Newsletter

CANCER RESEARCH UK | MANCHESTER INSTITUTE

Winter 2017

MANCHESTER 1824
The University of Manchester

Director's Introduction

This is our first newsletter in what has been a tumultuous year. As many reading this will know, on April 26th, a fire broke out in the Paterson Building which housed the majority of the CRUK Manchester Institute. Thankfully, everyone evacuated safely and nobody was hurt. However, the fire damaged much of the building's roof and there was significant water damage throughout the building due to the extensive fire-fighting measures.

The Greater Manchester Fire and Rescue Service were outstanding and very responsive to our business continuity needs; even while the fire was being tackled they allowed us to move our mouse colony to The University of Manchester's main animal facility. They also allowed us to recover the majority of our most valuable research collections and clinical trial samples.

The remainder of the year has been dominated by our efforts to clear the Paterson Building, check equipment, assess our losses and re-house our scientists and staff. I would like to thank colleagues at The University of Manchester, AstraZeneca and at other institutes further afield who accommodated our staff over the last few months and to all of the Institute's staff who, together with colleagues at The University of Manchester, are working hard on our recovery efforts.

Repairing or replacing the Paterson Building is likely to take some time so in the intervening period, the Institute is relocating to Alderley Park. We have received a great deal of help from colleagues there, including the staff of AstraZeneca, and I would like to thank everyone who is facilitating our move.

Our long-term aim is to return to Withington as our co-location with the Christie NHS Foundation Trust is critical to our mission of improving patient care through basic and translational research. Being so important, it is essential that we maintain our links to the clinic during our relocation to Alderley Park.

Just a few weeks after the fire, the Institute underwent its Quinquennial Review during which our progress over the past five years and our future plans were reviewed by an international panel of experts. Under the circumstances, we may have been tempted to postpone this event but continuing as planned allowed us to seek the valuable advice of the panel at this challenging time. It also enabled us to receive endorsement for our plan from the panel and CRUK, and it provided a formal platform for CRUK to receive confirmation of continued support for CRUK MI and its Manchester mission from its local strategic partners, The University of Manchester and The Christie NHS Foundation Trust. It was difficult to prepare for the QQR and simultaneously deal with the aftermath of the fire and the implementation of our recovery plans, however I was delighted with the CRUK MI team's resilience and willingness to proceed. I was also delighted with the panel's overall findings and its recognition of the upward trajectory of the Institute and progress that we have made in the last five years.

The winners of Cancer Research UK's Translational Cancer Research Prize for 2017 including CRUK MI's Caroline Dive. The prize was awarded to the Tumour Heterogeneity Team, led by Professor Charles Swanton from The Francis Crick Institute, for its work to understand genomic complexity and heterogeneity in solid tumours, and to track tumour evolution through time and treatment.

As the year draws to a close, we celebrate a number of significant achievements by our scientists. Claus Jørgensen was promoted to a Senior Group Leader following a highly successful Senior Appointments process. I would like to congratulate Claus and his team. There was further good news for Claus with the award of a European Research Council (ERC) Consolidator Grant to further his pancreatic cancer research. At the NCRI meeting in Liverpool, Santiago Zelenay was awarded the Cancer Research UK Future Leaders' Prize while Caroline Dive was part of the team to win Cancer Research UK's Translational Cancer Research Prize for 2017.

During the second half of the year, we were joined by a number of new Group Leaders and Institute Fellows. Rob Bristow has become the new Director of the Manchester Cancer Research Centre as well as a Senior Group Leader at CRUK MI. Caroline Springer is now the Director of the Drug Discovery Unit following the retirement of Donald Ogilvie earlier on in the year. Patricia Muller and Maximiliano Portal joined us to take up posts as Institute Fellows. We look forward to featuring them all in future issues of this newsletter.

As we reach the end of this difficult year, I would like to thank everyone at CRUK MI for all your hard work – especially in recovering from the fire and throughout all the disruption that this year has brought. I have never been more proud to lead this Institute than during these difficult times. I look forward to next year as we continue to establish our interim base of operations at Alderley Park and wish everyone an enjoyable and relaxing Christmas break and a very happy and successful 2018.

Richard Marais
Director

Cover Image: Santiago Zelenay receives his CRUK Future Leaders' Award from CRUK Chief Executive Officer Sir Harpal Kumar.

Science goes on

Six months on from the Paterson Building fire and after salvaging as much data, precious samples and equipment as possible, our scientists resume their important research. They have been temporarily established in facilities on the main University of Manchester campus, and also at the Alderley Park Bioscience Campus in Cheshire.

University of Manchester

Our researchers at the University of Manchester campus. Left to right: Cell Division team; Iain Hagan in the gardens at MSB; Ali Raoof, Vikki Clayton and Laura Johnson

It is thanks to the generosity and community spirit of our colleagues at The University that the groups of Angeliki Malliri, Iain Hagan and some chemists from the Drug Discovery Unit have been able to get back in the lab.

Angeliki Malliri and her Cell Signalling group moved into the labs and office space of Adam Hurlstone and Claudia Wellbrock. Iain Hagan and his Cell Division group are sharing space with colleagues at the Division of Molecular & Cellular Function: Martin Lowe, Steve High, Vicky Allan and Philip Woodman. Both teams have access to cell culture areas and vital equipment as well as shared central facilities. Happily, the groups are now in a position to carry out experiments and hold regular scientific meetings. Ali Raoof, Vikki Clayton and Laura Johnson from the DDU are sharing space with Roger Whitehead, getting to grips with the fundamental chemistry that underlies much of the project work undertaken in DDU.

Alderley Park

The Clinical and Experimental Pharmacology group and other members of the DDU have moved to Alderley Park. DDU Biologists have resumed a screening project that had been established in collaboration with AstraZeneca prior to the fire.

Access to their high-throughput screening has enabled them to set up biochemistry assays for key projects. Meanwhile, AstraZeneca and Blueberry Therapeutics Ltd continue to support DDU biology activities with the provision of cell culture space. Additionally, three others are keeping their skills up to date at Redag Crop Protection Ltd, also based at Alderley Park.

Caroline Dive and her team in CEP were the first researchers from the Institute to establish functional lab spaces in their new home at Alderley Park. Being the first meant they had to tackle many logistical issues but they are now settling in and continuing to do great science.

CEP moving team make CTC shapes during a break from recovering equipment from the Paterson Building

Core facilities

After the fire, it was also critical to get the core research facilities up and running. Equipment was assessed and relocated in an appropriate environment. Given the shortage of space, we gratefully relied on support from our colleagues at The University of Manchester, other institutes across the country, as well as technical supply companies.

The biggest challenge was clearing the in vivo unit and ensuring the safe relocation of the mice from the Paterson Building to their new location at the University. A human chain worked several hours through the night with only torches to light their way. Through impressive teamwork the mice were rescued from their cages and quickly rehoused at the University.

The Histology core facility was re-established within the MCRC Building shortly after the fire, thanks to the generous provision of vital equipment from Thermo, Leica and Menarini, and colleagues at the CRUK Beatson and Cambridge Research Institutes. Response from the University has also been remarkable, allowing some of our staff to be relocated there to process essential work so that #sciencegoeson.

Colleagues within the MCRC Building have been fantastic in creating space to accommodate our staff as well as some of the essential equipment for histology, molecular biology, flow cytometry analysis and high content screening, all set up within two weeks of the fire. Going forward, the aim is to establish our core research facilities at Alderley Park ahead of the rest of the Institute relocating there.

Everyone is settling into their new environments and looking forward to the potential new collaborations the move has created. We are incredibly grateful for all the support we have received during this transitional period.

Fundraising and Engagement activities

Manchester hosts inspirational cancer study day

In May, only a month after the Paterson Building fire, the MCRC Building hosted a Cancer Research UK study day entitled "Driving success to reach 3 in 4 patients surviving cancer - thinking differently about treating patients".

Featuring talks from Manchester researchers on a range of topics, the event was aimed at anyone interested in finding out more about cancer prevention, early diagnosis and the development of better treatments. There were Institute contributions from Caroline Dive, Richard Marais, Nic Jones, Steve Bagley, Allan Jordan and Stuart Pepper.

The study day was organised by Clare Dickinson, Senior Research Nurse, and Sive Finlay, former Research Engagement Manager. It was rounded off by a keynote lecture and Q&A from Cancer Research UK's CEO, Sir Harpal Kumar.

One attendee said: "A very interesting and informative day. Manchester has an amazing vibe for research." Other attendees found it "encouraging and inspirational" and "refreshing and rejuvenating".

A highlight for many was a presentation by patient advocate Jo Taylor, who spoke movingly about her own breast cancer experience.

The event was the first of its kind nationally and we hope it will be repeated across the country.

Manchester Marathon 2017

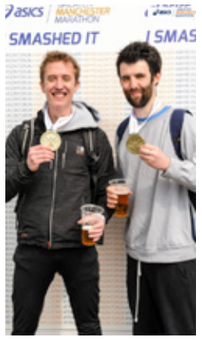
By Maximilian Schenk and Matthew Winder

"You are bonkers" was the frequent response after telling people about our idea to run the Manchester Marathon 2017. From the very beginning, both of us realised that we shared a passion for running, so we thought: why not run a marathon together?

Therefore, we started training and decided to stick to a very strict training and diet plan (more or less successfully). Initially, our main motivation for running a marathon was to test our limit and to prove to ourselves that we are able to survive running such a long distance. During one of our training sessions we thought it would be even more motivating if we could raise money for CRUK at the same time. Indeed, it was incredibly motivating to see all the support from people at CRUK MI, friends, and family.

On the 2nd April 2017, after 4 months of training, the big day had arrived and we were both very excited and looking forward to finally running the marathon. The weather could not have been better and the atmosphere was fantastic. After around 20 miles, we both started to understand why people say that the real marathon starts after this distance, but the refreshments waiting for us at the finish line kept us going. And finally, after 26.219 grueling miles, we crossed the finish line; what a great feeling!

We would like to thank everyone for all the motivation and donations we received. With your help we raised £1040 for CRUK. We would like to congratulate Alice Lallo (CEP) and Katharina Röck (Skin Cancer and Ageing group), the winners of the German/Yorkshire hybrid hamper for their closest guess of our average marathon time of 03:59:59 hours. Thanks again to everyone for believing in us and now we are looking forward to running next year's London marathon.



Images left to right: Lucky hamper winners Alice and Katharina receive their prize. Max and Matt: Manchester Marathon finishers with medals and refreshing non-alcoholic beers

Research Engagement Manager – Meet Tim

Tim Hudson took up his post in June 2017 as Cancer Research UK's Research Engagement Manager in Manchester.

Tim is working with the Institute's research groups, as well as other scientists and clinicians funded by CRUK in the area, to drive supporter and public engagement with the research taking place. Tim is a Chartered Public Relations Practitioner with 10 years' experience in communications in the education sector.

Tim is currently home-based but eventually will be split between the MCRC Building and Alderley Park following the Institute's move. He is looking forward to continuing the delivery of research engagement in Manchester and is particularly keen to hear from anyone who hasn't previously taken part in engagement activities.

Tim Hudson

Supporter Open Day at the MCRC Building

Manchester researchers funded by CRUK came together to welcome 40 of the charity's supporters and volunteers, alongside a handful of PhD students, for a special Open Day event in October.

The doors of the MCRC Building were opened for a morning of lab demonstrations, presentations and activities, as an opportunity for invited guests to gain an insight in to our work, learn about progress since the Paterson Building fire and understand more about the science behind the research.

Visitors were welcomed by CRUK's Regional Fundraising Manager, Sarah Peach, before learning more from CRUK MI Chief Operating Officer, Caroline Wilkinson, about progress in our research and the operational work to relocate the Institute after the fire.

Demonstrations took place throughout the MCRC Building's labs, courtesy of Steve Bagley, Wolfgang Breitwieser, Steve Lyons and Rob Clarke, with Elena and Nathalia from The University of Manchester's Division of Cancer Sciences Breast Biology group. Visitors were guided by David Jenkins, Heather Woodhouse, Xiaohong Zhang, Fabrizio Simeoni and Duncan Smith.

In the atrium, guests took part in research activities and discussions with Daniel Bronder, Anya Golder and Lizzy Hogg; Research Nurses Glenda Laviste and Rachael Finney from The Christie; and Jo Roberts and Kim Acton from the BRU.

The highlight of the event was an inspirational talk given by 8-year-old survivor Jenson who, together with his mum, described his battle with lymphoma and leukaemia and the bravery he showed during the hundreds of procedures he has been through.

Feedback for the event was excellent, with the words 'inspiration' and 'dedication' common across all the comments received.

Images left to right: Open Day lab tours, Nathalia from Breast Biology, and Steve Bagley from Advanced Imaging.

Images left to right: Steve Lyons sells home grown plants to raise funds; Relay for Life science activities; Relay for Life winner of Manchester United signed shirt

Institute Staff Team-Up in Relay For Life

Over £1,500 was raised to help fund life-saving research in Manchester by the MI team taking part in this year's Relay For Life Stockport, in July.

The team, captained by Cell Regulation Scientific Officer Steve Lyons for almost a decade, took on the 24-hour walking challenge under the blue skies of Stockport, along with over 350 participants, young and old, in the event's 12th year.

Relay For Life Stockport, organised by a local volunteer committee, with support from the Volunteer Fundraising team at Cancer Research UK, has raised over £500,000 since the first event in 2006, with all money raised going directly to funding CRUK research taking place in Manchester.

Stem Cell Biology Postdoctoral Fellow Julia Draper has been a member of the MI Relay team for the last six years. She says it has been a great way to connect with supporters of the charity: "Taking part in the event and getting involved with the fundraising is a great way to say 'Thank You' to everyone who supports the work we do in Manchester. From meeting the fundraising committee who organise the event to the survivors and all the members of the community taking part, it's a really rewarding experience."

Relay For Life is a year-round team fundraising challenge bringing communities together to beat cancer. There are over 50 Relay For Life events happening across the UK, and thousands more around the world.

On a summer's day, teams, survivors, carers and volunteers come together to take part in a 24-hour walking relay to celebrate their fundraising. Teams set up camp and take turns to walk around the track through the night. Anybody can join in, regardless of age or fitness level.

The event isn't just about the walking, as Julia explains: "There are lots of activities taking place over the two days. The event kicks off each year with an emotional and inspiring Survivors' Lap. There is also the Candle of Hope ceremony, which happens at around 10pm; and a local choir sing for the Relayers, as candles featuring messages of hope light the track. There's even a pub quiz (which the MI team have won two years in a row)!"

Relay For Life Stockport is the only one in the country that features a team of CRUK scientists. "It's a great opportunity to engage participants and the public with the science we are doing," says Julia. "The children taking part really enjoy the strawberry DNA extraction activity, and this allows us to start a conversation about our research with the adults there. We've also allowed people to look down a microscope at some slides and enjoy the VR lab tours."

The 2017 MI team featured Steve, Julia, Ben Hodgson from DDU, Toni Banyard from Flow Cytometry, Kim Acton from the BRU, Natalia Moncaut from the Transgenic Production Facility, Xiaohong Zhang from Systems Oncology and the MI's Administrative Services Coordinator, Belen Conti, who secured a signed Manchester United shirt for this year's event, which was raffled off to help raise further funds.

Relay for Life Team

Relay For Life 2018

Recruitment for next year's event will be under way soon. Anyone interested in being part of the MI team should contact Steve Lyons.

The team will commence their fundraising activities in the New Year; Steve is keen to hear from anyone who would like to help raise funds through bake sales, plant sales and other activities, and have fun taking part in the big event next summer.

Newcastle Cancer Researchers do Yorkshire Three Peaks for CRUK MI

By John Castle

The Paterson Building fire touched cancer researchers all over the world, but staff at the Northern Institute for Cancer Research at Newcastle University decided to do something about it. Led by Dr David Jamieson and Dr Gareth Veal, a group of PhD students and Postdocs, technicians and QA staff, have been raising money to help us rebuild, including hosting a very successful cheese and wine event.

Their main fundraising event however was a sponsored attempt of the Yorkshire Three Peaks Challenge on Friday 28th July. To show our appreciation Sarah Taylor, Caroline Roberts and myself from our Institute joined them in the hike.

After a 05:30 start at Ingleton Youth Hostel in the Yorkshire Dales, we drove to Horton-in-Ribblesdale to begin the walk. The first hill we tackled was Pen-y-ghent, the smallest of the Peaks but with a steep ascent and scramble at the top. We made good time in the rain and mist, and celebrated the summit with novelty hats and sweets.

On the way to the second peak, Whernside, the weather began to clear and we were briefly delayed by a helicopter team repairing the paths. Passing the stunning Ribblehead Viaduct and the raging Force Gill waterfall, we emerged at the top of Whernside in the sunshine, becoming the highest people in Yorkshire. We made a rapid descent and after a quick stop at The Old Hill Inn and a nervous foray past a weighty-looking bull we rose steeply up the sides of Ingleborough, the last peak. Reaching the top in heavy mist, we walked through the site of the Iron Age fort (and the current home of a Pokemon Go app legendary bird) and had a photo by the trig point. Following this we made the long trip in heavy rain back to Horton for a well-earned dinner at The Crown.

We finished the challenge wet, cold and quite exhausted, but in under twelve hours despite the bad weather. Through it all, we had the great company of the Newcastle contingent- David, Gareth, Elizabeth, Ed, Rosie, Lulu and Lucy. We thank them all on behalf of the Institute, for their hard work for us in our time of need in raising over £1580 so far:

www.justgiving.com/fundraising/NCCPG-Y3PC

The team reach the final summit of Ingleborough in the mist

A quick photo opportunity on the way up to the top of Whernside

Research Group Feature: Stem Cell Biology

Professorship


Georges Lacaud

We are pleased to announce that Georges Lacaud, a Senior Group Leader at the Cancer Research UK Manchester Institute, has been honoured with a professorship from The University of Manchester. Georges became a Professor of Stem Cell Biology in August.

Research Progress


Stem Cell Biology team

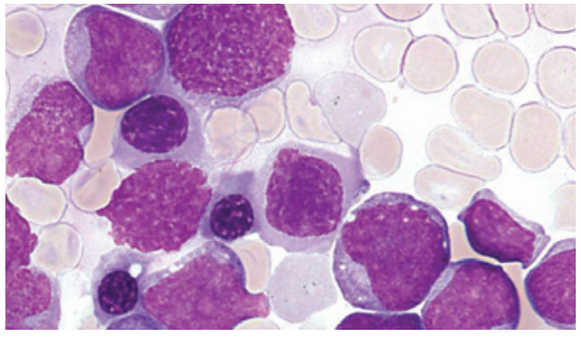
Professor Georges Lacaud leads the Stem Cell Biology group studying the in vitro production of haematopoietic stem cells (HSCs) to better understand how blood cells are generated, which has clear implications for the treatment of blood diseases, such as leukaemia.

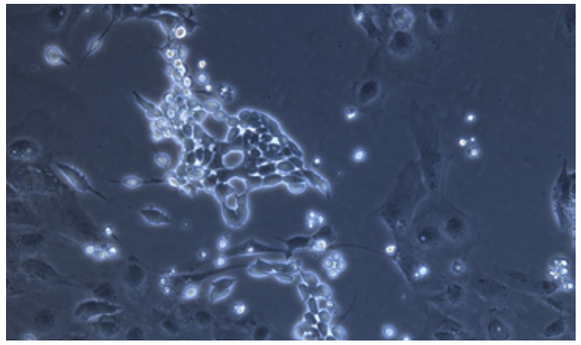
Identifying the molecular mechanisms behind this process is crucial to understanding how normal cell homeostasis proceeds as well as how their dysregulation leads to disease. More specifically, the group has been focusing on key transcription factors regulating early haematopoietic development, such as RUNX1, which have been implicated in various types of leukaemias. Elucidating their function during normal development could result in a better understanding of their roles during abnormal haematopoiesis in leukaemia.

Georges' team is currently comprised of three postdoctoral fellows, Julia Draper, Roshana Thambyrajah and Michael Lie-A-Ling. Anne Largeot recently left to take up a further postdoctoral fellow position in Luxembourg. There is also scientific officer Rahima Patel and two PhD students, Renaud Mevel and Zaki Fadlullah.

Over the past five years Stem Cell Biology have made significant progress studying RUNX1, which plays a critical role in megakaryopoiesis and platelet formation. In an important publication for the group, they demonstrated that the first haematopoietic progenitors are generated by a subset of endothelial cells, termed haemogenic endothelium, and that RUNX1 is critical for this endothelial to haematopoietic transition (Lie-A-Ling et al 2014, *Blood* 124(11):e11-20). Significantly, they went on to discover that the two GFI1 transcription repressors, and their binding partner LSD1, are absolutely required in the haemogenic endothelium during mammalian embryogenesis to epigenetically silence the endothelial programme and promote the emergence of the first haematopoietic stem cells (Thambyrajah et al 2016, *Nature Cell Biology* 1:21–32). More recently, they have identified the transcription repressors GFI1 and GFI1B as RUNX1 targets that regulate generation of blood stem cells and shown that RUNX1 regulates cell adhesion and migration, and that RUNX1c drives megakaryopoiesis (Draper et al. 2017, *Blood* 130(3):271-284).

As part of a large BBSRC-funded consortium with colleagues in Cambridge, Birmingham and Leeds, they have also characterised global chromatin structure and gene expression through the stages of haematopoietic specification. The data revealed the nature of regulatory elements driving haematopoiesis and represents a unique resource for the research community (Goode et al 2016, *Developmental Cell* 36(5):572–87).


Leukaemia cells


Embryonic stem cell-derived haemogenic endothelium undergoing endothelium to haematopoietic transition

A key discovery in the field, they found that fibroblasts can be reprogrammed to blood cells, or 'haematopoietic progenitors', by a surprisingly small number of defined transcription factors. This indicates that direct reprogramming represents an alternative approach to the differentiation of pluripotent stem cells for disease modelling, and reveals a putative approach to generate haematopoietic cells for patient therapies. (Batta et al 2014, *Cell Reports* 9(5), 1871–1884).

Georges and his team have also been working on the monocytic leukemia zinc finger (MOZ) protein, which displays a histone acetyl transferase (HAT) activity and is recurrently found translocated in leukaemia. It has been proposed that the translocations create fusion proteins with super HAT activity responsible for the deregulation of key pathways leading to leukaemogenesis. Therefore a deeper understanding of the HAT activity of MOZ is critical. They generated a mouse line with a specific mutation in its HAT domain suppressing its enzymatic activity and demonstrated that haematopoietic progenitors undergo premature entry into replicative senescence due to the impairment of the repression of p16INK4a expression. This repressive activity of MOZ over p16INK4a transcription could be exacerbated in MOZ fusion proteins facilitating the development of leukaemia (Perez-Campo et al 2014, *Stem Cells* 32(6):1591-601). They are currently further exploring the role of the epigenetic factor MOZ in normal haematopoiesis and leukaemia.

In future work, Georges will look at applying single cell technology to ask key questions that could potentially have an impact on the way patients with blood cancers are treated.

Kiran Batta establishes his own research group

Kiran Batta, a former postdoctoral fellow who worked in Stem Cell Biology up until last year, is now establishing his own research group as an independent leader at The University of Manchester. He is an Oglesby Leukaemia Research Fellow, having secured competitive funding from The Oglesby Charitable Trust to investigate an unusual type of chronic leukaemia.

Chronic myelomonocytic leukaemia (CMML) is a rare form of leukaemia affecting around 500 people per year in the UK. It particularly affects monocytes - white blood cells that protect the body from foreign substances - but also impairs blood cell production more generally, resulting in bone marrow failure. The cause is unknown in the vast majority of cases.

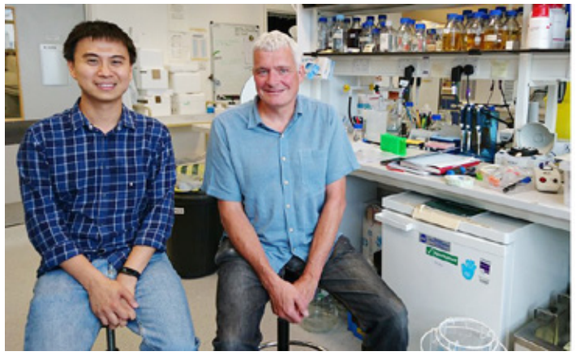
The Fellowship lasts for five years and includes funding for a postdoctoral fellow and a joint PhD studentship with Dan Wiseman, who is a Bloodwise clinician scientist and Oglesby Leukaemia Research Fellow in the Leukaemia Biology group.

Kiran is excited to be able to utilise his skills in epigenetics and normal blood cell biology so that he can ask critical questions to better understand the rather understudied leukaemia that is CMML. As a basic scientist, the prospect of working with clinicians offers exciting opportunities for him to venture into translational research and help make a bigger impact towards patient treatment. Current treatment options for CMML are very limited, partly due to a lack of research in this disease. The only potential cure is a stem cell transplant but this is only successful one-third of the time and is not even an option for most, particularly older patients. Therefore, there is a desperate need to discover new ways of treating this disease.


Kiran Batta

Alongside Dan, Kiran will be forming the basis of a new translational patient-centred research group in CMML and related myeloid cancers. It is expected that the group will grow over the next 5 years, with the aim of securing external funding by the end of that period.

Featured Publications



Centrosome is cell's 'air traffic control' centre

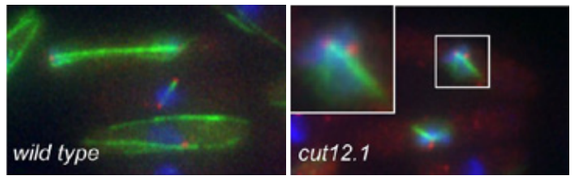
Scientists from the Cell Division group have shown how centrosomes – specialised subunits of a cell – are involved in controlling cell fate. Their work using yeast cells is some of the first to define the molecular basis of this vital link.

Centrosomes play a key role in cell division, forming the mitotic spindle that separates chromosomes. Frequently cancer cells contain too many – studies have previously shown that the number of centrosomes is linked to higher levels of metastatic and invasive activity.

Now Professor Iain Hagan's research team has explored the dialogue that takes place between signalling events on different components of the spindle pole body (SPB) – the equivalent to the centrosome in this single-cell organism.

They demonstrate that this dialogue combines inputs from diverse signalling networks to coordinate the output of a single signal. Future work will look at other model systems to investigate the discrete contributions of individual signalling molecules.

Chan KY, Alonso-Nuñez M, Grallert A, Tanaka K, Connolly Y, Smith DL, Hagan IM. (2017) Dialogue between centrosomal entrance and exit scaffold pathways regulates mitotic commitment. *Journal of Cell Biology*, 216(9):2795-2812.



Blood test could predict best treatment for lung cancer

A blood test could predict how well small-cell lung cancer (SCLC) patients will respond to treatment, according to research published in Nature Medicine.

Scientists in the Clinical and Experimental Pharmacology group, together with others at The University of Manchester, isolated tumour cells that had broken away from the main cancer - known as circulating tumour cells (CTCs) - from the blood of 31 patients with this aggressive form of the disease. When these cells were analysed, they discovered that patterns of genetic faults measured before treatment were linked to how well and how long a patient might respond to chemotherapy.

Obtaining a tumour sample from lung cancer patients using an operation, known as a biopsy, can be difficult because the tumour is hard to reach and samples are often too small to reveal useful clues on how best to treat patients. Liquid biopsies offer an alternative to taking tumour samples, providing a snapshot of the disease from a blood sample.

The team, led by Caroline Dive, also investigated the genetic changes that occurred in patients who initially responded well to treatment but later relapsed. The pattern in these cells was different from patients who didn't respond well to chemotherapy, suggesting different mechanisms of drug resistance had developed.

This study reveals how blood samples could be used to anticipate how lung cancer patients may respond to treatments. There are very few treatment options for patients with SCLC, and none at all for those whose cancer is resistant to chemotherapy. By identifying differences in the patterns of genetic faults between patients, we now have a starting point to begin to understand more about how drug resistance develops in patients with this aggressive form of lung cancer.

Carter L, Rothwell DG, Mesquita B, Smowton C, Leong HS, Fernandez-Gutierrez F, Li Y, Burt DJ, Antonello J, Morrow CJ, Hodgkinson CL, Morris K, Priest L, Carter M, Miller C, Hughes A, Blackhall F, Dive C, Brady G. (2017) Molecular analysis of circulating tumor cells identifies distinct copy-number profiles in patients with chemosensitive and chemorefractory small-cell lung cancer. *Nature Medicine*, 23(1):114-119.

Scientists identify new way of attacking breast cancer

Institute scientists have discovered a brand new way of attacking breast cancer that could lead to a new generation of drugs.

Researchers have revealed a new driver for the growth and spread of breast cancer cells and have designed a novel type of drug to block it. The next step will be to select the most effective drug from this new class of inhibitors and take it into clinical trials of patients.

Working with a team at The Institute of Cancer Research (ICR), the Molecular Oncology group discovered that a protein called lysyl oxidase, or LOX, plays an important role in driving breast cancer growth and cancer spread (metastasis).

The researchers found, in mice, that LOX seemed to help breast cancer cells 'trap' growth receptors on their surface as a means of growing more quickly.

Crucially, they also designed and validated a prototype drug, called CCT365623, which blocks this function, and is able to slow tumour growth and metastases in mice.

Previously, LOX had been known for its ability to help control formation of the extracellular matrix that holds tissues together, and its use by cancer cells to travel more easily around the body. But this major new study reveals for the first time how LOX is able to control tumour growth.

Tang H, Leung L, Saturno G, Viros A, Smith D, Di Leva G, Morrison E, Niculescu-Duvaz D, Lopes F, Johnson L, Dhomen N, Springer C, Marais R. (2017) Lysyl oxidase drives tumour progression by trapping EGF receptors at the cell surface. *Nature Communications*, 8:14909.

New algorithms to clean up genetic data

Manchester researchers have developed software that removes rogue data from the results of next-generation sequencing.

The RNA Biology group has created a new algorithm to sift out background contamination, allowing them to better identify tumour mutations.

Scientists who study cancer sometimes use mouse models created from samples of a patient's tumour. However, when they carry out genetic sequencing of these models, cells from the host animal often contaminate the results.

In this latest study, Crispin Miller's team show that ignoring this issue can lead to mutations being 'missed' in melanoma tumour models. After applying their filtering software, they were able to spot the tell-tale patterns in genes caused by UV radiation.

Khandelwal G, Girotti MR, Smowton C, Taylor S, Wirth C, Dynowski M, Frese KK, Brady G, Dive C, Marais R, Miller C. (2017) Next-Generation Sequencing Analysis and Algorithms for PDX and CDX Models. *Mol Cancer Res,* 15(8):1012-1016.

Insight into reining in bowel cancer spread

Our scientists have uncovered a two-pronged defence against aggressive bowel cancer.

Researchers from the Cell Signalling group have shown that a single protein damps down the activity of two separate factors involved in colorectal cancer spread.

Their findings could explain why some with the disease survive for longer, and offer doctors a tool for stratifying patients.

In the study, the team showed that TIAM1 blocks the activity of both TAZ and YAP, leading to suppression of the movement of colon cancer cells. In each cell, the molecule shuttles between compartments - the nucleus and the surrounding cytoplasm - controlling the action of TAZ and YAP in two distinct ways.

These results suggest that in bowel cancer, TIAM1 plays a role in slowing tumour spread. In patient samples, high levels of TIAM1 are linked to better survival – this information could prove useful in the clinic.

Diamantopoulou Z, White G, Fadlullah MZH, Dreger M, Pickering K, Maltas J, Ashton G, MacLeod R, Baillie GS, Kouskoff V, Lacaud G, Murray GI, Sansom OJ, Hurlstone AFL, Malliri A. (2017) TIAM1 Antagonizes TAZ/YAP Both in the Destruction Complex in the Cytoplasm and in the Nucleus to Inhibit Invasion of Intestinal Epithelial Cells. *Cancer Cell.* 31(5):621-634.

DDU make progress on new leukaemia drugs

Scientists from the Institute's Drug Discovery Unit have refined the structure of several series of chemical compounds with the potential to treat multiple cancer types.

The DDU was first inspired to work in this area by research from the Leukaemia Biology group, who discovered that a molecule known as LSD1 plays a key role in acute myeloid leukaemia (AML). Another study has since shown that it is also important in a type of lung cancer – small cell lung cancer (SCLC).

Now they have taken some existing molecules and made improvements to their chemical makeup, using some clever drug design techniques and synthetic chemistry to modify the structure of a selection of previously developed compounds.

Using tests on cells growing in the lab, the team showed that their new compounds are highly potent. In mice, they were able to demonstrate that one of these potent compounds could enter the bloodstream – a vital step in taking it into further research as a potential new treatment for leukaemia.

Mould DP, Bremberg U, Jordan AM, Geitmann M, McGonagle AE, Somervaille TCP, Spencer GJ, Ogilvie DJ. (2017) Development and evaluation of 4-(pyrrolidin-3-yl)benzonitrile derivatives as inhibitors of lysine specific demethylase 1. *Bioorg Med Chem Lett.* 15;27(20):4755-4759.

Mould DP, Alli C, Bremberg U, Cartic S, Jordan AM, Geitmann M, Maiques-Diaz A, McGonagle AE, Somervaille TCP, Spencer GJ, Turlais F, Ogilvie D. (2017) Development of (4-Cyanophenyl) glycine Derivatives as Reversible Inhibitors of Lysine Specific Demethylase 1. *J Med Chem.* 60(19):7984-7999.

Mould DP, Bremberg U, Jordan AM, Geitmann M, Maiques-Diaz A, McGonagle AE, Small HF, Somervaille TCP, Ogilvie D. (2017) Development of 5-hydroxypyrazole derivatives as reversible inhibitors of lysine specific demethylase 1. *Bioorg Med Chem Lett.* 27(14):3190-3195.

Pair of proteins plays different roles in blood cell development

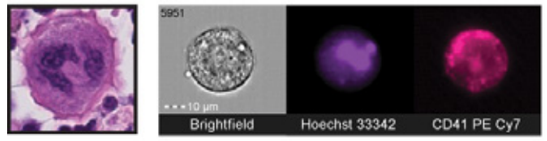
The Stem Cell Biology group has continued to investigate the RUNX1 protein, and shown that its two non-identical twin isoforms control distinct aspects of platelet maturation.

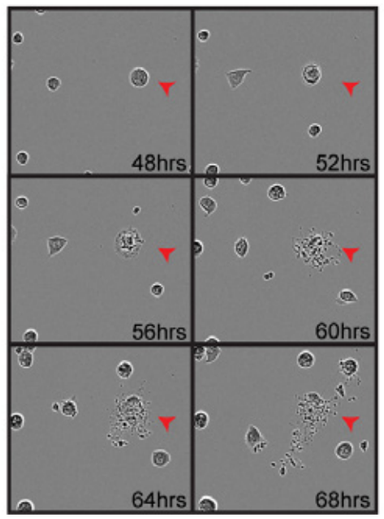
Following on from work published last year where they showed differences between the activity of RUNX1C and RUNX1B, Professor Georges Lacaud's team has now explored the cause of thrombocytopaenia - low platelet count - in some laboratory models. In the complete absence of RUNX1, thrombocytopaenia is severe and mirrors the defective platelet-formation phenotype observed in patients with familial platelet disorder with predisposition to acute myeloid leukemia (FPD/AML), a rare autosomal dominant disorder usually caused by germline heterozygous inactivating mutations or deletions in RUNX1.

With the loss of one of the two isoforms – RUNX1C – the group observed slightly decreased platelet count, as well as changes in signalling pathways: upregulation of red blood-cell associated regulators and downregulation of those controlling platelet production. These changes caused the decreased production and increased cell death of megakaryocytes – the cells responsible for producing platelets. However, unlike in total RUNX1 deficiency, loss of only RUNX1C does not prevent maturation of surviving megakaryocytes.

They concluded that RUNX1B can compensate for some, but not all, of the activity of RUNX1C and that despite similarity between the structure of the two isoforms, they do both have distinct and specific roles to play in the development of megakaryocyte blood cells.

Draper JE, Sroczynska P, Leong HS, Fadlullah MZH, Miller C, Kouskoff V, Lacaud G. (2017) Mouse RUNX1C regulates premegakaryocytic/erythroid output and maintains survival of megakaryocyte progenitors. *Blood.* 130(3):271-284.





Awards and Events

Institute Director receives prestigious European award

Richard receiving his award. Left to right: Michel Pébereau, President of the ARC Foundation; Richard Marais; Riccardo Dalla-Favera, who won the Léopold Griffuel Award in Basic Research; and Nobel Laureate Jules Hoffmann

Léopold Griffuel Award

We are proud to announce that Institute Director, Professor Richard Marais, has received one of the most prestigious European awards for cancer research: the ARC Foundation Léopold Griffuel Award in Translational and Clinical Research.

Richard was recognised for a series of seminal contributions to basic cancer genetics he made in the last two decades and their subsequent application to drug development and prevention in the field of melanoma. Recently, his research has also contributed to public health information regarding the use of sunscreen and the need to combine it with other sun avoidance strategies to reduce melanoma risk. Richard was presented with the award at the annual meeting held in Paris earlier this year and received €150,000, which he will use to expand his research programme to understand why melanoma develops and spreads so quickly through the body.

Angeliki Malliri

Philip Godfrey Fund Memorial Lecture

Congratulations to Angeliki Malliri, who has been chosen to deliver the next Philip Godfrey Fund Memorial Lecture.

This prestigious award is a plenary lecture that allows exceptional investigators to present results of broad significance to the current understanding of cell signalling. Angeliki leads the Cell Signalling group focusing on cancer cell migration and invasion. She will present the lecture at The Biochemical Society conference 'Small G proteins in cellular signalling and disease' in July 2018.

Our Rising Star

We are proud to announce that Marina Parry was named a WeAreTheCity Rising Star in Science and Engineering for her contributions to science and for tirelessly engaging with the public to inspire the next generation of female scientists.

Marina, a recent former postdoctoral fellow with the Molecular Oncology group, focused her research on how prostate cancer develops in order to give patients the most appropriate clinical care. She has recently moved to the Institute of Cancer Research in London to start the next phase of her career.

Marina receives her Rising Star Award

Institute scientist named as 'Future Leader' by Cancer Research UK

Dr Santiago Zelenay received Cancer Research UK's Future Leader Prize at the 2017 NCRI Cancer Conference.

An immunologist, he is building an exciting research programme looking at the cellular and molecular mediators that regulate anti-cancer immunity. His discovery that prostaglandin E2 production by cancer cells enables immune escape has raised exciting new ideas for targeted approaches adjuvant to immunotherapy. Santiago joined the Institute as a Junior Group Leader in 2015, following a productive postdoctoral position in Professor Caetano Reis e Sousa's group at the Francis Crick Institute, where he secured EMBO and Marie Curie Fellowships to pursue his research.

Of the award he said: "I am extremely honoured and grateful to Cancer Research UK and the panel for selecting me for this prestigious award. I feel very proud to be now part of a list of awardees that includes so many distinguished and accomplished investigators. In a way, given that the prize is for "Future" Leaders in Cancer Research I cannot also help but feel that the pressure is really on. I hope to live up to expectations."

The Future Leaders in Cancer Research Prize recognises researchers who have produced research of international importance within 10 years of receiving their doctorate, and proved themselves capable of becoming leaders in the field. This year Cancer Research UK have awarded this prize to three recipients: Dr Zelenay, Dr Gert Attard at The Institute of Cancer Research and Dr Simon Leedham from the Wellcome Trust Centre for Human Genetics.


Richard receives his award at SMR 2017

SMR Outstanding Research Award

At this year's Society for Melanoma Research Congress, held in Brisbane Australia last month, Professor Richard Marais was presented with the Outstanding Research Award for highly impactful, major discoveries in the field of melanoma within the last five years.

We congratulate Richard on receiving this prestigious award in recognition of his seminal contributions to melanoma research with potentially important consequences for melanoma therapy.

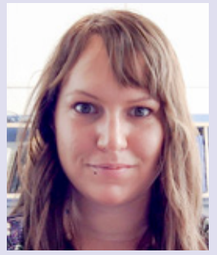
President's Doctoral Scholar (PDS) Recognition Awards

We are delighted to announce that two of our new PhD students have been awarded The University of Manchester's highly prestigious President's Doctoral Scholar (PDS) Recognition Awards.


Chris and Hannah at the latest PDS event

Hannah Reed, in Angeliki Malliri's group, and Christopher Below, in Claus Jørgensen's group, have received a £1,000 enhancement per annum to their stipend. Alongside the financial benefit, they will also be invited to attend exclusive events with the University's President and Vice Chancellor, Professor Dame Nancy Rothwell. This flagship scheme offers Hannah and Christopher the opportunity to develop their leadership skills in a variety of ways and play a principal role in organising, communicating and promoting key events throughout their time as a PhD student. This is a fantastic start for them both and we wish them all the best during their studies here at the Institute.

Fondation pour la Recherche Médicale Fellowship


Pauline Jeannot

Pauline Jeannot has joined Angeliki Malliri as a postdoctoral fellow in Cell Signalling on a competitive Fondation pour la Recherche Médicale Fellowship, as well as an award from Fondation Bettencourt-Schueller.

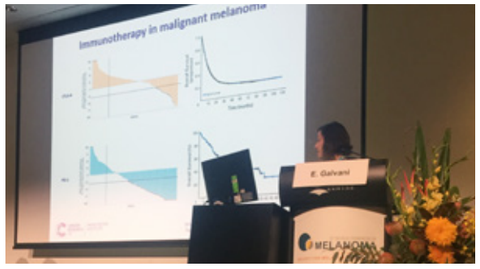
She completed her PhD at University Paul Sabatier in Toulouse where she found two new functions of cyclin/CDK inhibitor p27: firstly, in pancreatic oncogenesis where p27 acts as a tumour suppressor by regulating transcription; and secondly in invadopodia turnover where p27 acts as an oncogene by promoting cell invasion. Her new project here aims to decipher the nuclear functions of Tiam1 in non-small cell lung cancer carcinogenesis. We warmly welcome Pauline to the Institute.

Meetings highlights

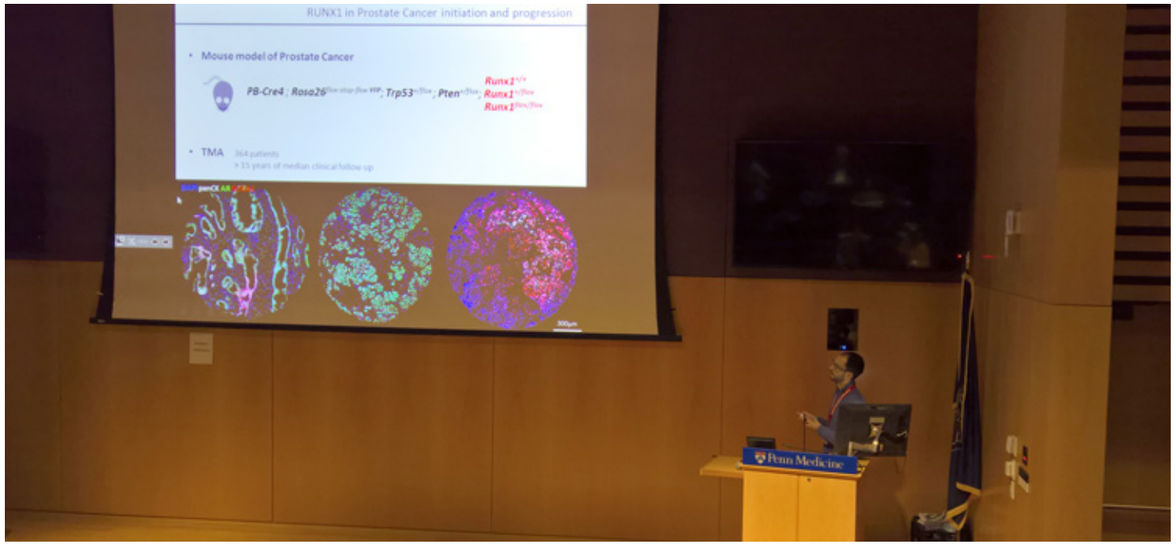
SMR 2017

The Society for Melanoma Research held its annual meeting in Brisbane, Australia this year. We wish to congratulate Rebecca Lee and Elena Galvani from Molecular Oncology on their participation at the event.

Rebecca received a competitive travel award to present her poster at the meeting and Elena was selected to present a talk on the basis of the excellence of her research abstract. This is a fantastic representation from our young researchers at an important international scientific meeting.



Top: Rebecca Lee receives her SMR Travel Award; Bottom: Elena Galvina presents her talk at SMR 2017

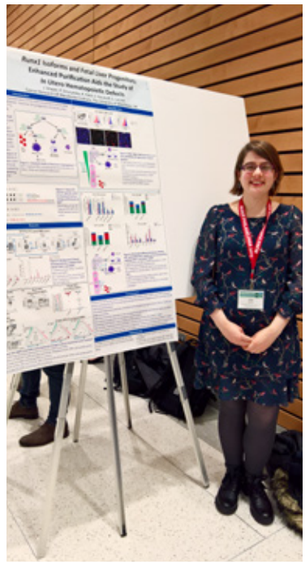


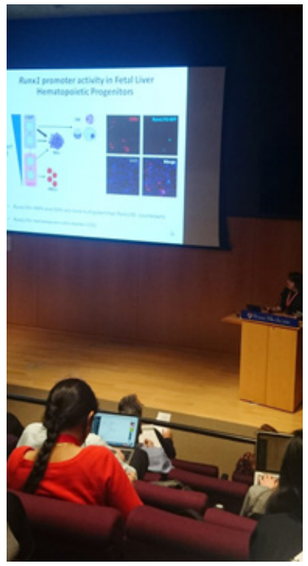
Renaud Mevel presents his work on RUNX1.

RUNX Conference

Several members of the Stem Cell Biology group made the journey to Philadelphia, USA to participate in the 21st International RUNX Conference at the beginning of November.

The conference was attended by over 100 researchers from all over the world to showcase their work on the RUNX transcription factors and RUNX-related disorders, particularly RUNX1 Familial Platelet Disorder with a Predisposition to Acute Myeloid Leukaemia (FPD/AML). Group Leader Prof Georges Lacaud gave a talk on the regulation of the dosage of RUNX1, and how it is crucial for blood formation. PhD student Renaud Mevel received a travel grant from the British Association for Cancer Research (BACR) to present his work on RUNX1 in normal prostate development and prostate cancer; and postdoctoral research fellow Julia Draper received funding from the British Society for Developmental Biology (BSDB) to present her project on RUNX1 expression and function in foetal blood production.





Left to right: Julia Draper by her poster, and presenting at the meeting.

Eduardo Bonavita

Keystone Symposia presentation

Eduardo Bonavita, a postdoc in Cancer Inflammation and Immunity, earned a place to give a talk at a Keystone Symposia organised meeting on Inflammation-Driven Cancer: Mechanisms to Therapy in Colorado, earlier this year.

Eduardo presented data on the molecular mechanism by which melanoma cells evade immunity and the factors that regulate the balance between tumour protective and tumour-promoting inflammation.

Awards from 2016

Since the Paterson Building fire of 26 April, we have been unable to publish a spring edition of the Newsletter as planned where we would have featured awards and events from late last year. We are proud of these achievements and have therefore still included them so we can celebrate these important successes.

Dexter Award

We are delighted to announce that Dan Wiseman was selected as the winner of the Institute's Dexter Award for Young Scientists for 2016.

The prize recognises the most impressive scientific achievement of the year across the Paterson and MCRC Buildings and is named after a former Director of the Paterson Institute, Professor Mike Dexter. Dan completed his PhD studies in the Leukaemia Biology group and authored eight publications, including three first author primary research papers and one first authored review. This represents a significant body of work encompassing both the basic biology of AML as well as more translational aspects.

Dan has also been awarded a highly competitive Bloodwise Clinician Scientist Fellowship to pursue post-doctoral studies in the Leukaemia Biology group. In addition, Dan has been awarded the Oglesby Senior Leukaemia Research Fellowship, which will enable him to develop an independent research career investigating chronic myelomonocytic leukaemia and related malignancies.

Prize at the MAHSC Prevention and Early Detection Showcase event

Michela Garofalo, who leads the Transcriptional Networks in Lung Cancer group, was awarded with a first place poster prize at the MAHSC Prevention and Early Detection Showcase event, held in Manchester in 2016.

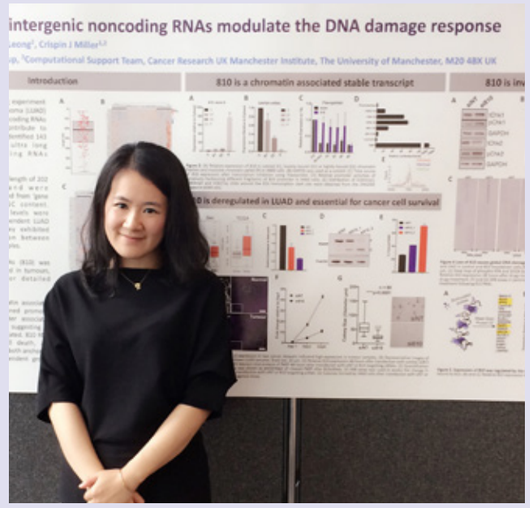
She presented the possibility of detecting non-small cell lung cancer early using microRNAs, small non-coding RNAs that have been established as key players in tumorigenesis.

Manchester Doctoral College Excellence Award Winner

The Manchester Doctoral College (MDC) has oversight of all doctoral training and researcher development across The University of Manchester and the MDC Excellence Awards celebrate exceptional performances from students.

Winners of these awards were announced at a prize giving ceremony as part of the Doctoral Academy PhD Conference in May last year and Ewelina Testoni, who completed her PhD in the Institute's Signalling Networks in Cancer group, was awarded best Outstanding Research Output. Ewelina is now working at Redx Oncology Ltd - part of the drug discovery and development company, Redx Pharma - based in Cheshire.

Winter Workshop Success



Jing BI standing next to her prize winning poster

The Manchester-UCL CRUK Lung Cancer Centre of Excellence held its second student and postdoc meeting in York.

This hugely successful Winter Workshop brought together junior researchers and experts working in the lung cancer field. Out of 25 posters Jing Bi, a postdoctoral fellow in RNA Biology, was awarded best poster prize.

ASCO 2017 recognition

The American Society of Clinical Oncology (ASCO) Annual Meeting, held in June, is the world's biggest clinical cancer conference.

This year the meeting focused on the need for a more personalised way of managing cancer, new treatment breakthroughs and improvements in survival.

Poster selected for discussion

Sara Valpione

Sara Valpione, an oncologist at The Christie NHS Foundation Trust who also works in the Molecular Oncology group with Richard Marais, presented a poster on the analysis of outcomes for melanoma patients retreated with BRAF-directed therapy. Her poster was selected for discussion and an expert in the field presented her data using slides she had prepared. Only 12 posters were selected so it is a great achievement for Sara.

ASCO Merit Award winner

Rebecca Lee

Rebecca Lee, a Clinical Fellow in Molecular Oncology, was invited to present a poster at the meeting, where she discussed her work on circulating tumour DNA (ctDNA) in melanoma.

She secured a BACR travel award to attend the meeting and won a highly competitive ASCO Merit Award from Conquer Cancer Foundation in recognition of the scientific merit of her abstract.

Richard speaking at the ESMO 2017 Meeting

Richard is honoured with a certificate in recognition for his role as Scientific Committee Co-Chair of ESMO 2017

ESMO 2017

Institute Director Professor Richard Marais was Scientific Committee Co-Chair of the 2017 European Society for Medical Oncology (ESMO) Congress.

This is a great accolade for a non-clinical cancer researcher to have had such a prominent role in the congress - the most influential annual meeting for oncology professionals in Europe - held in collaboration with the European Association for Cancer Research (EACR). The meeting brought cancer researchers and clinicians together to facilitate the exchange of ideas, from the laboratory to the bedside and back.

Events

Colloquium 2017

Alice Lallo receives the Lizzy Hitchman Prize for best poster

In September, the annual Institute Colloquium took place at Lancaster University.

The three-day event offers the chance for our staff and PhD students to present and discuss their work and to develop collaborations with each other.

Opening the first session, new MCRC Director and Senior Group Leader at CRUK MI, Rob Bristow gave an inspiring overview of his research in prostate cancer with the emphasis on his 'team science' approach. Subsequent sessions covered a variety of talks on both fundamental and translational research. Among these was a fascinating presentation by new Institute Fellow Patricia Muller on her work exploring the role of cell-in-cell structures in tumourigenesis.

Samantha Littler, Olivia Sloss and Eduardo Bonavita receive their prizes for best posters

Each evening, a poster session took place. Winning the Lizzy Hitchman prize for best poster by a PhD student was Alice Lallo of the Clinical and Experimental Pharmacology group for her work on circulating tumour cells and drug resistance in small cell lung cancer.

For the best poster by a postdoctoral researcher or scientific officer two prizes were awarded: one to Eduardo Bonavita from Cancer Inflammation and Immunity for his work on the potential for COX-2 as a useful biomarker of patient survival and potentially of response to immunotherapy; and the second to Olivia Sloss and Samantha Littler from Stephen Taylor's Mitosis and Cancer Pharmacology group, based in The University of Manchester's Division of Cancer Sciences, for their joint effort describing the dual role of transcription factor MYC in controlling the process of cell division and cell death.

NIHR Manchester Biomedical Research Centre

The National Institute for Health Research (NIHR) invested £28.5m in Greater Manchester to establish the NIHR Manchester Biomedical Research Centre, bringing together world-leading researchers from across The University of Manchester, including the Cancer Research UK Manchester Institute, and four NHS Trusts in Greater Manchester.

The centre will focus on three cancer themes (prevention, radiotherapy and precision medicine), alongside other diseases. Cancer precision medicine is led by Professor Caroline Dive and aims to deliver a more personalised and proactive approach to caring for patients with cancer.

RCPE Manchester Launch and Inaugural Lecture

Manchester Academic Science Centre and the prestigious Royal College of Physicians of Edinburgh (RCPE) recently formed RCPE Manchester, an exciting partnership to drive innovation and understanding in medicine.

Launched in June at The University of Manchester, an inaugural RCPE lecture was given by Professor Nic Jones on the power of partnerships in cancer research. He inspired the audience with the significance of what has been achieved locally in this field and highlighted future developments in cancer care.

Sponsor a Cancer Research UK Researcher

Colin Hutton

Matt Howell

Now it is possible to sponsor a Cancer Research UK PhD student to help fund their research activities, thanks to a pilot programme launched by CRUK.

This sponsorship programme aims to safeguard the funding of pioneering research and to raise awareness of the importance of PhD students in scientific research and their role in enabling Cancer Research UK to drive forward future success in cancer research.

CRUK currently fund approximately 550 PhD researchers and 41 are within our Institute. Two of our students, Colin Hutton and Matt Howell, are involved in this pilot scheme. Matt, a medical doctor who wants to become a cancer specialist in the NHS, is looking at how lung cancer cells differ from normal lung cells to help design drugs that target lung cancer; and Colin, who previously worked as a chemist in our Drug Discovery Unit, is investigating ways to reduce pancreatic cancer growth in order to help develop new treatments.

This new scheme enables donors to offer a financial gift towards the cost of delivering research. Sponsors will receive personal updates from the student and can attend CRUK lab tours and events to discover more about the science behind CRUK.

Now in his second year, Colin explains that he has been involved in the programme a little over a year and has found it to be an incredibly positive experience. He now thinks more carefully about funding and spending responsibility and has greater awareness of the generosity of supporters behind his research.

Matt says: "I have been part of the CRUK Sponsor A Young Scientist initiative for 18 months. Every six months I send an update to supporters, explaining what progress I have made with my PhD. The programme is a great way for supporters to get a sense of how their donation supports a junior researcher. My PhD is fully funded by CRUK, so this feels like a small thing to give back."

PhD students are a vital part of cancer research and potential future leaders in the field, so it is fantastic to learn that Cancer Research UK are currently recruiting more students into the programme. Sponsoring a young PhD Researcher facilitates innovative research that leads to tomorrow's scientific breakthroughs, helping to beat cancer sooner.

STAy Science Showdown

Jack Heal receiving prize for best talk

Earlier this year, the Manchester Cancer Research Centre (MCRC) Building hosted a fantastic STAy event: Science Showdown - the Battle of the Beakers - promoting scientific diversity and collaboration.

Scientists were given 3 minutes and 14 seconds to demonstrate why science is great and why their field knocks-out all the rest. These exciting short talks from PhD students and post-docs across the CRUK Manchester Institute and other parts of The University of Manchester engaged the audience and prompted lots of questions.

Talks ranged from "Is a data scientist the sexiest job of the 21st century?" to describing the make up of a cell in "Bigger on the inside". The prize for best talk went to CRUK MI's Database Web Developer Jack Heal, who blew our minds with the unimaginable Graham's number and entertained us with a stand up show about mathematics.

The STAy committee thank Pip Peakman, Director of Research Operations and Strategy for the MCRC, and all the competitors and audience members who made the evening such a success. Hopefully the 'Showdown series' will become an annual event.

Animals in research

Most of our research does not involve animals but some animal research is essential if we are to understand, prevent and cure cancer.

We only use animals when there is no alternative and in every study we aim to adopt the 3Rs' principles (reduction, refinement and replacement of animals). In this section, we highlight our efforts in maximising the welfare of the mice in our facility.

Promoting our Animal Research

Ben Acton from the Drug Discovery Unit presented a talk last year at The Laboratory Animal Science Association Winter Meeting.

He opened one of the 3Rs sessions and discussed the way in which the DDU has incorporated microsampling techniques throughout its in vivo cascade to maximise the value of early studies, avoiding potentially wasteful later experiments and reducing animal usage. The talk received very positive feedback and prompted a number of follow-up discussions.

3Rs Poster Prize

The Institute held a poster competition to highlight how our research is implementing the 3Rs.

Gemma Forrest, formerly of the Biological Resources Unit at the Institute, was awarded best poster prize for refining the detection of ovarian tumours. Using a non-invasive method, Gemma learned how to palpate the mice in such a way that enabled her to identify any tumour growth in the ovaries and reduce the amount of procedures involved for the animals. This event showcased the number of our researchers that are making a huge effort to improve animal welfare every day.

Gemma is presented with her prize by Professor Dame Nancy Rothwell, President and Vice-Chancellor of The University of Manchester who was invited to judge at the event

Public Engagement Award

At the Understanding Animal Research's third Openness Awards, CRUK MI was recognised for having helped further the way in which animal research is communicated in the United Kingdom.

Our Institute took The Public Engagement Activity Award for engaging public audiences with cancer research at the Manchester Museum of Science and Industry Platform for Investigation event. PhD students, scientific staff, and technical staff from our animal facility showcased our animal research with hands-on activities. We are very proud of our achievements in engaging the public in this crucial aspect of our cancer research.

Our team of researchers and technical staff receive UAR prize for engaging the public with animal research and cancer

Transforming pancreatic cancer in Manchester

Researchers at The Christie NHS Foundation Trust and CRUK MI will receive £1.2 million over 5 years from Cancer Research UK to help transform pancreatic cancer treatment in the UK.

The charity is investing a total of £10 million in the PRECISION Panc project – based in Glasgow, Manchester and Cambridge - which aims to develop personalised treatments for pancreatic cancer patients and improve the options and outcomes. In Manchester, the Institute's Professor Caroline Dive and Dr Claus Jørgensen, alongside Professor Juan Valle from the Christie, will work together to use the molecular profile of each individual tumour to offer pancreatic cancer patients and their doctor a menu of clinical trials that might benefit them.

The CRT Pioneer Fund and CRUK Manchester Institute nominate cancer drug candidate

The Cancer Research Technology Pioneer Fund LP (CPF) is further developing a promising class of cancer drugs called RET inhibitors, through a collaboration with our Drug Discovery Unit.

A potential drug candidate has entered preclinical studies, the stage necessary to enable an investigational new drug (IND) application and ensure the drug is safe for patients. If the studies are successful the experimental drug will be funded through early clinical trials. This is a significant project milestone and the further investment will pave the way for a potential new cancer drug to be taken into phase I clinical trials.

Lisa Doar receives Innovation Award for the Mouse Swing

Innovation award for BRU

Lisa Doar and her team in the Biological Resources Unit has introduced cable tie "Mouse Swings" as an additional form of environmental enrichment to improve the welfare of experimental mice in the facility.

Following positive feedback about their poster on the swings at the Institute of Animal Technology Congress, they entered their invention in the inaugural Janet Wood Innovation Award competition. We are delighted to announce that BRU won the award and excitingly the Mouse Swing has been adapted into a commercially available product in partnership with Datesand Ltd.

Award winning Mouse Swing improves animal welfare

Staff News

Babies

Eleanor Grant with her new baby sister Emily

The Molecular Oncology family grew bigger over the last few months with three beautiful new arrivals: Megan Grant, Scientific Officer, gave birth to her second baby girl in January. Emily Elizabeth Grant weighed 7 pound 9 ounces when she was born.

Kasper Ray Caplan

Nathalie Dhomen, Associate Scientist, welcomed her second child Kasper Ray Caplan in April. This handsome little boy was born weighing 2.58kg.

Leif Austin McKenzie Cox

Ruth Cox (EA to the Director) and her husband Callum are overjoyed with the arrival of their son Leif Austin McKenzie Cox. Born in June, weighing a healthy 9lb 11oz, he is already enjoying exploring the Peak District on walks with his family.

Getting dirty to beat cancer

A huge congratulations to Kim Acton, from BRU, who took part in the Pretty Muddy race in June last year at Tatton Park. Kim and two friends from the Macclesfield Academy Group Transformation Centre completed this muddy obstacle course fundraising for CRUK. Well done Kim!

When not even the sky is the limit

This was a year of fantastic achievements for Jason Farrand, scientific officer in the BRU. Not only did he complete his first full marathon, but he also did his first skydive just a few days later.

Jason took part in the Scott Trail Marathon in July and completed it in 6 hours 50 minutes. This is a 26 miles race up and around the highest mountain in Snowdonia (Wales). "It was a toughie considering it was my first ever marathon and previous to taking part in this, I had only ever run 9 miles. I ideally I should have opted for the half Marathon but you only live once", he commented.

Jason ran his first marathon and did his first skydive within a week!

With that same spirit he embarked on a new adventure just a week after, when he jumped from 15,000 ft high in his first ever skydive. "The free fall was amazing. It felt like I couldn't breathe but so good at the same time. Once the parachute was open it was epic, the views were amazing" he concluded.

In the spotlight with Andy Lloyd

Andy is our Logistics Team Manager and is a very familiar face around the Institute. From delivering and distributing goods, to maintaining our liquid nitrogen stock and moving heavy items, he and his team play a vital role in supporting our research. Since the fire, Andy has worked exceptionally hard to help co-ordinate the removal of vital items from the Paterson Building as well as providing invaluable help as the Institute undergoes its relocation.

1. **What is your favourite part of the UK?**
   Probably Cornwall.

2. **What was your best ever holiday and why?**
   My most recent one in Majorca. Fantastic hotel, great entertainment team which kept the kids entertained day and night.

3. **Which website do you always check, and why?**
   Probably BBC sport, football gossip.

4. **What is your favourite film?**
   Don't really have a favourite, but I will never get bored of Saving Private Ryan. My favourite genre is War.

5. **What is your favourite band/singer?**
   Again don't really have a favourite, but if I end up getting up and doing Karaoke, I tend to sing Meat Loaf (I blame my upbringing).

6. **If you had to change careers tomorrow, what would you do?**
   Pilot in the RAF, as you get to travel the world

7. **What is the most important lesson that you have learnt from life?**
   Life is short and unpredictable, so if you can do something today don't put it off until tomorrow.

8. **Name three things you would take with you to a desert island?**
   A boat to get back home, food/water to last the journey home, a talking parrot.

9. **What is your greatest fear?**
   Dying the day before I retire.

10. **How would you like to be remembered?**
    As someone who is honest, loyal, good humoured and reliable. And to be remembered by the lives that I touched and loved.

11. **If you could change one thing in your past what would it be?**
    To never have learned to play the one armed bandits. I would probably be wealthy now.

12. **What is your signature dish to cook?**
    Steak with peppered mushroom sauce.

13. **You've just won the lottery and have £5 million pounds to spend. What do you buy first?**
    Around the world ticket.

14. **What is your idea of perfect happiness?**
    Lots of holidays and SSS. Sun, Sea and Sangria.

15. **What keeps you awake at night?**
    My back.

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