

CoRE of The Matter



NATIONAL RESEARCH CENTRE FOR
GROWTH AND DEVELOPMENT

19 AUGUST 2004

EDITION NO. 4

Contents

| | | |
|---|----------------------------------|---------------------------------------|
| 1. FROM THE DIRECTORATE | 2. OFFICIAL OPENING OF THE NRCGD | 3. CHIASMA |
| 4. REPORT ON MEETING OF MAJOR PROJECT 6 AND 7 RESEARCHERS | 5. INTRANET DEVELOPMENTS | 6. RECENT BOARD OF GOVERNANCE MEETING |
| 7. UPCOMING DATES | 8. CONTACT | |

1. From the Directorate

The Directorate Team would like to welcome two newcomers. Firstly, Tracey Tarr who is now working half time for the Centre as Communications Officer. Tracey, who is already known to many of you, will increasingly take responsibility for 'The CoRE of the Matter' and Website as well as growing her role in event organisation. Secondly, Neil Prichard (until recently CEO of LandCorp) will take on the challenging role of Contracts Manager. We anticipate that Neil will be putting a considerable amount of time into the '04 contracts in the short term but that his role will decrease as contract management moves more towards a maintenance function.

It has been another very busy month. Quite clearly the Official Opening by the PM was a highlight and we would like to thank all those who had a role in organising or who attended for helping to make the day such a success.

This month we move into the '05 Business Planning round which will begin on August 23rd with a Science Strategy Day in Auckland.

Another key Diary Date is the upcoming visit of Sir Robert Winston (September 3 – 6). Various events are planned. Please contact Pandora Carlyon (phone (09) 373 7599) at the Liggins Institute for further information.

Please read on for further information on some of the month's highlights.

With best regards, Steve Hodgkinson

2. Official Opening of NRCGD by Prime Minister Helen Clark on 30 July 2004 at the Liggins Institute

Overview of the Opening

The proceedings began with the speeches, unveiling of the plaque and presentation of the Annual Report.



Professor Gluckman then led the Official Party on a tour of facilities. Of obvious interest to the PM was the Paykel Research Centre including Dexa scanner and also the Partnership Programme with Teachers for which new teaching facilities are under development on the Ground Floor of the Liggins Institute.



Craig Jefferies demonstrating the Dexa Scanner.



Discussions on the future use of the ground floor suite as a teaching facility to increase awareness of biomedical research and its value in high school students. The group includes the

Undoubtedly the highlight for staff though, and I believe also the PM, was the opportunity to meet researchers and discuss current work around the posters.



Here Helen Clark discusses peri natal biology with Professor Jane Harding and PhD student Ayla Graf of the Liggins Institute



Professor Mike Dragunow of the Faculty of Medical and Health Sciences discussing his research on the role of immune processes in neurodegenerative diseases with the PM.



Professor Gluckman discussing contribution of key University of Otago research partners Christine Winterbourne and Tony Reeve with the PM.

The Prime Minister also gave generously of her time, pausing for a cup of tea and photographs here with PhD students Rene Corner and Paul Kenyon from Hugh Blair's Massey University NRCGD team.



There follows the press release that accompanied the Opening.

NATIONAL RESEARCH CENTRE CELEBRATES FIRST YEAR

The National Research Centre for Growth and Development (NRCGD), one of seven government funded Centres of Research Excellence (CoRE), celebrated its first year of operation by inviting the Prime Minister, Helen Clark to officially open new headquarters at the Liggins Institute in Auckland.

Welcomed by NRCGD Director, Professor Peter Gluckman FRS and Mrs Alison Paterson, Chairperson of the NRCGD Board of Governance, the Prime Minister was presented with the NRCGD Annual Report and addressed an audience of more than 100 dignitaries from the Universities of Auckland, Otago and Massey and AgResearch. She then toured the facilities, visiting

laboratories and discussing the seven major research projects being undertaken by NRCGD personnel.

In her speech, the Prime Minister commented on the unique, inter-institutional nature of the NRCGD.

"This Centre of Research Excellence has brought together some of the best minds in the country in their respective fields, from some of the best research institutions, to tackle issues of both national and international importance.

"One of New Zealand's key strengths in the future will surely be our ability to apply our longstanding expertise in the sciences and research from which biotechnology stems in an innovative way. This Centre is evidence of that: it doesn't see boundaries between agri-biotech and medical biotech: it sees opportunities for synergies. It doesn't see differences between disciplines: it sees complementarity," Ms Clark said.

Professor Peter Gluckman said that the NRCGD is playing a major role in understanding the biology of growth and development which is crucial to reducing the disease burden both in New Zealand and globally.

"Such research can have major social and economic benefits through contributions to our health system and to our budding pharmaceutical industry. Growth and development is the basis of the pastoral economy and our research also aims to use our leading edge to enhance productivity in pastoral agriculture.

"We are trying to capitalise on the internationally recognised strengths that New Zealand scientists hold in the science of growth and development and in fields extending from genomics to systems biology. We are here to exploit the latent synergies that were hidden until now because the tools to create inter-institutional and interdisciplinary activity were just not there before" Professor Gluckman said.

All in all a really excellent and memorable day in the Centre's development.

For full transcripts of the Prime Minister's and Professor Gluckman's speeches at the Opening please refer to the Website (www.growthcentre.ac.nz). For further information, please contact Tracey Tarr, NRCGD Communications Officer, phone (09) 373 7599 ext 84489. Other scenes from the opening will shortly be posted on the website.

3. Chiasma

Chiasma is a new student led initiative aimed at improving the connectedness and preparedness of 'biotech' students for careers in the biologically based industries. Chiasma has ambitious goals related to student development which have much in common with those of the Centre and at a recent meeting the NRCGD Board of Governance made the decision to sponsor Chiasma. There follows an introductory statement from Priv Bradoo of Chiasma. Enquiries related to this initiative should be addressed to Priv at the address below and copied to Tracey Tarr.



Chiasma: The New Link in Biomedical Enterprise is a student-led initiative of the FMHS PGSA, run in conjunction with its university partners: the Faculty of Medical and Health Sciences, the School of Biological

Sciences, the Bioengineering Institute, and the Business School, and its foundation sponsor, the National Research Centre for Growth and Development.

Chiasma has been created to help YOU cross over to the age of biotechnology. This initiative aims to address the long standing need for well-rounded, enterprise-savvy biomedical scientists in New Zealand, and also endeavors also to be a focal point for all biomedical related activities both academic and commercial.

Our programs include:

- a free two-day intensive professional development program to help enhance your employability skills, and increase awareness of alternative careers after a postgraduate degree.
- a chance to win \$5000 in cash by submitting your own novel biotech idea, and gain direct entry into spark* (The University of Auckland Entrepreneurship Challenge) to turn your idea into a world-class Biotech enterprise.
- Bio-Tech expos featuring top level executives from industry: a great networking opportunity for employment and recruitment options
- free membership into NZ BIO (the hub for all bio-tech companies in New Zealand)
- constant updates on our website on academic careers vacancies around the world, and biotech related events/seminars within and outside The University of Auckland
- an opportunity to build NZ-wide links amongst biotech students through our partnership with the National Research Centre for Growth and Development

Chiasma is the beginning of a journey of enterprise, and an opportunity to expand your horizons...

Membership of Chiasma is FREE. To register now and find out more, please visit our website:

www.chiasma.auckland.ac.nz, or contact:

Privahini Bradoo

CEO, Chiasma

Tel: 021 128 0329

Email: p.bradoo@auckland.ac.nz

4. Joint Meeting of Major Projects 6 and 7 Researchers – 30 July 2004.

- Major Project 6 - 'Prevention of Brain Injury in Newborn Babies'
- Major Project 7 - 'Treatment of Neurodegenerative Diseases in Adults'

There follows a technical report on the meeting.

Attendees

Hannah Gibbons (HG), Jo Lim (JL), Ursula Byrne (UB), Pritika Narayan, Dr Tony Kettle (TK), Professor Christine Winterbourn (CWin), Professor Mike Dragunow (MD), Professor Richard Faull, Dr Henry Waldvogel, Ghassan Magzhal, Assoc Prof

Chris Williams, Sumudu Ranasinghe, Tanya Modersheim, Larissa Christophidis.

9 am. Pharmacology Dept. Discussion Room.

The topic of discussion centred around Ursula's results showing that myeloperoxidase (MPO) is elevated in neuritic plaques and tangles and neurons in Alzheimer's disease (AD) brain, but not in normal post-mortem human brain. Immunostaining was particularly high in the hippocampus and looked similar to that observed for Tau. A number of experiments were planned:-

1. There was a consensus for developing an *in vitro* model of MPO expression by neuronal cells so that we can begin to dissect out how MPO is induced and what it is doing to the nerve cells as well as the associated cells in the brain. MD has spare wells in various plates of cells used in other studies (eg: SKNSH human neuroblastoma cells exposed to vehicle, okadaic acid and amyloid; tau transfected Neuro2A neuroblastoma cells; hNT human neurons; co-cultures of BV-2+SKNSH cells). Anti-MPO was added to cells 2 Aug. These results look interesting as it appears that okadaic acid increases MPO staining in SK-N-SH human neuroblastoma cells (see below). Okadaic acid blocks protein phosphatase 2A and is used to induce tau aggregation *in vitro* and *in vivo*. Of course this staining might just be non-specific and HG plans to conduct a western blot to test this.
2. Look for nitration of proteins (with anti-nitrotyrosine) in BV-2/SKNSH co-cultures and in AD human brain (need to obtain a good nitro-tyrosine antibody).
3. Send cell pellet (on dry ice) from BV2/SKNSH LPS-treated co-cultures for determination of nitrotyrosine by MS (?) to TK/CWin (HG).
4. send lysates to TK and CWin for cell carbonyl assays

10.15 am. Anatomy Dept Microscopy Lab.

Viewing of MPO slides. Specific studies:

1. Look for Tau/MPO double labels.UB
2. Perform western blots for MPO on AD brain (await protocol from TK for lysates) – HG+UB.
3. Lysates for TK/CWin prepared with special buffer – MPO activity and extraction of AD-MPO (HG+UB).
4. Look at MPO in Tauopathies – this will answer whether amyloid is required for MPO expression or whether only tau aggregation required (UB).
5. Filter Retardation assay/immunoprecipitations on MPO and Tau (HG,UB)

11 am. Liggins Institute.

Discussion focused on P3 and P21 hypoxia models developed by theme 6 scientists.

Topics/experiments covered were:

1. Immunohistochemical staining of P3 and P21 rat brains with MPO antibody, to be done in Auckland. A positive control using neutrophils isolated from rat blood could be used if preliminary staining showed nothing to confirm antibody cross-reactivity with rat. Studies can begin on archived tissue. Also possible detection of other oxidative stress markers such as chlorotyrosine and HNE (note: formaldehyde cannot be used). Chris was to speak to Ernest and Arjan with regards to alternative fixation techniques.

2. Brain tissue from control and experimental hemispheres from P21 and P3 rats are to be snap frozen and sent down to Christchurch for biochemical analysis. Discussion highlighted the benefit of the model containing an internal control. Possibilities of looking at a time course, starting with maximum insult (36 hrs) as well as earlier time points. Animals/specimens to be available in approx. 3 months.

3. Hypoxia studies with either E18 mixed cultures (TM) or neuronal/glial co-cultures (HG).

12 pm. Function Room, Café, Medical School. Discussion over Lunch.

The event was finished off with a lunch/discussion session in the function room at the Medical School Café. This was a great way to finish off a most enjoyable and productive meeting.

Afternoon: Discussions with Tony Reeve (TR) regarding human DNA array studies on primary human astrocytes and NT2A's human astrocytes.

Simple Expt: Astrocytes respond to mechanical injury by hypertrophy. Using a pipette scratching method we have discovered that c-Fos is induced in "scratched" astrocytes suggesting that changes in gene expression are likely. This is a very simple model and we propose to investigate changes in gene expression after scratching at 1hr (look for

immediate-early genes) and 24 hrs (late response genes). Cells will be plated in 6-well plates and scratched a number of times across the plates to induce mechanical trauma to a large % of the cells. Controls will not be scratched. 1 and 24 h later RNA will be extracted using guanidium thiocyanate-phenol-chloroform and sent to TR for cy3/cy5 labelling and Array studies.

5. Intranet Developments

With the recent creation of the NRCGD website (see www.growthcentre.ac.nz), plans are now underway to extend on the website and establish an Intranet capability. This is intended to create a platform for internal business processes in the Centre. An initial meeting has been held with the University of Auckland IT Development Group.

6. NRCGD Board of Governance Meeting, Ruakura Research Centre, Hamilton – 10 August.

The Centre's Board held its August Meeting at the Ruakura Research Centre hosted by AgResearch Ltd. Our thanks and best wishes go to Dr Andy West who has only recently taken over the role of CEO at AgResearch. Before the Board Meeting Peter Gluckman and Steve Hodgkinson met with Andy to discuss strategic collaborative opportunities. After the Board meeting the Board were hosted on a tour of Centre associated research at Ruakura and the Transgenic Facilities at Ruakura. Our thanks too Jim Peterson in particular for hosting the visit to Ruakura.

7. Upcoming Dates

- 23/08/04 Strategic Science Planning Day at The Liggins Institute, Auckland
- 03/09/04 Lord Robert Winston visiting The Liggins Institute
- 13/10/04. Official Opening of NRCGD in Christchurch

8. Contact

Contributions to the next Newsletter are most welcome and should be sent to Tracey Tarr (t.tarr@auckland.ac.nz) by the second Friday of each month. If you would like to subscribe or unsubscribe to this newsletter or know of someone else who may want to receive a copy please contact t.tarr@auckland.ac.nz