Welcome to the Michaelmas 2016 termly newsletter. Thank you all for the very warm welcome you have given me as your incoming Head of Department. It’s been great getting to know more of you and I look forward to the planned further opportunities for interaction (see https://sharepoint.nexus.ox.ac.uk/IreneOnTour). There is no doubt that Chris Kennard left us in an excellent state, for which we are so grateful. His hard work and scientific excellence on behalf of the Department, Medical Sciences Division (MSD), University of Oxford, neuroscience within Oxford, the UK and internationally was celebrated at his Festschrift – some lovely photos are included in this newsletter. I am confident that you, like me, will want to ensure that his legacy is built upon in the coming years. Fortunately, with the outstanding quality of our staff at NDCN coupled to MSD’s and Oxford’s recent successes in the Times Higher World University Rankings (being ranked first), we are well placed to make this happen. Particularly so, as we are expertly supported by our administrative team who work so hard on our behalf.

I’m pleased to see that success abounds already in terms of fellowships, grants, prizes and other awards and appointments. Please make sure you read each Monday’s newsletter for such announcements and other vital information. It is the most efficient way to keep updated on many aspects of the Department. Perhaps the most significant and wonderful news of this term has to be the positive outcome of FMRIB’s Wellcome Trust Centre bid application. I cannot express how delighted we are with this news – both at a deeply personal level and for the whole team at FMRIB along with colleagues from Psychiatry and Experimental Psychology. The bid was led magnificently by Heidi Johansen-Berg who worked tirelessly over the past 15 months with Karla Miller and Tim Behrens as her associate directors to make this happen. No stone was left unturned, and it was a masterpiece of leadership and execution. This is a very significant development for the Department as it facilitates all sorts of exciting new scientific opportunities, as well as extra space! Hearty congratulations to one and all.

As mentioned in my ‘vision’ lecture, my focus in the first instance as Head of Department is to create transparent mechanisms for staff development and tenure-related decisions alongside improving the quality and quantity of space for staff. This will take some time, so please be patient while we ‘decompress’, but do get in touch if you have any ideas about how we can make NDCN a better workplace for us all.

Finally, I would like to wish you all a joyous and peaceful Christmas break. Safe travels and I look forward to seeing you in the New Year refreshed and raring to go.

Warmest wishes,
Irene

Professor Irene Tracey, Head of Department
Chris Kennard’s Festschrift

At the end of September 2016 Christopher Kennard FMedSci, Professor of Clinical Neurology, Head of the Nuffield Department of Clinical Neurosciences and Senior Nicholas Kurti Fellow of Brasenose College, retired after 36 years both as a consultant neurologist at the Royal London, Charing Cross and the John Radcliffe Hospitals, and holding senior academic positions at Imperial College London and the University of Oxford.

In over 200 scientific papers and 60 book chapters he has explored many different aspects of visual and oculomotor function and cognition, particularly in patients with neurodegenerative diseases and stroke.

On 22 September his life’s work to date was celebrated with a Festschrift in Oxford. Colleagues past and present delivered talks throughout the day at the Department of Experimental Psychology, before heading to Keble College for a magnificent celebratory dinner.
An interview with...

Martin Turner

When did you first get interested in the brain?
Aged seven, I suspended a magnet over my head in bed to see if it would influence my dreams. It marked the first of many confirmations of the null hypothesis. As a teenager I became very motivated to understand how my grandfather, a railway signalman, who regularly mend broken radios with a soldering iron and a few transistors, could become incapable of wiring a household plug or recognising his wife. Using ligand positron emission tomography in my PhD catalysed an armchair interest in particle physics, and ignited a passion for neuroimaging.

What are your main research interests?
I am trying to put a significant dent in one of the most aggressive neurodegenerative disorders: motor neurone disease (MND, also known as ALS), by developing neuroimaging and biochemical markers of disease activity against which it will be possible to test emerging therapeutics. Along the way I have been lucky to collaborate with researchers who have also helped me to dip into the wider question of who is at risk of MND, and how evolution and anatomy might influence this.

What’s unique about your research?
I set up The Oxford Study for Biomarkers in MND (BioMOx) in 2009 to meet the need for a platform to study the natural history of MND using a range of techniques. I am focused on the brain, which has become established as a major site of pathology in MND. MRI is challenging in these patients because they become rapidly physically disabled and may find it hard to lie flat in the scanner. Nonetheless, I have been able to build a sizeable cohort and the data has helped my group to define the structural and functional brain signature of the disease over time, which we are trying to link to neurochemical markers.

What impact do you hope to have?
MND, although usually life-shortening, is variable in its presentation and rate of progression, but with no objective way to measure disease activity. Many patients wait an average of one year for a firm diagnosis, and therapeutic trials take more than a year to run when they are based on crude outcome measures such as survival. The development of biomarkers offers potential to enrol more patients into clinical trials, and a shorter time needed to assess a response to treatment. The discovery process also reveals key pathogenic pathways that can serve as targets for novel therapy development.

What has been the most important recent paper in your area?
Schmidt R., et al. Simulating disease propagation across white matter connectome reveals anatomical substrate for neuropathology staging in amyotrophic lateral sclerosis, Neuroimage 2016; 124: 762-9. This very novel approach from Utrecht used diffusion tensor MRI as the basis for a mathematical model of brain structure. This was used to test the hypothesis that post mortem stages of pathology identified in MND patient brains are compatible with spread of disease via white matter connections. Known as prion-like spread, it is a very exciting area that might offer common therapeutic approaches for all neurodegenerative disorders. It is also a paper that typifies the increasing use of traditional mathematics to model brain function.

What is the next exciting breakthrough in your field going to be?
A major problem in the effective treatment of neurodegeneration is the fact that the damage is extensive by the time symptoms appear. Understanding changes in the activity of brain networks prior to the onset of symptoms, and developing tools to modulate this activity, is the next frontier. It is possible to study this using unaffected relatives of patients who carry single gene mutations placing them at high risk of MND in later life. This work requires great sensitivity but offers a vital window on the very earliest drivers of pathology, with the hope of both primary prevention, and more focused therapy for those already affected.

Who has inspired you during your career?
My Cambridge undergraduate physiology tutor Tony Edwards – a non-clinician – strongly encouraged me to pursue the track of clinician scientist. My PhD supervisor at King’s College London Nigel Leigh realised that the brain was important in MND long before others took it seriously. I took a leap in the dark applying PET scanning, inspired by the confidence the patients placed in him. In 2003, I met Kevin Talbot in a conference hotel bar in Milan. Over the most important drink of my career, he persuaded me to apply to Oxford and get involved with FMRIB. Emeritus Professor Andrew Eisen in Vancouver had ideas about MND 25 years ahead of their time, and the chance to write with him in recent years has been one of my most rewarding interactions.

Who do you work with?
Kevin Talbot and I run the Oxford MND Care & Research Centre together. It has become one of the largest tertiary referral centres in the UK, coordinated by our specialist nurse Rachael Marsden. My BioMOx team includes Ricarda Menke (neuroimaging post-doctoral scientist), Liz Gray (biochemical post-doctoral scientist), Alex Thompson and Emily Feneberg (clinical research fellows), and Lynn Ossher (research coordinator). I collaborate with several groups in NDCN and beyond.

How does being part of NDCN benefit you?
Advances in translational neuroscience require the integration of those with clinical, molecular, mathematical, engineering and physics backgrounds. NDCN is a uniquely vibrant community in this respect, and there are always new synergies to be found. I have particularly benefited from the international reputation that FMRIB has for its innovation and rigorous analysis development.

What do you do outside the lab?
I nurture my 80s pop vinyl collection, read anything I can find on space travel and how to build a time machine, come up with new Minecraft ideas for my 9-year-old son, ski at least once a year, and try to keep up when out jogging with my 12-year-old daughter.

Professor Turner’s inaugural lecture will be on 28 February 2017 in Lecture Theatre 1 at the John Radcliffe Hospital, starting at 16.30 and followed by a drinks reception.
Summer fun

The end of last academic year was celebrated with the annual NDCN summer party, which took place again in glorious sunshine at Osler House. The food of course was excellent, as were the summer drinks. The Silent Auction made a significant amount of money (£520) for this year’s charity the SMA Trust. The undoubted highlight of the evening was the Wimbledon-esque final of the NDCN Table Tennis competition, which took place over five very strongly contested sets with the winner eventually being Nina Stöberl. Many congratulations Nina.

Cricket

Still on the sporting front the NDCN cricket team, in only its second year, played very strongly this year, getting through to the semi-finals of the Jack Cox Trophy where they were beaten by a strong team of all-rounders in the Osler/Green Templeton team. However, pride was definitely restored when the team played Cambridge Neurosciences in the first Oxbridge Neurosciences match for over 15 years. Although technically ending in a draw, the opponents from the Fens were definitely outplayed, and victory was only prevented by a last wicket stand.

Halloween

On All Hallows Eve the CNS held a ‘Mary Berry’ style bake-off, with over 30 entrants baking six cupcakes on a Halloween theme. After professional judging by the owners of ‘Barefoot Bakeries’, three winners were declared. Michelle Wilson won the top prize for her delightful owls, while the runners up were Anne Kienzler for her little monster cakes and Mike Sanders for life-like renditions of Audrey II from the film ‘Little Shop of Horrors’. All the cakes were sold, making £288 for the SMA Trust and a lot of happy faces and full stomachs within the Department.

From frogs to man

The CNS Annual Lecture was given in November by Professor Kennard, who spoke about his life in science: ‘Forty years on: from frogs to man’. The lecture was very much enjoyed by the large audience and finished with a wine and cheese reception.

Talks

On the educational front the CNS is promoting a series of seminars given by early career researchers in the Department. For more information please contact Aarti Jagannath (aarti.jagannath@ndcn.ox.ac.uk). These seminars are interposed with the student lecture series, where our students talk about their research projects. Both series come with a free pizza lunch so please look out for the posters around the Department and keep an eye on the Monday e-newsletter and information screens.

The CNS promotes education, developmental and social events for everyone in NDCN. So please tell us what you want us to do and what issues you want us to take up in the future: cns@ndcn.ox.ac.uk
Have you seen the NDCN website recently?

New page for the Centre for the Prevention of Stroke and Dementia: www.ndcn.ox.ac.uk/divisions/cpsd

New section showcasing our varied public engagement activities: www.ndcn.ox.ac.uk/get-involved/public-engagement

New place to advertise your studies and trials: www.ndcn.ox.ac.uk/get-involved/studies-and-trials

- Don’t forget you can edit your own personal profile page.
- You may also wish to edit your research group page.
- Need help? See https://fry-it.atlassian.net/wiki/display/HKB/Haiku+Knowledge+Base or email communications@ndcn.ox.ac.uk.

Publishing a paper? Read on...

Since April 2016, the Higher Education Funding Council for England (HEFCE) has required that all authors seek to increase the amount of scholarly material that is made available in an open-access form, and Oxford has adopted this as University policy.

The following points need to be adhered to as part of this policy:

- Researchers need to act on acceptance to deposit their final peer-reviewed journal articles or conference papers (also known as the ‘Author Accepted Manuscript’), and this must be deposited in the Oxford Research Archive (ORA) via Symplectic less than three months after the publication acceptance date.
- Full-text must be accessible for anyone to read and download either immediately or after the end of an embargo period.*

What does this mean for you?

- Failure to act will make research outputs ineligible for the next Research Excellence Framework (REF).
- You still need to meet the requirements of the funders who are making your research article possible. Following the publisher’s requirements is not enough.

Oxford’s Author Accepted Manuscript deposit target is 1,000 per month, but we are only hearing from around 50% of Oxford authors; at UCL, the Act on Acceptance figure is closer to 80%!

Act on Acceptance is quick and easy. All you need are the date of acceptance and the manuscript. Details of what to deposit and how can be found on the Open Access Oxford website at http://openaccess.ox.ac.uk.

For any questions about Open Access in NDCN, please get in touch with Ben Dean on benjamin.dean@ndcn.ox.ac.uk

*Embargo periods should not exceed 12 months for Science and Medicine.
The NeuroMetrology Lab is developing new ways to measure neurological disorders in order to test the effectiveness of new drugs. Initially the team is looking at Parkinson’s Disease, but in future they hope to apply their measuring techniques to other conditions such as dementia.

The group is led by Associate Professor Chrystalina Antoniades and Consultant Neurosurgeon James FitzGerald. They are funded by the global pharmaceutical company UCB, building on work previously funded by Dendron, NIHR and an EU FP7 grant. New recruits to the team include Clinical Research Nurse Patrick Zettergren and Research Assistant Meghan Walberg. Zhongjiao (Joy) Lu has recently arrived to pursue her DPhil in oculomotor control in the NeuroMetrology Lab. The team collaborate closely with Nele Demeyere and Mihaela Duta in the Department of Experimental Psychology on the cognitive testing part of their work.

So how is it possible to measure disease, and how might this help pave the way for future treatments? The team are currently working on the OxQuip Study (Oxford Quantification in Parkinsonism), which measures the following:

- Eye movements (measuring oculomotor abnormalities)
- Cognition (using a series of touch-screen tablet tasks)
- Gait (using a set of sensors on the arms, legs and torso)
- Finger and toe tapping (using an ‘accelerometer’ attached to the finger and shoe)

They have recruited over 20 people in various stages of Parkinson’s Disease (and the related Progressive Supranuclear Palsy). These patients will come into the clinic to be tested every three months over the next two years. The aim is to use these tests to measure the progression of the disease more quickly and accurately than can currently be done using conventional rating scales, which rely on a clinician’s subjective impression of a patient’s condition.

The advantage of these improvements in measuring disease progression is that patients can quickly be identified to take part in clinical trials to test new drugs. Current treatments merely target symptoms, so the hunt is on to find a new drug that will be able to slow or prevent disease progression. More accurate objective measurement will be enormously beneficial when it comes to evaluating the success of such trials.

It is not only drugs that are currently being used to treat Parkinson’s Disease; deep brain stimulation (DBS) has also been shown to have a very positive effect. This is typically being used quite late in the course of the disease, often as a last resort when patients have severe symptoms despite trying all available drugs. However, there is increasing evidence that DBS could be beneficial from an earlier stage, and better ways of measuring the disease are essential to evaluating its benefits and also judging the right time to use it.

Chrystalina said: ‘In the next few years we might develop a marker to help choose candidates for new clinical trials which will lead to a better quality of life for people with Parkinson’s, or even retard this disease’.

See www.ndcn.ox.ac.uk/research/neurometrology-lab and follow @NeuroMetrology on Twitter to find out more.

Watch a recent video made by OUH about the OxQuip Study: https://twitter.com/OUHospitals/status/793404270473277440
Would you know how to make your own anaesthetic machine? It's OK, you can work in a team. But you can't talk to each other.

This is just one of the scenarios that delegates of NDCN's 'Anaesthesia in Developing Countries' course are faced with during the five-day training in Mbale, a small town in Uganda. The delegates come mostly from high-income countries to learn about the challenges of delivering anaesthesia in a completely different context.

For example, in remote areas of some developing countries, there may not be an oxygen supply to provide the pressurised gas necessary to run a conventional modern anaesthetic machine. So you're going to need to use a different sort of machine – or possibly even assemble your own! And even if there are people to help you, you may not speak the same language.

Hilary Edgcombe, a Consultant Anaesthetist in NDCN, took over the running of the course in 2010, nearly 30 years after its foundation by her mentor, Mike Dobson. She explains that there is an enormous shortage of trained anaesthetists in the developing world, which is a massive barrier to people getting surgical care.

This shortage is one of the reasons why qualified anaesthetists from developed countries want to spend time working in more resource-poor areas of the world. But it is not always an easy transition for them to make. Increasingly, the faculty who teach on Hilary's course are drawn from Africa, since they are the best placed to train westerners how to deliver anaesthesia in a developing-country environment.

Some people who attend the course are just dipping their toe in the water, to see whether global anaesthesia might be for them. Others already have a plan; they know they will be going out with the Red Cross, for example, and are keen to receive some training specifically designed to equip anaesthetists to work in developing countries.

About two-thirds of the course content is predetermined and one-third remains fluid so that the faculty can respond to the particular needs of the delegates in any given year. Topics include how to operate in fragile security situations, as well as how to maintain your own safety and psychological wellbeing. Delegates learn about cultural issues and how to be a 'good visitor', with Mary Mungai the Kenyan nurse anaesthetist (among others) explaining what it's like being on the receiving end of mission after mission of visiting medics. The delegates also visit local hospitals: this year they went to the CURE International paediatric neurosurgery hospital, and to Mbale Regional Referral Hospital (governmental).

A lot goes on around the edges of the curriculum, since it's a small residential course, and close links are often formed both between and among delegates and faculty. The organisers have enjoyed having some delegates back as faculty, in particular Dr Rola Hallam who has been instrumental in setting up a number of field hospitals in Syria since the outbreak of war.

Hilary herself first went to Africa as part of her medical elective during her training in Oxford. She discovered that she really enjoyed working there and has done so several times since. She says she learns something new every time she delivers the course: 'The people who come are always interesting and often have fascinating experience – I learn every time I go. I enjoy partnering with African faculty.'

As well as teaching, Hilary is also doing a Masters in Global Health at King's College London (where the course focuses on surgical disease). In addition, she is helping to set up a Global Surgery and Anaesthesia Network at Oxford across the Nuffield Departments of Surgical Sciences; Orthopaedics, Rheumatology and Musculoskeletal Sciences; and Clinical Neurosciences. With the advent of a new Academic Clinical Fellow in NDCN (Lindon Baxter), Oxford is now well placed in the UK to build genuine research capacity in global anaesthesia.

Find out more about the course here: www.ndcn.ox.ac.uk/courses/anaesthesia-in-developing-countries
About NDCN
Our Department provides a focus for world-leading translational neuroscience, allowing the swift transfer of biomedical findings to the clinical setting, and the delivery of evidence-based therapies for the benefit of society and the economy. It incorporates the Division of Clinical Neurology (DCN), the Nuffield Laboratory of Ophthalmology (NLO), the Nuffield Division of Anaesthetics (NDA), the Centre for the Prevention of Stroke and Dementia (CPSD) and the Centre for Functional Magnetic Resonance Imaging of the Brain (FMRIB).

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Curiosity Carnival
Curiosity Carnival is Oxford's contribution to European Researchers' Night, a Europe-wide celebration of academic research for the public, supported by the European Commission.

Taking place on 29 September 2017, Curiosity Carnival will showcase the world-leading research happening here at Oxford to a large and diverse audience through a programme that will include live experiments, debates, bite-sized talks and other activities. A six-month digital and media engagement campaign will lead up to the event. The University had a fantastic response to their call out for ideas. There will be more calls for activity in the new year. For more information, contact Naomi Gibson: www.medsci.ox.ac.uk/support-services/people/naomi-gibson.

Admin Team Update
From April to September 2016 NDCN's admin team has:
- Submitted 149 grant applications (including 30 preliminary and 35 internal) for a total of £26,019,837.20
- Been awarded 41 applications (including 8 internal) for a total of £12,277,083.37
- Raised 4389 purchase orders
- Processed 328 expense claims
- Put 36 vacancies out to advert
- Inducted 45 new starters
- Organised 83 new honorary contracts
- Run 2 Admin Roadshows

Brain Diaries
10 March–2 September 2017
Brain Diaries (formerly 'BrainFEST') is an exhibition and series of events revealing how the latest neuroscience is transforming what we know about the lifelong development of our brains, from birth to the end of life. It's a partnership between Oxford Neuroscience and Oxford's Museum of Natural History.

The main focus is a temporary exhibition in the Museum, but there will be a wide range of associated events for various audiences, including panel games, film showings, a NeuroCocktail Bar and a whole host of interactive activities.

Keep an eye on www.neuroscience.ox.ac.uk for more information, and contact nicholas.irving@ndcn.ox.ac.uk with any questions.

Recent Prizes
Associate Professor Gabriele De Luca has been selected by The British Neuropathological Society to receive the Society's 2016 Cavanagh Prize for his work on the neuropathology of demyelinating diseases of the central nervous system. The biannual award recognises a significant contribution that a young neuroscientist's studies have made to the understanding of the Neuropathology of Human or Veterinary Neurological Disease.

Professor Colin Espie is to be awarded the Mary A. Carskadon Outstanding Educator Award from the Sleep Research Society. This prestigious award is for scientists who have demonstrated outstanding effort in disseminating basic and/or clinical sleep research as a mentor, teacher or through public education. Colin will be presented with the award at SLEEP 2017, Boston.

Professor Russell Foster has been named as Lux Person of the Year for his research which could completely transform lighting in buildings. His discovery of photosensitive cells in the eyes is creating a whole new genre called circadian lighting.

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