



The SINAPSE Collaboration and Academic Neuroscience

Prof Joanna M Wardlaw
SINAPSE Edinburgh

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



Imaging is essential

In Healthcare:

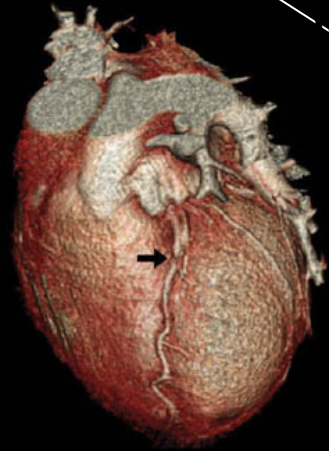
- Screening for possible disease
- Accurate diagnosis of symptoms
- Stage of disease
- What treatment to use
- Is the treatment working



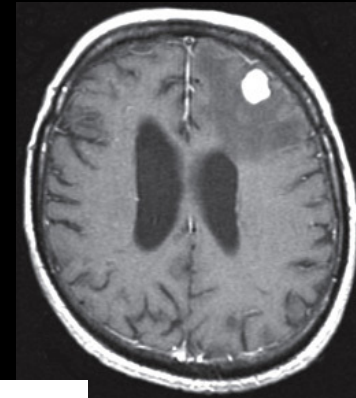
Pre-natal



trauma

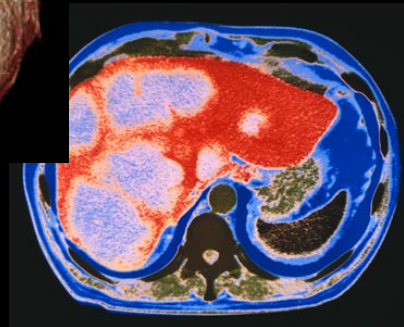


cancer



In Research:

- Work out pathology
- Work out new treatments
- Who to treat - accurate diagnosis
 - staging of disease
- Does the new treatment work?



Elderly



Imaging in Scotland

1992 - Scottish Office purchase 5 MR scanners (NHS)

2008 – 36 MR scanners in total

- 4 Aberdeen
- 5 Dundee
- 6 Edinburgh
- 17 Glasgow

100,000 MR exams per year in Scotland

10 University MR scanners

2006 Scot Exec purchase 4 PET scanners.....

.....*HELP!!!*

Imaging is Interdisciplinary

Example: 1 MR scanner, Research, Edinburgh

Neuroradiology
Radiography
Physics
Engineering
Signal processing
Neuroscience
IT
Administration



Training haphazard; not keeping up with demand for expertise



What?

£7,200,000 investment by SFC and CSO

£35,000,000 investment by six universities:

Aim:

Boost infrastructure for imaging research to improve health and wealth of the nation

Why here?

Unique subject and patient cohorts in Scotland

Centralised health statistics - *ISD*

Unique NHS imaging resources – National PACS

Clinical Research Networks in common diseases

Clinical Research Facilities networked

Top rated scientists

People talk to each other

www.sinapse.ac.uk

Governing Body of Principals
Board for Academic Medicine
Chair Sir David Carter

International Advisory Board
Chair Prof John Pickard, MRC, Wellcome Trust,
experts from Europe, North America, UK

Management Committee

Executive
Director Prof David Wyper;
Executive Director Dr Janet DeWilde
Leads from each university
Chairs of subcommittees

SFC, CSO, NeSC

Clinical Research Networks:
SSRN, SDRN, SMCN, SCRN,
SMHN, DeNDRon

Other Pooling Initiatives in
Chemistry, Physics, Life
Sciences, Computing,

**Transferable
Skills**

Chair Prof David
Donaldson

**Research &
Commercialisation**

Chair Prof Edwin
Van Beek

**MR and
Translational**

Chair Prof
Christian
Schwarzbauer

**IT & Image
Analysis**

Chair Prof R
Lerski

**Molecular
Imaging**

Chair Dr
Jonathan Owens

SINAPSE - *Capacity Building*

5 professors appointed

– *Plus three others*

- *Plus senior lecturers*

- *Cutting edge research improves health services*

– 166% return on senior investment so far;

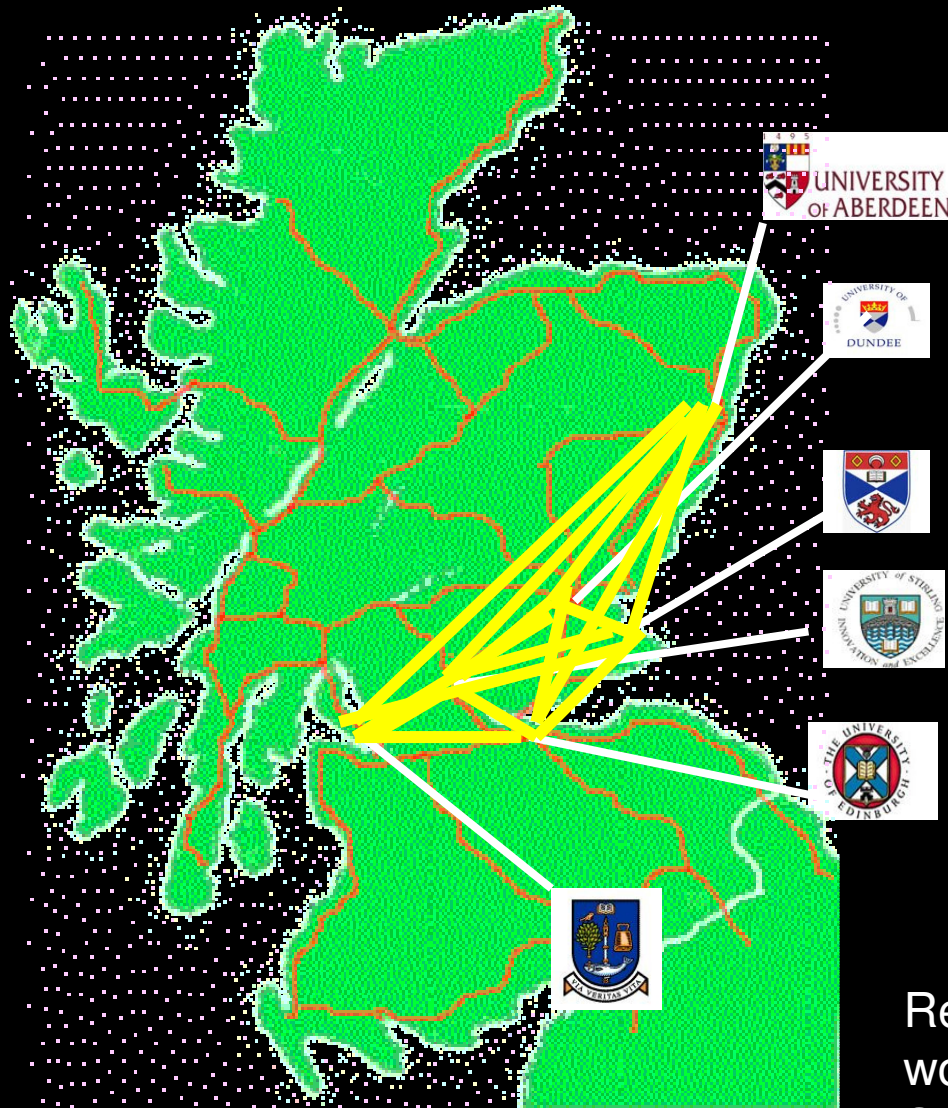
17 midlevel posts appointed

38 PhDs

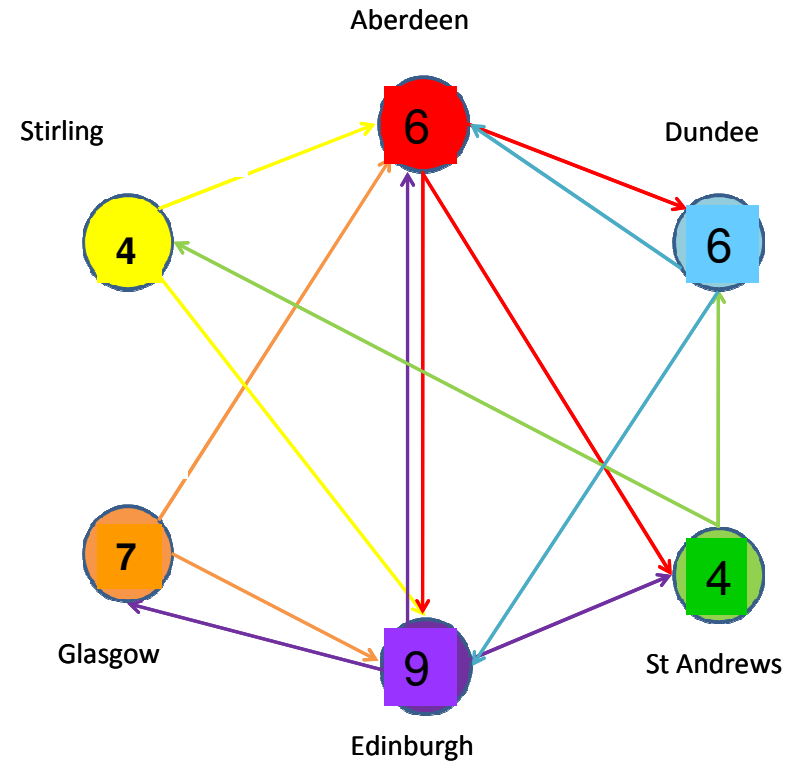
marketing; commercialisation; data management

Central co-ordination

SINAPSE Graduate School, 2007-2010



> 10 applicants for every place



24 from original SFC award
12 (+2) more in 2010 – new funding

Residential Induction Course; topic-specific workshops; Commercialisation Summer School; Online comprehensive training materials – *COPIED ELSEWHERE!!!*

SINAPSE – *National Imaging Laboratory*

Quality assurance :

standardise scanner performance

imaging tracer production

Standard equipment (eg fMRI compatible EEG)

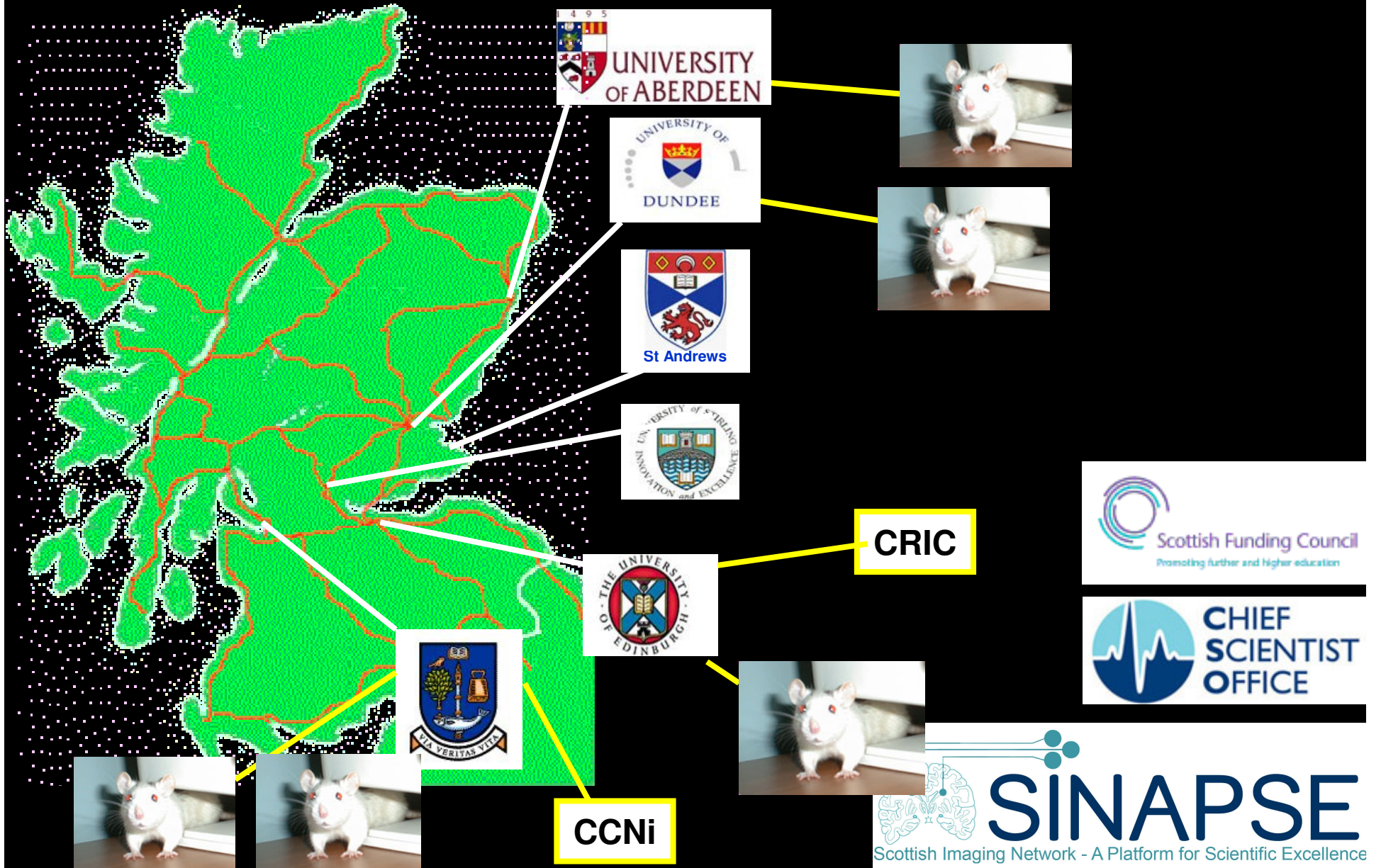
Easy to access image analysis tools

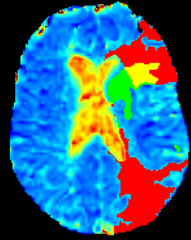
Scientific email – quick answers to complex questions

NHS-Univ research image data management:

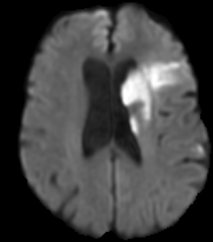
- analysis of imaging in multicentre studies
- Research Network Disease Registries
- SAIVMS centralised data collection

2009: Added experimental research imaging





SINAPSE – *Research*



- World-leading research in causes and treatment of stroke, psychosis, dementia
- Health technology assessment
- Create large database of normal brain images
2500+ images from birth to age 82

Result: Reducing burden of brain disease
Improving health

SINAPSE – *Industry*

SPIRIT: Novel and Collaborative Approaches to Knowledge Exchange in Translational Imaging. £1.2million

Pharma: Pfizer, GlaxoSmithKline, ReNeuron, MNI

Imaging: Toshiba, GE Healthcare, Siemens, Varian,

SME's: Propeller Multimedia, Digital Learning Foundation

NHS: R+D, Scottish Health Innovations Limited

PhDs joint with industry (12 + 2),

Radiochemists to help PET imaging (3),

Knowledge exchange seminars with industry

Create a searchable repository of imaging resources

SINAPSE – *Imaging and Society*

The collage features several news snippets. At the top right is a BBC News article titled "Brain scans being misused as lie detectors, experts say" by Caroline Parkinson, dated 6 June 2010. Below it is a Wired Science article titled "Courtroom First: Brain Scan Used in Murder Sentencing" from November 2009. To the left, a snippet from "CRIMINAL LAW" is visible. In the center, there are several brain scan images showing cross-sections of a brain with highlighted areas. At the bottom left, a snippet from "Brain Scanning" is partially visible.

Brain scan to help you chose a career

Brain scanning to catch terrorists

Brain scanning to see if your romance will last

Brain scanning has advanced to the point where not only can it identify certain thoughts take place within the brain, it can now identify some of those thoughts.

German researchers led by Dr. John-Dylan Haynes have found that MRI machines can be used to learn a subject's intentions before they become actions, which may have interesting repercussions in crime prevention, law

Presenting results to Holyrood; 29th Sept 2010

Good things are resulting

Delivering innovations in healthcare that

- improve national health
- and generate wealth

Wellcome Trust History of Medicine Seminars 2009:
“milestone in development of imaging research”

£10+ million in research grants so far

Public responsibility

- wider impact of imaging on society
- make best use of very expensive public investments



A single virtual national clinical *translational* imaging research laboratory for 5.5 million people, which will be unique in the world

A virtual national training “college” for imaging researchers of the future

Promoting the Health and Wealth of the Nation

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





Hunting in packs...



Thank you

SINAPSE – Career Development

- Professional clinical scientist career development
- Clinical Academic Training for Radiologists
 - Research training in centres
 - Wellcome Trust meeting April 2010
- Graduate School PhD Programme - Transferable skills in imaging

Massive expansion in research imaging

- All branches of medicine – particularly brain
- Not just medicine – psychology, linguistics, engineering, parapsychology, etc, etc!!!
- In Scotland too!!
 - 8% of UK pop;
 - 12.5% of all highest rated depts;
 - highest concentration of biotech in Europe;
 - 12% of total UK research funding;
 - 1% of all research publications
 - Scotland 3rd in world
- Neuroscience – much larger than NIH

Thank you



- Principals – inspired vision
- Scottish Funding Council
- Chief Scientist Office
- All imaging departments
- Clinical Research Facilities
- Clinical Research Networks
- Poolings – physics, chemistry, biology, informatics