Message from Professor Gilbert

In this issue, we feature the research of a medical student, Ahmed Maiter, who will be familiar to many of you as he worked in our department with Dr Gallagher’s group on an SSC project.

We also report on the success of our Annual EARS Meeting 2017 and of the visit of the President of the Hong Kong College of Radiologists. He is a Clinical Oncologist and we were given an interesting tour of the radiotherapy department with their latest equipment. We celebrate several publications of the excellent research coming out of our department in April, and the presentations given by our researchers at ISMRM in Hawaii. By all accounts it was a very successful meeting. Dr Graves and I are off to Uppsala to a GE Users meeting to present some of our early FMISO Breast work on the new PET MR machine.
Ahmed is a medical student who has been working with Frank and other members of Dr Gallagher’s team on a project in brain MRI. The project investigated two modern MRI techniques - high-resolution diffusion kurtosis imaging (DKI) and sodium MRI (Na-MRI) - in healthy volunteer brains. DKI is based on diffusion-weighted imaging (DWI) and studies the probability distribution of water diffusion, providing information about tissue microstructure that could be used in cancer assessment and grading. Na-MRI images the sodium nucleus directly, allowing quantification of sodium distribution within tissues which can report on the changes in cellular viability seen across a range of diseases, including cancer and multiple sclerosis. Maps produced from DKI and Na-MRI scans were analysed, involving the comparison of values in different regions of the brain. Both techniques were demonstrated to be non-invasive biomarkers of tissue properties and feasible for clinical imaging.

Following a research SSC in Dr Ferdia Gallagher’s group during his clinical course, Ahmed submitted an abstract to the ECR 2017 Rising Stars Programme. Out of 279 abstract submissions from students across Europe, his was one of 32 accepted, and he was invited to present the research at ECR 2017. His oral presentation was selected as the best out of 8 in the Neuroimaging Student Session, and he was presented with a ‘Best Student Presenter Award’.

He would like to thank Dr Ferdia Gallagher and other members of the department for their continued support with the project.
The 2017 annual meeting of the East Anglian Radiological Society last month was a great success, with a wonderful group of 95 attendees witnessing our varied programme of speakers! This was followed by a successful dinner.

The first half of the meeting showcased interesting talks from two speakers from within Cambridge University Hospitals, followed by Professor Yukunori Korogi (photo below), who came all the way from the University of Occupational and Environmental Health in Japan to give an excellent lecture on "Acquired viral encephalitus and its differential diagnosis."

A quick coffee break was followed by our visiting speakers, and finally we were honoured to welcome the President of the Royal College of Radiologists, Dr Nicola Strickland to speak about the “Hot Topics” for radiologists in the UK right now.

Thank you to all who attended and made this 2017 EARS meeting a great success!
Visit from Dr Chun Key Law

Dr Chun Key Law, President of the Hong Kong College of Radiologists visited Professor Gilbert in the department last week. As a clinical oncologist he was particularly interested to see the radiotherapy department in Addenbrooke’s Hospital. Accompanied by Dr Charles Wilson, Dr Li Tee Tan and Dr Charlotte Coles he was shown the various radiotherapy bunkers and the CT planning suite. The highlight of the tour was the new targeted radiotherapy suite which is currently being commissioned and will be ready for clinical use in the summer.

Research and Publications

Publication of New Study (with Department of Medicine)

Researchers from the Department of Medicine (Drs F Joshi and J Rudd) and Radiology (Dr R Manavaki) reported the first prospective human study quantifying hypoxia in atherosclerosis. Using positron emission tomography (PET) with $^{18}$F-fluoromisonidazole ($^{18}$F-FMISO), symptomatic carotid plaques were found to be more hypoxic than asymptomatic lesions, perhaps identifying a novel target for drug therapy. The correlation between $^{18}$F-fluorodeoxerglucose ($^{18}$F-FDG) and $^{18}$F-FMISO suggests that hypoxia contributes to the $^{18}$F-FDG signal in atherosclerosis PET studies. The study was published in the Journal of the American College of Cardiology (JACC) in April.

The paper is accessible online here: http://www.onlinejacc.org/content/69/14/1873

New Book: MRI From Picture to Proton 3rd Edition

Our Head of MR Physics, Dr Martin Graves, along with Donald W. McRobbie¹, Elizabeth A. Moore², and Martin R. Prince³, are having a new book released this month, the 3rd Edition of MRI from Picture to Proton.

¹South Australian Medical Imaging, Adelaide, Australia ²Philips Research Laboratories, The Netherlands ³Weill Cornell Medical College, Cornell University

From the online description:

MR is a powerful modality. At its most advanced, it can be used not just to image anatomy and pathology, but to investigate organ function, to probe in vivo chemistry, and even to visualise the brain thinking. However, clinicians, technologists and scientists struggle with the study of the subject. The result is sometimes an obscurity of understanding, or a dilution of scientific truth, resulting in misconceptions. This is why MRI from Picture to Proton has achieved its reputation for practical clarity. MR is introduced as a tool, with coverage starting from the images, equipment and scanning protocols and traced back towards the underlying physics theory. With new content on quantitative MRI, MR safety, multi-band excitation, Dixon imaging, MR elastography and advanced pulse sequences, and with additional supportive materials available on the book’s website, this new edition is completely revised and updated to reflect the best use of modern MR technology.
April 2017 Publications


Our Department’s Posters and Presentations at ISMRM in Hawaii

A few of our department members attended and presented at ISMRM in Hawaii this month, here is a roundup of the presentations and posters:

Dr Martin Graves

Sequences and Simulations (Physics for Physicists Teaching Session) - Introduction to Hardware (SMRT Session:MRI Theory From the Fundamentals to Advanced Imaging Applications)

Dr Josh Kaggie

Presentation “Spiral Fingerprinting of Articular Knee Cartilage and Bone”
(for which he won a prize for second best presentation!)
Poster: “3D modeling of cartilage surfaces at the knee using clinical magnetic resonance imaging data”
(on behalf of Dr Jamie MacKay)
Charlie Daniels  

Jianmin Yuan  
E-posters: “3D modeling of cartilage surfaces at the knee using clinical magnetic resonance imaging data”  
“3D black blood T2 mapping of the carotid artery wall with compressed sensing and data-driven parallel imaging”

Posters: “Comparison of black-blood T2 mapping sequences in carotid artery at 3T”  
“Optimization of 3D black-blood multi-echo T2* weighted sequence in carotid artery”

Dr Frank Riemer  
Poster (work presented in his absence):  
“Do gadolinium-based contrast agents alter 23Na T1 relaxivity in glioma?”

Dr Ferdia Gallagher  
Chairing sessions: Cancer Treatment Response  
Clinical & Translational Molecular/Metabolic Imaging

New Arrivals  
Callie Deng is a visiting Student from The John Hopkins University will be joining the department for a summer research project from 29th May 2017 until 28th July 2017, supervised by Dr Ferdia Gallagher.

Marius DeGroot will be a familiar face around the department as he has been working in collaborating with Dr Josh Kaggie, but he will be joining the department officially for 2 years starting in May.

Recent Awards  
Dr Ferdia Gallagher has been awarded GSK funding for the project “Development of Zirconium-89 immuno-PET for cellular imaging”  
This will fund a PhD Studentship for current MPhil student Laura Lechermann

Dr Jamie MacKay has been awarded GSK funding for his study: “Advanced magnetic resonance imaging of osteoarthritis (AMROA)”

Dr Josh Kaggie, Dr Martin Graves and Professor Fiona Gilbert were awarded GSK Varsity funding for their project: “Functional Cartilage MRI Response of Early Osteoarthritis”. This will fund a PhD student staring in October/2017.

Prof Fiona Gilbert has been awarded GE Educational Grant for the project “Functional PET/MR in triple-negative or BRCA mutation breast cancer”. This will fund PhD student Gabrielle Baxter, who will start her PhD programme in October/2017, supervised by Prof. Gilbert.
Upcoming Events

Wednesday Forums

10th May

“Molecular Imaging Club” (CRUK) - Dr John Buscombe

24th May

“Pelvic Imaging” - Dr Penelope Moyle

Radiology Research Seminars

“Electrophysiological characterisation of breast tumours”

12:00 - 1:00pm - 22nd May 2017

Dr Will Brackenbury - Research in the Brackenbury lab centres on voltage-gated sodium channels, and their role in regulating membrane electrical activity, adhesion, process extension and cellular migration. His current focus is on the novel role of voltage-gated sodium channels in regulating the migration and invasion of metastatic breast cancer cells.

Starting with this talk on the 22nd of May, our Radiology Research Seminars will be presented in the new format of a talk over a pizza lunch once per month. Dr Brackenbury will be available in the afternoon following the seminar - if anyone would like to meet with him please contact Catherine Munn and Frank Riemer so that they can facilitate this.

Annual Symposium of the Cambridge Computational Biology Institute

The symposium takes place on 17 May 2017 at the Centre for Mathematical Sciences and is organised in collaboration with Cambridge University Health Partners.

This one-day event will cover a wide range of Research Departments from Astronomy to Engineering, involving speakers from diverse backgrounds across the University and region. This year’s Symposium will feature a strong focus on health and health research. Amongst the speakers are Professor Keith McNeil, the recently appointed NHS Chief Clinical Information Officer, Dr Lydia Drumright, University Lecturer of Clinical Informatics in the Department of Medicine, and Dr John Marioni, group leader the CRUK Cambridge Institute and European Bioinformatics Institute. A full list of speakers is now on our Eventbrite page – click here both to view details of the event and to register if you haven’t already done so!
Clinical School Refurbishment and Relocation

The refurbishment of the Clinical School is now complete and their offices have returned to the SCM building across from the main hospital entrance. The Clinical School Computing Service will re-open its service window on May 3rd.

Some photos of the newly refurbished space in the Medical Library are available here:
https://library.medschl.cam.ac.uk/blog/2017/05/welcome-newly-refurbished-medical-library/

Funding Opportunities Page

We’ve added a large number of funding opportunities to the web page here:

http://radiology.medschl.cam.ac.uk/research/funding-opportunities/

This is a great resource for finding potential grants and other forms of funding for your research.

Make sure you check out Research Professional as well, as it will allow you to search for potential funding.

Department Website

In every newsletter, we will be requesting that all department members – including students - do three things for us:

1 – Please ensure that your Symplectic account is up to date. We pull publication data for the website using this database, so to make sure your publications are up to date on the website, this account must be up to date.

2 – Please send us any news or information about the projects you’re working on! We want to publicise the department’s achievements as much as possible, and get your names out there.

It goes without saying that it is essential in the current academic market to promote your work, and we want to help you do that!

3 – We will be updated the website staff profiles to new versions soon. Let us know if there is anything you’d like to have included in the new format!

We are also still looking for basic outlines of people’s projects, along with images if possible, to make our Research Themes section look fantastic, and show off that this is a world class department for prospective students and researchers.

OPEN ACCESS UPDATE

As you all know, since HEFCE’s policy change, in order for any publications to be eligible for the REF they must be made Open Access. We want to make sure that as a department we are 100% compliant.

The university has a team in place dedicated to making sure this process is as simple as possible and has now linked Open Access with Symplectic Elements so that publication data will be filled automatically from databases.

When a journal accepts your paper for publication, upload it through Symplectic before you sign any copyright or Open Access agreements.

See this page for more information on how to submit accepted publications: http://osc.cam.ac.uk/open-research/symplectic-elements-deposit-pilot/depositing-articles-symplectic-elements

You can also contact the open access team directly at: info@openaccess.cam.ac.uk
Open Access FAQs

- **If I am not the first or last author do I still need to submit?**

  If the first author is in our department ➔ ask them to submit.

  If they are in another Cambridge department and you have access to the accepted manuscript ➔ please submit it anyway.

  If you are the only Cambridge author ➔ please submit if possible.

  The bottom line is to have as many of our publications be eligible for the REF as possible. The Clinical School evaluates us on our compliance levels, and this reflects on both the department and the University.

- **When do I submit to/contact the Open Access Team?**

  As soon as the paper is **ACCEPTED**. This is because the Open Access Team will want to support you in making sure the publication is published under the correct Open Access license, and this needs to happen during the initial negotiations, before you have signed the publisher agreement.

  The acceptance date is also how compliance with the HEFCE policy is determined.

**IT Updates**

By now you should all have had a chance to access the Internal Website at

http://radiology.medschl.cam.ac.uk/internal/

Please let us know if there’s anything you’d like to see added there, either by emailing Ralph, or by filling in the department feedback form here:

http://radiology.medschl.cam.ac.uk/internal/feedback/

*As always, if you have questions about anything IT related in the department, please come and see Ralph or Anna.*

**Feedback**

We are currently working hard to improve communication and development within the department, and a big part of that work requires feedback from you. We are open to hearing any feedback or suggestions you have. If you’d like to provide feedback on anything department related, in addition to coming to see us, you can now provide it through a feedback form located on the Internal website via this link:

http://radiology.medschl.cam.ac.uk/internal/feedback/

*We want to hear from all of you in relation to achievements, updates, news and any information you would like to share with the Department.*