



## October 2015

In the first year of the current funding period of SINAPSE [Scottish Imaging Network: A Platform for Scientific Excellence], significant progress has been made towards key outcomes in research, knowledge exchange, and education.

- SINAPSE serves as the node for research imaging activity in Scotland by maintaining a strong, dynamic network that pools facilities, resources, and skills.
- SINAPSE provides direct access to outstanding imaging expertise for the benefit of the pharmaceutical industry, manufacturers of imaging equipment, and academic and clinical researchers, and increases public awareness and understanding of imaging.
- SINAPSE ensures access to high quality training across the wider imaging research community, and encourages and facilitates individuals from different disciplines to be part of a larger imaging collaboration.

### Administration

The post of Lead Scientist, which is central to the functioning of SINAPSE, was advertised internationally and Dr Kristin Flegal took up the appointment on 1<sup>st</sup> June. Dr Flegal has a PhD in Psychology with a concentration in Cognitive Neuroscience, and she came to SINAPSE after completing a postdoctoral fellowship at the University of California, Davis. Her post is based at the University of Glasgow, where she is dividing her time between coordinating SINAPSE network activities and continuing her own research programme using behavioural and fMRI methods to investigate the mechanisms of cognitive training and associated changes in patterns of brain activity.

### Further development of the network

Dr Flegal and SINAPSE CEO Prof David Wyper have visited the partner Universities to discuss the next phase of SINAPSE, promote research collaborations

across the network, and increase membership. In tandem, the SINAPSE website has been further developed as an active online base for the network, enabling more topic-specific groups and content editors. The ongoing growth in SINAPSE membership is reflected by more than 270 member accounts. There are now JISC mailing lists for three SINAPSE subject areas: MRI, Molecular Imaging, and Psychology. Additionally, a monthly SINAPSE e-mail newsletter has been launched and a SINAPSE Twitter account (@SINAPSECENTRE) is in active use.

### Activities within Scotland

In response to an invitation from the Scottish Funding Council to identify the one item of capital equipment that would make the greatest collective contribution in our Research Pool, the SINAPSE Executive Committee submitted a proposal requesting £4.45M to establish a Scottish National MR Guided Focussed Ultrasound (MRgFUS) Unit. In addition to its impact on leading academic research in Scotland, this facility would be of enormous potential benefit to the NHS in Scotland, leading to clinical trials that would ultimately translate to clinical service delivery. We are hopeful that this will be funded.

SINAPSE is engaged in pan-Scotland events most weeks. Two worth highlighting in 2015 are:

1. On 27<sup>th</sup> March, the Dundee Medical Image Analysis Workshop was organised by the Computer Vision and Image Processing Group in conjunction with SICSA [Scottish Informatics and Computer Science Alliance]. Prof Wyper delivered a keynote address on the role of functional imaging in the study of neurological and psychiatric disease.
2. On 8<sup>th</sup> October, the annual SINAPSE-SANON [Scottish Adult Neuro-Oncology Network] Meeting was held in Dundee. Dr Sally Pimlott, who Chairs the SINAPSE Molecular Imaging Group, presented data on current activity around the world on tracer development for detection or staging of brain tumours. Amino acid tracers are showing signs of being much better for patient stratification, but there are several to choose from and the technical challenges of synthesis and delivery around Scotland will have to be addressed. A subgroup has been set up to explore the rationale for a multicentre study across Scotland.

### International activities

To help promote and increase participation in EU funding bids, Dr Flegel attended a workshop for the launch of the Horizon 2020 Health, Demographic Change and Wellbeing work programme held at the University of Glasgow on 14<sup>th</sup> October, and gathered information of interest to SINAPSE members about call topics with a focus on clinical studies and personalised medicine.

Prof Wyper and Dr Flegel were invited to represent SINAPSE at a workshop in Taiwan the first week of November, for the Bilateral Exchange Programme sponsored by the Royal Society of Edinburgh and the Ministry of Science and Technology, Taiwan. With the objective of soliciting interest in collaborative research, they will be presenting SINAPSE neuroimaging research on the topics of clinical applications and development of novel technologies, and applications in psychology research. By using a pooling group in the activity, the work of fifteen leading Scottish academics will be presented.

Prof Matteo Zanda at the University of Aberdeen is Head of Unit in the recently funded H2020-MSCA-ITN-2015 European Joint Doctorates Project "MOGLYNET" (Modulation of glycolytic flux as a new approach for treatment of atherosclerosis and plaque stabilization: a multidisciplinary study), in which Aberdeen will be one of five European universities to take on 12 international PhD students studying new therapies for atherosclerosis and new ways of diagnosing the condition at an earlier stage. The role of Aberdeen in the project is to develop candidate therapeutics and diagnostics (PET and optical imaging).

### Knowledge exchange

The SINAPSE Seed Fund provides part-funding for five PhD studentships to enhance engagement with industry. Our call for studentship applications has been advertised through SINAPSE channels and around industry partners, and encouraging early feedback was received in response to an enquiry circulated to SINAPSE members. The application deadline is 18<sup>th</sup> December, and the decision on submitted applications will be made in January so that the awarded studentships may be advertised shortly thereafter, for starting dates around August 2016.

Along with SUPA [Scottish Universities Physics Alliance] we were successful in obtaining an STFC Grand Challenge Exploration award of £10K to hold a series of workshops on the potential medical imaging application of physics technologies. Those taking part included industry representatives from Anacil, Gas Sensing Solutions, Chromacity, Edinburgh Molecular Imaging, Toshiba Medical Visualization Systems Europe, and CEOs from SHIL, DataLab and CENSIS.

On 24<sup>th</sup> September, the University of Glasgow Future of Biomedicine Industry Day was held at the new Queen Elizabeth Teaching and Learning Centre. Prof Keith Muir spoke during a workshop titled 'Focus on Industry, NHS and Academia' and Dr Flegel represented SINAPSE in a 'College Pod' organized by the College of Medical, Veterinary and Life Sciences. The event was successful in promoting SINAPSE research and informing potential academic and industry partners about current KE opportunities including the Seed Fund studentships.

On 1<sup>st</sup> October, the CENSIS 2nd Technology Summit and Conference was held in Edinburgh. Prof Wyper chaired an Image Processing session and Dr David Dickie exhibited work from a major SINAPSE collaboration project, the Brain Images of Normal Subjects (BRAINS) Bank. Many delegates visited the exhibition stand, and queries and comments were on a wide range of SINAPSE activities – not limited to the BRAINS Bank – including opportunities for technology developed within SINAPSE to be developed commercially and applied in clinical practice.



Dr David Dickie staffed an exhibition stand showcasing SINAPSE image processing technologies at the CENSIS Technology Summit and Conference on 1<sup>st</sup> October. *Credit: Angus Forbes Photography*

### Public engagement

Several SINAPSE members have registered as STEM Ambassadors.

PhD student Michael Stringer from the University of Aberdeen reached the Scottish final of FameLab, an event promoting public awareness of science, with an entertaining presentation on James Clerk Maxwell, the Scottish mathematician and physicist who formulated the classical theory of electromagnetic fields.

We have teamed up with the Institute of Physics in Scotland, together with SUPA and SULSA [Scottish Universities Life Sciences Alliance], to take part in an International Year of Light project asking post graduate students and early career researchers to send in videos explaining how light is used their research. The broad definition of 'light' is being used – anything in the electromagnetic spectrum including PET, SPECT, MRI and optical imaging. A panel of judges will select the top three videos and these will be “packaged” by a professional recording company and made available to schools as well as being promoted on a YouTube channel.



Dr Chris McCabe and several colleagues in Glasgow are STEM Ambassadors. They have participated in events such as the recent Science Fair at Williamwood High School on 7th October.

## Learning and development

The Postdoctoral and Early Career Researcher Exchanges (PECRE) fund provides research training and development opportunities for outstanding young investigators while at the same time building experience of international collaboration with academia and/or industry. The funding allocated in 2015 has been committed to support exchange visits to partner sites in Italy, Germany, France, the Netherlands, and the United States.

The 2015 Annual Scientific Meeting was held in Aberdeen on 12<sup>th</sup> June, with an excellent keynote address delivered by Prof Bill Jagust from the University of California, Berkeley; the result of a connection developed through a PECRE exchange undertaken by SINAPSE PhD student Dorota Chapko. Prof Jagust is one the world’s leading authorities on the role of amyloid and tau in Alzheimer’s Disease, and the opportunity for the leading dementia imaging researchers in Scotland to debate with him directly was invaluable. Other highlights from the programme included updates on the VAMPIRE optical imaging collaboration led by Dundee and Edinburgh, talks on treatments for dementia from SINAPSE researchers at Aberdeen and Edinburgh that dovetailed splendidly with Prof Jagust’s keynote, and well-attended student poster sessions.

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