Welcome to CCACE’s 8th Annual Research Day. It’s our biggest and busiest by far. Welcome to all members and interested non-members who have come along.

Some special welcomes, in addition. To Katri Räikkönen, our keynote speaker, and whose life-course cohort work dazzles with its excellence and range; she and her team are good role models. To our speakers before afternoon tea, who kindly agreed to come and demonstrate how the Scottish Mental Survey work can be expanded into new areas with imagination and different approaches. To our new members since last year—associate members Atul Anand, Caroline Brett, Moreno Coco, Michaela Dewar, Donald MacIntyre, Victor Gonzales Castro; our post-doctoral CCACE Fellows Stuart Ritchie and Paul Hoffman; and new clinical fellows Jenni Harrison and Katherine Walesby—it’s great that you have joined and broadened our approach to cognitive ageing and cognitive epidemiology.

Today, from the film screening and posters before and during lunch, through our distinguished invited lecturer’s talk and the varied short talks after that, to the reception at the end, we have illustrations of the quality, variety and focus of CCACE’s people and topics.

There’s been a lot of growth since we started in 2008. How resilient have we been to that? Are we showing signs of allostatic load? How have we coped? Well, those, like me, whose daily work involves treating those buzz-terms seriously and trying to operationalise them, will know that the way to answer that is to define the stresses that have hit the CCACE and how it has responded.

We’ve grown in numbers. We started with 45 members and we now have 86. Our core and associated PhD cohort has grown; there are 23 past and present CCACE-funded PhD students. We’ve added in a layer of CCACE-funded and associated post-doctoral researchers. We’ve expanded in the topics we deal with. There is more on non-pathological cognitive ageing. There is more on personality traits as well as cognition in influencing later health. The Mechanisms of Cognitive Ageing has flowered into four related sub-groups. We have taken on epigenetics and gene expression and stem cell work as well as plain SNP testing. Our imaging work is growing in size and variety, both of the types of people studied and the techniques used to study them. We have strong involvement in new and large cohorts such as the UK Biobank, the Healthy Ageing in Scotland (HAGIS) cohort, the STRADL project that is enhancing Generation Scotland, and the ambitious Dementias Platform UK.
Well, we’ve not just coped, we’ve grown stronger and better able to meet challenges. Just take those large cohorts first. Our senior staff provide leadership in the Dementias Platform UK; we have the largest representation of any University, including membership of the Executive, leadership of an Experimental Medicine theme, and several Work Package leaderships. And take Biobank. There is CCACE leadership there too, and our core staff and post-docs responded with great agility and verve when the first genetic data were issued, as you will hear today. We are leading international genetics and epigenetics consortia, with epigenetics firsts already out there from us. We are leading internationally on brain white matter pathology and delirium. Growing into the field of pathological cognitive ageing has enriched our understanding of the normal cognitive ageing, the topic at our heart. One thing that especially pleases me is the blurring of the work on cognitive ageing and cognitive epidemiology; people who started doing one are now doing both and articulating the dynamic relationship between cognition and the body through the life course. Our grant awards since our renewal in 2013 add up to some tens of millions; it not just us who think we’re good.

Bring the challenges on. The new areas we have chosen to tackle and the new cohorts and initiatives that we are involved with have demonstrated CCACE’s strength and flexibility. That’s because of our inventive and dedicated members who have chosen to be affiliated with CCACE and help it achieve important things in our societally-important topics. An important part of my work recently and for the next while will be to ensure that we have a structure and functioning that can retain and improve our contribution to cognitive capability and health through the life course. Part of that is seeking new leadership after 2018 when our current quinquennium ends and I’ll pass on the baton.

CCACE is a resilient rough beast; the new challenges have freshened us. In response to challenges, the Centre holds, and evolves and improves. It’s your CCACE; do use it fully to do more and better research and knowledge exchange.

Ian Deary

September 2015
Dementias Platform UK Award

Dementias Platform UK has awarded CCACE Director Professor Ian Deary at £91,000 to look into the associations between lipidomics and cognitive function and brain imaging in the Lothian Birth Cohort. The Lothian Birth Cohort 1936 is one of over 30 population studies sharing their data with DPUK.

Lipoproteins are made of lipids bound to proteins and are used to transport fats and cholesterol around the body via the bloodstream. We already know that some lipoproteins, like APOE, influence cognitive and brain ageing.

In collaboration with the National Phenome Centre in London, the LBC1936 team will measure several thousand lipoproteins in about 600 members of LBC1936, with blood plasma samples and cognitive and brain imaging data available. We will then look to see how these lipoproteins influence cognitive and brain ageing.

Ian Deary said, “This signals the power of the Dementias Platform UK. We were delighted to be approached by Platform members to consider this new ‘omics’ within out Lothian Birth Cohort 1936. With the rich and longitudinal cognitive and brain data in the cohort we can test hypotheses about lipidomics variables as both outcomes and potential causes of cognitive differences, and we’ll map their associations with brain health, especially white matter.”

DPUK offers “seed corn” funding for an Experimental Medicine programme, aiming to open the door to early phase trials that are highly informative and cost-effective.

http://www.dementiasplatform.uk/
Humans evolved to be “taller and smarter”

People have evolved to be smarter and taller than their predecessors, a study of populations around the world suggests.

Those who are born to parents from diverse genetic backgrounds tend to be taller and have sharper thinking skills than others.

Dr Peter Joshi who will present at the 8th CCACE Annual Research Day and colleagues analysed health and genetic information from more than 100 studies carried out around the world. These included details on more than 350,000 people from urban and rural communities. The team found that greater genetic diversity is linked to increased height. It is also associated with better cognitive skills, as well as higher levels of education.

However, genetic diversity had no effect on factors such as high blood pressure or cholesterol levels, which affect a person’s chances of developing heart disease, diabetes and other complex conditions.

Dr Joshi, a Chancellor’s Fellow, at the University of Edinburgh’s Usher Institute said, “Our research answers questions first posed by Darwin as to the benefits of genetic diversity. Our next step will be to hone in on the specific parts of the genome that most benefit from diversity.”

The study examined individuals’ entire genetic make-up and pinpointed instances in which people had inherited identical copies of genes from both their mother and their father - an indicator that their ancestors were related. Where few instances of this occur in a person’s genes, it indicates greater genetic diversity in their heritage and the two sides of their family are unlikely to be distantly related.

It had previously been thought that close family ties would raise a person’s risk of complex diseases but this was found not to be the case. The only traits found to be affected by genetic diversity are height and the ability to think quickly.

The findings suggest that over time, evolution is favouring people with increased stature and sharper thinking skills but does not impact on their propensity for developing a serious illness.

Dr Jim Wilson, Senior Lecturer at the Centre for Population Health Sciences said, “This study highlights the power of large-scale genetic analyses to uncover fundamental information about our evolutionary history.”

The study is published in the journal Nature and was funded by the Medical Research Council.

This study received extensive coverage in the media, including The Guardian and The Independent. See Nature 523, 459–462 (23 July 2015) DOI: doi:10.1038/nature14618
Congratulations and Welcome!

Seven years on and CCACE has seen seven PhDs complete. Congratulations to our 2015 graduates Dr Laura Pidgeon, Dr Nicola Wheelan and clinical PhD Dr Alixe Kilgour.

Our latest PhD intake will take us up to 14 PhDs ongoing across the Centre’s diverse groups. In 2015, we welcome four new CCACE-funded PhD students (Pictured below, from left to right): Alicia Forsberg, Caroline McHutchison, Anniel Sluiman, and Fraser Shearer.

Clinical Training Fellows

We also welcome two new Clinical Training Fellows: Jenni Harrison and Katherine Walesby (pictured right), supervised by Susie Shenkin and John Starr respectively. Both Jenni (left panel) and Katherine (right panel) are funded by CCACE and the Alzheimer’s Scotland Dementia Research Centre (ASDRC).

PhD 2015 Retreat

The new annual CCACE PhD retreat will take place this year on Thursday 24th September. The PhD retreat for CCACE PhD students is a recent addition to the annual CCACE calendar. Our students have the opportunity to work across diverse subject areas and so are spread across George Square, RIE and WGH, so this will be a great opportunity for them to get to know each other better.

This year we have arranged a day of talks covering the use of statistics in cognitive ageing research (led by Dr Tom Booth, CCACE Member) and knowledge exchange activities (led by Dr Robin Morton, CCACE Knowledge Exchange Officer). The group have then arranged a social event for the evening at "Can You Escape?" (https://canyouescape.co.uk/). This is a live room experience escape game and will certainly test the student's problem solving abilities and give them a chance to be secret agents!
Autumn School for PhD Students

The annual PhD Autumn School is a one day event jointly organised by CCACE and Edinburgh Neuroscience. The one day seminar is open to all types of PhD students (basic, clinical, neuroinformatics, psychology) provided they are working in a neuroscience-related field at Edinburgh. The Autumn School aims to:

1) Encourage interdisciplinary mixing from the earliest stages of a research career.
2) Instil the skills required to aspire to the very highest research standards.
3) Provide information to allow planning for the next career stage.
4) Build confidence in approaching your future studies and career.

The 2015 Autumn School is being held on Thursday 29th October in the John McIntyre Conference Centre at Pollock Halls. Topics to be covered this year include "Being an effective researcher", "What do I do now that I've finished my PhD?", "Ethics and you", "What makes a good publication?", "Science translation", and "Being a successful independent researcher". Booking will open in September. Please contact Beverly Roberts (CCACE) or Jane Haley (Edinburgh Neuroscience) for further information.

Dates for Your Diary

24th November 2015 - St Andrews Day invited lecture  Professor Pat Rabbitt, University of Oxford. 5pm, Room F21, 7 George Square (followed by a drinks reception). Open to all.

10th May 2016  Professor Julie Williams, MRC Centre for Neuropsychiatric Genetics and Genomics, Cardiff University. 5.00 pm, Room F21, 7 George Square. Open to all.

6th September 2016 - CCACE 9th Annual Research Day. Keynote speaker: Professor Yaakov Stern, Cognitive Neuroscience Division, Columbia University, USA. 1-5pm, Room F21, 7 George Square, Edinburgh EH8 9JZ (preceded by lunch and posters, and followed by a drinks reception).
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CCACE is part of the Lifelong Health and Wellbeing Initiative funded by the UK Research Councils and led by the Medical Research Council.

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