Organisers and Speakers of the BACR Special Meeting
Non-coding RNAs in Cancer and Development, meeting report within.
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2016/2017

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Confirmed speakers include:
- Annie Anderson
  University of Dundee, UK
- Arul Chinnaiyan
  Michigan Center for Translational Pathology, USA
- Matthew J. Ellis
  Baylor College of Medicine, USA
- Jerome Galon
  Integrative Cancer Immunology Laboratory, INSERM, France
- Irene Higginson
  Cicely Saunders Institute, King’s College London, UK
- Steve Jackson
  University of Cambridge, UK
- Pasi Jänne
  Harvard Medical School and Dana-Farber Cancer Institute, USA
- Ton Schumacher
  The Netherlands Cancer Institute, Netherlands
- Bin Tean Teh
  National Cancer Centre and DUKE-NUS Medical School, Singapore
- Anthony Zietman
  Massachusetts General Hospital and Harvard Medical School, USA

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<table>
<thead>
<tr>
<th>Page Range</th>
<th>Content Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 2</td>
<td>Letter from the Chair</td>
</tr>
<tr>
<td>3 - 10</td>
<td>Meeting Reports</td>
</tr>
<tr>
<td>11 – 15</td>
<td>NCRI 2016</td>
</tr>
<tr>
<td>16 - 17</td>
<td>BACR/Breast Cancer Now</td>
</tr>
<tr>
<td></td>
<td>San Antonio Breast Cancer Award Report</td>
</tr>
<tr>
<td>18 – 46</td>
<td>Travel Award Reports</td>
</tr>
<tr>
<td>47</td>
<td>Travel Fellowship Report</td>
</tr>
</tbody>
</table>
My name is Professor Julian Downward and I have taken over as Chair of the BACR from Caroline Dive at the 2016 AGM. I trained with Mike Waterfield in London and Bob Weinberg in Boston before setting up my own lab in 1989 at the Cancer Research UK London Research Institute, now the Francis Crick Institute, where I am an Association Research Director. My work focuses on the role played by major oncogenes such as RAS and EGFR in human cancer. I established the EGFR being the product of the \( \text{erbB} \) proto-oncogene and was responsible for mapping out the signalling pathways linking EGFR to RAS and downstream of RAS to the MAP kinase and P1 3-kinase pathways. I am also a Fellow of the Royal Society.

I want to first of all thank Caroline Dive for her contribution to this committee from 2011 through to 2016. She was a positive influence and had a can do attitude. She was instrumental in getting funding from CRUK to assist with the Student Travel Awards and was also influential in increasing student membership numbers.

With the help of the Branding Company a new branding was developed and from this we then went on to develop a new website. This has taken a number of months to put together but I hope, like me, you like the end product.

Also at the 2016 AGM the Constitutional Changes were accepted by the membership in relation to the collection of membership subscriptions. This means we will be working on adding these changes to the website in the next few months to take effect for the 2018 subscription run.

The changes in relation to the subscriptions are as follows:

1. If you have a direct debit on your account then nothing will change and payment will be collected on the 1st October as before.
2. If you pay your membership subscription by other means the website itself will send out a reminder when your subscription is due.
3. You will only have a period of six weeks in which to pay your subscription. If this is not paid your membership will be terminated.
4. Reinstatement of a membership will no longer be available if your membership terminates. You may apply for a new membership but you will have to wait one year before you can apply for any of the Fellowship and Bursaries BACR has to offer.

This decision has had to be made to help streamline subscription payments, and reduce the workload of the Secretariat and also so the rules are fair and transparent as it could be seen as unfair to members who maintain their
subscriptions for eligibility for award applications, especially now that the awards are extremely competitive.

Not only did the BACR have changes to make to its branding and website but it was also business as usual. In July we held the BACR/ECMC Joint Meeting, Therapeutic Interventions for cancer prevention – the way forward at the School of Chemistry, University of Bristol. A meeting report is enclosed for your information. This meeting was a great success and was sponsored by the United Kingdom Environmental Mutagen Society.

We also attended the EACR Biennial Congress in Manchester where we supported a BACR Symposium on Invasion and Metastasis. We also had an exhibition stand and provided Travel Awards to some of our student members. We had 15 applications and the following people were awarded: Anh Le; Hannah Moody; Fiona Kogera; Aisyah Mohd Noor; Johanna Amunjela.

We were also present at the 2016 NCRI Cancer Conference in Liverpool. This year, Kat Arney, Freelance science writer and science broadcaster gave this year’s BACR Tom Connors Lecture on Headlines, hype and hope: How should we talk about cancer research? We also held two BACR Workshops. The first Bioinformatics for the uninitiated which was hosted by Crispin Miller from Cancer Research UK Manchester Institute. The second BACR workshop entitled Artificial cells- smart delivery system for cancer therapy hosted by Oscar Ces of Imperial College, London.

I would like to take this opportunity of thanking everyone for their involvement in our 2016 events.

Also further on in this newsletter we report on the winners of the BACR/AstraZeneca Frank Rose Award and the first BACR/Astex Pharmaceuticals - Roger Griffin Prize for Cancer Drug Discovery and finally the Hamilton Fairley Post Prize.

So far in 2017 we have had the Non-coding RNA in Cancer and Development Meeting in May and the Tumour Microenvironment – Basic Science to Novel Therapies (Including 3D Model Workshop) in June. Both of which were successful and again you can see the meeting reports within this Newsletter.

We also have a Development of Cancer Medicines meeting planned for the 21st November entitled Precision medicine and cancer modes: developing strategies to enhance clinical response. This meeting is being held at the Royal Society of Medicine. Please see the website for more information.

True to our mission of promoting young talent in cancer research, the BACR awarded travel bursaries in all three rounds of the competition in February June and October; the February round resulted in 37 applications of which the following were awarded: 7 Non Student Awards and 13 BACR/CRUK Student Awards and in the June round 19 applications resulted in 9 BACR/CRUK Student Awards and 4 Non Student Awards. The October round we received 16 applications resulting in 7 BACR CRUK Student Awards and 3 Non Student Awards and one Travel Exchange.

We also had two one off awards in 2016 the first in relation to the EACR Biennial Conference which I reported early and the second the BACR/Breast Cancer Now San Antonio Breast Cancer Award. We received 4 applications for this one off award and the winner was Alastair Ironside who received £2,000 towards his registration, accommodation and travel. He has also provided a report which can be found in this newsletter.

Finally, I would like to take this opportunity of thanking once again our major sponsor AstraZeneca and Astex Pharmaceuticals and our supporting partners Randox for all their support this year.

Best wishes

Julian Downward
Chair
he aim of this meeting was to address the enormous opportunities and some of the challenges faced by researchers in the field of therapeutic cancer prevention. This two day meeting was targeted at a broad range of researchers, spanning basic scientists interested in mechanistic pathways relevant to carcinogenesis, translational scientists working on chemoprevention (including those involved in nutrition and food research) as well as clinicians, epidemiologists, statisticians and geneticists undertaking clinical prevention trials. Until recently, there was no available forum at which these people would have had the opportunity to meet and interact, the UK Therapeutic Cancer Prevention Network (UK-TCPN) was set up in Nov 2013 with support from the Cancer Research UK Experimental Cancer Medicine Centre (ECMC) secretariat to fill this gap; this International meeting was conceived and organised by this collaboration.

The 'Therapeutic Interventions for Cancer prevention' meeting attracted a fantastic line up of International Speakers; all were extremely generous with their time, presenting stimulating talks often containing unpublished data. Session Chairs wrestled to keep to time, as questions generated lively discussions which often spilled over into the refreshment breaks. Speakers mingled with delegates throughout the meeting; in fact one of the most important and enjoyable aspects of this meeting was the amount of discussion both in the sessions and in the refreshment breaks as well as at a wonderful delegates dinner at the University’s Goldney Hall Orangery, on a beautiful summers evening.

The full programme and abstracts can be viewed at www.bacr.org in the BACR meeting archive. Michael Pollak (McGill, Canada) opened the meeting with a wonderful Keynote Address, discussing the use of Metformin in cancer prevention. He described how metformin appears to reduce oxidative phosphorylation resulting in energetic stress in cells at risk of transformation. He stated that metformin may be particularly effective for prevention in a subgroup of patients that are “metabolically obese”, introducing a theme that recurred throughout the conference of identifying populations who would most benefit from chemoprevention.
In the session on ‘Aspirin and cancer prevention’, Peter Rothwell (Oxford) started by outlining what we still need to know from epidemiology and trials, followed by Ruth Langley (MRC, UCL) who gave us an update on the Add Aspirin trial. Carlo Patrono (Rome, Italy) then discussed potential mechanisms of action of low dose aspirin in chemoprevention. Prof Sir John Burn (Newcastle) introduced the CAPP trials and bought us up-to-date with CAPP3. Farhat Din (Edinburgh) discussed the effects of aspirin on energy and metabolism signalling in colorectal cancer, followed by Mark Hull (Leeds), who covered in vivo mechanistic data on the interaction between aspirin and Omega-3 fatty acids which lead to the seAFOod trial. The ‘Dietary interventions for cancer prevention’ session was led by Richard Mithen (Norwich) who covered the association between diet, exercise and prostate cancer, and described their ongoing trial which hopes to gain better insight into how cruciferous vegetables (and broccoli in particular) can prevent cancer. Michelle Harvie (Manchester) gave a stimulating talk on how lifestyle and diet can be used to prevent cancer using breast cancer as an example.

In the second Keynote Address, Adrea De Censi (Genoa, Italy) discussed some of the barriers to therapeutic cancer prevention; again using breast cancer as the example, he described how despite efficacy, the uptake of prevention therapies for breast cancer remains low, due to barriers such as patient/physician awareness, fear of side effects, lack of mortality data and licensing and indemnity issues. His talk led the way in describing strategies to overcome such barriers and outlined what is needed for future research for cancer prevention.

In the session on New Approaches and recent advances, Bernado Bonnani (Milan, Italy) discussed recent advances and lessons from window trials and Malcolm Dunlop (Edinburgh) talked about using genetic data for risk profiling in colorectal cancer. Owen Sansom (Glasgow) described the advances in \textit{in vivo} models that allow intestinal stem cell dynamics to be studied, generating data that give new and important insight to the mechanisms that drive stem cell fitness in intestinal tumorigenesis. Marc Gunter from the International Agency for Research on Cancer (Lyon France) covered obesity and metabolic health and cancer prevention, identifying metabolic subtypes in relation to breast and colorectal cancer risk.

In the session on “Drug repurposing what next?” Farhat Khanim (Birmingham) gave a comprehensive introduction to drug repurposing, highlighting the importance of drug redeployment, giving examples of successful drugs that have changed the clinical landscape in diverse disease areas, including diseases of the developing world and rare diseases. Rob Coleman (Sheffield) covered the use of bone targeted agents such as bisphosphonates for the prevention of breast cancer.

Included in the programme were also seven excellent talks selected from abstracts covering topic from basic science, mechanistic studies, epidemiology to general Practitioner attitudes towards prescribing Aspirin for Lynch Syndrome. In addition, a total of 38 abstracts were selected for poster presentation; posters were acclaimed as being of universally high quality making the poster prizes very difficult to select. Generously supported by the UK Environmental Mutagen Society, poster prizes were awarded to Alex Greenhough (first prize, Bristol), and to the runners up Caroline Bull (Bristol), Sam Smith (London) and Alexandrou Constantinos.

To conclude the meeting, Sylvia Bailey and Maired Mackenzie (Patient and Public Involvement) provided insight into the patient perspective and importantly highlighted how groups provide an independent patient voice which can help with prevention research. Finally Jack Cuzick (London) gave a fantastic overview for the prospects for cancer prevention in the next ten years, highlighting successes as well as the challenges ahead.

We were also pleased to be supported by eCancer, who carried out short interviews with many of the Speaker and delegates, which will be available to view at http://ecancer.org, allowing us to reach a
wider audience, highlighting the importance of cancer prevention research.

Included below is a student’s perspective of the meeting written by Eleanor Mortensson who is in the first year of her PhD in Bristol:

As a PhD student, hearing and even meeting some of the big names in chemoprevention at the recent BACR conference was fantastic. Listening to talks from Professor Cuzick and Professor Rothwell, scientists whose papers have influenced the field so greatly and who discussed not only the merits of chemoprevention, but also the problems we still face, was really thought-provoking and provided many fresh ideas for the future. Hearing from primary researchers and epidemiologists, through to clinicians and patients themselves brought to the forefront the real impact and importance of chemoprevention and the discussions produced meaningful collaborations that will help my project and hopefully my career in the future. The quality of posters presented at the conference was also particularly high and being able to present my work alongside these a pleasure, discussing my research with so many people was really helpful. Overall, being able to talk with some of the greatest names in chemoprevention, listen to the presentations describing cutting edge work and the atmosphere of free discussion provided an environment which was truly inspiring.

In summary, the aim of the meeting was to encourage collaboration that would facilitate prevention/delivery, which is particularly timely as prevention represents the best opportunity to significantly impact cancer mortality statistics. The success of this meeting is highlighted by the many requests that this become a regular fixture, and we would like to extend our sincere thanks to all the participants who made this such an enjoyable and informative meeting.

This exciting 1-day workshop was held in the auspicious surroundings of the Royal Society of Medicine in London and attracted 72 delegates, from across and beyond the UK, reflecting the exciting international line-up of speakers - 7 invited speakers and 5 short talks selected from the excellent submitted abstracts. The purpose of the day – to reflect the current state of research into all aspects of non-coding RNA biology at this pivotal time – was introduced by Claire Fletcher, representing the Organising Committee.

The meeting was then kicked off in fine style by Sean McGuire of the University of Texas MD Anderson Cancer Center, Houston, USA. He highlighted two pertinent issues that frustrate many working in the field of microRNAs: how to accurately identify miR targets in a biologically- and disease-relevant manner, and the extent to which miR binding location within a gene determines extent and direction of regulation. Outlining his group’s recent seminal work, Dr McGuire described use of an optimised cross-linking protocol to give a ‘snapshot’ of functional miR:mRNA interactions in cancer cells. These data revealed that pan-cancer onco-miRs (miR oncogenes) are enriched in GUGC motifs and, interestingly, co-target many tumour suppressors, leading to targeting redundancy – a concept with many ramifications. Next in this session – on small RNAs in cancer – was Luke Selth of the University of Adelaide, Australia. Dr Selth outlined use of miRs as clinically-informative biomarkers in cancer, demonstrating that a 5-miR signature, when assessed in seminal fluid of men with a high risk of developing prostate cancer, has higher diagnostic accuracy than PSA testing (the current standard). In addition, he has been investigating miRs as treatment response biomarkers in circulating tumour cells (CTCs) of advanced, so-called ‘castration-resistant’ prostate cancer (CRPC) patients, exploiting spiral chip technology to isolate CTCs based on size and deformability. To round off the session, in a short talk Francesco Nicassio, of the Fondazione Istituto Italiano di Tecnologia, presented a very interesting study that looked at the role of miR-34a in the regulation of mammary stem cells and breast development from
early progenitor as well as breast cancer stem cell formation. He showed that mammary progenitor cells with miR-34 depletion have defects in proliferation and fate commitment. He suggested that miR-34a-dependent therapy could be used to treat triple negative breast cancers which are highly enriched in cancer stem cells or tumour initiating cells.

The second session covered non-coding RNAs as treatment targets and biomarkers. Xavier Gidrol, of the Centre de Energie Atomique, Grenoble, gave a thought-provoking and stimulating talk about miRNA networks – including, among other concepts, a “stemness community” of miRNAs that can control differentiation in many cell types. He also introduced a quirky and very useful analogy of miRNAs as acting like the suspension on a car, buffering mRNA expression! He was followed by Tapio Visakorpi, of the University of Tampere, who talked about both miRNAs and long non-coding RNAs (lncRNAs) in prostate cancer. When his group studied identified 128 IncRNAs differentially expressed in prostate cancer, they saw in some cases there was correlation with adjacent coding transcripts suggesting they may simply be passengers – but in other cases there was not, and one such case was PCAT5, which appears to be regulated by and show correlation of expression with ERG, an important oncogene in prostate cancer. This opened up discussion of whether a major function of IncRNAs is to act as microRNA sponges: Dr Visakorpi was of the opinion that this isn’t the case. He was succeeded by Victoria James, of Nottingham University, who gave an elegant short talk in how extracellular vesicle RNA may prime the pre-metastatic niche. Excitingly, she has been able to label such RNAs and show their transfer into cells in the metastatic niche (in this case osteoblasts).

Over lunch we held a poster session, showcasing 20 excellent and exciting posters of mostly unpublished work which sparked high-quality discussions and allowed a lot of networking for all participants, from the PhD students to the heads of Institutes. Then into the next session, the topic of which is encapsulated in Martin Bushell’s (University of Leicester) title “How do microRNAs work?”. Addressing the vexed question of whether repression of translation by microRNAs occurs pre- or post-initiation of translation, he showed compelling evidence that it can be both, and discussed mechanisms including recruitment of RNA helicases to the RNA-Induced Silencing Complex. He was followed by 2 short talks, the first by Benjamin Hawley also from Leicester. Ben showed novel data linking microRNA biogenesis and DNA double-strand break repair, with Drosha enzyme providing the key functional link. Next, Paolo Gandelini (Isitituto Nazionale dei Tumori di Milano) elegantly indicated that MIR205HG, the RNA transcript and primary transcript host for miR-205, is actively involved in cancer progression independently of the activity of the miRNA itself, by acting as a nuclear long noncoding RNA. Interestingly MIR205HG is not involved in post-transcriptional gene regulation, but regulates transcription of target genes by directly interacting with their promoter regions.

The final session concentrated on lncRNAs and Loverka Stojic (University of Cambridge) described a functional screen for lncRNAs involved in regulating cell division and cell shape. She termed the hits from this “limp RNAs” — for lncRNA-induced mitotic phenotype and showed movie
footage to demonstrate how their depletion induces enormous mitotic delay. Next, Jorge Ferrer (Imperial College London) described the discovery that in the beta cell transcriptome, most transcripts were found to be non-annotated — in fact lncRNAs. Many of these are unique to pancreatic islets and show dynamic, stage-specific regulation. They often co-regulate the same genes as islet-specific transcription factors thus represent a means to fine-tune the actions of these. The final speaker, Keith Vance (University of Bath) drilled down to a specific, chromatin-associated lncRNA termed PAUPAR (Pax6-Associated Upstream Antisense ncRNA). He described a novel method of identifying the RNA targets of such chromatin-associated RNAs and how this led to a mechanism whereby the lncRNA can promote formation of a ternary complex by modulating chromatin, this may be local or in trans to transcription factor binding sites. The meeting was then rounded off with a summary of the talks by Leandro Castellano and closing remarks and thanks from the Committee before more discussion and networking opportunities over (well attended!) drinks. We are very grateful to Janet Alexander for her enormous input on the day and in planning, and for generous support from Cancer Research UK, Exiqon, Nanostring Technologies and Cambridge Bioscience. Also to the participants, whose enthusiastic input made the day a great success generating fantastic feedback — we hope to repeat the event in the future!

Organising committee: Charlotte Bevan, Leandro Castellano, Claire Fletcher.
Over 150 speakers and delegates from across the world met in central Nottingham to present and discuss the latest advances in tumour microenvironment work. The meeting kicked off with a joint workshop, hosted by Penelope Ottewell, Craig Murdoch and Neil Cross (Sheffield) and Anna Grabowska (Nottingham). Eight invited speakers covered themes from 3D models to test stromal targeting to how best to model bone metastasis. The workshop included a number of talks delivered by junior investigators that were selected from the submitted abstracts. The workshop was closed by Jos Jonkers from Amsterdam who’s presentation combined the cutting edge 3D tumour modelling with deep sequencing techniques to suggest news ways to target chemoresistant tumour genotypes.

The Tumour Microenvironment meeting was started by Robert Kerbel who presented ‘the state of the art’ with respect to how preclinical models are informing future approaches for tumour targeting. The Tumour Microenvironment meeting was designed to cover a range of topics ranging from Hypoxia and metabolism (Michael Potente, Max Mazzone, Ester Hammond); Stroma (Ian Tomlinson, Jeff Pollard, Ingunn Holen); Tumour angiogenesis (Kari Alitalo, Kairbaan Hodivala-Dilke, Gordon Jayson); Cancer and the immune system (Lisa Cousens, Poulam Patel, Jamie Honeychurch); and the Interstitial-stem cell niche (Gabriele Bergers, Axel Behrens, Roy Bicknell). One emerging theme of the meeting was the cross talk between innate and adaptive immune cells in tumours and the vascular and stromal components, demonstrating exciting potential clinical applications for new therapies and diagnostics/theragnostics that could target this interaction. The increasing understanding of the complex nature of the tumour microenvironment, its chemical, physical and cellular control of the cancer cells themselves, and its influence on cancer behaviours was very apparent.

The meeting was closed by David Bates, who gave a summary of aspects of the meeting, particularly focussing on the emerging role of the synergy between anti-angiogenesis and immunotherapies. 6 further talks were selected from the abstracts, including outstanding talks from PhD students, postdocs and faculty, whereby the depth and quality of the scientific field in the UK for tumour microenvironment was demonstrated. Two lively poster sessions were held, with over 80 posters submitted from all over the world, with delegates travelling from as far afield as Australia for the meeting. Nine prizes were given out for presentations at the meeting, at a lively dinner held at the Nottingham Conference Centre.
These included the Hamilton Fairley prize to Barry Peck from the Institute of Cancer Research, BACR awards to Kendelle Murphy and Kiren Yaqub, EACR awards to Massimiliano Mellone, Christopher Hanley and Rachel Evans, and University of Nottingham Cancer Research Priority Area poster prizes to Sara Waise, Cristina Ferreras and Nicola Ferrari (see some of our winners pictured below). The organising committee (Dave Bates, Andrew Benest, Anna Grabowska, Stewart Martin, and Sarah Storr) have already begun to organise the follow up meeting for June 2019. We look forwards to welcoming you all again to Nottingham.
Cancer specific non-essential amino acid metabolism – a role for targeted dietary intervention in cancer therapy?

Oliver D. K. Maddocks\textsuperscript{1,2}, Dimitris Athineos\textsuperscript{1}, Eric C. Cheung\textsuperscript{1}, Pearl Lee\textsuperscript{1}, Tong Zhang\textsuperscript{2}, Julianna Blagih\textsuperscript{1}, Kirsteen Campbell\textsuperscript{1}, Niels van den Broek\textsuperscript{1}, Gillian M. Mackay\textsuperscript{1}, Christiaan F. Labuschagne\textsuperscript{1}, Fatih Ceteci\textsuperscript{1,3}, Owen J. Sansom\textsuperscript{1}, Karen Blyth\textsuperscript{1} and Karen H. Vousden\textsuperscript{1}

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\textbf{Background}
Altered cell metabolism is a fundamental hallmark of cancer and tumour cells acquire a range of metabolic perturbations and adaptations that support proliferation and survival. To sustain enhanced growth, cancer cells become dependent on uptake of nutrients such as glucose and amino acids. We have undertaken extensive studies to characterise the dependency of cancer cells on the non-essential amino acids serine and glycine; including the metabolic pathways dependent on these nutrients, and how this phenotype can be exploited for improved cancer therapy.

\textbf{Methods}
To elucidate metabolic pathways involved in serine and glycine metabolism we have utilised and developed steady state metabolomics and carbon-13 labelled metabolic flux assays. These approaches, combined with conventional protein expression analysis and functional assays, have allowed us to characterise serine and glycine metabolism in cancer cells \textit{in vitro} and \textit{in vivo}.

\textbf{Results}
We have found that many cancer cell lines are sensitive to serine starvation, despite the ability of these cells to synthesise serine \textit{de novo}. Cancer cells undergo extensive metabolic remodelling in response to serine starvation requiring a balance between nucleotide and glutathione synthesis aided by the tumour suppressor p53. We have also characterised why excess glycine (a direct metabolite of serine) can inhibit cell proliferation when given in excess. In exploring the metabolic links between the methionine cycle and serine dependent
one-carbon metabolism we have found that cancer cells do not ordinarily use serine to re-synthesise methionine, but rather use serine to support the methionine cycle – and DNA & RNA methylation – via *de novo* ATP synthesis. In pre-clinical studies with a range of murine models we show that certain tumours are sensitive to dietary serine restriction, which significantly improves survival as a sole therapeutic intervention.

**Conclusions**

This work establishes a strong foundation for the continued investigation of dietary non-essential amino acid restriction as an adjunct to conventional chemo and radiotherapy.
The British Association for Cancer Research was proud to announce the annual Roger Griffin Prize for Cancer Drug Discovery, generously supported by Astex Pharmaceuticals, Cambridge, UK.

Background

Roger Griffin passed away in September 2014 following a courageous battle with pancreatic cancer. Roger was a highly successful and internationally respected medicinal chemist, and a longstanding and valued member of the BACR. He was Professor of Medicinal Chemistry and Co-director of the Cancer Research UK Drug Discovery Programme at Newcastle University. Roger graduated in Pharmacy from the University of Portsmouth in 1981 and completed a PhD in Medicinal Chemistry at Aston University. He moved to Newcastle in 1990, and became Professor in 2001. The main focus of Roger’s research was anticancer drug design, with a particular emphasis on the medicinal chemistry of antitumour agents that modulate DNA damage repair and cell cycle progression. Roger was passionate about the BACR’s mission to support and nurture talented young cancer researchers across the UK and we were privileged to be able to award this prize in his honour.

Roger’s widow Melanie Griffin kindly agreed to attend the conference and award our first prize winner Matthias Baud of the University of Southampton whose talk was given on:

Engineering potency and selectivity of chemical probes for functional elucidation and target validation

Designing selective chemical probes is crucial for accurate functional elucidation and target validation in disease. However, this can become a daunting task when the target is part of a family of structurally related proteins. One example of such a family of proteins includes Bromo and Extra-Terminal (BET) proteins brd2, brd3, brd4 and brdt, which are important transcriptional co-regulators modulating gene expression in the nucleus. Key to their activity are small modular domains called bromodomains that recognise and interact with acetylated lysine residues from chromatin. The eight BET bromodomains (two per BET protein) have attracted particular attention lately for drug
development. Disregulation of their transcriptional activity has been linked to a number of aggressive cancers that are usually associated with relatively poor prognosis, such as NUT midline carcinoma, multiple myeloma, mixed-lineage leukemia and myeloid leukaemia. These findings have fuelled the interest of medicinal chemists for developing new routes towards synthetic and potent small molecules modulating the activity of BET bromodomains by disrupting their interaction with their chromatin substrates. This eventually resulted in the development of a range of small molecules showing efficacy against several cancers. A number of such compounds are currently evaluated in the clinic as anticancer agents. Despite their promising pharmacologies, these molecules bind to all BET bromodomains rather unspecifically in cells and all past attempts at modulating an individual BET bromodomain with a small molecule proved largely unsuccessful. This in turn hampered accurate functional elucidation of individual BET bromodomains, making it unclear which of these domains should be the ideal target of further medicinal chemistry efforts.

We recently developed a chemical genetics approach called “bump-and-hole”, aimed at delivering a new tool that would allow us to selectively modulate an individual BET bromodomain with a small molecule. This approach is based on the generation of orthogonal and high-affinity protein/ligand pairs and involves introducing a single point mutation (the “hole”) onto the BET bromodomain of interest together with making a synthetic modification (the “bump”) onto the parent BET bromodomain binder to complement a newly created protein subpocket. We discovered that compound “ET”, a derivative of I-BET762, was able to target engineered bromodomains bearing a leucine to alanine (L/A) mutation in their Z/A loop with very high potency (< 100nM) and selectivity (up to 500 fold) both in vitro and in cells. This orthogonal protein/ligand pair provided the first chemical tool that allows controlling a single BET bromodomain while leaving the remaining seven domains unaffected. Following-up on these results, we are currently using our approach to gain deeper understanding of the biological function of BET proteins, which we expect will further shed light on their potential as targets in oncology. We also anticipate that this approach will be of benefit to address a wide range of other protein targets where chemical probes development has been hampered by selectivity and potency issues.
Viola Walther, from Barts Cancer Institute, was this year’s Hamilton Fairley Poster prize recipient, for her poster on “Clonal interactions as mechanisms of polyclonality in colorectal adenomas”.

Background
According to the somatic mutation theory, tumours are derived from a single mutated cell that clonally expands into a neoplasm. In colorectal tumourigenesis however, studies on familial adenomatous polyposis (FAP) and some sporadic microadenomas have revealed tumours that are polyclonal in origin – they are derived from more than one crypt. The mechanisms and the implications of this are unknown.

Method
We investigated the effect of dysplastic crypts on non-dysplastic crypts to determine the mechanisms of polyclonality. To characterize the field effect of adenomas on adjacent normal crypts and surrounding stroma, immunohistochemistry was performed on FAP specimens and sporadic adenomas for Ki67, γH2AX, nuclear β-catenin, intraepithelial CD8, stromal CD4/8, CD68 and α-SMA expression. The percentage of stained cells were analysed as a function of proximity of normal to dysplastic crypts. Deficiency in the mitochondrial enzyme cytochrome c oxidase was also quantified as readout of mutation burden.

Results
We found higher expression of γH2AX, Ki67 and nuclear β-catenin in non-dysplastic crypts surrounding adenomas compared with distant normal crypts; an effect decreasing over distance away from the adenoma. Cytochrome c oxidase deficiency was also increased in crypts surrounding adenomas. For all stromal markers, the percentage of positive cells decreased the further away from the adenoma. This strongly suggests that a field effect results from an inflammatory response initiated by the adenoma generating mutant adjacent crypts.

We have also determined gene expression effects of an adenoma on normal colonic epithelium using Wild type and Apc1322/+ organoids that were subjected to RNA sequencing. Target pathways were identified using Gene Set Enrichment Analysis (GSEA). Strikingly, WT organoids exposed to Apc1322/+ organoids showed an upregulation in genes involved in proliferation, cell cycle and replication after 72hrs, whilst apoptosis genes are downregulated.

Conclusion
This study characterises polyclonality and suggests how this develops in the early events in colorectal tumorigenesis.
BACR/Breast Cancer Now
San Antonio Breast Cancer Award

Alastair Ironside, Queen Mary University of London

The San Antonio Breast Cancer Symposium is the largest meeting devoted to breast cancer globally and provides a forum for internationally recognised experts in the field to present discuss their research findings. The meeting program is spread over five days and consists of a variety of clinical, translational and basic science presentations designed to provide state of the art information relating to all aspects of breast disease. The symposium is held at the vast Henry B Gonzalez Convention Centre in downtown San Antonio and attracts over 9000 participants, with around 50% of these from countries outside of the USA. The audience comprises a diverse mix of academic researchers, clinicians, pharmaceutical industry employees, patient advocates and other individuals with a special interest in breast cancer.

I was fortunate to receive a travel bursary from the British Association for Cancer Research and Breast Cancer Now to allow me to travel to the meeting and present a poster of the findings from my PhD research on the biology of mammographic density, a major risk factor for breast cancer.

The 2016 meeting began on Tuesday 6th December with an educational day covering a wide variety of topics designed to provide the necessary scientific background for the presentations over the coming few days. Particular highlights for me included updates on the biology and heterogeneity of triple negative breast cancer by Professor Charles Perou and Professor Clarke Isacke speaking about the role of Wnt7a in tumour - stroma crosstalk and the role of pericytes in the tumour microenvironment. As a clinical trainee in diagnostic histopathology I also particularly enjoyed the special session on breast cancer services in low and middle income countries which featured a presentation from Dr Britt Marie Ljung from USCF who described her experiences of setting up a breast fine needle aspiration cytology service in Sub-Saharan Arica.

The following day was the start of the main meeting programme and began with an excellent plenary presentation from Professor Stephen Johnson summarising the progress made in the management of metastatic ER+ breast cancer and future research directions. This was followed by the general oral presentation sessions. Other highlights from this day included the Susan Komer Brinker award lectures for distinction in clinical and basic science research delivered by Monica Morrow and Charles Perou.

The evening and early morning poster sessions provided an excellent opportunity for junior researchers such as myself to present and discuss their research findings with experts in the field. The sessions also provided the opportunity for attendees to network with colleagues from outside their own area of interest. I was particularly impressed at the number of posters from patient advocates and the number of projects being led by advocates to increase patient and public engagement and participation in cancer research.

The third day of the conference began with a comprehensive plenary overview of cell free plasma tumour DNA in breast oncology by Professor Ben Ho Park. This was followed by general session presentations on the treatment of HER2 positive breast cancer. The afternoon lunch break not only provided an opportunity to browse the trade exhibition but also
provided the opportunity to attend one of the educational mini-symposiums scheduled throughout the conference. I particularly enjoyed attending the session on tumour exosomes and metastasis. Following the afternoon general session presentations I took the opportunity to attend the in depth poster discussion sessions on breast cancer in young women and the breast cancer tumour microenvironment.

The final full day of the conference began with a thought provoking plenary presentation and discussion on the global cost of health care led by Professor Peter Bach. This was followed in the afternoon by a fascinating review of the current understanding of breast cancer risk predisposition genes by Professor Fergus Couch in Susan Komen outstanding investigator award lecture. I was particularly intrigued to learn that PALB2 should be considered a high-risk gene – even being referred to as ‘BRCA 3’ during the presentation.

Attending the SABCS has been a fantastic experience, allowing me not only to improve my basic scientific knowledge of breast cancer biology but also providing a comprehensive update on the best evidence in the clinical management of breast cancer patients. In addition, I was able to discuss my research findings and make new connections with colleagues from all over the globe. I am extremely grateful to the British Association for Cancer Research and Breast Cancer Now for this invaluable opportunity.
Travel Bursaries

Sara Elkashef, University of Bradford
The AACR 2015, Philadelphia, April 2015

The AACR 2015 annual meeting was held in Philadelphia, PA, 16-22 April 2015, and I was able to attend this prestigious conference by the help and support of the British association of cancer research who awarded me the BACR/CRUK Student Award to assist my attendance.

At this year’s meeting, more than hundreds of invited talks and more than 6,000 proffered papers from researchers all over the world were presented. This year’s meeting theme - “Bringing Cancer Discoveries to Patients” - was featured in many of the educational sessions, award lectures, and symposia.

I had the pleasure to present my poster titled ‘Polysialyltransferase ST8SiaII: A novel target for the treatment of neuroblastoma’. This was my first international conference. My first impression was that the meeting was huge! Choosing a session was a difficult yet exciting task as there were so many interesting things going on at once. Attending such a prestigious event gave me the opportunity to meet some great people and discuss my project with them. Besides the research sessions, I also attended the AACR career fair which was a part of the conference, specifically designed for PhD students and junior scientists. I was able to discuss some job opportunities at different research institutes and got to know better as to what is expected from a PhD student aiming for a postdoctoral position. I also attended couple of workshops about paper and grant writing, which has helped me a lot. Besides, I really had great fun in America: I was able to spend a few days in New York City after the conference. I enjoyed a tour above New York in a helicopter and checking out the Empire state building.

To sum up, attending the AACR annual meeting was very beneficial for my scientific development, a great career opportunity and an opportunity to learn about new culture. I’d like to thank the BACR for making this possible.
Thanks to the BACR/CRUK Student Awards, I had the privilege of attending the American Association for Cancer Research 2015 annual meeting in Philadelphia, Pennsylvania, USA. This conference was an assemblage of approximately 18,000 academic researchers, healthcare professionals, pharmaceutical and biotech company representatives, along with members of the global business community and charitable organisations. The central theme was ‘Bringing Cancer Discoveries to Patients’.

I attended all the plenary sessions, which were about the most recent advances in the development of cancer specific vaccines and immunotherapies, cancer mutational landscape, tumour heterogeneity, the development of drug resistance, epigenetics and novel targeted agents. These were instrumental in giving me a broader perspective in the final year of my PhD. I was also able to make use of a selection of specialised sessions, organised to offer a platform to internationally renowned experts in niche areas of cancer research. Many of these talks were pertinent to my field of interest that is the study of p53 signalling and determinants of response to MDM2-p53 binding antagonists (MDM2 inhibitors). For example, a mini-symposium on the determinants of response to MDM2 inhibitors in acute lymphoblastic leukaemia, wherein the authors reported that higher basal mRNA expression of four genes [MDM2, XPC, BBC3 and CDKN2A] can be used as a predictive biomarker of increased sensitivity to MDM2 inhibitors in a large panel of human cancer cell lines and in patients.

These findings offered a potential explanation for some of the data generated in our own laboratory while instilling confidence in the translational validity of our preclinical findings. Furthermore, by presenting my data in poster format, I managed to attract some of the leading experts in my field of interest, who were very keen to engage in constructive debate.

As well as bringing about the potential for future collaborations with other passionate experts in the field, this conference also led to cross germination of ideas that were seminal in shaping my PhD thesis and ultimately the publication of my results.

I would like to sincerely thank BACR/CRUK for generously funding my attendance of this extremely educational and exciting conference.
In 2015 I was awarded a Fellowship and Bursary Award from the BACR which allowed me to travel to the AACR annual meeting and present a poster of my research. The AACR annual meeting is a large and prestigious conference attracting an International audience of approximately 18,000 delegates. This therefore provided an excellent opportunity to hear about the latest developments in the field and network with researchers from around the world.

I presented a poster highlighting my recent data on TP53 mutational status in chronic lymphocytic leukaemia (CLL) and the use of novel inhibitors (MDM2-p53 antagonists) targeting the p53 pathway as a potential treatment option in TP53 wild type patients.

A number of delegates attended my poster presentation and provided useful feedback which was of benefit when preparing a manuscript of the data for publication. One of the delegates was working on an early stage clinical trial of a dual MDM2/MDMX inhibitor, opening up the possibility of future collaborations.

There were many interesting sessions at the conference which highlighted exciting and novel research into areas including tumour heterogeneity, targeted therapies, combination treatments and clinical trial updates. One session of particular relevance to my research was presented by Roche who currently have an MDM2-p53 antagonist (RG-7388), which targets the p53 pathway, in clinical trials. The data presented showed that in addition to TP53 mutational status, a four gene signature baseline score predicts sensitivity to MDM2-p53 antagonists. This may be of particular benefit in identifying the small subset of patients which have wild type p53 but are less sensitive to the antagonists potentially due to a secondary mechanism causing a non-functional p53 pathway.

I would like to thank the BACR for the award of funding which allowed me to attend this hugely beneficial meeting.
In April 2015 I was delighted to be granted a BACR non-student travel award. This award was to subsidise the travel expenses and conference registration fee for attendance at the EMBO conference entitled ‘DNA replication, chromosome segregation and cell division’.

The international conference was held in the beautiful surroundings of the Royal Holloway, University of London, in July 2015. Despite being a small audience of around 150 members, many of the participants were world-leading researchers from within my discipline of DNA replication and cell cycle. Indeed the relatively small size and the length of the conference (Monday-Friday) was a big advantage as it meant that networking with the majority of delegates was possible.

The talks comprised a great mixture of topics. To mention just a few that I personally found interesting: DNA damage repair mechanisms linked with replication, fork rotation, research into DNA replication origins and termination, histone displacement and deposition during replication and mechanisms of preventing re-replication.

I was also able to present my own research at the poster session and discussed my findings with the formation of DNA double-strand breaks at stalled replication forks and their links with cell cycle progression. Thanks to the generous amount of time allocated for the session, I had a lot of interesting discussions and gathered some really helpful ideas.

The social events organised throughout the week also made this conference very special. Not only did we have a lovely evening barbecue (with only a small amount of rain), but a free afternoon was spent exploring the town of Windsor, and on the final evening we dined in splendour in a grand tapestry room with a live jazz band.

Overall this was a wonderful experience and I am very thankful to BACR for their financial support.
Travel Bursaries

Benjamin Sharpe, University of Bath
Genes and Cancer, Cambridge, April 2015

In April 2015 the BACR provided a travel grant to allow me to attend the Genes and Cancer 31st Meeting at Robinson College, Cambridge. As a final year PhD student in prostate cancer research at the University of Bath, I aimed to use the opportunity to interact with as many cancer researchers in my field as possible, as well as to identify potential avenues for postdoctoral research positions and for collaborations. The meeting brought together many researchers from around the UK and abroad in a stimulating and relaxed environment, which allowed me to develop academic contacts. The talks were varied across the entire cancer research field, with some key researchers in the fields of Ras and ERK signalling speaking at the event, including an excellent – and entertaining - keynote lecture by Frank McCormick on targeting K-Ras signalling in cancer. The poster presentation sessions were just as diverse, with an opportunity for me to interact with several other prostate cancer research groups over lunch and a splendid dinner event.

I met cancer researchers from the University of Nottingham and the Beatson Institute for Cancer Research with whom I shared research interests, had friendly academic discussions and shared my work. I was also able to identify resources that would be useful to research in my lab and there is now the possibility of forming collaborations following on from this. I came to notice how many researchers were unaware of the cancer research being done at the University of Bath, which highlights the need for researchers such as me to attend these meetings. I have since begun searching for postdoctoral research positions in my field, and contacts from this meeting are among those I am pursuing. I am thankful to the BACR for providing the funds to allow me to attend.
In 2015 I was awarded a BACR/CR-UK Student Travel Award. As a PostDoc at the Institute Of Cancer Research, this prize was very important and enabled me to present the results of my research at The International Society for Magnetic Resonance in Medicine (ISMRM) conference in Toronto, Canada from 30th of May to 5th of June. This conference is the most important conference in the field of Magnetic Resonance Imaging and gathers over 5000 people every year, from clinicians to physicists, engineers, biochemists, and technologists. Attending this meeting allowed me to give an oral presentation on my research on imaging biomarkers of response in a pre-clinical model of neuroblastoma. During my talk I had the privilege of having some very important experts in pre-clinical MRI imaging in the audience, but also clinicians with interest in cancer research. I had to reply to answers and comments from the audience which not only provided me the opportunity to further explain my research, but also to receive feedback and suggestions of improvement on the methodology used. That feedback was incorporated in the remaining research and surely has strengthened the results of it.

Additionally, while at the conference, I was able to attend other presentations which widened my interests, not only in terms of cancer localization, but also in terms of new emerging methods of assessment and treatment of different types of cancer and potential future research directions.

Finally I was able to meet several renowned scientists and listen first hand their latest achievements.

Overall, my attendance to this conference was extremely important for my development as a researcher and also personally by helping me overcoming the stage fright and receive positive feedback. I am extremely thankful to BACR for making all this possible.
The BACR non-student travel fellowship enabled me to present at the EAS2015 special conference in Anticancer Drug Action and Drug Resistance.

This unique conference was a joint effort from EACR, AACR and SIC (Italian Cancer Society) to bring together the leading cancer researchers, biochemists and clinical experts to address the current problems of targeted cancer therapies and drug resistance. Attending this conference was not only a valuable educational experience, but also an exceptional networking opportunity.

The programme of this meeting was incredibly diverse, starting with a discussion of the very hot topic of immunotherapy in cancer. It was particularly informative for me and the speakers initiated exciting follow-up discussions. Another popular and topical session was on liquid biopsies and their potential as a non-invasive diagnostic. I particularly enjoyed Prof Caroline Dive’s account on usefulness of lung circulating tumour cells. In general I felt that the full spectrum of cancer research was covered in only 4 days, from very basics to clinical trials data, and to an exceptional standard, which I benefited from in the context of my own work.

The focus of my presentation was on triple negative breast cancer (TNBC), one of the major pharmaceutical challenges. We investigated therapeutic strategies that would leverage a partial dependence of TNBC on FGFR signalling to identify effective combination strategies for mesenchymal subtype of TNBC. The feedback I received from both senior and junior peers was invaluable in developing this work further. As a result I also formed new professional relations, which for an early career researcher is of particular importance.

The BACR travel award is recognition of efforts by young researchers in cancer studies and it is an honour to receive such recognition. I am deeply grateful to BACR for this opportunity and for continued support of young scientists.
I had great opportunity to attend the EACR-AACR-SIC 2015 Special Conference “Anticancer Drug Action and Drug Resistance: from Cancer Biology to the Clinic” held in Florence/Italy on 20-23 June 2015. It was my first experience as a presenter in an international conference. I presented some of my PhD work in a poster entitled "Hypoxia modulates the expression of aldehyde dehydrogenases in colon cancer cells with ALDH7A1 emerging as a key enzyme whose functional involvement is dependent on the tumour microenvironment".

The conference had valuable oral presentations given by experts from many countries around the world. Presentations focused on different areas of cancer biology and drug resistance including the role of tumour heterogeneity, microenvironment and cancer genomics on the development of drug resistance.

Additionally, some presentations focused on the identification of novel drug targets with potential for the therapeutic intervention in different cancer types. Beside the oral presentation sessions there were poster sessions covering different areas in cancer and drug resistance ranging from basic to transitional research. Having the opportunity to see such novel work has expanded my knowledge about recent advances in cancer research. In addition, it gave me the opportunity to meet expert researchers as well as PhD students and discuss my work with them.

I also had the opportunity to visit the Florence city and enjoy the great historical and touristic sights.

I would like to express my sincere gratitude to the BACR, who awarded me a bursary to attend this conference.
Travel Bursaries

Stamatina Verykiou, Newcastle University Society for Melanoma Research Annual Meeting, San Francisco, November 2015

I have attended the Society for Melanoma Research annual meeting in San Francisco which was held between the 19th and 22nd of November 2015.

Attending the meeting was an extremely valuable experience. The first day of the meeting was dedicated to skin cancer dermatopathology. A number of fantastic talks were presented on the day. The most memorable one was from Professor Claire Lugassy who presented a model for melanoma metastases introducing angiotropism and extravascular migratory metastasis using the vessel-associated pericytes in order to spread to distant sites. The second and third day consisted of a number of thought provoking presentations mainly focused on tumour immunotherapy, anti-PD1 clinical trials results and biomarkers for anti-PD-1 resistance. Presentations from other medical specialties including an exciting talk from Professor Joshua Brody a haematology professor based in Mount Sinai School of Medicine in New York highlighted the similarity in cancer-utilised pathways in a number of different malignancies. The last day of the meeting was dedicated to uveal melanoma with a number of exciting talks presented. Professor Jackie Lees from MIT gave an excellent presentation demonstrating the role of in vivo studies using zebrafish as a model in uveal melanoma. Professor William Harbour gave an insight into tumour and patient related characteristics of uveal melanoma and their impact on prognosis.

Finally the women in science part of the meeting hosted a truly inspiring talk by one of the most influential female scientist in breast cancer research, Mina Bissell. Her talk included some highlights from her very successful academic career but also demonstrated how perseverance and determination could lead to a successful and fulfilling personal and professional life. Truly inspiring!

The meeting also gave me the opportunity to present my data to date. My poster attracted a number of interested researchers and stimulated a lively debate, which gave me some ideas for future work and opened the door for possible future collaborations.

This meeting also gave me the opportunity to network with experts in the field like Professor Bertil Damato, one of the world experts in ocular oncology and uveal melanoma. Apart from the scientific program, visiting San Francisco was a unique experience.

I will always remember the bike ride across the golden gate bridge to Sausalito and the boat tour to Alcatraz. The weather was on our side and we exploited every hour out of the conference hall with walks in golden gate park and the very famous San Francisco Chinatown. Overall, my trip to San Francisco was an excellent experience and I would like to thank the BACR for supporting me to attend this exciting and educational meeting.
I am a final year PhD student with Hull York Medical School in the Cancer Biology and Therapeutics Laboratory, where I am investigating the role of microRNA in the aggressive cancer malignant pleural mesothelioma (MPM). I am particularly interested in the function of microRNA within the landscape of chemoresistance in MPM.

The BACR/CRUK student travel award facilitated my attendance to the National Cancer Research Institute Conference held in Liverpool, November 2015. The world renowned NCRI meeting is one of the largest and most prestigious conferences in cancer research in the United Kingdom, which has been established annually since 2005, and brings together all aspects of cancer biology from the laboratory bench to the patient’s bedside. The conference resided over 4 days, in which there were several fantastic talks, including a plenary session from distinguished cancer biologist Professor Mel Greaves, who gave a brilliant insight into his research relating to leukaemia and how an evolutionary approach to the work has aided our understanding of this complex disease. Another plenary session by Dr Amy Abernathy was particularly inspirational, as it covered the evident holes within our data analysis system, and discussed how we could be more pioneering if we were to collate ‘big’ data, and use this to better influence clinical and academic cancer research, with a positive impact on patient care.

I was fortunate to be able to present a poster at the conference, for which I was nominated for the BACR/Gordon Hamilton-Fairley Young Investigator Award prize. My poster was well received by other delegates, and stimulated some interesting conversations in which I gained inspiration to develop some of my research ideas further.

I am particularly thankful to the BACR for funding this opportunity and for its support in my attendance at such an excellent meeting.
I work as a postdoctoral research fellow at the University of Leeds on a project looking at the role of two transcription factors of the Ets family, ETV1 and ETV5, as mediators of the oncogenic effects of mutant FGFR3 in bladder cancer. My current position has no allocated funding for travelling and accommodation. In November 2015 BACR very generously supported my attendance to the National Cancer Research Institute annual cancer conference in Liverpool. As I recently returned to work after maternity leave, the conference has been a fantastic opportunity not only to network and showcase my research to a large multidisciplinary audience, but also to bring me up to speed with the latest discoveries in the field. I found many of the sessions extremely interesting. The plenary lecture on the transcriptional response to Ras and Rho, by Dr Richard Treisman, was particularly relevant as directly linked to my work on FGF receptors and their downstream signalling pathways.

Having worked on molecular markers of Barrett oesophagus and associated adenocarcinoma during my PhD, I also enjoyed listening to Rebecca Fitzgerald talk about the progress made in the development of a Cytosponge for the early diagnosis of oesophageal cancer. The talk by Mel Greaves on his lifetime of research into childhood leukemia was inspiring and touching, whilst listening to the entertaining plenary lecture by the Nobel laureate Tim Hunt was a once-in-a-lifetime opportunity. I also enjoyed the sessions on headline-grabbing subjects, such Dr Harpal Kumar’s talk on the reasons behind the later cancer diagnosis in UK compared with other European countries and how this crucial issue can be addressed, and the one on e-cigarettes policy. Overall, the scientific programme was excellent and varied. I am very grateful to BACR for giving me the opportunity to attend such an exciting and inspiring conference.
In December 2015 I attended the American Society for Hematology (ASH) Annual Meeting in Orlando, Florida, funded in part by the BACR/CRUK Travel Award. This was a hugely beneficial experience for me as it was my first time attending an international meeting.

I was lucky enough to be invited to present a poster of my data entitled ‘CREBBP Knockdown does not Impact on Glucocorticoid Induced Apoptosis in Childhood Acute Lymphoblastic Leukemia’, which lead to many interesting discussions with researchers working in the fields of relapsed acute lymphoblastic leukaemia (ALL) and epigenetic regulators.

The impact of my poster presentation was quickly made clear when, after a talk regarding genetic abnormalities in childhood ALL, the presenter made reference to my data when questioned about the role of CREBBP in glucocorticoid resistance.

The meeting gave me a great insight into the cutting edge research happening in the field of relapsed ALL, getting to see the unpublished data really gives a sense of the current standard of research, and in some cases gave me assurance that the project I am working on is clinically relevant and novel.

I was also able to learn about current research in the field of epigenetics, as well as prominent research outside of the fields of haematology that I work in. It was very interesting to see what the current hot topics are and what questions people are most interested in answering.

The importance of international collaboration was very clear at ASH 2015, with researchers from all over the world coming together to show what can be achieved when data and methods are shared. It definitely gives some perspective to the global effort of researchers, and made me feel part of something much bigger, with around 30,000 predicted to be in attendance over the 3 day meeting.

I would like to thank the BACR and CRUK for their generous award, allowing me to this experience.
The EACR conference “A Matter of Life or Death: Mechanisms and Relevance of Cell Death for Cancer Biology and Treatment” was held at the Rode Hoed in Amsterdam, The Netherlands and organised by the European Association for Cancer Research.

The conference covered topics in cancer biology, molecular pathology, molecular oncology, cancer immunology, pharmacology, radiation biology and oncology, and medical oncology, as well as the role of cell death on cancer ranging from basic mechanisms of cell death signaling and resistance, tumour microenvironment, tumour heterogeneity, and immune effects to target discovery and new therapy concepts.

The conference receives international attention every year, which results in the attendance of a huge variety of speakers and experts in the field from all over the world like Eric Baehrecke (USA), Adi Kimchi (Israel), Peter Vandenabeele (Belgium), Simone Fulda (Germany) and Marion MacFarlane (UK) to just name a few of the big names in cell death research.

Receiving the BACR bursary allowed me to attend this conference. I was able to improve my presentation skills, especially during my poster session where I was given the chance to explain and communicate my research to other scientists. I received constructive feedback from my peers and lots of ideas for experiments which will further my research. I was also able to make new contacts within my field of research, which will lead to an exchange in information (protocols, reagents etc.) and possible future collaborations. I also received invitations to visit other labs to widen my horizon.

I am very grateful to have received this prestigious Bursary from BACR.
I am very grateful for the BACR/CRUK Student Travel Award that allowed me to attend and present my work at The Cancer Genome joint with Genomics and Personalised Medicine meeting that took place in Banff, Canada, February 2016.

These conferences from Keystone Symposia were held in a beautiful location in the middle of the Canadian Rockies. From the 7th-11th February, scientists from around the world gathered together at the Fairmont Banff Springs Hotel, the castle in the heart of the Banff national park, to discuss a diverse range of topics including genome-guided cancer therapy, personalised immunotherapy, computational and mathematical models for the integration of “omic” platforms during disease progression.

In addition to the influential talks, there was an open session on the challenges of precision oncology in the clinical setting which provoked insightful discussions that covered clinical, financial, technical, biological and ethical topics.

During the poster presentations I had the opportunity to present my PhD project, which aims to understand the role that telomere dysfunction plays in driving the evolution of the cancer genome. The poster sessions were a fantastic opportunity to engage with other students and PIs.

The meetings united leading scientists with different expertise that will help advance genome-guided approaches to improve human health in the future. Therefore, I would like to thank and acknowledge E.R. Mardis, S. Shab and B.J. Raphael, as well as M. Snyder, L.E. Hood and H.L. Rehm for organising the Cancer Genome and Genomics and Personalised Medicine conferences.

I am very grateful to the BACR/CRUK committee for the travel award; this opportunity allowed me to present my research project, inspire novel ideas and make valuable connections, particularly establishing a successful collaboration with a group in the Johns Hopkins Cancer Center.

I am passionate about pursuing a career in cancer genomics research and attending this conference has been a timely opportunity to meet leading international scientists and explore potential post-doctoral positions.

Overall, it has been a successful and insightful experience. I would highly recommend other PhD students to present their projects at both national and international conferences relevant to their field.
Travel Bursaries

Cambilla Fairbairn, University of Cambridge
The AACR Annual meeting, New Orleans, Louisiana, April 2016

The American Association of Cancer Research (AACR) annual meeting was held at the memorial centre in New Orleans Louisiana. The theme for this year being “Delivering Cures Through Cancer Science” and with around 10,000 delegates, over 1000 talks and a greater number of posters, illustrated the magnitude of this conference.

Arguably the biggest collection of cancer researchers in the world, at every point in their career. There were many highlights this year including a talk from the Vice president of the United States Joe Biden, who tragically lost his son Beau to a brain cancer in 2015. The United States government has recently vowed to increase funding of scientific research in America particularly for cancer research for which Joe Biden will be taking the reigns. Joe graced us with a very inspirational talk highlighting the future plans for science research funding in the USA. Other highlights included the celebration of 100 years of AACR publications and the 75th anniversary of the journal Cancer Research, which also included free cake!

Scientific highlights of the meeting fell into many categories with a strong emphasis on the microbiome, tumour heterogeneity and immunotherapies, in particular a key focus on Chimeric Antigen Receptor (CAR) technology.

The ALK session chaired by Tom Look gave insights into the treatment of lung cancers and neuroblastoma using ALK targeting tyrosine kinase inhibitors such as crizotinib, ceritinib and lorlatinib; this session was of particular interest to me as this oncogene is the focus of my PhD thesis. I was invited to present a poster on my research looking at the origin and developmental processes leading to the generation of ALK+ Anaplastic Large Cell Lymphoma (ALCL). ALK+ ALCL is a paediatric peripheral T cell lymphoma where 85% of cases are driven by the Nucleophosmin (NPM)-ALK chimeric oncogene. Using NPM-ALK expressing mouse models I am trying to elucidate the cell of origin of this disease along with assessing the interplay of NPM-ALK with the T cell receptor. The poster session allowed me to interact with other scientists and to discuss my research which was an invaluable experience as I near the end of my PhD.

I found the meeting incredibly inspirational and stimulating and would like to thank the BACR for, through funding, allowing me the opportunity to attend the conference.
Timothy Malcolm, University of Cambridge  
The AACR Annual meeting, New Orleans, Louisiana, April 2016

Due to a travel award from the BACR, I was able to attend my first major international conference, the annual meeting of the American Association of Cancer Research, held in 2016 in New Orleans.

The five day meeting took place on April 16-20, featured hundreds of invited talks and thousands of posters, and surely gave the broadest possible overview of trends and new discoveries in the field of cancer research that one could ever receive.

It was inspiring to be able to attend numerous fascinating talks on vastly disparate topics; from how wearable technology is enabling us to collect data on whether increased light exposure at night increases the risk of breast cancer, to new ways to specifically delete the regulatory T cells that inhibit immune responses to cancer cells.

It was also an unique opportunity to see leaders in the field speak on their subject of expertise; including John Dick on cancer stem cells, Gerard Evan on Myc, or Tom Look on the discovery of oncogenic ALK.

Ultimately the meeting was most valuable as a means to survey the overall trends in cancer research. From what I observed the two main trends were the ever increasing use of genomics to track the clonal evolution of cancers, and secondly (and relatedly) the continuing discovery that tumours are often incredibly heterogeneous; in the population as a whole but also within individual patients. Both these trends are presenting a challenge to clinicians about how (and even whether) this data should impact therapy. The sad fact is that the number of effective drugs available to clinicians are not even close to keeping pace with our ever deepening knowledge of the intricacies of tumour biology. However, it is better to know the scope and scale of the problem we face, rather than dwell in blissful ignorance.

Personally I was able to present some of my research in one of the vast poster sessions, and it was fun to get to talk to some of the attendees about my work (see photo). Overall it was invaluable and inspiring experience, which has given me new insights and enthusiasm for my work at the University of Cambridge.
As an NIHR funded Academic Clinical Lecturer in Medical Oncology I was privileged to be counting on the BACR support to attend ASCO, the most important and renowned conference in the field of clinical and experimental oncology.

Thanks to the generosity of BACR I was able to submit and present 2 posters evaluating the clinical impact of programmed death ligands (PD-L) expression in gastrointestinal neuroendocrine tumors (NETs) and in diverse histotypes of primary and metastatic lung cancer.

We compared the expression of PD-L1 & 2 in a tissue microarray of isogenic primary and secondary lung cancer deposits, revealing significant heterogeneity amongst paired primaries and metastases. Our data highlighted the risk of sampling bias in the assessment of PD-L1 status on biopsy samples and unveiled interesting implications between PD ligand expression and the metastatic progression of lung cancer.

For its translational implications my work has been selected for an ASCO Merit Award, having been selected amongst the top quality abstracts presented in 2016.

In my second abstract on NETs, we reported for the first time PD-L1 expression in approximately 10% of specimens, supporting a potential therapeutic role for PD-L1 inhibitors in a subset of gastrointestinal and pancreatic NETs.

I am very grateful to the BACR for having facilitated my attendance to ASCO and enabled the dissemination of my research findings in a high profile research meeting, where ongoing collaborations will facilitate my academic development as a clinician scientist.
I have recently attended the 12th World Cancer Conference. This three day multidisciplinary conference brought together clinicians, pharmacists and scientists to discuss the theme “Integrating every bit of cancer research: Prevention, diagnosis and cure”. This international meeting enabled the dissemination of original research and novel ideas, not only allowing professionals to deliver scientific talks but also promoting the work performed by early career researchers through a young researcher’s forum.

My research focuses on identifying the chemopreventative mechanism by which dietary polyphenols such as those found in black raspberries, can prevent colorectal cancer. My abstract was fortunate enough to be selected for a 15 minute oral presentation as part of the young researcher’s forum within the 12th World Cancer Conference. The BACR/CRUK Student Travel Award enabled me to attend this conference and present my work internationally. I received exceptional feedback about both my work and my presentation skills. One delegate stated that ‘my talk was the highlight of the conference for him’ and went on to ask if we could establish a future collaboration to write a paper on the latest intestinal stem cell data. As a result of my oral presentation I was also presented with some insightful questions and potential ideas on how to progress this work following the completion of my Ph.D.

Furthermore, I can proudly say that I was awarded the Best Young Researchers Award for oral presentation and my abstract has been published in the Journal of Cancer Science & Therapy. This conference highlighted the range of scientific research being performed internationally to try to combat cancer. It was great to see the diversity between projects and the very promising results that are beginning to arise. One talk in particular which greatly interested me was from Prof. Dr. Katharina Pachmann. She discussed circulating tumour cells and their ability to evade elimination and explained a novel detection method, Maintrac®, and its ability to study the behaviour of individual circulating tumour cells. I found this talk extremely interesting and I was able to engage in discussion with Prof. Dr. Katharina Pachmann during the questions period following her presentation, which was a new and rewarding experience for me as this was the first time I had asked a question at an international conference.

Attending this meeting was a very important stepping stone in my development as an early career researcher. It enabled me to further develop my networking and communication skills, it broadened my knowledge and understanding of the cancer research happening around the world and most importantly it allowed me to showcase my research internationally. These experiences have provided me with new ideas and concepts to apply to my research and further develop my personal skills all of which will aid my career development as I begin to apply for early career researcher fellowships in the near future.

All of this would not have been achievable without the support from the BACR, whom which I am in indebted for this experience.
Travel Bursaries

Gintare Smagurauskaite, University of Leicester
10th International ICAPS Conference 2016 on Lung Cancer Prevention, 2nd December 2016

I am a current PhD student at the University of Leicester, Cancer Studies Department, Chemoprevention group. I was fortunate to receive a BACR bursary and be able to attend the ICAPS Lung Cancer Prevention conference held in Vienna, Austria on the 2nd – 3rd of December, 2016.

My PhD project aims to investigate the use of the naturally derived compound curcumin for non-small cell lung cancer (NSCLC) chemoprevention, and this conference was very informative and personally benefited my research. I am very glad to have been able to present my own data not only by displaying my scientific poster, but also by performing a short oral presentation. The subsequent questions, comments and suggestions were invaluable to me.

It was truly wonderful to meet many experts in lung cancer prevention research and hear about new drugs, trials and developments as well as challenges and opportunities in this field. The concluding discussion prior to the close of the day’s events revealed a variety of professional opinions on the current state of this field as well as possible future directions and expectations.

I have also had an opportunity to attend IASLC Workshop on Global Screening for Lung Cancer. It was very impressive to be able to hear from people who established the first lung cancer screening programmes world-wide and to learn about the progress and achievements in this field. Throughout the workshop we had many possibilities to discuss recent advances and implementations of global CT screening with many specialists working in this field as well as find out about how lung screening programmes can advance chemoprevention research. As an early investigator in NSCLC chemoprevention, I have found this conference inspiring and motivating.
The San Antonio Breast Cancer Symposium is the world's premier breast cancer meeting attracting around 7500 attendees from approximately 90 countries. I attended as I was invited to present a poster at the symposium detailing my investigation of novel therapeutic approaches for targeting drug-resistant quiescent breast cancer cells by pharmacological inhibition of the oestrogen-related receptor-α-mediated oxidative lactate metabolism; work that was the result of an international collaboration with the McDonnell lab based at Duke University School of Medicine, North Carolina, U.S.A.

The symposium aims to achieve a balance of basic, translational and clinical research, providing a forum for interaction, communication, and education for a broad spectrum of researchers, health professionals, and those with a special interest in breast cancer. In the basic and translational scientific research fields, the symposium programme heavily emphasised the importance of understanding the genetics and epigenetics of breast cancer, the molecular sub-typing of breast cancer, the clinical utility of this information and the future direction for genotype driven treatments.

Keynote lectures were focussed on the approaches and utility of cell-free tumour DNA in breast oncology, tumour immunotherapy, and the contemporary understanding of breast cancer stem cells and the opportunities for therapeutically targeting this population. The clinical elements of the programme primarily focussed on updates from a number of pivotal clinical trials being undertaken on the next generation of anti-cancer agents that are being used in the treatment of oestrogen- and HER2-receptor positive breast cancers.

Overall, virtually every element of breast cancer research was represented in one format or another and as such this was an invaluable opportunity to gain insight into the quality of research and the contemporary status quo within the field of breast cancer, to meet world-leading researchers and to be able to present my own work in this setting.
Travel Bursaries

Mary-Kate Hayward, Barts Cancer Institute
Gordon Research Conference 'Fibronectin, Integrins & Related Molecules, USA
29th January to 3rd February 2017

With the BACR student travel award I was able to attend the Gordon Research Conference (GRC) in California on 'Fibronectin, Integrins and Related Molecules' - a topic directly related to my PhD project. GRCs are recognised as unique, prestigious international scientific conferences at the frontier of research.

There are a few key reasons as to why these conferences are known and highly respected for their distinctive format.

Firstly, admission to a GRC requires a formal application process and acceptance of the application is decided by the organisers. This admission process guarantees a small and intimate audience that facilitates highly interactive presentations, poster sessions, and also ensures a diversity of both senior and young scientists from academia and industry.

Secondly, GRC venues are chosen partly for their scenic and isolated natured to encourage an informal community atmosphere. As there are no presentations during the afternoon, this allows for free-form discussion in relaxed gatherings (as well as excursions – we went whale watching and wine tasting).

Finally, and most importantly, GRCs encourage the discussion of cutting-edge, unpublished research. These "off-record" presentations mean that you are learning about research ahead of where you would normally see this information in the literature.

The benefits of the presentations and poster sessions include receiving feedback on the latest experiments and future work from audience members who are most likely to be reviewing your work, and therefore the best people to learn from. By having the opportunity to attend this conference I was able to give a presentation sharing my own work and developed strong relationships with other scientists in the field. I would not have been able to attend if it were not for the BACR student travel award.
As an early career researcher, networking and learning about the latest research is integral to deliver the highest quality, most relevant research possible. The American Association for Cancer Research Conference in Washington, DC was the perfect setting for this.

The AACR covered topics ranging from epidemiological studies, racial equality in treatment and clinical trials to basic cell biology, novel therapies and drug development. As a Research Fellow in a multi-disciplinary team, this range was extremely relevant and informative for all areas surrounding my research into pre-clinically evaluating the efficacy of repurposed drugs and working with samples from multiple clinical trials.

I attended talks and learnt about cutting-edge research and trials involving immune drugs and monitoring disease using liquid biopsies; work that is directly relevant for projects within our group in Birmingham.

The importance of the microbiome was covered in multiple sessions, including a number of plenary talks. In addition, a session dedicated to HPV and oral health highlighted the growing incidence of HPV-related head and neck cancers in younger patients, confirming the importance of the work I carry out. Poster sessions proved particularly rewarding as I was able to interact with researchers from across the globe and discuss practicalities of carrying out certain studies, for example using PDX models and drug repurposing. Discussions were incredibly motivating and stimulating and gave me a lot to take away. Thousands of posters were presented at the conference so preparation was key, not only to get to all the relevant posters in time, but to do so without walking excessive miles!

I am extremely grateful to the BACR for providing funding for me to attend the AACR this year as it has strengthened my work and inspired me to contribute effective, life-changing research to the complex field of cancer research.
Attending the AACR Annual Meeting in Washington DC was a very valuable experience to me, at both a personal and professional level. With financial help from the BACR, I had my first ever opportunity to travel to the United States and attend the biggest, most prestigious cancer conference in the world.

Here, I had the chance to meet many researchers from around the globe and make valuable connections with others in my field.

I thoroughly enjoyed the various talks and educational sessions over the five days; it was invigorating to be exposed to such high-quality research and to learn about the hot topics in cancer research at the moment.

I gave my first ever international oral presentation at the AACR which was an exciting and overwhelming experience! The feedback I received was very rewarding and beneficial to my research going forward. I would highly recommend this conference to my colleagues and I am grateful to the BACR for providing me with the opportunity to attend.
It was a privilege to be awarded a student travel bursary by The British Association for Cancer Research (BACR) to attend the American Association for Cancer Research (AACR) Annual Meeting in Washington D.C, USA in 2017.

The generous bursary of £1,000 enabled me to afford flights, registration and accommodation for this conference which otherwise would have been difficult. The AACR Annual Meeting is the biggest cancer research conference which attracts experts from all around the world and I was honoured to attend.

Through the dedicated symposium, plenary and meet-the-expert sessions this conference provided the opportunity for avid learning from key experts across numerous fields and also provided insights into upcoming research avenues. I was also able to attend professional advancement sessions which gave advice on career development, as well as meet and greet sessions with editors of AACR journals that I am interested in publishing my PhD research with. Moreover, during this conference I was able to network with international researchers and clinicians alike.

Importantly, I was given the opportunity to present a poster on my PhD research in one of the dedicated poster sessions. This provided a platform to promote my research, enhance my communication skills, establish successful collaborations, obtain feedback on my research and also discuss possible job prospects post my PhD studies. Without obtaining the student travel award from the BACR none of these opportunities would have been possible and I am very grateful.
Travel Bursaries

Zohra Butt, University of Liverpool
2nd International Conference on the Long and the Short of Non-Coding RNAs in Crete, Greece

I was generously awarded £996.96 by the BACR/CRUK Student Travel Award Committee to assist in my attendance at 2nd International Conference on the Long and the Short of Non-Coding RNAs in Crete, Greece. The award kindly covered the entirety of my registration fee.

This conference represented a fantastic opportunity to present unpublished data from my PhD project at a highly selective and prestigious meeting, which I undertook successfully in the form of a poster. I received valuable feedback on this work and noted down suggestions on how I could validate my findings with the most appropriate functional assays.

I was very grateful to the BACR/CRUK for providing the funds for me to attend this meeting, as I could generate links with eminent scientists from various institutions all over the world.

I garnered the interest of Principal Investigators from the Memorial Sloan Kettering Cancer Centre in the USA, whom were very interested in my research in BAP1 as it is an active research focus in their department, and we discussed the potential transfer of resources such as BAP1 conditional knockout mouse models.

This conference was the ideal forum to publicise my research and, as a PhD student coming to the end of my final year, I gained invaluable experience in networking and establishing collaborations, whilst also having the opportunity to listen to presentations highly relevant to my research interests and to learn about novel and unpublished data of direct relevance to my PhD studies. The knowledge I have acquired on microRNA biology and their translational potential has helped to form a clearer picture of the level of scientific content that I need to include in the introductory chapters of my thesis, which I will start to write over the next few months.
In June, with the help of the BACR/CRUK travel award, I attended the Gordon Mammary Gland Biology Conference in Vermont, USA. This was my first international conference and it was an incredible experience. The conference was 4 ½ days long and encompassed a wide variety of research at the forefront of mammary gland biology. The days were long: at American conferences you often get a few hours off in the afternoon for activities, which means you are in talks till 9:30 pm every night (before going to the bar...). However, this gave me the chance to learn so much about aspects of mammary gland biology I had never considered before.

Aside from the talks, the other massive benefit of a conference like this is the people you meet. I only knew one other person attending the conference which was initially a bit daunting but turned out to be a big positive; it forced me to speak to many different people and I am keeping in touch with a lot of them.

I was presenting a poster of my work in two early evening poster sessions, and whilst mammary gland biology is a substantial area, it was really surprising the amount of people I talked to who knew a lot about my research. These conversations have given me a number of new areas to explore in my project and I am in contact with people I met, discussing possible future collaborations.

All in all, I had a brilliant time at the conference; I learnt so much and came back with new enthusiasm for my research! The long hours and late nights meant it was tiring but it was a great week and I would recommend it to anyone! I am already trying to work out how to go again next year.
In the beautiful historical city of Florence, the 2nd EACR-AACR-SIC Conference was held between 24-27 June 2017

The EAS special conference was under the title of “The Challenges of Optimising Immuno and Targeted Therapies: From Cancer Biology to the Clinic”.

The first day of the conference was a short day that begun around 2 p.m. After the welcome speech by EACR, AACR and SIC representors, the first lecture was addressed by Professor Robert Schreiber (US) who gave an introduction to immunotherapy. I really enjoyed this lecture as it gave a good information about the basics of immunotherapy.

The conference was huge and contained about 845 participants from 61 countries.

Some of the highlights of the second and third days were the talks from Dr. Levi Garraway who gave guiding priciples for response to anticancer therapy, Dr. Olivera finn, who focused on cancer prevention vaccine, Dr. Rene Bernards who emphasized that MAP3K1 and MAP2K4 are potential novel targets in oncology, Dr.Riccardo Dolcetti who talked about combination immunotherapy and Dr. Matthew Vander Heiden who explained the role of metabolism in tumor growth.

During those two days, the Poster Sessions were also held, where I had the opportunity to present my work on the second day.

On the contrary of the lectures which focused on immunotherapy, the poster sessions were variable between immuno and targeted therapeutics and I particularly enjoyed them. Conference organization was excellent.

On the last day, I enjoyed Dr. Erik Sahai talk who showed that intravital imaging can shed light on single cell responses to therapy to explain why drugs don't work as well as we hope.

At the end, several awards for best posters and oral presentations were announced.

I am very grateful to BACR for giving me the opportunity to attend the Conference which allow me to contact with large number of scientists from all over the world and to learn about their latest unpublished researches.
I am very thankful to British Association of Cancer Research for awarding a “non-student travel award” to attend the conference, Tumour Microenvironment - Basic Science to Novel Therapies (including 3D Models Workshop), Nottingham, UK, 14th - 16th June 2017 held at Nottingham. It allowed me to present my work on “Novel 3D brain cancer model using extrusion based bioprinting system”.

I found the conference to be very informative with substantial science spread through evenly in 3 days curriculum. The meeting did captured recent advancements in 3D cancer models, role of tumour microenvironment components in cancer progression, drug screening models and clinical trials. The generous Q&A sessions and discussion panel made possible to interact effectively with other scientists. In addition, some of the interesting talks were also presented via posters, and poster sessions, conference coffee /lunch breaks were very successful in terms of networking and interacting between scientists ranging from PhD students and post-docs to group leader.

As a tumour microenvironment post-doc researcher I thoroughly enjoyed the quality and quantity of science presented in the conference, particularly interesting talks such as by Anna Grabowska and Ingunn Holen in “Modelling cancer in 3D”.

The conference aided to develop my knowledge in 3D cancer models research and provoked thinking upon my own tumour microenvironment research. In addition to good science, the conference venue and dinner certainly was well organised which allowed me to enjoy the conference.
The grant from the BACR/CRUK travel award was used to attend a BACR conference, Tumour Microenvironment (Including 3D Model Workshop), in Nottingham. Attending the conference was extremely beneficial as there were talks from leading scientists in the field, analysing how to successfully model the tumour microenvironment and how to tackle problems that may be encountered.

My work examines the effect of aspirin and metformin on prostate cancer and I use 3D cell culture to assess the effect of the drugs on a more realistic tumour model. All the of the talks were very relevant, presenting fascinating results and discussing novel ideas.

Talks which I found particularly useful or interesting included talks from Dr Craig Murdoch, Professor Marilena Loizidou, Dr Robert Kerbel, Professor Jeff Pollard, and Dr Jamie Honeychurch which provided insightful discussions with the other conference attendees.

I also presented a poster of my work which led to invigorating talks with key researchers- a fantastic opportunity to discuss the research and receive suggestions. My poster received a lot of interest and talking to other researchers during the poster sessions was particularly valuable. During the session, I met people who had similar research interests as me; examining modulators of prostate cancer migration and invasion in 3D cell culture. It was useful to compare methods and discuss research with people who are passionate about your project. The conference was a great experience and reinvigorated my research. Since attending it I have incorporated suggestions from researchers and pursued new ideas from the talks. It was great to share my work with other academics in such a positive atmosphere.
Travel Fellowship

David Hill, Newcastle University
Visit the laboratory of Dr Guillermo Velasco, Complutense University, Madrid, Spain

I would like to offer my sincere thanks to the British Association of Cancer Research for awarding me a traveling fellowship to visit the laboratory of Dr Guillermo Velasco at Complutense University in Madrid, Spain. The purpose of this visit was to develop the skills and expertise required to manipulate autophagy regulatory pathways within melanoma stem+like cells, as well as to acquire knowledge of autophagy regulation within cancer.

During the visit to Dr Velasco’s lab I gained a greater understanding of the techniques used to genetically manipulate low population number stem cells, as well as learning strategies to define a cancer stem cell. Melanoma cell lines were cultured in a serum-free media supplemented with growth factors to stimulate the growth of cells as non-adherent spheres, which are enriched for cells expressing stem cell markers. Due to the heterogeneity of cancer cells within a tumour population multiple markers were used to define the presence of cancer stem cells within these spheres. Results demonstrated increased expression of several known stem cell markers including MSI1 and BMI1, as well as the putative stem cell marker CD271, in two metastatic melanoma cell lines. However, interestingly, while a third cell line of primary origin formed spheres in culture the expression of BMI1 and CD271 was reduced, although MSI1 expression was still increased.

Additionally, to investigate the effect of autophagy modulation on sphere formation and maintenance, both adherent and sphere-growing melanoma cell lines were transduced with a doxycycline-inducible ATG5 shRNA to inhibit the autophagy regulatory protein ATG5. Using a limiting dilution assay (LDA) to quantify the rate of sphere growth and thus the number of sphere-forming stem cells within a population it was observed that the knockdown of ATG5 did not significantly prevent sphere formation. Ongoing studies are investigating whether the specific inhibition of ATG5 prevents the maintenance of spheres once formed, as well as the effect on melanoma cell invasion into 3D organotypic skin or within a zebrafish xenograft model.

This visit was undoubtedly a success and has set the foundation for ongoing collaborative studies, which will generate greater insight into the potential strategy of targeting melanoma stem-like cells through the modulation of autophagy as a therapy for patients with metastatic melanoma.
Special meeting

Precision medicine and cancer models
Developing strategies to enhance clinical response
21st November 2017
Royal Society of Medicine
London
Abstract Deadline: 12th October 2017
Early Bird Deadline: 7th November 2017

Overview:
The use of preclinical and clinical information to inform patient selection for novel cancer therapies is key, with the development and use of models to interrogate target dependencies based on molecular pathology being well-established. Recent studies also suggest that it may be valuable to integrate additional information into patient selection hypotheses, including considerations of tumor metabolism, the type and extent of immunological infiltrate in a tumour, or the acquisition of a mesenchymal phenotype. This one-day conference involves leading investigators working at the translational interface in oncology to better define disease subtypes and guide precision medicine decisions.

Topics include:
- Use of models and clinical material to inform subtyping of colorectal cancer
- Classifying tumours based on immunogenic subtype
- Experimental strategies to reveal therapeutic targets in liver cancer
- Modelling the microenvironment in ERα-positive breast cancer
- Modelling pancreatic adenocarcinoma and potential therapeutic approaches

Confirmed Speakers
JP Medema
Academic Medical Centre, Netherlands
Jerome Galon
Cordeliers Research Center, Paris
Lars Zender
University Hospital Tübingen, Germany
Cathrin Brisken
ISREC (Swiss Institute for Experimental Cancer Research) Switzerland
Andrew Biankin
CRUK Beatson Institute, Glasgow

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