

HEADLINES

Neuroscience Institute of Schizophrenia and Allied Disorders. JULY 2005



In Memory of Prof. Neil McConaghy

On Sunday 5th June, many distinguished scientists joined Neil's family at the South Chapel in the Eastern Suburbs Crematorium to bid goodbye to a much loved colleague. Neil was the inspirational researcher and teacher who had mentored many in the key group of scientists who started NISAD, and was one of the first Australian psychiatrists to champion the neuroscientific techniques which would come to dominate psychiatric research. As Founding Chairman of the Scientific

Advisory Committee, Neil played a vital role in formulating the structures and procedures which became the foundation of NISAD's growth into the diverse and internationally recognised institute it is today.

Early Intervention Poster Goes National

Australia's first schizophrenia early intervention awareness poster received an auspicious official launch at the South Sydney Police & Community Youth Club (PCYC) on 20 May, attended by NISAD Patron and Governor of NSW Prof. Marie Bashir AC.

Speaking from her distinguished professional background in youth and community psychiatric services, Prof. Bashir applauded the NISAD initiative which will give young onset sufferers a better chance of receiving early intervention therapy.

At present it is common for young people to develop increasingly severe schizophrenia symptoms for up to 5 years after onset without being diagnosed and treated. During this delay, symptomatic thinking and behaviour become entrenched, often leading to denial and non-compliance when diagnosis and treatment are offered. The poster is designed to alert family members to the symptoms, and to provide a contact number from where expert advice can be gained.

Displayed in civic centres, social clubs, corporate workplaces and hotels, as well as

hospitals and doctor's waiting rooms, the poster provides full information on schizophrenia's early symptoms, how the brain is affected, and what treatments are available.

Thousands of the posters are now being distributed to a wide variety of venues throughout every State in Australia with the help of State Branches of the Mental Illness Fellowship of Australia (MIFA). These posters carry the single contact number of 1800 985 944, which connects callers to the MIFA head office in their State. Hundreds of additional posters have been distributed by NISAD directly to all Area Health Services in NSW, and many requests for copies from organisations are being received every week.

Many thanks to PCYC manager Samatha Sidwell, Aboriginal Elder Sylvia Scott, Member for Heffron Kristina Keneally (representing Minister for Health Morris Iemma), 'Triple J' radio presenter Maya Jupiter, and Rabbitoh's Captain Brian Fletcher for making the launch occasion memorable.

The poster, which was funded by NSW Health, can be viewed and downloaded from www.nisad.org.au



L-R: NISAD Executive Director Debbie Willcox with NISAD Patron Her Excellency Professor Marie Bashir AC, Governor of NSW, and poster designer Alan Tunbridge. Right: Member for Heffron Kristina Keneally.



The Windows of the Soul

How does schizophrenia affect the ability to share attention and empathy?

For some families caring for a schizophrenia-affected relative, one of the most disturbing behavioural effects is the emotional 'blunting' or lack of empathy shown by many patients. Some parents, for instance, refer to the "glass wall" that has appeared between themselves and their son or daughter after onset. Neuroscience refers to this category of empathetic interpersonal abilities as 'social cognition', and asserts that it is severely impaired by schizophrenia.

Ongoing NISAD studies at the University of Newcastle have revealed that schizophrenia subjects and their family members exhibit abnormal eye scanpaths when viewing emotionally expressive face images, and have suggested that such scanpath anomalies could be linked to deficits in social cognition. And at the Macquarie Centre for Cognitive Science, a NISAD affiliated team is investigating the remedial effects of training people to deliberately correct these scanpath abnormalities.

Now, Dr Robyn Langdon and collaborators at the Macquarie Centre for Cognitive Science have completed two studies* further investigating social cognitive deficits in schizophrenia.

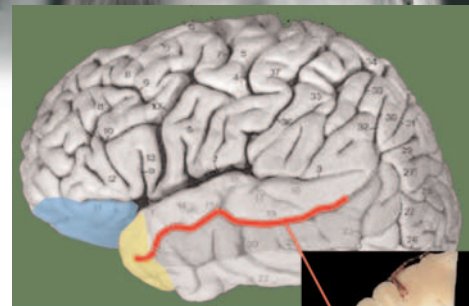
The eye of the beholder

Dr Langdon's first study was based on the hypothesis that schizophrenia's social cognitive deficits may be associated with a reduced ability to share attention with others, and that this deficit may be measured by testing the automatic reflex of detecting and following another person's change in direction of gaze. Though simple, this reflex is a fundamental indicator of shared attention.

The experiment involved 30 subjects with schizophrenia and 24 healthy controls. The test apparatus was a series of pictures flashed on a computer screen of a female head which looked either right or left, before a 'target' red star appeared in one of the empty boxes shown in each side. The interval between the head turning right/left and the appearance of the target was varied from 100 to 800 milliseconds.

Subjects were asked to simply click the space bar on the keyboard as soon as possible after seeing the target star. By varying the head turn direction, the speed of change in the sequence of images, and recording the speed of space bar clicks, the research team was able to assess how much each subject was distracted by the gaze direction of the central head.

Subject's 'scores' were then processed



The three key brain areas thought to be involved in social cognition: the medial prefrontal cortex (blue); the temporal poles (yellow) and the superior temporal sulcus (red). Right: Brain tissue showing the infolded surface of the superior temporal sulcus.



to arrive at a measure of the gaze direction sensitivity of each group.

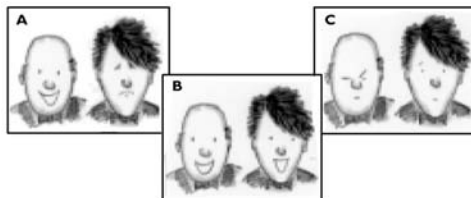
Summarising her results, Dr Langdon reports that, contrary to expectations, the schizophrenia subjects were abnormally *over*-responsive to the gaze direction of the image, not *under*-responsive as predicted.

This surprising result suggests that the emotional blunting and unresponsiveness observed in schizophrenia may not be due to deficits in attention sharing, but rather to deficits in *interpreting the intention* of interpersonal 'signals' received from others.

Feeling what others feel

Dr Langdon's second study was devised to investigate the degree to which schizophrenia causes misinterpretation of the intentions or emotional states of others.

Empathy has been described as the ability to feel an emotional response, which is more appropriate to someone else's situation than to one's own: that is, to 'put yourself in another's shoes'. Dr Langdon's method of measuring this ability was to use cartoons of simple emotional



One of the picture puzzles used to measure research subjects' ability to interpret the emotional content of social interactions. Subjects were asked to assign a pair of facial expressions (A, B or C) to each frame of the cartoon strip above. The correct sequence is C, A, B.

situations; to blank out the facial expressions of the characters involved, and to ask study subjects to choose which facial expressions matched each frame of the cartoon.

After comparing the results of 22 schizophrenia-affected subjects and 18 healthy controls, it was found that schizophrenia subjects scored significantly lower than controls in choosing correct facial expressions, and that the lowest scores were recorded by those with the longest duration of illness.

This study provides the first direct empirical evidence that schizophrenia impairs the ability to attribute emotions appropriately on the basis of how another person is likely to be feeling in specific circumstances.

* Langdon R, Coltheart M, Ward P. *Cognitive Neuropsychiatry* (in press 2005)

* Langdon R, Corner T, McLaren J, Coltheart M, Ward P. *Neuropsychologia* (in press 2005)



At the NISAD poster launch. L-R: Executive Director Debbie Willcox, NISAD Patron Her Excellency Prof. Marie Bashir AC, and South Sydney PCYC Manager Samantha Sidwell.



NISAD banners outside Sydney Tower.

Flying the Flag in the City Centre

Generously sponsored by Macquarie Bank, NISAD marked Schizophrenia Awareness Week 15-21 May by displaying bright red banners in Pitt Street Mall and Philip Street. Many thanks to the City of Sydney, and Screengraphics Printing for their contributions.



At Parliament House L-R: TRC Data Systems Manager Donna Sheedy, Helen Blake and TRC Director Prof. Clive Harper.

Recognition for TRC Volunteer Helen

Helen Blake has been working as a volunteer administrator at the NSW Tissue Resource Centre (TRC) for two days a week over the past three years. Her generous contribution was recognised at a NSW Parliament House occasion in May, where Minister for Charities Grant McBride presented her with a certificate. Helen continues to work for the 'Using Our Brains' donor program, which operates alongside NISAD's 'Gift of Hope' brain donor program.



Many thanks to Members of Botany Bay Rotary Club.

Botany Bay Rotary answers the question

The question was, "How can we help NISAD?" Botany Bay Rotarians answered it by organising a Trivia Night in October at Mascot RSL for 130 members. A great night was enjoyed by all, raising \$3,000 for NISAD's research.

Telstra Makes the Connection

As part of the Schizophrenia Awareness Week campaign, Telstra generously allowed NISAD to set up information booths in the foyers of their Sydney Pitt and Elizabeth Street buildings, and in their Exhibition Street office in Melbourne. Over 1,200 staff received literature and a copy of the Early Intervention Poster. Many thanks to key Telstra organisers Cherry Parker and Emma Reid.



Management at Telstra's Pitt Street office take a keen interest in NISAD literature: Roy Watman, Mary Mallioatakis, Perry Tsimouslis, Tim Jenson and Cherry Parker.



First thing in the morning, NISAD's Lee Drury ambushes Telstra's Ian Tyrrell - but all in a good cause.

Rotary Enables Research Volunteers to Make a Difference

NISAD connects volunteers, brain donors and DNA donors into a new force for research.

Prior to NISAD's inception in 1996, very little schizophrenia research was happening in NSW, largely due to the dearth of bedrock research resources such as volunteer patients and post-mortem brain tissue. That's why NISAD's first priority was to establish the Schizophrenia Research Register, and the 'Gift of Hope' Tissue Donor Program. Since then, the DNA Bank has been added to complete the Institute's set of basic research resources.

With the support of the Schizophrenia Fellowship of NSW and successful TV appeals, the Register, 'Gift of Hope' and DNA Bank programs have now enrolled close to 1,500 volunteers. These volunteers include a mix of patients, their family members and people with no medical connection to schizophrenia.

The unique differences between individuals

Interviewing each person to record their details, including such information as individual and family medical history, is an essential part of making every volunteer's contribution as valuable as possible.

These assessments help to 'characterise' the research performance, brain tissue or DNA provided by volunteers. Because the essence of the research is to detect differences between groups of individuals, and identify their causes. The more information researchers have about each participant or donor, the more powerful the research results will be.

Due to the overwhelming interest and support from the community, the successful recruitment of such a large number of volunteers has outstripped the resources that NISAD has been able to provide to support the programs. Therefore around half of the registered



NISAD Research Officer Lisa Azzizi conducts a friendly interview with a volunteer.

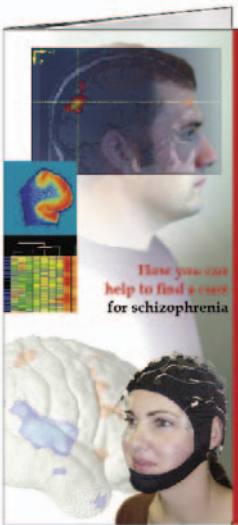
volunteers are still waiting to be interviewed.

In order to facilitate the processing of the backlog of existing registrants, as well as the constant stream of new volunteers, NISAD has used a \$60,000 grant from the Australian Rotary Health Research Fund together with additional funding from the Institute to employ two new Clinical Assessment Officers - Dr Sarah Russell and Gali Lawrence.

Later in 2005 NISAD will be investing more funds in staff and infrastructure to ensure the ongoing success of these vital research resource programs.

How you can help find the answer

A new brochure has been produced appealing for volunteers for all three NISAD infrastructure programs. So if you would like to make a difference to the progress of schizophrenia research, just call (02) 9295 8407 to have a copy mailed to you, or simply log on to www.nisad.org.au to read about the programs and download a Registration Form.



The Chair goes to the University of.....

At the 'Spark of Genius' event held last year the NSW Minister for Health Morris Iemma MP announced a recurrent annual grant of \$0.5M to NISAD to establish Australia's first University Chair of Schizophrenia Research - with an additional commitment to underwrite a further \$0.5M p.a. of fundraising efforts for the Chair.

Consultation immediately began with NISAD's senior scientists to determine the field of research expertise in which the Chair should be active, and in which institute or university it should be based.

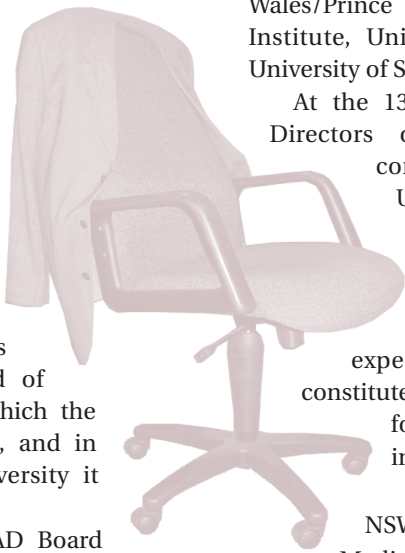
In August the NISAD Board approved the proposal that the Chair should specialise in *developmental neurobiology of behaviour and cognition* - a field which includes the very latest technological developments in genetics and tissue-based research. Whoever is

eventually appointed to the Chair will be prominent in this field.

The next question was about where the Chair should be located, and discussions were held with a number of potential host institutions before arriving at a short list of three: the University of New South Wales/Prince of Wales Medical Research Institute, University of Newcastle, and University of Sydney.

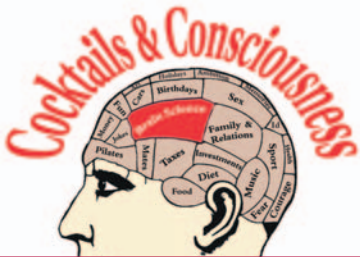
At the 13 July Board meeting, the Directors of NISAD accepted the conjoint proposal of the University of NSW/POWMRI, and announced that this university will host and co-support the Chair and his/her research team. It is expected that this team will constitute a new and powerful centre for schizophrenia research in Australia.

NISAD, the University of NSW and the Prince of Wales Medical Research Institute will now work in partnership on the international search for the scientist who will occupy Australia's first University Chair in Schizophrenia Research. The position is expected to be filled in early 2006.



Members of The NISAD Society

will soon receive their invitations to the exclusive 2005 Cocktails & Consciousness event - to be held at The Garvan Institute on 20 October. If you've been thinking about joining, please do so before the end of September so that yourself and three of your guests can join us for an inspirational evening! Just call (02) 9295 8407.



How Medications Alter Genes

NISAD's Dr Albert Chetcuti uses mice to explore how drugs affect human genes.

Although each cell in the human body contains a full complement of genes contained in DNA, cells use genes selectively. Many genes encode proteins that are unique to a particular kind of cell and that give the cell its character - making a brain cell, say, different from a bone cell. A normal cell activates or 'expresses' just the genes it needs to do its particular job, and actively suppresses all the rest.

A healthy body and brain depend on the continuous interplay of thousands of proteins, acting

an inherited genetic alteration have an abnormality present in the DNA of virtually all their body cells, which can be passed on to their offspring. More than 4,000 diseases are thought to stem from genes inherited from parents.

Acquired changes in the profile of gene expression, however, affect which cells express which genes, and how strongly a particular gene is expressed. A major influence on the pattern of gene expression is due to a variety of environmental causes.

Some medicines which are known to improve diseases of specific organs can do so by causing changes in the levels of expression of genes affecting those organs. These genes can be identified by taking a tissue sample of the organ and comparing its genetic profile with profiles from normal healthy organs. When the organ is the brain, and the functional deficits are mental illnesses, however, such 'live' tissue samples cannot be obtained - making the task of identifying the affected genes doubly complex.

Enter the Mouse

Fortunately, the genetic profiles of mice are almost the same as human profiles. That's why 'animal studies' are an expanding feature of worldwide genetic research into mental illness.

At the NISAD Centre for Molecular Brain Research within the Garvan Institute, Dr Albert Chetcuti has been investigating the genetic effects of the widely prescribed bipolar disorder mood-stabilising drug valproate by comparing the genetic profiles of treated and untreated mice.*

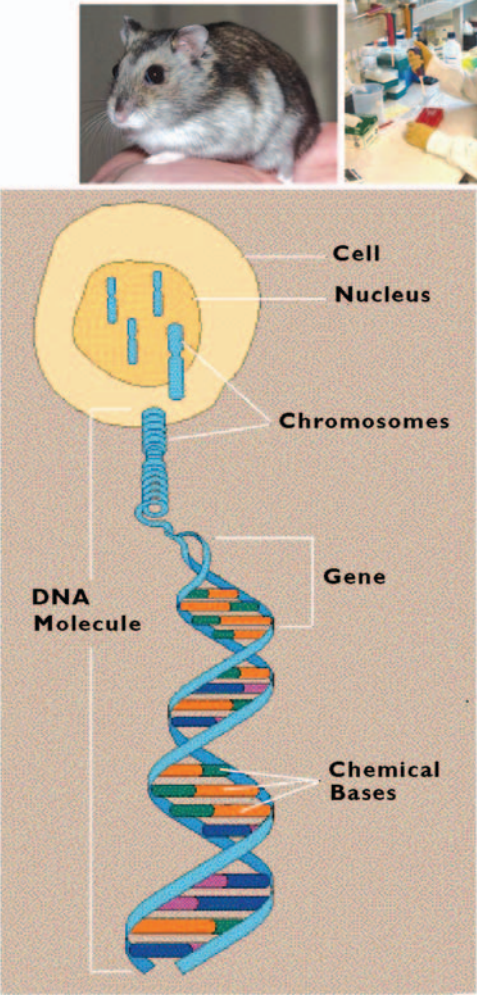
Dr Chetcuti has identified 11 genes in the treated mice which exhibit altered levels of expression, and many of these genes are known to be involved in the development and functioning of the brain.

This research uses the beneficial effects of medication as clues to help identify the genetic abnormalities which produce the illness.

Dr Chetcuti is now mobilising the experience gained from his study of valproate in a new 'animal' study targeting anti-psychosis medication.

When combined with the results of other such studies, Dr Chetcuti's work aims to provide new insight into the genetic causes of psychotic disorders.

*Chetcuti A, Adams LJ, Mitchell PB, Schofield PR. Altered gene expression in mice treated with the mood stabiliser sodium valproate. *International Journal of Neuropsychopharmacology* (in press)



Very similar to mouse DNA, the human DNA molecule is a long strand made up of the four chemical bases adenine (A), thymine (T), cytosine (C) and guanine (G) arranged in varied sequence. Certain thousands-long sequences of A,T,C,G in the strand are active genes - coded instructions that allow cells to make proteins, which are the building blocks of the body.

together in just the right amounts and in just the right places - and each properly functioning protein is the product of an intact gene.

But genes can be altered in many ways. Genetic abnormalities can be either inherited from a parent or acquired from environmental sources. Individuals with

Prof. Loris Chahl steps down

A founding member of NISAD's scientific team retires.

Prof. Loris Chahl's distinguished career in neuroscience research at the University of Newcastle did not include schizophrenia studies until NISAD's initial advocacy drew her attention to the urgent need. Since then Loris has become one of the Institute's strongest supporters.

Initiated in 1998, NISAD's Newcastle centre was the first to specialise in neurobiological research, and has since grown to include 10 researchers and to become one of NISAD's most productive groups. Throughout this period, Loris was always on hand to support NISAD's cause, supervising a number of NISAD postdoctoral scientists and PhD students.



At Newcastle, L-R: NISAD Scientific Director Prof. Vaughan Carr, Prof. Loris Chahl, and NISAD Research Manager Daren Draganic.

Following her retirement Loris will continue her schizophrenia studies as Conjoint Professor in the School of Biomedical Sciences - an honorary position. As a hobby? Helping her daughter run a furniture hire business called 'Keeping up Appearances'!

APRN - The Birth of a National Program for Psychosis Research

NISAD Founding Chairman

Prof. Stan Catts rallies

support for a national effort against psychotic disorders.

In 1992 Prof. Stan Catts initiated and coordinated the movement of scientists and family members which resulted in the incorporation of NISAD in 1996. In 2000 he stepped down as Chairman to continue as a NISAD Director while working as Professor of Hospital and Community Psychiatry at Royal Brisbane Hospital.

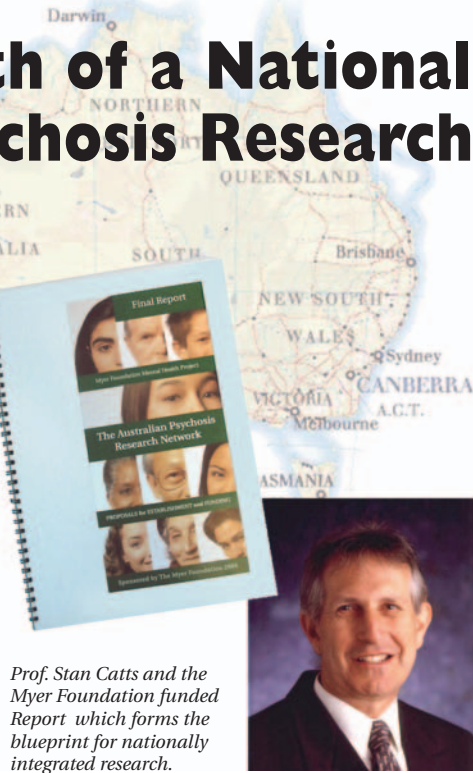
Since then, says Prof. Catts, Australia has developed world class research centres in the neurosciences and genetics, often co-located with mental health clinical services. But despite these favourable conditions for a major national research effort into the causes of psychosis, there is currently little coordination or strategic direction of the skills and resources now available.

In a 50-page Report submitted to the Myer Foundation last year, Prof. Catts outlined the urgent need for large scale studies:

"Currently, more than 70 percent of the disability associated with psychosis is completely untreatable. Virtually all our treatments are non-specific - only research can offer the prospect of targeted treatments that act on specific brain systems."

The Report called for the establishment of an Australian Psychosis Research Network (APRN) which would provide direction and coordination:

"This nationally coordinated effort will



Prof. Stan Catts and the Myer Foundation funded Report which forms the blueprint for nationally integrated research.

create a critical mass of technical and clinical infrastructure; promote standardisation of measurement across research centres; support multi-centre studies of large representative clinical cohorts and their long term follow-up; enable integration of research databases nationally, and establish multi-disciplinary meeting processes for scientific exchange."

Proposals and budgets for seven major research initiatives, involving up to 3,000 subjects, were endorsed by 83 eminent scientists from every State in Australia.

The Myer Foundation has awarded a grant of \$80,000 to Prof. Catts for the purpose of gaining support for the APRN concept from Federal and State governments, the corporate sector, and consumer advocacy groups - and of developing the funding sources and structures necessary for its full implementation.



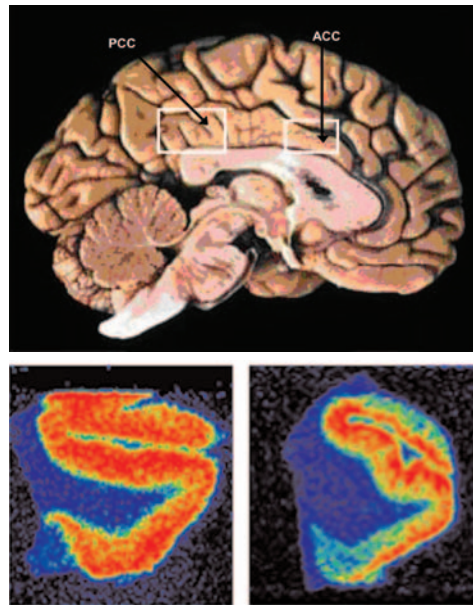
St. George Foundation Funds a Schizophrenia Research First

In 2002, Dr Katerina Zavitsanou and colleagues in NISAD's University of Wollongong centre published their findings of increased levels of glutamate neurotransmitters in the anterior cingulate cortex (ACC) of schizophrenia-affected brains. As glutamate is the primary trigger of excitatory brain activity, and the ACC plays a fundamental role in cognition and attention, these findings were a highly significant addition to the growing body of evidence that such abnormal excitatory activity in the ACC played a key role in schizophrenia.

Dysfunction in the ACC has been directly linked to disorders such as obsessive-compulsive and bipolar, as well as to depression, autism and schizophrenia. All evidence indicates this brain area as a key 'accident black spot' in the brain's busy pathways.

Led by NISAD scholar Kelly Newell, a further study* at Wollongong has explored whether the abnormal glutamate activity found in the ACC is also present in the posterior cingulate cortex (PCC). The PCC tissue from schizophrenia and control subjects was examined for the binding of three kinds of glutamate receptors; NMDA, AMPA and kainate.

The results showed no difference in AMPA or kainate, but a highly significant 40



NISAD's Beta-Imager at the University of Wollongong reveals a 40% increase of glutamate NMDA neuroreceptors in the PCC of schizophrenia brain tissue (left) as compared with tissue from healthy donors (right).

percent increase in NMDA neuroreceptors in the schizophrenia brain tissue.

This is the first time a selective increase in NMDA receptors has been demonstrated in the posterior cingulate cortex in schizophrenia.

Together with the earlier ACC study, this evidence of increased glutamate densities in two regions of the cingulate cortex strongly indicates a source of dysfunction that could alter activity in related brain circuits and result in abnormal information processing.

The St. George Foundation has added a further \$10,000 to the \$75,000 provided for the St.George Foundation Schizophrenia Research Scholarship - which has funded Kelly Newell's research.

*Newell K, Zavitsanou K, Huang XF. Differential alterations of ionotropic glutamatergic receptors in the posterior cingulate cortex in schizophrenia. *Neuroreport* (in press 2005)

.....Profile of a NISAD Scientist.....



Dr. Irina Dedova
Tissue Resource Centre (TRC) Coordinator

As a part of the NSW TRC team, I deal with the brain tissue used in research. I oversee its collection at the time of death, then its careful dissection and storage, and its distribution to other researchers, both nationally and internationally.

I am also directly involved in research, the main focus of which is on the effects of schizophrenia and antipsychotic medications on human brain ‘proteome’ - which is the term used for all of the proteins in the brain. All the schizophrenia brain tissues available for research

comes from patients who have used antipsychotic medication, so it is important (and very difficult) to distinguish changes in the brain proteome caused by medications from those caused by the illness itself.

What does NISAD mean to you? Great people, great cause, excellent team work and exciting research!

What got you interested in researching schizophrenia? Schizophrenia is not only affecting the lives of patients but also their families and the general community. An opportunity to help someone and change someone's life for the better is the most exciting thing about researching schizophrenia.

What is the most difficult thing about research? For me, the most difficult thing about research is critical thinking. You have to question what you read and not take anything for granted. You have to question yourself and try not to be overexcited about your results!

If you were not a scientist, what would you be doing? I have always been involved in research. I believe that no matter what I did, I still would end up being a scientist!

What do you do when not researching? My Dachshund ‘Doonya’ (she is the best!), family, friends, and sports.

Neuroscience Institute of Schizophrenia and Allied Disorders

Patron: Her Excellency, Professor Marie Bashir AC, Governor of NSW

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IN MEMORIAM

- Mrs Florence Maggs
- The Bandy Family
- The Jensen Family
- The Pailthorpe Family
- The Snow Family

SPECIAL CONTRIBUTIONS

Individuals

- Mrs Kate Armati
- Justice Graham Barr
- Mr Robert Benkhauser
- Mr & Mrs Tony & Alison Dickin
- Mr Doug Hawkins
- Mr Thomas Henley
- Mr David Hook
- Mr Abraham James
- Mr Thomas Jucovic QC
- Mr N Lees
- Mr N Minogue
- Mr Clem Morfuni
- Mrs Irene Moss
- Mrs Frances Powell
- Mr & Mrs Bryan & Fiona Shedden

Clubs

- ARAFMI Cowra Branch
- East Maitland Beresfield Lioness Club
- Leagues Clubs Association of NSW
- Roseville Returned Servicemen's Memorial Club
- Rotary Clubs of Botany Bay and Picton

Corporations

- Australian Charities Fund
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NISAD Society Members

- To the 71 people who have joined The NISAD Society - Thank you!

NISAD IS SUPPORTED BY NSW HEALTH

Fatty Acids and Brain Signals

Two Wollongong University studies investigate the abnormally low levels of fatty acids in schizophrenia brain and red cell membranes

Essential fatty acids play an important role in neural membrane structure and function, influencing the activity of a range of neural chemical signalling systems in the brain.

These polyunsaturated fatty acids are divided up into the two families of omega-6 (found in cereals, eggs, poultry, most vegetable oils, whole-grain breads, baked goods, and margarine) and omega-3 (found in oily cold-water fish and fresh seaweed). Abnormally low levels of both types are associated with schizophrenia.

Fatty acids, stress and cannabis

A preliminary study led by Sharon Monterrubio at Wollongong has investigated the relationship between fatty acids, cannabis use and stress in schizophrenia. This line of research was inspired by evidence that cerebrospinal fluid levels of anandamide (a neurotransmitter formed from an omega-6 fatty acid) were abnormally high in patients with schizophrenia. Anandamide is known to affect the stress-regulating cannabinoid system, and higher levels are associated with reduced symptoms.

In addition, cannabinoid (CB1) receptor levels have been found to be elevated in post-mortem brains from patients. In this context, the possible relationship between fatty acid levels, anandamide levels, alterations in stress mechanisms and cannabis use by individuals with schizophrenia was investigated.

Fatty acid levels were measured in red blood cell membranes of 12 clozapine-medicated patients. Six had never used cannabis, and six had stopped using cannabis more than six months prior to the study. Stress levels were also measured using standardised questionnaires.

The study found that high levels of arachidonic acid and other fatty acids that enhance anandamide function were associated with lower levels of nervous tension-stress, but only in the former cannabis users.

At the same time, high levels of linoleic acid, a fatty acid that is abundant in diet, were strongly associated with higher levels of nervous tension-stress - again, only in former cannabis users.

These results suggest that fatty acids may aid cannabis-using individuals with schizophrenia to cope with stress. While promising from the point of view of developing pharmacological and/or dietary interventions which may help protect stabilised patients from relapse, further research with larger numbers is needed.

How fats affect rats

In another Wollongong study**, Teresa du Bois and colleagues have been looking at the influence of different fat diets in rats: focusing on how different levels of fat consumption affect muscarinic acetylcholine receptor binding levels, which are involved in normal cognition, mood and motor functioning.

Rats were fed on either a saturated fat, omega-6 polyunsaturated fat, omega-3 polyunsaturated fat or low fat diet. Examination of the post-mortem brains showed that, compared to the low fat intake group, only the group fed omega-6 polyunsaturated fats showed a reduction in the density of acetylcholine muscarinic receptors.

These results suggest that a diet high in omega-6 polyunsaturated fatty acids may selectively alter neurotransmission activity in rat brains. Similar effects in humans have yet to be investigated.

*Monterrubio S, Solowij N, Meyer B, Turner N. Fatty acid relationships in former cannabis users with schizophrenia. *Progress in Neuropsychopharmacology and Biological Psychiatry* (in press)

**du Bois T, Bell W, Deng C, Huang XF. A high n-6 polyunsaturated fatty acid diet reduces muscarinic M2/M4 receptor binding in the rat brain. *The Journal of Chemical Neuroanatomy* 2005; 29: 282-288.



Irene Kwong Moss AO



Marion Kellenbach

Irene Kwong Moss AO

Joined the NISAD Board in April, bringing a wealth of experience from her distinguished career, which has encompassed appointments as Commissioner, Independent Commission Against Corruption (1999-2004), Ombudsman NSW (1995-1999), Magistrate (1994-1995) and Federal Race Discrimination Commissioner, Human Rights and Equal Opportunity Commission (1986-1995). Irene is currently a Consultant to the Minister for Justice of NSW.

Dr. Marion Kellenbach

Appointed in March at NISAD's Central Office, working with Research Manager Daren Draganic on coordinating an ever-expanding program of research projects, grant applications and staff management. Marion has a substantial research and publication background in cognitive neuroscience, both in Holland and the UK.

EFY APPEAL JUST SHORT OF FUNDING A YOUNG SCIENTIST SCHOLARSHIP

Mailed to HeadLines readers in June, NISAD's appeal needs to raise \$30,000 for the first year of a 3-year PhD Scholarship which would enable a young scientist to specialise in schizophrenia research. The generous response has been the best ever recorded, but is still short of the target. So if you have forgotten to send your donation, please remember! And join all the other contributors who will be kept informed of the young scientist's progress over the three years.

To include yourself on the mailing list to receive free HeadLines, call (02) 9295 8407.

NISAD, 384 Victoria Street, Darlinghurst, NSW 2010. Fax: (02) 9295 8415 Web: www.nisad.org.au

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