THE BRITISH ASSOCIATION FOR CANCER RESEARCH

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2018

News

Why is it so hard to turn fundamental scientific knowledge into effective cures and how can we do this better in the future?

Whilst there is general enthusiasm for recent developments in cancer medicine guided by analysis of an individual cancer patient's genomic alterations ("personalised medicine") and for the use of immunotherapies for some cancers, there are major questions regarding the efficacy of novel therapies, their cost and whether they significantly impact on the survival of the majority of patients. This conference sets out to address these questions, with presentations both by advocates of current therapeutic approaches and those who consider that different or additional directions are necessary. It lays out the science which underlies the complexity and heterogeneity of advanced cancers and why they are so hard to eradicate. Presentations will also be made by clinician scientists, leading members of the pharmaceutical industry, healthcare analysts, and medicines agencies. Looking to the future and how early diagnosis may impact to increase survival and "cures", experts in liquid biopsy, informatics, telemedicine and artificial intelligence will address emerging approaches.

The program permits ample time for discussion including a concluding forum entitled "Cancer Medicine in 2030 and Beyond – How to Get Ready". This meeting is unique in composition: its goal is to reflect realistically on the achievements of the cancer research community to date and their limitations, and to discuss ways forward to dramatically decrease mortality from cancer in the coming decades.

Speakers and Moderators include:

Julian Downward (Francis Crick, London, UK)
Vinay Prasad (Oregon Health and Science University, USA)
Charles Swanton (Francis Crick Institute, London, UK)
Serena Nik-Zainal (Sander Centre, Cambridge, UK)
Christian Rommel (Roche, Basel, Switzerland)
Nils Lonberg (BMS, CA, USA)
Susan Galbraith (AZ, Cambridge, UK)
Johann De Bono (ICR, London, UK)
Paul Workman (ICR, London, UK)
William Hait (Johnson & Johnson, New Brunswick, USA)
Jack Scannell (UBS London & University of Edinburgh, UK)
John Reed (Sanofi-Aventis, Paris)
Ian Tannock (University of Toronto, Canada)
Richard Sullivan (King's College London, London, UK)
Tito Fojo (Columbia University, NYC, USA)
Sham Mailankody (MSKCC, NYC, USA)
Fred Steward (Policy Studies Institute, London, UK)
Daniel O'Connor (UK Medicines Healthcare products Regulatory Agency)
Jorge Camarero Jiménez (European Medicines Agency, Amsterdam, Netherlands)
Victoria Thomas (Head of Public Involvement, NICE, UK)
Ajay Aggarwal (King's College London, London, UK)
Emma Robertson (Patient Leader, Just Treatment UK)
John Hickman (Paris)
Galina Velikova (University of Leeds, Leeds, UK)
Iain Buchan (University of Liverpool, UK)
Lisa Hutchinson (London)
Klaus Pantel (UKE, Hamburg, Geermany)
Nick Papdopoulos (John Hopkins University, Baltimore, USA)
Nathan Brown (BenevolentAI, London, UK)
Karen Vousden (Francis Crick Institute, London)

BACR Secretariat
c/o Leeds Institute of Medical Research at St James's
Cancer Genetics Building
St James's University Hospital
Leeds LS9 7TF

E-mail: bacr@leeds.ac.uk
Phone: 0113 2065611

BACR Executive Committee 2019

Chair
Professor Julian Downward
Associate Research Director
The Francis Crick Institute
44 Lincoln's Inn Fields
London WC2A 3LY
Tel: _44 20 7269 3533
julian.downward@crick.ac.uk

Secretary
Professor Valerie Speirs
Institute of Medical Sciences
University of Aberdeen
Foresterhill
Aberdeen AB25 2ZD
Tel: 01224 437361
valerie.speirs@abdn.ac.uk

Treasurer
Dr Amanda Harvey
Brunel University
Biosciences
Kingston Lane
Uxbridge B8 3HP
Tel: 02920 870107
amanda.harvey@brunel.ac.uk

Professor Barry Davies
AstraZeneca
Imed Oncology
Darwin Building (Unit 310)
Cambridge
CB4 0WG
barry.davies@astrazeneca.com

Dr Joanne Edwards
University of Glasgow
Institute of Cancer Sciences
Wolfson Wohl Cancer Research Building
Garscube Estate
Glasgow G61 1QH
joanne.edwards@glasgow.ac.uk

Professor Kevin Ryan
Cancer Research UK Beatson Institute
Tumour Cell Death Laboratory
Garscube Estate
Switchback Road

Professor Anna Grabowska
University of Nottingham
D Floor, West Block
Queen's Medical Centre
Nottingham NG7 2UH
anna.grabowska@nottingham.ac.uk

Dr Richard Grose
Bart's & The London School of Medicine and Dentistry
CRUK Dept of Tumour Biology
John Vane Science Centre
Charterhouse Square
London EC1M 6BQ
r.p.grose@qmul.ac.uk

Professor Ian Hickson
Northern Institute for Cancer Research
Drug Discovery
Paul O'Gorman Building
Medical School
Framlington Place
Newcastle upon Tyne NE2 4HH
ian.hickson@newcastle.ac.uk

Professor Xin Lu
Ludwig Institute for Cancer Research
University of Oxford
Nuffield Department of Clinical Medicine
Old Road Campus Research Building
Off Roosevelt Drive
Oxford OX3 7DQ
xin.lu@ludwig.ox.ac.uk

Dr Craig Murdoch
University of Sheffield
Dept of Oral & Maxillofacial Medicine
School of Clinical Dentistry
Claremont Crescent
Sheffield S10 2TA
c.murdoch@sheffield.ac.uk

Dr Sarah Storr
Molecular Therapeutics and Formulation
University of Nottingham
School of Pharmacy
Academic Oncology

Glasgow
G61 1BD
k.ryan@beatson.gla.ac.uk

Nottingham City Hospital
Nottingham
NG5 1PG
sarah.storr@nottingham.ac.uk

Co-opted Member
David Scott
CRUK
Angel Building
407 St John Street
London
EV1V 4AD
david.scott@cancer.org.uk

Co-opted Member
Robert Wilkinson
MedImmune
Aaron Klug Building
Granta Park
Cambridge
CB21 6HG
wilkinsonr@medImmune.com

Co-opted Member
Dr Isabel Pires
University of Hull
Department of Biomedical Sciences
Hardy Building
Cottingham Road
Hull
HU6 4RX
i.pires@hull.ac.uk

Co-opted Member
Sophie Roberts
University of Leeds
Leeds Institute of Medical Research at St James's
Wellcome Trust Brenner Building
St James's University Hospital
Beckett Street
Leeds
LS9 7TF

Contents

Letter from the Chair

Welcome to our new look Newsletter and Website.

We have been planning this for the last year and I hope you like the improvements that have been made.

We would be grateful if you could please log into the website and ensure all your details are correct. The majority of members do hold a direct debit on their account and as normal their subscription monies will be collected on the 1st October as they have previously, so no change there. However, a quarter of the membership like to pay their subscription by other means and the new website has an automated system whereby in September a letter will be sent direct from the site advising you that your membership subscription is due. The system will then send a further reminder. You will have a six week period in which to pay. If your membership is not paid within this period the system will no longer remind you and will make your account inactive. We would encourage those members therefore to reconsider and set up a direct debit mandate on their account, and to do this they simply need to contact our BACR Administrative Secretary, Janet Alexander.

To also comply with GDPR (General Data Protection Rules) we need you to tick the relevant consents on the site for data processing and also to enable us to share your information with the European Association for Cancer Research. We are an affiliated society of the EACR and as such when you become a member of the BACR you can also take advantage of the benefits of the EACR but we do require your Consent to enable us to share this information with them. We did send details out in relation to this before the Law was changed in 2018 but not everyone supplied their Consent and unless you do we cannot share your information with them.
Not only have we been busy developing a new website and a new look Newsletter it has been business as usual for BACR in 2018. We held two BACR Conferences and our first Interactive Workshop and you can read about all these under Meeting Reports. We are also planning three further Conferences in 2019 and you can find information relating to these in this Newsletter and online at www.bacr.org.uk.

We awarded over 70 Fellowship and Bursaries totaling around £24K in the last year and we are noticing a steady increase in the applications we receive.

Our annual award talks were also given in 2018. The AstraZeneca Award talk was given by Seth Coffelt from University of Glasgow and the Roger Griffin Prize for Cancer Drug Discovery by Sean Lim from the University of Southampton. Both talks were given at the newly formatted NCRI which was held at the Scottish Event Campus in Glasgow.
We also held our very first Chris Marshall Prize for Cell Signaling at the BACR Student Conference and this was given by Zoi Diamantopoulou from CRUK Manchester Institute.

You can find the abstracts for all the award talks within this Newsletter. If you are interested in applying, or know someone who is, the next round of applications are due on the **1st March 2019.** (You do have to be a member of the Association to apply but you can submit a membership application with your award application).

In 2018 three of our Committee Members stepped down. Michelle Garrett from the University of Kent had held the position of Honorary Secretary for 5 years and I would like to thank her personally for all the hard work she put into this role. Also three committee members stepped down namely Richard Bayliss, Charlotte Bevan and Clair Perks whom I would also like to thank. Isabel Pires was also due to step down but agreed to stay on as a co-opted member to help with the Media aspects of the BACR and I would like to thank her for this commitment.

Picture of Valerie Speirs and Michelle Garrett after the AGM

I would therefore now like to introduce the new members to the Executive that were elected at the AGM held on the 26th November. Valerie Speirs from the University of Aberdeen has joined us as the new Honorary Secretary and Chair of the Meeting and Training Subcommittee, Professor Joanne Edwards (University of Glasgow), Professor Ian Hickson (University of Newcastle) Dr Richard Grose (Bart's & The London School of Medicine and Dentistry) and Xin Lu (Ludwig Institute for Cancer Research) who have joined as Executive Committee members. I look forward to working with you all.

Also in 2018 our President, Margaret Frame, stepped down after serving four years at the helm. She contributed a lot to our Committee Meetings and I would like to thank her for this commitment as I know it was a very busy period for her Chairing the NCRI. I am, therefore, pleased to announce that Karen Vousden has agreed to take Margaret's place as President and the Executive Committee and I welcome her on board.

Also I am excited to advise that the BACR 60th Anniversary will soon be upon us and we are planning a Celebration Meeting on the 6th to 8th September 2020 at Nottingham Conference Centre so please keep a note in your diary. Both 2018 and 2019 Executive Committee are working tirelessly to make this a memorable meeting.

We would also like to thank you all for continuing to support the BACR our membership is steadily increasing and we would ask that you support us further by helping to recruit even more members to the Association. The membership subscription for full members is £60 and Student members can join for a free for the first year and then pay a nominal fee of £25 for the next three years. You no longer have to be nominated but Students are required to supply a letter from their Institute confirming their student status and duration.

I look forward to another exciting year with the BACR!

Thank you
Professor Julian Dive
Chairman of the BACR

Meeting Reports

Building Capacity in 3D Tissue Modelling and its Application in Cancer Research:
An interactive hands-on workshop – 16th May 2018

Organising committee:
Valerie Speirs, University of Leeds (now University of Aberdeen)
Anna Grabowska, University of Nottingham
Penny Ottewell, University of Sheffield
Anke Bruning-Richardson University of Leeds (now University of Huddersfield)

This was a new style of meeting for BACR and was arranged in response to a strong desire from the research community for opportunities to have 'hands on' experience of 3D tissue modelling techniques that are fast gaining traction in cancer biology.

The target audience was early career researchers wishing to incorporate bespoke 3D tissue models into their workflows. Due to the capacity of the teaching lab, the workshop was restricted to 40 delegates, which we quickly reached.

The morning session introduced delegates to 3D technologies, through short presentations on 3D Models of Bone Metastasis (Penny Ottewell, Sheffield), Tissue-on-a-chip (John Greenman, Hull), Tuneable Hydrogels (Cathy Merry, Nottingham), 3D Spheroid Models (Sophie Roberts, Leeds; Gillian Farnie, Oxford) and Vascular Tumour Models, delivered by our keynote speaker, Jelena Vukasinovic, Atlanta.

These were held in the Thackray Medical Museum Leeds. Following a networking lunch, delegates moved to the teaching labs in the Clinical Sciences Building at St James's University Hospital where they had opportunities to rotate round a number of workstations: Precision Cut Tissue Slices, Hanging Drop Cultures, Self-Assembling Peptide Hydrogels, Microfluidic Devices, Matrix-free 3D culture and Analysis/ Characterisation of 3D spheroids. The image on the next page shows some examples of the delegates participating in these hands-on sessions.

Through the generosity of the NC3Rs, we were delighted to be able to offer several Early Career Researcher Training Bursaries, worth £250, to allow them to receive further training in 3D tissue modelling, addressing the 3Rs. Three awards were made and reports on the outcomes of these bursaries will be available in future BACR newsletters. Overall the workshop was well received, however delegates expressed a desire for more hands-on training.

Special thanks to our sponsors the Leeds Industry Engagement Academy, Nexcelom Bioscience Gilson, Promega, The Company of Biologists, MRC, Pathological Society and SEARCHBreast and to the NC3Rs for kindly providing funding for training bursaries.

Delegates participating in the various hands-on stations during the event.

Response and Resistance in Cancer Therapy – 10th to 12th September 2018

Organising committee (all University of Kent):
Tim Fenton
Michelle Garrett
Martin Michaelis
Mark Wass

While advances in surgery and radiotherapy have led to significantly more people surviving long-term following a cancer diagnosis, the outlook remains dismal for many of those with advanced cancer that has already spread beyond the primary site (metastatic disease) at the time of diagnosis. The chief reason for this lies in the fact that metastatic disease requires treatment with systemic drugs, either conventional chemotherapy or drugs that target specific altered genes in the tumour (often referred to as 'targeted' or 'personalised' therapies). Unfortunately, while tumours often show impressive initial responses to such therapies, lasting months or years, these responses are often followed by recurrence, and this time the cancer is resistant to the drug. At this conference we brought researchers, clinicians and those involved in drug discovery within the pharmaceutical sector together to discuss this problem of drug resistance and to share their cutting-edge research.

This conference brought together scientists working in a number of disciplines and focusing on different cancer types, with a common aim of understanding why some tumours respond to certain therapies while others don't and of understanding (and therefore overcoming) therapeutic resistance. These questions are timely: we have a large and rapidly increasing catalogue of anti-cancer drugs; unprecedented ability to profile tumours at the genomic level and an ever-increasing number of cancer patients depending upon improved therapies. Delegates that are developing and deploying immunotherapies were able to learn from those that have been studying resistance to conventional chemotherapy and targeted therapies for many years. Researchers working on model systems discussed their findings with those analysing large omics datasets from patient samples and all in an intimate setting that allowed maximum opportunity for 1:1 and small group discussions during the networking sessions and at the evening dinners, that were very well attended.

We were extremely impressed with the quality of the science presented at this meeting, both in the talks and during the poster sessions. We received many comments from delegates remarking us on the high quality of the talks and how much they enjoyed attending the conference in the relatively rural surroundings of the University of Kent campus.

Special thanks to our sponsors AstraZeneca, European Association for Cancer Research and Fujifilm/Visual Sonics and our Exhibitors: Astell, , Breast Cancer Kent, Cambridge Bioscience, Cancer Research UK-MedImmune Alliance Laboratory, Fisher Scientific, Haier Biomedical, Illumina, Menarini Silicon Biosystems, New England BioLabs, Promega, Qiagen, Star lab and Triple Red and University of Kent.

The meeting also received sponsorship from a recently established open access journal 'Cancer Drug Resistance' (ISSN 2578-532X) and was the subject of a special issue, including an editorial from the organisers and listing all abstracts from the meeting (http://cdrjournal.com/journal/special_detail/210).

BACR Student Conference – 26th November 2018

Organising Committee:
Sophie Roberts (BACR Student Representative, University of Leeds)
Laura Gomez Cuadrado (Cancer Research UK, Edinburgh Centre)
Natasha Murphy (MedImmune and University of Cambridge)
Dorota Sabta-Pospiech (University of Liverpool)
Fabrizio Simeioni (CRUK Manchester Research Institute)
Hanum Binti Yaakub (The University of Manchester)

Speakers Mina Bissell, Carlos Caldas, and Brian Huntly and the organizing committee.

The first BACR Student Conference was held on the 26th November 2018, at the Francis Crick Institute, London. This event was organized by six dedicated PhD students and dedicated to BACR student members.

This one day meeting was divided into four main themes; Immuno-oncology, Cell Signalling, Tumour Microenvironment and Tumour Models & Genomics. Four experts from each field were invited to give their talk on the latest update in their research area at the very beginning of each session, followed by three short oral presentations by selected students. The guest speakers were Len Seymour (University of Oxford, UK), Brian Huntly (University of Cambridge, UK), Carlos Caldas (CRUK Cambridge Institute, UK) and Mina J. Bissell (Lawrence Berkeley National Laboratory, California, US). Apart from the oral presenters, all participants were asked to prepare a poster to introduce their research to others. Best oral and poster presenters were selected at the end of the event.

This meeting provided a unique opportunity for approximately a group of 90 PhD students to communicate their work and discuss the future direction of cancer research in a very relaxed and students-friendly environment. The participants thought the four topics discussed in this meeting gave a good wide coverage of cancer research. They also found the sessions with the invited speakers were also very engaging. The students got the opportunity to communicate directly with the guest speakers which is not always happen in a scientific meeting like this.
There are still some rooms of improvement but overall, most of the participants were very happy with the contents of the meeting and looking forward for the next BACR Student Conference.

Special thanks go to our sponsors Cancer Research UK, The Company of Biologist and MedImmune. Exhibitors included Enzo, Integra, Promocell, Stratech and Star Lab.

Chris Marshall Award for Cell Signaling Given at the BACR Student Conference

Julian Downward (Chair of the BACR) presenting Zoi Diamantopoulou with her award

Regulation of cell migration by the Tiam1 family of Rac GEFs

Zoi Diamantopoulou[1], Gavin White[1], Muhammad Zaki Hidayatullah Fadlullah[2], Marcel Dreger[3], Karen Pickering[4], Joe Maltas[1], Georges Lacaud[2], Graeme I. Murray[5], Owen J. Sansom[4], Adam F.L. Hurlstone[3] and Angeliki Malliri[1]

[1]Cell Signalling Group, Cancer Research UK Manchester Institute, The University of Manchester, Manchester M20 4BX, UK

[2]Stem Cell Biology Group, Cancer Research UK Manchester Institute, The University of Manchester, Manchester M20 4BX, UK

[3]Faculty of Biology, Medicine, and Health, School of Medical Sciences, The University of Manchester, Manchester M13 9PT, UK

[4]Cancer Research UK Beatson Institute, Garscube Estate, Switchback Road, Glasgow G61 1BD, UK

[5]Pathology, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, Foresterhill, Aberdeen AB25 2ZD, UK

Tiam1, a guanine nucleotide exchange factor specific for Rac, has previously been implicated in cell migration. While capable of promoting migration, in epithelial cells with functional cadherin-mediated adhesion Tiam1 is mostly associated with inhibition of cell migration via promoting cell-cell adhesion. Tiam1's ability to influence migration has until now been associated with membrane-bound or cytoplasmic Tiam1. Recently following staining of a tumour microarray from colorectal cancer (CRC) patients we detected Tiam1 in the nucleus and showed that high nuclear Tiam1 correlates with early stage and increased CRC patient survival. Colorectal carcinogenesis typically commences with constitutive WNT signalling leading to nuclear accumulation of transcriptional co-activators including TAZ and YAP. We demonstrated that Tiam1 shuttles between the cytoplasm and nucleus antagonizing TAZ and YAP by distinct mechanisms in the two compartments. In the cytoplasm, Tiam1 localises to the destruction complex and promotes TAZ degradation by enhancing the interaction of TAZ with the ubiquitin ligase β-TrCP. Nuclear Tiam1 suppresses the interaction of TAZ/YAP with the transcription factors TEADs inhibiting expression of TAZ/YAP target genes involved in epithelial-mesenchymal transition and cell migration. Importantly we showed that nuclear Tiam1 suppresses cell migration. These data therefore identify nuclear Tiam1 as a critical antagonist of CRC progression through inhibition of TAZ and YAP.

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TUMOUR MICROENVIRONMENT MEETING 2019

1ST - 3RD JULY 2019. NOTTINGHAM, UK.

Abstract + early bird submission end of **March 2019**

Basic Science to Novel Therapies

Stem cell niche • Vascular-Tumour Interactions • Immune-Tumour Interactions • Lymphatic-Tumour Interactions • Stromal Interactions • Tumour microenvironment and imaging • Into the clinic

Overview

Tumour growth and metastasis is critically dependent on the interaction between tumour cells and their surrounding environment. Knowledge of the role of the tumour micro-environment has been developing rapidly and therapies aimed at tumour vasculature and lymphatics, immune interactions, and stromal components are now increasingly available. Therefore this meeting aims to highlight the latest advances in this field from basic science to clinical development.

Speakers include:

Gabriele Bergers	Be
Adrian Harris	UK
Richard Kolesnick	USA
J Martin Brown	USA
Johanna Joyce	Ch
Sirpa Jalpanen	Fi
Claire Lewis	UK
John Marshall	UK
Tony Ng	UK
Ester Hammond	UK
David Lyden	USA
Andrew Reynolds	UK
Jacqui Shields	UK
Melody Swartz	USA
Michele De Palma	Ch
Jeff Hubble	USA
Mike Olson	UK
Kurt Ballmer-Hofer	Ch
Lindy Durrant	UK
Stuart Farrow	UK

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THE BRITISH ASSOCIATION FOR CANCER RESEARCH bacr

Organisers

Andrew Benest, David Bates, Stewart Martin, Alan McIntyre, Sarah Storr & Hester Franks at University of Nottingham

NCRI 2018 BACR AWARDS

Scottish Event Campus, Glasgow

BACR/AstraZeneca Frank Rose Award

Seth Coffelt receiving his award from Michelle Garrett

From rarity to clarity: γδ T cells in cancer

Seth B. Coffelt
University of Glasgow, Institute of Cancer Sciences, and Cancer Research UK Beatson Institute

Over the past 10 years, the cancer community has learned a great deal about how solid tumors alter distant organs to create a suitable environment for the seeding and outgrowth of disseminated cancer cells. Immune cells are major contributors to this process, where some populations work to counteract metastasis and other populations function to promote metastasis. We have shown that γδ T cells – a rare population of T cell receptor-expressing cells that straddle the line between innate and adaptive immunity – advance mammary tumour metastasis through expression of IL-17. We have found that IL-17-producing γδ T cells instruct neutrophils to suppress the function of CD8 T cells, allowing metastatic cancer cells to avoid anti-tumour immunity. My lab is now interested in understanding how IL-17-producing γδ T cells are regulated in the pre-metastatic niche of the lung, in order to develop novel immunotherapies that counteract their function and reduce mammary tumour metastasis. At the same time, we are exploring the role of γδ T cells in other cancer types, including colorectal cancer and pancreatic cancer. We are particularly interested in liver-resident γδ T cells and how they may shape this major site of metastasis. During my talk, I will present our latest data in this area, which are providing clarity on the function of γδ T cells in different metastatic organs.

BACR/Astex Pharmaceuticals Roger Griffin Prize for Cancer Drug Discovery

Sean Lim receiving her award from Michelle Garrett.

Antibody Tumour Targeting Is Enhanced by CD27 Agonists through Myeloid Recruitment

Sean Hua Lim
University of Southampton, Antibody and Vaccine Group (AVG) in Cancer Sciences

Background: Tumour-targeting monoclonal antibodies (mAb) such as anti-CD20 exert their anti-tumour activity through macrophage-mediated antibody-dependent cellular phagocytosis (ADCP). We examined whether the efficacy of CD20 mAb could be augmented by combination with immunomodulatory mAbs against PD-1, CTLA-4, OX40, GITR, and CD27. CD27 is a TNFR superfamily member expressed constitutively on T and NK cells and has been shown to regulate $CD8^+$ T-cell priming, cytotoxicity, and memory responses.

Methods: mAb combinations were tested in multiple immunocompetent murine B-cell lymphoma models (BCL_1, A31 and Eμ-TCL1) and in human CD27 transgenic mice. We dissected the mechanism of action of the mAbs through single-cell RNA sequencing and functional immunological assays.

Results: Amongst the immunomodulatory mAb tested with anti-CD20, only addition of an agonistic mAb against CD27 markedly improved the survival of BCL_1 lymphoma-bearing mice. Similar results were observed in multiple B-cell lymphoma models.
Profound myeloid cell infiltration and activation was observed in mice treated with anti-CD27. mRNA expression of known myeloid chemoattractants (CCL3, CCL4 and CCL5) and IFNγ was observed on $CD8^+$ T cells. *In vivo* neutralisation of IFNγ or depletion of T and NK cells, abrogated myeloid cell infiltration by anti-CD27. Further, macrophages from anti-CD27 treated mice demonstrated increased phagocytic ability in the presence of anti-CD20.

Conclusion: These data demonstrate the therapeutic potential of combining a tumour-targeting mAb with an immunostimulating mAb, through a hitherto, unexpected mechanism of action involving activation of the innate immunity. Here, anti-CD27 indirectly increased the capacity of macrophages to perform anti-CD20-mediated ADCP through T-cell activation. Based upon these data, a U.K. multicentre phase II clinical trial examining rituximab and varlilumab (anti-CD27) in relapsed and/or refractory B-cell lymphoma has been initiated (RIVA trial NCT03307746).

BACR Hamilton Fairley Award

Two BACR Hamilton Fairley Awards were given at the NCRI in 2018. The first went to Stelios Chrysostomou of Imperial College London, and the second to Michael Hodder of CRUK Beatson Institute.

Stelios Chrysostomou receiving his award from Michelle Garrett

Title: Targeting RSK4 prevents both chemoresistance and metastasis in lung cancer

Stelios Chrysostomou[1], Rajat Roy[1], Filippo Prischi[2], Katie Chapman[3], Uwais Mufti[4], Robert Peach[1], Francesco Mauri[1], Joel Abrahams[1], Eric Aboagye[1], Maruf Ali[1], Michael Seckl[1], Olivier Pardo[1]
[1]Imperial College London, [2]University of Essex, [3]Assay Biology, Domainex Ltd, [4]Department of Urology, Leeds Teaching Hospitals NHS Trust

Background: Lung cancer is the primary cause of cancer death worldwide with a 5-year survival rate <5%. Non-small cell lung cancer (NSCLC) accounts for 85% of cases with adenocarcinoma being the major subtype. Patients almost invariably develop metastatic drug-resistant disease and this is responsible for our failure to provide curative therapy. Hence, a better understanding of the mechanisms underlying these biological processes is urgently required to improve clinical outcome. The 90 kDa ribosomal S6 kinases (RSKs) are downstream effectors of the Ras/MAPK cascade. RSKs are highly conserved serine/threonine protein kinases implicated in diverse cellular processes, including cell survival, proliferation, migration and invasion. Four isoforms exist in humans (RSK1-4) that are uniquely characterised by the presence of two non-identical N- and C-terminus kinase domains.

Method: Two kinome siRNA screens were performed to identify novel regulators of drug response and migration/invasion in lung and bladder cancer cells. RSK4 emerged as a novel regulator of both processes.

Results: We show here that RSK4, contrary to RSK1, promotes both drug resistance and metastasis in lung cancer. This kinase is overexpressed in the majority of NSCLC biopsies and this correlates with poor overall survival in lung adenocarcinoma patients. The knockdown of RSK4 sensitises lung cancer cells to chemotherapy and prevents their migration and invasiveness *in vitro* and *in vivo*. RSK4 downregulation decreases the anti-apoptotic proteins Bcl2 and cIAP1/2 which correlates with increased apoptotic signalling. RSK4 silencing also induces mesenchymal-epithelial transition (MET) through inhibition of NFκB activity. A small-molecule inhibitor screen identified several floxacins, including trovafloxacin, as potent allosteric inhibitors of RSK4 activation. Trovafloxacin reproduced all effects of RSK4 silencing *in vitro* and *in vivo* and is predicted to bind a novel allosteric site revealed by our RSK4 N-terminal kinase domain crystal structure.

Conclusion: Taken together, our data demonstrate that RSK4 represents a promising novel therapeutic target in lung cancer.

Michael Hodder receiving his award from Valerie Speirs.

Title: Effective chemoprevention strategies in APC driven mouse models of intestinal tumourigenesis

Michael Hodder, Patrizia Cammareri, Dennis Timmerman, Owen Sansom
CRUK Beatson Institute

Background: Truncation of the negative regulator of the Wnt signalling pathway, Adenomatous Polyposis Coli (APC), represents one of the earliest commonly occurring events in Colorectal Cancer (CRC) progression. In addition, a number of factors substantially increase the risk of developing CRC, including inherited mutations in APC, such as Familial Adenomatous Polyposis (FAP). Here we exploit vulnerabilities in APC mutant stem cells and use chemo-preventative strategies to influence tumour initiation in the mouse intestinal epithelium.

Method: Using *in vivo* mouse models we mutate APC specifically in the Lgr5+ve stem cell population of the intestine. We subsequently challenge these models with short term therapeutic strategies to influence early lesions, and assess the ability of chemotherapy to influence mutant clone establishment, as well as tumour formation and overall survival.

Results: We demonstrate that APC deficient intestinal stem cells are more sensitive to chemotherapy when compared with wild type stem cells. In addition, we establish that short term therapeutic interventions, including those which cause DNA damage and those which specifically target apoptotic machinery, are able to influence tumour initiation, extend survival and reduce tumour numbers in mouse models. Furthermore, we identify that timing is crucial for therapeutic efficacy, as treatment of established tumours has no significant impact on tumour progression.

Conclusion: Overall we provide evidence that chemoprevention is a tenable approach to combat CRC, and could be of significant benefit to high risk patients, such as those with FAP. Similar to our mouse models, chemoprevention could offer more tangible patient benefit than treatment of established tumours. This work highlights that early lesions are exquisitely sensitive to a variety of therapies and that mutant clones can be eliminated and readily replaced with healthy stem cells prior to tumour formation.

Fellowship & Bursary Awards 2018

2018 BACR/CRUK Travel Awards (Selection of Reports)

Awardee: David James Pinato (Imperial College London)
Meeting: ASCO SITC Clinical Immuno Oncology Symposium. January 27th – 31st 2018, San Francisco CA (USA)

As an NIHR funded Academic Clinical Lecturer in Medical Oncology I was privileged to be counting on the BACR support to attend the ASCO-SITC Annual Symposium, the most important and renowned conference in the field of immunotherapy of cancer.

Thanks to the generosity of BACR I was able to submit and present 2 posters evaluating the clinical impact of the heterogeneity in programmed death ligands (PD-L) expression in hepatocellular carcinoma (HCC).

Therapies directed against programmed cell death-1 (PD-1) or its ligands (PD-L1 & 2) are gaining momentum in HCC as well as in a number of other solid tumors. However, response to immunotherapy is heterogeneous.

The role of PD-L1 expression by immunohistochemistry (IHC) as a predictor of response remains controversial in HCC and there is no consensus as to the optimal test. In this retrospective study of 100 patient samples, we found marked heterogeneity in the detection of PD-L1 in tumour and immune infiltrating cells across 5 different PD-L1 IHC assays utilized in research and clinical trials of checkpoint inhibitors. Inter-assay variation in PD-L1 detection is substantial and impacts on the reliability and reproducibility of PD-L1 IHC status as a predictive correlate of response to immune checkpoint inhibitors.

During the meeting I was able to learn about novel techniques being implemented in the field of biomarker discovery in immunotherapy and I was glad to establish a collaboration with the MD Anderson Cancer Centre focusing on the use of ImmunoSeq, a novel T-cell receptor sequencing technique that allows for the profiling of clonality of T-cell responses in solid tumours.

I am very grateful to the BACR for having facilitated my attendance to ASCO SITC 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.

Awardee: Alejandro Jiménez-Sánchez (University of Cambridge)
Meeting: Next-Gen Immunology , February 11th – 14th 2018 at the Weizmann Institute of Science

The Next-Gen Immunology conference at the Weizmann Institute of Science is the best conference I have ever attended so far, and I am looking forward to the following one! Attending and presenting at this conference allowed me to get a much wider overview of the current cutting-edge research in immunology, from the neuro-immune axis, to systematic analyses of the microbiome and its influence in health and disease, to cancer immunotherapies.

I was amazed by the quality of speakers and projects presented, including of course the presentation by Prof James P. Allison. In addition, the opportunity to speak with editors was a unique experience. Gratefully, my poster presentation was very well received and indeed potential future collaborations were set. Speakers were very approachable at the social events (which are the best I have seen at a conference, thanks to Prof Ido Amit and Prof Eran Elinav), and the small size of the conference allowed plenty of interactions with principal investigators and professors.

The vast realm of biological processes in which the immune system is involved was clearly shown during the conference, which opened my eyes to the multitude of variables that could affect the immune response to cancer, and all the parameters we could monitor to prevent, diagnose, treat, and cure cancer by harnessing the immune system, of which the best current example is checkpoint-blockade immunotherapies.

The venue, The Weizmann Institute of Science is a magnificent place, and now I will go for a scientific visit to collaborate with researchers there. I foresee that by systematically integrating many of the different elements that affect the immune response, the current response to immunotherapies will be increased and many more patients cured by targeting and manipulating the immune system. I cannot recommend more this conference to researchers working on any area of immunology.

Alejandro Jiménez-Sánchez with Professor James P. Allison

Awardee: Ahmed Khairallah Mahdi (Northern Institute for Cancer Research)
Meeting: EASL-HCC summit 2018, 1st-3rd March 2018 in Geneva, Switzerland

The European Association for the Study of Liver (EASL) Summit on Hepatocellular Carcinoma has grown steadily and successfully to become one of the largest meetings concerned with advancing liver cancer science and care worldwide. It offers liver cancer experts an international multidisciplinary forum to exchange the latest innovations in research and care.

Attending this conference offered me a great opportunity to expand my knowledge in liver cancer field as it involved intense programme that ran over three days covering different varieties and aspects of liver diseases. Also, it allowed me to present part of my project that deals with testing a treatment modality in liver cancer by Combined targeting of the PPM1D/WIP1 and MDM2 negative feedback suppressors of p53 in *TP53* wild-type human liver cancer cells in the form of an e-poster. I had the opportunity to have face to face discussion with key figures and keynote speakers in liver cancer filed. This was very useful and important to me, especially being at the end of my PhD journey.

After my successful application for a BACR student travel award, the funding offered was very helpful in helping me attending this important summit, So I would like to express my appreciation and gratitude for this.

Ahmed Khairallah Mahdi next to his e-poster at the meeting.

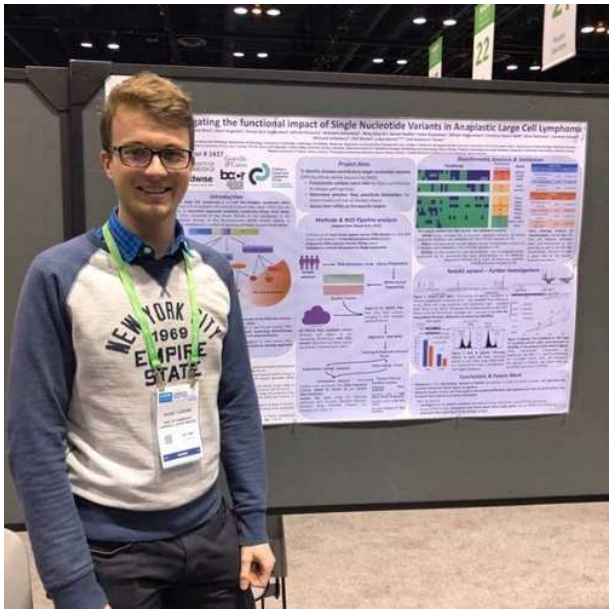
Awardee: Hugo Larose (University of Cambridge, Addenbrookes' Hospital)
Meeting: American Association for Cancer Research (AACR) Annual Meeting, April 14th – 18th 2018 – Chicago, IL

This year's iteration of the AACR Annual Meeting was held in Chicago, IL, on April 14th-18th 2018. The only reason I was able to attend this conference and absorb the cutting-edge research discussed was the generous assistance of the British Association for Cancer Research, who awarded me the BACR/CRUK Student Award.

The conference this year recorded record-breaking numbers of delegates, with an army of over 22000 coffee-gulping scientists and assorted allies in the war on cancer travelling to Chicago. This year's theme 'Driving Innovative Cancer Science to Patient Care' combined a number of thrilling presentations on the latest research in such varied fields as AI, Big Data or CAR T-cell therapy. A large part of the conference also featured both talks from clinicians – perhaps this was even more valuable, particularly to us bench-based scientists who get little exposure to clinical trials or bed-side care. The concept of survivorship and the need for both follow-up and less toxic drugs to avoid a relapse – sometimes decades – after the initial tumour opened a completely new field for the cancer research community to tackle.

The AACR also organised a number of town-hall meetings for fascinating panel discussions about tissue banks, strategy for paediatric cancer research and cancers in racial minorities. A number of careers talks, as well as talks from members of the industry, the FDA, and other policy-setting organisation proved to be an excellent way to network and learn about career progressions outside of the academic track.

Thanks to the BACR/CRUK award I was able to present a poster on the genomics of Anaplastic Large Cell Lymphoma and gain invaluable insight that will serve as excellent feedback prior to submitting a draft manuscript for publishing. Thanks to this award I was also able to travel in the United States, discovering Chicago as well as other towns on the East Coast such as Buffalo, New York, Boston or Philadelphia. My heartfelt thanks to the BACR and CRUK for creating this wonderful opportunity for early-career scientist!

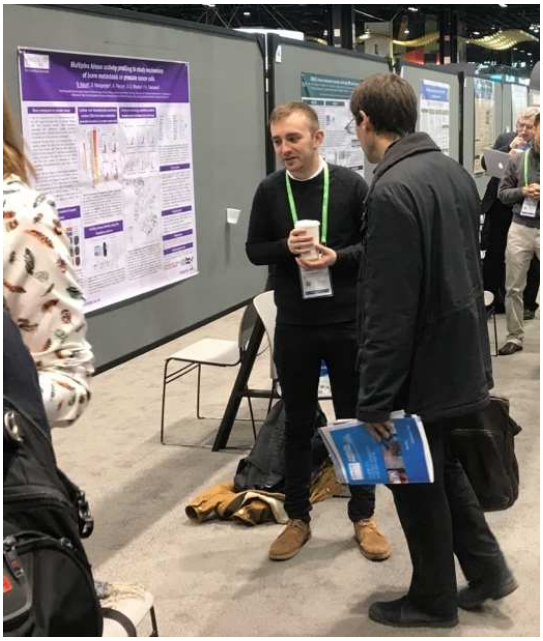


Hugo Larose next to his poster at the AACR meeting.

Awardee: Benjamin Abbott (University of Manchester)
Meeting: American Association for Cancer Research (AACR) Annual Meeting, April 14th – 18th 2018 – Chicago, IL

I'm a PhD student at the Manchester Cancer Research Centre. In 2018, I received a BACR/CRUK Student Travel Award to enable me to attend the American Association for Cancer Research (AACR) Annual Meeting, held in Chicago in April. The central theme of the meeting was 'Driving Innovative Cancer Science to Patient Care', reflecting the diverse programme of talks, workshops and poster sessions covering all areas of basic and clinical cancer research and attracting clinicians, scientists, cancer survivors and patient advocates from across the world. The scale of the conference – in terms of number of attendees and size of the venue – was mind-blowing.

Some of the scientific highlights for me included plenary talks from Klaus Pantel on liquid biopsies, Padmanee Sharma on immune checkpoint therapy and Charles Swanton on clonal evolution in cancer. Mikala Egeblad's work on the reawakening of dormant cancer cells and Rakesh Jain's work on vessel co-option during metastasis offered valuable insights into how the microenvironment can control cancer progression. I particularly enjoyed the talk from Tony Hunter, in which he described his serendipitous discovery of tyrosine phosphorylation.
I presented some of my research as part of the 'Mechanisms Underlying Metastasis' poster session. This gave me chance to communicate my research to scientists from various institutes and scientific backgrounds, many of whom provided valuable advice and feedback on my work and asked interesting questions.



Benjamin Abbott presenting his poster at the AACR meeting

I also took the opportunity to explore Chicago, despite it being one of the coldest Aprils on record in Illinois. Luckily our hotel was situated near to the Magnificent Mile, Chicago's main shopping street, so I was able to invest in a hat and gloves to keep me warm!
I would like to thank the BACR for giving me the opportunity to enjoy and benefit from this renowned international meeting.

Awardee: John Gallon (Imperial College London)
Meeting: American Association for Cancer Research (AACR) Annual Meeting, April 14th – 18th 2018 – Chicago, IL

The annual conference of the American Association of Cancer Researchers was an amazing meeting with a vast number of world renowned, international speakers presenting the most cutting-edge research across the broad spectrum of cancer research.

A particular focus of the meeting was methods of exploiting the immune system in order to augment cancer treatment, as this is currently an exciting area of research showing great promise. In this area I was particularly interested in research such as that of Andrea Schetinger, which used 'immunogenomics' approaches; integrating next generation sequencing data and genomics data, in order to understand T cell response throughout tumour development.

My personal highlights were hearing from researchers describing their work relating to the role of epigenetics in the progression of ovarian cancer, and the emergence of drug resistance. Marie Classon's work on the role of chromatin modifications at repetitive elements in the emergence of drug tolerant cells was particularly interesting to me as her previous work provided a lot of the inspiration for my research.

I also gained ideas for methods to apply to my own research, through the presentation of tools such as CREAM, by Matthieu Lupien, which calls clusters of regulatory elements from ATAC-seq data, which I have already applied in my own project.

My BACR funding for attendance at this conference was awarded based on the opportunity to present my research to a wide audience, so the poster presentation session was highly beneficial. I had a number of great discussions with people interested in my research and have even begun a collaboration with a lab who were interested in using a technique we have developed.
I am extremely grateful to BACR for the opportunity to attend this conference and hear from the leading researchers in our field, as well as to present my work. It was an extremely interesting experience which will be of great help to me as I near the end of my PhD.

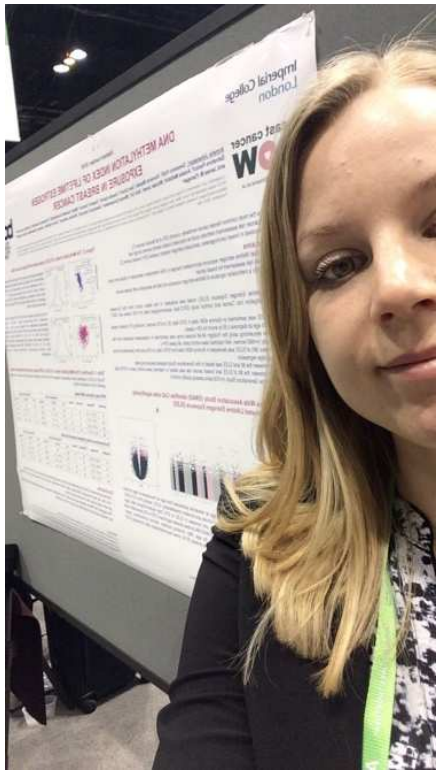
Awardee: Annelie Johansson (Imperial College London)
Meeting: American Association for Cancer Research (AACR) Annual Meeting, April 14th – 18th 2018 – Chicago, IL

I had the privilege of attending the AACR Annual Meeting 2018 in Chicago because of support from the BACR/CRUK Student Award. More than 20,000 members from the global cancer community attended this year's conference, which offered hundreds of symposiums covering all perspectives of cancer research from drug discovery to prevention and early detection. Alongside this, inspiring plenary sessions, hundreds of poster presentations, and a large exhibition were held.

As a PhD student in my final year this was a great opportunity to learn about the new advances in cancer research and for networking with other researchers and company representatives. I had the pleasure to present my poster titled "DNA methylation index of lifetime estrogen exposure in breast cancer" and I am grateful for how many delegates approached me to discuss my project, collaborations and job opportunities.

I will only mention a few highlights from the conference relevant to my interests. I attended a session about the challenges of bringing (breast) cancer risk models in to the clinic, very well explained by Ruth Pfeiffer, a great talk by Yu Shyr and Thomas Braun discussing common statistical mistakes in cancer research and regression modelling, and how to use AI in cancer diagnostics by Jason Hipp and Martin Stumpe. Relevant to my own research, I found the seminar by Carol Lange and Jason Carroll about targeting the progesterone receptor in oestrogen receptor positive breast cancer and the interplay between hormones and the receptors very fascinating.

In summary the conference offered many new perspectives and left me inspired and motivated for my future career in cancer research. I would like to thank BACR for the generous funding of my attendance of this very exciting conference, which I can highly recommend.



Annelie Johansson next to her poster at the AACR meeting.

Awardee: Angélica Santiago Gómez (University of Manchester)
Meeting: The AACR Special Conference on Cancer Dormancy and Residual Disease
June 19th-22nd 2018 - Montreal, QC, Canada

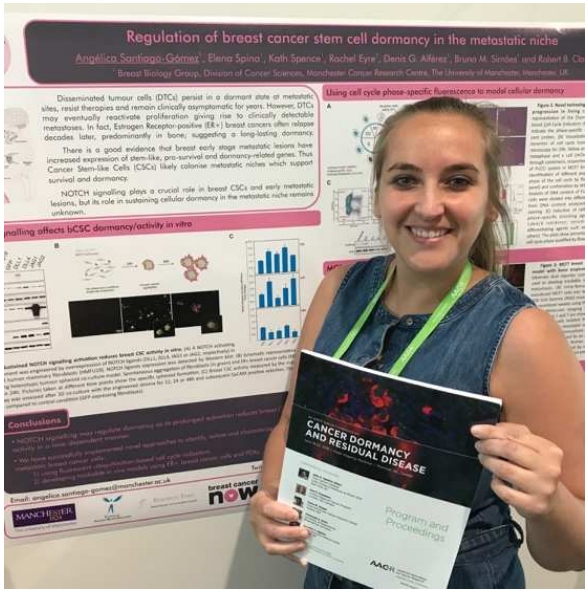
I am a Postdoctoral Researcher at the Manchester Cancer Research Centre working on breast metastatic dormancy. Earlier this year I was granted a BACR Non-Student Travel Award that allowed me to attend the first ever conference about Cancer Dormancy and Residual Disease. This Special Conference in Cancer Research was sponsored by the American Association for Cancer Research (AACR) and held in Montreal, Canada.

Over 200 attendees, including scientists and clinicians, got together for 4 days to hear about the latest findings in cancer dormancy. This paradigm within cancer biology was identified more than 20 years ago; and, although this discovery transformed metastasis research by opening a new space to block metastatic outgrowth, it remains a poorly understood disease state. The meeting aimed to address this emerging cancer research field by increasing awareness and research efforts to target minimal residual disease.

The Opening Keynote Lectures were made by 2 remarkable cancer researchers: first, Julio Aguirre-Ghiso, who has been a pioneer in studying the molecular mechanisms of early disseminated tumour cells; followed by Mina Bissell, who highlighted the importance of the extracellular matrix in this context. The following days we had the opportunity to hear about disseminated tumour cell heterogeneity, pro-dormancy and metastatic niches, protective niches for stem cells in adult tissues, novel technologies to image and profile disseminated tumour cells, immune evasion and how dormancy can be translated into the clinic to prevent metastasis. It was also really interesting to learn about the parallels between minimal residual disease and HIV with Daniel Douek, who gave an extraordinary and inspiring keynote lecture about the HIV reservoir maintenance.

I really enjoyed the poster sessions and the thought-provoking discussions during the early traditional Canadian breakfasts! It was great to catch up with old friends and to establish new collaborations. But not all was about science, I also had time to explore the city and hiked to the top of the *Mont Réal* (Mount Royal)!

I would like to thank the BACR not only for their support to attend this special conference to present my work about cellular dormancy in breast cancer; but also, for the opportunity to travel to Canada (I had never been before!) and to become part of the growing cancer dormancy scientific community!



Angélica Gómez next to her poster at the meeting.

Awardee: Jessica Buck (University of Oxford)
Meeting: European Association for Cancer Research 25th Congress; 30th June – 3rd July, Amsterdam

I would like to thank the BACR for their generous travel bursary to present my work at the European Association for Cancer Research 25th Congress. It was a very interesting and educational conference to attend, and will help greatly with my remaining experimental work and thesis.

I attended the Cancer Science for Oncologists educational sessions on the Saturday before the main conference. As my DPhil is mostly MRI imaging based, the opportunity to learn from world experts in areas such as liquid biopsy, tumour evolution, and immunotherapy was very valuable, and enabled me to make the most of the conference by providing an overview of molecular methods that I wasn't overly familiar with. The learning from these sessions allowed me to understand the methods used by groups in the scientific talks that followed.

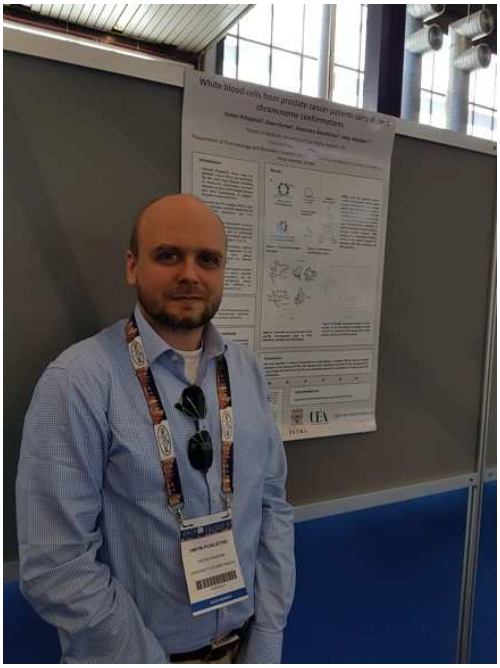
On Sunday and Monday I attended symposia on tumour metabolism, tumour microenvironment, clinical developments in the treatment of solid tumours, invasion and metastasis, and paediatric cancers. In addition, there were a huge number of posters relevant to my work, and I spent many hours reading through results and speaking with other students and post-docs working in similar areas. I also attended careers networking lunches on animal models and patient derived xenografts, which were valuable to meet experts in the field and discuss some of the pros and cons of these methods.

On Monday I also defended my poster. I discussed my work with a number of interested students, post-docs and PIs, and it was a valuable experience which helped prepare me for my upcoming pre-submission viva examination. A number of potential experiments to answer some interesting questions my work raised were also suggested, which was also very useful.

On Tuesday I attended the plenary talks, which were all very interesting. I particularly enjoyed the prize talk on p53 by Karen Vousden, which despite being out of my field of expertise was very interesting and easy to understand. It was undoubtedly an excellent conference, and a valuable learning experience for my DPhil.

Awardee: Dmitry Pshezhetskiy (University of East Anglia)
Meeting: European Association for Cancer Research 25th Congress; 30th June – 3rd July, Amsterdam

I would like to thank BACR for the opportunity to attend the EACR 25 conference in Amsterdam this July. I think this meeting was a great success. The scale and organisation were impressive and I think EACR did a spectacular job in setting the scene. The quality of presented science was also excellent – the keynotes and major plenary lectures were presented by the leading specialists in the relevant fields. Many of the presentations were ground-breaking and truly inspirational. I enjoyed a great keynote speech by Laurence Zitvogel about the impact of gut microbiome on chemotherapy resistance. It is an extremely exciting and a very novel concept, which is still poorly studied, yet of significant impact. Another session that was very interesting to me was "Tracking Cancer in the Blood". The idea of clonal expansion in response to therapies was always mesmerizing me, as we are basically "paving the way for bad guys" with the chemotherapy treatment. An interesting concept was introduced by Alberto Bardelli in his talk "Cancer evolution as a therapeutic target". Alberto laid out a new idea that enhancing defects in mismatch repair mechanism can make tumours more visible to the immune system and lead to their eradication. This is a risky and same time interesting approach – making the tumour more aggressive to eradicate it more successfully. Similar approaches were recently proposed in prostate cancer where a pulse androgen activation was given to patients prior to chemotherapy to increase cancer cell mitosis and hence susceptibility to antimitotic agents.



As for me, I presented my poster entitled "White blood cells from prostate cancer patients carry distinct chromosome conformations" during the poster sessions and had many good discussions with various attendees.

Overall, during the conference there were many excellent presentations, good meetings, interesting discussions and we may even make a collaboration or two.

Finally, Amsterdam is a beautiful city with many attractions and definitely worth a repeat visit. We ate the pancakes on the canals in the evenings and enjoyed a very warm and sunny (not Dutch) weather.

Dmitry Pshezhetskiy next to his poster at the EACR 25 meeting.

Awardee: Sumitra Mohan (Cancer Research UK Manchester Institute)
Meeting: European Association for Cancer Research 25th Congress; 30th June – 3rd July, Amsterdam

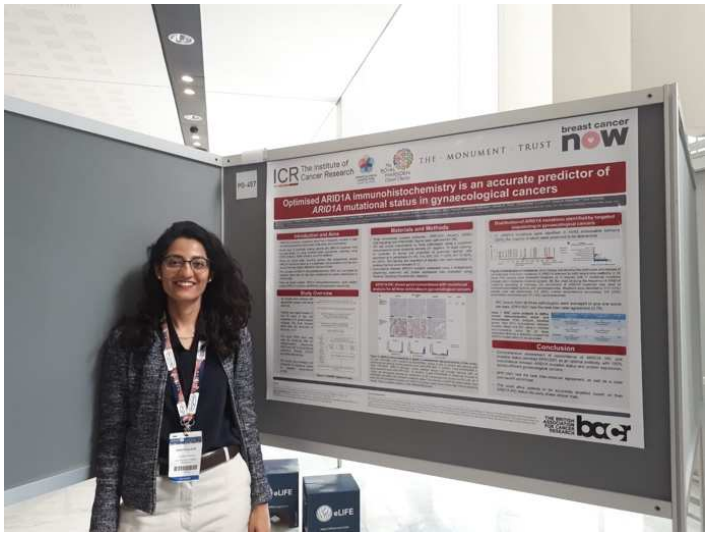
Sumitra Mohan

I am a postdoctoral scientist at Cancer Research UK Manchester Institute working in the group of Caroline Dive. In my project, I am addressing the clinical potential of molecular analysis circulating cell free DNA as a liquid biopsy in small cell lung cancer (SCLC) and more recently pancreatic cancer. We have developed sensitive next generation sequencing methodologies to detect tumour associated alterations in cfDNA in 96% of SCLC patients and further we were able to identify potential therapeutic targets in >50% of the patients. BACR generously supported my travel and attendance at the EACR congress in Amsterdam in July 2018 which allowed me to present our work in the session "Tracking cancer in blood".

The EACR congress was four great days of science, networking and inspiration. The opening talk from Uri Alon about the emotional and subjective side of doing science opened discussions on changing the culture in Science. The Mike Price Gold Medal Award Lecture by Karen Vousden on the many ways p53 impacts cancer development, René Bernards talk on the one-two punch model for treating cancers and the plenary talks from Mike Stratton on mutational signatures in cancer and Anton Berns on Wnt Signalling pathway in tumour development were a few of my favourite talks. The educational sessions for oncologists on day 1 were extremely interesting for both oncologists as well as basic scientists and in particular I enjoyed the talks from Gerard Evans explaining the role of oncogenes in hacking tissue regeneration and Jos Jonkers' on identification of breast cancer drivers and therapy resistance mechanisms in mouse models. Opening each day with exceptional talks in the Meet the Expert sessions from true leaders in the field such as Carlos Caldas on the breast cancer tumour heterogeneity and Sergio Roman Roman on recent research in uveal melanoma were interesting as well as inspiring.

Overall, the scientific programme was excellent and diverse covering the latest discoveries in the field of cancer research. I am grateful to BACR for granting me the travel bursary to attend this congress.

Awardee: Saira Khalique (The Institute of Cancer Research)
Meeting: European Association for Cancer Research 25th Congress; 30th June – 3rd July, Amsterdam



Saira Khalique next to her poster at the EACR 25 meeting.

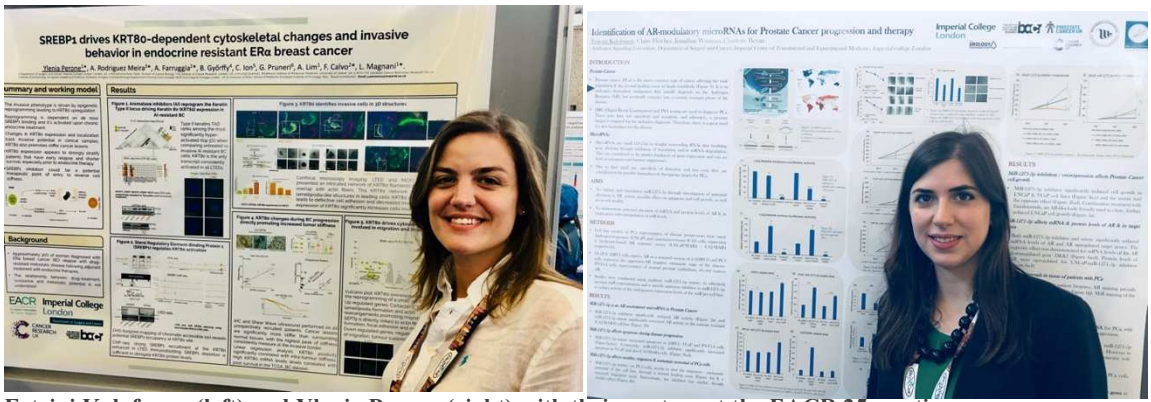
The EACR 25th anniversary meeting was an opportunity to hear well-presented talks from a number of high-profile international speakers and interact with other researchers. I learnt about the latest developments in basic and discovery driven translational research. The first day was dedicated to educating clinical fellows and young researchers.

During the conference, there were a number of sessions focused on how best to personalise and rationalise cancer treatment approaches using novel technology. Highlights included the uses of biosensors, Jos Jonkers's mouse models developed using CRISPR to understand treatment resistance, and Hans Clever demonstrating that patient derived organoids accurately recapitulate patient data and that these can now be transplanted into mice. Charlie Swanton gave a historical overview of Darwinian evolution and the latest results from TRACERx - Tracking Cancer Evolution through Therapy - focusing on primary resections from lung and renal cancers, using serial CTC, cfDNA, metastatic biopsies and multi-region sequencing.

Translational research-based sessions provided a resource to help me focus my future practice as a clinician, and help me contextualise my current research. I now have a better understanding of the genomics consortium workflows, such as PCAWG, and approaches to understanding diversity, e.g. Andrea Sottoriva shared his open access applications using evolutionary bioinformatics pipelines. I was particularly interested in the pros and cons of working with CTC and cfDNA from the Dive group, and immunogenomics; e.g. the development of a validated IHC Immunoscore in colorectal cancer; including advantages and limitations of RNA based-signatures. The early morning session by Marco Foiani on ATR mechanistics provided clarity on how the protein works and its biological implications.

My poster entitled "Optimised ARID1A IHC is an accurate predictor of *ARID1A* mutational status in gynaecological cancers", led to interesting discussions about the importance of antibody optimisation and validation of sequencing.

Awardees: Foteini Kalofonou and Ylenia Perone (Department of Surgery and Cancer, Imperial College London)
Meeting: European Association for Cancer Research 25th Congress; 30th June – 3rd July, Amsterdam



Foteini Kalofonou (left) and Ylenia Perone (right) with their posters at the EACR 25 meeting

We had the great opportunity to attend the 25th Biennial Congress of the European Association for Cancer Research celebrating the EACR's 50thAnniversary Year, held at the RAI Convention Centre in Amsterdam attracting over 1800 participants with over 1000 scientific posters.

The travel bursary we received from the British Association for Cancer Research and Cancer Research UK gave us the opportunity to participate at the Europe's largest dedicated cancer research conference, greatly helping us to define our career path, to interact and exchange ideas with many of the leading figures from a wide variety of backgrounds. We were fortunate to receive this travel bursary that allowed us to travel to the meeting and present a poster of the findings from our PhD research projects: ''*Identification of AR-modulatory microRNAs for Prostate Cancer progression and therapy'' (*Foteini Kalofonou) and *"SREBP1 drives cell-autonomous cytoskeletal changes by KRT80 remodelling during ERα breast cancer progression" (*Ylenia Perone).

The meeting programme was spread over four days and consisted of a variety of clinical, translational and basic science presentations, designed to provide state of the art information related to all aspects of cancer. This gave us a broader understanding of the exciting research avenues of basic and translational cancer research. As clinicians, undertaking a PhD in basic cancer research, we particularly enjoyed this year's Congress and gained great benefit from its theme 'from bench to bedside'.

The 2018 Conference began on the 30th of June with the educational session "Cancer Science for Oncologists". The scientific programme looked into mechanistic principles and tumour evolution, with Prof. Charles Swanton from London Research Institute CRUK, talking about TRACERx and cancer evolution.

The following day was the start of the main meeting programme and it began with an excellent "Meet the Expert" presentation about breast cancer inter- and intra-tumour heterogeneity landscapes from Prof. Carlos Caldas from the University of Cambridge. Dr. Andrea Sottoriva, from Institute of Cancer Research, opened the session ''heterogeneity of tumour evolution'', discussing about a novel quantitative method of machine learning approach, called ''REVOLVER''. This method overcomes the stochastic effects of cancer evolution and highlights hidden recurrences in cancer patient cohorts, predicting therefore repeated evolutionary trajectories.

Prof. Thomas Gajewski, from University of Chicago, gave a talk on Immunology in Cancer, suggesting the three major hypotheses in order to explain the molecular mechanisms behindT cell-inflamed versus non-inflamed tumour-microenvironment: Somatic differences at the level of tumour cells; Germline genetic differences at the level of the host; Environmental differences.

Multiple sessions on the third day of the Conference covered topics such as mechanisms of resistance to tumour therapy, invasion and metastasis, paediatric cancers, the role of microbiome and inflammation in cancer, finishing with the keynote lecture given by Prof. Michael Stratton, from The Sanger Centre, on signatures of mutational processes. Prof. Neta Erez, from Tel Aviv University of Israel, focused on the link between Cancer Associated Fibroblasts (CAFS), tissue damage and tumour promoting inflammation in breast cancer. The innate immune system plays a key role, recognising common molecular patterns associated with pathogens or tissue damage. Different inflammasome pathway genes are upregulated in stroma of human breast tumours and this upregulation is related to predisposition for lung metastasis.

The congress concluded on the 3rd of July with a programme of keynote lectures, a plenary symposium, finishing with the Mike Price Award Lecture, where Prof. Karen Vousden, from The Francis Crick Institute, explained how p53 impacts life and cancer development.

Attending the EACR25 has been a fantastic experience, helping us to improve our scientific knowledge of cancer biology and to discuss our research findings with colleagues from all over the globe. We are extremely grateful to the British
Association for Cancer Research and CRUK for awarding us with this travel grant.

Awardee: Martina Finetti (Wolfson Childhood Cancer Research Centre, Northern Institute for Cancer Research, Newcastle University)
Meeting: ISPNO 2018 , 29th June to the 3rd July – Hyatt Regency Hotel, Denver

ISPNO 2018 took place at Hyatt Regency hotel, Denver from 29th June to the 3rd of July, 2018. ISPNO is a paediatric neuro-oncology specific international symposium which aims to facilitate greater collaboration between participating countries, with a goal to improve treatment as well as better understanding of several neuronal tumour such as Glioma, Medulloblastoma and Rhabdoid tumours.

I have presented my work in an oral presentation titled "SMARCB1-dependencies in atypical teratoid/rhabdoid tumours: a strategy for pre-clinical therapeutic target identification in the absence of actionable mutations" which was well received. I also presented a poster as joint first author ("Chromatin segmentation in ATRT reveals an important role for residual SWI/SNF members") and two as second author (Intra- and extra-cranial malignant rhabdoid tumours share common location-independent clinical and molecular disease characteristics; An analysis of putative cells of origin for Malignant Rhabdoid Tumours (MRT): a frontier for development of MRT cancer modelling and identification of potential therapeutic targets). Our study looked at patient samples at diagnosis with the aim of determining molecular subgroups, cell origin and drug target discovery in Malignant Rhabdoid Tumours. The cross-referencing between patient sample and cell models data revealed pathway and mechanism that can be target in these tumours, including Stat3, mTOR, self-renewal pathway.

Martina Finetti

Several key findings were presented at this meeting by other participants including latest research about molecular subgroup found using whole genome and epigenome characterisation (Dr Johann; Heidelberg), new PDX models (Dr Bourdeaut; Institut Curie) and breakthrough in immunotarget discovery (Dr Theruvath; Stanford University).
This meeting gave me also the opportunity to meet my collaborators to discuss for future work and funding strategy. In particular I have lay the foundations for an international single cells consortium between Newcastle University, DZFK Heidelberg, institut Curie and Munster University.

Thank you very much for allowing us to present our work at this prestigious meeting and your continued support. My work is currently submitted and in review in Cancer cell.

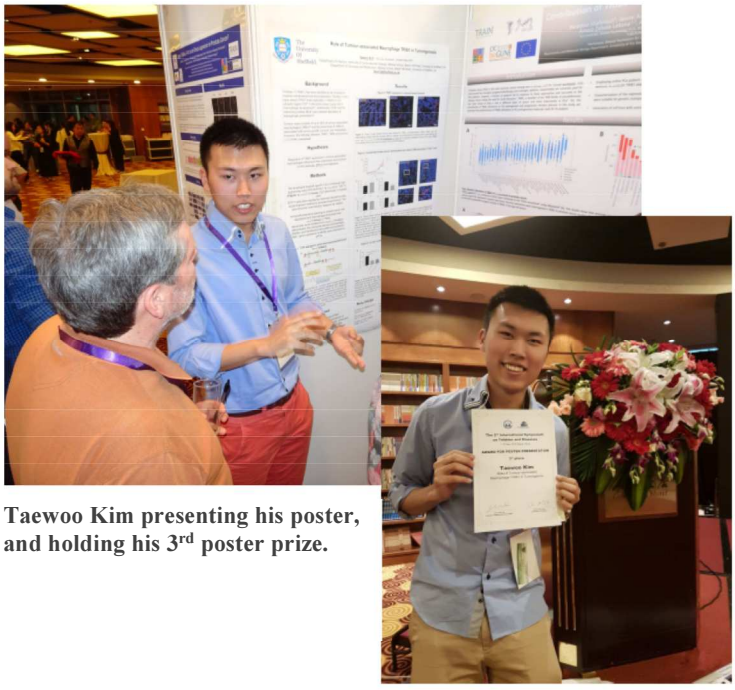
Awardee: Taewoo Kim (University of Sheffield)
Meeting: 2nd International Symposium of the TRIBBLES Conference, May 2018 - Beijing

The BACR/CRUK student award enabled me to attend the 2nd international symposium of the TRIBBLES conference. This was the second international conference to bring together the leading researchers and experts of the field to discuss and analyse how the TRIBBLEs family are studied worldwide.

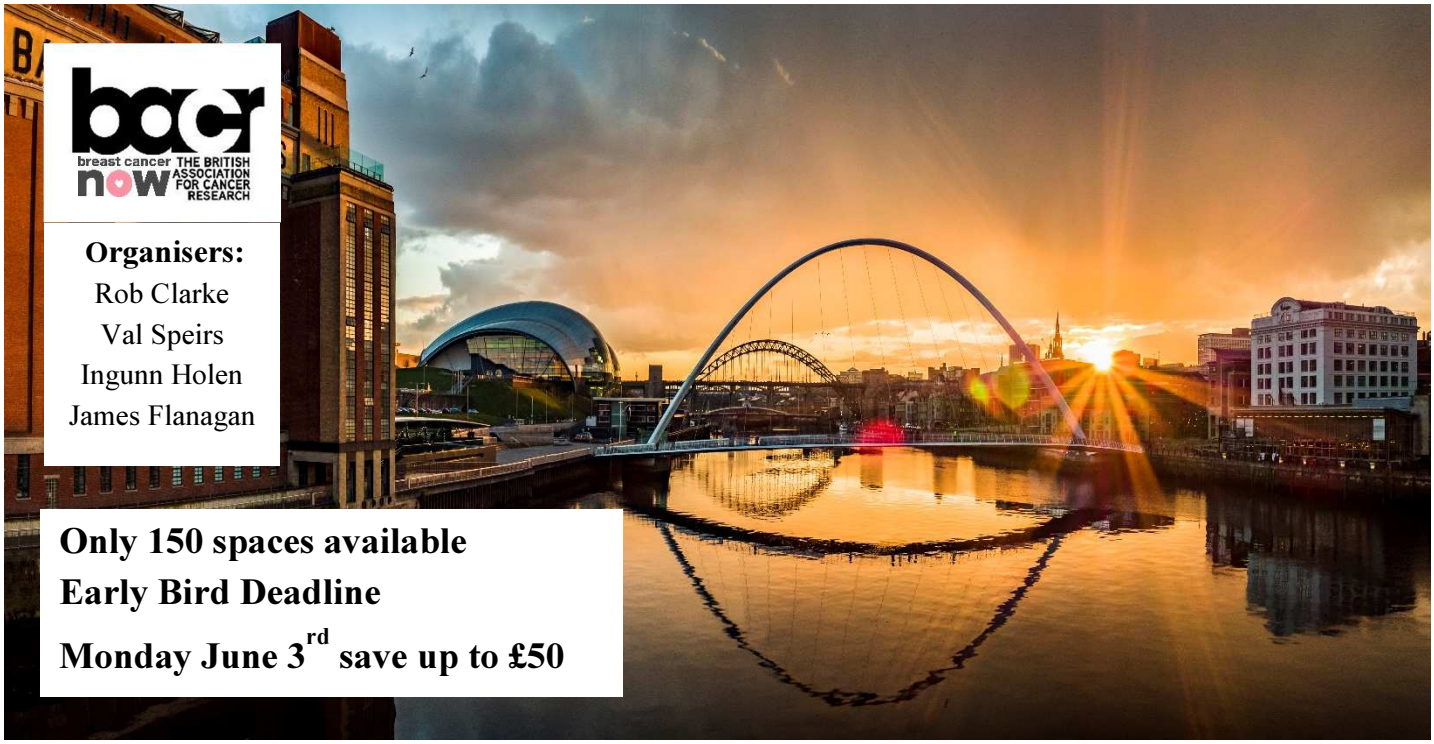
The international conference was held in Beijing in May 2018, with a diverse range of research approaches to investigate the role TRIBBLES in immunity, metabolism, and cancer. I found talks by academics in the field of TRIBBLES in cancer particularly informative, however it was disappointing that the speeches were more focused on TRIB3, rather than my research focus of TRIB1. TRIBBLES in immunity was also an interesting session and I particularly enjoyed the talks of Dr. Warren Pear and Prof. Yishi Jin about the effect of TRIB1 in eosinophils and neutrophils, and how TRIBBLES takes part in *C. elegans*' immunity.

I presented a poster on *in vivo* studies highlighting the enhancement of breast cancer development and the reduction of pro-inflammatory tumour-associated macrophages in tumour microenvironment in the myeloid-specific TRIB1 overexpressed mice. It was a great experience to share my research with senior researchers and the critical feedback was invaluable to reveal limitations in my research and to develop plans for future investigations. Additionally, I was awarded the 3rd poster prize at the end of meeting.

This was the first international conference I participated in and presented at, and it was an extremely important event for my development as a researcher and as guidance to observe and overcome encountered issues. I am deeply grateful to BACR for the travel award which enabled to me attend the conference.



Taewoo Kim presenting his poster, and holding his 3rd poster prize.



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each session includes clinical and scientific keynotes:

- **The changing landscape of breast cancer – personalised medicine; dream or reality?**
- **Immunotherapy – use in breast cancer treatment and model systems – Iain McPherson, Karen de Visser**
- **Tumour cell dormancy and breast cancer recurrence – Cyrus Ghajar, Lewis Codosh**
- **Mathematical oncology and artificial intelligence – Alexander Anderson**
- **New strategies for treatment of breast cancer – CDK4/6 and PARP inhibitors and beyond – Helen Bryant, Simak Ali**
- **DCIS – to treat or not to treat? Elly Sawyer, Jelle Wesseling**
- **Metabolomics and the microbiome; role in cancer progression and treatment – Sarah-Maria Fendt, Dylan Edwards**
- **The next decade of breast cancer research – Jo Morris, Gareth Evans**

CPD credits will be offered

Fellowship & Bursary Awards 2018

Travel Exchange Fellowship Report

Awardee: Tajkia Musarrat (University of Nottingham)
Training course: Annual Mass Cytometry Training Course 2018, Guy's and St Thomas' and King's College London

I recently had the privilege to attend the "Annual Mass Cytometry Training Course 2018" and I would like to express my gratitude to BACR for awarding me with the "Travel Exchange Fellowship" which made it possible for me to attend the training course.

Mass cytometry is one of the most advanced techniques to study cellular phenotype and functions. Mass cytometry is developed on combined features of Flow cytometry and Mass spectrometry and it broadens the opportunity to determine up to 40 parameters on a single cell level.

The BACR Travel Fellowship has provided me with the opportunity to attend training course organized by BRC flow cytometry platform Guy's and St Thomas' and King's College London, which is one of the pioneers in using Mass cytometry in UK. I got to learn through hands-on training alongside participants from many national and international research organizations. By attending this course, I learned not only how to design the experiments which will provide us with in-depth knowledge of immune cells in healthy and disease states, but also how to properly interpret the results, from the big data set generated by mass cytometry experiments, by using various data analysis tools. Interestingly, some of techniques I learnt during the mass cytometry training can also be implemented in flow cytometry and it has contributed to improvements in my own work. The knowledge obtained from the course can be utilized to study multiple cell populations simultaneously while focusing on rare cell populations, which was previously restricted due to spectral overlap limitations of Flow cytometry.

The training is a significant step forward in utilizing the technique properly in our research here at University of Nottingham and forming collaboration in future. I really appreciate the support the BACR has provided for me to develop myself as a scientist and continues to encourage many young researchers by facilitating access to various training programs with their Travel Exchange Fellowship.

Tajkia Musarrat during the Annual Mass Cytometry Training Course 2018

THE BRITISH ASSOCIATION FOR CANCER RESEARCH

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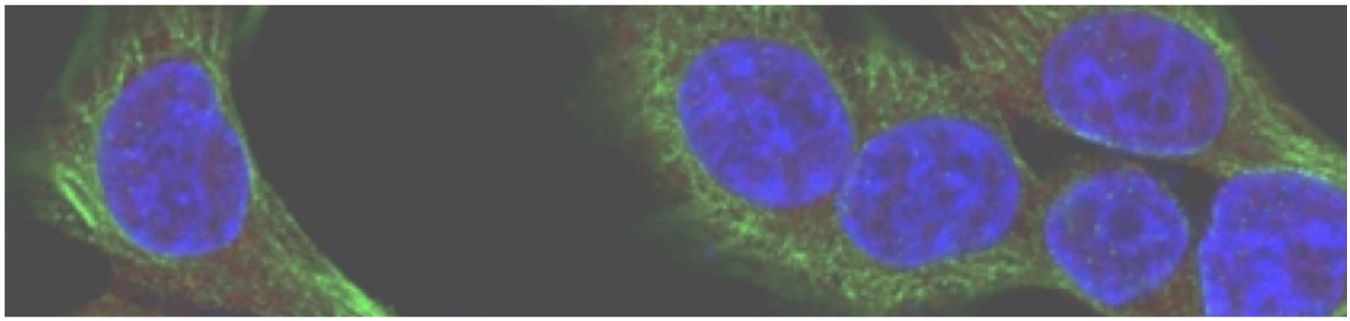

BACR 60th Anniversary Meeting

Nottingham Conference Centre, Nottingham, UK

6th – 8th September 2020

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