Message from Professor Gilbert

The most memorable aspect of the Summer of 2018 may be the excellent weather we are enjoying. The temperatures have soared and are staying consistently high hopefully putting everyone into a good humour with holidays just around the corner. Yet despite this the department is hard at work setting up new projects, appointing new staff, completing PhDs and writing more grant applications. The role of an academic is never done!

We are delighted to welcome Professor Evis Sala back to Cambridge having spent 5 successful years at Memorial Sloan Kettering Cancer Centre. Her experience gained there is already proving to be invaluable and Evis is setting up many exciting collaborations across the campus. While we were disappointed that the Wellcome Trust did not wish to invest further in the Hyperpolarizer project our team has demonstrated that the Wellcome decision was shortsighted as many patients have now been successfully imaged with superb results. The Breast team have secured a large CRUK grant to set up a feasibility project in stratified imaging for women with dense breasts – this will be project managed by Miranda Townsend who will also oversee the MyPEBS trial – a risk stratified screening study, part of an 85,000 women project funded by the EU.

The 40th anniversary celebration of the department in March was a big success with an interesting afternoon of lectures marking the enormous contributions of Professor Tom Sherwood and Professor Adrian Dixon followed by a well attended dinner at Caius College. But perhaps a more important event that day was the birth of Simone’s second child.

We are delighted that Oshi Abeyakoon was awarded her PhD and we wish her well in her new job. We are delighted to have Richard Hill as our locum DA and we welcome Sarah Perkins appointed as PA to Professor Gilbert.

Thanks to all of you for all your hard work and successful endeavours over the past Academic year. I wish you a happy restful summer break.
Researcher Feature: James Grist

During my PhD in the department I have focused on understanding the healthy and inflamed brain, and have undertaken *in vitro, in vivo* and clinical research.

My *in vitro* work has focused on using measurements of lactate to predict inflammatory cell behaviour in culture and have shown that this is as sensitive as current gold standard methods. This line of research is being further applied to understand basic cellular biology, as well as developing the tool to predict behaviour in other cell types.

I have also undertaken a large number of *in vivo* studies, using hyperpolarized $^{13}$C MRI to probe the porcine brain, in collaboration with Aarhus University Denmark. This has been a great experience and provided a wealth of opportunity to understand sequence development and the biological make of the pig brain.

Finally, my clinical studies have looked at using high resolution $^{23}$Na MRI to understand the distribution of sodium in an active MS lesion, as well as under taking the first study of the healthy brain with hyperpolarized $^{13}$C MRI (figures 2 and 3, respectively).

I have enjoyed my time in the department and will continue in collaboration with a number of researchers here. Thank you to all that have had input in to my PhD – I couldn’t have done it without you!

Special thanks must go to Ferdia Gallagher, Frank Riemer, Andrew Gill, Martin Graves, Mary McLean, Sarah Hilborne, Jackie Mason, Rhys Slough, Ilse Patterson, Candice Anderson, and Ralph Ball.
This March, the department celebrated our 40th Anniversary along with our annual EARS meeting - presentations were given in the Clinical School’s Lecture, Theatre, followed by a lovely dinner at Gonville and Caius College, which was enjoyed by all.

A few photos from the event:

Right: All three heads of the Department of Radiology since its inception, Prof. Adrian Dixon, Professor Thomas Sherwood and Professor Fiona Gilbert all standing with the Regis Professor of Physic, along with Dr Frank Reimer (Postdoc), James Grist (Phd Student) and Vicky Lupson (Superintendent Research Radiographer, WBIC).
Vice Chancellor Visit

Back in November we had a visit from the Vice Chancellor of the University, Professor Stephen Toope. He met with Professor Gilbert, toured the department and was presented with the fantastic research we’re doing here in Radiology.

Homerton 250 Year Celebration

On the 10th of February of this year, Dr Zhongzhao Teng, together with Mr Aziz Tokgoz (Dept. of Engineering), Mr Shuo Wang (Radiology) and Ms Hatische Kasap (Dept. of Chemistry), ran an event to introduce atherosclerosis and their work to a general audience. Apart from basic background on the disease, they also introduced the recent progress on medical imaging in identifying higher risk atherosclerotic lesions. They demonstrated how the atherosclerosis affected the blood flow and local pressure by causing blockage using an in-house made circulation system.

More importantly, they advised the audience how this disease develops and how to prevent it through diet, exercise, etc.
Congratulations must also go to two of our Phd Students; Dr Jamie MacKay and Mr James Grist were awarded Magna Cum Laude awards for their oral presentations: “Physiology of Joint Tissues in Osteoarthritis” and “Imaging the healthy human brain with hyperpolarized [1-13C] pyruvate” respectively.

Magna Cum Laude awards are given to the top 15% of abstracts submitted to the conference, based on review scoring.

Please see the table on the following two pages for details on all the presentations our department was involved in at this year’s meeting.

Huge congratulations go to Dr Martin Graves, who was awarded a prestigious Senior Fellowship of the International Society of Magnetic Resonance in Medicine (ISMRM). This has been given in recognition of his contributions to oncological and vessel wall imaging as well as MRI education and training.

Our department was well represented at the 2018 ISMRM annual meeting in Paris in June.
<table>
<thead>
<tr>
<th>Title of Paper/Abstract</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>An optimised subtraction approach for subtractive NCE-MRA techniques based on principal component analysis</td>
<td>H. Li, S. Wang, A. Priest, M. Graves, D. Lomas</td>
</tr>
<tr>
<td>Automated Textural Classification of Osteoarthritis Magnetic Resonance Images</td>
<td>J. Kaggie, R. Tovey, J. MacKay, F. Gilbert, F. Gallagher, A. McCaskie, M. Graves</td>
</tr>
<tr>
<td>Central thoracic vein imaging without Gadolinium: diagnostic confidence of DANTE-based 3D subtractive NCE-MRA and comparison with 2D bSSFP</td>
<td>A. Priest, I. Patterson, N. Shaida, N. Hilliard, S. Hilborne, D. Lomas</td>
</tr>
<tr>
<td>Comparison of T2WI and DWI qualitative assessment and T2W-based radiomic features for predicting complete response in patients with rectal cancer after neoadjuvant chemoradiotherapy</td>
<td>N. Horvat, H. Veeraraghavan, M. Khan, I. Blazic, J. Zheng, M. Capanu, Evis Sala, J. Garcia-Aguilar, M. Gollub, I. Petkovska</td>
</tr>
<tr>
<td>CS+M: A Simultaneous Reconstruction and Motion Estimation Approach for Improving Undersampled MRI Reconstruction.</td>
<td>A. I. Aviles-Rivero, G. B. Williams, M. Graves, C.B. Schönlieb</td>
</tr>
<tr>
<td>Electrophysiological stimulation of excised rat muscle elicits a measurable change in tissue sodium concentration using 23Na-MRI</td>
<td>F. Riemer, J. Kaggie, C. O'Neil, M McLean, James Grist, Myfanwy Hill, Joe Guy, Rolf Schulte, Martin Graves, James Fraser, Ferdia Gallagher</td>
</tr>
<tr>
<td>Title of Paper/Abstract</td>
<td>Authors</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Musculoskeletal MR Fingerprinting with dictionary-based fat and water separation</td>
<td>M. Cencini, L. Biagi, <strong>J. Kaggie</strong>, R. Schulte, M. Tosetti, G. Buonincontri</td>
</tr>
<tr>
<td>Phase Corrected Bipolar Acquisition for Simultaneous Water-Fat Separation and Quantitative Susceptibility Mapping of the Carotid Artery Wall</td>
<td>P. Ruetten, A. Priest, J. Yuan, A. Usman, J. Gillard, M. Graves</td>
</tr>
<tr>
<td>Physiology of Joint Tissues in Osteoarthritis</td>
<td>J. MacKay</td>
</tr>
<tr>
<td>Prognostic value of cardiac T1 mapping in Pulmonary Arterial Hypertension</td>
<td>L. Saunders, C. Johns, N. Stewart, C. Oram, D. Capener, D. Kiely, <strong>M. Graves</strong>, J. Wild, A. Swift</td>
</tr>
<tr>
<td>Quantitation of metabolites in human tumour (paraganglioma and GIST) tissues with mitochondrial mutations (SDH and IDH1) by HRMAS 1H NMR spectroscopy</td>
<td>B Madhu, R. Casey, B. Challis, G. Clark, A. Marker, O. Giger, V. Bulusu, <strong>M. McLean</strong>, <strong>F. Gallagher</strong>, E Maher</td>
</tr>
<tr>
<td>Standardisation and quantification of 23Na-MRI: repeatability and reproducibility of sodium imaging</td>
<td>D. McHugh, F. Riemer, D. Lewis, <strong>F. Zaccagna</strong>, <strong>F. Gallagher</strong>, G. Parker</td>
</tr>
<tr>
<td>The relationship of R1rho to aqueous pH and macromolecular density</td>
<td>P. Fessas, S. O. Ali, <strong>J. Kaggie</strong>, <strong>M. Graves</strong>, S. Reid, G. Houston, F. Gallagher</td>
</tr>
<tr>
<td>Triple Accelerated NCE-MRA with optimised sampling patterns</td>
<td>H. Li, A. Priest, <strong>M. Graves</strong>, D. Lomas</td>
</tr>
</tbody>
</table>
Please welcome our new department staff!

**Miranda Townsend**

Miranda is joining us in June as project manager for a new clinical research programme. The project involves a unique European randomized phase III trial assessing the effectiveness of a risk-based breast cancer screening strategy, based on a clinical risk score and polymorphisms, as compared to the standard of care in terms of detection of high-risk cancers.

**Professor Evis Sala**

In January, Professor Sala joined us as Professor of Oncological Imaging

**Richard Hill**

Richard joined us in March as Operations Manager, providing maternity cover for Simone Matias Vegh.

**Sarah Perkins**

Sarah joined us in January as PA to Professor Fiona Gilbert

**Miranda Townsend**

Miranda is joining us in June as project manager for a new clinical research programme. The project involves a unique European randomized phase III trial assessing the effectiveness of a risk-based breast cancer screening strategy, based on a clinical risk score and polymorphisms, as compared to the standard of care in terms of detection of high-risk cancers.
Dr Kerwyn Foo

Dr Foo is from The Chris O’Brien Lifehouse cancer treatment centre in Australia. Dr Foo joined us in January as a visitor and is working with Dr Ferdia Gallagher on response assessment in oncology imaging.

Dimitri Kessler

Dimitri is a Phd student who joined us in January, and is working with Dr Joshua Kaggie on the Development of new quantitative MRI techniques to detect early compositional changes in articular cartilage.

Gautam Adusumilli

Gautam is an MD student in the United States at Washington University School of Medicine, He is working with Dr Josh Kaggie on the characterization of femoral abnormalities in Gaucher’s Disease (bone crises, osteonecrosis, osteosclerosis, Erlenmeyer flask deformities) on MRI using intensity-based texture metrics, surface area ratios, and volume.

Chanuka Ranmuthu

Chanuka is a visiting student working with Dr Josh Kaggie and Dr Jamie Mackay on 3D Modelling the anterior cruciate ligament.
Recent Awards

**Professor Martin Bennett and Dr Zhongzhao Teng** have received funding from the British Heart Foundation for “Development of 3D Finite Element Analysis and Imaging to Predict Human Atherosclerotic Plaque Instability”

**Professor Fiona Gilbert** received funding from the European Commission’s Horizon 2020 for a project on “Randomized Comparison Of Risk-Stratified Versus Standard Breast Cancer Screening In European Women Aged 40-74”

**Dr Zhongzhao Teng** was awarded funding by Engineering and Physical Sciences Research Council (EPSRC) to develop “A Technique To Measure The Strength And Stiffness Of Soft Biological Tissues”

**Dr Frances Henson** was awarded funding for a project called ”STARSTEM” by the European Commission’s Horizon 2020 program

**Dr Karen Eley** was awarded funding for the project “Improving the management of patients with hemifacial microsomia through the use of 3D “Black Bone” MRI, computational analysis and non-ferrous distraction devices” by Newlife: The Charity For Disabled Children.

**Professor Fiona Gilbert and Dr Joshua Kaggie** were awarded a GSK VARSITY: PHD STUDENTSHP for Dimitri Kessler, working on “Development of new quantitative MRI techniques to detect early compositional changes in articular cartilage.” funded by GLAXOSMITHKLINE RESEARCH & DEVELOPMENT LTD

**Professor Fiona Gilbert** was awarded the CRUK Early Detection grant for “Stratified screening - a tailored imaging approach”

Recent Publications - January - May 2018


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.

3 - The website’s pages on research teams and projects are out of date. Any material available for public consumption would be a great help!

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!

Upcoming Events

Wednesday Forums

Regular Wednesday forums will resume in October for Michaelmas Term - we have some exciting and interesting talks lined up, including visiting Dr Kerwyn Foo, our own Radiology department’s Dr Helen Addley, and Professor Laurent Milot from the University of Toronto.

Radiology Research Seminars

These research-focused seminars are regularly advertised in advance and take place on Mondays at noon.
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.

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.