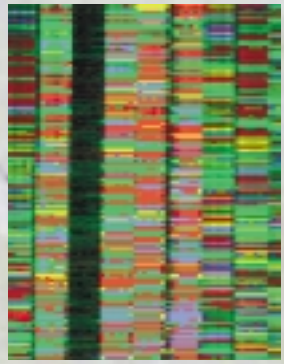
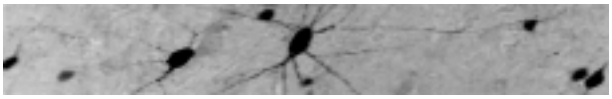


ANNUAL REPORT 2001

NEUROSCIENCE INSTITUTE
OF SCHIZOPHRENIA AND ALLIED
DISORDERS

NISAD

Annual Report 2000-2001

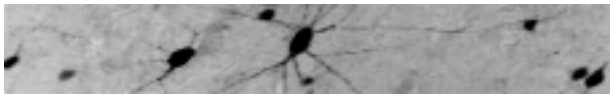


Contents

NISAD

NEUROSCIENCE INSTITUTE
OF SCHIZOPHRENIA AND ALLIED
DISORDERS

Background to the Institute



The Neuroscience Institute of Schizophrenia and Allied Disorders (NISAD) commenced operations on 21 March 1996. The Institute's central office is located at 384 Victoria Street, Darlinghurst, Sydney, NSW 2010.

NISAD is incorporated as a public company limited by guarantee. The Institute is registered as a charity, and has Australian Taxation Office approval to receive tax deductible donations.

The Patron of NISAD is Her Excellency Professor Marie Bashir AC, Governor of NSW.

Structure

The Institute's Board of Directors constitutes its governing body and comprises of members broadly representing scientific, business and community interests.

The Board is legally responsible to ensure the Institute's work is directed towards optimal and efficient achievement of its aims and objectives.

NISAD's researchers are networked with scientists within all three academic departments of psychiatry, and many of the major brain research centres in NSW.

The Institute's research is also closely linked with Area Health and other Regional Services across NSW - which ensures research collaboration, scientific interaction, and cooperation with public health programs.

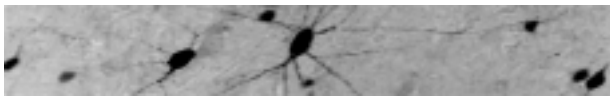
NISAD supports three Centres for Collaborative Human Brain Research at the Universities of Newcastle, Sydney, and Wollongong; the NISAD Centre for Molecular Brain Research at The Garvan Institute of Medical Research; the NISAD Schizophrenia Research Register; the NSW Tissue Resource Centre; the NISAD 'Gift of Hope' Tissue Donor Program; three neuroimaging research groups in Sydney and Newcastle; the NISAD/UCLA Brain Atlasing Initiative, and two Clinical Research Centres in Sydney and Newcastle.

The Institute also supports the NISAD/NSW Health Partnership Project for schizophrenia research fundraising, and mental health awareness in the workplace.

All Institute activities are regularly reported via the newsletter HeadLines, and on the website at www.nisad.org.au

Mission

To discover the means to prevent and cure schizophrenia by initiating, supporting and conducting world class research into its clinical components, mechanisms, and causes.



■ *Neurobiology Research*

Discovery of significant differences in the distribution of tachykinin NK1 receptors between cases of schizophrenia and normal controls. Preclinical models suggest a role for antagonists to the tachykinin NK1 receptor in the treatment of schizophrenia.

Investigations of the normal anterior thalamus reported one of the highest percentages of local circuit neurons in the mammalian thalamus, and no significant difference in phenotype ratios between schizophrenia and normal control cases. These results provide further evidence that intrinsic neuronal components of the human anterior thalamus have evolved to accommodate the processing of information relevant to tasks of memory and learning, which are known to be altered in schizophrenia.

Discovery of a significant reduction of dopamine D_2 and serotonin 5-HT_2 receptor binding sites in the anterior cingulate cortex of schizophrenia cases compared to normal controls. The anterior cingulate is a region of the brain implicated in the attentional dysfunctions found in patients with schizophrenia.

Demonstration of a decrease in the proportion of cortical grey matter in schizophrenia compared to normal controls. This supports the hypothesis that there are regional structural changes in the brain in schizophrenia patients, and that these changes may contribute towards cognitive clinical deficits.

Continued development of a NMDA receptor gene knockdown mouse model of schizophrenia. This model is of considerable interest as these mice show a number of behavioural alterations that are ameliorated by antipsychotics. Once completed, scientists will utilise these mice in specific schizophrenia research studies.

■ *Neuroimaging Research*

Demonstration of reduced levels of neural activation in schizophrenia affected subjects compared to normal controls when completing an executive functioning task. These results are consistent with impaired engagement of distributed cortical brain networks in patients with schizophrenia during performance of executive planning tasks.

Documentation of similar patterns of neural activity in normal controls completing an executive functioning task when the fMRI imaging technique was compared to another neuroimaging modality, O^{15}PET.

First ever studies that simultaneously obtained fMRI and skin conductance response data in an MRI scanner. This technology enables a better understanding of the brain networks underlying cognitive operations such as selective attention and emotion, which are known to be altered in people with schizophrenia.

Demonstration that patients with schizophrenia display reduced limbic system activity in response to threat-related expressions compared to normal controls. These results suggest that people with schizophrenia may inhibit the normal limbic response to threat as a means of coping with a heightened awareness of threat-related stimuli.

Continued development of the NISAD/UCLA Brain Atlasing Initiative that will compare structural and functional MRI data on first-episode schizophrenia patients and controls (using an executive functioning task) to examine potential relationships between structure and function. This will be the first time this type of comparison will be made. Acquisition and analysis of data for this study has commenced.

■ *Clinical Measurement Research*

Discovery that NISAD Register volunteers have lower current symptomatology and higher

functioning than those who participated in the national Low Prevalence (psychotic) Disorders Study (LPDS). However, the psychosocial data and clinical similarities with the LPDS subjects demonstrated that Register volunteers meet established diagnostic criteria for schizophrenia and report similar high levels of lifetime disturbance associated with the illness.

Demonstration that volunteer research registers (i.e. NISAD Schizophrenia Register) may provide valuable, complementary recruitment sources for researchers who tend to rely largely on samples drawn from mental health service contexts.

Development of a further initiative to examine neuropsychological status of Register volunteers using the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) instrument. Currently there has been no RBANS data published on an Australian schizophrenia sample and only data from a small schizophrenia sample collected in the USA.

Development of an initiative to examine the use of psychoactive substances in schizophrenia and related disorders. Numerous studies have demonstrated high rates of lifetime substance abuse in people with schizophrenia.

■ *NISAD Publications/Conferences*

The expanding schizophrenia research program supported by NISAD has led to a significant increase in the presentation and publication of NISAD-supported research results at scientific conferences and in peer-reviewed journals. Encompassing the clinical, neuroimaging and neurobiological fields of NISAD-supported research, over forty presentations were made at national and international scientific conferences, and approximately thirty publications were achieved in peer-reviewed journals.

Hosted by NISAD in 1999, The First Australian Schizophrenia Prevention Conference provided an important forum for scientists and researchers to discuss the development of preventive strategies in schizophrenia. The Proceedings of this meeting were subsequently published in the Australian and New Zealand Journal of Psychiatry in November 2000 and linked to the NISAD web site.

Catts SV, O'Toole BI, Draganic DM (eds). Proceedings of the First Australian Schizophrenia Prevention Conference. Australian and New Zealand Journal of Psychiatry 2000; 34 (Supplement): S1 – S212.

■ *Successful Grant Applications*

NISAD infrastructure support was a critical element in the successful award of approximately $130,000 to NISAD-affiliated scientists for neurobiological schizophrenia research initiatives, equipment and funding to attend conferences. Infrastructure support from NISAD was also an essential element in the successful award of a National Institute on Alcoholism and Alcohol Abuse grant to NISAD-affiliated scientist Prof. Clive Harper for equipment and infrastructure for the TRC (US$713,000). This successful grant application has had positive benefits for the entire TRC, including the schizophrenia section.

■ *Infrastructure Support*

NISAD has continued to provide essential infrastructure resources to assist with the development of schizophrenia research initiatives in NSW.

The NISAD Schizophrenia Register has approximately five hundred volunteers and has continued to support a variety of research projects.

The Neuroimaging and Neurobiology Panels have continued to provide the essential software and hardware to help facilitate the schizophrenia research initiatives underway at the various NISAD-affiliated Centres in NSW.

The NSW Tissue Resource Centre has continued to provide brain tissue for research related to schizophrenia. In the 2000-2001 period, tissue was supplied to scientists for twelve different schizophrenia research projects at eleven different sites in Australia and overseas.

Approximately seventy people expressed interest in joining the Tissue Donor Program, with the first volunteers consenting to join the Program in May 2001.

■ *Research Training Support*

NISAD has continued to provide training for scientists and clinicians in techniques relevant to schizophrenia research. The Clinical Measurement Panel has facilitated a number of training workshops in clinical assessment techniques in Sydney and Newcastle and the Neuroimaging Panel facilitated a training workshop in the use of the MEDx image analysis package in Sydney.

■ *Development of Young Scientists*

NISAD has recognised the need to provide an opportunity for undergraduate and postgraduate students to undertake schizophrenia research, as these are the researchers who will provide the discoveries of the future. In the past year the Institute has supported two Rebecca Cooper Foundation postgraduate scholarships, five Summer Student Scholarships and three Honours studies. These initiatives were undertaken at the Universities of Sydney, Wollongong, Newcastle and Western Australia, and spanned the neurobiology and neuroimaging fields.

■ *Scientists and Clinicians Join the NISAD Effort*

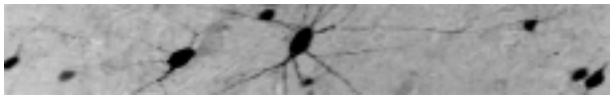
NISAD has continued to attract leading scientists and clinicians to join the Institute's research programs.

In the past year Prof. Pat Michie (Professor of Psychology, University of Newcastle), Prof. Paul Thompson (Laboratory of Neuro-Imaging, University of California Los Angeles), Mr Paul Rasser (NISAD Research Officer), Ms Jo Gorrell (Royal North Shore Hospital), Mr Jim Sheedy (NISAD Research Officer), Prof. Rodney Scott (Director of Cytogenetics and Molecular Genetics, John Hunter Hospital), Assoc. Prof. Scott Clark (Area Director of Mental Health, South Western Sydney Area Health Service), Ms Lisa Azizi (NHMRC Network for Brain Research into Mental Disorders) and Mr Andrew Fortis (National Institute on Alcoholism and Alcohol Abuse) have joined various NISAD Panels.

■ *External Review of NISAD*

The External Review of NISAD's activities will occur in December 2001. This review will examine NISAD's activities in its first five years of existence and make recommendations for the future. Renowned Australian scientists Prof. Assen Jablensky (Director, Centre for Clinical Research in Neuropsychiatry, Graylands Hospital, Perth) and Prof. John McGrath (Director, Queensland Centre for Schizophrenia Research) have agreed to facilitate this process.

Institute Highlights 2000-2001



◆ *NSW Health Department Funding*

In April 2001, the Minister for Health, the Hon. Craig Knowles announced that NISAD would receive $1M per annum recurrent funding from NSW Health commencing 1 July 2001. This announcement of secure funding for NISAD's future will allow the Institute to further develop the innovative and cutting-edge schizophrenia research programs that have been a hallmark of NISAD's success.

◆ *NISAD/NSW Health Partnership Project*

In October 2000, the Minister for Health, the Hon. Craig Knowles announced funding to support the appointment of NISAD Deputy Chairman Don McDonald as Project Director for the NISAD/NSW Health Partnership Project. The aim of this initiative is to raise funds for NISAD research and mental health awareness in the workplace. During the first 8 months of the project over $177,000 has been raised and workplace and community presentations have been given to approximately 5,500 people.

◆ *NISAD Corporate Sponsorship Program*

Launched with a fundraising dinner at Parliament House in April, which was attended by over three hundred people, the NISAD Corporate Sponsorship Program has attracted sponsorships from major

Australian companies to the value of approximately $135,000 over three years.

◆ *New Patron for NISAD*

As the new Governor of NSW, Her Excellency Prof. Marie Bashir AC accepted the invitation to become Patron of NISAD, following the completion of His Excellency Gordon Samuels' term as Governor of NSW. Prof. Bashir's interests in adolescent mental health are well documented, and she was appointed an Officer of the Order of Australia in 1988 for her services to child and adolescent health.

◆ *New Board Members*

The NISAD Board has been reconstituted with influential directors best able to assist the Institute reach its financial and scientific objectives.

New appointments have included: Prof. Pat Michie (Professor of Psychology, University of Newcastle), Mr John Fraser (Managing Director, UBS Asset Management), Mr Peter Young (Executive Vice Chairman, ABN AMRO Australia), Mr Michael Shepherd (Deputy Chairman, Australian Stock Exchange), Mr Peter Dempsey (CEO, Baulderstone Hornibrook), Ms Pru Goward (Federal Sex Discrimination Commissioner) and Dr Christine Bennett (CEO, Total Healthcare Enterprises).

◆ *Fundraising Success*

NISAD has continued a undertake a range of successful fundraising programs that have included support from the corporate sector (BT Financial Group, Tyrrell's Wines), charitable foundations (The Rebecca L. Cooper Medical Research Foundation), direct mail appeals, and donations from the general public.

NISAD's annual fundraising dinner will be held in November 2001 in association with the completion of the M5 East Freeway tunnel by Baulderstone Hornibrook. All profits from the evening will go to NISAD.

◆ *Bequest to NISAD*

In late 2000 NISAD received a bequest of $15,000 from Mr John Barrett. Mr Barrett was diagnosed with schizophrenia in 1960 at the age of 22. Despite his illness, he managed to become a Bachelor of Agricultural Science, working at the Glenfield Research Station until his death in 1999. NISAD gratefully acknowledges this most generous gift.

◆ *Raising Awareness of Schizophrenia*

NISAD has continued to play a leading role in raising public awareness of schizophrenia and research into the disorder.

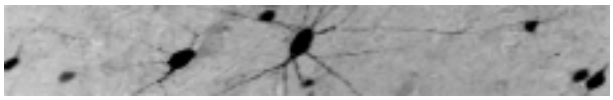
In February, *The Australian* newspaper commenced a three-month program of placing free NISAD advertisements. Three issues of the Institute's newsletter 'HeadLines' were published and distributed to a readership of over 10,000 people in Australia. The NISAD website was redesigned, and received around 40,000 'hits' per month over the year.

In the coming year NISAD will develop a video describing schizophrenia and the Institute's work to be used for awareness and fundraising purposes.

◆ *New NISAD Appointments*

In October 2000 Ms Ana Lopes was employed as Administrative Assistant in the NISAD Central Office and Mr Jim Sheedy as the Sydney-based Research Officer for the Clinical Measurement Panel based at Cumberland Hospital. In January 2001 NISAD appointed Ms Zoe Webster to coordinate the Institute's fundraising programs as Development Officer, and Mr Paul Rasser as the Research Officer to facilitate the NISAD/UCLA Brain Atlasing Initiative.

Chairman's Report



Since commencing operations in 1996, it seems that every passing year has delivered major advances for NISAD, and hence for schizophrenia research and public awareness in Australia. Even so, the twelve months to June 2001 must be singled out as a period of exceptional achievement.

As detailed in this document under Institute and Scientific Highlights, the year's momentous developments have included original research findings in neurobiology, neuroimaging, and clinical measurement, as well as expansions of our Tissue Resource Centre, Tissue Donor Program, and Research Register. On behalf of all Directors and supporters, I congratulate our scientists for producing the research results which are the purpose of NISAD's existence, and particularly acknowledge the role of Scientific Director Professor Philip Ward for his steady hand upon the accelerating pace of activities.

These scientific strides found firmer footing when Minister for Health Craig Knowles initiated the NISAD/NSW Health Partnership Project in October, then announced $1M pa recurrent funding to commence in July 2001. These funding milestones are testimony both to the Minister's genuine concern for mental health issues, and to the indefatigable lobbying of our Deputy Chairman Don McDonald.

NISAD also has Don McDonald to thank for spearheading the Corporate Sponsorship Program so successfully launched at Parliament House in April, and for recruiting most of the distinguished members of our new Board of Directors.

I especially wish to thank the NSW Labor Council and Employers First for their unprecedented collaboration in support of the Sponsorship Program, and also the Construction Forestry Mining Energy Union whose invaluable ongoing support has extended into its second year.

The new Governor of NSW, Her Excellency Professor Marie Bashir AC, accepted the Board's invitation to become Patron of NISAD, and expressed special interest in the Institute's work.

Supporting and augmenting all activities, as ever, were our central office personnel comprising Secretary/Treasurer Jim Breene, Research Program Coordinator Daren Draganic, Development Officer Zoe Webster, Office Administrator Ana Lopes, and Marketing Director Alan Tunbridge: a remarkably small team who maintain the ever-expanding organisational, fundraising and marketing foundations of the Institute.

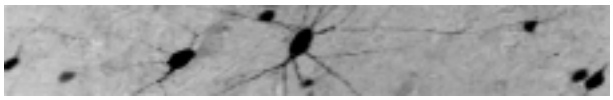
In such a brilliant year, it was sad to accept Judy Gibson's resignation from the Board. Jack and Judy Gibson have worked tirelessly for NISAD since its earliest beginnings in 1993, and I speak for all in saying that the Institute's current status and success is owed largely to their determined efforts. Similarly, Jim Breene and Alan Tunbridge fulfilled our Board restructuring strategy by stepping down to make places available for our new Directors. Needless to say, all ex-Directors continue their support in other capacities.

The Financial Year ended as energetically as it had begun with the appointment of six new and highly influential Board members, and the imminent prospect of a major review and redefinition of NISAD's structure - both being timely fulfilments of the strategic goals set last year. I thank Christine Bennett, Peter Dempsey, John Fraser, Pru Goward, Pat Michie, Michael Shepherd and Peter Young for their valuable support.

I also look forward to the coming twelve months in anticipation of further scientific discoveries, sponsorships, and public awareness growth. Such expansions will mean that our community is at last addressing schizophrenia with the concern it deserves.

Ian Harrison SC
Chairman

Scientific Director's Report



This year has seen NISAD scientific endeavours bear fruit, both in terms of increased research productivity, and a range of exciting new developments that promise further success in coming years. It is especially pleasing to see the infrastructure developments that NISAD has helped to create bear fruit. The range of projects that have accessed the Tissue Resource Centre for post-mortem tissue, and the Schizophrenia Research Register for volunteer participants, continues to grow, and those working directly in support of these valuable resources are now turning their attention to the important research questions that can be addressed via these resources. From a better understanding of the clinical profile of research volunteers, to quantitative evaluation of changes in brain tissue after death, our research database is expanding.

This year has also seen the initiation of NISAD's international collaborative project involving US-based researchers at the Laboratory of Neuroimaging at UCLA. This exciting development has seen a NISAD scientist, Paul Rasser, working in the USA to learn state-of-the-art analysis methods to better understand what structural and functional brain imaging can tell us about brain function in young people experiencing psychosis for the first time. On Paul's return to Australia, this cutting-edge methodology will be available to further research questions, including detailed studies of those at risk for the development of schizophrenia and allied disorders.

Our collaborating centres for human brain research have been awarded several competitive research grants over the past twelve months, recognizing the high quality of the science being conducted by NISAD scientists at these sites.

The recruitment of additional postgraduate students is another important index of the success of these centres. By training the next generation of schizophrenia researchers, we are helping to ensure that skilled hands and minds will be available in the future to help translate today's research findings into better treatments, and hopefully a cure for schizophrenia.

The recurrent funding announced by Minister Craig Knowles in April this year sets the scene for several new research initiatives. These include the development of a transgenic mouse model for schizophrenia, drawing on the expertise of Prof. Peter Schofield and his team in the Neurobiology Program at the Garvan Institute, and the establishment of a research position to facilitate studies of patients who suffer from both schizophrenia and substance abuse.

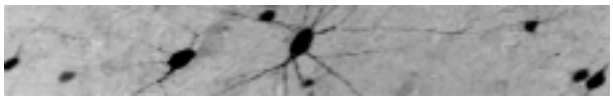
The opportunity for NISAD scientists to be part of the NSW Health/NISAD Partnership project has provided the chance for scientists to relate directly to those in the wider community whose lives have been affected by mental illness and want to know more about our research. The personal stories we hear through such contacts, and our links with consumer and carer groups, inspire us all in our work. There is no better reminder that we are truly engaged in 'urgent research'.

Associate Professor Philip Ward
Scientific Director

NISAD Scientific Steering Committee

Prof. Peter Beumont (until Feb. 2001)
Prof. Philip Boyce (from May 2001)
Prof. Vaughan Carr
Dr Stanley Catts
Prof. Clive Harper
Prof. Graham Johnston
Prof. Neil McConaghy (Chairman)
Prof. Perminder Sachdev
Prof. Peter Schofield
Dr Paul Tooney (from Feb. 2001)
Assoc. Prof. Philip Ward
Dr Leanne Williams

Clinical Measurement Panel



The Panel Members

Dr Elsa Bernardi (to November, 2000)
Prof. Vaughan Carr (Convenor)
Dr Stanley Catts
Mr Daren Draganic
Ms Joanne Gorrell (from October, 2000)
Dr Anthony Harris
Dr Stephen Hook (to July, 2000)
Ms Carmel Loughland
Mr Jim Sheedy (from October, 2000)
Assoc. Prof. Philip Ward

Participating Scientists/Centres

Discipline of Psychiatry, University of Newcastle:
Prof. Vaughan Carr
Ms Carmel Loughland (NISAD Clinical Measurement Coordinator)

Division of Psychiatry, The Prince of Wales Hospital:
Dr Maryanne O'Donnell

Greater Parramatta Mental Health Service:
Dr Anthony Harris
Mr Jim Sheedy (NISAD Research Officer)

Macquarie Hospital:
Dr Elsa Bernardi

NISAD Central Office:
Assoc. Prof. Philip Ward (Scientific Director)
Mr Daren Draganic (Research Program Coordinator)

Royal North Shore Hospital:
Ms Joanne Gorrell

School of Psychiatry, University of NSW:
Prof. Neil McConaghy
Dr Stanley Catts

School of Psychology, University of NSW:
Assoc. Prof. Sally Andrews

St John of God Hospital, Burwood:
Dr Stephen Hook

St John of God Hospital, Richmond:
Dr Shail Chaturvedi

Summary of Activities

■ *NISAD Schizophrenia Research Register*

The continuing focus for the Panel's activities this year has been the further development of the NISAD Schizophrenia Research Register, a volunteer database of people with schizophrenia willing to be involved in research. During the past year, approvals from research ethics committees to recruit volunteers to the Register were finalised in every Area Health Service in NSW and the ACT.

The Register was actively promoted in the past year via presentations to scientific and consumer group meetings, presentations to Area Health Services, broadcast of television and radio community service announcements, articles in consumer group newsletters, publication of a Register newsletter and by media interviews. This has resulted in the recruitment of approximately five hundred people to the Register. Clinical assessment of Register volunteers to confirm diagnosis has continued with over a third of volunteers having been assessed.

The Register provided volunteers for five schizophrenia research projects in Sydney and Newcastle. These initiatives included neuroimaging investigations and studies investigating substance abuse in schizophrenia. Over two hundred and fifty of the Register volunteers have now been involved in a schizophrenia research project.

■ *Sydney-based Research Officer*

In October 2000 Mr Jim Sheedy was employed by NISAD as the Sydney-based Research Officer for the Panel. His position is based at Cumberland Hospital under the supervision of Dr Anthony Harris and has thus far focused on the promotion of the Register and assessment of Register volunteers in the Sydney area.

■ *Research Initiatives*

With the Register now well established the Panel was able to turn a greater focus to the development of clinical schizophrenia research initiatives. The first of these was to review and describe the establishment of NISAD's volunteer Register in comparison with data collected for the national Low Prevalence (psychotic) Disorders Study (LPDS) that primarily recruited subjects though mental health services. Ms Carmel Loughland undertook this study that, in general, demonstrated that Register volunteers had lower current symptomatology and higher functioning compared to LPDS participants. However, the psychosocial data and clinical similarities with the LPDS subjects demonstrated that Register volunteers meet established diagnostic criteria for schizophrenia and report similar high levels of lifetime disturbance associated with the illness. The study concluded that the Register was a unique and invaluable educational and research resource, as well as a complementary recruitment source for researchers who would otherwise rely on samples drawn primarily from mental health services.

Subsequently Ms Loughland collaborated on a further initiative which examined the demographic, psychosocial, clinical and service use differences reported between groups of people with schizophrenia who had been recruited for research via a community mental health service, family practitioners, being a public inpatient or via the NISAD Schizophrenia Register. The study also concluded that primary care agencies and volunteer research registers may provide valuable, complementary recruitment sources for researchers who tend to rely largely on samples drawn from mental health service contexts.

NISAD has a strong commitment to postgraduate research training for its employees and has supported Ms Loughland's doctoral research that investigated visual scanpaths in patients with schizophrenia and first-degree relatives in response to positive and negative facial emotions. Disturbances in the perception of facial emotions is one of the most pervasive aspects of schizophrenia impairments in interpersonal communication. This study demonstrated that compared to controls, schizophrenia subjects showed a 'restricted' scanning and reduced attention to salient facial features (eyes, nose, mouth) that was particularly apparent for happy and neutral faces. Also, the first-degree relatives generally showed an attenuated form of the markedly 'restricted' scanpaths of schizophrenia subjects across all face stimuli. The schizophrenia deficit in positive emotion perception may reflect a failure to integrate salient features due to dysfunctions in local processing of detailed, relevant information (fewer fixations, less attention to facial features), and in the networks that synchronise local and global processing of biologically-relevant face stimuli.

A number of other research initiatives were commenced in late 2001. Ms Loughland and Mr Jim Sheedy commenced a review of the performance of Register volunteers on the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) instrument. The RBANS is a test that helps determine a person's neuropsychological status and is part of the clinical assessment protocol for the Register. Currently there has been no RBANS data published on an Australian schizophrenia sample and only data from a small schizophrenia sample collected in the USA.

Ms Loughland and Mr Sheedy also commenced the development of two further collaborative research initiatives with scientists from the University of Newcastle. The first involves the trial of a newly developed neurocognitive battery on Register volunteers. To date this has only been trialed in elderly dementia patients. The second initiative will investigate substance abuse profiles across three populations of people with psychiatric disorder. Data from five databases (including the Register) will be drawn on for this project.

■ *Clinical Assessment Training*

The Panel has continued to facilitate a number of training workshops in clinical assessment techniques for researchers and clinicians in the past year. These have included:

A Scales for the Assessment of Positive and Negative Symptoms (SAPS/SANS) and Positive and Negative Syndrome Scale (PANSS) training course for psychiatrists and research nursing staff at James Fletcher Hospital, Newcastle.

Two Diagnostic Interview for Psychosis (DIP) training workshops for research staff at James Fletcher Hospital, Newcastle.

Introductory and train-the-trainer DIP workshop at Cumberland Hospital, Sydney.

■ *Substance Abuse Research in Schizophrenia and Other Psychoses.*

The major new program for the Panel in 2001-2002 will be the development of an initiative to examine the use of psychoactive substances in schizophrenia and related disorders. Numerous studies have demonstrated high rates of lifetime substance abuse in people with schizophrenia. The Panel aims to appoint a Research Office to facilitate the program in late 2001.

■ *Scientific Publications*

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the submission and publication of the following manuscripts and abstracts:

Loughland C, **Carr V**, Lewin T. The NISAD Schizophrenia Research Register: Why do we need a database of schizophrenia volunteers? *Australian and New Zealand Journal of Psychiatry* 2001; 35: 660-667.

Carr V, Lewin T, **Loughland C**, Barnard R, **Johnston P**, Chapman J, Walton J. Does the source of sampling make a difference in schizophrenia research? *Schizophrenia Research* 2001; 49: 258.

Loughland C, **Williams L**, Gordon E. Visual scanpaths to positive and negative facial emotions in an outpatient schizophrenia sample. *Schizophrenia Research* (in press).

Loughland C, **Williams L**, Gordon E. Schizophrenia and affective psychosis show different visual scanning behaviour for faces: A trait verses state-based distinction. *Biological Psychiatry* (in press).

■ *Conference Presentations*

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the following conference presentations/submissions.

Loughland C, **Carr V**, Lewin T, Barnard R, **Johnston P**, Chapman J, Walton J. Sampling source impacts in schizophrenia research. Presented at the Australasian Society for Psychiatric Research Meeting, Adelaide, December, 2000.

Carr V, Lewin T, **Loughland C**, Barnard R, **Johnston P**, Chapman J, Walton J. Does the source of sampling make a difference in schizophrenia research? Presented at the International Congress on Schizophrenia Research, Canada, May, 2001.

Sheedy J, **Loughland C**. Schizophrenia research and nursing: a partnership with the NISAD Schizophrenia Research Register. Abstract accepted for the 12th Annual Winter Symposium, Rozelle Hospital, Sydney, July, 2001.

Sheedy J, **Loughland C**. The NISAD Schizophrenia Research Register: Training partnerships in clinical and technical measurement skills. Abstract accepted for the NSW Institute of Psychiatry, Second National Conference, Sydney, September 2001.

■ *Schizophrenia Research Register Projects*

The following schizophrenia research projects were provided with volunteers from the NISAD Schizophrenia Research Register.

Differences in evoked cortical activation during semantic word processing between normals and patients with schizophrenia, and their structural and symptomatic correlates.
Johnston P, University of Newcastle.

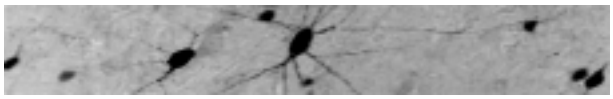
Emotional well-being in schizophrenia - an fMRI study.
Harris A, Westmead Hospital.

A neuropsychological and neuroimaging investigation of semantic processing in patients with schizophrenia, delusional disorder, mania and controls.
Rossell S, Coltheart M, Ward P. Macquarie University.

Counselling for alcohol and other drug problems among people with a psychotic illness.
Baker A, Lewin T, Carr V. University of Newcastle.

Intervention for smoking among people with a mental illness.
Baker A, Richmond R, Carr V, Lewin T, Wilhelm K. University of Newcastle.

Neuroimaging Panel



Panel Members

Assoc. Prof. Sally Andrews (until April, 2001)
Mr Daren Draganic
Dr Allison Fox
Mr Patrick Johnston
Dr Frini Karayanidis
Dr Jim Lagopoulos
Prof. Pat Michie (from May, 2001)
Mr Paul Rasser (from June, 2001)
Dr Ulrich Schall
Prof. Paul Thompson (from June, 2001)
Assoc. Prof. Philip Ward
Dr Leanne Williams (Convenor)

Participating Scientists/Centres

Cognitive Neuroscience Unit, Westmead Hospital:
Dr Leanne Williams

Department of Psychology, University of Western Australia:
Dr Allison Fox
Mr Aaron Kent (NISAD/Rebecca Cooper Scholar)

Discipline of Psychiatry, University of Newcastle:
Mr Patrick Johnston
Dr Ulrich Schall

Discipline of Psychology, University of Newcastle:
Dr Frini Karayanidis
Prof. Pat Michie

Laboratory of Neuro-Imaging, University of California Los Angeles:
Prof. Paul Thompson
Mr Paul Rasser (NISAD Research Officer)

NISAD Central Office:
Dr Jim Lagopoulos (Technical Support Officer)
Mr Daren Draganic (Research Program Coordinator)

School of Psychiatry, University of NSW:
Assoc. Prof. Philip Ward
Mr Craig Little

School of Psychology, University of NSW:
Assoc. Prof. Sally Andrews

Summary of Activities

■ *Research Initiatives*

The Neuroimaging Panel has continued to provide support for neuroimaging research in schizophrenia throughout NSW. These initiatives have examined aspects of human behaviour known to be altered in people with schizophrenia such as emotion, decision making skills and auditory information processing.

■ *Functional MRI Initiatives*

Functional MRI research in schizophrenia has remained the focus of the Panel's activities during this year with studies supported at Liverpool/St George, Westmead and James Fletcher/John Hunter hospitals.

Three research initiatives have been supported by NISAD at St George MRI in the past year. Prof. Philip Ward and Dr Ulrich Schall have used the 'Tower of London' paradigm to examine the executive functioning of people with schizophrenia, that is, the ability of the brain to make complex decisions. Results have demonstrated reduced levels of activation in the prefrontal, premotor and pariental cortices in schizophrenia affected subjects compared to normal controls when completing the 'Tower of London' task. These results are consistent with impaired engagement of distributed cortical brain networks in patients with schizophrenia during performance of executive planning tasks. This study was extended to compare fMRI activation with that obtained from another neuroimaging modality, O^{15}PET during performance on the 'Tower of London' task in normal controls. Results have demonstrated similar patterns of activation from use of both modalities. NISAD has also provided infrastructure support for PhD student Mr Craig Little who is using fMRI to

examine auditory information processing in schizophrenia.

Dr Jim Lagopoulos successfully completed a pilot study at St George MRI that examined the 'Orienting Reflex' (indexed by skin conductance response), a physiological response to novel stimuli, orienting the organism to examine the stimulus in detail. This was the first ever study that simultaneously obtained fMRI and skin conductance response data from healthy controls in an MRI scanner. This technology will enable better understanding of the brain networks underlying cognitive operations such as selective attention and emotion, which are known to be altered in people with schizophrenia.

The Panel has also supported fMRI research at Westmead Hospital where Dr Lea Williams and collaborators have used a 'facial perception' paradigm to examine emotional responses in people with schizophrenia and normal controls. This study has also collected skin conductance response data using the instrument designed by Dr Lagopoulos. Whilst previous fMRI studies have examined the response to facial expressions in people with schizophrenia and normal controls no study has examined neural activity as a concomitant of Orienting. Results from this study demonstrated neural activity in the amygdala, hippocampus and anterior cingulate regions of normal controls together with electrodermal Orienting when subjects viewed fearful expressions. These results indicate that Orienting may embody a fundamental mechanism in emotion perception. However, patients with schizophrenia showed reduced limbic system activity in response to threat-related expressions. These results suggest that people with schizophrenia may inhibit the normal limbic response to threat as a means of coping with a heightened awareness of threat-related stimuli.

Functional MRI studies have also been supported at the John Hunter Hospital in Newcastle. Mr Pat Johnston and Dr Ulrich Schall have utilised a 'facial emotion' paradigm to initially examine normal control subjects. Results have demonstrated significant activation in response to the presentation of negative and positive faces compared to neutral faces. The paradigm will now be applied to a sample of patients with schizophrenia as it is well documented that patients with schizophrenia display a deficit in the recognition of facial emotion. However, the neural mechanisms underlying this deficit are far from well understood. The Panel has also supported another study by Mr Pat Johnston utilising a 'word recognition' paradigm to compare structural and functional MRI data from people with schizophrenia and control subjects, in a size judgement task with novel and repeated stimuli. It is hypothesized that abnormalities in the structure or function of different brain regions may be associated with different types of symptoms of schizophrenia. Pilot scanning is continuing.

The Neuroimaging Panel commenced a collaborative initiative which will use an 'eye movement' paradigm to examine the link between eye movement abnormalities and functional brain activity via fMRI in schizophrenia. Scanning will be undertaken in patients with schizophrenia and controls across three of NISAD's neuroimaging sites (i.e. St George, Westmead and John Hunter Hospitals). The project is being facilitated by Dr Jim Lagopoulos and scanning will commence in the second half of 2001.

■ *NISAD/UCLA Brain Atlasing Initiative*

Following, Mr Pat Johnston's visit to UCLA in 2000 the NISAD/UCLA Brain Atlasing Initiative was commenced with the support of Prof. Paul Thompson, Laboratory of Neuro-imaging, UCLA. This initiative involves the acquisition of structural and functional MRI data on first-episode schizophrenia patients and controls (using the 'Tower of London' paradigm) so that examination of potential relationships between structure and function can be compared. This will be the first time this type of comparison will be made.

In January, 2001 Mr Paul Rasser was employed as the Research Officer for this initiative. Mr Rasser initially spent two months based in Sydney and Newcastle familiarising himself with NISAD's data collection procedures. In April, Mr Rasser commenced work at UCLA where appropriate equipment and support are available. Acquisition and submission of

data for this study has commenced at NISAD-affiliated imaging sites at John Hunter, St George and Westmead hospitals as well as the University of Essen, Germany.

Magnetic Resonance Spectroscopy (MRS)

The Panel commenced collaboration with two groups who are using MRS to investigate schizophrenia. MRS is a non-invasive imaging modality for evaluating the chemistry of living tissue that involves no ionizing radiation and generally involves the same scanning equipment and environment utilised for MRI. The first project involves researchers from the University of Wollongong using MRS to investigate membrane phospholipid composition and symptom alterations elicited by fatty acid supplementation in first episode schizophrenia patients. The second project, to be undertaken by researchers at Westmead Hospital, will use MRS to investigate young patients in their first episode of psychosis. Both initiatives commenced recruitment and scanning in mid 2001.

Neural Network Initiative

NISAD has provided infrastructure support to assist Mr Pat Johnston to develop a neural network model. Such models are used to simulate experimental results, generate novel hypotheses and provide insights into how the brain performs computations. Mr Johnston has applied this neural network approach to explain how a generalised deficit can account for problems in facial emotion recognition in schizophrenia.

Neuroimaging Equipment Infrastructure

The Panel has continued to provide infrastructure support to help facilitate the neuroimaging initiatives underway at the various NISAD-affiliated Centres. This has included funding to support subscription renewals for the MEDx image analysis software at all NISAD-affiliated neuroimaging sites, the purchase of a notebook computer for the analysis of data acquired for the Panel's collaborative initiative and funds for computer hardware for all NISAD neuroimaging groups to assist with the acquisition and analysis of fMRI data.

Training

The Neuroimaging Panel once again facilitated a training workshop in the use of the MEDx image analysis package at Royal Prince Alfred Hospital in July. Scientists from the University of Newcastle and Westmead, Royal Prince Alfred and Liverpool Hospitals attended this workshop which was extremely successful in providing introductory information on the use of MEDx to those in attendance.

NISAD / Rebecca Cooper Scholarship

Mr Aaron Kent has continued to progress his Rebecca Cooper Scholarship project at the University of Western Australia. This study is utilising event-related potentials and functional MRI to investigate patients with schizophrenia, family members and controls, using tasks that assess the role of inhibitory processing in relation to sustained attention and working memory. In the past year the collection of data for the ERP component of the project has commenced and recruitment continues. Pilot testing and data acquisition for the fMRI component of the project was successfully undertaken in March.

New Neuroimaging Panel Members

In the past year, Prof. Pat Michie (Professor of Psychology, University of Newcastle), Prof. Paul Thompson (Laboratory of Neuro-Imaging, University of California Los Angeles) and Mr Paul Rasser (NISAD Research Officer) joined the Neuroimaging Panel.

Scientific Publications

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the submission and publication of the following manuscripts and abstracts:

Williams L, Brammer M, Skerrett D, **Lagopoulos J**, Rennie C, Kozek K, Olivieri G, Peduto A & Gordon E. The neural correlates of orienting: An integration of fMRI and skin conductance orienting response. *Neuroreport* 2000: 11; 3011-3015.

Schall U, **Ward P**, Jüptner M, Jentzen W, Müller S, Boden N, Bender S. FMRI and PET activation during performance of the 'Tower of London' task. *International Journal of Neuropsychopharmacology* 2000; 3 (Suppl. 1): 379.

Williams L, Rennie C, **Lagopoulos J**, Brammer M, Bahramali H, Phillips M, Olivieri G, Peduto A, Gordon E. The influence of electrodermal orienting on simultaneously recorded neural activity: an fMRI study of emotion perception. *Psychophysiology* 2000; 37 : S11.

Williams L, Brammer M, Skerrett D, **Lagopoulos J**, Rennie C, Peduto A, Gordon E. Neural activity associated with electrodermal orienting: an integrated fMRI and GSR study. *Psychophysiology* 2000; 37 : S105.

Lagopoulos J, **Ward P**, Rennie C, **Williams L**, Gordon E. Functional MRI as a tool for investigating networks underlying the Orienting Reflex. *Psychophysiology* 2000; 37 : S65

Lagopoulos J, **Ward P**, Rennie C, **Williams L**, Gordon E. Functional MRI as a tool for investigating networks underlying the Orienting Reflex. *Proceedings of the Australian Neuroscience Society* 2001; 12: 253.

Ward P, **Schall U**, **Lagopoulos J**, Bender S, **Little C**. Functional brain imaging of increasing task difficulty in the 'Tower of London' in patients with schizophrenia and healthy volunteers. *Proceedings of the Australian Neuroscience Society* 2001; 12: 49.

Ward P, **Schall U**, Jûptner M, Mûller S, **Lagopoulos J**, Bender S, **Little C**. Functional neuroimaging of increasing task difficulty in the Tower of London: A comparison of BOLD fMRI and rCBF PET data. *Schizophrenia Research* 2001: 49: 188.

Little C, **Ward P**, **Catts S**. Auditory stimulus duration effects on mismatch negativity in patients with schizophrenia and healthy volunteers. *Schizophrenia Research* 2001: 49: 205.

Johnston P, Katsikitis M, **Carr V**. A neural network approach to facial emotion recognition in schizophrenia: a generalised deficit can explain poorer performance to negative emotions. *Schizophrenia Research* 2001: 49: 136.

Williams L, **Harris A**, Peduto A, Horley K, Phillips M, Gordon E. Emotion perception in schizophrenia: integrating ERP, fMRI and arousal measures. *Schizophrenia Research* 2001: 49: 190.

Williams L, Phillips M, Brammer M, Skerrett D, **Lagopoulos J**, Rennie C, Bahramali H, Olivieri G, David A, Peduto A, Gordon E. Arousal dissociates amygdala and hippocampal fear responses: Evidence from simultaneous fMRI and skin conductance recording. *NeuroImage* (in press).

Johnston P, Katsikitis M, **Carr V**. A generalised deficit can account for problems in facial emotion recognition in schizophrenia. *Biological Psychology* (in press).

■ *Conference Presentations*

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the following conference presentations/submissions:

Johnston P, Henskens F, McGowan W. Neu-MODEL: a multilevel object-oriented dynamic emulation laboratory. Presented at CNS 2000 (The Annual Computational Neuroscience Conference), Bruges, Belgium, July, 2000.

Lagopoulos J, **Ward P**, Rennie C, **Williams L** & Gordon E. Functional MRI as a tool for investigating networks underlying the Orienting Reflex. Presented at the Society of Psychophysiological Research meeting, San Diego, USA, October, 2000.

Williams L, Brammer M, Skerrett D, **Lagopoulos J**, Rennie C, Peduto A, Gordon E. Neural activity associated with electrodermal orienting: An integrated fMRI and GSR study. Presented at the Society of Psychophysiological Research meeting, San Diego, USA, October, 2000.

Williams L, Rennie C, **Lagopoulos J**, Brammer M, Phillips M, Bahramali H, Olivieri G, Peduto A, Gordon E. The influence of electrodermal orienting on simultaneously recorded neural activity: An fMRI study of emotion perception. Presented at the Society of Psychophysiological Research meeting, San Diego, USA, October, 2000.

Ward P, **Schall U**, **Lagopoulos J**, Bender S, **Little C**. Functional brain imaging of increasing task difficulty in the Tower of London in patients with schizophrenia and healthy volunteers: An fMRI study. Presented at the Australasian Society for Psychiatric Research Meeting, Adelaide, December, 2000.

Williams L, **Harris A**, Peduto A, Phillips M, David A, Gordon E. Emotion perception in schizophrenia: integrating functional neuroimaging and arousal measures. Presented at the Australasian Society for Psychiatric Research Meeting, Adelaide, December, 2000.

Johnston P, **Schall U**. Neural substrates of facial emotion recognition: an fMRI study. Presented at the Australasian Society for Psychiatric Research Meeting, Adelaide, December, 2000.

Ward P, **Schall U**, **Lagopoulos J**, Bender S, **Little C**. Functional brain imaging of increasing task difficulty in the 'Tower of London' in patients with schizophrenia and healthy volunteers. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Lagopoulos J, **Ward P**, Rennie C, **Williams L**, Gordon E. Functional MRI as a tool for investigating networks underlying the Orienting Reflex. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Ward P, **Schall U**, Jüptner M, Müller S, **Lagopoulos J**, Bender S, **Little C**. Functional neuroimaging of increasing task difficulty in the Tower of London: a comparison of BOLD fMRI and rCBF PET data. Presented at the International Congress on Schizophrenia Research, Canada, May, 2001.

Little C, **Ward P**, **Catts S**. Auditory stimulus duration effects on mismatch negativity in patients with schizophrenia and healthy volunteers. Presented at the International Congress on Schizophrenia Research, Canada, May, 2001.

Williams L, **Harris A**, Peduto A, Horley K, Phillips M, Gordon E. Emotion perception in schizophrenia: integrating ERP, fMRI and arousal measures. Presented at the International Congress on Schizophrenia Research, Canada, May, 2001.

Johnston P, Katsikitis M, **Carr V**. A neural network approach to facial emotion recognition in schizophrenia: a generalised deficit can explain poorer performance to negative emotions. Presented at the International Congress on Schizophrenia Research, Canada, May, 2001.

Ward P, **Schall U**, **Lagopoulos J**, Bender S, **Little C**. Functional brain imaging of increasing task difficulty in the Tower of London in patients with schizophrenia and healthy volunteers: An fMRI study. Presented at the Functional Brain Mapping meeting, Melbourne, May, 2001.

Williams L, Brammer M, **Lagopoulos J**, Skerrett D, Liddell B, Peduto A, Gordon E. Dissociating amygdala and hippocampus responses to emotion: Integrated fMRI-arousal evidence for 'fact' and 'feeling' networks. Presented at the Functional Brain Mapping meeting, Melbourne, May, 2001.

Ward P, **Schall U**, **Lagopoulos J**, Bender S, **Little C**. Functional brain imaging of increasing task difficulty in the Tower of London in patients with schizophrenia and healthy volunteers: An fMRI study. Presented at the Human Brain Mapping meeting, Brighton, UK, June, 2001.

Ward P, **Schall U**, **Lagopoulos J**, Bender S, **Little C**. Functional brain imaging of increasing task difficulty in the Tower of London in patients with schizophrenia and healthy volunteers. Abstract accepted as oral presentation to the 7th World Congress on Biological Psychiatry, Berlin, Germany, July, 2001.

Johnston P, Katsikitis M, **Carr V**. Modelling facial emotion recognition in schizophrenia. Abstract accepted for the 7th World Congress on Biological Psychiatry, Berlin, Germany, July, 2001.

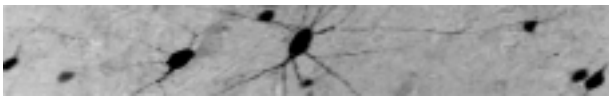
Ward P, **Schall U**, **Lagopoulos J**, Bender S, **Little C**. Functional brain imaging of increasing task difficulty in the Tower of London in patients with schizophrenia and healthy volunteers. Abstract accepted to Evoked Potential International Conference, Paris, France, July, 2001.

■ *Rebecca Cooper Scholarship Schizophrenia Research Project*

NISAD has initiated and administers the following three-year schizophrenia research doctoral scholarship:

Executive function in individuals at risk for schizophrenia: physiological correlates of sustained attention, response inhibition and working memory activation.
Kent A. Departments of Psychology and Psychiatry, University of Western Australia.

Neurobiology Panel



Panel Members

Assoc. Prof. Loris Chahl
Dr Mary Collins
Dr Gavin Dixon
Mr Daren Draganic
Prof. Peter Dunkley
Prof. Clive Harper
Ms Tina Hinton
Dr Xu-Feng Huang
Prof. Graham Johnston (Co-Convenor)
Dr Renee Morris
Prof. George Paxinos
Prof. Peter Schofield (Co-Convenor)
Prof. Rodney Scott (from March 2001)
Dr Paul Tooney
Prof. Denis Wakefield (until November 2000)
Assoc. Prof. Philip Ward
Dr Katerina Zavitsanou

Participating Scientists/Centres

Department of Biomedical Science, University of Wollongong
Dr Xu-Feng Huang
Dr Katerina Zavitsanou (NISAD Research Officer)
Mr Warren Bell

Department of Pathology, University of Sydney
Prof. Clive Harper
Dr Gavin Dixon (NISAD Research Officer)

Department of Pharmacology, University of Sydney
Prof. Graham Johnston
Ms Tina Hinton (NISAD/Rebecca Cooper Scholar)
Dr Mary Collins

Garvan Institute of Medical Research
Prof. Peter Schofield
Dr Renee Morris

John Hunter Hospital, Newcastle
Prof. Rodney Scott

NISAD Central Office
Assoc. Prof. Philip Ward (Scientific Director)
Mr Daren Draganic (Research Program Coordinator)

School of Biomedical Sciences, University of Newcastle
Assoc. Prof. Loris Chahl
Prof. Peter Dunkley
Dr Paul Tooney (NISAD Senior Research Officer)

School of Pathology, University of NSW
Prof. Denis Wakefield

School of Psychology, University of NSW
Prof. George Paxinos

Summary of Activities

■ *Research Initiatives*

Neurobiological research into schizophrenia at NISAD's Collaborative Centres for Human Brain Research (based at the Universities of Sydney, Wollongong and Newcastle, and at the Garvan Institute) has continued. These facilities have resulted in highly-regarded neuroscientists developing research initiatives that aim to advance the understanding of abnormal cellular and molecular neurobiology in schizophrenia.

■ *BT Financial Group Centre for Collaborative Human Brain Research – University of Newcastle*

Dr Paul Tooney has continued his initiative examining GABA neurons in the prefrontal cortex of schizophrenia cases, as alterations of these neurons in this region of the brain have been implicated in the pathophysiology of schizophrenia. Results from the study demonstrated significant differences in density of neurons between schizophrenia and control cases in two subsets of these cells. No significant difference in the soma size for either population of neurons was observed.

Dr Tooney has also continued his investigations of the tachykinin receptors in the prefrontal cortex as preclinical models suggest a role for antagonists to the tachykinin NK1 receptor in the treatment of schizophrenia. Results from this study have demonstrated significant differences in the distribution of NK1 receptors between cases of schizophrenia and normal controls. However, as this effect on tachykinin receptors may be due to the useage of antipsychotic medication, Dr Tooney has initiated a further study to determine whether the distribution of the tachykinin receptors is altered by anti-psychotic drug treatment. This study is ongoing. A further examination of the level of tachykinin NK3 receptors in the prefrontal cortex of schizophrenia cases is also underway.

Dr Tooney has actively collaborated with other researchers from the University of Newcastle on a number of other schizophrenia research initiatives including the examination of the distribution of tachykinin receptors in the amygdala of normals and cases of schizophrenia, and the development of microarray technology to compare gene expression in the prefrontal cortex in control subjects to that in subjects with schizophrenia or bipolar disorder.

■ *NISAD Centre for Collaborative Human Brain Research – University of Sydney*

Dr Gavin Dixon has continued his immunohistochemical studies of the thalamus at the University of Sydney Centre. Initially, his investigations of the normal anterior thalamus reported one of the highest percentages of local circuit neurons in the mammalian thalamus. These results provided further evidence that intrinsic neuronal components of the human anterior thalamus have evolved to accommodate the processing of information relevant to tasks of memory and learning, which are known to be altered in schizophrenia. Subsequently, Dr Dixon examined cases of schizophrenia and discovered that neuron phenotype ratios in the anterior thalamus were not altered in schizophrenia cases compared to normal controls.

Dr Dixon initiated a further study investigating the posterior cingulate cortex to explore the possibility

of altered patterns of interstitial cells, neurons that play a role in cortical development and which persist in the adult. Several previous studies have found altered patterns of interstitial cell distribution in the subcortical white matter in the brains of individuals diagnosed with schizophrenia.

Dr Dixon has collaborated on another schizophrenia research initiative with scientists from the University of Sydney that is using immunohistochemistry on sections of mamillary bodies from schizophrenia cases. Neurons of the human mamillary bodies have not been phenotyped to date. Data from this study, along with that obtained from other studies of the thalamus and the posterior cingulate cortex (see below), will be examined to determine overall circuit integrity.

■ *NISAD Centre for Collaborative Human Brain Research – University of Wollongong*

Dr Katerina Zavitsanou continued her studies examining the anterior cingulate, a region implicated in the attentional dysfunctions found in patients with schizophrenia. Her initial study characterised antipsychotic-sensitive binding sites (D_2 and $5HT_2$), in the anterior cingulate cortex of schizophrenia patients and controls. The results indicated a significant reduction of dopamine D_2 and serotonin 5-HT_2 binding sites in the anterior cingulate cortex of schizophrenia cases compared to normal controls.

Subsequently, Dr Zavitsanou initiated a study examining the ionotropic glutamate receptors (i.e. AMPA, kainate and NMDA) in the anterior cingulate cortex of the human brain. Glutamate is the major excitatory neurotransmitter in the brain and previous pharmacological and biochemical data have suggested a deficiency in glutamatergic transmission in schizophrenia. Disturbances of any of the glutamate receptors could result in the emergence of the symptoms of schizophrenia. Preliminary results have indicated significantly increased [3^H]AMPA binding in the upper layers of the anterior cingulate cortex in schizophrenia cases. Further analysis is underway.

Dr Zavitsanou has actively collaborated on other schizophrenia research projects underway at the University of Wollongong including a study examining the possible effects of fatty acid supplementation on membrane phospholipid composition in first episode schizophrenia patients, and an initiative that examined the membrane phospholipid composition from the anterior cingulate cortex of control and schizophrenia cases. Preliminary results from this study have indicated a significant difference in the fatty acid profile of grey matter in the anterior cingulate cortex of schizophrenia cases compared to normal controls.

■ *NISAD Centre for Molecular Brain Research – The Garvan Institute*

The NISAD Centre for Molecular Brain Research was initiated at the Garvan Institute under the supervision of Prof. Peter Schofield in July 2000. This Centre will develop a NMDA receptor gene knockdown mouse model of schizophrenia. This model is of considerable interest as these mice show a number of behavioural alterations that are ameliorated by antipsychotics. Once completed, Neurobiology Panel scientists will be able to utilise these mice in specific schizophrenia research studies. The first phase of the project, which involves the development of the genetic construct and targeting construct has been undertaken in preparation for homologous recombination into embryonic stem cells. The Centre aims to produce the first chimeric mice in early 2002.

■ *Successful Grant Applications*

NISAD infrastructure support was a critical element in the successful award of approximately $130,000 to NISAD-affiliated scientists for schizophrenia research initiatives, equipment and funding to attend conferences in the past year.

■ *NISAD Summer Student Scholarship Program*

Five Summer Student Scholarships were awarded to undergraduate students at NISAD's Centres for Collaborative Human Brain Research. These scholar-

ships provided undergraduate students with an introduction to neurobiological schizophrenia research under the supervision of NISAD's postdoctoral scientists.

Honours Students

Dr Gavin Dixon supervised two Honours students who undertook schizophrenia research studies at the University of Sydney and University of Wollongong Centres:

Ms Nerida Telec commenced her Honours study in 2000 examining the laterodorsal nuclei of the thalamus in schizophrenia but had to discontinue her honours year due to ill health.

Ms Kelly Newell commenced her Honours degree in 2001 with a study investigating the local circuit neurons of the posterior cingulate cortex in schizophrenia.

Dr Katerina Zavitsanou also undertook supervision of an Honours student in 2001 at the University of Wollongong Centre:

Mr David Burns commenced his Honours study with an initiative that will attempt to further characterise the dopamine D_3 and D_4-sensitive receptors in the anterior cingulate cortex in schizophrenia. His study will also investigate whether dietary intervention (diets rich in polyunsaturated and saturated fats) affect antipsychotic binding sites in the cortex and striatum of two groups of mice.

NISAD Doctoral Scholarships

The Panel agreed to initiate three-year doctoral scholarships at each of the NISAD Centres commencing in 2002.

Infrastructure Equipment Support

NISAD has continued to provide infrastructure support for the Panel's neurobiological schizophrenia research initiatives by purchasing computer hardware and contributing to the purchase of a Neurolucida analysis system and for the University of Sydney Centre.

NISAD/Rebecca Cooper Scholarship

Ms Tina Hinton has continued to progress her Rebecca Cooper Scholarship at the University of Sydney. Her studies have focused on examining the expression of GABA-C and GABA-A receptor mRNA in cases of schizophrenia and normal controls. Results from the analysis of normal controls found evidence of these receptors in the medial frontal cortex, temporal pole, hippocampus, amygdala, caudate nucleus, primary visual cortex and cerebellar cortex. These novel findings provide evidence of the recently described GABA-C receptors in human brain, and may aid in the understanding of the role of these receptors in the brain.

New Neurobiology Panel Member

Prof. Rodney Scott (Director of Cytogenetics and Molecular Genetics, John Hunter Hospital) joined the Neurobiology Panel.

Scientific Publications

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the submission and publication of the following manuscripts and abstracts:

Tooney P, Au G, **Chahl L**. Tachykinin NK1 and NK3 receptors in the prefrontal cortex of the human brain. *Clinical and Experimental Physiology and Pharmacology* 2000; 27; 947-949.

Tooney P, Crawter V, **Chahl L**. Increased expression of tachykinin NK1 receptors in the prefrontal cortex in schizophrenia. *Biological Psychiatry* 2001; 49: 523-527.

Bell W, **Zavitsanou K**, **Sarris M**, **Huang X**. Alterations of membrane phospholipid composition in the anterior cingulated cortex of schizophrenia. *Proceedings of the Australian Neuroscience Society* 2001; 12: 135.

Zavitsanou K, **Bell W**, **Huang X**. Autoradiographic characterisation of [3H]spiperone binding sites in the anterior cingulate cortex of schizophrenia patients and controls. *Proceedings of the Australian Neuroscience Society* 2001; 12: 95.

Dixon G, **Harper C**. Ratio of local circuit neurons in the human anterior thalamus is not altered in schizophrenia. *Proceedings of the Australian Neuroscience Society* 2001; 12: 136.

Tooney P, Crawter V, **Chahl L**. Elevated levels of tachykinin NK1 receptor immunoreactivity in the prefrontal cortex in schizophrenia. *Proceedings of the Australian Neuroscience Society* 2001; 12: 136.

Hinton T, **Chebib M**, **Johnston G**. Distribution of ionotropic GABA receptor mRNA in human brain. *Proceedings of the Australian Neuroscience Society* 2001; 12: 72.

Tooney P, Crawter V, **Chahl L**. Tachykinin NK1 receptor immunoreactivity is increased in the prefrontal cortex in schizophrenia. *Schizophrenia Research* 2001; 49: 64.

Zavitsanou K, **Huang X**. Decreased [3H] spiperone binding in the anterior cingulate cortex in schizophrenia: an autoradiographic study. *Neuroscience* (in press).

Dixon G, **Harper C**. An analysis of GAD immunoreactivity elements in the anterior thalamus of the human brain. *Brain Research* (in press).

■ *Conference Presentations*

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the following conference presentations/submissions:

Hinton T, **Chebib M**, **Johnston G**. Distribution of GABA-C Receptors in Human Brain. Presented at the GABA 2000 International Conference, Cairns, July, 2000.

Tooney P, Crawter V, **Chahl L**. Increased levels of NK1 receptors in the prefrontal cortex in schizophrenia. Presented at International Tachykinin Conference, France, October, 2000.

Ward PB. Understanding the neurobiological bases of schizophrenia: the NISAD program of neurobiological research. Invited presentation at Australasian Schizophrenia Research Conference, Lorne, Victoria, October, 2000.

Tooney P, Crawter V, **Chahl L**. Elevated levels of tachykinin NK1 receptor immunoreactivity in the prefrontal cortex in schizophrenia. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Dixon G, **Harper C**. Ratio of local circuit neurons in the human anterior thalamus is not altered in schizophrenia. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Zavitsanou K, **Bell W**, **Huang X**. Autoradiographic characterisation of [3H]spiperone binding sites in the anterior cingulate cortex of schizophrenia patients and controls. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Bell W, **Zavitsanou K**, **Sarris M**, **Huang X**. Alterations of membrane phospholipid composition in the anterior cingulate cortex of schizophrenia. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Hinton T, **Chebib M**, **Johnston G**. Distribution of ionotropic GABA receptor mRNA in human brain. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Tooney P, Crawter V, **Chahl L**. Tachykinin NK1 receptor immunoreactivity is increased in the prefrontal cortex in schizophrenia. Oral presentation at the International Congress on Schizophrenia Research, Canada, May, 2001.

Dixon G, **Harper C**. Neuron ratios in the anterior thalamus in schizophrenia. Abstract accepted for the World Congress on Biological Psychiatry, Berlin, Germany, July, 2001.

Tooney P, Crawter V, **Chahl L**. Neuropeptides and their role in the pathology of schizophrenia. Invited presentation at the Australasian Society for Biological Psychiatry Meeting, Melbourne, December, 2001.

■ *Grants Awarded*

NISAD infrastructure support played a vital role in the success of the following grant applications from NISAD-affiliated scientists:

Acquisition system for physiological and behavioural data (equipment). **Huang XF.** ARC RAGB Grant ($37,650)

Neural membrane phospholipid composition and antipsychotic drug binding efficiency in schizophrenia (project). **Huang XF**, **Zavitsanou K**. University of Wollongong Metabolic Research Centre ($6,500)

Schizophrenia: neuromembrane phospholipid composition, antipsychotic drug binding and dietary intervention (project). **Bell W**, **Huang XF**, **Zavitsanou K**. University of Wollongong Postgraduate Scholarship ($17,267 p.a. for three years)

Tachykinin NK1 receptor immunoreactivity is increased in the prefrontal cortex in schizophrenia (travel grant to International Congress on Schizophrenia Research, 2000) **Tooney P**. Ian Potter Foundation Travel Grant ($1,500)

Tachykinin NK1 receptor immunoreactivity is increased in the prefrontal cortex in schizophrenia (travel grant to International Congress on Schizophrenia Research, 2000). **Tooney P**. School of Biomedical Sciences, University of Newcastle Travel Grant ($1,000)

Analysis of gene expression in psychosis using microarray technology (project). **Tooney P**, **Scott R**, **Chahl L**, **Carr V**. Hunter Medical Research Institute Clinical Neuroscience Program Grant ($31,000)

■ *NISAD Summer Student Scholarships*

NISAD supported the following undergraduate scholarships in schizophrenia research at the Institute's Centres for Collaborative Human Brain Research:

Alterations of membrane phospholipid fatty acid composition in schizophrenia.
Mr Warren Bell, University of Wollongong.

Correlation between neural MPC and D_2, D_4 and 5-HT binding efficiency in schizophrenia.
Mr David Burns, University of Wollongong.

Expression of tachykinin receptors in the brain in schizophrenia.
Ms Virginia Crawter, University of Newcastle.

GABA transporters in schizophrenia.
Ms Sonja Schleimer, University of Sydney.

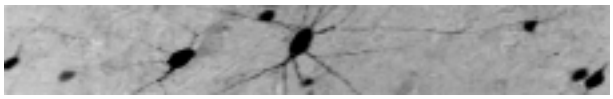
Optimization of low level target antigens.
Ms Kelly Newell, University of Sydney.

■ ***Rebecca Cooper Scholarship Schizophrenia Research Project***

NISAD has initiated and administers the following three-year schizophrenia research doctoral scholarship:

GABA receptors and transporters in schizophrenia.
Hinton T. Department of Pathology, University of Sydney.

Tissue Resource Centre Advisory Committee



Committee Members

Ms Lisa Azizi

NHMRC Network for Brain Research in Mental Disorders (from February 2001)

Ms Margaret Boyes

NISAD Tissue Donor Program Coordinator

Dr Stanley Catts

University of New South Wales (until December 2000)

Assoc. Prof. Scott Clark

South Western Sydney Area Health Service (from February 2001)

Dr Gavin Dixon

NISAD Research Officer

Mr Daren Draganic

NISAD Research Program Coordinator

Mr Andrew Fortis

National Institute for Alcoholism and Alcohol Abuse (from May 2001)

Ms Therese Garrick

National Institute for Alcoholism and Alcohol Abuse

Prof. Clive Harper

University of Sydney (Convenor)

Assoc. Prof. John Hilton

Department of Forensic Medicine

Prof. Graham Johnston

University of Sydney

Dr Maria Sarris

NISAD TRC Coordinator

Prof. Denis Wakefield

University of New South Wales (until November 2000)

Assoc. Prof. Philip Ward

NISAD Scientific Director

Summary of Activities

■ ***Tissue Resource Centre***

The NSW Tissue Resource Centre (TRC) has continued to provide researchers with fixed and frozen brain tissue that is well characterised both clinically and

pathologically for research projects related to schizophrenia. In the 2000-2001 period, tissue was supplied to scientists for twelve different schizophrenia research projects at eleven different sites in Australia and overseas. The focus of the collection remains cases of schizophrenia. However, tissue from normal control cases and other major psychiatric disorders has also been collected to provide important comparative groups. Next of kin consent is sought for all tissue collected by the TRC.

■ *Research Initiatives*

Dr Maria Sarris has continued her study examining the volumes of cortical grey, white matter and deep grey structures in schizophrenia and controls cases. Preliminary results from this research illustrate a decrease in the proportion of cortical grey matter in the schizophrenia group compared to normal controls, which agrees with published MRI studies. The analysis is ongoing.

NISAD has also provided infrastructure support for Ms Therese Garrick's study investigating the volume, density and total neuronal number in the mamillary bodies of people with schizophrenia, substance related disorder (alcohol) and a normal control population. The mamillary bodies are critical in memory processing, yet little is known about them in people with schizophrenia and memory impairment is a common feature in schizophrenia. This study is ongoing. Dr Sarris and Dr Gavin Dixon have been collaborating with Ms Garrick on extending this study to utilise immunohistochemistry on sections of mamillary bodies from schizophrenia cases as neurons of the human mamillary bodies have not been phenotyped to date.

■ *Successful Grant Application*

Infrastructure support from NISAD was an essential element in the successful award of a National Institute on Alcoholism and Alcohol Abuse grant to NISAD-affiliated scientist Prof. Clive Harper for equipment and infrastructure for the TRC. This successful grant application has had positive benefits for the entire TRC, including the schizophrenia section.

■ *Infrastructure Equipment Support*

NISAD provided funding to purchase computer hardware for Dr Maria Sarris at the TRC.

■ *Tissue Donor Program (Gift of Hope)*

Ms Margaret Boyes continued the promotion of the Tissue Donor Program (TDP) and the clinical assessment and consenting of volunteers. Ms Therese Garrick, Ms Lisa Azizi and Mr Jim Sheedy have also provided support.

Thus far sixty eight people have expressed interest in joining the TDP. The Patron Ms Marilyn Mitchell, and Mr Bernard McNair were the first people to join in May 2001. As of 30 June, seven people had consented to join the program.

Following an advertisement in the newsletter of the NSW Branch of the Royal Australian and New Zealand College of Psychiatrists, three psychiatrists agreed to conduct consultations for donors regarding their competency to give informed consent. The Westmead Coroner gave approval for NISAD to collect tissue from the Westmead Institute of Clinical Pathology and Medical Research. Subsequently, Ms Boyes obtained approval from the Westmead Ethics Committee to collect tissue at this facility.

Ms Boyes was invited to present on the development of the NISAD Tissue Donor Program at the Asia Pacific Forum on Brain Banking meeting held in October 2000 in Japan. The presentation was extremely successful and the Tissue Donor Program was described as the program for the region to aspire to in regards to tissue donation.

In May 2001 Ms Boyes attended a training workshop for the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) assessment instrument at the Centre for Clinical Research in Neuropsychiatry in Western Australia.

■ *New TRC Committee Members*

Assoc. Prof. Scott Clark (Area Director of Mental Health, South Western Sydney Area Health

Service), Ms Lisa Azizi (NHMRC Network for Brain Research into Mental Disorders) and Mr Andrew Fortis (National Institute on Alcoholism and Alcohol Abuse) joined the TRC Committee in the 2001-2002 period.

■ *Scientific Publications*

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the submission and publication of the following manuscripts and abstracts:

Garrick T, **Sarris M**, **Harper C**, Kril J, Pamphlett R. Keeping a 'breast' of schizophrenia: Neuronal estimation in the mamillary bodies. *Proceedings of the Australian Neuroscience Society* 2001; 12: 135.

Sarris M, Arianayagam M, **Garrick T**, **Harper C.** Regional brain volumes in schizophrenia – a post mortem study. *Proceedings of the Australian Neuroscience Society* 2001; 12: 233.

■ *Conference Presentations*

NISAD support played a vital role in the development of the schizophrenia research initiatives that led to the following conference presentations/submissions:

Boyes M, Garrick T, Sarris M, Harper C, Ward P. Establishment of the NISAD 'Gift of Hope' program: a prospective post-mortem donation program for people with schizophrenia and healthy volunteers. Presented at the Australasian Schizophrenia Research Conference, Lorne, Victoria, October, 2000.

Boyes M, Garrick T, Sarris M, Harper C, Ward P. NISAD's 'Gift of Hope' program: a prospective post-mortem donation program for people with schizophrenia and healthy volunteers. Invited presentation at Asian Pacific Forum for Brain Banking, Fukushima, Japan, November, 2000.

Sarris M, Arianayagam M, **Garrick T, Harper C**. Quantitative analysis of brain volumes in schizophrenia – a post mortem study. Presented at Cell-to-Society meeting, Sydney, November, 2000.

Garrick T, Sarris M, Harper C, Pamphlett R. Schizophrenia and the 'Breasts of the Brain" (Mamillary bodies). Presented at Cell-to-Society meeting, Sydney, November, 2000.

Sarris M, Arianayagam M, **Garrick T, Harper C**. Regional brain volumes in schizophrenia – a post mortem study. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Garrick T, Sarris M, Harper C, Kril J, Pamphlett R. Keeping a 'breast' of schizophrenia: Neuronal estimation in the mamillary bodies. Presented at the Australian Neuroscience Society Annual Meeting, Brisbane, February, 2001.

Dixon G, Sarris M, Garrick T, Harper C. The New South Wales Tissue Resource Centre. Presented at the American Association of Neuropathologists meeting, Chicago, USA, June, 2001.

Sarris M, Arianayagam M, **Garrick T, Harper C.** A post mortem study – brain volumes in people with schizophrenia. Presented at the American Association of Neuropathologists meeting, Chicago, USA, June, 2001.

Garrick T, Sarris M, Harper C, Kril J, Pamphlett R. Mamillary bodies in alcoholism and schizophrenia. Presented at the Research Society on Alcoholism meeting, Montreal, Canada, June, 2001.

Boyes M, **Mitchell M**. Volunteer brain donation after death for schizophrenia research: consumer and researcher viewpoints. Presented at Australian Institute of Health, Law and Ethics Conference, Melbourne, June, 2001.

■ *Grants Awarded*

NISAD infrastructure support played a vital role in the success of the following grant applications from NISAD-affiliated scientists:

Brain tissue resource centre for alcohol research (project/equipment). **Harper C**. National Institute on Alcoholism and Alcohol Abuse (US$713,000 for three years).

■ *Tissue Resource Centre Projects*

The following schizophrenia research initiatives have received tissue from the NSW Tissue Resource Centre:

Membrane phospholipid composition $5HT_2$ binding in schizophrenia.
Bell W. University of Wollongong, NSW.

Investigation of GABA systems in the pathophysiology of schizophrenia.
Hinton T. University of Sydney, NSW.

Investigation of GABA systems in the pathophysiology of schizophrenia.
Hill H. University of Sydney, NSW.

Cellular abnormalities of posterior cingulate cortex in schizophrenia.
Dixon G. University of Sydney, NSW.

Comparative gene expression profiling and in situ hybridization to find and verify potential genetic causes of schizophrenia and bipolar disorder.
Sipma H. Janssen Research Foundation, Belgium.

Pathogenesis of Borna virus infection in humans.
Flower R. Royal North Shore Hospital, NSW.

Predictors of cognitive deterioration in subclinical memory disturbances.
Martins R. University of Western Australia, WA.

Neural development in stem cell leukaemia.
Smith K. Western Australian Institute for Medical Research, WA.

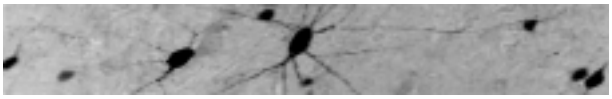
Tachykinin receptors in human brain.
Tooney P. University of Newcastle, NSW.

Membrane phospholipid composition and 5-HT binding efficacy in schizophrenia.
Zavitsanou K. University of Wollongong, NSW.

3D Golgi analysis of the prefrontal cortex and hippocampus in schizophrenia/immunohistochemical analysis for chronogranin A & B expression in schizophrenia brains.
Matsumoto I. Department of Neuropsychiatry, Fukushima Medical College, Japan.

Changes in the nucleus basalis of meyert in schizophrenia.
Halliday G. Prince of Wales Hospital, NSW.

Communications and Data Management Advisory Committee



Committee Members

Dr Gavin Dixon
NISAD Research Officer

Mr Daren Draganic
NISAD Research Program Coordinator

Mr Patrick Johnston
University of Newcastle

Ms Carmel Loughland
NISAD Clinical Measurement Coordinator

Professor George Paxinos
University of NSW

Mr Paul Rasser
NISAD Research Officer (from February 2001)

Dr Paul Tooney
NISAD Research Officer

Mr Alan Tunbridge
NISAD Marketing and Publications Director

Assoc. Prof. Philip Ward
NISAD Scientific Director (Convenor)

Summary of Activities

■ *The NISAD Website*

With NISAD's continued initiation of a wide range of scientific and development activities, enhanced means of communication between scientists, and with consumers and the wider community is essential. The NISAD web site has been a critical element in disseminating information on NISAD's schizophrenia research activities, fundraising and awareness campaigns, and other items of interest to the general public. In late 2000 the NISAD web site was redeveloped and relaunched with a greater amount of information about the Institute's activities whilst being significantly easier to navigate.

Throughout the year the NISAD web site has been regularly updated to provide the very latest information from the Institute together with information about schizophrenia research worldwide. In the past year the web site has continued to receive substantial interest nationally and internationally, and

has been viewed in over fifty countries worldwide. Approximately two hundred people requested further information on NISAD, and a number of people registered for the NISAD Schizophrenia Research Register via the web site.

■ *Proceedings of the First Australian Schizophrenia Prevention Conference*

The Proceedings of the First Australian Schizophrenia Prevention Conference were published in the *Australian and New Zealand Journal of Psychiatry* in November. A PDF version was made available to the general public via the NISAD web site in 2001.

■ *The NISAD Schizophrenia Research Database of NSW and the ACT*

The NISAD Schizophrenia Research Database of NSW and the ACT has continued to grow and now holds information from over fifty schizophrenia research projects on the NISAD web site. The Database aims to provide a single source of information for neuroscientists, clinicians, consumers and carers about every schizophrenia research project currently under-way in New South Wales and the ACT.

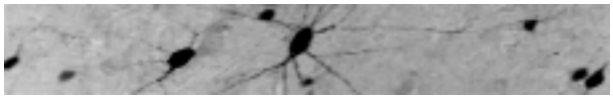
■ *NISAD Brain Atlasing Initiative*

In May 2001, the Communications and Data Management Committee recommended that the future development of the NISAD Brain Atlasing Initiative should be undertaken by the Neuroimaging Panel, reflecting the expertise of this Panel (see Neuroimaging Report).

■ *Future of the Communications and Data Management Committee*

In the course of preparing budgets for the 2001-2002 period it became apparent that in the coming year the two major projects that the Communications and Data Management Committee were overseeing (the NISAD web site and the Brain Atlasing Initiative) would be facilitated by other NISAD Committees. Therefore the Communications and Data Management Committee was disestablished.

NISAD/NSW Health Partnership Project



Steering Committee Members

Mr Ian Harrison SC
Chairman - NISAD

Dr Stan Catts
Director - NISAD

Mr Peter Nichol
Consumer advocate

Mr Don McDonald
NISAD/NSW Health Partnership Project Director, Deputy Chairman - NISAD

Ms Margaret Boyes
Tissue Donor Program Coordinator - NISAD

Assoc. Prof. Philip Ward
Scientific Director - NISAD

Mr Mark McBride
Workplace representative

Ms Marilyn Mitchell
Consumer Advocate

Mr Bernard McNair
Schizophrenia Fellowship Council

Ms Dymphna Peterson
Chair - Association of Friends and Relatives of the Mentally Ill

Mr Tom Rosser
Director - NISAD

Following an unprecedented joint approach to the NSW Government by Mr Garry Brack, CEO, Employers First, and Mr Michael Costa, Secretary NSW Labor Council, the Hon. Craig Knowles MP, Minister for Health, decided to commission Mr Don McDonald, Deputy Chairman of NISAD, to work full time as Director of a Partnership Project between NISAD and NSW Health.

The project, which commenced on 30 October 2000, is for a 3-year period and has the objectives of raising awareness of mental health in the workplace as well as raising funds to support the research program of NISAD.

At 30 June 2001, the Partnership Project's 8 months of activities had produce a number of significant advances for NISAD:

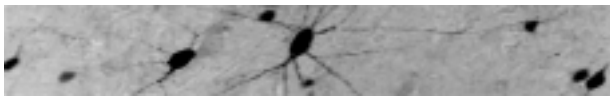
- The building of a new, high profile NISAD Board of Directors with 6 new corporate/community leaders joining the board.
- NSW Health committment of $1M pa recurrent infrastructure funding to NISAD from 1 July 2001.
- Many workplace/community presentations involving increased general awareness of schizophrenia, and direct donations to NISAD.
- $177,000 raised for NISAD research plus a further $90,000 committed over the next 2 years through the NISAD 3-year Corporate Sponsorship Program - launched on 24 Apri1 2001 at Parliament House, Sydney.

Millions of people were reached though newspaper articles, TV and Radio interviews, union journals, ethnic publications, workplace 'flyers' and multi-lingual publications. Some of the special features of the first year included:

- Very strong ongoing support from the Construction, Forestry , Mining and Energy Union (CFMEU).
- Good support from the Rotary Clubs of Sydney Cove, North Sydney and Parramatta.
- Support obtained from the NSW Club Industry through Clubs NSW, The Leagues Clubs Association and the Club Managers Association.
- Good support from regional and country centres with a number of visits to the South Coast, Newcastle and various country centres.
- Special support from the Mayor of Marrickville who donated the proceeds of his 2001 Golf Day to NISAD totaling $12,000.
- The decision of the CEO of Baulderstone Homibrook, Mr Peter Dempsey, to donate the proceeds of a major function inside the M5 tunnel to NISAD research.

The Partnership Project has made an energetic and productive start to its mission, and will be seeking to take further initiatives during 2001-2002 to raise community awareness, combat stigma, and attract support for NISAD's schizophrenia research.

Marketing and Development Committee



Committee Members

Mr Tony Dicken (from May 2001)
Ms Judy Gibson (until Dec. 2000)
Mr Graham Jones (until Dec. 2000)
Mr Don McDonald
Ms Trish Oakley (from May 2001)
Ms Erica Power (until Nov. 2000)
Mr Tom Rosser
Mr Alan Tunbridge (Chair)
Ms Zoe Webster (from Jan. 2001)
Mr Dick Whitehead (from May 2001)

In a year of significant developments, certainly the most momentous were the announcements by NSW Minister for Health Craig Knowles of funding for the NISAD/NSW Health Partnership Program, and that direct annual funding to the Institute would be increased to $1M. Details of these developments are covered in the Partnership Program Director's report.

These two victories came as an appropriate climax to the workplace campaign led by NISAD Deputy Chairman Don McDonald, and championed by the Construction Forestry Mining Energy Union. The Minister made his announcement of increased annual funding at the Parliament House Dinner event held in April to launch the NISAD Sponsorships Program. This event was made possible through an unprecedented collaboration of the corporate lobby group Employers First and the NSW Labor Council.

The Marketing & Development Committee (M&DC) played a supporting role in this epic and multi-faceted campaign by providing banners, brochures, invitations, sponsorship plaques, event coordination, and media liaison. Along with a number of NISAD scientists and Board members, M&DC members spoke at a number of Sydney construction sites, and NISAD's successive Development Coordinators Erica Power and Zoe Webster were responsible for much of the organisation.

In April 2000, BT Financial Group appointed NISAD as a 'Community Partner' able to raise funds from staff on the assigned day of 8 December. Initiated by NISAD Research Program Coordinator Daren Draganic, this contact resulted in a donation of over $30,000, and the gift of more than 40 computers.

NISAD's Christmas Appeal, featuring a personal letter from Jack and Judy Gibson, was mailed to supporters in November, raising over $15,000 in donations. Also in November, digital design group Markus Dilectite assisted in redesigning the NISAD website.

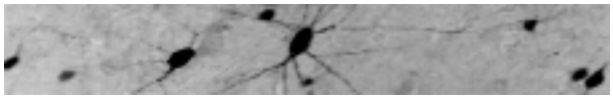
Covering these events, and NISAD's significant scientific progress, the HeadLines newsletter was published and distributed in August, January and May. By June 2001, the mailing list had risen to over 4,000 names, an increase of around 1,000 over the year.

The year 2000 also saw the departure of Judy Gibson from the Committee. Since 1993, together with her husband Jack Gibson, Judy played a vital role in making the idea of a NSW schizophrenia research institute the reality it has become.

In November, Development Officer Erica Power left NISAD to start a family. Her contributions to the development of the Institute's marketing database; special events management, and many fundraising initiatives have been inestimable. In January, the Committee welcomed NISAD's newly appointed Development Officer Zoe Webster, who undertook the management of the database, fundraising projects and special events. Other new members joining their talents to the Committee were Tony Dicken, Trish Oakley, and Dick Whitehead.

The Financial Year ended as momentously as it had begun, with the appointment of six new and highly influential Board members, and the prospect of a major review and redefinition of NISAD's structure. The M&DC looks forward to working in full support of the innovations to come, and to the benefits they will bring to Australian schizophrenia research.

Donations 2000-2001



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Bankshouse Mental Health Carers Support Group
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Papadellis, Mr Emanuel
Patchett, Mr Steven
Paton, Dr Michael
Peatfield, Mr & Mrs J
Peric, Mr Duro
Peters, Mrs Joan
Peterson, Dr & Mrs B.H.
Peterson, Ms Dymphna
Pflieger, Mr Heinz
Piggott, Mrs Joyce
Poignand, Mrs Ann
Poulos, Mr James
Powell, Mr & Mrs D & J
Powell, Mrs Frances
Power, Mrs Erica
Powers, Ms Vera
Pugh, Mr William
QBE Insurance
Ramage, Mr Malcolm
Rares, Mr Steven
Rasche, Miss Erica
Rawson, Mr John
Renshaw, Mr Angus
Restaurant & Catering NSW
Restom, Mr & Mrs Conway & Jill
Richardson, Ms Pat
Richardson, Ms Terri
Rigozzi, Mr & Mrs A & J
Riverwood Legion & Community Club
Robinson, Dr Steve
Robinson, Ms Anne
Robinson, Ms Wendy
Roche, Mrs Eileen
Rockey, Mrs Jeanne
Roper, Mr & Mrs Duncan & Mirrel S.
Rose, Ms Veronica
Rosenstrauss, Mr Al
Rosser, Mr Tom
Rowe, Mr Jim
Rowland, Mrs Maureen
Russell, Ms Anna
Rutherford, H
Ryan, Mr & Mrs Roy & Carolyn
Ryan, Ms J.C.
Salisbury, Mr Brian
Salt, Ms Megan
Savage, H
Sceales, Mrs P
Scott, Mr & Mrs Peter & Carol
Scott, Mrs D.J.
Scroop, Ms Megan
Sears, Mr Ronald
Serasinghe, Mr/Ms I M
Sharpe, Mr & Mrs B & J
Shaw, Mr/Ms G M N
Shaw, Ms Margaret
Shepherd, Mr Michael
Shore, Ms Penny
Simiana, Mr Joseph
Simpson, Mrs Barbara
Skerritt, Dr P.
Sloman, Mrs Joan
Somerville, Mr Dave
Sommerfeld, Mr Peter
Sosso, Mr Livio
Speedy Ceilings (NSW)
Spiers, Mrs Jean
Sprigge, Mrs Janet
Squires, Ms Cheryl
Stark, Mr/Ms F
Steel, Mrs Lisa
Still, Ms Megan
Stillman, Mr & Mrs K
Stowe Australia
Structurial Concrete Services
Strunk, Mr & Mrs AC & KG
Strybis, Mrs Diane
Sullivan, Miss Kerrie
Syrmlis, Ms Kerry-Anne
Szpajchler, Mr/Ms M
Talbot, Mrs Evalyn
Tame, Mr Keith
Tanner, Mrs Kate
Taylor, Mr Lloyd
TCFUA
Terrafirma Terrazzo
Terry, Mr John
The Police Department Employees Credit Union
Thompson, Mrs Rhoda
Titley, Dr Keith
Tooney, Dr Paul
Trump Property Maintenance
Tunbridge, Mr Alan
V & R Panzarino
Vassall, Mr Charles
Vautin, Dr Joy
Venvale Partners
Vermeulen, Ms Wendy
Vinci, Mrs Maria
Viskich, Mrs Stella
Vogelnest, Mrs Pamela
Waddy, N
Walford, Ms Gemma
Walker, Mrs Elaine
Ward, Prof Philip
Warleigh, Mr Len
Waterhouse, Mr Colin
Watson, Mrs Gwen
Webb, Mr Paul
Weisser, Mrs Hilary
Westwood, Mrs Patricia
White, Ms Kristine
Whitehead, Mr & Mrs Dick & Judy
Wilding, Ms Melanie
Williams, Ms Cheryl
Willings, Ms Salli
Wilson, Mrs Dorothea
Wiseman, Ms Maree
Wollongong Fabrication
Wong, Ms Katherine
Woodward, Ms Sue
Workforce Westfields Hornsby Project
Wrathall, Mr/Ms J K
Wright, Mr & Mrs Robert & Carol
Wylie, Mrs Kenneth
Wylie, Ms Jan
Young, Mr Ken
Young, Ms Christine
Young, Ms Linda
Young, Ms Ruby
Zana Concrete