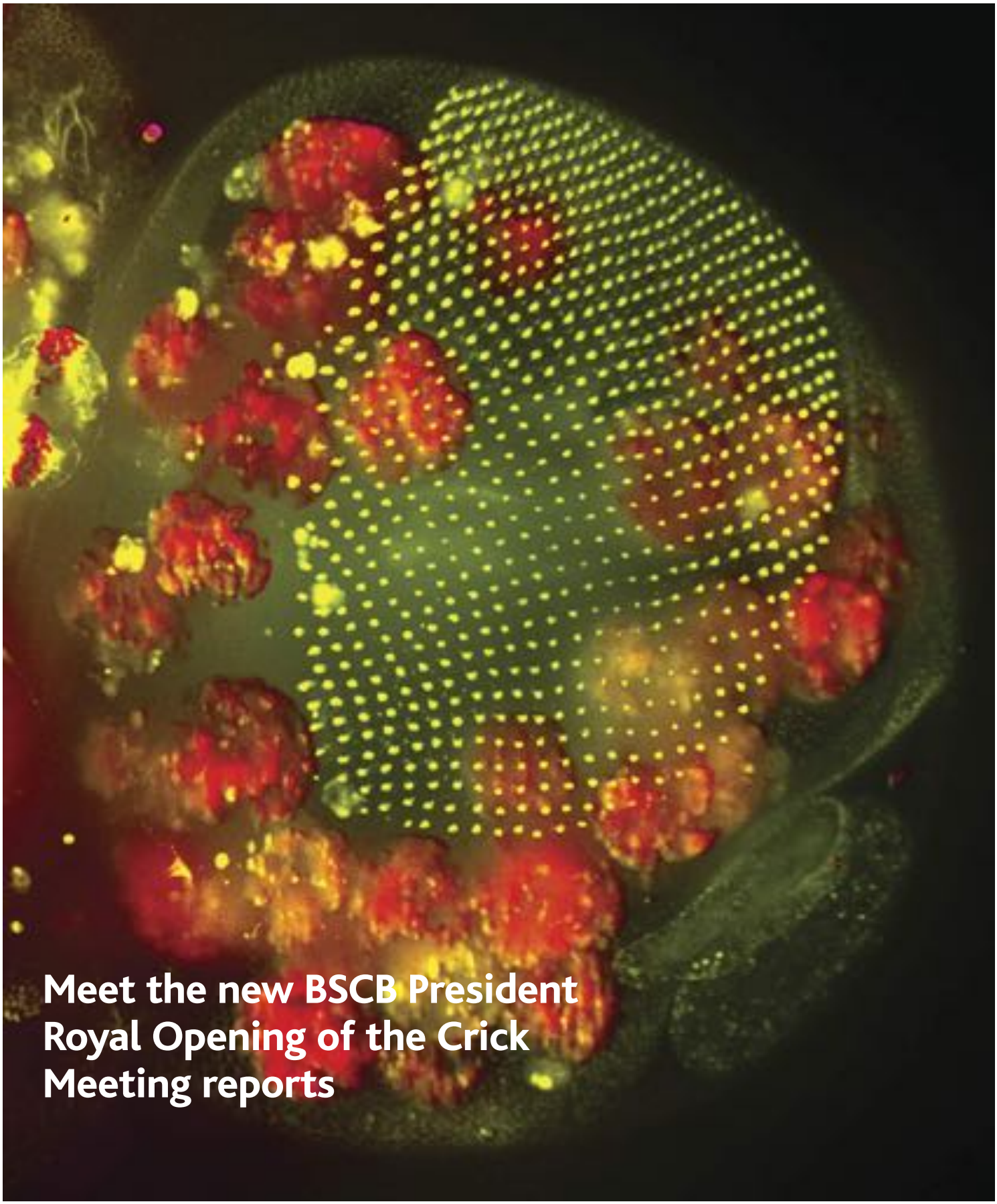
2017

BSCB Newsletter

BRITISH SOCIETY FOR CELL BIOLOGY



Meet the new BSCB President
Royal Opening of the Crick
Meeting reports

BSDB BSCB gs geneticssociety

joint meeting including the **British Society for Cell Biology**
the **British Society for Developmental Biology**
and the **Genetics Society** to be held on
the **2nd-5th of April 2017** at the
University of Warwick with talks by

Bonnie Bassler
Marisa Bartolomei
David Baulcombe
Xiaowei Zhuang

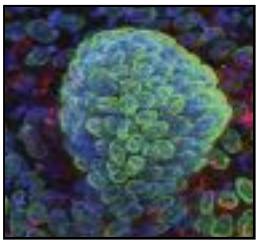
Manuel Théry, John Briggs
Mathias Lutolf, Julie Ahringer
Didier Trono, Marika Charalambous
Jerne Ule, Stephen Goodwin, Arantza Barrios
David Traver, Sebastian Deindl, Dirk Schubeler
Thijn Brummelkamp, Marvin Tanenbaum
Vincent Colot, David Tollervey
Reiner Schulz, Marella de Brujin
Logan Kistler, Sam Reck-Peterson
Bruce Goode, Eamonn Mallon
Ulli Gruneberg, Rebecca Oakey
Nipam Patel, Linda Holland, Anna Akhmanova
Tarun Kapoor, Ralf Sommer, William Jeffery
Laure Bally Cuif, Joan Barau, Elizabeth Murchison
Angela Hay, Myriam Hemberger, Laura Johnston
Iain Cheeseman, Michael Goodisman, Axel Visel, Steve Goldman

the organisers are
Julie Welburn, Andrew Carter, Andy Oates
Henry Roehl, Rebecca Oakey, Marika Charalambous

for more information and to register see
www.bscb-bsdb-gensoc-meetings.co.uk

The Company of Biologists

BSCB Newsletter 2017



Editorial

Welcome to the 2017 BSCB newsletter. After several years of excellent service, Kate Nobes has stepped down and handed the reins over to me. I've enjoyed putting together this years' newsletter. It's been great to hear what our members have been up to, and I hope you will enjoy reading it.

The 2016 BSCB/DB spring meeting, organised by our committee members Buzz Baum (UCL), Silke Robatzek and Steve Royle, had a particular focus on Cells and Tissue Architecture, Growth & Cell Division, Interaction of Cells with their Environment and Polarity. As part of this, there were several fascinating talks from the Plant Cell Biology community. A musical highlight of the meeting was the Plenary lecture and Q and A by Uri Allon whose BSCB special editions of songs can be found on our YouTube channel (youtube.com/user/BritishCellBiolSoc). For those of you who missed our excellent prize winning talks, Lidia Vasileva – our Women in Cell Biology medalist – is interviewed in this issue, and Thomas Surrey's Hooke Medal lecture is well worth watching on our webpage (www.bscb.org).

Congratulations to our Postdoctoral poster of the year prize winners: Dr Dimitra Aravani, Webb lab, University of Leicester; Dr Kyojiro Ikeda, Freeman lab, University of Oxford; and Dr Amy Barker, Nightingale lab, QMUL, London. There was a dedicated Graduate Symposium, and several well-attended, lively and stimulating poster sessions. The prize for the student of the year went to Emma Stewart, Coverley lab, University of York; the close runners were Alex Pool, Godinho lab, Bart's Cancer Institute, London; and Saroj Saurja, Raff lab, University of Oxford. The spring meeting hosted several well received events for our PhD and Postdoc members, which we discuss on page 5. Our PhD and Postdoc reps are working hard to make the event bigger and better for next year! The social events were well attended including the now infamous annual "Pub Quiz" and disco after the conference dinner. Members will be relieved to know we aren't including any photos from that here.

In this issue, we highlight the great work the BSCB has been doing to engage young scientists. We have several reports about exciting lab work by undergraduate students who were sponsored by the BSCB have carried out over the summer. And an article about the STARs project held at the BCI London, where A level students are encouraged to dip their toes into the lab work for the first time.

This year there have been a number of exciting changes in the BSCB committee. We welcome and interview our incoming president Professor Anne Ridley in this issue, and to help you get to know the committee better we have two members answering questions about Cell Biology. Dr Julie Welburn, who administers our Honor Fell Award, also explains how we have been able to extend our travel grants and everything we have to offer to support our members.

I'd be delighted to receive articles for the 2017/8 edition of the newsletter. Let me know about the news where you are.

See you at the 2017 BSCB Spring Meeting.

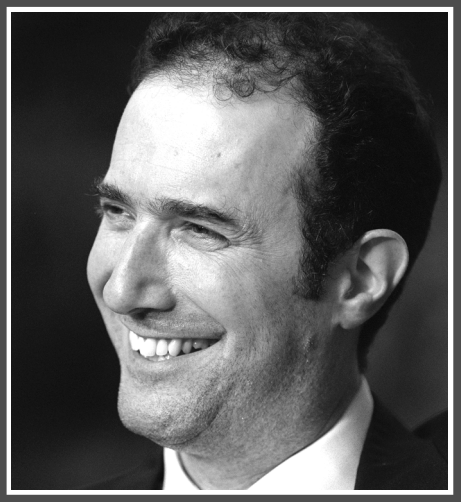
Ann Wheeler (PhD), BSCB Newsletter Editor

Front cover:
The head of a *Drosophila* pupa. The developing compound eye (green) is composed of several hundred simple units called ommatidia arranged in an extremely regular array. The giant polyploidy cells of the fat body (red), the fly equivalent of the mammalian liver and adipose tissue, occupy a big area of the head.

Newsletter editor: Ann Wheeler **Production:** Giles Newton **Website:** www.bscb.org **Printer:** Hobbs

Society News

BSCB President's Report 2016



This is my last report as President of the BSCB, and so it is perhaps understandable that I am in a reflective mood, which, sadly, has been depressed by recent political events. When I became President in 2011, it was already clear that challenging times lay ahead for the UK cell biology community. Nevertheless, I was optimistic that our community was sufficiently strong and successful that we didn't have to worry too much about continuing financial support for the biomedical sciences. To some extent, this optimism has proved justified: basic science funding in the UK has been spared from the worst of the widespread cuts to many other areas of Government spending. Now, however, I am finding it hard to remain optimistic in the face of so much uncertainty about the consequences of Brexit and a Trump presidency on scientific research in the UK and USA, respectively. And the consequences for science funding may be a relatively minor problem compared to the many other potential consequences for our planet.

But I will not discuss these issues here. Instead, I will leave you with two questions for the BSCB to think about in the coming years. In both cases, I am disappointed that we have not resolved them during my time as BSCB President.

First, what is the BSCB for? The BSCB committee puts in a lot of effort doing many things, including organizing meetings and reviewing and disbursing travel grants and summer studentships, but does the community value this work, particularly as regards our meetings? It is heartbreaking to spend so much time and money organizing a fantastic scientific meeting (often in collaboration with the BSDB) with an all-star list of national and international speakers and then to have to spend an almost equal amount of time and effort trying to encourage people to attend – just to ensure a sufficient number of attendees. We are not alone in having this problem: the large EMBO and ASCB meetings are also struggling to attract attendees and have recently announced that the two annual meetings will merge. Is the day of the large general meeting over – at least for the cell and developmental biology communities? Would we be better off concentrating our efforts on smaller, more focused, meetings that are organised from the ground up? Personally, I have a strong emotional attachment to our large annual meetings, and I passionately believe that they serve a particularly important role in exposing students and post-docs to a wide variety of cell-biological problems and systems early in their careers. But perhaps this view is just sentimental, and it is time to move on.

Second, should the BSCB be more politically active in promoting the interests of the cell biology community? One of the reasons I was excited about becoming President of the BSCB was that I imagined it might be able to promote cell biology in influential places. Unfortunately, this has not come to pass, mainly because I have not had the time or energy to drive this agenda. Instead, the BSCB has largely outsourced its political activity, by supporting groups such as Science is Vital and The Royal Society of Biology—organisations that are more focused on this agenda, and, in the case of the RSB, have more resources. Nevertheless, I remain convinced that the BSCB could be more influential under the right circumstances, although I am not sure that the community would support this.

Now, for some good news: I am delighted to report that Anne Ridley (Kings College London) has agreed to become the next President of the BSCB. She will take over at the Spring Meeting in Warwick next year (see her interview on p10 of the Newsletter). Many of you will know Anne as a distinguished cell biologist, perhaps most famous for her seminal discoveries about the role of the Rho family of GTPases in regulating the cytoskeleton function when she worked with the late Alan Hall in the 1990s. Anne is steeped in BSCB (and ASCB) history, and it is a comfort to know that the BSCB will be in such capable hands.

I am also delighted to report that we have recruited several new committee members over the last two years, elected from a pool of many excellent applicants. There were many more applications than vacancies, so many thanks to everyone who expressed an interest; we have several of you in mind for the committee over the next few years as places become vacant. I am happy to welcome to the committee Vas Ponnambalam (Faculty of Biological Sciences, Leeds), Anne Straube (Centre for Mechanochemical Biology, Warwick), Andrew Carter (LMB, Cambridge), Ann Wheeler (Institute of Genetics and Molecular Medicine, Edinburgh) and David Elliot (Institute of Genetic Medicine, Newcastle), and also to provisionally welcome Susana Godhino (Barts Cancer Institute), Stephen Robinson (School of Biological Sciences, UEA), Sharon Tooze (Crick Institute, London) and our new Student Rep. Melanie Panagi (Biochemistry, Bristol) – all of whom can be officially welcomed when/if their appointments are approved at our next AGM at the Spring Meeting in Warwick (don't miss it!). Vas, David, Anne and Ann deserve a special mention as they have kindly agreed to act as Secretary, Treasurer, Meetings Secretary, and Newsletter Editor, respectively.

With so many new faces joining over the last couple of years it is inevitable that I need to say thanks and goodbye to people leaving the committee. Kate Nobes, Buzz Baum, Patrick Hussey, and Grant Wheeler have all left the committee this year, as has our Student Rep Clare Mills. They have all contributed in many ways, but I must single out Grant for special thanks: as BSCB Secretary, his organizational skills and guidance have been a great help to me throughout my time as President.

As I won't get a chance to write another President's Report, I also want to thank the committee members who will be leaving next year when I retire. Caroline Austin, Steve Royle, JP Vincent, and our Post-Doctoral Rep Alexis Barr, all of whom have contributed

many hours of hard work. In particular, I am grateful to Caroline, who, as Treasurer, has sometimes had to make superhuman efforts to keep the Society up to date and compliant with the latest banking and charity laws, and to Steve, who, as Meetings Secretary, has presided over especially turbulent times.

It has been a great honour to serve on the BSCB committee with all of you, including all the other current and past committee members. I am extremely grateful for your help and hard work.

In these uncertain and disturbing times, it is worth remembering that we are living in a golden age for cell biology. New technical advances enable us to address fundamental questions in ways that could hardly be imagined even a few years ago. While we will doubtless continue to argue about how best to measure and recognize scientific success, there will remain great rewards for those who can think of interesting questions and of original ways to answer them. It is not easy, but it is important to keep in mind what a privilege it is to be able to participate in the quest.

Jordan Raff

News in brief 2015/6

In 2016 the BSCB held its Annual Spring meeting at Warwick University. This was organised jointly with the BSDB and attracted around 300 delegates. The winners of the prestigious Hooke Medal and Women in Cell Biology medal were presented and the winners gave a keynote talk.

Several other focussed meetings on cell biology were supported by the BSCB. These included the Actin meeting in Bristol, Cell Trafficking meeting in London and Microtubule meeting in Edinburgh. In 2016 the Society also supported the UK Autophagy meeting, Big roles for Small RNAs symposium and the Northern Cell Biology meeting. Meeting reports from some of these are included in this issue. The BSCB also administers the Abercrombie fund for the quinquennial Abercrombie cell migration meeting which will be held in 2017.

The Society continued its support of young scientists via the Company of Biologists / Honor Fell Travel Award (CoB / HFTA) scheme to attend conferences that cover cell biology research. A total of 78 HFTAs were awarded in 2015 with a total worldwide value of £37,417, enabling cell biologists to attend meetings worldwide. To promote awareness of cell biology for university students, the Society supported 10 summer vacation studentships in 2016. This enabled undergraduates to gain valuable laboratory research experience. The total expenditure on these was £15,140.

The BSCB became an organisational part of the Royal Society for Biology (www.rsb.org.uk/) in 2015. This provides our members with the opportunity to join the RSB at a reduced rate for the first two years. Full details of the society's activities over the forthcoming year can be found on the website www.bscb.org. We welcome our new members and thank our old members for continuing to support our work.

Honor Fell Travel Award Update

Dame Honor B. Fell FRS (1900–86) was a pioneer of organ, tissue and cell culture and worked prominently on cartliage and bone formation. Her long career led to Directorship of The Strangeways Laboratory in Cambridge. BSCB is proud to associate these Awards with her enthusiasm for science and persistence in experimentation.

Good news for all BSCB members, we are increasing the value of the Honor Fell Travel Awards. From now on, members can claim up to £500 to attend meetings in the UK and Europe, and up to £750 for meetings in the USA/other parts of the world. Other eligibility criteria, such as being a member for 1 full year, remain. We also have a small amount of funds to allow attendance to courses and training workshops.

Finally, travel grants for PIs that have restricted funding are now available to BSCB members (see bscb.org for full details).

The BSCB also now accepts applications to provide financial help with childcare or care for dependents when the applicant is presenting at a scientific meeting. All claims require approval with appropriate receipts. You will be notified within 2–3 weeks of the outcome. Claims can be for:

1. Home-based childcare/ dependent care expenses incurred because of meeting attendance (funds may not be applied to normal ongoing expenses).

2. Travel of a relative or other care provider to your home to care for your child(ren) while attending a meeting.

3. Travel of a care provider to the meeting with you to care for your child(ren) in that city.

Please download the form from the website and submit it to the Honor Fell / COB Travel Awards Secretary.

Please note that the maximum amount that can be applied for is £250. No payments will be made without supporting receipts. Forms will soon be available on our website.

Julie Welburn

COB Support Grants

Company of Biologists Support Grants are available for independent group leaders/PIs with no independent funding to attend meetings, conferences, workshops, practical courses, PI laboratory management courses and courses to re-train.

• Only current BSCB members of at least one calendar year's standing are eligible and no awards will be made to lapsed members or those paying the incorrect subscription fee.

• The purpose of the award must be clearly linked to Cell Biology (in the broadest sense) or professional development and should be justified in the application.

• Up to £500 will be awarded for attendance inside the UK, up to £1,000 for Europe and up to £1,500 for outside Europe.

• Applications can be submitted at any time, but ahead of the event and leaving at least 2 weeks for processing and response.

• Applications are not competitive but will be processed in sequence of submission.

• When presenting a poster or talk, an acknowledgement should be displayed which can be downloaded

BSCB Sponsored or allied meetings 2017

February

Intercellular interactions in context: towards a mechanistic understanding of cells in organs. Company of Biologists sponsored workshop: 5–8 February, Wiston House, Steyning, West Sussex. *www.biologists.com/workshops/intercellular-interactions-in-context-towards-a-mechanistic-understanding-of-cells-in-organs-february-2017/*

April

BSCB, BSDB, Genetics Society meeting. 2–5 April, Warwick UK. *www.bscb-bsdb-gensoc-meetings.co.uk/home*

British Microtubule meeting. 24 April, Edinburgh UK, *microtubule.bio.ed.ac.uk/*

May

Cellular Dynamics: Membrane–Cytoskeleton Interface'. Southbridge, MA, USA. Company of Biologists sponsored meeting: http://www.biologists.com/meetings/cellulardynamics2017/

Autophagy UK Meeting. 24–25 MayLondon UK *autophagy.uk/2017-london-meeting/*

June

European Cytoskeletal Forum. 4–8 June, Helsinki Finland. *www.europeancytoskeletalforum.org/*

July

New Horizons in ESCRT-biology. Royal Holloway University of London

Microscience Microscopy Conference 2017. 3–6 July, Manchester UK www.mmc-series.org.uk/

September

Abercrombie Cell Migration meeting 2017. 11–14 September, St Catherines College, Oxford.

December

American Society for Cell Biology meeting. 2–6 December Philadelphia, USA. *www.ascb.org*

Actin 2017. The Watershed Theatre, Bristol UK *mellorlab.wordpress.com/actin-2017/*

UK Membrane Traffic Meeting 2017. SOAS, University of London

New PhD student representative

Hi! My name is Mélanie, your new PhD student representative here at the BSCB. I am taking over the role from Clare Mills and I am delighted to have the privilege of being your new voice for the committee.

To briefly introduce myself: I am second-year PhD student at The University of Bristol in Dr. Abderrahman Kaidi's research group and my project focuses on the interplay between the DNA damage response and nuclear mechano-sensitivity. Before this I completed my undergraduate degree in biological sciences at University College London followed by a master's degree in immunology at the University of Oxford.

Part of my role as rep is to sit on the BSCB committee and also help organise a variety of events including the careers roundtable and graduate symposium at the BSCB/BSDB/GenSoc Joint Spring Meeting. I was president of the biology society at UCL and was a postgraduate rep' in my faculty at Bristol so I am very excited to test out my skills on a much larger scale. If you have any ideas for events, workshops or general comments about the BSCB and how we can best help you, I am all ears. And if anyone wants to try their hand at a little science communication and write an article for the newsletter, I'd love to hear from you too. You can find me at melanie.panagi@bristol.ac.uk or tweet me at @melaniepanagi - I hope to hear from you soon !

Career development events at the 2016 BSCB/DB Spring meeting

This year, the graduate student symposium was moved to the middle of the BSCB / DB meeting, resulting in excellent attendance. This was a truly excellent event – the speakers covered a diverse range of topics in an engaging manner. Some talks even got mentioned in the twitterverse! The format was also altered so that there were six fifteen-minute presentations and six five-minute presentations. All the speakers did an excellent job – particular mention must be made for everyone who managed to describe their complex research in just five minutes!

This was the first year that we ran science breakfasts, whose goal was to facilitate informal discussions between junior researchers and scientists at the top of their field. A small number of students and postdocs got to participate in this event, discussing everything from research, careers and life in general with Abigail Tucker, Ottoline Leyser, Jordan Raff, Lidia Vasilieva and Thomas Surrey – who we are really grateful for giving up their time. Our roundtable careers session was very popular too. We had 87 pre-registered attendees of which 59 sent in feedback to us to help next year's event be even better. For the 2016 careers round table we had eight tables:

1. Claudia Barros, Lecturer at Plymouth University.
2. Paul Conduit, Henry Dale Fellow at Cambridge University.
3. Katherine Brown, Editor at Development.
4. James Wakefield (2)/, Valentina Sasselli (1), Associate Prof at Exeter University, Elsevier Editor.
5. Anne Wiblin, Research Collaboration Manager at Abcam.
6. Caroline Grant, Management Consultant, Accenture.
7. Andreas Prokop, Prof at Manchester University.
8. Cat Vicente, Community Development manager @thenode.

For our round table, each participant had the chance to spend 30 mins at each of three tables. Participants were asked to select tables before the meeting to help organisation. All of the tables were pretty popular with 25–33% of people signing up for each one.

We asked our attendees 'How easy was it to find your table?' and were awarded 8.8 / 10. Our participants found the workshops very useful too, scoing them 8.3 /10 and almost all of them saying they would recommend this session to a friend.

The top 5 responses to "What was the best thing about the workshop?"

1. Variety of careers amongst speakers
2. Round table set up, including informal atmosphere and input from other participants
3. Learning about career paths
4. Open discussion
5. Getting advice

From the feedback, we realise how valuable it is for young scientists to talk to other scientists who have trained as cell or developmental biologists and go on to have successful 'alternative' careers. For future workshops, we intend to build on this theme and invite an even more diverse selection of speakers. For next year we're thinking of including tables about: Scientific communication, Patent Law, Start-up biotech ot Industry/ Pharma, Government policy/Civil Service, Women in Science and Teaching as well as some others. Watch this space!

Some selected comments from the participants:

'Open and honest speakers, Enough time to discuss and explore career prerequisites, responsibilities and prospects'

'Great organisation and table choices, thank you! I feel quite optimistic now!'

'Table leaders were friendly, easy to talk to and answered all questions'

'Learning about career paths, Variety of careers amongst speakers'

We hope to see many of you next year. If you have any comments or ideas please get in touch with Alexis (Alexis.Barr@icr.ac.uk) or Melanie, especially if you have ideas for games to play in the student social, know someone who would be a great table leader for the careers workshop or if there is someone with whom you would really like to have breakfast with.

Schools news

Information about changes to 'AS' and 'A' (Advanced Subsidiary and Advanced) – level Biology from September 2015, including some detail about cell biology content. [These changes do not apply in Scotland]

As readers in the UK will know a previous Secretary of State for Education, Michael Gove and his successor Nicky Morgan want to schools to follow, in some ways, a more linear or 'traditional' line of 'AS' and 'A-level' examinations. As part of this process some of the style and content of courses and examinations are being changed including 'AS' and 'A'-level Biology and performance in practicals is marked separately from theoretical knowledge. Subject content prescribed by Government, as applied to aspects of cell biology.

Cells: That cell theory is a unifying concept in biology; prokaryotic and eukaryotic cells can be distinguished on the basis of their structure and ultrastructure and in complex multicellular organisms cells are organised into tissues, tissues into organs and organs into systems. During the cell cycle genetic information is copied and passed to daughter cells. Daughter cells formed during mitosis have identical copies of genes while cells formed during meiosis are not genetically identical.

Biological molecules: That biological molecules are often polymers and are based on a small number of chemical elements; in living organisms nucleic acids (DNA and RNA), carbohydrates, proteins, lipids, inorganic ions and water all have important roles and functions related to their properties. The sequence of bases in the DNA molecule determines the structure of proteins, including enzymes. Enzymes are proteins with a mechanism of action and other properties determined by their tertiary structure and they catalyse intracellular and extracellular reactions that determine structures and functions from cellular to whole-organism level. ATP provides the immediate source of energy for biological processes. Substances are exchanged by passive or active transport across exchange surfaces such as cell membranes and the structure of the plasma membrane enables control of the passage of substances into and out of cells.

For more information about the changes please see the Government website including content: https://www.gov.uk/government/publications/gce-as-and-a-level-for-science

[URLs checked: 22/08/2016]

David Archer, BSCB Schools Liaison Officer.

BSCB Ambassadors news

Jon Pines Elected as Royal Society Fellow

Congratulations to one of our ICR Ambassadors Professor Jon Pines, Head of Cancer Biology, who was admitted as a Fellow to the Royal Society on Friday 15 July 2016 – the greatest honour in UK science. On Wednesday 13 July 2016, Jon gave a seminar about his research, titled 'Regulating mitosis: sea urchins, jellyfish and the island of Serandip'. His team have developed a way to measure how living human cells break down proteins to ensure chromosomes are segregated equally during cell division.

Large glass microtubules adorn the botanics

Over the summer of 2016, researchers from the Wellcome Trust Centre for Cell Biology held Glass Life, an exhibition of stunning glass sculptures at the Royal Botanical Gardens in Edinburgh. Glass Life depicted the hidden inner working of living cells. Much of glass work on the theme of Microtubules was created by research scientists to explain their research to the public. The picture (right) shows members of the Welburn lab, who working on microtubules, next to a giant glass microtubule. The project was coordinated by WTCCB public engagement organizer Sarah Keer-Keer.

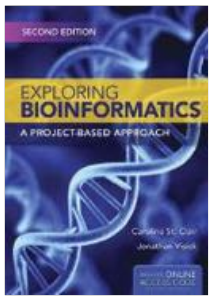
Bake off meets cell biology

BSCB Ambassador Angus Lamond's lab were placed first in the GREat British Bake off, held at the yearly GRE symposium with their masterpiece entitled "Immune (w)rap)". They created two cakes illustrating how a killer T cell recognises a viral-infected host cell via the T cell receptor. For more information and recipes see lamondlab.com/newwebsite/home.php

Book Reviews

Exploring Bioinformatics, A Project-based Approach

AUTHORS: CAROLINE ST. CLAIRE & JONATHAN E. VISICK.



Exploring Bioinformatics, A Project-based Approach.
2nd Edit 2014.

Pbk. 297 pages
Caroline St. Claire & Jonathan E Visick.

Publisher: Jones & Bartlett Learning.

ISBN: 9781284034240.

List Price: £38-99 (but available at discount to BSCB members. See BSCB website for details).

For many biologists and perhaps fewer cell biologists 'bioinformatics' is a relatively new subject label. But determining, quantifying and analysing data is not new to biology. What is, of course, new is the speed at which modern computers can handle and process data generated from techniques such as next generation sequencing, imaging and various forms of spectroscopy that enable scientists to 'look deeper'.

So how does '*Exploring Bioinformatics*' help? Many well-known examples of bioinformatics involve large and complex projects carried out at specialist institutes, either singularly or in cooperation with others, using powerful computers. This book helps one understand their work but it also enables one to use the techniques of bioinformatics to gain experience with smaller data sets and use them to increase knowledge in diverse fields.

In the book I especially liked how a range of varied biological scenarios are used to illustrate the application of different algorithms and techniques. 'Investigating an Influenza Outbreak' is used to illustrate 'Sequence Alignment' (chap. 3), 'Investigating Antibiotic Resistance' to illustrate 'Database Searching and Alignment' (chap. 4) and 'Three Domains of Life' to illustrate 'Tree-Building in Molecular Phylogenetics' (Chap. 7). There are also chapters on 'Genetic Screening for Disease Alleles' (chap. 2), and 'Rational Drug Design' (Chap.11).

Each chapter starts with an 'Overview' followed by 'Understanding the Problem' in which the problem is put in a larger biological context. This is followed by appropriate 'Bioinformatics Solutions' and 'BioConcept Questions'. The keystone of each chapter is next, namely 'Understanding the Algorithm'. This section provides 'Learning Tools' and can be linked to the book website. A 'Chapter Project' is next and, following good educational practice, the reader/student uses the skills and techniques learnt earlier to work through an example. Helpfully there are two approaches; one for courses using programming and another for those on non-programming ones. The 'Web Exploration', 'More to Explore' and 'On Your Own Project' take account of these two approaches and are followed by a 'BioBackground' essay. Each main chapter ends with a list of 'References and Supplemental Reading'. The book ends with an extensive glossary and an index.

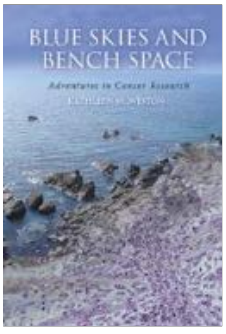
Interested readers need to be aware that Jones & Bartlett Learning company have a policy of limiting access to the Companion website to 365 days after registration [but it can be renewed for a fee]. Other publishers have linked websites but as far as I know do not have a time limit on free access to the website. Instructor Resources are also available.

'*Exploring Bioinformatics*' is produced as a 'course book' but I found it a good 'teach yourself book'. Even if you do not have time to work through some of the examples, the book still has much to offer. If 'knowledge is power' then this book provides 'knowledge with the power of enabling'.

David Archer

Blue Skies and Bench Space, Adventures in Cancer Research

KATHLEEN WESTON FOR CANCER RESEARCH UK



Blue Skies and Bench Space, Adventures in Cancer Research

H/bk. 2014
Kathleen Weston for Cancer Research UK

Cold Spring Harbour Laboratory Press.
ISBN: 978-1-621820-77-2.
List Price £14.00

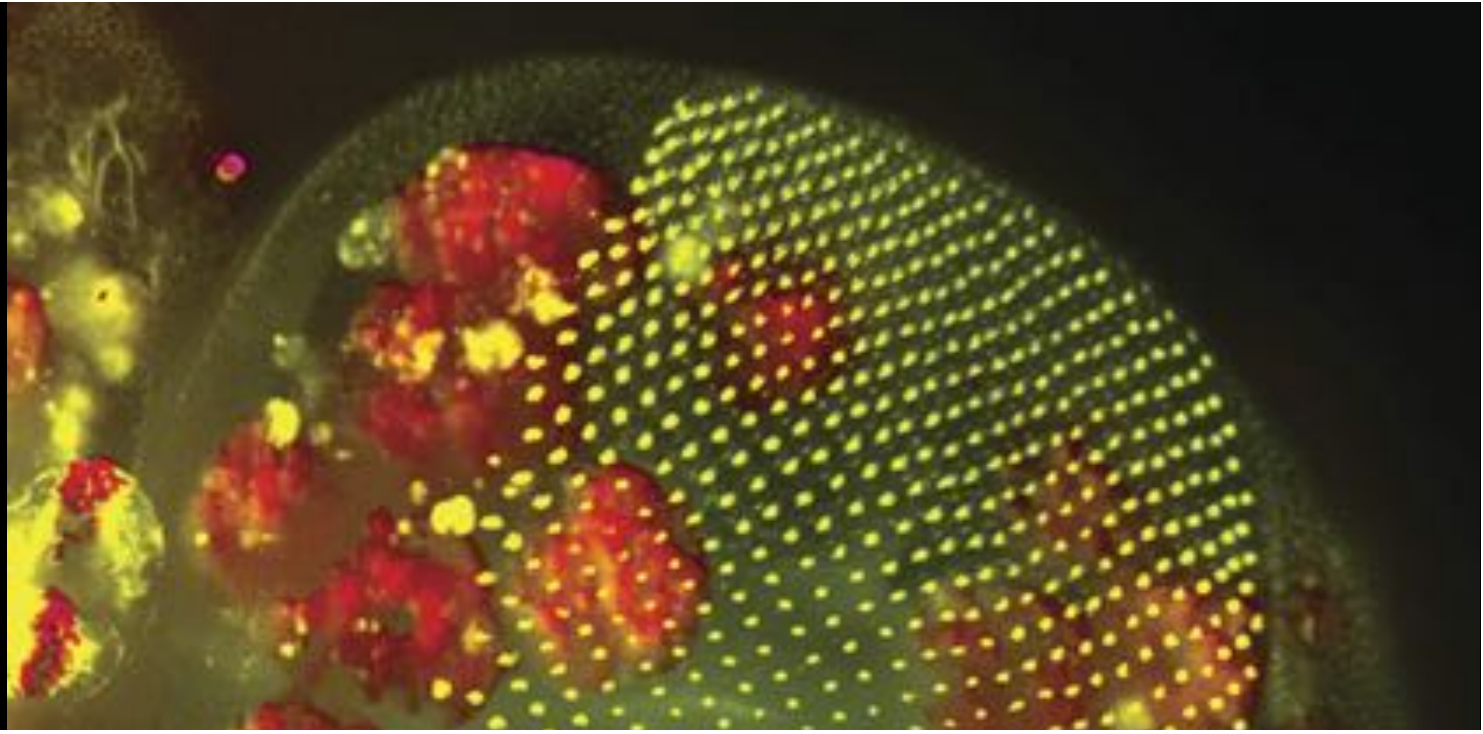
'*Blue Skies and Bench Space*' is magnetic in its attraction and is a book with a difference. The prime function of the volume is to record for posterity information about some of the research carried out at the Imperial Cancer Research Fund Laboratories and its successor the London Research Institute, before its closure in 2016. Sometime during that year personnel will transfer, along with staff from the Medical Research Council Institute for Medical Research (Mill Hill), to new bench space, but still with blue skies thinking, to the new Crick Institute at St Pancras, London, UK.

But this volume is not a dry, time-line list of events, discoveries and disappointments. It is a beautifully crafted blend of traditional biography, institute history, personality sketches and anecdotes peppered with all the highs and lows of laboratory life. All these ingredients have been carefully blended by Kathleen Weston around eight research stories in which she includes some quite detailed and beautifully recorded science.

The volume is very well researched and the chapters are illustrated with black and white photos many of which are personal 'snaps'. I especially like the one of Steve West standing on a laboratory stool and just about to fill a long glass column. This was in 1978. Did he do a risk assessment? Probably, but thinking more about the column and the sample than himself!

I greatly enjoyed this book and sincerely recommend it to anyone interested in the field of research in cell and cancer biology and science history. I would also recommend it to young aspiring cell and molecular biologists but they may be pushed for time to read it since it is quite long (328 pages including web references, further reading, a glossary and index). Many of the names in the book will not be familiar to them, but the atmosphere of life in a biological research laboratory is well conveyed in '*Adventures in Cancer Research*'.

David Archer



BSCB Imaging competition 2016

We are pleased to announce the winners of the 2016 BSCB Image Competition:

First: Anna Franz; School of Biochemistry, University of Bristol
Second: Ronan Mellin; MRC Human Genetics Unit, Edinburgh
Third: Helen Weavers; School of Biochemistry, University of Bristol

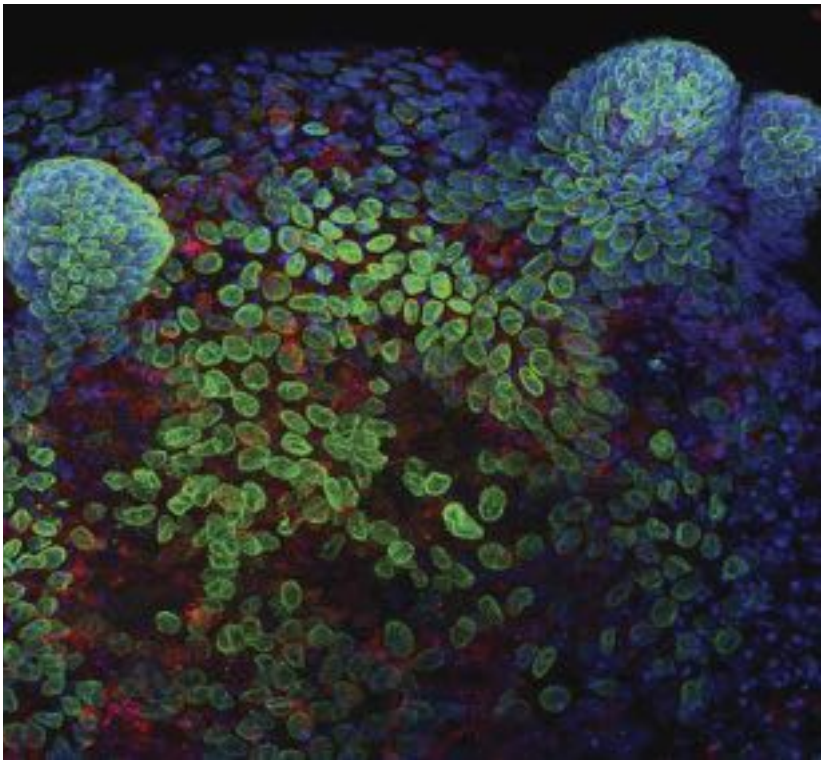
1st Prize winner: Anna Franz, School of Biochemistry, University of Bristol.

Anna's image (above and front cover) is of the the head of a *Drosophila* pupa. The developing compound eye (green) is composed of several hundred simple units called ommatidia arranged in an extremely regular array. The giant polyploidy cells of the fat body (red), the fly equivalent of the mammalian liver and adipose tissue, occupy a big area of the head.

"After completing my undergraduate studies in Biology in Heidelberg, I moved to the Gurdon Institute in Cambridge to do my PhD in Prof. Jordan Raff's lab – as part of the Wellcome Trust-funded PhD programme in Developmental Biology – where I studied the role of the centrosomal protein CP110 in centriole duplication in *Drosophila*. I'm now a postdoctoral researcher in the labs of Prof. Paul Martin and Prof. Will Wood in Bristol, studying the role of fat body cells during wound healing in *Drosophila*."

The system studied:
The fat body, the fly equivalent of the mammalian liver and adipose tissue, is a versatile tissue, comprised of very large cells, that performs several important systemic functions throughout the fly life cycle. These disparate roles include growth control, storage and regulation of lipid and carbohydrate delivery and the production of antimicrobial peptides after infection. We think that all of these systemic functions of the fat body could be pivotal but required locally at any site of tissue wounding, and are currently investigating this in the *Drosophila* pupa.

2nd Prize Winner: Ronan Mellin, MRC Human Genetics Unit, Edinburgh.



Ronan's confocal image (right) shows a murine colonic epithelial organoid grown in Matrigel (3D culture). Crypt-like projections containing epithelial progenitors can be seen protruding from the spheroid. It is stained for DNA with DAPI (Blue), the nuclear envelope with LaminB1 (Green) and the centrosome marker -tubulin (Red).

"I'm an MRC-funded PhD student in Dr Luke Boulter's lab at the MRC Human Genetics Unit in Edinburgh. I am looking at the role of non-canonical Wnt signalling in the adult intestine to better understand how this signalling pathway governs tissue architecture in health and disease.

Here, I am using murine colonic epithelial organoids as an *ex-vivo* tool to model intestinal cell polarity. Colonic crypts were isolated and grown in Matrigel (a 3D matrix). Following culture, projections containing the epithelial stem cells and progenitors can be seen protruding from the spheroid. These represent the colonic crypt, and can be easily manipulated to define the signals that regulate epithelial architecture. This organoid is stained for DNA with DAPI (Blue), the nuclear envelope with LaminB1 (Green) and the centrosome marker γ-tubulin (Red). This method gives us a highly tractable three-dimensional model of regeneration, which we can use to computationally study cellular processes

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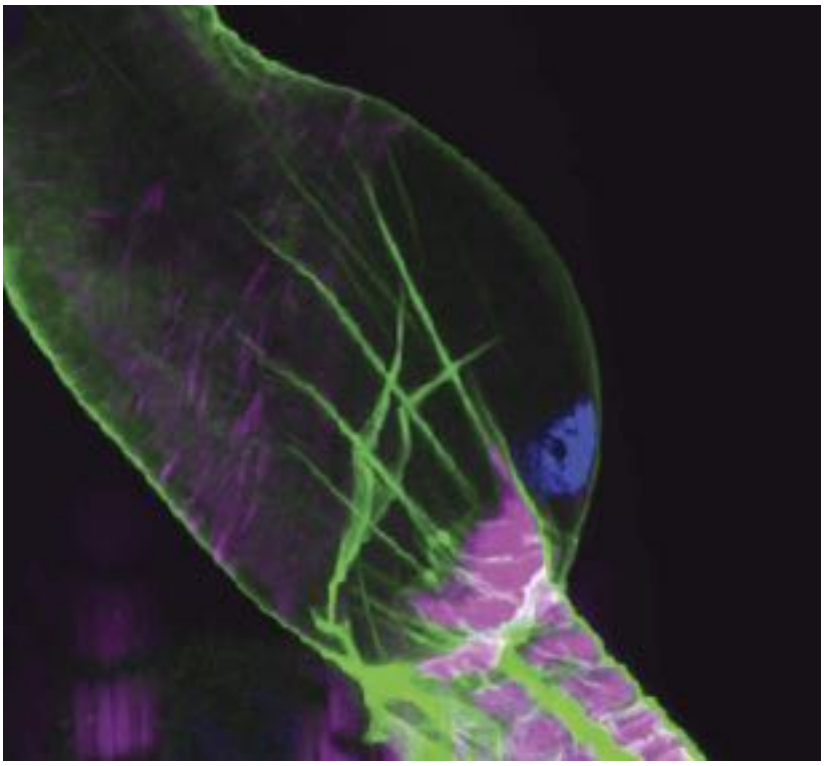
3rd Prize Winner: Helen Weavers, School of Biochemistry, University of Bristol.



Helen's confocal image (below right) shows the intricate structure of the developing fly kidney, which is anchored within the body by attachment to nearby heart muscle. The striking striations of the heart (and body wall muscle beneath) are revealed by labeling Actin (magenta). Cell membranes (green) and nuclei (blue) are also stained.

"After graduating with a degree in Developmental Biology, I embarked on a Wellcome-Trust-funded PhD in Prof. Helen Skaer's lab on the Developmental Biology 4-Year PhD Programme at the University of Cambridge. Here, I have been studying the development of the fly's excretory (renal) system, focusing on the role of specialised tip cells that guide the formation of the kidney's complex 3D architecture which is key to optimal physiological functioning. I am now continuing my interest in developmental biology as a Post-doctoral Research Associate in Biomedical Sciences at the University of Bristol in the labs of Prof. Paul Martin and Prof. Will Wood, where I am studying the development and function of the *Drosophila* immune system.

Meet the new BSCB President – Anne Ridley

Professor Anne Ridley is the incoming BSCB President. She is Section Head of Cell Motility and Cytoskeleton in the Randall Division of Cell and Molecular Biophysics at King's College London. Our Postdoc Rep, Alexis Barr, interviewed Anne recently about her research, her career and how she feels about becoming the new BSCB President.

What are the big questions your lab is trying to answer?

Our research is focussed around two areas. The first is studying the function and regulation of Rho GTPases. Human cells have 20 Rho GTPases and hardly anything is known about the function of most of these. We know a great deal about the classical Rho GTPases that were the first to be identified – RhoA, Cdc42 and Rac1 – but what are the others doing? What is their function and how are they regulated? Why have vertebrates evolved so many diverse GTPases? This is a big challenge.

The paradigm for our research in this area is the Rho GTPase Rnd3/RhoE, where we went from just being given the cDNA to successfully characterising its function and regulation. We showed that the function of Rnd3 is to downregulate RhoA signalling. Unlike classical Rho GTPases, Rnd3 is constitutively GTP-bound and we have shown that Rnd3 activity is regulated by phosphorylation and not by RhoGEFs and GAPs. The challenge now is to characterise the function and regulation of the other Rho GTPases.

The other focus of my lab is using a physiological/pathological model to understand how leukocytes and cancer cells cross the endothelium. I started this work about 20 years ago looking at how leukocytes cross the endothelial layer. Now we've moved into trying to understand how breast and prostate cancer cells migrate through and how Rho GTPases are involved in this process.

How did you first get interested in this area?

During my PhD with Hartmut Land at ICRF (which became the Cancer Research UK London Research Institute), I worked on Ras as an oncogene. Ras was the first small GTPase member to be identified and was soon followed by other members of the Ras superfamily. The French were particularly brilliant at cloning these. At the start of my PhD, RhoA had just been cloned. At the time, people thought that all these GTPases were oncogenes, just like Ras, and I became very interested in what was going on in the field.

Despite this, for my Postdoc I initially decided I wanted to work in a different area, and decided to go to the Whitehead Institute at MIT to work on the Y chromosome and genes regulating sex determination. However, it didn't work out and so I started looking for something else. I started to talk to people from Bob Weinberg's lab that was in the same building and I became very interested in their work. At the same time, Alan Hall was advertising for a Postdoc at the ICR in London. He was mostly working on Ras but had just published a paper on RhoA. I interviewed with Alan and realised that he was exploring completely unchartered waters. I started a Postdoc with Alan to work out what Rho GTPases were doing and I feel I was very lucky in that I happened to be in the right place at the right time.

How did you get to where you are today?

I really benefitted from having papers from my PhD and Postdoc research. I applied to two places for group leader positions: the newly formed MRC-LMCB and the Ludwig Institute for Cancer Research, both at UCL. Mike Waterfield was running the Ludwig Institute and he was very open to recruiting people in different areas. They had established the Institute with three senior leaders at its core and he wanted to recruit new, young team leaders in diverse areas. Actually, Mike had been running his lab next door to ours during my PhD. My PhD supervisor was a new team leader and I was his first PhD student. Mike was Hartmut's mentor and was very supportive of me, taking a fatherly approach to make sure I was doing ok as the first PhD student.

I decided to take a position at the Ludwig Institute and was one of the first junior team leaders there, definitely the first woman. Mike offered me a very generous start-up, it was a very supportive atmosphere and had been established with good leaders at its core. The Ludwig Institute had a focus on signal transduction and I was the only one there to be working on the actin cytoskeleton and cell migration, which was a completely new area for them. Mike's laboratory were cloning and characterising PI3K isoforms. But when it was discovered that PI3K regulated Rac, it worked out very well that we were in the same institute.

I then became interested in Rnd3 and branched into looking at migration across endothelial cell layers and setting up systems to study this. It was work I started during my young group leader years that still forms the basis of what we do today.

I spent 13 years at the Ludwig Institute, progressing from junior team leader to Professor and eventually Deputy Director to Mike. These were definitely my formative years. However, the Ludwig Institute was run from New York and they decided to change focus and bring in a new Director. In the end, this didn't really work out for me because they moved the Institute to Oxford, which is when I moved to King's.

Who has inspired you during your career and why?
Several people have inspired me, but three have played major roles during my career. The first was Tim Hunt. He was my supervisor when I was a third year undergraduate in Cambridge and was very influential. At first he thought I was "not worth much", turning up late to his supervisions with my viola. However, in my third year I suddenly realised that science was actually really interesting and wasn't just a case of learning facts. Tim recognised that I had "taken off" and told me I should do a PhD.

Alan Hall was also very influential. I liked how Alan ran his lab and it really influenced the way I run my lab now. I am glad that I have always worked for open-minded and generous supervisors, who have supported my ideas and research.

The third was Mike Waterfield at the Ludwig Institute. He was my mentor and was very understanding. If it hadn't been for him, I wouldn't have made it through having young children and continuing in research.

What has been the highlight or highlights of your career so far?
I've had a series of highlights. I really enjoyed my third year undergraduate project. During my PhD, my first paper was a highlight because I really enjoyed that research and working with Hartmut. Then my Postdoc with Alan was a fantastic experience – the projects I worked on were all really interesting, combining cell biology and biochemistry. As a PI, I've really enjoyed all the people I've worked with, in particular my first PhD student and a series of great Postdocs. For example, Beata Wojciak-Stothard, now at Imperial, and Jaime Millán, now in Madrid, who were amazing with endothelial cells and confocal microscopy. Also, all the work we have done on Rnd3 has been a highlight.

I think most of all I've really enjoyed all the people I've worked with.

What have been the biggest obstacles you have had to overcome to get to where you are today?
The first is learning to cope with grant and paper rejections. I found this particularly difficult when I was a young PI. I think you just have to be humble, and admit that maybe it wasn't as good as it could have been. Try not to take it personally and accept that reviewers are people just like you. Not usually ogres!

The second has been trying to get the right balance between looking after young children and work. It's particularly tough when they're very little and you have to cope with the lack of sleep.

What questions or problems keep you awake at night?
Finding time for teaching, mentoring and research. I'm responsible for undergraduates, Masters and PhD students and I also mentor all the PIs in my section. I worry about getting the balance right between my different roles.

If you could go back and change one thing in your career, what would it be?
I don't know if I would change anything but you never know when you make a decision if it was the right choice. I can say that the most difficult choice I have had to make was whether to move with the Ludwig Institute to Oxford or to move to King's. It was difficult because this involved choosing between two different research directions, as well as locations.

What do you enjoy most about being a scientist?
I'm driven by curiosity. I just want to know the answer. I like listening to results from our own or others' science and making connections that lead to somewhere completely new. That's why I enjoy going to meetings, listening to talks and chatting during the breaks – making those new connections.

I try to instil this sense of discovery in the

undergraduates and PhD students. I really want them to think "wow" when they learn something. I remember going to a seminar as a third year undergraduate when they were just starting to work out how the cell cycle was controlled. It was just incredible. I also went to a conference on the cell cycle as a PhD student and there was an incredible buzz because it was just starting to take off as a field.

I want to inspire people to be excited about science.

When did you first decide to pursue a career in science and did you ever consider any other careers?
When I was deciding what to do at university, I had to choose between a degree in Music or Science. I loved playing the piano but, in the end, I didn't think I was good enough to be competitive as a professional. I found science pretty easy at A-Level so I chose science!

Then when I finished my PhD I didn't know what to do next. I actually applied and interviewed for a job with Friends of the Earth. However, I decided to do a Postdoc and after that I knew I wanted to stay in science.

How do you spend time outside the lab? Any hobbies?
I still play the viola in orchestras. Unfortunately I don't have time to play the piano any more. We also go to concerts and I enjoy gardening as well.

How have you found balancing parenthood with your career? Can you think of anything that would have made the balance easier?
I have an amazing husband. I didn't really think about it when we got married but the fact that he's a school teacher meant that he was home all of the school holidays which was just incredible!

Something that wasn't available when I had my children was some of the extra funding that parents can now apply for. For example, King's can provide extra money to support someone to help run your lab when you are on parental leave. The other thing that we didn't have back then was email and Skype. If you wanted to discuss something with someone you had to physically go into the lab. That meant I took short maternity leaves. It would have been much easier with Skype to direct the lab from home.

Are you looking forward to becoming the new BSCB president and what was it that made you accept the role?
The first meeting I ever went to was a BSCB meeting on the cell cycle. I've been a member since my PhD. I think it's a really important society for cell biologists, particularly young cell biologists. I think the BSCB inspires young people, which is really important.

When I was offered the position as president I was immediately enthusiastic but then had to take a step back to decide if I had the time to commit to the role. After talking with Jordan (Raff), he convinced me that I would, after all he's busy too, and so I accepted.

It's a good time for me to take on this role. I have a stable position at King's and so I'm ready for a new challenge. And this is a big challenge as it's a great time for cell biology. I'm really excited.

What challenges do you think face British cell biologists in the future?
Cell biology really started in the 1960s with electron microscopy and the first look at organelles. Since then, the field has really taken off with advances in microscopy - from confocal and now super-resolution.

I think the future challenge is that not only should we be discovering new information about cells but also we need to apply these discoveries to benefit society. For example, in my lab, we apply our findings to human disease. Others may study plant cell biology to prevent crop diseases. We really need to understand the cell biology to be able to make differences to society. For example, you can't understand how malaria spreads without understanding cells. It's the same with genome sequencing – we can sequence 100,000 genomes but we need to know what the effect of genetic mutations or polymorphisms is on cells and organisms.

Cell biologists need to realise how important they are and find ways to apply their research to improve our society.

How do you think the BSCB can best serve its members to overcome these challenges?
I think we need to embrace meetings covering diverse topics so that we can give young scientists ideas about which directions they can take their work. Each person will have different ideas about how to apply their skills but people have to realise you can't do everything and you need to be focussed.

I think the BSCB can be that umbrella to show people the options available to them and help them find direction in their work.

I am also keen to get undergraduates and Masters students to meetings and as members into the BSCB to inspire them.

What advice would you give to PhD students and Postdocs aspiring to run their own research teams?
You have to be realistic. Look at what you have – do you have publications at the level you need to be competitive? Having said that, I do think if you are really driven by curiosity you are probably going to get there.

Look around at what's available and don't leave it too late to apply for independent positions. People tend to wait too long and you have to be careful, because many positions, especially Career Development Fellowships, have stringent deadlines from the time of finishing your PhD to when you can apply.

I think, if you can, it's best to do one longer Postdoc in the same lab. It takes time to build up expertise in an area and get to the point where you are productive and publish papers. But, if you do get into a lab and for whatever reason it isn't working out then get out as quickly as possible. Do explore different areas, as I tried, but if it isn't working for you then move on!

Women in Cell Biology Early Career Medal 2016 – Lidia Vasilieva

I met Dr Lidia Vasilieva in the foyer of the New Biochemistry building at Oxford University. Tucked away around the back of the Pitt Rivers Museum, the light, open-plan building gives off an air of scientific excellence, community and interaction. She was awarded the Women in Cell Biology Early Career Medal by the British Society of Cell Biology earlier this year, and I was given the great privilege of interviewing her for this newsletter.

Lidia grew up in Siberia, daughter of two academics: her mother a Professor of art history and her father a theoretical physicist. The many philosophical discussions with her father and her mother's academic passion provided the foundations for her own scientific career. Having always been fascinated by the natural world, Lidia took up a degree in biology at the local Krasnoyarsk State University. It was there that she began to craft the path she has taken. Although her studies were specialised in ecology and hydrobiology, she craved a deeper more molecular-level understanding of the world. With the encouragement of her teachers, she travelled across the country to do a Master's degree at the Institute of Protein Research just outside of Moscow. Two years and three publications later, she joined Professor Leevi Kääriäinen at the University of Helsinki for her PhD in viral replication.

She met Dr Kääriäinen at a scientific meeting. She enjoyed his talk and asked if he would take on a PhD student. There she benefited from a nourishing environment and infrastructure. Her boss, who had had nearly two dozen PhD students pass through his lab by this point, shared his wisdom, words which have stayed with her ever since. She is glad she chose Finland for her doctoral studies. It's about being in the right place for the right time in your career she says: you need a PhD which will give you confidence in your abilities and where you have the chance to learn as much as you can; you can leave the intense competition for when you get to post-doctoral level.

National borders have most definitely not been an impeding factor in Lidia's life: if the science is there, she'll go. Thus, from Russia and Finland, she left for Boston, Massachusetts before settling here in Oxford. Although she stresses none of these moves were part of a strategic career plan, it definitely shows that she has an open mind and that her passion sees no boundaries. She speaks very fondly of her travelled science, saying the culture and environmental changes shaped both her and her scientific process- in a way a philosophical experience. Harvard was a particular influence with scientists coming from across the globe, all with different ways of doing things and thinking, really expanding her horizons.

After a fruitful post-doc at Harvard, she moved to Oxford along with her with her husband, fellow biochemist Dr Martin Cohn. Arriving with a Leukaemia and Lymphoma Society fellowship and then being awarded a Wellcome Trust Research

Career Development Fellowship she started the next stage of her career on the right foot. For her this was the greatest transition: from postdoc to PI. There were many new skills to learn, a steep learning curve. And if starting her own lab wasn't hard enough, Lidia coupled this with starting a family. As she says, there is no "right time" for these things, as long as it is what you want you will make it work. She admits that is was scary but sometimes you have to jump in feet first. That is something she stressed over and over: if your heart is in it, and you know what you want, you will learn quickly and compensate for the lack of experience. It's all about self-belief.

She has a very positive message for young scientists: empowerment is all about trusting that you are doing what is right for you; if you stop being afraid and just go for it you can follow your dream. It's all about not over evaluating, keeping your eyes open for the unexpected – you can't anticipate what you'll find – and not being too disheartened when things are tough.

If I take one thing away from meeting Dr Vasilieva, it is that she is a woman that does not shy away from a challenge: she knows what she wants and will go and get it, even if it means stepping into the dark. All of these messages really hit home, it is so easy to continually criticise yourself – and yes, you must question your work, only challenge it fairly – but she is right, without the belief and the motivation, you'll get nowhere.

A few words from Lidia:

On her research
We are interested in understanding mechanisms involved in gene regulation in eukaryotes. We aim to understand how cells make functional mRNA and control levels of individual transcripts through transcriptional and post-transcriptional mechanisms.

On what drew her to this subject
In the virology field [in which she did her PhD], the most important question is how viruses interact with the cell. But without understanding how cells work you can't understand these viruses are making use of the cellular machinery. I was always kind of interested in the questions around the central dogma as this is really the key. I went on to a 'hard-core' transcription lab of Steve Buratowski and there I wanted to find my own niche. At that time the Tollervey lab had purified the RNA exosome complex and found it to be present in both nuclear and cytoplasmic compartments and I was really excited to test whether there is any cross talk between transcriptional and post-transcriptional regulation. Indeed, I found that non-coding transcripts are pre-programmed for degradation or processing by the exosome complex during transcription and this is regulated by the conserved transcription factor Nrd1.

On becoming and being a PI
I didn't think "I do want to be a PI" or "I don't want to be a PI", I just knew I wanted to do science. And then I realised at some point that in order for me to be able to work on exactly the problems I am most interested in I would need to set up my own lab. So, to really be happy, to do what I want, I needed my own lab. I didn't have a plan, but I was passionate about what I wanted to achieve and science was my path. I want to be a scientist and I really enjoy the process. It's just where I was going.

I really enjoy finding something new. I really like discovering things, it's a little bit like detective work: you start with the question then you try to find how it works, you're trying to unwind this complicated order of events. You have to learn to trust people – there's only so much you can do as one person – They do the best they can and I have a really good team, students and post doc's. It's not big [currently 7] but it's a good balance and works really nicely. Being a PI, I enjoy watching them grow, to see their development, making the best of their potential. Being a scientist is really fun, we have all this flexibility. We love our work, many people don't: we are happy people, it's quite a luxury.

On having a family
It is difficult to decide when is the right time to have a family. Scientists are very devoted to their art. You will always be split between two things you are equally passionate about; there is always guilt that you're not giving enough but you become very efficient and a careful planner. You have to compromise but it's all possible. I decided to have a family when I started my lab – but there is no right time, as long as it's what you want, it will work out.

Final words of wisdom
Get out and experience the world; without being happy, you won't be complete.

The Royal Society for Biology

From blue skies research to medical marvels; cutting-edge biotech to frontline conservation – the biosciences are incredibly rich and diverse. The Royal Society of Biology brings over a hundred bioscience organisations together into a powerful, unified voice.

We facilitate a huge range of projects to connect the biosciences, including skills, education, and outreach work, cross-disciplinary networking opportunities and conversations with Government.

In October 2016 we celebrated the fifth annual Biology Week with life science celebrations happening all over the UK, including many biochemistry events and activities. The week brings together schools, universities, museums, labs, wildlife sanctuaries, charities and everyone in between in an increasingly diverse collection of events.

At the Biology Week debate we discussed: Can we predict people's chance of getting cancer? Should we? This attracted hundreds to the Royal Institution to discuss the latest screening and genome sequencing techniques, along with the ethical and societal impact of 'The DNA Revolution'. An audio recording of the event is available online and you can read more in the Biologist Magazine.

Other society events during the week included our annual awards ceremony, where we announced the winners of our photography, books and science communication awards; and a Parliamentary Reception in the House of Commons for our members, representatives of our Member Organisations, and parliamentarians to share experiences and discuss science policy issues.

As part of the Learned Society Partnership on Antimicrobial Resistance (LeSPAR), we held a popular Policy Lates event in which participants examined the roles of innovation and regulation in tackling the AMR crisis from different perspectives, including veterinary research, biotechnology and public health.

Hundreds of schools and universities around the country took part in biology events and activities, many of which we developed in partnership with our MOs to tackle issues around biodiversity, animal research, and genetic modification.

Earlier in the year we also ran several public engagement activities for a general audience, in partnership with our MOs. In June, the 'Biology Big Top' went to Cheltenham Science Festival and the Big Bang Fairs in Yorkshire and Humber, and in July we were at Lambeth Country Show. 'The Hungry Games' engaged thousands of people from all backgrounds with issues around food security, nutrition, agriculture, food waste and sustainability.

Details of our public engagement activities and events for festival season 2017 will be announced soon. We wish to engage the broadest possible audience in the life sciences. We will be continuing our national citizen science projects, investigating flying ants, house spiders and starling murmurations, with the help of the public! Our app to investigate seasonal allergies, #BritainBreathing, will be re-launched in spring to collect symptom data and shed light on the increase in seasonal allergy symptoms.

For anyone interested in biology teaching at all levels, I would encourage you to take a look at our recently launched free online 'virtual special issue' of the Journal of Biological Education (JBE) to celebrate its 50th birthday and highlight some of the incredible research it has published.

The Editor, Professor Ian Kinchin CBiol FRSB, put

together the issue which includes 40 of some of the most cited and downloaded articles. These included: Learning difficulties in biology, The effect of eco-schools on children's environmental values and behaviour, The epidemiology of a zombie apocalypse, and Using role play to debate animal testing.

The JBE is uniquely broad in its reach: it's a really accessible journal for people who teach the biosciences across the spectrum. Looking to the next 50 years of the JBE, I'm excited to see more research into the interface between school and universities.

Soon in the new year we hope to start working with our MOs on the annual Voice of the Future event. At Voice of the Future, young scientists and engineers quiz key political figures in the Houses of Parliament about the science policy issues that matter to them. It is a unique event – in no other part of Parliament is the normal select committee format completely reversed so that MPs have to answer questions rather than ask them. The event aims to highlight the importance of policy makers using reliable evidence and being held to account on their decisions and today's young scientists will be vital for this in the future.

Next year at the House of Commons we will also be hosting the annual Parliamentary Links Day which brings MPs, Ministers and the science community together. On our website, you can watch last year's 'Science after the Referendum' event – which attracted over 300 attendees.

We organise or input into many science policy committees along with our MOs, including the Drug Discovery Pathways Group (DDPG). This is a partnership of learned societies that has provided a single well-informed and representative voice on key issues associated with medicines research. The Group's work has focussed on three main areas: industry-academia partnerships, knowledge and skills.

The DDPG has actively sought to influence the policy environment and offer proactive proposals to support drug development. This has included a push to create better cross-sector exchange of information, people and knowledge through mechanisms such as a Drug Discovery Advisory Forum that could bring together medical charities, funding bodies, businesses, academics, the NHS and learned societies, to ensure patients' needs are met in a sustainable and cost-effective manner, and that the UK remains at the forefront of medicines research. There has been significant movement in this direction over the last five years and the DDPG is now considering how best to evolve its own objectives.

Another key aspect of our work is Degree accreditation. So far we have awarded Degree Accreditation to 154 degrees across 21 HEIs and awarded Advanced Degree Accreditation to 214 degrees across 22 HEIs. We plan to launch International Degree Accreditation in 2017, and as part of our engagement with HE and careers we will also again host the 'Meet the Universities' event; a mini UCAS type event focusing on the biosciences, held at The Royal College of Surgeons.

Our competitions are a great way to encourage the best in biology in schools up and down the country. Over 40,000 children took part in the British Biology Olympiad and Biology Challenge in 2016. The Intermediate Biology Olympiad launched in June and over 4,000 took part. The Gopher Science Labs project reached over 8000 students and 650 teachers. In July, the UK will be the official host country for the International Biology Olympiad 2017. The RSB will be working with the University of Warwick to organise and run a successful flagship event, welcoming up and coming biologists from over 70 countries.

Next year will also see us launching a new journal 'Emerging Topics in Life Sciences', in partnership with the Biochemical Society and Portland Press; launching a Plant Health Professional Register with DEFRA; publishing a 25 year roadmap for plant sciences from our Special Interest Group, the UK Plant Science Federation; and expanding our training programme to include an online portal.

Dr Mark Downs CSci FRSB, Chief Executive of the Royal Society of Biology

BSCB Science Writing Prize 2016

The 2016 winner was Girisaran Gangnatharan from the Institut de Génomique Fonctionnelle, Montpellier, France.Heart Disease.

Heart Disease: Fishing for a cure

Girisaran Gangnatharan

It is not just a little fish

"Why?" You ask me.

Because the tiny zebrafish may be the answer to the problem of heart disease in our society. Or, to be specific, this fish might be able to teach us how to repair your heart if you have a heart attack.

Before I explain how that is possible, we need to understand what happens during a heart attack. Let's take as our example Mr. Sam.

Mr. Sam is in his late 40s. He works in a bank and exercises twice a week to keep himself healthy. One fine day, Mr. Sam is working in his office and feels a small pain in his chest. He clutches his chest and falls to the floor. Mr. Sam is having a massive heart attack. As he lies on the floor, let's jump into our hypothetical nano-submarine and zoom into his heart.

You witness first-hand the destruction as it unfolds: thousands upon thousands of his heart-muscle cells are dying almost instantly. These heart-muscle cells are required for the pumping action of his heart. Unfortunately, these heart-muscle cells cannot be replaced, and his heart is unable to pump blood efficiently to the rest of his body. Eventually, his heart will fail, and unless Mr. Sam has a heart transplant, he will die prematurely.

Would it surprise you if I told you that you could be the next Mr. Sam? In fact, heart disease is so rampant, one out of every three people reading this article will most likely die of a heart attack. Unless a creative solution to the problem of heart disease is found.

So what is the nature of the problem? The problem is that Mr. Sam, you, and I cannot replace our heart-muscle cells if they are damaged. One promising solution, then, would be to find a way to stimulate our hearts to replace damaged cells.

This is where the zebrafish comes in. "What on earth is a fish going to tell me about my own abilities to heal my heart?" You might ask. If you cut off a small portion of this fish's heart it will heal spontaneously. It will fully regenerate and replace the lost heart muscle. Now some of you must be thinking, "well, this is great!" It is – if you are a zebrafish. So the obvious question is: why can't we heal our damaged hearts using the same mechanism that a zebrafish uses to heal its injured heart?

Why not?

Now I admit: you and I, we look nothing like fish. But did you know that zebrafish and humans share 70% of our genes? And, most importantly, did you know that the mechanism the zebrafish employs to heal its damaged heart also exists in mammals?

For example, if you were to remove a portion of the heart of a baby mouse, it would regenerate its heart in the same fashion as the zebrafish. However, as mice get older, they lose this ability to regenerate.

What this means is that the process by which a creature heals a damaged and injured heart is not specific to zebrafish; it is not specific to baby mice. It is not a genetic program specific to only a few animals. It is actually written in our own DNA.

But these genes were switched off in humans at some time during our evolution.

Our goal as scientists is to switch this genetic program back on. The zebrafish can tell us which human genes need to be turned on to repair the human heart.

Thanks to the zebrafish, cardiovascular disease could become a thing of the past in the coming decades: we would look at it the way we look at small pox today. Imagine a world where you would not have to go through the pain of losing a loved one to heart disease.

Who knows, this fish might actually save your life in the future.

It's not just a fish…. It is hope!

Girisaran is a Final Year Graduate Student in Chris Jopling's Lab at the Institut de Génomique Fonctionnelle, Montpellier, France. For his thesis, he has been studying the zebrafish. Unlike ours, if a zebrafish's heart is damaged it will repair itself. If we could understand this process in the zebrafish, we could reverse engineer that into human therapies.

Outside the lab, you can find Girisaran singing with his acoustic guitar or swimming laps in Montpellier's Olympic sized swimming pool.

Royal opening of the new CRICK institute

The Queen and The Duke of Edinburgh, accompanied by The Duke of York, opened the £650 million Francis Crick Institute in London on 9 November 2016.

The Crick is the biggest biomedical research institute under one roof in Europe and is investigating the fundamental biology underlying human health and disease.

Paul Nurse, director of the Crick, former president of the Royal Society and Nobel laureate, said: "It was a delight to welcome the Queen to our new building for the Francis Crick Institute and show her some of the science that we are carrying out to understand the human body better in health and disease."

He added: "As part of the visit, she sequenced my genome and we'll find out the results in the coming weeks. In our normal work at the Crick, we use this type of advanced sequencing to understand more about genetic influences on disease."

The Crick was formed on 1 April 2015 and is a registered charity. Its founding partners are the Medical Research Council (MRC), Cancer Research UK, Wellcome, UCL (University College London), Imperial College London and King's College London.

The Queen and The Duke of Edinburgh toured the new building for the Crick next door to St Pancras and the British Library. They saw some of the state-of-the-art facilities for research, including the advanced sequencing and peptide chemistry laboratories. They met many of the scientists and staff of the Crick, along with major

donors who contributed to the Crick via a Cancer Research UK fundraising campaign. The Queen and The Duke of Edinburgh were also introduced to representatives of each founding partner.

The Royal party met artist Robert Ballagh and unveiled his portrait of Francis Crick, a portrait commissioned by James Watson, who worked with Crick on the structure of DNA. The visit finished with the Queen unveiling a plaque to mark the opening of the institute.

The Crick is bringing scientists together from across disciplines to tackle the pressing health concerns of the 21st century. It will be home to 1,250 scientists and a further 250 support staff at full capacity in 2017.

Construction of the new building for the Crick was completed in August 2016. Researchers will continue moving into the new building from the Crick's legacy institutes until the end of the year.

As a world-leading centre of biomedical research and innovation, it has scale, vision and expertise to tackle the most challenging scientific questions underpinning health and disease. The aim is to find new ways to prevent, diagnose and treat conditions such as cancer, heart disease and stroke, infections and neuro-degenerative conditions like motor neurone disease.

The Crick also has a strong national role. By taking a collaborative approach, training future science leaders, taking forward discoveries towards new treatments for patients and engaging with schools and the public, the Crick aims to boost UK science and help drive the UK economy.

Come and visit the new CRICK institute:

Members of the public (and Cell Biologists ed.) can now visit the Francis Crick Institute, buy a coffee, use the free Wi-Fi and explore our first exhibition, titled 'How do we look?: Exploring the scientific gaze at the Crick'.

'How do we look?' is an initial small-scale exhibition, which explores the what, why and how of scientific imaging through the eyes and thoughts of Crick researchers. It provides an opportunity to get to know the new institute; both the physical building and our scientists themselves. As a science exhibition it is almost unique, taking place inside the same building in which the science on display is being carried out.

The exhibition consists of a collection of images and videos, each created by one of our scientists to help solve a research problem. From microscope images, to illustrations, to computer models, the selection is diverse. Some are beautiful, others deceptively simple; all have been produced for specific scientific purposes. The visuals are displayed alongside large-scale photographs of the scientists and their own explanations, providing a personal and a scientific context to the exhibition.

The exhibition opens on Wednesday 2 November and runs until Saturday 4 February 2017. Admission is completely free and non-ticketed; anyone wanting to attend can simply turn up during the opening hours.Following this initial use of the gallery, a rolling programme of public exhibitions will explore the Francis Crick Institute's mission to understand the fundamental biology underlying human health. Live events and opportunities to meet Crick scientists in person will take place throughout the year.

Jonathan Wood, CRICK Press office.

Higher Education and Research Bill: what needs to change

If passed in its present form, the 2016 Higher Education and Research Bill currently before Parliament will enact huge constitutional changes that will undermine the autonomy and vigour of the UK's universities and research base.

We want you to write to your MP to ask for amendments to the bill that will protect the health of our system of higher education and research by ensuring that crucial decisions have full parliamentary oversight.

As it stands, the bill concentrates power in the hands of the Secretary of State and significantly weakens the ability of Parliament to scrutinise and challenge decisions that could abolish particular universities or research councils or undermine existing freedoms to teach and direct research.

Our UK's universities and research base are world-leading, but they are already under threat from stagnating budgets and the risks from leaving the EU. In such circumstances, we need to think very carefully before making changes to how this ecosystem functions.

The Higher Education and Research Bill in its current form would cause widespread changes to this landscape, undermining the independence of our universities and research communities. For more information about the bill please see the article by Dr Stephen Curry, Science is Vital Advisory Board member, in the Guardian, the link for this is below.

To remedy the bill's most significant flaws we propose the following amendments:

• Remove the provision (Part 1, Sections 2(2) & 2(4)) allowing the Secretary of State to give guidance to the Office for Students on what courses may be taught by universities.

• Change the provision (Part 1, Section 43(1)) allowing the Office for Students (a body appointed by the Secretary of State) to revoke the right of institutions to grant degrees and retain the name 'university', so that each such decision requires parliamentary assent.

• Change the provision (Part 3, Section 87(5)) allowing the Secretary of State to create or abolish a research council, or to alter their remits without parliamentary assent.

Since this bill needs to be passed by MPs in Parliament, this would be an ideal topic about which to write to yours. As luck would have it, we've just produced a guide to writing to your MP. Please check it out, write a letter, and let us know what your MP says.

This article has been written as part of the Science is Vital campaign, which the BSCB supports. Science is vital is a grassroots campaign of UK scientists and supporters of science who believe that a strong science base is vital to the UK's economy and reputation. Formed in 2010 as a response to threatened government cuts to science, we've incorporated as a formal group to remain on call to speak for the interests of scientists and UK science. But we remain a strictly grassroots organisation: we are all volunteers; working scientists, ex-scientists and non-scientists. We have no funding and give freely of our own time and resources to campaign.

Web links for further information

Higher Education and Research Bill:
www.gov.uk/government/collections/higher-education-and-research-bill

Guardian Article by Professor Steven Curry:
www.theguardian.com/science/occams-corner/2016/oct/18/higher-education-research-bill-needs-amended

How to write to your MP about this:
scienceisvital.org.uk/resources/how-to-write-mp-letter/

More information about Science is Vital:
scienceisvital.org.uk/

Dr Jenny Rohn, our new public Affairs Officer and Science is Vital Campaign manager

Meet the BSCB committee: Anne Straube

Anne Straube joined the committee in 2016 and is an associate Professor at the University of Warwick. She's bravely stepped into the breach to answer 10 questions about cells, the BSCB and what inspires research in the Straube lab.

1) What's your role on the committee?
I am the new Meetings Secretary

2) Over the next year what will be you be upto for the BSCB?
I will prepare a meeting "The Dynamic Cell" jointly with the Biochemical Society for 2018.

3) What are your aspirations for the BSCB?
I hope to organise meetings to which a large number of BSCB members want to attend every year. Thus I aim to bring back old favourites such as "The Dynamic Cell" and try out new formats, such as joint meetings with BSCB's sister organisations of our European neighbours.

4) Could you describe your research in a nutshell?
My lab tries to find out how microtubules regulate cell shape changes. We study how microtubules self-organise into arrays that support cell polarisation using quantitative live cell imaging combined with *in vitro* reconstitution experiments.

5) What inspired you to come into Cell Biology?
When I started my PhD in Cell Biology, labelling intracellular structures with GFP had just started. To be able to see with your own eyes and often in real time how the tiny machines and structures in cells are built, move and change over time is most fascinating.

6) What's been your best moment as a cell biologist?
There have been many happy moments on the microscope – catching that perfect shot of a cellular process in action is pretty similar to a wildlife photographer getting a complete view of a lion making his kill. It needs patience and perseverance, but the reward is pure joy.

7) What do you feel are the biggest challenges facing cell biology?
As we are trying to understand in greater detail what we are seeing, artefacts from the labels we use, the manipulations we do and the influences of the environment our cells or proteins are in during experiments lead to inconsistent or wrong conclusions. This is unavoidable, but we need to make sure that inconsistent or surprising results are published so that they are available to challenge emerging models.

8) If you were to start your PhD now, which cell biology questions would you like to address?
I currently have a funded PhD opportunity in my lab to study how cargo transport is achieved by surfing on polymerising microtubule ends. This is a cool project I would fancy doing myself.

9) At the BSCB meeting where would we be most likely to see you?
In one of the rows at the front – I tend not to pay attention unless I am close to the action...

10) What's your favourite cell and why?
Any cell that has bits of its cytoskeleton labelled with a fluorescent protein, because it lets me watch what happens inside.

To find out more about Annes' lab and research see www.mechanochemistry.org/Straube

Meet the BSCB committee: James Wakefield

James Wakefield has been a BSCB committee member since 2013. He says "When I was an 'A' level student I had an inspirational Biology teacher, Alan Wright, who told me that one day, when I grew up, I should go and find out how microtubules organised themselves during mitosis. I'm still working on an explanation!"

1) What's your role on the committee?
I'm the Membership Secretary

2) Over the next year what will be you be up to for the BSCB?
I'll be helping people become new members, co-ordinating with our accounts team and liaising with our BSCB Ambassadors – individuals within Universities and institutes around the country who promote the BSCB with their colleagues and students.

3) Best moment in the BSCB / aspirations for the BSCB?
I think the best moment personally so far was co-organising the last Dynamic Cell meeting, jointly with the Biochemical Society (September 2014, held in Cambridge). We had such a great response from the scientific community in what we were trying to achieve by emphasising the temporal nature of cellular and sub-cellular processes.

4) Could you describe your research in a nutshell?
My lab uses an integrated approach combining cell biology, quantitative image analysis, genetics, biochemistry, proteomics, bioinformatics and art to explore and understand the formation of one of the most iconic cellular structures – the mitotic spindle.

6) What's been your best moment as a cell biologist?
Probably when my first PhD student, Graham Buttrick, came out of his viva examination. To know that you've successfully mentored someone through their first foray into research, and that they've enjoyed it, brought home how much of a communal and emotionally attached pursuit science is. I felt a bit like a proud dad!

7) What do you feel are the biggest challenges facing cell biology?
Undoubtedly, one of the biggest challenges is how biological complexity resolves itself out of a system constructed of constituent parts – high throughput genetic, biochemical and cell biological approaches have successfully identified most of the key proteins required for most of the fundamental cell biological events; but we're still far away from understanding how they dance and morph together in space and time to drive these processes.

8) If you were to start your PhD now which cell biology questions would you like to address?
If it wasn't the same question we're trying to address in my lab (!), it would probably be investigating the limits of eukaryotic cellular life – either analysing weird and wonderful single celled organisms or the cells of more complex animals (I've got a bit of thing for tardigrades at the moment...).

9) At the BSCB meeting where would we be most likely to see you?
Chatting with other researchers by the posters.

10) What's your favourite cell and why?
It would have to be the *Drosophila* syncytial blastoderm embryo. A single cell of 150 by 650um, containing up to 6000 nuclei that co-ordinately cycle through DNA replication and mitosis. They're intrinsically beautiful when their cytoskeleton and associated structures are lit up. Twenty years after I first looked at them under a fluorescent microscope, and I still get over-enthusiastic every time I manage to get the time to image them.

To find out more about James' research see www.thewakefieldlab.com/ and twitter.com/thewakefieldlab

Alan Hall, Obituary

Alan Hall, an outstanding researcher, teacher and colleague, died suddenly on Sunday 3 May 2015 in New York City.

In the 1980s, in his early career, Alan Hall was one of a small group of molecular biologists who first uncovered how genetic changes could cause cancer. Then, in truly pioneering studies, he discovered mechanisms through which Rho family GTPases regulate the cytoskeleton and thus how cells control and change their shape and movement. He remained to his death one of the world's leading cell biologists and a committed mentor to generations of young scientists.

Alan studied chemistry at Oxford (BA) and biochemistry at Harvard (Ph.D), before taking up molecular biology during postdoctoral training in Edinburgh and Zurich. In 1981 Alan joined a group of young PIs at the Institute of Cancer Research's Chester Beatty Laboratories, London, as a member of a nascent Section of Cell and Molecular Biology under the guidance of the then new ICR director Robin Weiss. Together with Chris Marshall, Alan used transfection techniques to identify a novel form of Ras, N-Ras, a discovery that set them both on the trail of understanding the biology of Ras and the closely related Rho family of small GTPases. At the ICR, Alan was joined by Anne Ridley and together with Hugh Patterson, the team discovered the key roles of Rac, Rho and Cdc42 as receptor-coupled molecular switches that regulate actin assembly and cell motility.

In 1993, Alan left the ICR and moved to the newly formed Laboratory for Molecular Cell Biology (LMCB) at University College London. The LMCB was funded by the Medical Research Council and was a joint venture between King's College London and UCL. It was the first research institute in the UK focused specifically on molecular cell biology, and its four-year graduate programme became the prototype for the many similar programmes that followed in the UK. Alan was one of the LMCB's first group leaders, and he played key roles in the institutes' early years.

Alan recruited an outstanding team of young, dynamic postdoctoral fellows and graduate students who extended the work on Rho, Rac and Cdc42 into studies of cell motility, wound healing and cell polarity. They identified many of the effectors through which these crucial GTPases control a plethora of cell functions. In 2000, Alan became the second director of the LMCB,

from 2000–2006, and oversaw the establishment of the MRC Cell Biology Unit at the core of the Laboratory, ensuring ongoing MRC support for the LMCB and its continuing success. Alan was an exceptional director, leading by example through the excellence of his science, his good humour and his strong moral code and mentorship skills. Alan left London in 2006 to take up the Chair of Cell Biology at Memorial Sloan Kettering Cancer Centre in New York, but he continued to mentor many at the LMCB where he will be sorely missed. He was one of the founders of the RhoGTPase field and leaves a legacy of a generation of scientists as seen in the family tree complied by Hall lab members and colleagues at the LMCB.

Alan was a Fellow of the Royal Society and the Academy of Medical Sciences, and he was a member of EMBO. He won a number of prizes, including the Feldberg Foundation Prize, the Novartis Medal, the Gairdner International Award and the Louis Jeantet Prize for Medicine. He was also the current Editor-in-Chief of the *Journal of Cell Biology*.

Mark Marsh LMCB Director

Meeting Reports

2nd Autophagy UK Network Meeting

14–15 April 2016. Edinburgh.

The Autophagy UK Network is an inclusive and welcoming forum for all researchers in the area of autophagy working in the UK, from PhD to PI, from newcomers through seasoned veterans. The major activity of the network is the annual meeting which brings researchers together from all over the UK.

The symposium, which was held at Appleton Tower in the centre of the city, was organized by Dr Simon Wilkinson and Dr Noor Gammoh and was generously sponsored by the British Society for Cell Biology. 120 delegates, representing 29 universities and institutions from all over the United Kingdom, came together to share their research on autophagy and forge future collaborations across areas as diverse as basic mechanisms, disease biology and model organism studies. Keynote invited speakers were Kevin Ryan from the UK (Beatson Institute) and two high-profile European speakers, Ivan Dikic (Goethe University) and Anne Simonsen (University of Oslo). In addition to established group heads we were delighted to have a large number of talks and posters from PhD, Postdocs and junior Group Leaders, in many cases showcasing exciting new, often unpublished, work. The quality of these presentations demonstrated that the field is patently in good health within the UK!

The meeting was crowned by a "lively" dinner and Ceilidh event in the historic debating hall of Edinburgh University's Teviot House union. Plans are already in place for a third meeting in London next year to build upon the success of the Edinburgh event. If relevant, please see http://autophagy.uk/ for regular updates on network activities and events, and to sign up to the newsletter!

Congratulations to: Yoshinori Ohsumi for winning the 2016 Nobel Prize in Physiology or Medicine for his discoveries of mechanisms for autophagy

Gordon Research Conference: Signaling by Adhesion Receptors

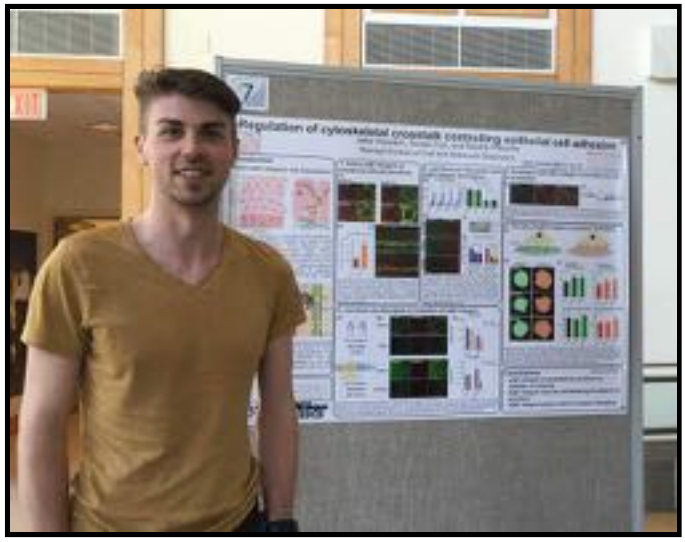
18–24 June 2016

At the start of the summer I had the pleasure of attending the Gordon Research Conference titled 'Signaling by Adhesions Receptors', thanks to the travel grant awarded by the BSCB. I am a third year PhD student at King's College London and my project focusses on integrin, an adhesion protein typically found at the cells basal membrane. Integrin has been identified at cell–cell junctions and so I'm interested in its potential role there. The GRC conference strongly appealed to me, not only because of the overlap with my own project but because of the excellent line-up of speakers that attended.

The adhesion signalling GRC this year was hosted by Bates College in Lewiston. To me Bates College was everything I expected a leafy American college to be, from its redbrick buildings to students practicing cheerleading on the football field. It was a scenic and accommodating place to hold the conference. Lewiston is a former industrial mill town but is now considered a university town. It's situated in beautiful central Maine on the Androscoggin river which winds its way from New Hampshire to the Atlantic coast. While we were there we had the opportunity to visit a local brewery, and see some of the neighbouring town: Auburn.

The week's conference was split into two parts. The first part was a two-day seminar, organised and run by students and post-docs. This was targeted at PhDs and post-docs as a way to introduce them to the conference, without feeling intimidated by all the superstars of the adhesion world that would attend the main conference. I found that this was a great way to get to meet my peers and find out what projects are hot in the field right now. The seminar format consisted of a mix of students and post-docs giving talks, interspersed with break-out sessions for networking. Additionally, there were two poster sessions enabling me to: receive feedback on my project from other students; see what they're working on; and catalysed a few collaborations too.

The next five days consisted of standard conference fare. Each day was split into topics relevant to adhesion signalling and filled with top quality talks. All of the speakers were engaging and open to questions and healthy debate. To name just a few speakers that I particularity enjoyed: Alpha Yap, Martin Humphries, Ann Miller and Clare Waterman. We had the chance to chat with all the speakers throughout the week during meals and breakout sessions and the entire atmosphere was very relaxed. All the speakers were very approachable and happy to engage in discussion of my project. The conference ended with my first taste of famous Maine lobster. I would thoroughly recommend it - as well as Boston speciality hot lobster roll – describing it as messy, but delicious.



A noteworthy feature of the GRC was an event organised to discuss how best to promote women in science. This was organised by some attendees of the GRC and was a great opportunity to see how different institutions are promoting women in science, as well as hearing first-hand the discriminatory experiences that some women have received during their careers.

In summary, the GRC was a fantastic event, especially for early career scientists looking to meet the leaders in the field and build their networks. The science was of the best quality and the whole experience was highly rewarding. I would recommend the GRC and if the adhesion signalling conference is anything to go by then I would strongly recommend any of the other conferences in the GRC series.

Jake Howden

2nd British Microtubule meeting

25 April 2016, Edinburgh

Following the success of last year, the 2nd British Microtubule meeting in Edinburgh was organized to bring together labs across the UK who have a common interest in the field. This well-organized one-day meeting provided a multi-disciplinary base for the exchange of ideas that gave fresh thought into many biological aspects to which microtubules are key.

The size of the meeting was perfect, allowing attendees to fully engage with one another over the latest science on offer. Throughout the day, much emphasis was given to early career researchers to talk about their research and between talks there were also many opportunities for delegates to present posters, talk through ideas and network over coffee.

In the first session, Daniel Peet (Cross lab, Warwick) described how the mechanochemical cycles of both kinesin and tubulin coordinate to permit the remodeling of dynamic microtubules. It was shown that Kinesin motor domains could inhibit microtubule shrinkage when they are in a stabilized state, even if the kinesin itself is bound to one side of the microtubule only. It was further demonstrated in a series of microfluidic experiments that microtubule curvature induced by hydrodynamic flow is trapped or increased by stabilized state kinesin.

Stefanie Redemann (Mueller-Reichert lab, Dresden) presented some beautiful work on the complete 3D reconstruction of the *C.elegans* mitotic spindle using electron tomography and modeling. The acquired model determined the number, length, density and origin of spindle microtubules. From this, it was revealed there was an indirect pole-to-chromosome linkage by kinetochore microtubules.

An engaging talk given by Jordan Raff (Oxford) discussed his lab's work that aimed to explore the order of protein recruitment to the centrosome in *Drosophila*. Using fluorescence recovery after photobleaching (FRAP), the intensity profile of key centrosomal proteins shown distinct gradients that concentrated around the centrioles. Cnn, Asterless and Spd2 were shown to recover first at the mother centriole and then diffuse away, suggesting these proteins act upstream in the formation of the pericentriolar material (PCM) gradient. By combining super-resolution imaging with FRAP revealed how these proteins did not need to form a complex with Sas-4 to be recruited to the mother centriole and therefore PCM recruitment in fly embryos does not appear to require cytosolic S-CAP complexes.

Anne Straube (Warwick) concluded the meeting by presenting her work on acentrosomal microtubule array organization. This included her recently published work on oMAP4 in muscle cells but also highlighted imaging of microtubules done by lattice light sheet microscopy at HHMI Janelia Farm, USA.

After the final talk there was chance for everybody to get together for dinner, hosted in University of Edinburgh's Teviot Hall. A highlight of the evening was the quiz that delivered much entertainment for everyone, before the bars of Edinburgh provided the ideal spot for many of us to keep warm and unwind until the late hours.

A special thank you must go to Julie Welburn, Stephen Royle and Andrew Carter, the scientific organizers, as well as to The Scottish National Museum for providing the ideal location for the meeting.

Nick Clarke, University of Warwick.

Big Roles for Small RNAs

29 June 2016, Julian Study Centre at the University of East Anglia

The Norwich Research Park, a world leading science hub and 4th in the UK for research output, played host in June 2016 to the inaugural 'Big Roles for Small RNAs'. The primary aim of the meeting was to bring together early career and experienced scientists from all fields of small RNA research.

After several months of organising and planning, the one day meeting welcomed over 100 delegates from the UK, US, mainland Europe and India. Greeted by the meeting organisers Nicole and Darrell, delegates filed into the Julian Study Centre at the University of East Anglia (UEA) which is set within the beautiful Norfolk countryside.

UEA, a major partner of the Norwich Research Park, sits within 320 acres of countryside with its own broad and protected wildlife trail.

Kicking off the day, Dr Luca Penso-Dolfin from the Earlham Institute described how new methods in microRNA bioinformatics helped to rebuild and enhance the canine genome. Next to take the stage was Dr Xiaoqi Feng from the John Innes Centre who gave a fascinating talk on the role of lineage-specific DNA methylation, specifically RNA-directed DNA methylation, in flowering plant sexual reproduction. Her talk was followed by Professor Ian Clark whose ground-breaking research at UEA has uncovered evidence to show some cases of osteoarthritis are a microRNA-mediated disorder. Dr Mike Gilchrist from The Francis Crick Institute followed with an enthusiastic talk describing his research into various species of small RNA identified in frogs. Are messenger RNAs home to an elusive class of small RNA? Or do they share the same fate as ribosomal degradation products? The jury was out, giving delegates something to think about for future projects and grant proposals. After an already varied and impressive morning, cue refreshment break number one.

Forget protein shakes and bench presses, Dr Katarzyna Goljanek-Whysall from the University of Liverpool showed how microRNAs were directly related to sarcopenia. Topping up on microRNAs may be the future of gym supplements (but more importantly for preventing age and disorder-related loss of muscle). How do you achieve two significantly differing phenotypes from one genome? UEA's very own Dr David Collins gave a fascinating talk on caste determination in bumble bees where a specific microRNA may be pivotal in deciding if a bee is a queen or a worker. Dr Gyorgy Szittya travelled over from Hungary to deliver his informative talk on how temperature can regulate small RNA production in plants. Dr Ania Wilczynska from the MRC Toxicology Unit discussed her research focusing on the importance of eukaryotic initiation factors and their interaction with microRNAs.

Hungry? The hunger for more small RNA biology had to take a step back as it was time for lunch. Delegates moved upstairs to find a whole host of sandwiches, meats, fruits and drinks as well as the poster session. There were almost 20 posters presented at the meeting which varied from cancer biology and RNA structure to microRNA turnover and bioinformatics software. We were delighted to ask Dr David Young from Newcastle University and Dr Ania Wilczynska from the Medical Research Council to be our poster judges for a prize to be presented at the end of the day (David and Ania did an excellent job of judging undercover!!).

Bellies full and ideas thrashed out, delegates returned to the lecture theatre for the "talk of the day" – Professor Sir David Baulcombe from the University of Cambridge. With no introduction required, although he received one anyway, David gave an inspiring talk which hit home for both animal and plant scientists alike. Discussing his latest work on hybrid plants and the transfer of regulatory RNAs between the two parents, his talk was rounded off with a longer-than-usual round of applause.

With some big boots to fill on stage, Tyler Creamer from Johns Hopkins University gave an outstanding talk on his work investigating the role of miR-29a in fibroproliferative diseases. By uncovering the gene interactions of miR-29a his work has led to a clinically relevant target for inhibiting liver fibrosis. Dr Kehinde Ross from Liverpool John Moores University discussed evidence of the dynamic nature of microRNAs and their varying expression in response to ultraviolet light in humans. Affirming our goal in delivering a varied day, Dr Dave Kushner from Dickinson College discussed his work on the sequence and structure plasticity of a viral-interacting satellite RNA, which gained much interest from the audience.

After a final coffee and biscuit break, Dr Molly Taylor from the pharmaceutical firm AstraZeneca talked about her work on miR-29b and epigenetic modifications in a subset of lung cancer. Matilde Ghibaudi from the University of Turin presented her work on spinal cord injury. Using next generation sequencing her research has uncovered novel microRNA candidates which may be involved in the neuron regeneration process. Dr Silvana Rošic from Imperial College London presented an interesting talk on the evolution of DNA methylation in several nematode species. Rounding off the day of talks, Dr Antonio Marco from the University of Essex demonstrated the power of his population genetics model to detect microRNA target avoidance in Drosophila embryology.

After an audible gasp at the announcement of a £100 cash prize for the best poster (and the loud whisper of "we should have entered a poster"), Professor Tamas Dalmay was delighted to present the prize to Antoni Beltran from Imperial College London for his poster titled "The evolution of piRNA clusters in nematodes". Nicole and Darrell were presented with a bottle of champagne and treated to a round of applause. After an exciting and thought provoking day, which we have on good information included new collaborations and a job offer, it was time for a drink….or ten.

Nicole Ward & Darrell Green, University of East Anglia

BCI STARS 2016

July 2016, Barts Cancer Institute

BCI STARS (Science Training for Aspiring Research Scientists) has been successfully running at the Barts Cancer Institute for three years since it was first introduced by Professor John Marshall. This year, 24 students who had just completed the first year of their A-Levels attended an intensive week-long practical course facilitated by PhD students from a mixture of disciplines.

The school students were identified by the charity Access Work Placements, whose aim is to support young people by removing barriers to access higher education and thus increasing social mobility. The students who attended were from schools who have a low percentage of students that go on to higher education.

During their week with us, students followed the story of p53 and used a variety of techniques including:

- Clonogenic assays
- SDS-PAGE and Western Blots
- Immunohistochemistry
- Polymerase Chain Reaction
- Purifying, analysing and cloning DNA

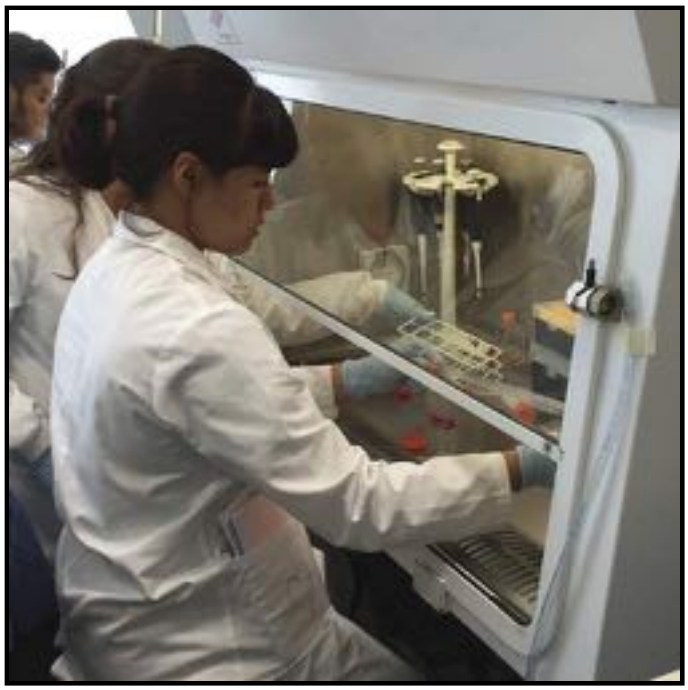
Using these techniques, the students investigated the effects of chemotherapy on p53 activity in cancer, and they learned tissue culture, demonstrating aseptic technique, and looking at cells under the microscope. By the end of the week they could explain the role of the "guardian of the genome".

Students were advised on how to write a personal statement for their university application, and were given guidance about student finance including bursaries and scholarships they may be eligible for. Complementary to these aspects of the week, we hoped to broaden their horizons and show them different academic options that could help them choose their future careers. Most of the students were the first person in their family who would be going to university, and as such had lots of questions for us about:

- the university application process
- how we decided which courses to study
- the influences that led us to pursuing a PhD

As we were only a few years older than them, our experiences were a lot more relevant than those they had heard from their teachers at school. They loved hearing about the different routes we had all taken, and after speaking to us seemed less anxious about the choices they were about to face in regards to the UCAS application.

We have both volunteered on this programme for the last two years. Initially we were encouraged to volunteer by previous demonstrators (aka DEMONS) who had said that it was extremely rewarding. We couldn't agree more! We found it great to be able to work with groups of bright, highly-motivated and enthusiastic young people. During the programme, students naturally were intrigued by our own research projects. We had the opportunity to talk to them about our research in small groups of 3-4 students, as well as during "3-Minute Thesis" talks during long incubation periods. This really helped us to develop the way we explain complex concepts to a less



academic audience, as well as see the parts of our research that are engaging to the public.

The most rewarding part of the experience for us was that we were able to be a part of a support network for students with so much potential. We and the rest of the DEMONS imparted experience and knowledge about our own journeys through university. We were able to show students how concepts they were learning in traditional subjects like biology and chemistry at school were translated and applied in cancer research. They quickly saw how they had been learning the building blocks to the careers they wanted to pursue.

The best moments for us were:

- Watching the students become more and more confident in themselves and their abilities as the week went on
- Experiencing someone getting excited about our research and grasping what we do
- Seeing how competitive they could get during the daily quizzes, especially when showing off their understanding of the techniques they had learnt across the week
- Reading the postcards they had written to themselves that will be sent to them just before their A-Level exams. They all told their

future selves that they were more than capable to achieve their goals and not to give up, which was extremely endearing to read

The students were also asked at the end of the week to offer anonymous feedback. Here are some of their comments:

Why did you want to participate in the STARS programme?

"I hoped to gain a better scientific background concerning biology and chemistry by doing a variety of different practicals"

"I wanted to boost my confidence skills and teamwork, which I feel I accomplished"

"I was unsure about the type of engineering I wanted to pursue, but after doing these lab practicals I am now seriously considering bioengineering"

What did you enjoy most over the week?

"The people who were with me. Interacting and asking the demonstrators questions was really exciting and allowed me to broaden my horizons"

What was the most interesting thing you learnt?

"I really enjoyed extracting my own DNA and getting (to) do cloning"

"The talks about writing personal statements and student finance were so helpful"

"I found it interesting to see what a real lab looks like!"

How do you feel about research science now?

"The use of equipment like the Gilson allowed me to grasp the basis of research science, which I feel requires a lot of mental agility. The experience was exciting!"

"It made me see that there is so much more to science careers than just the traditional medicine/biomed routes"

Since STARS first started, it has grown rapidly with programmes now also being run at the Blizard Institute (also part of Queen Mary University of London) and at Kings College London. We think it is a fantastic programme where everybody wins. Please visit http://www.bci.qmul.ac.uk/public-engagement/bci-stars to see reports and photos from previous years. The success of the programme has managed to attract sufficient funding to run STARS for the next couple of years. Thus we want to thank Alex Rhys, the Biochemical Society, and our own university's Widening Participation and Student Opportunity Fund for their support. It is a symbiotic programme where everybody that takes part comes out with a personal gain. At the moment, the programme only reaches a relatively few schools in London. It would be great if more young people across the country could have the opportunity to take part in such a programme in their local universities. We have thoroughly enjoyed volunteering, and will definitely be doing so again next year.

Arran Dokal and Emma Vilventhraraja
3rd year PhD students at Barts Cancer Institute, Queen Mary University of London

Summer studentships

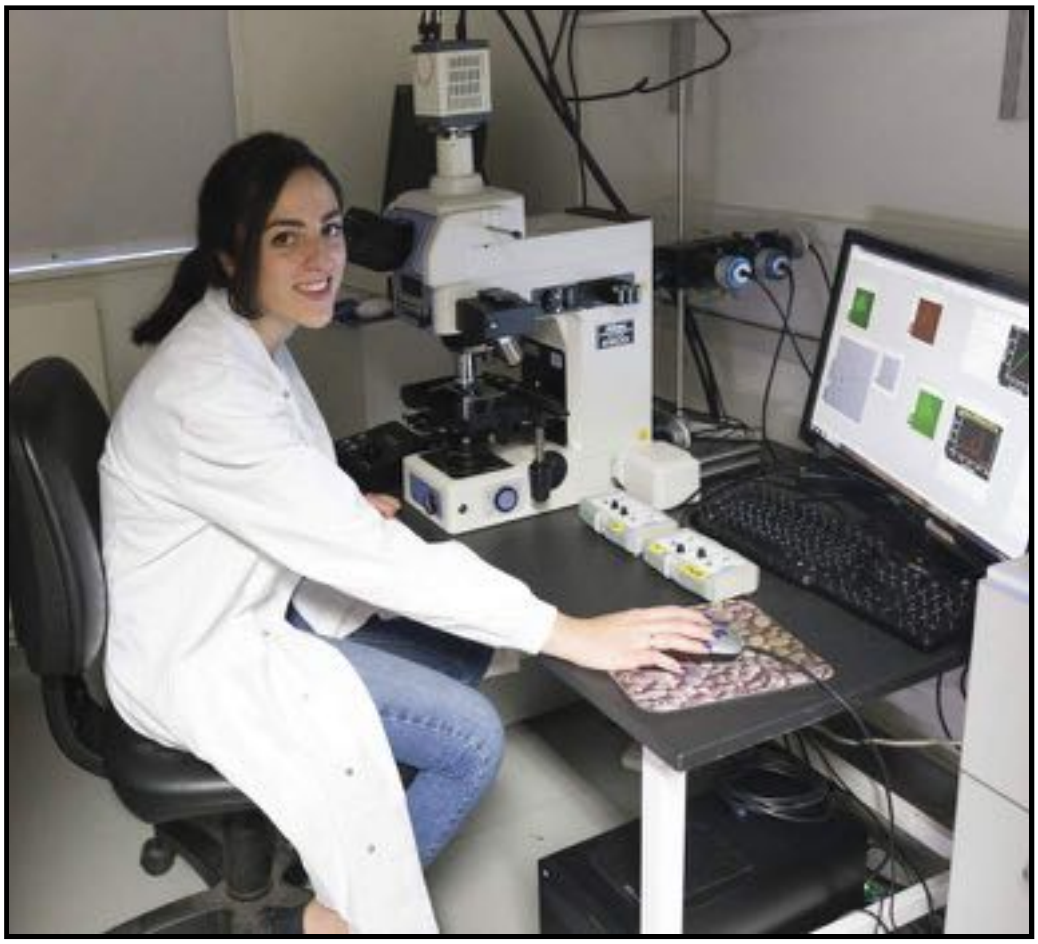
Spc72 asymmetric partition underlying differential spindle pole fate in budding yeast

Temporal and spatial coupling between the mitotic spindle and the division plane are critical for the integrity of cell divisions. Cells often divide symmetrically to produce identical daughter cells. However, in a variety of developmental contexts, cells may divide asymmetrically producing two daughter cells with distinct fates. For example, stem cells divide symmetrically for pool expansion but asymmetrically to self-renew, with one daughter cell retaining the stem cell identity and the other committing to a new fate.

This summer I completed a research project in Dr Marisa Segal's laboratory, where I learnt about asymmetric cell division in *Saccharomyces cerevisiae*, called budding yeast owing to its curious mode of asymmetric cell division into a larger mother cell and a smaller daughter cell or bud. This organism is a powerful paradigm to understand evolutionary conserved principles governing asymmetric cell divisions.

The focus of my project was Spc72, a component of the cytoplasmic face of the Spindle Pole Body (SPB; the yeast counterpart of the animal centrosome). Spc72 is a receptor for the γ-tubulin nucleation complex (γTC; Knop and Schiebel, 1998) that builds docking sites seeding cytoplasmic or astral microtubules (aMTs) from the SPB. It turns out that Spc72 is initially located asymmetrically and appears to be the most upstream factor introducing a bias for aMT organization that causes the SPB inherited from the previous cell cycle (SPB_{old}) to migrate into the bud. Indeed, live imaging analyses demonstrated that Spc72 favours SPB_{old} leading to biased recruitment of the TC that translates into preferential aMT nucleation by SPB_{old} at early stages of spindle assembly (Juanes et al., 2013; Shaw et al. 1997). According to a proposed model, the migration of SPB_{old} towards the bud is primed by interactions of those existing aMTs with Bud6, part of a cortical complex dubbed "the polarisome", that marks the bud cell cortex upon establishment of an axis of cell polarity. Thus, aMT dominance set by Spc72 bias commits SPB_{old} to enter the bud while the newly formed SPB, that acquires aMTs later, is retained in the mother cell.

The first aim of my project was to validate the original characterisation of Spc72 asymmetry during spindle assembly by showing: a) that Spc72 asymmetry is present in *S. cerevisiae* strains with unrelated genetic backgrounds; b) that quantification of Spc72



levels at SPBs by live imaging analysis yields consistent results using different combinations of fluorescent tags to visualise Spc72 with respect to core components of the SPB. Two unrelated *S. cerevisiae* strains, also different from the wild type strain typically used in Dr Segal's laboratory, were transformed to express at endogenous levels Spc72-GFP and Spc42-CFP, the latter a reference core component that marks separated SPBs symmetrically. After obtaining stacks of live still-images of cycling cell populations I measured fluorescence intensities to determine the extent of association of Spc72 normalized to the content of Spc42 at each SPB (expressed as an absolute asymmetry index ranging from 0 (complete symmetry) to 1 (only one pole labelled). These data confirmed that Spc72 asymmetry was not unique to the 15D-BF background previously studied by Juanes et al. (2013).

Following these results, I produced new strains to assay different tag combinations. I tested Spc72-CFP or Spc72-super-folder GFP (sfGFP, Pédelacq et al., 2005) relative to Spc42 (central plaque) or Nud1 (outer plaque) fused to YFP or CFP, respectively. All combinations continued to highlight Spc72 asymmetry with respect to either Spc42 or Nud1. It is noteworthy that even Spc72-sfGFP continued to mark the separated SPBs asymmetrically, showing that the delayed marking at the new SPB cannot be attributed to tag maturation alone.

The second aim was to set up a protocol to explore Spc72 dynamic association to SPBs in real-time along the cell cycle. To this end, I constructed yeast strains expressing Spc72-GFP or Spc72-sfGFP along with Spc42-mCherry, for reference. In order to focus exclusively on events at the SPB cytoplasmic side or outer plaque I compared wild-type cells (WT) with *kar1Δ15* mutants in which nucleation from another cytoplasmic site - the bridge- is abolished (Juanes et al., 2013). I established single and dual colour time-lapse protocols that afforded sufficient temporal resolution while preserving label integrity for quantitative analysis. These protocols are currently in use to complete this study.

It is of great interest to achieve in-depth understanding of the mechanisms for Spc72 asymmetric distribution and their regulation. Spc72 is a member of the TACC protein family, also found at centrosomes. Further components of the SPB and the nucleation machinery are also conserved in humans. Significantly, the yeast paradigm predicted centrosome functional asymmetries associated with self-renewing stem-cell divisions, demonstrating again the awesome power of yeast as a model. I want to express my thanks to the BSCB for supporting me during this summer project. Completing work in this exciting area got me very involved in experiencing biology at its ultimate expression – facing hands-on the excitement of exploring the unit of life, yet not forgetting that these tiny unicellular creatures are so important to us for brewing beer, making pizza and ...research!

Miriam Scarpa. Supervisor: Dr Marisa Segal, Department of Genetics, University of Cambridge.

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Analysis of the dynamic properties of Tregs using fluorescence timer tag reporter proteins

My interest in regulatory T cells (Tregs) was piqued when I wrote an essay on their contended mechanisms of action and therapeutic potential. I could not believe that such an important cell subset had been overlooked for so long – Treg research collapsed in the 1980s and was only revived around 20 years later. Therefore, when I began to look into possible labs for a summer internship, I was thrilled when Dr Ono at Imperial College agreed to supervise me.

Regulatory T cells are crucial in the dampening of the immune response. Like other T cells, they develop in the thymus. The α and β chains of the T cell receptor (TCR) undergo gene rearrangement and selection to become specific for an antigen. The Ono lab is interested in the dynamic properties of Tregs and uses a Timer protein that enables them to study these in a time-dependent manner. The Timer protein spontaneously changes its emission spectrum from blue to red during its chromophore maturation (Subach et al., 2009), and the Ono lab has exploited this property to visually represent the temporal dynamics of gene transcription.

The lab uses this protein to study T cell (especially Treg) responses to foreign antigens in mice. To ensure that these responses are antigen specific, they use mice with transgenic TCRs. Although transgenic TCRs can prevent most endogenous TCR rearrangement, some can still occur (Sharma et al., 2008). My aim was to analyse the impact of endogenous TCR β chain recombination on TCR stimulation and thus Timer expression and Treg numbers.

We found that, in our model, thymic T cells with more endogenous TCRs received stronger TCR signals, resulting in higher Timer expression. Some of these T cells also express Foxp3 (the master transcription factor in Tregs). These endogenous TCRs may decrease the reactivity of T cells to antigen for which the transgenic TCR is specific, while increasing it to others. This may impact later cell commitments and create a response that is not specific for the supplied antigen – an issue for many immunological experiments that rely on the tracking of specific T cells.

Apart from gaining insight into the intricacies of T cell responses, being able to experience the working environment of a lab was also a wonderful learning experience. When unexpected problems arose, I was challenged to think in new and creative ways to find solutions, which augmented an already rewarding experience. This was often the case in my first few weeks whilst we optimized our protocol, as our cells were fragile and needed specific conditions to remain viable.

Although the data interpretation could prove challenging to wrap my head around, it was satisfying once a clear result was obtained. I then presented these results during lab meetings, which was also a chance to hear about the exciting work from the rest of the lab.

After finishing my 8 week project, I organized an outreach activity to convey immunology to primary school pupils through a dance-based program. We hoped that dynamic movement would help to convey the constantly changing nature of the immune system. This required consideration of how best to simplify concepts and which aspects were most important. After delivering the project in a local school in September, we were pleasantly surprised by the highly intuitive questions asked by pupils – I will definitely attempt to adopt some of their curiosity and creative thinking in my own scientific work.

I am now completing the final year of my Biology (Immunology Honours) degree at the University of Edinburgh – this will include a lab-based project for which I hope to transfer many of the skills I have gained this summer. This placement has vastly increased my awareness of the opportunities that exist within science. As a result, I am considering a career in research and am also interested in how immunology can link with policy and healthcare.

I would like to thank Masahiro and everyone at his lab at Imperial for being so welcoming and supportive, and the BSCB summer studentship scheme for making the project possible.

Anna Dighero

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Investigation of the impact of mRNA modifications on localised actively translated glycolytic mRNAs

I'm currently in my third year studying medicine at the University of Manchester, having just started clinical years at Central Manchester University hospital's foundation trust. I really enjoy my course and I couldn't see myself doing anything other than medicine. However, unless you choose to intercalate, there isn't really any opportunity within the course to experience lab research. I'm also on the Manchester Oncology Society student committee and have been around clinicians who are heavily involved in research, and the idea has always intrigued me.

I was fortunate to be able to spend 8 fabulous weeks with Dr. Mark Ashe and his team at the Ashe Lab, University of Manchester. With the guidance of Dr Jennifer Lui, who helped organise my project, I started to investigate the effect of deleting 2 genes, IME4 and BMT2 in *Saccharomyces cerevisiae* on mRNA granules in 2 strains of MS2 tagged yeast. Despite my project being basic science-related rather than medical, I gained so much from the experience!

The aim of the project was to first construct mutant yeast strains where the IME4 gene (encodes N6-adenosine methyltransferase) and BMT2 (a potential N1 adenosine methyltransferase) are deleted and then to characterize these deletion mutants by studying the translation and localization of specific glycolytic mRNAs to test the hypothesis that mRNA modification facilitates translation of mRNAs as part of mRNA granules in live cells.

In terms of results – my project ended on a high note, as one of my mutant strains was different to the wild type strain. This was a really exciting discovery, and if I had time, I would have repeated the project to ensure that this result was truly significant, but we think that it was. It was a shame that I had to leave and I was surprised at how much I had gotten used to being there and being a part of that atmosphere. I found it quite hard to pry myself away from it.

However, I learnt a lot about research during those 8 weeks, and I learnt that I actually enjoy it! I still haven't experienced clinical medicine properly, however I can see myself in a career which allows me to experience the best of both research and clinical medicine. A summer of research has left me wanting to pursue this avenue further to find out what options are available to me in the future, and for this I am very grateful.

I've been very interested in oncology/haematology and there is opportunity for research within these fields, but whatever specialty I end up in, I very much hope that research will have a place in my career.

Many thanks to Dr Mark Ashe for this amazing opportunity, many thanks to everyone at the Ashe lab for inspiring me and many thanks to the British Society of cell biology for awarding me a studentship to allow me to pursue a summer of research. I have learnt so much and I have been inspired to explore and pursue research. One of my short term goals include applying to do an intercalated Master's degree.

I hope other students can continue to benefit from this amazing opportunity, as I am truly grateful to have been one of ones who did.

Yasmin Samir

Application for Honor Fell / Company of Biologists Travel Award

Please complete, print out and send to Julie Welburn at the address below together with supporting information

Full name and work/lab address:

Email:

Age: BSCB Memb. No:

I have been a member for years

Years of previous Honor Fell /COBTravel Awards:

Degree(s) (dates):

Present Position:

Meeting for which application is made:
title/place/date:

Expenses claimed:

Travel:

Accommodation:

Registration:

Have you submitted any other applications for financial support?
YES/NO (delete as applicable)
If YES, please give details including, source, amounts and whether these monies are known to be forthcoming. Note we expect you to not claim the expenses twice from different sources.

Bank details
Sortcode:
Account number:
Bank:

Supporting statement by Lab Head:
This applicant requires these funds and is worthy of support. I recognise that in the event of non-attendance at the meeting, the applicant must return the monies to the BSCB and I accept the responsibility to reimburse BSCB if the applicant does not return the funds. Also, the student is not receiving the same reimbursement from another source.

Signature:

Name:

Applicant's Signature:

Name:

Have you included all the necessary information/documentation in support of your application?
(Application form, Copy of Abstract Presented, Copy of Meeting Registration form.)

• If proof of payment for ALL costs claimed is available at the time of application, successful applicants will be awarded a grant in advance of the meeting

• If proof of payment for ALL costs is not available at the time of application, successful applicants will be awarded a provisional grant and funds will be sent when BSCB have received the receipts.
• Incomplete applications will not be considered.
Applications should be sent to: Dr Julie Welburn, Wellcome Trust Centre for Cell Biology, University of Edinburgh, Mayfield Road, Edinburgh, EH9 3BF

The British Society for Cell Biology

Statement of Financial Activities for the year to 31 December 2015

	Unrestricted Funds	Restricted Funds	Total 2015	Unrestricted Funds	Restricted Funds	Total 2014
	£	£	£	£	£	£
Income from:						
Donations and legacies	35,000	45,000	80,000	35,000	35,000	70,000
Investments	2,017		2,017	2,391		2,391
Charitable activities						
Meetings						
Subscriptions	29,029	-	29.029	30.002	-	30,002
Total income	**66,046**	**45,000**	**111.046**	**67.393**	**35.000**	**102,393**
Expenditure on:						
Charitable activities						
Grants payable:						
CoB/Honor Fell travel awards	37,417	37,417		33,400	33,400	
Other grants	2,929	400	3,329	3,900	250	4,150
Studentships	15,172		15,172	18,400		18,400
Costs of meetings	24,391		24,391	17,968		17,968
Website expenses	354		354	14,757		14,757
Newsletter costs	3,000		3,000	2,650		2,650
Membership fulfilment services	16,443		16,443	17,479		17,479
Executive Committee expenses	2,656		2,656	1,964		1,964
Examiner's remuneration	2,788		2,788	2,285		2,285
Other support costs	-	-	-	2,526	-	2.526
Total expenditure	**67.733**	**37,817**	**105.550**	**81.929**	**33,650**	**115.579**
Net gains/(losses) on foreign exchange rates	19		19			
Net gains/(losses) on investments	-	-	-	-	-	-
Net (expenditure)lincome	**(1,668)**	**7,183**	**5,515**	**(14,536)**	**1,350**	**(13,186)**
Transfer between funds						
Gains/(losses) on revaluation of fixed assets	-	-	-	-	–	-
Net movement in funds	**(1,668)**	**7,183**	**5,515**	**(14,536)**	**1,350**	**(13,186)**
Funds brought forward at 1 January 2015	188,422	7,324	195,746	202.958	5 974	208,932
Funds carried forward at 31 December 2015	**186 754**		**201 261**	**188 422**		**195 746**

Committee Members 2016/17

Committee
The Society is run by a Committee of unpaid volunteers elected by the Members. The Officers of the Society, who are all members of the Committee, are directly elected by the Members.

The BSCB Committee is comprised of eight office-holders (President, Secretary, Treasurer, Meetings Secretary, Membership Secretary, Newsletter Editor and Web Co-ordinator) and up to 12 other ordinary members, including one PhD student representative and one Postdoc representative.

The committee is always interested in hearing from cell biologists who wish to contribute to the Society's activities. Members of the Society are encouraged to nominate candidates for the Committee or Officers positions at any time. Formal nominations should be seconded by another member of the Society. The Committee is also happy to receive un-seconded informal nominations. Nominations should be sent to the Secretary.

The Committee generally meets twice a year, at the Spring Meeting and in the Autumn in London. Additional meetings are arranged from time to time. Items for consideration by the Committee should be submitted to the Secretary.

The BSCB has charitable status (registered charity no. 265816) and has a constitution, which can be read here.

The BSCB AGM is held every year at the Spring Meeting and all BSCB members are invited to attend.

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BSCB Ambassadors 2017

The BSCB Ambassadors are the society's advocates in the UK cell biology community. They should be your first point of call for information about what the society can do for you and also how you can get involved. They should also be the people readily available to ask about sponsoring you for membership.
Anyone who wishes to volunteer to become a BSCB ambassador at any Institutes not represented in the list below please contact the BSCB.

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The BSCB newsletter is published once a year in Winter in hard copy with an interim eNewsletter in Spring.

Submission
If you have an idea for an article please e-mail the editor a brief outline first.

It is preferable to send all articles, reports and images by e-mail (though alternatives can be arranged after contacting the editor). Attachments for text can be in txt, rtf or doc format. Please send images as 300dpi JPEG, TIFF or PSD files.

Submission of articles and images should be made to
Dr Ann Wheeler
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Website: £500 for 6 months – for box ad on side panel with external link on the main page (about 130 x 200 pixels; animation ok, not flashing). 25% discount for four bookings to cover two years.

If you are interested please contact the Sponsorship Secretary, Silke Robatzek at robatzek@TSL.ac.uk

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Journals
BSCB members are entitled to a range of discounts from journal and book publishers. These are correct at the time of going to press but members should check www.bscb.org for the latest information.

Offers include a 25% discount from the individual subscription rate to all journals published by the Company of Biologists, and other discounts from other publishers. To take advantage of this offer, quote your BSCB membership number when ordering your subscription.

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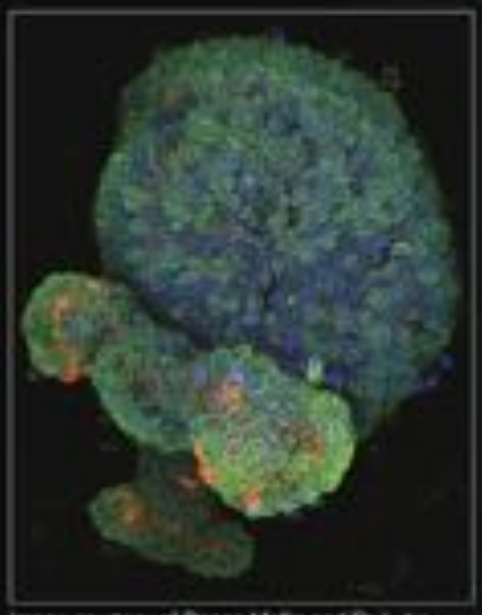

Image courtesy of Ronan Mellin and Dr. Luke Boulter, MRC Human Genetics Unit, University of Edinburgh, Scotland.

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