Chinese MOU brings fresh talent to IHMRI

Researchers aligned with IHMRI’s Neuroscience and Mental Health theme are making significant progress understanding the causes of schizophrenia, developing new treatments and reducing the side effects of current antipsychotic treatments.

IHMRI’s inaugural Executive Director, Professor Don Iverson and acting Executive Director, Professor Xu-Feng Huang, have been pursuing a number of international collaborations to enhance this work, recently travelling to Beijing, China to sign a Memorandum of Understanding (MOU) with the Beijing Huilongguan Hospital; the largest psychiatric hospital in northern China.

The three-year MOU provides funding for senior hospital clinicians to pursue schizophrenia-related research at IHMRI for a period of six months, with senior hospital psychiatrist, Dr Chongsheng Song, becoming the first researcher to take up the opportunity in January.

Leaving his family behind in China, Dr Song made his first trip to Australia and is now settled into his office at IHMRI where he is learning from members of IHMRI’s Centre for Translational Neuroscience and collaborating on a National Health and Medical Research Council (NHMRC) project seeking to reduce the obesity side effects of antipsychotics.

At the Huilongguan Hospital – which receives around 200 outpatient visits a day – Dr Song and his colleagues regularly prescribe antipsychotics.

“While the treatments are effective and many patients do recover, the side effects of antipsychotics, such as obesity, drowsiness and memory loss, can hamper their recovery or make it difficult for them to maintain treatment,” says Dr Song.

The MOU gives IHMRI researchers access to more than 15 years of clinical data obtained by the 1,369-bed hospital, with bioinformatics specialists and statisticians to be brought in to analyse the data.

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Dr Song says the opportunity to work with IHMRI researchers, including Associate Professor Chao Deng, on the NHMRC project is “very exciting”. “The collaboration is focused on understanding the biochemical changes – in an animal model – to reveal information about antipsychotics. Psychiatrists are very familiar with antipsychotic drugs, so together we can find ways to avoid the side effects and thus provide schizophrenia patients with better treatments.” It is expected that several joint publications will come out of the collaboration.

Modelling a Healthy Recovery for substance abusers

In January, UOW senior lecturer and clinical psychologist, Dr Peter Kelly, was named ‘First Ranked Fellow’ by the Cancer Institute of NSW, which awarded him almost $700,000 to continue his work with The Salvation Army addressing the high rates of smoking among chronic drug and alcohol users.

Dr Kelly and his colleagues at the Illawarra Institute for Mental Health, Professor Frank Deane and Dr Trevor Crowe, were also recently awarded the Excellence in Research Award at the National Drug and Alcohol Awards for their ongoing research with The Salvation Army.

The Healthy Recovery Program, developed with the support of the Cancer Council NSW, has been pilot-tested within The Salvation Army Recovery Service Centres. And now, thanks to the three-year Cancer Institute of NSW grant, the research will move into the next phase, with an eight-session, group-based intervention that will encourage those in treatment for substance abuse to reduce their smoking, improve their diet and increase their level of exercise.

“Smoking rates among the general population are reducing at a steady rate, with 15 per cent of the population estimated to be daily smokers,” says Dr Kelly.

“However, smoking rates have remained largely unchanged for people with a history of alcohol or other substance abuse problems, where around 80 per cent of participants smoke. As a result, there are higher rates of mortality for these populations, with the average life expectancy being approximately 25 years less than the general population. Cancer is one of the leading causes of mortality for this group; primarily as a result of their smoking.

“This has an enormous social and financial cost to the Australian population, so it is important that we develop more comprehensive prevention strategies for these high risk population groups.” In collaboration with researchers at the University of Newcastle and the University of New South Wales, Dr Kelly will also lead an evaluation of the program.
Protein discovery may reduce the risk of Alzheimer’s disease

Most people are aware of the fact that when cholesterol, or plaque, accumulates in our arteries, we are at increased risk of developing cardiovascular disease. The ageing population and concurrent rise in neurodegenerative disorders is drawing attention to the way that lipids (fats) are metabolised in the brain and how certain proteins can accumulate, forming ‘biological garbage’ that increases the risk of developing Alzheimer’s disease (AD).

In 2007, a group of researchers led by dual National Health and Medical Research Council and Australian Research Council fellow, Professor Brett Garner, attracted worldwide attention by showing that a protein called Abca1 (ATP-binding cassette transporter A1) played a role in controlling the production of a small protein or ‘peptide’ called amyloid-beta (Aβ), which is generated in the lipid membranes of cells and which can accumulate in the brain, causing neuron death.

The researchers went on to identify that a closely-related protein, Abca7, which is highly expressed in human brain cells, could also slow down the production of the Aβ peptide in cultured cells. Now they have discovered that Abca7 may play a role in removing toxic substances from the brain. By deleting the gene in a mouse model of AD, they showed that the disease pathology significantly worsened, indicating that the gene is, indeed, involved in regulating Aβ homeostasis and plaque load.

“This is the first study to describe the impact that a loss of Abca7 function has in the brain in the AD context and may help us to understand why mutations in human Abca7 confer increased risk for AD,” explains Professor Garner.

“This research opens up new avenues for us to study how Aβ is removed from the brain and what therapeutic approaches may be used to promote this in the AD context.”


“We will now focus on discovering compounds that may selectively increase the expression of Abca7 in the brain and in particular in the brain’s ‘garbage collector’ cells called microglia,” adds Professor Garner.

“While we can only speculate that these compounds will promote the removal of the harmful Aβ deposits, our data lends support to the general concept that any approach aimed at increasing microglial phagocytosis - the process by which microglia digest Aβ and other unwanted materials - could be helpful in the AD treatment context.”

The study was conducted at IHMRI and represents part of a long-term collaboration between Professor Garner (Principal Investigator) and Dr Hongyun Li with Dr Tim Karl and Dr Woojin Kim from Neuroscience Research Australia.

More good news on nuts and berries

In September 2012, IHMRI hosted a visit by Spanish nutrition expert, Dr Emilio Ros, a lead investigator in one of the world’s largest and longest dietary intervention studies, PREDIMED, which addresses cardiovascular disease prevention.

The main results of the PREDIMED study, funded by the Spanish Ministry of Health, were published in the New England Journal of Medicine in February. The study clearly shows the positive effects of a Mediterranean diet. Walnuts were a key food in the study diets and the results align well with local research on the effects of snack size portions of walnuts in healthy diets - 30g a day. The local studies were led by Professor Linda Tapsell and included other IHMRI researchers including Dr Marijka Batterham and Associate Professor Karen Charlton.

The New England Journal of Medicine paper on PREDIMED cited two review papers which Professor Tapsell had published in collaboration with international colleagues on nuts and berries in heart health and on food synergy as an operational concept for understanding nutrition.
Support for ethnic family caregivers of people with dementia

One of the objectives of IHMRI's Summer Scholarships for Dementia Research scholarship program is to give students research experience and the opportunity to evaluate and demonstrate their research potential.

One of six successful scholarship recipients, Robyn Gillespie undertook an exploratory qualitative study on medication management over the 2012/13 summer break and in February the Masters of Public Health (Advanced) student gained experience presenting her research findings to an audience made up of members of IHMRI's Ageing and Chronic Conditions (ACC) theme, who provided very positive feedback.

Robyn has been working with School of Health Sciences' lecturer and IHMRI researcher, Dr Lindsey Harrison, and ACC scientific leader, Dr Judy Mullan, on a project examining the medication management concerns of ethnic minority family caregivers of people with dementia.

“The majority of medication management is carried out by family caregivers; especially as the disease progresses to the later stages,” Robyn said.

“Few studies on medication management are dementia-specific or include the family caregiver. Most studies also focus on adherence issues and do not consider the broader tasks required to manage medication.”

To address these gaps, the team undertook an exploratory qualitative study on the everyday medication management experiences of caregivers.

“We targeted caregivers from ethnic minorities to see what additional literacy and health literacy barriers they might face as they take on responsibility for this role,” added Robyn.

The findings will now be applied to the development of a bilingual medication management information resource for family caregivers of people with dementia.

The scientific committee of the Illawarra Born project met at IHMRI’s headquarters in February to review the protocol and discuss how the project is progressing.

They are (l-r): Scientific Director, Professor Brin Grenyer, Dr Theresa Larkin, Dr Francesca Fernandez, Ms Judy Pickard, Dr Michelle Townsend, Associate Professor Vicki Flood, Associate Professor Chris Georgiou and Dr Angelique Hoolahan.

The project is set to commence recruitment as part of a pilot study with 50 pregnant women due to give birth at The Wollongong Hospital.

Funding for breast cancer study

On World Cancer Day, 4 February, the Cure Cancer Australia Foundation announced its 2013 grant recipients, directing a record $3.2 million to fund 38 early-career researchers, including IHMRI researcher and Vice Chancellor Postdoctoral Fellow, Dr Kara Lea Perrow, who founded the Cancer Research Drug Discovery Group at the UOW in 2012.

Cure Cancer Australia is the only charity whose sole focus is to fund "young researches with ground-breaking ideas".

Dr Perrow received funding from the foundation in 2010 and in this round received a significant grant to pursue a project entitled: 'Development of Bifunctional Anti-uPA/Anti-HER-2 Lipidic Nanoparticles to Target Advanced Breast Cancer'.

"Breast cancer remains the most frequently-diagnosed cancer in women and current treatment strategies for metastatic disease are of limited effectiveness" explains Dr Perrow.

"This study will use a combination of in vitro and in vivo methods to develop and test novel targeted anti-cancer drugs that selectively 'seek out and destroy' breast cancer cells that possess certain markers of malignancy. These markers are present in high concentrations on cancer cells but not in normal cells, providing a key point of selectivity."

The results are therefore anticipated to have widespread benefits and, with further development, have the potential to translate into new drugs with enhanced efficacy and reduced side effects for patients with advanced breast cancer.
Whole grains recommended as anti-oxidant foods

Australians should be consuming at least 40 grams and ideally 50 grams of whole grains daily says IHMRI researcher, Professor Stephen Lillioja, who has published a paper suggesting that whole grains are just as important as fruit and vegetables in protecting the body against chronic disease.

Professor Lillioja has been studying the health benefits of whole grains for several years and collaborated with a team of UOW and international nutrition researchers on this paper, which analysed the results of 11 major prospective studies on the benefits of consuming whole grains.

“These large studies have followed the life histories and habits of over 300,000 people; some for more than 20 years to see what habits lead to future disease. They consistently show that eating more whole grain food reduces your chances of developing type 2 diabetes, heart disease, hypertension, bowel cancer and inflammation, and that people who eat more whole grains are less likely to be obese,” explains Professor Lillioja.

Based on experience in other developed countries, he believes that up to 80 per cent of Australians are not consuming enough whole grains, putting them at an increased risk of developing diabetes and other diseases.

“In many consumers’ minds the fibre, or bran, in whole grain food is simply the woody stuff that keeps the colon healthy and not worth bothering with. This is a serious misunderstanding,” warns Professor Lillioja.

“When we consume whole grains, and bran in particular, we not only get fibre but also some highly specialised plant cells - the aleurone. Whereas most of the grain cells are dead, these aleurone cells are alive. They have the job of supplying the chemical machinery needed for a grain to germinate and grow a new plant.

“These cells contain so many anti-oxidants that whole grains match fruit and vegetables as anti-oxidant foods, which seems to be a well kept secret. It is possible this anti-oxidant and mineral content also means whole grain intake is a better predictor of future high blood pressure than is salt intake.”

He cautions that consumers need to be educated about what constitutes whole grain. “Whole’ in this context means the presence of grain starch, bran and germ in the amounts found in a grain kernel when harvested.Rolled oats is whole grain even though broken up, while jasmine rice and cornflakes are not whole grain because the bran is gone.”

Based on the literature review, Professor Lillioja has concluded, for the first time, we should consume at least 40 grams and preferably 50 grams of whole grains daily, “the equivalent of around a bowl and a half of cooked rolled oats, or 3-4 weet-bix, or 10 vita-weats”.

“Increasing whole grain intake should not be that difficult especially since whole grains are cheap, easily stored and readily obtained,” adds Professor Lillioja.

The report, entitled, ‘Whole grains, type 2 diabetes, coronary heart disease and hypertension: Links to the aleurone preferred over indigestible fibre’ was published in journal, *BioFactors*. The co-authors were Andrew L. Neal (Rothamsted Research, UK), Professor Linda Tapsell (IHMRI/UOW) and David R. Jacobs, Jr., (University of Minnesota, US).
New dietary guidelines have IHMRI flavour

Several IHMRI researchers made significant contributions to the development of new Australian Dietary Guidelines published by the National Health and Medical Research Council (NHMRC) in February.

IHMRI’s Population Health scientific investigator and leading dietitian, Professor Linda Tapsell, was a key member of the working committee, which spent around four years reviewing 55,000 scientific publications to update the 2003 report.

The committee used new, evidence-based methodologies, state-of-the-art dietary modelling and extensive stakeholder and community consultation to develop the 2013 guidelines, which provides further proof that a healthy diet can reduce the risk of developing heart disease, type 2 diabetes, obesity and some cancers. The guidelines highlight the types of foods and diets that can increase the risk of weight gain and health problems.

Associate Professor Peter Williams, Dr Marijka Batterham, Associate Professor Karen Charlton and Dr Yasmine Probst also made contributions to the guidelines via a supporting evidence review report commissioned by the Dietitians Association of Australia.

Professor Tapsell was invited to be on a panel at the media launch of the guidelines, where NHMRC CEO, Professor Warwick Anderson, acknowledged that Australia is facing an obesity epidemic and that health professionals needed an authoritative reference standard.

“To achieve and maintain a healthy weight, Australians need to balance physical activity with amounts of nutritious foods and drinks that meet energy needs. We all need to limit energy rich nutrient poor ‘junk foods’ that are high in saturated fat, added salt or sugar,” said Professor Anderson.

Professor Tapsell added, “We hope the guidelines will have a significant impact on food, nutrition and health policy and practice in Australia. It is great to see finalisation of a major piece of work.”

The guidelines can be found at www.eatforhealth.gov.au.

Smart Bra app leads the world

The development of computer or smart phone “apps” to help people look after themselves took an interesting turn in February when the team from Breast Research Australia (BRA), based in UOW’s Biomechanics Research Laboratory, launched the global Sports Bra app.

By providing a step-by-step guide to help women choose the right bra and check how supportive it is, the app helps to address research which suggests that up to 85 per cent of women are wearing the wrong size bra, with lead researchers, Dr Deirdre McGhee and Professor Julie Steele, saying that the health consequences of ill-fitting bras include to poor posture, headaches, neck pain, back pain and nerve pain.

Many women are also uncomfortable exercising, which leads to other health issues.

On launching the app, Dr McGhee told the media that, “basically every time your heel hits the ground your breasts bounce, so if you go for a half-hour jog, at around 8-9km/h, then your breasts will bounce about 9,000 times”.

The first non-commercial app in the category, the Sports Bra app utilises intellectual property developed by the team over the past decade. It features international sizing options and is available on iTunes.

Director of the Smart Foods Centre, a fellow of the Dietitians Association of Australia and editor of the journal, Nutrition and Dietetics, Professor Linda Tapsell, was a key contributor to the development of new Australian Dietary Guidelines.

University Vice-Chancellor, Professor Paul Wellings, at the media launch of the Sports Bra app, developed by Professor Steele (left) and Dr McGhee (middle). PE student Stephanie Power is on the treadmill; PhD student Sheridan Gho monitors.
Intervention models the focus of personality disorders conference

The Project Air Strategy for Personality Disorders undertakes research and provides training, consultation, resources and guidelines to support consumers, families and health professionals in identifying and recovering from personality disorders.

For the past six years, members of the Project Air team have organised and hosted an annual conference on the UOW campus, with registrations growing steadily each year.

To accommodate this growth and provide more opportunities for health professionals to attend, the team has brought the conference date forward from its usual spot in November to July.

Supported by IHMRI, the 7th Annual Conference on the Treatment of Personality Disorders will be held from 5-6 July under the theme ‘Intervention Models’.

Keynote presenters and topics include:

• Professor Russell Meares (University of Sydney): The Conversational Model
• Associate Professor Andrew Chanen (University of Melbourne): The Cognitive-Analytic Therapy Model
• Professor Brin Grenyer (IHMRI/UOW): Step-down Integrative Relational Models in Mental Health Services
• Dr Christopher Lee (Murdoch University): The Schema Therapy Model
• Dr Carla Walton (University of Newcastle): Research Comparing Conversational and Dialectical Behaviour Therapy Models

Discussions around Dialectical Behaviour Therapy (DBT) will be a particular focus of this conference, with Dr Shelley McMain, Head of the Borderline Personality Disorder Clinic at the Centre for Addiction and Mental Health at the University of Toronto set to deliver an hour-long lecture entitled: ‘A Decade of Research on Dialectical Behaviour Therapy for Borderline Personality Disorder: Implications for Clinical Practice’.

This session will summarise the main findings of a randomised controlled trial which compared DBT to a psychodynamically-informed treatment for borderline personality disorder. It will also highlight findings emerging from secondary analyses of this trial comparing DBT to general psychiatric management.

On Saturday 6 July, Dr McMain will then lead a dedicated workshop or ‘primer’ on the practice of DBT for clinicians with or without experience in the area. It includes interactive lectures as well as modelling, role-playing and video demonstrations, with participants encouraged to share case studies for discussion.

To register or learn more, visit: http://ihmri.uow.edu.au/projectairstrategy/conferencesandevents

Next Gen Alzheimer’s researchers spend summer in the lab

With funding from The Medical Advances Without Animals Trust, Dr Lezanne Ooi joined IHMRI in 2012 and is currently collaborating with researchers at the universities of NSW and Western Sydney and IHMRI on understanding why neurons degenerate and die in Alzheimer’s disease (AD).

Also a lecturer in the School of Biological Sciences, Dr Ooi (pictured middle left) spent part of the 2012/13 summer break mentoring and collaborating with three students who have been investigating AD; IHMRI Summer Scholarship for Dementia Research student, Phuong (Dzung) Do-Ha (left) and interns Rebecca Badour (right) and Heema Vyas (back right).

“We have been taking skin samples from patients and using them to generate neurons that we can study in a dish,” explains Dr Ooi.

“Dzung Do-Ha has been identifying genes that we think are important for neuronal function. Rebecca and Heema identified changes in the structure of neurons from Alzheimer’s patients compared to non-sufferers of the disease.

“So, the students made a valuable contribution to my research program and I hope their experiences have inspired them to continue in their research careers.”
Dutch cannabis researcher joins project team

What makes some individuals vulnerable to psychosis/schizophrenia after smoking cannabis and not others? This question, which is being investigated by Australian Research Council Future Fellow, Associate Professor Nadia Solowij, has attracted the attention of Dutch post doc, Dr Erika Van Hell, who has relocated from the Netherlands to Wollongong to collaborate on the project.

After studying pharmacy Erika completed a research masters in cognitive neuroscience at the University Medical Center of Utrecht (UMC Utrecht).

“During my masters I did two internships; one in which I measured the ERP [event related potential] in people with high and low impulsivity. This led to an interest in what drugs could do to the brain, so I did my second internship with UMC Utrecht Professor Nick Ramsey, where I performed a functional MRI [magnetic resonance imaging] study with chronic cannabis users about reward.”

The results of this study led to the development of the Pharmacological Imaging of the Cannabinoid System (PhICS) study, where Erika enrolled as a PhD student.

“We were interested how the endogenous cannabinoid system could be involved in psychiatric disorders, as many cognitive functions seem to be affected, and cannabinoid receptors are found throughout the brain,” explains Erika.

They came to believe that one of the broader problems behind psychiatric disorders, such as schizophrenia, depression, ADHD and addiction, might be a malfunctioning cannabinoid system.

The team went on to investigate THC as an agonist for the cannabinoid system, finding that the ‘high’ people feel after THC is processed in the insula and that the cannabinoid system is involved in reward processing, which may have implications for disorders such as addiction and ADHD.

When A/Prof Solowij approached Erika to join the project team, she was working as a Clinical Research Associate in the Netherlands. “I saw it as a good opportunity for me to re-enter the academic/scientific career path and get to know Australia and travel,” she says.

While there has been a lot of research done on this issue, Erika believes that this project is particularly important.

“Although it has been acknowledged that cannabis is an addictive substance, no clear consensus has been reached about the long-term harmful effects. Discovering the endogenous cannabinoid system has been a breakthrough and the availability of very advanced techniques to investigate the brain, its activity and the neurotransmitters in a more direct manner, has given us important tools to learn more.”

The UOW trial involves the administration of two different cannabinoids to chronic users and people who have only tried it a few times.

“Finding out what the different compounds in cannabis do to a specific EEG measure of short-term memory, which is affected in schizophrenia patients, will help us understand why there is an association between cannabis and psychosis and what parts the different compounds in cannabis may play,” adds Erika.

The team will also be using spectroscopy to measure glutamate, one of the main neurotransmitters in the brain associated with vulnerability to schizophrenia and which they suspect may be affected by chronic cannabis use.

Southern Indian conference on challenges of rural psychiatry

An international conference looking at the challenges of dealing with global mental health, particularly in the context of rural psychiatry, was held in southern India recently.

A collaboration between the UOW’s Graduate School of Medicine (GSM), the Institute of Australasian Psychiatrists and Nitte University in Karnataka, India, the conference theme was ‘Mind the Gap’.

IHMRI/GSM researcher, Professor Nagesh Pai, was especially keen to support and contribute to the conference because its rural and community focus reflects the GSM’s mission.

Twenty two Australian delegates attended and discussed both similarities and differences in the challenges of dealing with global mental health, as well as the importance of incorporating more mental health teaching into a medical education curriculum.

Keynote presentations were delivered by Professor Pai and Dr Judy Mullan; scientific leader of IHMRI’s Ageing and Chronic Conditions theme.

GSM mental health lecturer, Kerry Dawes, was a member of a panel looking at interdisciplinary education, with honorary GSM academics, Dr Vikas Garg and Dr Nalin Wijesinghe, also contributing to the conference proceedings.
Men and women respond differently to low fat dairy advice

Low fat dairy products are often recommended for people trying to lose weight as they provide less energy and saturated fat than their full fat counterparts.

A recent study completed at the UOW’s Smart Foods Centre and published in the prestigious *Journal of the Academy of Nutrition and Dietetics* found, however, that participants of a weight loss trial did not always benefit from this advice.

In analysing the dietary intake of 86 adults enrolled in a weight loss trial for three months, men tended to reduce their intake of total dairy products rather than increase their intake of low fat dairy alternatives.

In contrast, women successfully consumed reduced full fat dairy foods as recommended, but increased their intake of carbohydrates from dairy products and failed to decrease their overall energy intake from this food group; an important consideration for those consuming these products as part of a weight loss strategy.

In addition, a trend was observed whereby study participants decreased the number of servings they consumed per day following advice to consume reduced fat dairy.

Findings from the study, conducted as part of IHMRI’s research program, suggest that it may be important to consider the impact of recommending low fat dairy products for those wanting to lose weight, particularly as recent research has failed to find an association between the consumption of full fat dairy products and an increased risk of diet-related diseases.

“This may be an effect of the overall dietary balance achieved by those who choose full fat dairy as part of a healthy diet, where a low level of saturated fat intake can still be achieved,” explains Dr Deborah Nolan-Clark, who undertook the study with Smart Foods Centre Director, Professor Linda Tapsell as part of her PhD.

“The findings also emphasise the need for dietary advice relating to low fat dairy products to consider an individual’s food preferences and their total diet,” adds Dr Nolan-Clark, who is now director of Landmark Nutrition.

How healthy is the local environment?

In September 2012 research scientist, Dr Kim Alexander, joined IHMRI’s flagship population health project, ‘Health Connect: A Chronic Disease Prevention Program for the Illawarra Shoalhaven Population’.

With extensive experience in participatory/community projects in regional and rural communities, both nationally and internationally, Dr Alexander is now working with senior team member, Associate Professor Vicki Flood, on assessing and understanding the impact of the local environment on community health and wellbeing.

“In urban environments, there is a tendency to adopt lifestyles that exacerbate the development of chronic diseases,” she explains.

“Where there is ready consumption of energy-dense, nutrient-poor food without a corresponding increase in physical activity, that extra energy is stored as fat which we all know can lead to other health problems.

Dr Alexander says this process may, for example, consider what types of walking and cycle paths are available, “what other safe and interesting recreation areas there may be” and what healthy food options are on offer in various neighbourhoods.

She is also working closely with the Health Connect team to develop protocols around the project, which is set to commence recruitment later this year.
Scholarships for MND students

The Rotary Club of Dural recently partnered with Australian Rotary Health and the UOW to co-fund a PhD study into the genetic causes of Motor Neuron Disease (MND).

Congratulations to Isabella Lambert-Smith who will begin her PhD at IHMRI under the supervision of Australian Research Council Discovery Early Career researcher, Dr Justin Yerbury.

"After decades of research, a range of genes have now been identified in patients with MND. I will be studying these genes systematically in my project, trying to understand their specific roles in the disease process while looking for a connection between them," says Isabella.

"We believe this connection involves a specific cellular system that is fundamental to cell function and that is damaged in diseased motor neurons. Understanding this link will provide a significant step forward in identifying therapeutic targets for MND patients."

PhD candidate Kate Roberts also recently received a scholarship from Australian Rotary Health to undertake further research into the causes of MND under the supervision of Dr Yerbury.

Kate is investigating motor neurone death in MND. Typically associated with the formation of protein aggregates, she is seeking to determine how these aggregates affect immune processes involved in MND.

Kate also recently received news that a paper she submitted on this topic had been accepted for publication in the journal, *Glia*.

"Motor neurone death in MND is associated with the formation of protein aggregates (clumps of protein) and immune activation in the central nervous system (CNS). Non neuronal cells such as microglia (immune cells of the CNS) are thought to release inflammatory factors and contribute to the progression of MND," explains Kate.

"In vitro research in this paper showed, for the first time, that aggregated Cu/Zn Superoxide Dismutase potently activates microglia to produce a toxic phenotype. This immune response could be contributing to the progression of motor neurone death in MND."

Henning Foundation scholarship

Parramatta couple, Keith and Glennis Henning established the David Henning Memorial Foundation in 2006 in memory of their son, David, who died in tragic circumstances. The foundation provides several PhD scholarships through Australian Rotary Health.

In February, IHMRI PhD student, Blagoje Jovevski, received a scholarship to enable him to continue examining the role of proteins in the brain as a way of preventing Alzheimer’s disease.

"Alzheimer’s disease is directly linked to abnormal protein behaviour. These proteins tend to clump together to form large inclusions which interrupt brain cell function," he says.

"The aim of this research is to further understand how certain proteins interact with these inclusions. By learning more about this, more effective treatments can be developed. This scholarship gives me the opportunity to work on such an important project and hopefully allows me to play a part in helping others down the track."

First paper by the Targeted Nano-Therapies group

Formed by Diagnostics and Therapeutics scientific theme leader, Dr Moeava Tehei, in 2012, the Targeted Nano-Therapies group draws on the significant experience of researchers from three research strengths at the UOW: the Centre for Medical Bioscience, the Centre for Medical Radiation Physics and the Institute for Superconducting and Electronic Materials, as well as its industry partner, the Prince of Wales Hospital.

The group is making significant progress with its first paper on advanced nano-ceramics for health protection published in the journal *Nanomedicine: Nanotechnology, Biology and Medicine*; currently ranked ninth in the category.

The paper is entitled: ‘Cerium oxide nanoparticles: Influence of the high-Z component revealed on radioresistant 9L cell survival under X-ray irradiation’.
Meet an IHMRI Network member

Darren Mayne, Public Health Epidemiologist, Illawarra Shoalhaven Local Health District

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

Much of my day-to-day work involves the analysis and reporting of large administrative data sets to support the public health activities of the Illawarra Shoalhaven Local Health District (ISLHD). This ranges from your bread-and-butter epidemiological tasks of describing the distribution of disease and health determinants in populations, and routine disease surveillance, to the more exciting and challenging tasks of cluster and outbreak investigations and supporting emergency responses. I principally work with the other members of public health unit but provide epidemiological and design and analysis advice to a range of health service staff.

What is your career history - where did you study?

I completed my undergraduate degree in psychology at the University of Wollongong (UOW) from 1991 to 1995. It was apparent early on that I had more empathy for numbers than people, so after graduating I took up a research position with the Wentworth Centre for Health Promotion and that was essentially the start of my public health career. After a few years evaluating health promotion programs, I moved back to my home town of Broken Hill to work as a health economics planner for the Far West Area Health Service Population Health Unit and then as a public health officer. During this time I was fortunate to work with an amazing group of public health practitioners to deliver Aboriginal health and housing programs throughout far western NSW, which culminated in a 2003 Baxter Award for Consumer Participation.

Since 2003 I have been the epidemiologist for the ISLHD and its predecessor health jurisdictions. In 2009 I finally got around to doing my Master of Public Health through the University of Sydney and I am currently completing a Doctor of Philosophy in the Sydney School of Public Health examining environmental correlates of physical inactivity, overweight and obesity and psychosocial distress among the 45 and Up Study cohort.

What motivated you to join the IHMRI Research Network?

Initially it was access to online journals via the library, but very quickly I became aware of the breadth of experience in the network that you can access to inform your work and research. Many of the research projects I am currently involved in are a direct result of meeting people through the IHMRI Research Network, or owe their genesis to an informal discussion at an IHMRI function. Network members also provide a cross-section of perspectives on issues which I find helpful in guiding the direction of my work and research.

What are your research interests?

My main research interest is the application of geographical information system technologies and spatial statistical methods to public health practice and research. For example, I am collaborating with the Graduate School of Medicine’s Professor Andrew Bonney on a project with Southern IML Pathology and other UOW academics that is using routinely-collected clinical information to map geographic variation in risk of overweight and obesity across the region.

I am also working with the Illawarra and Southern Practice Research Network on an electronic medical data project examining the feasibility of using general practice data to evaluate health outcomes within local populations. Leveraging novel sources of local health information such as this will hopefully yield planning data for health services and programs that allows them to respond to fine-grained geographic variation and inequalities in disease burden and may potentially be used for surveillance purposes and to monitor trends in health outcomes.

What have you achieved so far?

An important outcome for a number of projects I am collaborating on is that we have been able to demonstrate that sensitive health information can be used at very fine spatial resolutions if rigorous processes for protecting privacy and confidentiality are implemented. This is an essential step to making greater use of ‘grey data’ from clinical management and information systems.

The 2009 National Health and Hospitals Reform Commission Report made an imperative of collecting high-quality epidemiological data at community and regional levels to inform research and health care planning. I am particularly interested in pursuing research that addresses the extent to which novel sources of health data can be used to achieve this imperative, especially for public health purposes.

Anything else you would like to add?

I would actively encourage anyone considering joining the IHMRI Research Network to do so and to become an active member. You will benefit from the experience but, more importantly, you may benefit someone else.
Currently recruiting
If you know of anyone who could benefit from participation in the following trials, please phone: 02 4221 4333.

Accelerate
The CRTU is conducting a research study into the effectiveness of an investigational medication to determine if it will reduce your chances of having another cardiovascular event. We are looking for participants who are currently taking medication to lower cholesterol and have one or more of the following:
• diabetes with heart disease
• previous ischaemic stroke or mini stroke (TIA) or carotid surgery
• current claudication or pain at rest in lower limbs due to blood vessel disease
• previous vascular surgery or amputation of lower limbs
• heart attack within the last year.

Down syndrome
In collaboration with Balance Therapeutics Pty Ltd, IHMRI is researching whether a medication can improve the cognitive abilities of people with Down syndrome. The research to date has shown there is potential benefit and adequate safety measures in place to support additional clinical trial research. Researchers are looking for persons with Down syndrome between the ages of 13 through the age of 35 to take part in this clinical trial for approximately 5 months.

Flavonoid study
Nutrition research shows that flavonoids, natural compounds found in plant foods, may reduce the risk of developing cancers and diseases that affect the heart and brain. However, there are currently no valid ways to measure the quantity of flavonoids that people eat. A food frequency questionnaire that will be able to accurately measure flavonoid consumption in the older Australian population has been developed and is now being tested.

Activity ramps up in the CRTU
Now entering its third year of operation, IHMRI’s Clinical Research and Trials Unit is gaining significant momentum. Nine commercial clinical trials and 11 investigator-initiated trials are underway in the unit; with some already completed and several more planned for this year.
In January alone, the CRTU’s team of Registered Nurses, coordinators and doctors responded to over 170 enquiries relating to trials testing medications for obesity and osteoarthritis.

Participant profile - Marco Onofri
The enthusiasm forty-something Figtree-resident and Sydney Water officer, Marco Onofri, has towards promoting IHMRI’s clinical trials can hardly be contained.
In fact, he offered to be interviewed and is keen to tell everyone about the benefits.
“I was as reluctant as the next person about being involved in these mysterious ‘clinical trials’, but now I want to tell everyone, everywhere, that it is not what they expect. It is one of the best things I have done for myself and my community,” Marco said.

Marco saw a CRTU advertisement placed in the Illawarra Mercury looking for participants in an arthritis trial.
“I saw the ad on the first day and thought, ‘that’s interesting’. When I saw the second advertisement, I thought ‘I’m going to pick up the phone and find out what this is all about, as I have arthritis in the knee and it’s really giving me hell.’

Like many people, Marco suffered in relative silence before taking action. His knee was constantly sore and swollen. “I have seen many doctors over the years but nothing really helped and I don’t like taking painkillers, so I was always in pain.”

Once he made it through the recruitment process, which included a full medical, Marco was given one injection and then monitored every day for 85 days.
“I had a 100 per cent improvement on the first day, so I was thrilled. I knew things had turned a corner when I took my son to Jamberoo and could walk up all the stairs and go on all the rides,” he says.

“But what has really kept me engaged in the trial is the CRTU’s doctors and nurses – they are phenomenal; friendly, helpful, professional and supportive. I actually look forward to seeing them [at the unit once a week]. The facilities at IHMRI are also excellent. “I can’t recommend participation enough. Everyone in the Illawarra should know that these clinical trials are happening. We all need to get behind IHMRI’s efforts to improve the health and wellbeing of Illawarra residents.”