

JUNE 2009

TRANSLATIONAL MEDICINE RESEARCH COLLABORATION — an interview with Dr Garry Honey

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Special points of interest:

- ◆ SINAPSE has been designated a supplier to the Centre for Evidence based Purchasing (CEP) which is an organisation of NHS PASA that works with the Department of Health.
- ◆ 12 SINAPSE PhD Studentships awarded
- ◆ Fiona Godsman to work with SINAPSE on Marketing and Business

Dr Garry Honey joined the Translational Medicine Research Collaboration (TMRC) in April 2008 as one of three translational scientists. His area of responsibility covers the TMRC Neuroscience projects. Garry previously worked at the University of Cambridge and Institute of Psychiatry, and has 12 years experience in the combined application of neuroimaging, cognitive function and pharmacological challenge studies.

Garry explained that the TMRC is a unique collaboration between four Scottish universities, four NHS trusts, Scottish Enterprise and the pharmaceutical company 'Wyeth'. The aim of TMRC is to ensure that Scotland leads on providing an excellent environment for translational research which can be described as 'bench to bedside' research. Drug development is a high risk process, with over 90% of compounds failing to make the transition from preclinical models to efficacy in humans when tested in Phase II trials. The

aim of the research undertaken by the collaboration is to minimize the failure rate at this critical point by increasing our understanding of the translational development from animal models of disease to clinical endpoints.



DR GARRY HONEY

To this end, the work of the TMRC aims to identify 'biomarkers'. For Wyeth, biomarkers are objective measures to indicate whether the target is relevant to the disease, whether the drug sufficiently engages its target and at what dose, the functional consequences of engagement, the selection of appropriate patients for the drug, and predicting clinical

outcome in individual patients. Imaging plays a critical role in each aspect of this process. This is particularly the case in neuroscience, where it is central to such basic questions as whether the drug has reached the brain, or has any clinically useful effects at the intended sites of action. Given the industry-wide focus on translational medicine as the way forward in reducing Phase II attrition rates, this is an exciting opportunity for imaging research in Scotland to be at the forefront of clinical applications.

Garry states that through large-scale collaborative projects such as TMRC and SINAPSE, Scotland is ideally placed to meet these challenges, since such ambitious questions will undoubtedly require the combined and co-ordinated efforts of multi-site programs, harnessing the considerable expertise Scotland has across multiple imaging modalities and related disciplines, which can be the envy of researchers in other parts of the UK.

ANNUAL SCIENTIFIC MEETING

The SINAPSE Annual Scientific meeting on the 17th June 2009 will be a day of keynote presentations by international speakers across topics in human imaging and 14 proffered oral papers and 50 posters presentations on imaging projects taking place throughout the SINAPSE network. Topics include MR (structural, diffusion, perfusion, functional, permeability,

vascular); PET and SPECT; EEG; MEG; image analysis, e-science; multi-centre studies; stroke; dementia; ageing; psychosis; mental health; diabetes; oncology; vascular imaging. The day is organized into four sessions covering Molecular Imaging and Radiochemistry; Clinical Applications, Functional and Structural imaging of the Brain; Novel and Emerging

Techniques. The invited speakers include Prof. Andre Luxén, University of Liège, Belgium; Dr Alan Moody, Radiologist-in-Chief, Sunnybrook Health Sciences Centre, Toronto; Prof. Dorothee Auer, University of Nottingham, Professor Geoff Parker, University of Manchester; Prof. Keith Muir, University of Glasgow, Prof. Neil Roberts University of Edinburgh.

The following Universities are charitable bodies, registered in Scotland, with registration numbers as below.





E-science institute

On March 18th SINAPSE and the e-science institute hosted a meeting called MIDAS, Medical Imaging Data Access and Sharing.

The meeting brought together key representatives from the National Health Service (NHS) and Higher Education Institutes (HEIs) interested in management of research imaging data in both domains and at the interface between the two sectors.

Participants reviewed the current situation in Scotland including an overview of the National PACS (Picture Archive and Communications

System) and local NHS-HE (Higher Education) solutions.

The discussions highlighted the potential benefits of a more coordinated NHS-HE medical imaging data access policy and the added value this would bring by enhancing opportunities for use of medical imaging data in research in the NHS through the e-Health strategy.

This meeting provided a great forum for discussing the needs and challenges for researchers working with medical imaging research and key metadata. The forum enabled a comprehensive discussion of the broad range of aspects in-

involved in this: networks, data protection, ethics, etc. by bringing together representatives from both sectors - NHS and HEIs.

A report of the meetings has been produced and circulated to the CSO, Caldicott Guardians and PACs—IT specialists across NHS and HE sectors. If you would like to receive a copy please contact Dr Janet De Wilde on janet.dewilde@staffmail.ed.ac.uk.



getEMOTIONAL at SENSATIONS

SINAPSE has developed a public engagement workshop called "getEmotional" that provides an opportunity for families with young children to find out more about human expression of emotion and how scientists use imaging tools in their research to see the emotional brain at work.

The first public "getEmotional" event was held at the Royal Botanical Gardens Edinburgh on 7th March 2009. Children and adults alike discovered more about the brain through activities such as "making a

neuron" and "making an emotional dial". This event was part of the National Science and Engineering Week and was supported with funds from both SINAPSE and Edinburgh Neuroscience. Edinburgh Neuroscience has an umbrella group of public engagement events called "getBrainy". The event proved very popular with approximately 250 people visiting.

The second event was held in Sensation Science Centre in Dundee as part of Brain Awareness Week on 21st

March 2009. Both staff and students from the University of Dundee picked up the baton and incorporated the emotion-themed activities into the broader scope of Brain Awareness Week which included activities and experiments covering a wide variety of topics such as attention and motor control. SINAPSE PhD students who have helped during these events have gained an enormous amount of experience from explaining the brain in a clear and entertaining manner.



KT Scotland and SINAPSE KT Activities

On Friday 3rd April the KT Scotland Conference was held at University of St Andrew's. The picture shows Dr Janet De Wilde and Dr Alison Murray at the SINAPSE stand. Dr Alison Murray gave a presentation on the Knowledge Transfer activities of SINAPSE, which covered interactions with industry, NHS and other sectors.

An example of SINAPSE knowledge transfer with industry is Toshiba Medical Visualisation Systems (TMSV). SINAPSE and TMSV have set

up a staff exchange programme whereby their staff spend time in the clinical environment and SINAPSE staff/students can spend time embedded in an industrial environment. This is of enormous benefit to both partners as university researchers can understand how their research can be translated into industry and the tough requirements of commercial software and TMSV can learn what a clinician really needs to see in an image to aid diagnosis and they also have time in an envi-

ronment that is conducive to explore new ideas.

Another example of SINAPSE KT is our work with Lux Innovate, a Scottish SME which requires knowledge of image analysis. SINAPSE researchers have spent many years studying the challenges of medical image analysis, in particular, brain images. This is invaluable expertise that can be shared with industry

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SINAPSE at ST ANDREWS

Dr Arlene Astell is the SINAPSE Lead at the University of St Andrews. Her research focuses on developing interventions to support and maintain independence and optimal quality of life in ageing. She works with older people, including those with a diagnosis of dementia, to understand the patterns of spared and impaired skills and how these impact on everyday activities, social behaviour and interpersonal relationships. This information forms the basis of novel approaches, including the creative use of technology, to minimize and mitigate disorders of ageing. Read about her SINAPSE student below.

The SINAPSE Deputy at St Andrews is Dr Ines Jentsch who is Principal Investigator in the EEG lab. Ines' collaborators who are based in St Andrews are Reiner Sprengelmeyer, Barbara Dritschel, Steve Reicher, Dave Perrett, Malcolm MacLeod, Mike Oram. There are two PhD students in the Lab are Joana Hissa and Blair Saunders.

The lab is equipped with a 72-channel BIOSEMI Active-Two Amplifier EEG system. The analysis software used is BESA, EEGlab, Konstanz-Format and the Stimulus presentation software is ERTS.

This equipment is used to study behavioural measures (response times, error rates), and electrophysiological markers (Event-related Brain Potentials: ERPs). This allows the study of mechanisms underlying visual perception, attention, motor preparation, and executive control. ERPs are particularly helpful to access the covert brain processes when no behavioural measures are available. Also chronometrical ERP measures with their millisecond resolution more direct estimates for the duration of sensory, decision, and motor execution stages.



Dr Arlene Astell

EEG Research

In the EEG Lab at St Andrews, the research focuses on how people's current behaviour is affected by past events. For example, people are usually faster in current performance when they have actively expected or anticipated the forthcoming event. Studies have been undertaken examining behavioural and electrophysiological correlates underlying active expectancies and automatic.

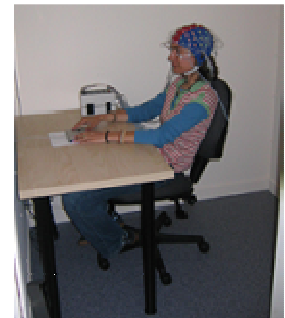
One major factor contributing to the built-up of expectancy is event preparation. In several

studies undertaken in collaboration with H. Leuthold (University of Glasgow) effects of movement preparation have been investigated. More specifically, covert brain processes and structures involved in advance movement preparation using the response precuing technique have been examined.

People's current behaviour is also strongly affected by previous processing conflict or incorrect responding. When a person experiences conflict or makes a mistake, they usually

adjust their behaviour to avoid future conflict or errors. Mechanisms underlying control adjustments, are currently being studied, focusing on effects of posterror slowing and slowing after response alternations. This research aims to revise current models on cognitive control and to introduce a broad framework on adjustment mechanisms in human performance.

More recently studies of the social aspects of cognition with a focus on emotional processes have been undertaken.



Dr Ines Jentsch

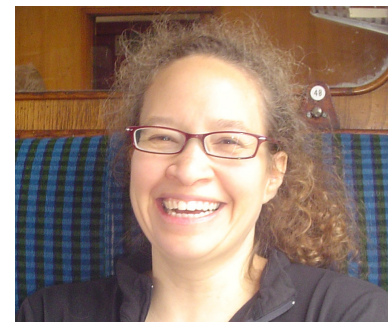
Meet The SINAPSE PhD Student

Harriet has been a registered educational psychologist in Canada for over 10 years. She studied Psychology (B.A.), at the University of Ottawa, Ontario and School and Community Psychology (M.Ed.) at the University of Calgary, Alberta. Her work in cognitive assessment of children led to a growing interest in brain functioning and its relation to cognition. Harriet and her family moved to Scotland in September 2007, to pursue an M.Sc. in Human Cognitive Neuropsychology at the University of

Edinburgh. Her M.Sc. project focused on the cognitive functioning of individuals with Motor Neurone Disease.

Harriet started her SINAPSE PhD in October 2008, under the supervision of Dr. Arlene Astell from the School of Psychology, University of St. Andrews and Dr. John Petrie from the Medical School, University of Dundee. Her PhD project focuses on gaining a better understanding of the reasons for the influence of type 1 diabetes on cognitive

functioning by using cognitive assessment and both functional and structural MRI. Her study will specifically explore the impact of long-term hyperglycaemia on cognitive function. By combining cognitive and imaging studies, she aims to gain valuable insight into the causes of cognitive functioning deficits in type 1 diabetes that will influence patient management and care.



Harriet Johnson

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SINAPSE NEWS

Marketing and Business Development



FIONA GODSMAN

SINAPSE EVENTS 2009

17th June 2009
Annual Scientific Meeting
Royal College of Physicians
Edinburgh

24-26th June 2009
Enterprise Summer School
The Westerwood Hotel
Cumbernauld

27-29th October 2009
SINAPSE PhD Induction
The Burn
Glenesk

See website more SINAPSE
events

SINAPSE is pleased to announce that Fiona Godsmán has been appointed to support SINAPSE's marketing and business development efforts.

Fiona has 18 years of sales, marketing and business development experience in the pharmaceutical and biotechnology industries and has held senior global positions in both small and large organisations. She also has several years of research and laboratory experience, in

both the NHS and academia.

She is an active participant in biotech/bioscience communities and has been involved in organising several international conferences. She is a founding member of Nexxus, the Scottish bioscience network and still serves as vice-chair on the steering committee. She is also served on the Bioindustry Association steering group in Scotland for eight years.

Fiona said "*The imaging*

and neuroscience research being undertaken here in Scotland is truly world class and I am very excited about helping SINAPSE to build its global reputation and encourage new collaborative ventures."

Fiona runs Kelados, a marketing consultancy business specialising in the life sciences industry. She was educated at Glasgow and Paisley Universities, has a BSc (hons) in Biology and a Diploma in Marketing from the Chartered Institute of Marketing.

CEP CONTRACT AWARD

We are pleased to announce that SINAPSE has been designated a supplier to the Centre for Evidence based Purchasing (CEP) which is part of NHS Purchasing and Supplies Agency. CEP works closely with the Department of Health. Dr Richard Lerski and Dr Janet De Wilde led the application bid. As a result, the SINAPSE network will undertake to provide reports on specific

clinical evaluations on a project by project basis. Project teams will be formed to undertake a report depending on the expertise required for that project. Several members of SINAPSE staff have considerable experience in medical device evaluation and health technology assessment.

CEP saw the value of tapping into a wide network of

expertise, especially due to the fact that SINAPSE is multidisciplinary and brings experts from radiology, physics, informatics, chemistry, psychology and more together. SINAPSE staff have extensive expertise in many imaging modalities such as MRI, PET, EEG and PACs. The flexible nature of SINAPSE was very important to CEP who need to address a wide range of clinical issues.

We're on the web
www.sinapse.ac.uk

Any Comments Please Contact
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PHD STUDENTSHIPS

SINAPSE has awarded 12 studentships for PhD projects. This year there were more than 80 applications to undertake a PhD project with SINAPSE so the competition was fierce. Many recognized the added value of projects with a multi-institutional approach.

All SINAPSE students are supervised by two supervisors each from a different institution. The students also have the opportunity to partake in the SINAPSE transferable skills training programme which includes a residential induction, e-learning modules in

Neuroimaging and many other cross-institutional seminars throughout the year.

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