health Program) - will be supported by a Project Advisory Group made up of people living with a mental illness and qualified experts.
Dr Kylie Mansfield

Active IHMRI researcher, Dr Kylie Mansfield, from the UOW’s Graduate School of Medicine, presented a poster at a meeting of the American Urology Association in May and has just received news that her work has been written up in the November edition of *Urology Times*.

Her research investigates the relationship between urinary tract infection (UTI) and their symptoms and proposes that a component of E.coli - lipopolysaccharide (LPS) - may be an important part of understanding why some infections present with symptoms while others are asymptomatic.

The poster showed that one serotype of LPS may prompt adenosine triphosphate (ATP) release from the urothelium when it is stretched, while other serotypes inhibit ATP release.

As part of her trip to the US, Dr Mansfield presented two seminars at Washington University’s (WU) Medical School in St Louis. This resulted in her research group establishing collaborations with the internationally-recognised WU researcher, Professor Scott Hultgren.

"Professor Hultgren has over 200 publications on UTI, so establishing a collaboration with his group is a big deal for us here in Australia," says Dr Mansfield.

Professor Don Iverson, et al.

Executive Dean, Professor Don Iverson, has won an ARC Discovery Project grant to pursue a project entitled: ‘Do intentions predict health-related behaviours? Implications of method bias for the design of public health promotion programs’.

Over the next three years, he will be working with Associate Professor Rajeev Sharma (UOW School of Information Systems and Technology) and Professor Tim Coltman (Institute for Innovation in Business and Social Research) to evaluate the validity of theories that purport to explain why people diet, exercise and quit smoking etc.

Adam Briggs

Targeted Nano Therapies group member and Masters student, Adam Briggs, has been looking at the effect of nanoparticles on cells in response to radiation.

With the support of his supervisors, Dr Moeava Tehei, Dr Stephanie Corde Tehei (Prince of Wales Hospital) and Dr Michael Lerch (UOW Centre for Medical Radiation Physics), Adam recently won a scholarship from the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) to attend the 2012 Engineering and Physical Sciences in Medicine conference on the Gold Coast.

He gave a presentation on the in-vitro tissue culture work he has been doing at IHMRI, which involves the preparation, maintenance and performance of assays to primarily analyse the effects of radiation on the survival of cells.

Another TNT student, Ryan Brown, also had a paper accepted for an oral presentation at the conference.

Adam is now working towards accreditation with the ACPSEM as a Medical Physics Specialist at the Royal North Shore Hospital.

Professor Stephen Pyne

Active IHMRI researcher, Professor Stephen Pyne won an NRMRC grant to lead a team developing novel antibacterials targeting *clostridium difficile* infections and an ARC Discovery Project grant to develop methods of preparing bioactive natural products and their analogues with potential applications as new/safer therapeutic drugs.

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**Boost to ERA ranking**

The 2012 Excellence in Research for Australia (ERA) report has just been published by the Australian Research Council, with the University of Wollongong significantly improving its performance in several health and medical research areas.

ERA evaluates the quality of the research conducted at Australian universities by discipline. It identifies the research strengths of individual universities and of the sector as a whole. It also highlights disciplines where there are opportunities to develop research capacity.

The ARC provides internationally-recognised researchers with discipline-specific national and international benchmarks to assist them in determining and moderating ratings. Each discipline is awarded a rating on a five-point scale, where three is world standard and five is the highest rating.

The first round of ERA evaluations took place in 2010 and a second round has just been completed.

From 2010 to 2012, the UOW’s Clinical Sciences discipline jumped from a ranking of 3 to the maximum of 5, Public Health and Health Services jumped from 1 to 4, Psychology from 2 to 4 and Biochemistry and Cell Biology from 2 to 4.

IHMRI researchers Professor Brett Garner, Associate Professor Marie Ranson and Professor Sandra Jones played a part in this success as coordinators of UOW panels.

ERA outcomes inform performance-based university funding, with the 2012 rankings also incorporated into the Australian Government’s MyUniversity website.
Functional foods, herbal medicines and obesity

Most Australians are aware of the health risks of obesity, including type 2 diabetes, hypertension and coronary heart disease. As a society we are also becoming more aware of the cost that overweight and obesity has on individuals, families and the economy. The potential of functional food molecules and herbal medicines in reversing overweight and obesity is a focus of research activity within IHMRI’s Centre for Translational Neuroscience (CTN), where National Health and Medical Research Council Australia-China Exchange Training Fellow, Dr Yinghua Yu, is pursuing a range of fascinating studies.

Of particular interest is the potential of DHA (Docosahexaenoic Acid) supplements and n-3 polyunsaturated fatty acids (PUFA), in preventing obesity and related metabolic disorders.

“Diets emphasising different types of fats, saturated fatty acid, monounsaturated fatty acid, n-3 and n-6 PUFA have been shown to differentially modulate overall energy metabolism,” explains Dr Yu.

“Our studies are providing evidence that DHA supplements may play a role in addressing the obesity epidemic.”

Dr Yu recently conducted clinical research investigating the serum levels of phospholipid fatty acids in Chinese men with metabolic syndrome, with the results published in the refereed journal, Nutrition Research.

The study found that the proportion of DHA n-3 PUFA (widely held to be the most important of the n-3 PUFA) decreased in the serum of metabolic syndrome individuals and is negatively correlated to body weight.

While it has already been proven that DHA can enhance memory and learning, Dr Yu sought to understand the mechanics of this by studying rats on a DHA supplemented high-saturated-fat diet. Her study found that DHA did, in fact, prevent dysfunction in the neurotransmitters/receptors of the brain. The paper has been accepted by the Journal of Nutritional Biochemistry.

With funding from the Diabetes Australia Research Trust, Dr Yu is now embarking upon another project looking at how distinct fatty acids affect central leptin sensitivity and glucose intolerance in obesity and type 2 diabetes.

“This project will determine which types of fatty acids cause central leptin resistance and others promote central leptin sensitivity, leading to reduced food intake and improved glucose tolerance,” explains Dr Yu.

An earlier animal study found that central leptin sensitivity decreased by acute intraventricular injection of saturated fatty acids compared with n-6 PUFA, with the underlying molecular mechanism being investigated via a tissue examination.

The anti-inflammatory and anti-obesity properties of teasaponin – a glycoside compound extracted from tea seeds – have also been studied, with Dr Yu finding that the compound did indeed reduce liver and visceral fat inflammation and improved central leptin sensitivity in diet-induced obese mice.

This result will be presented at the 5th International Congress on Prediabetes and Metabolic Syndrome in Vienna, Austria, in April 2013.

Under the supervision of CTN Director, Professor Xu-Feng Huang – who shares a strong interest in nutrition and herbal pharmacology - Dr Yu has also completed further studies on the use of functional foods and herbal medicines in preventing and treating obesity and obesity-related disorders. Publications have appeared in Molecular Nutrition & Food Research, Appetite, Nutrition and Cancer, Public Health Nutrition and the Asia Pacific Journal of Clinical Nutrition.

Dr Yu’s work may lead to the development of new treatment strategies for obesity and identify possible molecular target sites for improving leptin sensitivity and glucose tolerance.
Clinical trial participant, Lia Rombouts

Watching her mother and four of her six brothers experience the pain and discomfort of shingles was enough to propel Lia Rombouts to pick up the phone when she saw an ad in the Illawarra Mercury seeking volunteers for a clinical trial of a new shingles vaccine.

“I was little bit anxious about getting the injections, but certainly eager to participate,” says Lia, who moved to Australia from Holland with her family in the mid-fifties “to get away from the war and everything that was happening in Europe at the time”.

Lia’s mother developed shingles - a painful, blistering skin rash caused by the varicella-zoster virus – at the age of 68 and treated it with calamine lotion “as there was nothing else available at the time,” says Lia.

“Because of the pain, she couldn’t eat and started to lose weight; her back was red raw. She couldn’t really do anything and died of kidney failure at the age of 71.”

Four of Lia’s brothers also have the virus, with two experiencing a rash on the face; the other two on the legs.

“Obviously our family is predisposed to the virus. I have been lucky so far and there are better treatments available now. Seeing what my family has gone through, I wouldn’t want anyone else to go through it.”

It is estimated that more than 220,000 Australians aged over 50 are diagnosed with shingles every year.

The trial is being conducted in 18 countries. IHMRI was the only site in the Illawarra hosting the study (which is now closed for recruitment).

“The experience of participating in the trial has been better than expected,” says Lia.

“The CRTU’s facilities are excellent, the staff are very friendly and the follow-up and care you receive from the doctors and nurses has been great.

“I tell all my friends about clinical trials now. It is important that we all give something back to the community and this is a great way of getting involved.”

Currently recruiting

IHMRI’s Clinical Research and Trials Unit was specifically designed and equipped to host sponsored trials, research clinics and investigator-initiated trials suited for delivery in an out-patient setting.

In accepting sponsored trials, the CRTU targets those which test new drugs and therapies for common conditions experienced by Illawarra residents, are suitable for recruitment in the Illawarra population and are low risk.

The unit is currently recruiting for the following trials and is seeking the support of the local community and GPs in encouraging people to register their interest in these and other studies at: ihmri.uow.edu.au/participate/

Osteoarthritis study: Volunteers are sought for a study assessing the effectiveness of a new drug to relieve the pain caused by osteoarthritis. Eligible volunteers will have osteoarthritis in the knee.

Gout study: The CRTU is looking for men and women aged 18 to 85 years with gout to take part in a clinical research study for people who are taking Allopurinol, but who have had two or more gout attacks in the past year. This study is evaluating an investigational drug to see whether, when combined with allopurinol, it works better in reducing high uric acid levels in the blood.

Obesity study: The CRTU is investigating the efficacy of a drug for weight loss. We are looking for overweight females aged 18 – 65 who are otherwise in generally good health.

Coming soon:

ACCELERATE: Early in 2013, the unit will begin recruiting people who are on cholesterol-lowering medication and have experienced a cardiovascular event. This study is researching the effectiveness of an investigational drug to determine if it will reduce their chances of having another cardiovascular event.
Meet an IHMRI Network member

Dr Thomas Lee, Gastroenterology Staff Specialist, The Wollongong Hospital

Tell us a bit about your day-to-day work

I am a full-time staff gastroenterologist at The Wollongong Hospital. My job is clinically-orientated, where I see referrals from GPs and other specialists in the out-patient clinics, look after in-patients (those admitted through the emergency department) and perform endoscopies.

I work with a team of junior doctors, specialist nurses and members of the allied health team, including dietitians.

Gastroenterology has a good mix of procedural work – endoscopies, in-patient and out-patient work – and a good mix of acute and chronic gastrointestinal and liver conditions.

What is your career history?

I obtained MBBS from the University of New South Wales in 2000 and completed basic physician training through St George Hospital.

After completing a gastroenterology fellowship in 2009, I spent two years at the University of Alberta in Canada, where I completed Master of Science in Experimental Medicine involving an Inflammatory Bowel Disease cohort.

I am a clinician first and researcher second. I hope to develop a good mix of clinical work, translational research and teaching commitments.

You joined the IHMRI Research Network in March 2012. What motivated you to join and what have you gained from your involvement?

My motivation for joining the IHMRI Research Network was to network with like-minded researchers for future collaborative projects.

Thus far, I had the pleasure of attending gut microbiota interest group meetings through IHMRI, where we discussed potential research ideas and projects. Learning about the strengths and capabilities of health and medical science and research at the UOW and IHMRI is important.

What are your research ideas and how will they make a difference in your day-to-day work?

My passion is in optimising clinical care of patients with Inflammatory Bowel Disease from bench to bedside (clinical trials) and vice versa (translational research).

Research ideas usually stem from clinical observations that we make and wanting to find out why or how. Therefore, my day-to-day work is the foundation of these research ideas.

Tell us a bit about your involvement with Gastroenterological Society of Australia and your recent award.

The Gastroenterological Society of Australia is the public body representing gastroenterologists. It oversees the training and credential process, promotes gastroenterological and liver research and contributes to public health policies such as the National Bowel Cancer Screening Program.

The 2013 Ferring IBD Clinician Establishment Award was set up to fund individuals early in their career who have developed special skills in IBD clinical management and who want to play a leadership role in IBD clinical practice locally and nationally.

I have the honour of being the recipient and tasked to establish a specific IBD service within Illawarra.

2013 seminar and networking events

IHMRI’s seminars and networking events were very well supported in 2012. In planning for next year’s events, the Research Development team is eager to hear from IHMRI Research Network members about speakers they would like to hear from.

Speakers are typically drawn from, or speak to, the four research themes:

• Ageing and Chronic Conditions
• Diagnostics and Therapeutics
• Health Care Delivery
• Neuroscience and Mental Health

If you have any suggestions, email ihmri-research@uow.edu.au

If you have a colleague who may be interested in joining the IHMRI Research Network, please forward this newsletter on and invite them to learn more about the benefits by visiting: www.ihmri.uow.edu.au/join.

IHMRI’s 2011-12 Annual Report has just been published and is now available for download at: ihmri.uow.edu.au/illawarra/governance
IHMRI Networking Evening with NeuRA boss

IHMRI’s final Networking Evening for 2012 was held in early December and presented by the Executive Director and CEO of Neuroscience Research Australia, Professor Peter R Schofield, who talked about the evolution of NeuRA from its early days as the Prince of Wales Medical Research Institute to its position as a leader in brain and nervous system research. He showed slides of NeuRA’s architecturally-stunning new building in Randwick, NSW, and spoke to IHMRI Research Network members about NeuRA’s approach to building effective research partnerships and collaborations.

Stay tuned for updates on IHMRI’s 2013 event calendar.