

## Hutchison/MRC Research Centre

# Newsletter

To undertake world leading research into cancer cell biology that can be translated into clinical practice

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Summer 2013

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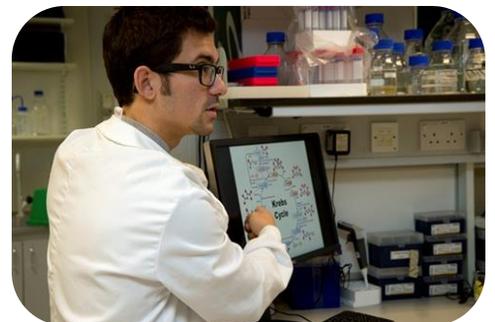
## Inspiring the next one hundred years of cancer research

As part of the Medical Research Council's centenary celebrations, staff at the MRC Cancer Cell Unit and Hutchison/MRC Research Centre organised our first ever open day.

### Message from the Directors

Welcome to the summer issue of the Hutchison/MRC Research Centre newsletter. This edition puts a spotlight on some of the outreach activities our scientists have been involved in, both as part of the MRC centenary celebrations, and in other contexts. We are delighted that so many of our staff have been able to contribute to the vital area of public engagement with science.

Professor Ashok Venkitaraman  
Professor Bruce Ponder  
Joint Directors, Hutchison/MRC  
Research Centre



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After several months of planning, on Thursday 20th June 2013 (exactly 100 years since the foundation of the Medical Research Council), we opened our doors to a number of local secondary schools and colleges. Almost one hundred students and teachers visited us during the day, seeing a variety of labs, hearing from our researchers, and learning about the diversity of careers in science

Through the day we welcomed students from Long Road Sixth Form College, Parkside Federation, Chesterton Community College, Hills Road Sixth Form College,

Manor School, Cambridge Regional College, and Sawston

Community College. After donning their lab coats, the first step on the students tour were the laboratories of Dr Jacqui Shields and Dr Carla Martins. Here they were able to try out some scientific techniques such as quantifying proteins, as well as learning about the different types of cells in the tumour microenvironment. They then moved on to hear about two major strands of work led by Professor Rebecca Fitzgerald- the development of the Cytosponge screening device and the International Cancer Genome Consortium which is sequencing DNA from oesophageal cancers. Following this, the students visited the labs of Professor Ashok Venkitaraman to hear about the hallmarks of cancer, mitosis, and drug discovery. On the final stop of their tour, students dropped in on the labs of Dr Christian Frezza to see a mass spectrometer in action and find out how cancer cells alter their metabolism to survive and grow. After this overview of our cancer research activities, the students were able to speak to some of our graduate students and staff about what a career in scientific research is really like, in a session coordinated by Dr Phil Jones.



*Students try their hand at loading DNA samples into agarose gels.*

We're delighted with some of the feedback we've had from this event, with comments such as:

***"Trips like these always make me want to work in a research lab"***

***"I had no idea that there were so many areas to be looked at within one cancer cell"***

***"The best bit was finding out about a tumour's microenvironment. And also about mitosis"***

***"Amazing! I learnt a lot and understand cancer cells a bit better"***

We hope that this visit has played a part in inspiring some of the cancer researchers who could be working with the MRC over its next one hundred years. We'd also like to say a huge thank you to all our staff and students who put so much time and effort into making the open day such a success.



*Exploring the tumour microenvironment in the Shields and Martins labs.*



*The hallmarks of cancer being explained by the Venkitaraman group.*



enthusiasm. And we would also like to thank all our colleagues at the CRUK CI, and especially Dr Will Howat, for extending our research collaborations into outreach collaborations too!

And this event, hasn't been the only outreach activity that our researchers have been involved in recently. Earlier in the year, scientists from the Research Centre teamed up with our colleagues in the CRUK Cambridge Institute to showcase our cancer research activities in the Biology Zone, as part of the Cambridge Science Festival. Our younger visitors were able to take part in wide range of activities, such as trying their hand at some chromatography and seeing if they could escape from our intracellular matrix maze.

Our cancer screening 'hook a duck' game returned as a perennial favourite, while the CRUK CI team also offered the opportunity to take part in some citizen science. We would like to thank all our staff who gave up their weekends to take part in the Cambridge Science



## Research Centre scientists at Cambridge Wordfest

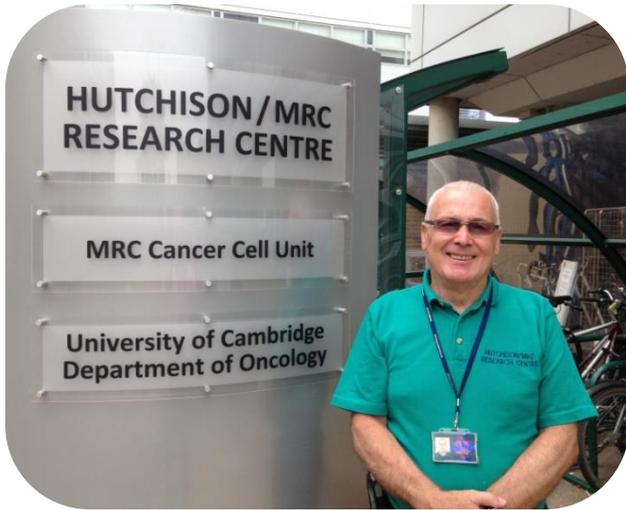
And as a change from science festivals, some of our researchers made a recent appearance at a literary festival.

Cambridge Wordfest is the city's now decade-old literary festival, and regularly hosts some of the world's freshest thinkers. In April, the Spring Wordfest welcomed back its *Thinking Aloud* series with a focus on cancer. Professor Sir Bruce Ponder (Department of Oncology), Professor Rebecca

Fitzgerald (MRC CCU), and Dr Robin Hesketh (Department of Biochemistry) discussed the causes of cancer, recent developments in its detection and treatment, and its impact on society in front of an audience at the ADC Theatre.



## End of an era as Research Centre veterans retire



*Research Centre porter, Roger Jennings*

After many years of supporting scientists in the building, this summer sees two Research Centre veterans retire from their roles. Porter Roger Jennings and media technician Sue Judd, have both undertaken work that has allowed the Hutch to function effectively as a leading centre of cancer research, and will be much missed.

Laboratory manager, Lorraine Smith, writes, "After twelve years of exemplary service, Roger Jennings has come of age, and is retiring. Formally Roger was a business man, running a small engineering company with his brother. Fortunately for us the new millennium brought change for Roger, and he joined the Hutchison/MRC Research Centre as a porter when its doors first opened in 2001. Roger is one of those people who everybody loves, he doesn't have to try, it just comes naturally. He is quiet and calm with a great sense of humour; he always does his best to help people, solving their problems without a fuss. We will all miss Roger- we thank him and hope that he has a long and happy retirement. Janet and the grandchildren will keep you on your toes Roger, but please find the time to relax and think of us struggling on without you!".

And as if saying goodbye to Roger was not enough, we also have to bid a fond farewell to Sue Judd. Laboratory manager, Karen Hébert writes, "Most of you will know Sue from her work in Media. For the last twelve years she has been expert and dependable, able to advise researchers, and always friendly and welcoming. I expect many of you will have made use of the cancer charities bookstall Sue ran for many years here in the Hutch. As a warm and considerate member of the Hutch core team, Sue will be greatly missed. We'll be sad to say goodbye but know that Sue will continue to be very busy in her retirement, with family and friends in America and the UK, including her first American grandchild. (Hopefully you might be able to fit in the odd visit to come back and see how we are managing without you Sue!). Her partner Zena is already retired and they have an extensive to-do list, which includes travelling across the US and plans for a visit to China!".



*Research Centre media technician, Sue Judd*

We are sure that these sentiments will be echoed by all the staff within the Research Centre, and we wish Roger and Sue all the best for their respective retirements.

## Other news

### Graduate School of Life Sciences Poster Competition

Congratulations to PhD student, Laura Schulz (Fitzgerald group), who was the runner up in the awareness and impact category in the annual poster and image competition run by the University's Graduate School of Life Sciences. All the winners and runners up were invited to a lunch hosted by the Regius, Professor Patrick Maxwell and Nobel Laureate, Professor Sir John Gurdon.

## Professor Rebecca Fitzgerald elected Fellow of the Academy of Medical Sciences

In May, 44 leading medical researchers from across the UK were recognised for their contribution to the advancement of medical science by election to the Fellowship of the Academy of Medical Sciences. Amongst them was MRC CCU programme leader Rebecca Fitzgerald. Rebecca originally made contact with the Academy by joining its career mentoring scheme, and she becomes the first Academy mentee to be elected to the Fellowship.



Commenting on her election Rebecca said, *“The Academy mentoring scheme enabled me to link up with a senior clinician scientist at an early stage in my independent research career. I have valued their encouragement and advice immensely as I have tried to build an innovative translational research career alongside clinical and family commitments. I am thrilled to have been elected a Fellow.”*

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## Arrivals and Departures

We welcome Gavin Roe-Scott , who joins the portering team, and David Fernandez Antoran, who joins the Jones group, to the Research Centre.

And as well as our retirees, we wish recent leavers from the Fitzgerald group, Siby Varghese and Elizabeth Bird-Lieberman, all the best with their future careers.

## Hutch scientists in the media

A number of recent news articles, including on the [BBC News site](#), highlighting the rise of oesophageal cancer in men have quoted **Professor Rebecca Fitzgerald** describing the Cytosponge device and its innovative role in diagnosis.

Professor Fitzgerald is also quoted in a [CRUK News](#) piece on recent discoveries in the area of genetic mutations specific to oesophageal carcinoma.

**BBC NEWS HEALTH**

18 June 2013 Last updated at 02:08

### 'Quiet epidemic' of male cancer in UK

By Helen Briggs  
BBC News

Action is needed to fight a "quiet epidemic" of oesophageal cancer, which is on the rise in the UK, particularly among men, experts say.

It is five times more likely than women to get the disease, according to experts.

Professor Rebecca Fitzgerald says a new device, the Cytosponge, can help to detect the disease before it becomes too late to treat.

Rates are rising in men

Male oesophageal cancer 'doubles' compared with 2,800 UK women (about 56 for men and one in 110 for women).

Food getting stuck when you swallow and persistent heart burn are not normal.

Researchers believe a steady rise in the number of adenocarcinomas in men is behind the gender gap.

Related Stories

- Male oesophageal cancer 'doubles'
- Food getting stuck when you swallow and persistent heart burn are not normal

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6	6	6
7	7	7

**CANCER RESEARCH UK**

### New genetic clues to origins of oesophageal cancer

Wednesday 27 March 2013

Using new genetic sequencing techniques, CRUK scientists have revealed some of the key underlying genetic mutations underlying the most common form of oesophageal cancer.

The researchers found that cancer cells developed a pattern of genetic alterations that could potentially be targeted by new treatments. According to a study published in *Nature*.

Oesophageal adenocarcinoma was associated with just one set of all oesophageal cancers, but these genetic alterations had distinct patterns to those seen in the adenocarcinoma. This suggests that the two types of cancer may have different origins.

There is a clear genetic explanation for why rates of oesophageal adenocarcinoma are rising in men. The researchers have identified a set of genetic mutations that are more common in men than in women. This suggests that the disease may be linked to a set of genetic mutations that are more common in men.

CRUK scientists have also identified a set of genetic mutations that are more common in men than in women. This suggests that the disease may be linked to a set of genetic mutations that are more common in men.

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**abcam**

### Interview with Christian Frezza and David Komander

Following the success of both Cancer & Metabolism 2012 & Vascular & Metabolism 2012, we are organising the next conference in Cambridge in June 2013. The subject of the conference is Cancer & Metabolism 2013.

Register for Cancer and Metabolism 2013

Register for Vascular and Metabolism 2013

David Komander - I received my PhD from the University of Sussex in 2006, where I worked in the laboratory of Professor Peter D. Stahl. I then moved to the laboratory of Professor David Komander at the University of Cambridge. I have since worked in his laboratory, where I have been involved in the study of the molecular mechanisms of protein-protein interactions. I have also worked in the laboratory of Professor David Komander at the University of Cambridge, where I have been involved in the study of the molecular mechanisms of protein-protein interactions.

**Dr Christian Frezza**, conference chair of the recent Abcam conference Cancer and Metabolism 2013, is interviewed on the [Abcam website](#).

**MRC Medical Research Council**

## insight

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### MRC Centenary Open Week

19 September 10:00am to 10:00pm

MRC Open Week (20-29 June 2013) was an opportunity for scientists to open their lab doors and get out into the community to share their science with the public. From stand up comedy to sketching, they came up with some inventive ways of doing this. Here we round-up the week's social media.

Subscribe to insight via email

What's in a workshop? Edmund Kung and the Chinese methods

Favrets, fever and flu

MRC Centenary Open Week

Watching worms

In pictures: the MRC Centenary Festival

ARCHIVES

- July 2013
- June 2013
- May 2013
- April 2013
- March 2013
- February 2013
- January 2013
- December 2012

The **MRC Cancer Cell Unit** is mentioned on the [MRC Insight blog](#) as part of their post on the social media coverage of the MRC Centenary open days.

## Recent publications

*The relative timing of mutations in a breast cancer genome.* Newman S, Howarth KD, Greenman CD, Bignell GR, Tavaré S, **Edwards** PA. PLoS One. 2013 Jun 10;8(6):e64991. doi: 10.1371/journal.pone.0064991.

*Molecular markers for Barrett's esophagus and its progression to cancer.* Fels Elliott DR, **Fitzgerald** RC. Curr Opin Gastroenterol. 2013 Jul;29(4):437-45. doi: 10.1097/MOG.0b013e328362282f.

*Three-gene immunohistochemical panel adds to clinical staging algorithms to predict prognosis for patients with esophageal adenocarcinoma.*

Ong CA, Shapiro J, Nason KS, Davison JM, Liu X, Ross-Innes C, O'Donovan M, Dinjens WN, Biermann K, Shannon N, Worster S, Schulz LK, Luketich JD, Wijnhoven BP, Hardwick RH, **Fitzgerald** RC. J Clin Oncol. 2013 Apr 20;31(12):1576-82. doi: 10.1200/JCO.2012.45.9636. Epub 2013 Mar 18.

*Screening and risk stratification for Barrett's esophagus: how to limit the clinical impact of the increasing incidence of esophageal adenocarcinoma.*

di Pietro M, **Fitzgerald** RC. Gastroenterol Clin North Am. 2013 Mar;42(1):155-73. doi: 10.1016/j.gtc.2012.11.006.

*To treat or not to treat: is the way forward clearer in low-risk prostate cancer?*

**Gnanapragasam** VJ. BJU Int. 2013 Aug;112(3):285-7. doi: 10.1111/j.1464-410X.2012.11723.x. Epub 2013 Mar 7.

*Repeat prostate biopsy strategies after initial negative biopsy: meta-regression comparing cancer detection of transperineal, transrectal saturation and MRI guided biopsy.*

Nelson AW, Harvey RC, Parker RA, Kastner C, Doble A, **Gnanapragasam** VJ. PLoS One. 2013;8(2):e57480. doi: 10.1371/journal.pone.0057480. Epub 2013 Feb 27.

*Cycling progenitors maintain epithelia while diverse cell types contribute to repair.*

Doupe DP, **Jones** PH. Bioessays. 2013 May;35(5):443-51. doi: 10.1002/bies.201200166. Epub 2013 Mar 6.

*The Mitochondrial Chaperone TRAP1 Promotes Neoplastic Growth by Inhibiting Succinate Dehydrogenase.*

Sciacovelli M, Guzzo G, Morello V, **Frezza** C, Zheng L, Nannini N, Calabrese F, Laudiero G, Esposito F, Landriscina M, Defilippi P, Bernardi P, Rasola A. Cell Metab. 2013 Jun 4;17(6):988-99. doi: 10.1016/j.cmet.2013.04.019.

*Succinate is an inflammatory signal that induces IL-1 $\beta$  through HIF-1 $\alpha$ .*

Tannahill GM, Curtis AM, Adamik J, Palsson-McDermott EM, McGettrick AF, Goel G, **Frezza** C, Bernard NJ, Kelly B, Foley NH, Zheng L, Gardet A, Tong Z, Jany SS, Corr SC, Haneklaus M, Caffrey BE, Pierce K, Walmsley S, Beasley FC, Cummins E, Nizet V, Whyte M, Taylor CT, Lin H, Masters SL, Gottlieb E, Kelly VP, Clish C, Auron PE, Xavier RJ, O'Neill LA. Nature. 2013 Apr 11;496(7444):238-42. doi: 10.1038/nature11986. Epub 2013 Mar 24.

*The cell cycle and pluripotency.*

Hindley C, **Philpott** A. *Biochem J.* 2013 Apr 15;451(2):135-43. doi: 10.1042/BJ20121627.

*Non-canonical ubiquitylation: Mechanisms and consequences.*

McDowell GS, **Philpott** A.

*Int J Biochem Cell Biol.* 2013 May 31;45(8):1833-1842. doi: 10.1016/j.biocel.2013.05.026. [Epub ahead of print]

*Functional variants at the 11q13 risk locus for breast cancer regulate cyclin D1 expression through long-range enhancers.*

French JD, Ghousaini M, Edwards SL, Meyer KB, Michailidou K, Ahmed S, Khan S, Maranian MJ, O'Reilly M, et al., and Hsiung CN, Wu PE, Chen ST, Swerdlow A, Ashworth A, Orr N, Schoemaker MJ, **Ponder** BA, Nevanlinna H, Brown MA, Chenevix-Trench G, Easton DF, Dunning AM. *Am J Hum Genet.* 2013 Apr 4;92(4):489-503. doi: 10.1016/j.ajhg.2013.01.002. Epub 2013 Mar 27.

*A-type lamins maintain the positional stability of DNA damage repair foci in mammalian nuclei.*

Mahen R, Hattori H, Lee M, Sharma P, Jeyasekharan AD, **Venkitaraman** AR.

*PLoS One.* 2013 May 2;8(5):e61893. doi: 10.1371/journal.pone.0061893. Print 2013.

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