

SINAPSE NEWSLETTER JUNE 2011

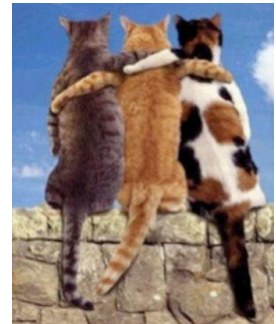
SCOTTISH IMAGING NETWORK A PLATFORM FOR SCIENTIFIC EXCELLENCE

SINAPSE PARTNERSHIP EVENT

With invaluable advice from NEXXUS, SINAPSE organised a networking event at the Corinthian Club in Glasgow on 26th May. The objective was to strengthen our links with partners from industry and other pooling groups. The meeting opened with short presentations on the specialist knowledge and expertise within SINAPSE and the imaging facilities round Scotland. Dave Wyper emphasized that the science within industrial partnerships was shifting from industry support for objectives determined by academic groups towards provision of academic expertise and facilities for combined programmes defined by company objectives. Janet De Wilde highlighted the multidisciplinary nature of SINAPSE with radiologists, radiographers, physicists, psychiatrists, neurologists, psychologists, radiochemists, computer scientists and mathematicians. Jonathan Owens outlined the facili-

ties and expertise avail for PET scanning and the development of novel radio-labelled biomarkers for selective molecular binding sites. Our guest, Kurt Anderson, presented on optical imaging. Kurt works at the Beatson Cancer Research Institute in Glasgow. We then had two presentations on magnetic resonance imaging. Barrie Condon outlined the clinical MR work, including novel developments in MR elastography led by Professor Neil Roberts in Edinburgh; a method of measuring tissue viability using oxygen as a contrast medium, developed by Dr Celestine Santosh in Glasgow; and MR functional connectivity for the study of altered consciousness, led by Prof Christian Schwarzbauer who has the SINAPSE Chair in Aberdeen. Then Ian Marshall demonstrated the power of high field small bore MRI for pre-clinical studies, the highlight being exquisite images of a beating heart. Finally Sandy Cochrane

from the University of Dundee showed how ultrasound has developed from its first use in medicine in Glasgow by Ian Donald and Tom Brown to the sophisticated 3-D images of today. Then the speed networking started. The normal rules of engagement were observed. On one side we had the SINAPSE team and on the other a mixture of representatives from industry, other pools and the support organizations NEXXUS, Interface and SHIL (Scottish Health Innovations Ltd). The latter is the commercialization wing of the NHS in Scotland and was included because the NHS has a significant stake in SINAPSE through our work in training and the provision of imaging expertise for clinical trials and NHS research. If rumbustiousness is an indicator of success then the evening certainly scored a perfect ten. More importantly several follow-on meetings have taken place since the event, hopefully leading to new partnerships.



Coincidentally the meeting took place the day after the Holyrood 2001 Science Scotland event at Our Dynamic Earth in Edinburgh. The importance of exploiting academic innovation for economic benefit was a key theme. In Scotland, 0.01% of the world's population creates over 1% of the new knowledge, but do we have 1% of the market for exploitation of this new knowledge? Far from it. We are repeatedly hearing the message that we must focus on knowledge exchange, but will we react quickly enough and will we get sufficient government support? Who knows? One thing that we do know from the SINAPSE network is that there is a great deal of new knowledge in medical imaging waiting to be exploited.

By Prof David Wyper

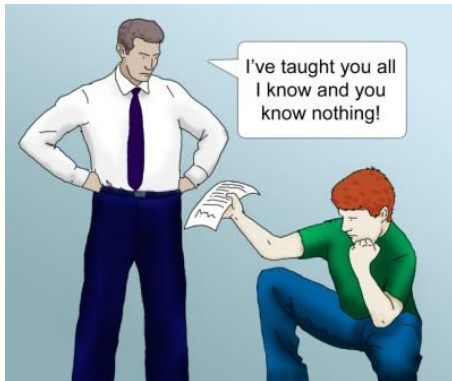
CONGRATULATIONS TO PROFESSOR JOANNA WARDLAW

Professor Joanna Wardlaw, the founding Director of SINAPSE, has been elected a Fellow of the Royal Society of Edinburgh. The society has a 1500-strong Fellowship of experts in the sciences, arts, humanities, the professions, industry and commerce. The new Fellows are elected after a rigorous four-stage selection process culminating in a ballot of the entire Fellowship.



THE DIRECTOR'S CUT

'Transferable Skills' is an interesting term. We have a Transferable Skills Committee in SINAPSE. It oversees the activities of our Graduate School, and focuses to a large extent on our PhD students. Students have the advantage of dual supervision involving two of the participating Universities. The diagram illustrates the number of studentships hosted and the linkages. We are confident that knowledge is being passed from the senior staff to the students.

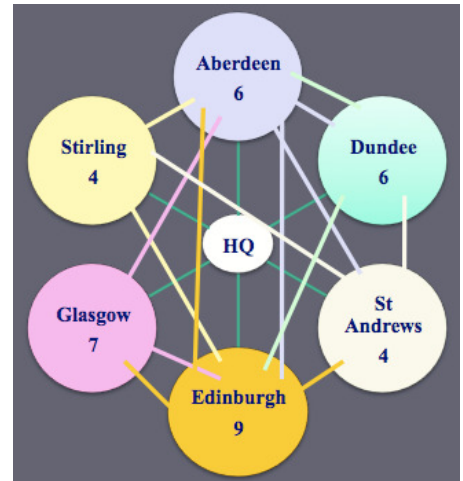


What is equally satisfying is when knowledge is passed from the students to more senior staff. I took the opportunity at our student poster presentation day to improve my understanding of MRI entropy measurement. I had a vague understanding, which is maybe as close as you get with entropy, but set out to try to

improve on that. I thought back to one of my first attempts to get to grips with k-space. I was new to MRI and knew more about outer space than k-space. I was traveling north from London and had what I thought would be a glorious opportunity when I encountered Jim Hutchison who was travelling on the same tube to Heathrow. Wow, I thought, one of the most knowledgeable MRI experts in the world. Here's my chance. I recon I followed Jim's explanation for something close to the average T1 relaxation time.

Well, after a five-minute discussion with one of our students my understanding of MRI entropy measurement improved no end. I had been focusing too much on physics and not enough on information theory. Sometimes those who have learned more recently take less for granted and can be excellent teachers. It is a two way process.

Getting back to the diagram, it would be disingenuous to suggest that there was no functional connectivity before SINAPSE was established. There certainly was. What SINAPSE has done is to strengthen established links and create some new ones. It takes many years to build up productive collaborations and we are



well on course in SINAPSE to strengthening the medical imaging research base in Scotland. Our direction of travel now is to develop more external links with other pooling groups and industry. We already have over a dozen active commercial partnerships and this is growing. I was asked recently if our desire to work with companies was driven by money. The honest answer is that it is not. Certainly money is required for any research activity, but the attraction of working in partnership with companies is that it helps to ensure that a component of our work is close to being of economic benefit, and therefore also of benefit to patients around the world.

By Prof Wyper and cartoon by Gordon Simpson.

SINAPSE PHD STUDENT POSTER DAY

SINAPSE PhD students present a poster every year at the SINAPSE Annual Scientific Meeting. However this meeting has become a very busy day full of lectures and with many people to meet. This left limited time for scientific discussion so, to address this, SINAPSE arranged a student poster day prior to this year's ASM.

The event took place on the 26th May just before the networking event at The

Corinthian Club in Glasgow. It was a relaxed and fun day in the excellent surroundings of this club.

There were 32 posters on show ranging from imaging in psychology and psychiatry to techniques in Positron Emission Tomography and Magnetic Resonance Imaging (plus plenty more).

As you can see from the pictures on the opposite page, there was plenty of time to discuss the finer details of imaging. The

abstracts from this day will be downloadable from the SINAPSE website.



Director Prof Wyper sees the light - courtesy of Gordon Simpson's PhD project 'Interact'

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





MY STORY by GAVIN MERRIFIELD, SINAPSE PHD STUDENT

On my desk there are piles of books and papers on biology, physics and neuroscience. DVDs containing data from various MRI scans of spiders sit wedged between these. There are also three glass jars (various sizes), foam (anti-static), some superconducting wire and a figurine from the recent Thor movie.

This is slightly confusing at times.

It shouldn't be as my PhD project in translational Magnetic Resonance Imaging (MRI) utilises all of these - with the exception of the spiders. Maybe Thor as well.

The confusion is there because rolling the clock back to my undergraduate days I had taken steps in nearly all these directions!

Back then it was the big questions about cosmology and the universe that interested me. After a childhood growing up on farms I'd had enough biology for a while and I'd abandoned attempts to study chemistry further. Someone who could crack glassware simply by looking at it should not be in a 'wet' laboratory!

With this in mind I headed to Exeter to study physics. Once there I specialised further into astrophysics. It

was great! There was much that was fun (the physics of stars for example) alongside some harsher topics (general relativity anyone?) but intellectually it had me.

Ultimately, although interesting, it wasn't that useful in getting me a job in a research area outside of astrophysics. In my final year I had also realised I was not someone who could just sit at a computer all day programming or running image analysis routines which is what drives much astrophysical research.

With this in mind I applied to do a postgraduate course in Photonics at the University of St. Andrews, which is how I came to Scotland. It was a good course and certainly confirmed my more practical inclinations.

Following this I joined the department of Medical Physics at the University of Edinburgh to work as the technician in the new preclinical MRI facility where I remained for five good years.

Being thrust into a mixed up world of physicists biologists, clinicians and chemists after abandoning biology at school ten years before meant quite a steep learning curve. However the

inter-disciplinary environment, people and research was very refreshing. It helped me to appreciate more fully that there were 'big' questions everywhere and that they didn't all have to be as literally 'big' as in astrophysics. Increasingly I was also gratified to be involved in something that both scratched my personal itch of curiosity and also played a role in bettering society through improved medicine and health care.

This brings me up to the present and onto my PhD. I'm still curious about many things and perhaps a little too easily distracted by them for my supervisor's liking, but the project itself is proving to be a great blend of just about everything I once wanted to avoid! For example those rather abstract (and painful) electrodynamics notes from my final undergrad year are suddenly looking quite useful....



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SINAPSE EVENTS 2011

SINAPSE -SPRING ANALYSIS OF PRECLINICAL NEURO IMAGES



22 June 2011: SINAPSE will be hosting an Analysis of Preclinical Neuro Images Course based in the Library Meeting Suite, George Square, Edinburgh. Bookings open see SINAPSE website www.sinapse.ac.uk/media/events.asp

SINAPSE -SPRING MRI SAFETY COURSE

7 September 2011: SINAPSE will be hosting an MRI Safety Course based in the Library Meeting Suite, George Square, Edinburgh. To book see SINAPSE website www.sinapse.ac.uk/media/events.asp



SINAPSE PHD STUDENT INDUCTION

26-28 October 2011: SINAPSE PhD students will gather at The Burn for their annual induction. It is held over three days and includes activities around research & presentation.



SINAPSE-SPIRIT CHEMISTRY IN IMAGING

6 December 2011: The SINAPSE SPIRIT Chemistry in Imaging Seminar will be held in Glasgow. To Book see the SINAPSE website www.sinapse.ac.uk/media/events.asp

HELP FOR STROKE PATIENTS

React2 is a new suite of speech and language therapy software that has been developed by a company called Propeller to help stroke patients with communication problems. It retrains patients in their communications skills, allowing them to understand speech and regain activity in certain

areas of the brain. SINAPSE is working with the company to undertake patient trials. These are set to begin and will last three years. Project leader Anna Jones, a SINAPSE PhD student at University of Edinburgh, is about to start the recruitment process for volunteers from hospitals across the city.

This project is one of a number funded by the SFC under the SPIRIT scheme to enable knowledge exchange between academia and companies. For a list of Spirit projects see www.sinapse.ac.uk/collaborations/spirit_projects.asp

SKILLS DEVELOPMENT SCOTLAND

A survey carried out by the Life Sciences Advisory Board (LiSAB), with the support of key partners including Skills Development Scotland (SDS), Scottish Enterprise, the sector skills council for Life Sciences SEMTA Scotland and Dundee College has shown that the vast majority of organisations (85%) reported that they had funded or arranged training for their employees in the past 12 months.

The life science sector has grown by 6% annually over the last eight years and has been boosted by the innovative energy of its high concentration of Small and Medium Enterprises (SMEs). It is seen as one of Scotland's key sectors in the Government's Economic Strategy which supports ambitious development plans for science clusters.

SINAPSE plays a key role in developing skills by organising the above

seminars and events and by developing elearning modules.

For more details on the Scottish Life Sciences Employer Skills Survey 2010 see:

<http://tinyurl.com/6aodc85>

For more details on currently available CPD modules please see the website below.

<http://www.neuroimage.ed.ac.uk/elearninfo/CPD/bitesized.asp>

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