Pharmacology Matters

BPS BRITISH PHARMACOLOGICAL SOCIETY
Today's science, tomorrow's medicines

ISSN No: 1757-8175
Volume 8, issue 2 - **August 2015**

Society membership: A springboard for achievement

Ebola | Global impact | AJ Clark | Mixologist to scientist | Penguin Collective

BPS BRITISH PHARMACOLOGICAL SOCIETY
Today's science, tomorrow's medicines

bts driving excellence in toxicology

Stratified medicine & prevention of adverse drug reactions

A joint meeting of the British Toxicology Society & the British Pharmacological Society
5—6 October 2015, Royal College of Physicians of Edinburgh, UK

This meeting will focus on how the concept of stratified medicine may prevent adverse outcomes for the patient. The programme will cover all aspects from the basic mechanisms through pharmacology and toxicology model systems to clinical pharmacology and all the way to the use in practice and finally to the regulatory perspective.

Co-Chairs:
Professor Heather Wallace, President of the British Toxicology Society
Professor David Webb, President-Elect of the British Pharmacological Society

Session 1: An overview and introduction to the problem in relation to public health
Session 2: Basic mechanisms, clinical pharmacology and toxicology, genetics, immune system
Session 3: Basic pharmacology and toxicology / animal models
Session 4: How to apply the knowledge in practice

Confirmed Speakers:
Dr Graham Cooke, Imperial College London, UK
Dr James Dear, University of Edinburgh, UK
Dr Colin Henderson, University of Dundee, UK
Professor Magnus Ingelman-Sundberg, Karolinska Institutet, Stockholm, Sweden
Dr Phil Jeffrey, Pfizer Ltd, UK
Professor Duncan Jodrell, University of Cambridge, UK
Professor David Juurlink, University of Toronto, Canada
Dr Dean Naisbitt, University of Liverpool, UK
Professor Kevin Park, University of Liverpool, UK
Professor Munir Pirmohamed, University of Liverpool, UK
Dr Krishna Prasad, MHRA, UK
Dr Angela Thomas, CHM, University of Edinburgh, UK
Professor Jack Uetrecht, University of Toronto, Canada
Dr Dominic Williams, AstraZeneca, UK

For more information or to register please contact:
t: +44 (0)207 239 0176
e: meetings@bps.ac.uk
w: www.bps.ac.uk

Editorial

Felicity N.E Gavins
Editor-in-Chief, Pharmacology Matters

As the Summer months set in, sit back with a glass of lemonade (or something a little stronger if preferred) and enjoy this jam-packed edition of *Pharmacology Matters*, which focuses very much on 'YOU' the reader.

We have focused this issue on what the Society can do for its members (and as always, please feel free to contact us if you have any suggestions). Jono Brüün gives an excellent synopsis of the recent events and developments that have affected membership, and brings to light the strengths and depths of the Society as a whole.

There is also a very interesting article written by two of our members, Jane Norman and Claire Liew, that gives a first hand experience of what it was like to be a humanitarian aid worker in Sierra Leone during the Ebola crisis in 2014.

Several of our past and present PhD students, who have been or are currently, funded by the AJ Clark Studentship describe their experiences and what it means to them to have been a recipient of this prestigious award.

The Society offers many fellowships and awards, including the Bain Memorial Bursary Fund, which was awarded recently to Robert Allen, for attending *Experimental Biology 2015*. Robert shares his experience with us. Aidan Seeley tells us how the Society helped him to start up the Aberdeen Medical Science Network (AMSN), which provides a platform for scientific communication and networking between students and staff at the University of Aberdeen.

The Society's mentoring scheme is something that is taken up enthusiastically by both mentors and mentees alike. Kristen Bubb (mentee) interviews her very own mentor, Sian Harding, about her experience of being involved in the programme.

It is always a pleasure to read about some of the hobbies of our members (and I hope this section will become a regular feature, so, don't be shy!) Stuart Mundell gives us an insight into what it is that he does to relieve any scientific angst.

We also have our usual roundup of news, including meetings that have passed (by Barbara McDermott and Karen Schlaegel) and dates of upcoming meetings… So get your diaries out!

Finally, it is with sadness that this will be the last edition of *Pharmacology Matters* that Hazel will edit, as she is moving on to pastures new. I, on behalf of all the Editorial team, want to thank Hazel for doing such a wonderful job over the years. For her constant enthusiasm, confidence, and bubbliness, and for being such a delight to work with - especially when deadlines are tight!! We wish you all the very best Hazel.

Enjoy this edition of PM and I wish you all a wonderful summer!

Contents

Your BPS

Jono Brüün
BPS Chief Executive

I'm delighted that the theme of this edition of *Pharmacology Matters* focuses on what the Society can do for its membership. Learned Societies such as BPS are many things: charities; businesses; publishers; conference organisers; think tanks and pressure groups. But they are primarily organisations that are set up, owned and driven by members. As CEO, it is my job to ensure that BPS represents and serves the needs of its membership, and I'm supported and governed in that by Honorary Officers and Trustees who have the same goals.

In this article, I'll try and highlight a few recent events and developments that affect or reflect our membership.

The first and most important development has been the agreement by BPS Council to pursue a research project into the teaching of pharmacology and its value to society. The *Focus on Pharmacology* project was originally conceived by BPS President Humphrey Rang and has been developed in tandem with the Society's Council. It will be driven by its own steering group of BPS members, with support from the office and external input where necessary, and will consider a variety of issues including the quantity and quality of pharmacology education in UK universities, the role of the discipline to the modern world, and the Society's provision of educational services such as curricula, workshops and training. This is a huge undertaking, demanding considerable resourcing over a sustained period, and we will be keeping members up to date with progress in the coming months: your input will be invaluable.

The *Focus* project was discussed in great detail at Council's recent strategy retreat and board meeting, which took place in Bristol in mid June. The retreat provided an opportunity for the Society's committees to consider their own strategies for the coming two years (taking us to the end of the current five-year plan in 2017), and to propose new projects based around BPS's seven strategic goals. I was really grateful to all those vice presidents, Trustees, Officers and staff who came along to the meeting and contributed such great ideas. It's also good to have such a clear roster of plans and projects that can be built into a programme of work created by our members and for our members, for the next two years.

To tie in with the meeting of Council in Bristol, BPS also held its second networking event of the year (the first was at Experimental Biology in Boston back in April). We were delighted to see so many members from all around the West Country, and Wales, all of whom were treated to a wonderful evening of chat and a glass or two of wine by the Waterfront. This was the first such event to take place in the UK this year, but I know the Society is keen to do more to support and encourage its members, so you can expect more of the same in the months and years ahead. Next up will be the BPS Fellows' Reception, which takes place in Liverpool in October, and in which Jane Mitchell will be giving her JR Vane Medal lecture (congratulations Jane!).

These events and projects are just a few examples of the strength and depth of activity being undertaken by the Society as it seeks to support pharmacology and pharmacologists – and in particular its members – in the UK and across the world. I'm delighted to see so much work going on in this area and am grateful as ever to the brilliant work of our Trustees, Officers, members (including committee members) and staff who have the task of bringing it all together.

On the subject of staff, I should let you know that Hazel O'Mullan, our Marketing and Communications Manager, announced in June that she will be leaving the Society. Hazel will be taking up a new marketing role for a large group of veterinary practices in London, after she leaves us at the end of July. I am sure she will offer them the same brand of friendliness, hard work and care that she has given BPS over such a long period of time. I'm sure you'll all join me in wishing Hazel all the very best in her new challenge.

Joining the Society in August will be Talja Dempster, who will take up the position of Head of Meetings and Events. Talja has worked for a sister Society – the Society for Experimental Biology – for a number of years as Conference and Communications Manager and I'm confident she will bring enthusiasm and aptitude to this important role. Welcome Talja!

There will be a great opportunity for members to meet Talja, and many of the Society's other staff during our annual meeting, *Pharmacology 2015*, which takes place in London, 15–17 December. Registration and abstract submission are live and can be found on our website (**www.bps.ac.uk**). This event has sold out (despite bigger and bigger capacity) in recent years, so don't delay in booking your place at the Society's biggest member event!

Have a great summer.

BIOCHEMICAL SOCIETY

FEBS

1–4 SEPTEMBER 2015
Robinson College, Cambridge, UK

DEADLINES
Abstract submission: 30 JUNE 2015
Earlybird registration: 3 AUGUST 2015

A joint Biochemical Society/FEBS Focused Meeting

Signalling 2015: Cellular Functions of Phosphoinositides and Inositol Phosphates

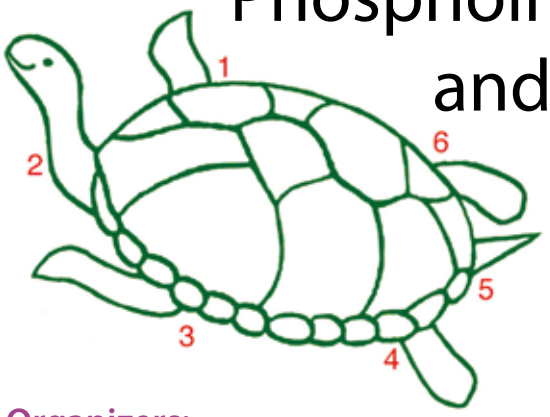


Image kindly supplied by Phillip Hawkins (Babraham Institute, UK)

Organizers:

Phillip Hawkins (Babraham Institute, UK)
Len Stephens (Babraham Institute, UK)
Colin Taylor (University of Cambridge, UK)
Pete Cullen (University of Bristol, UK)

Overview:

This meeting will bring together both world leading and early career scientists to discuss their latest research into the cellular functions of inositol phospholipids and phosphates. Posters and short oral presentations will be selected from submitted abstracts. This meeting will commemorate the retirement of Professor Robin Irvine FRS.

Topics:

* Inositol phosphates * Inositol phospholipids
* PI kinases and phosphatases * Intracellular trafficking
* Therapeutic opportunities and challenges * Calcium signalling

For a full programme please visit: **www.biochemistry.org**

Sponsored by:

EMBO Avanti Polar Lipids, Inc. greiner bio-one BMG LABTECH addgene A better way to share plasmids

Ebola: working in the 'red zone'

Jane Norman, University of Bristol
Claire Liew, Ebola Response

Dr Jane Norman and hospital pharmacist Claire Liew share their experience of working in Sierra Leone during the Ebola crisis of 2014.

Jane: As the Ebola crisis in West Africa unfolded last year, I, like many people in the UK, was profoundly moved and disturbed when watching and reading about the scale and the terrible consequences of the epidemic. I have been working in the NHS for over 10 years, currently as a haematology specialty registrar, and this was the first occasion I felt my skills could be of use in a humanitarian crisis. I was listening to the radio in October and heard that they were recruiting doctors, nurses and paramedics to help in Sierra Leone and immediately felt that if I could offer any help then I would apply.

The suits made basic tasks even harder

After application forms, information meetings, interviews, health checks, vaccinations and training, I eventually arrived in Sierra Leone and the reality of the task ahead became clear. My role as a clinician in the Ebola treatment centre (ETC) was split between 'confirmed' patients and 'suspect'.

The patients who had a diagnosis of Ebola Virus Disease (EVD) made by Real-Time Qualitative Polymerase Chain Reaction were in wards in the 'red zone'. The care we could provide was basic. The majority of the work involved cleaning patients, changing nappies, making beds and feeding adults and children. The medical care primarily consisted of giving intravenous (IV) fluid, broad spectrum antibiotics, anti-emetics and analgesia.

The suspect wards consisted of patients who had symptoms suggestive of EVD. Laboratory testing was carried out for Ebola and malaria in all patients and patients who tested positive for EVD were transferred to the confirmed wards. Patients with other conditions, such as malaria and likely bacterial infections were given limited treatment and discharged. Patients often presented with chronic conditions such as HIV, presumed malignancy and TB; it was frustrating and upsetting that there was little the ETC could offer and we had to transfer patients to rely on an almost non-existent local health care system, which while previously fragile, had further deteriorated during the epidemic.

Working in the ETC was hot! The temperatures in the heat of the day were up to 35°C and the personal protective equipment we wore made the job at times physically unbearable. The suits took about 20 minutes to put on and even longer to take off, which was the time when the risk of contracting EVD was the highest. This was often when you were hot, exhausted and emotionally distressed and I had to force myself to keep calm and rigidly adhere to the decontamination protocol to ensure my personal safety. The suits made basic tasks even harder, for example siting an IV cannula with three pairs of gloves proved difficult in adults let alone the children. Communication and the ability to show empathy was limited by the protective suits due to how much of your face was covered. I realised how much you depend on facial expressions and touch when caring for dying patients, especially children. This was really difficult, I and the healthcare workers did the best we could, using toys, balloons and identifying ourselves by writing our names on our suits. When patients did survive and were discharged we could finally introduce ourselves without the protective gear. I hope these measures showed a human side to the strangers caring for patients in a terrifying situation.

Ebola is the most devastating disease I have ever been involved in treating, the individual suffering was at times unbearable to observe. Patients almost universally had very high gastrointestinal losses with associated abdominal pain, neurological compromise was common; bleeding was only seen in about 10% of people with Ebola and was usually mild but nonetheless problematic for the patient. As well as the individual morbidity, the nature of the transmission of Ebola meant many members of the same family were killed within a few weeks. When talking with survivors the devastation for communities was apparent, both emotionally and economically.

Claire: As a pharmacist in a humanitarian response my role centred on efficient supply chain management to ensure that the ETC never had stock-outs of the vital fluids and drugs needed to treat the patients we cared for. Working with clinicians from the NHS, the Sierra Leonean Ministry of Health, the UK Ministry of Defence and the Cuban Medical Brigade provided challenges; each team had their own opinions and treatment preferences both from their own experience and their home countries' treatment protocols. As the only pharmacist it was important to keep all the teams following the in-house guidelines that had been drafted for the response – no mean feat in a climate where language barriers, physical and emotional stress and professional hierarchy can provide obstacles. My 12 years' experience of working in the NHS led well to the multi-disciplinary approach that existed in the ETC. As a clinical pharmacist I was able to advise on therapeutic substitutions when necessary and the safe and appropriate use of off-label drugs for example, whilst maintaining a high level of patient care.

There was a limited formulary mainly consisting of drugs for the symptomatic

management of Ebola and its complications, including a narrow range of antimicrobials and medications for gastro intestinal reflux, electrolyte disturbances, nausea and pain.

Most of the drugs did not require dose adjustments in renal and hepatic impairment – common occurrences in Ebola patients – or require therapeutic drug monitoring; a limitation of the on-site laboratory. As the patient demographic shifted from purely Ebola positive patients to suspect patients who had a wider range of medical complaints, the demands on the EVD-centred formulary increased. As Jane mentioned, only simple care could be provided to Ebola negative patients before they were either discharged or referred to local hospitals. Our biggest challenges ranged from a lack of access to the range of medications we are used to back home to avoiding intravenous infusion of drugs and medications requiring multiple daily dosing. Entering the red zone was a physically challenging and time demanding exercise. Any means of reducing the time spent on drug administration whilst inside was a high priority allowing more time for direct patient care.

Ensuring drug administration was recorded was another challenge at the ETC. As nothing can leave the red zone except the clinician themselves, we relied on their good memory for completing the prescription charts that were stored in the green zone areas. When the ETC was at its busiest it was very difficult to ensure that drug charts were endorsed with doses given or not given for the 40+ patients on the wards. Various methods were tried including using radios to communicate with the outside which fluids and drugs had been administered, white boards visible from the green zone as an administration reminder and iPads connected wirelessly to computers in the green zone; all had their advantages and disadvantages of ensuring accurate documentation.

Together we were very proud to play a very small part in the international relief effort to treat and prevent the spread of Ebola in Sierra Leone. As cases continue to fall, we hope the region will be declared Ebola free in the next few months with the next step involving focusing on rebuilding the fractured health care system to ensure a disease such as Ebola can never have such catastrophic consequences ever again.

About the authors

Claire is a UK based hospital pharmacist. Whilst most of her career has been spent working for the NHS in London and the south-east of England, she has also worked as a pharmacist in Australia and New Zealand. Eighteen months working in Tanzania as a part of a hospital-strengthening team for Voluntary Services Overseas (VSO) in 2012 opened the door to development work and she has since been deployed to Sierra Leone and Nepal with Save the Children's Ebola and Earthquake responses, respectively.

Jane is a haematology specialist registrar. She completed her medical degree at the University of Nottingham in 2004. She is currently studying towards a PhD in platelet biology at the University of Bristol. Working in Sierra Leone was the first time Jane has worked outside the UK.

AJ Clark: A soldier, doctor, pioneer of quantitative pharmacology and patron to future generations of pharmacologists

In honour of the contributions Alfred James Clark made to pharmacology, the British Pharmacological Society (BPS) introduced a PhD studentship dedicated to supporting talented young students with an appetite for pharmacology. The first AJ Clark Studentship was awarded by BPS in 1987 to Ms Carol Nadin to work under the supervision of Professor Michael Edwardson in Cambridge. Since then, this award has continued to support many budding pharmacologists from all over the UK as they embark upon their PhD studies.

Next year marks 75 years since the death of AJ Clark. The impact of his research remains as significant today as it did in the 1930s. This studentship is not only an investment in the students who receive it, but it serves to provide an opportunity for future generations of pharmacologists to flourish and advance the field of pharmacology further. Who knows, there may even be a future pioneer among the PhD graduates who have been supported through the AJ Clark studentship. Only time will tell. For many, this studentship has marked the start of their careers in pharmacology. Whilst the AJ Clark alumni continues to grow, we hear from past and present recipients of this studentship.

Nick Holliday (1994–1998)

After undergraduate studies at Cambridge, Nick was an AJ Clark student in Helen Cox's group in London from 1994–1998. Following postdoctoral work at King's College London, Nick moved to Nottingham in 2006 where he is currently Associate Professor of Pharmacology in the School of Life Sciences.

I am an accidental pharmacologist. In my final Cambridge year I studied neurophysiology, and initially thought my PhD would revolve around electrodes and neuronal circuits. However I discovered that the parts of the third year course that most fascinated me involved receptor signalling pathways. At the same time, Helen Cox contacted me about doing research in her lab. Helen had been my second year pharmacology course tutor, with an infectious enthusiasm that was hard to resist! And so it was that I arrived at UCL for the AJ Clark interview in front of several distinguished pharmacologists. I was confident about the project area, but I had somehow missed rule one of the interview manual, which was to know who AJ Clark was. I talked about Andrew Huxley instead, and hoped the panel didn't notice, but I left the interview with a sense of foreboding. I am always thankful that one ethos of the AJ Clark award is to bring students in to engage with pharmacology from other fields, and perhaps that is what saved me that day.

An early BPS poster presentation: I appear to have frightened off the person I was speaking to…..

The four years I spent with Helen's group as an AJ Clark student were a fantastic experience, working on newly cloned Neuropeptide (NPY) receptors, and studying the effects of receptor mutations on their epithelial cell function. Helen was unfailingly supportive and positive throughout; while her key lieutenant Iain Tough supplied a constant diet of one liners, with gentle (and sometimes not so gentle) advice on the realities of scientific research. I had an introduction to academic reorganisation too, as our first base (the Royal College of Surgeons, whose distinguished pharmacology department had been led by John Vane) made way for another at St Thomas' Hospital midway through the project. I was a rather shy student those days, and I remember that the idea of conference presentations initially terrified me, with tales of fierce academic societies. Fortunately BPS wasn't (and isn't) like that – instead at my first poster at the Oxford meeting in 1995, I had the chance to talk to a procession of members who were genuinely interested in my work and constructive and free with their advice. An oral communication was still a rite of passage, with Helen and Gordon Lees frogmarching me to the pub for some Dutch courage beforehand. Despite some dodgy coloured slides, it passed off reasonably well though I don't think I troubled the 10 minute timer with the speed of my delivery. In 1996, there was the proud moment of my first *British Journal of Pharmacology* publication, though the brief positive reviewers' comments for that paper did not really prepare for some of our subsequent experiences!

The Cox group, surprisingly down the pub: L-R Dr Iain Tough, Prof Helen Cox, Dr Niall Hyland, Dr Nick Holliday

So the AJ Clark studentship benefitted me in many ways. It sent me down a subject area, on G protein–coupled receptor molecular pharmacology, which continues to excite 20 years on – and I still have a lab project on NPY receptors. It brought me a fantastic mentor in Helen Cox, who amongst other things (wine, tennis, Porsche sports cars….) taught me much about the art of supervision

– in generating confidence in your ability as a student, always making time for help and support, and pushing just a little bit to enable your own research path to blossom. Some of my international collaborations came from Helen's contacts book, while my internal examiner Dave Smith became a key contact as AstraZeneca when obtaining my first independent industrial funding. I have been fortunate to host two brilliant AJ Clark students in my lab – Laura Kilpatrick (2010 –2014) and from 2015, Laura Humphrys. They will benefit from the fact that the BPS is great at supporting early career researchers, particularly in the informal and friendly constructive atmosphere at our meetings. Both students came from other scientific backgrounds – and like me, I hope the AJ Clark studentship will pave the way to them becoming future passionate advocates of pharmacology.

Rachel Rose (2006–2010)

After completing her MPharm studies at University of Nottingham, Rachel was an AJ Clark student in Steve Hill's group in Nottingham from 2006–2010. Shortly after, Rachel moved to Sheffield where she is currently a Senior Research Scientist at Simcyp Ltd.

I was awarded an AJ Clark studentship in 2006 for a project investigating the membrane organisation of the histamine H1 receptor under the supervision of Professor Steve Hill at the University of Nottingham. Over the course of my studies I gained experience in a variety of experimental techniques and the skills required to analyse the data generated. I was also fortunate to attend a number of scientific meetings which, along with my internal training, exposed me to a broader scientific field, expanding my knowledge of pharmacology and experimental design and included an opportunity to present at a BPS meeting. The latter, in addition to the writing of my first scientific papers, were invaluable in developing my oral and written communication skills.

Shortly after finishing my PhD I took up a position as a Research Scientist at Simcyp Ltd where I continue to work, now as a Senior Research Scientist, on the development and application of physiologically based pharmacokinetic and pharmacodynamic (PBPK/PD) models, which are used for model based drug development spanning preclinical through to clinical development phases. As my understanding of a broader range of areas of drug development has grown, I can see that different processes often involve related mechanisms such that the strong grounding in basic pharmacological principles I gained during my PhD have stood me in good stead for this position.

Rachel Rose

An important application of PBPK/PD models is in the extrapolation of *in vitro* pharmacological data to predict the *in vivo* behaviour of a drug at an individual level by understanding differences between the systems (i.e. the experimental set up versus the physiology of an individual, which may differ depending on genetics, disease etc.). Thus, although my job is now desk based, the practical experimental experience I gained from my studentship is extremely useful in understanding this translation. As part of my role I also give regular internal and external presentations, including tutoring workshops on the scientific and practical aspects of PBPK/PD models for scientists from industry, academia and drug regulatory agencies.

Overall, the skills I gained from my studentship were an essential start to my career in scientific research. Although my research has shifted to a different area of pharmacology and from academia to a commercial organisation, the knowledge and principles introduced to me remain highly relevant and I continue to build on these.

Alex Cooke (2009–2013)

After undergraduate studies at University of Bristol, Alex was an AJ Clark student in the laboratories of Graeme Henderson and Stuart Mundell in Bristol from 2009–2013. She has recently completed her first postdoctoral research position at Bristol and plans to continue in academia.

Completing a year in industry as part of my undergraduate studies confirmed my desire to pursue a career in scientific research. In 2009, I was excited to be awarded a BPS AJ Clark Studentship, which gave me a fantastic opportunity to work with the leading opioid pharmacologist, Professor Graeme Henderson. My PhD work focussed on the trafficking and signalling of the mu-opioid receptor, building the technical skills and enhancing my scientific knowledge to develop my career. In addition to the challenge and enjoyment of the PhD, the position enabled me to regularly attend scientific conferences such as the annual BPS Pharmacology meetings, allowing me to engage with other scientists, as well as providing me with the opportunity to present my work and listen to exceptional talks from leading scientists. The AJ Clark Studentship opened other doors for me, allowing me to become a member of the BPS External Affairs Committee for two years. Part of this role entailed promoting the importance of pharmacology to non-science professionals and parliamentary figures. This is an area that I remain passionate about, to ensure that our work is promoted beyond the boundaries of the laboratory and to demonstrate the vital role science plays in wider society.

Alex Cooke

In 2013 I completed my PhD and started my first post-doctoral position. The foundation of my PhD has assisted immensely, not only in terms of scientific expertise, but also in developing my administrative, networking and organisational skills. I continue to specialise in the GPCR field and I'm currently trying to assess the potential of applying phosphoproteomics to investigate GPCR signalling. In 2014, I was privileged to receive support from PrimeXS, an EU funded consortium, which has allowed me to focus on this rapidly expanding area which I am particularly interested in.

For a scientist embarking on their career, the AJ Clark Studentship offers many opportunities, not least providing the inspiration, confidence and guidance to progress in what can sometimes seem a daunting field. My career to date has provided the opportunity to meet with a number of inspirational scientists and dedicated professionals, who share the passion to promote science, as well as being prepared to offer a young scientist guidance and advice to advance their career. The support given by BPS to young scientists is crucial in ensuring they pursue their ambitions, maximise their talents and remain committed to this exciting profession.

Florence Johnson (2013–present)

After graduating from King's College London, Florence was awarded the 2013 AJ Clark studentship and is currently carrying out her PhD at The William Harvey Research Institute (WHRI) in the laboratory of Chris Thiemermann.

Florence Johnson

I applied for the AJ Clark Scholarship, never expecting to be fortunate enough to be awarded such a prestigious studentship. At the time of my application, I was just beginning the final year of my Pharmacology degree at King's College London, after finishing a very enjoyable extra-mural year at The William Harvey Research Institute. My extra-mural year was a very steep learning curve, and I had previously never considered science as a real career. This all changed a few months in, and when asked to return for a PhD by my supervisor Professor Chris Thiemermann, I jumped at the chance.

The AJ Clark allowed me to continue the research I was interested in immediately, rather than applying for Masters programmes or other PhDs that I didn't feel as passionately about, and the transition from finishing my degree to starting my PhD was seamless.

My extra-mural year began by studying the pathophysiology of acute kidney injury (AKI), which affects 5–7% of hospitalised patients. Until recent years, patients discharged from hospital after regaining normal kidney function were not monitored, and it has been proven that these patients develop chronic kidney disease (CKD) later in life. I am studying the progression of AKI to CKD in animal models and how the initial inflammatory phase develops into fibrosis and a consequent decline renal function. My supervisors Chris and Nimesh have been very supportive and thankfully are just as enthusiastic about my PhD as I am.

The research costs provided have allowed me to buy kit for certain experiments that I wouldn't otherwise have been necessarily able to afford, which have greatly enhanced my research and the understanding of my subject. The other bonus to the studentship is the generous stipend, which has allowed me to continue living in central London, something I am continuing to make the most of! Attending the official BPS dinner is also compulsory, which is always in a great location and really good fun.

I am still unsure as to where my PhD will take me, however I do know I am going on a long holiday when it's over! I want to stay in the scientific field for a post doc, but I have yet to decide whether that will be in the same lab, in a lab elsewhere in the UK, or in another country. I have 15 months of my PhD remaining so it's only a matter of time before I need to make my mind up. I am very grateful to BPS for funding my PhD; it has provided me with a fantastic opportunity, which I may otherwise not have had.

Bain bursary to Boston

Robert Allen
William Harvey Research Institute

I became a member of the British Pharmacological Society (BPS) at the beginning of my PhD, at the recommendation of my supervisor. Since joining the Society I have regularly attended the annual conferences, which are free to members. These meetings are a great hub to connect with other pharmacologists, catch up on the latest research and are the perfect environment to present pharmacological research.

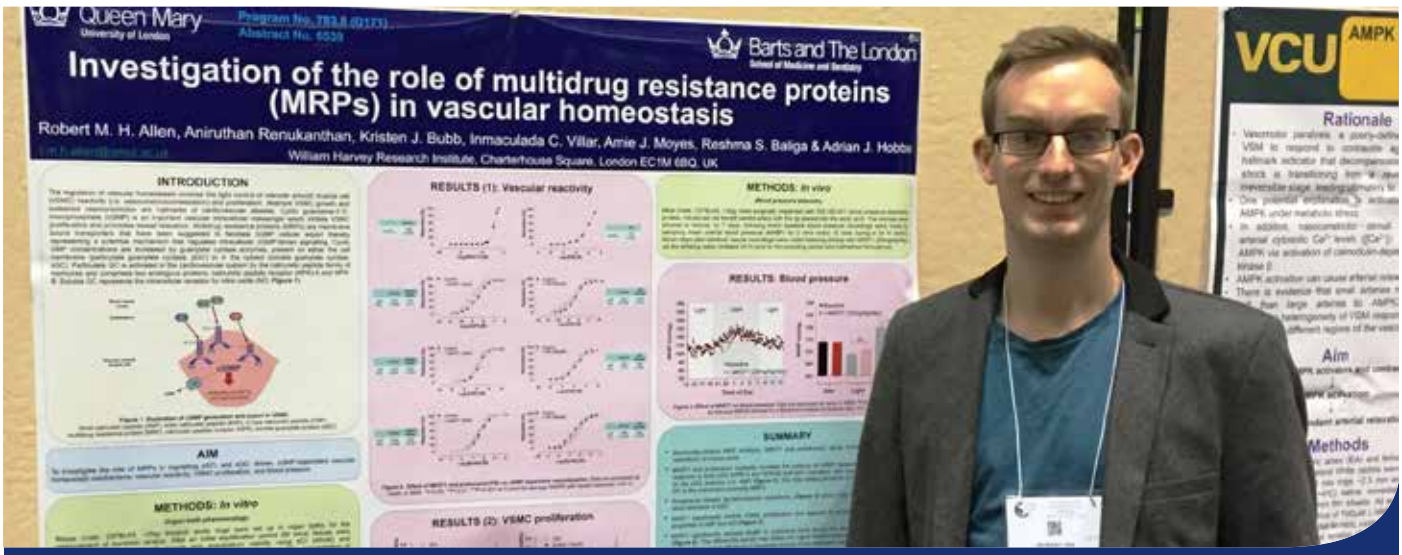
As a member I have also had the opportunity to apply for funding. Earlier this year I was fortunate enough to be awarded the Bain Memorial Bursary Fund. I used this award to support my attendance at the *Experimental Biology* (EB 2015) conference held in Boston, USA. Attending this meeting proved extremely beneficial to me. It was an opportunity to present my research for the first time at a large, multi-disciplinary, international conference and to use this stage to discuss the implications of my research with world-leading experts in my area. EB 2015 was the ideal setting to hear of new findings and broaden my understanding of cardiovascular research (and beyond).

Furthermore, attending the conference offered the opportunity to establish new professional connections. This started with an informal introduction to members of a world-leading group at Harvard University/ Massachusetts General Hospital (Professor Warren Zapol). During this interaction I expressed a keen interest in undertaking a post-doctoral position in their group after completing my PhD as our research interests are closely aligned and my practical experience and expertise appeared a good fit. I was later invited to visit their lab and speak to members of staff, both PIs and younger fellows. I thoroughly enjoyed the experience and felt that moving to Boston to initiate my post-doctoral career would be an ideal next step which would benefit me both professionally and personally. It was to my delight that following this visit I was offered a position in Professor Zapol's lab starting in Spring 2016. I am thrilled with this opportunity and am now working hard to ensure I complete my PhD studies in a timely fashion!

I am therefore immensely grateful to BPS, particularly the award of the Bain Memorial Bursary Fund, which has supported my participation in a key pharmacological conference and generated a number of opportunities: to expand my scientific understanding, present my research to the wider community, network with like-minded scientists worldwide, and ending with a post-doctoral job offer! I would recommend student membership to all those undertaking a PhD in pharmacology and related disciplines!

About the author

Robert is a final year PhD student at the William Harvey Research Institute (WHRI), Queen Mary University of London (QMUL). His research focuses on the intracellular signalling molecule: cyclic guanosine monophosphate (cGMP) and its role in maintaining vascular homeostasis and the pathogenesis of cardiovascular disease. Before starting his PhD, Robert was an apprentice at the Novartis Institute of Biomedical Research (NIBR) in Horsham, West Sussex. Joining after his A-levels, Robert was quickly integrated into the company's drug discovery projects while he attended the University of Surrey part-time to study for his BSc in Biological Sciences.



Robert's poster presentation at Experimental Biology 2015

From mixologist to scientist:

The role of BPS in the career development of undergraduate students

Aidan Seeley
University of Aberdeen

It is somewhat anti-climactic at the end of an Undergraduate degree, after years of lectures, late nights in a library and exams that those years are summed up in just a few sentences on a résumé. During our degree many of us will join societies and sports clubs which will add an additional few sentences to the summary of your time at University. While the cocktail society may provide desirable expertise to a student, for those who wish to pursue a scientific career being a proficient mixologist has limited applications. This drives many of us to seek out experiences which will aid in our professional development while at university. This may come in the form of involvement with degree-related Societies, undertaking an internship or industrial placements or one of the many other opportunities afforded to students while at university. Early in my degree I had the realisation that a few sentences did not justify the length of time at university and so undertook a summer internship at the Institute of Medical Sciences, University of Aberdeen. During this, it became apparent that what you knew was equally as important as who you knew. Communication within and between research institutions is paramount in a time when the occurrence of single institution papers are rare, and single author papers rarer still. This realisation was the initial seed which grew to become the Aberdeen Medical Science Network (AMSN), an organisation set up in 2014 at the University of Aberdeen.

AMSN is a student-led initiative aimed at working closely with staff at the University in order to integrate students and staff more efficiently and develop industrial links. It was also developed to act as a platform to encourage exchange of ideas on scientific topics. In the past year AMSN has developed beyond what was expected which has been in no small part due to the dedication of the Founding Committee and the British Pharmacological Society.

The support of BPS during this inaugural year allowed AMSN to proudly hold four BPS sponsored guest lectures. These lectures were delivered by renowned scientists including Professor Roger Pertwee. These events were aimed at staff and students alike, and generated platforms for discussions on a range of pharmacological topics such as the involvement of reactive oxygen species in diabetes and the pharmacological use of cannabinoids.

AMSN has also worked with Anthony Nolan, a bone marrow register recruitment charity, and held two fundraisers which has raised almost £400. Links such as this demonstrate the range of career paths available to Undergraduate students upon the completion of their degree and also supports a very worthwhile cause.

Due to the support of BPS, AMSN was able to grow rapidly and introduce a platform for students to present their final year projects to other year groups. This event encouraged students to critically evaluate findings presented to them as well as allowing discussion of what final year projects entail. However, it was not until the end of the academic year that AMSN reached its pinnacle. In April this year, the 1st School of Medical Science Ball was held. The event was for students to celebrate their achievements in the past year and to socialise together, promoting networking between both degree disciplines and year groups with an attendance of almost two hundred students. The event encompassed the primary aim of AMSN, and a shared aim of BPS, to promote communication and networking between scientists.

AMSN is akin to the Young Pharmacologists and BPS has been instrumental in its success to date. With younger members encompassing such a large proportion of the overall membership, it is unsurprising that BPS offers support to its younger members in a range of ways. The availability of resources for schools and universities, which are easily accessible for students and staff, offer career advice and content covering principles of pharmacology. Membership of BPS is free for undergraduate students for the duration of their degree, enabling students to become involved with a scientific Society, as well as linking them to peers, and enhancing awareness of current research.

For those wishing to undertake a placement in a laboratory, BPS offers a Vacation Studentship for up to ten weeks. This funding offers students an opportunity to develop their skills in a research setting as well as aiding in professional development, and it is funding such as this which encourages many students to pursue a career in a research setting. Experiences like these allow development of fundamental skills which are not only useful to students during an Undergraduate degree, but can be built upon during the course of their career.

BPS and AMSN share a similar aim of promoting scientific exchange, with the BPS operating on a larger scale. In order to encourage younger BPS members to engage in this exchange there are grants and bursaries available for students to attend education events, thereby promoting professional development and expanding the network of its members. These bursaries are used for attendance at conferences, symposia and meetings and allow students to experience a critical part of conducting research.

The involvement of BPS in the initial development of AMSN and their continued support throughout this year has allowed AMSN to become an integral part of the student experience here at the University of Aberdeen, as well as giving BPS a stronger presence within the student population. Groups such as AMSN can greatly encourage students while at university and allow exposure to aspects of science which may not be covered within course

content. It is hoped that the links generated from AMSN between students will lead to future collaborations and promote scientific exchange. We are indebted to BPS for their support. The AMSN story highlights the ability of BPS to encourage students to actively engage in science and to communicate broadly with researchers and fellow students. Supporting initiatives such as AMSN and the wealth of other opportunities described above, it is not an understatement that BPS is instrumental in the development of students about to embark on their careers. It has certainly positively impacted on my own experiences, and the wider community here in Aberdeen, where the now established AMSN will continue as a lasting positive legacy of that influence.

About the author

Aidan graduated recently from the University of Aberdeen in Biomedical Sciences (Pharmacology) and was awarded the Pharmacology Prize.

He is the founding President of the Aberdeen Medical Science Network, which can be found on Facebook and at **www.theamsn.wix.com/amsn**. Aidan has worked previously on imaging osteocytes in compact bone using electron microscopy and evaluating novel multidrug resistance modifiers during the course of his undergraduate degree. He is due to begin his PhD studies at Queen's University Belfast later this year, which will focus on receptor-mediated endocytosis in cancer cells.

If you would like support in setting up a society at your institution please contact **info@bps.ac.uk**

From left to right: Jack Connor, Founding AMSN Vice-President, and Aidan Seeley, AMSN Founding President, with Sophie Robertson, AMSN President 2015-2016, and Sean Bankier, AMSN Vice-President 2015-2016.

Students attending the 1st School of Medical Science Ball. Photos kindly provided by Foggo Photography, Aberdeen.

BAP
British Association for Psychopharmacology

Certificate in Non-Clinical Psychopharmacology

6th – 10th March 2016

The Royal Cambridge Hotel, CB2 1PY

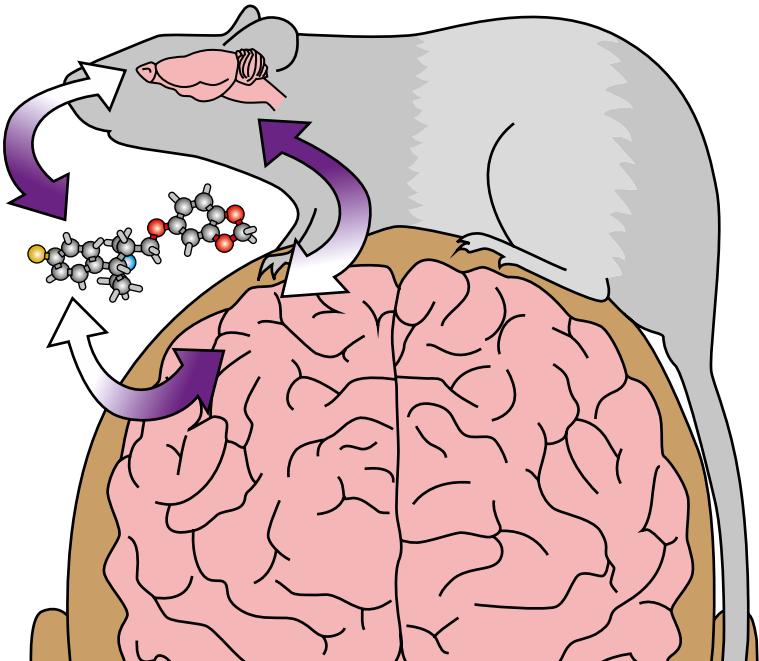
In 2001 the BAP launched the Pre-clinical Certificate in Psychopharmacology with the support of the BBSRC. This modular Certificate programme was highly successful. The Certificate moved to its new format and became a 4 day residential course which was held in Cambridge in February 2014, and will be held every two years.

The aim of the programme is to increase awareness of, and interest in, experimental psychopharmacology through the provision of a cluster of training modules which covers key aspects of research on animals and humans (as well as professional development in this field). The modules are of particular relevance to Home Office Licence holders as they provide essential continuing professional development for researchers in industrial and academic centres whose work involves experiments on animals.

The following topics are covered:

- Principles of Psychiatry
- Pharmacokinetics in Psychiatry
- The Molecular Biology of the Mind
- Statistics and Experimental Design
- Scientific Validity in Preclinical Psychopharmacology
- Pre-clinical Models and Behavioural Psychopharmacology
- Combining Neurobiology and Behaviour
- Neuroimaging in Psychopharmacology

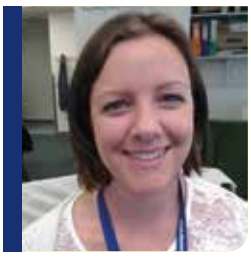
In addition to taught sections, the residential course includes round-table debates, practical sessions and team projects.



For more information and to register interest go to

www.bap.org.uk/nonclinical

Women in Pharmacology: role models



Kristen Bubb, Queen Mary, University of London
Sian Harding, Imperial College London

Dr Kristen Bubb participated in the Society's mentoring scheme during 2010 and has since stayed in contact with her mentor Professor Sian Harding. Kristen recently interviewed Sian about her experience of being involved with this programme.

Why did you decide to become a Pharmacologist and tell me about your journey to get here?

I saw the subject in the UCAS Handbook when I was looking for University courses, and it immediately sounded fascinating. I did my BSc and PhD at in pharmacology at KCL, in a very inspiring department which produced many of the pharmacologists in senior positions today. I then joined the National Heart and Lung Institute, which eventually became one of the Divisions of Imperial College Faculty of Medicine. In a cardiac science department a lot of what I do would not now be identified as pharmacology, but those core skills have remained important.

What is your current position and what are you working on?

I am now Head of the Myocardial Function Section in NHLI, with about 100 staff and students, and Director of the BHF Regenerative Medicine Centre. The focus is on the myocardium in heart failure, with one of the main efforts being advanced imaging to look at arrhythmia mechanisms. A gene therapy trial which has grown out of these studies is in progress. Pluripotent stem cell-derived cardiomyocytes are being developed as a new model system and also towards cardiac regeneration.

Are you where you thought you would be 10 years ago?

I am where I hoped to be, and enjoying it a lot.

What has been your biggest challenge in your career to date?

Supervising staff and students who are using techniques that I am not expert in and where I have had no hands-on experience. I have to do this because it is important to bring those methods into my work, but the challenge is to understand when I can troubleshoot through general experience and when I need to find them outside help.

What resources and support have you found which have helped you on your way?

I have had most help from my colleagues and peers rather than powerful senior figures. It's one of the best things in science to see how generous people can be.

Why did you decide to get involved with the BPS WiP mentoring program?

I just wanted to help people, especially women, in the same way that I had been helped, and to pass on a few hard-won tips.

Would you volunteer to be a mentor again?

Yes, I don't know whether I have helped but I want to keep trying

How do you maintain your work/life balance?

I am quite ruthless in excluding from my life, either work or personal, things that are unpleasant or a waste of time. This includes limiting the acceptance of invitations to speak at meetings as well as getting someone else to do the housework.

Who has been an inspiration person during your career?

(Either in science or just somebody in your life) My maternal grandmother, who had to leave school to work even though she could have gone on to be a teacher. She ran a 'caff' in the East End during the Blitz (where she was known as Roughhouse Rene) while caring for a severely autistic daughter.

Tell me something surprising about you?

I'm a very good shot with an airgun.

*Contact **wip@bps.ac.uk** or head to the website (**www.bps.ac.uk**) to find out more about the Society's mentoring scheme.*

About the authors

Sian obtained her PhD in Pharmacology from King's College, London in 1981. She became Professor of Cardiac Pharmacology at the National Heart and Lung Institute, a Division of the Imperial College Faculty of Medicine, in 2002. Her work has centred on the myocardium in heart failure, especially beta-adrenergic mechanisms. She was PI on a UK Gene therapy Trial in LVAD patients, aimed at improving cardiac contractility. She is now studying the pluripotent stem cell-derived cardiomyocytes, both for disease modelling and cardiac repair and is Director of the Imperial British Heart Foundation Cardiovascular Regenerative Medicine Centre. Sian has been President of the European Section of the International Society for Heart Research and member of the Nuffield Council on Bioethics. She has been elected Fellow of the American Heart Association, the European Society of Cardiology and the British Pharmacological Society.

Kristen's current position is Post-Doctoral Research Assistant at the William Harvey Research Institute, Queen Mary University of London in the Cardiovascular Pharmacology group with Professor Adrian Hobbs. She moved to the William Harvey Research Institute in 2009 to work in Vascular Pharmacology, with Professor Amrita Ahluwalia, after completing her PhD at Monash University, in Melbourne. Kristen has published 11 papers and a book chapter, with a recent first author paper appearing in Circulation and she has presented work at numerous international conferences. Kristen has won several travel grants and two early career researcher awards. In 2010 she received the Post-Doctoral support award from BPS. She was an organiser of the Young Life Sciences symposium in 2013 held at QMUL, which was co-funded by BPS, Biochemical and Physiological societies.

Pharmacologist seeks outlet for constant rejection - other band members please apply

Stuart Mundell
Bristol University

Throughout my scientific career I have been used to "facing the music" of yet another experimental failure, manuscript rejection or grant that has been shredded during the review process. Of course part of the learning curve of becoming an independent research scientist is developing coping strategies to deal with the constant rejection lest you wish to resemble the lyric from my favourite Manchester miserablists the Smiths' "Heaven knows I'm miserable now". Of course for the most part the growth of a durable and tough skin, not too dissimilar to rhino hide is an essential requirement. Many scientists also process their latest scientific quanderies through leaisure activities whether it be the punch bag at the local gym or pilates at the local yoga club.

For me it has always been going for a long run, which has the added beer belly reduction benefits, or playing the guitar. Indeed making music (or old flatmates might call it making a tuneless noise) has always been an effective cure for the ills of scientific rejection. Apparently I am not alone in this pursuit, there are hundreds of scientific musicians out there. Some are professional. Most like me, are closeted bedroom twangers with a need to offload their angst whilst singing covers from the Beatles through to R.E.M.

Personally I started playing the guitar in my late teens when the angst was more about the opposite sex rather than the slope of my Schild plot. However as I have aged, perhaps not particularly gracefully, picking up the guitar has allowed me to put my latest scientific rejection into context. Concentrating on the next chord, whilst trying to sing in key, certainly reduces the period of extended self-flagellation. Importantly when I am not trying to process Reviewer 1s incomprehensible comments about the need to translate my work into a zebrafish I find that making music actually supplements my meagre capacity to come up with novel ideas to bolster a nascent grant application or an experiment that might actually allow me to address a question in the laboratory. There is plenty of evidence that playing an instrument makes you smarter. Although only an n=1 my lengthy study has thus far unfortunately shown no such correlation, although I do find a period of chord smashing does help to recalibrate my neurons to process my thoughts.

For around 20 years I was the true bedroom solo performer apart from a brief flirtation with Chris Bailey (Senior Lecturer at the University of Bath and secret keyboards wizard) and Sam Roome (violinist and Marketing Director of Hello Bio who supply a range of pharmaceutical tools – free plug there Sam!) in the aptly named Chris Bailey and the Minnions. That was until 2013 when a chance meeting with a chap called Simon King whilst trying to cook a large chunk of raw pig on a small home BBQ, at a wedding reception following a failed attempt by the father of the bride to pit roast a whole hog – sounds weird it was! He persuaded me to chance my limited guitar and singing skills at the local open mic he runs. A few open mics later and the newly formed Penguin Collective were spewed into the world. The venture even crosses the boundaries of scientific disciplines with our lead guitarist Paul Curnow a biochemist at the University of Bristol. We've played numerous gigs over the past few years including weddings, house parties, pubs and local music festivals.

During this period it has become obvious to me that singing in a band has many parallels with that of my daytime occupation as University lecturer. For starters people generally come along to hear me. These can be grouped into those who come out of choice or obligation. Occasionally however they are there by mistake - oops wrong lecture theatre or where's the meat raffle tonight? Before the performance commences I am a bit tense, some may even say grumpy. I then stand in front of an audience and try to engage them with something coherent and entertaining whilst showing some degree of coordination either with a laser pointer or a guitar. At the end when it's all over I tend to be pumped full of adrenaline, a little bit sweaty and generally over excitable. Generally both processes take about 45 minutes to an hour. An obvious difference is that I have never been asked to give an encore whilst lecturing about G protein-coupled receptor traffic but if the students had been drinking before and during my lecture who knows. The level of buzz I get is higher post a gig, that's dopamine for you! It could be due to the amount of alcohol I have imbibed but probably more likely the type of feedback post-performance. In one arena you'll get a satisfaction rating out of 5 and some bizarre comments about the speed of the performance - how can I be too fast and too slow at the same time? In the other, with a bit of luck people applaud periodically. Some of you reading this might be outstanding lecturers and can't spot the difference between those two forms of feedback but for the rest of us it should be pretty obvious which one is which.

So to summarize, if you have managed to get this far through my stream of meandering consciousness well done! Whatever you do to combat rejection fatigue I hope it works for you. If not, why not try the joys of homemade music, anyone can learn to play the kazoo or hit the pots and pans with a ladle. If you're already a homemade musician I would recommend getting out there and trying it out in front of an audience – it's no more nerve wracking than that first oral presentation at a BPS meeting.

The Penguin Collective

Born in the summer of 2013 at an acoustic Open Mic in Yatton the Penguin Collective play a set that spans the 60s to the present day. With a Brit-Pop feel they feature Stuart and Paul on vocals and guitar, Simon on bass and Guy on drums. They love high-energy indie tunes with plenty of acoustic 'sing-along' classics throw in for good measure. Being a collective rather than a band enables the line up to vary. The band are occasionally joined by guest vocalists and other musician's although the core members of The Penguin Collective understand the main rule to not to take yourself too seriously! The Penguins play at local pubs and private parties whilst supporting local community events.

For further information look here: **www.kingpenguinrecords.com/site/penguin-collective/**

About the author

Stuart graduated from the University of Glasgow with a degree in Pharmacology in 1994. He then obtained his PhD from Bristol in 1998 with a thesis investigating G protein-coupled receptor regulation. After his PhD Stuart undertook post-doctoral positions in the laboratories of Professor Jeffrey Benovic in Philadelphia and Dr Eamonn Kelly in Bristol. Stuart was subsequently awarded British Heart Foundation Research Fellowships in 2003, 2006 and 2011 to investigate the regulation of G protein-coupled receptor function in platelets. He is presently a Senior British Heart Foundation Research Fellow in the School of Physiology and Pharmacology. Stuart was the recipient of the British Pharmacological Societies Bill Bowman lectureship in 2006 and Novartis Prize in 2010.

Meetings update

Barbara McDermott, Vice President - Meetings
Karen Schlaegel, Head of Meetings and Events

BNA Festival of Neuroscience, Edinburgh, 12–15 April 2015

With more than 1,500 delegates, the festival was a great success with 92% of surveyed delegates rating the symposia and workshops as excellent/good. There was a real buzz around the meeting, with sessions including symposia and plenary lectures very well attended. The BPS team engaged delegates at its exhibition stand and as a partner society, supported a symposium on the Brain Cannabinoid System, organized by Francisco Molina-Holgado. It was also the first project for the BPS meetings team of providing project management to an external society.

Focused meeting: Exploiting the new pharmacology and application to drug discovery, Edinburgh, 20–21 April 2015

Feedback for this meeting, which was attended by 75 delegates, was very positive overall:

"A very relevant and interesting meeting and excellent standard of presentations."

"Interesting balance of applied/academic advances, excellent chairing of sessions."

We would like to thank Anthony Davenport, Steve Alexander and Adam Pawson – the main organizers of this meeting – for putting together an excellent programme. We would also like to thank all speakers as well as IUPHAR, EPHAR and Cisbio for supporting the meeting.

Joint ASCEPT-BPS Scientific Meeting: Tomorrow's medicines: pharmacology, patients and populations, Hong Kong, 19–21 May 2015

The idea for this meeting was conceived five years ago. It's safe to say that all the preparation paid off! We received 146 abstracts from 21 different countries, as well as 16 symposia submissions for just 11 available slots. More than 200 delegates from the UK, Australia and across Asia, enjoyed the three day meeting at the University of Hong Kong – while outside it was a tropical temperature but mostly raining and blowing a gale. It was a great opportunity for both Societies to come together and build even stronger links. Feedback for this meeting was also very positive.

"The keynote speakers were excellent and, overall, the quality of speakers was very high."

"This was a really well put-together programme and a very enthusiastic bunch of delegates."

Upcoming meetings:

Pharmacology 2015,
15–17 December 2015

Online registration and online abstract submission are now open – please visit the BPS website (**www.bps.ac.uk**) for further information. As always, BPS is offering bursaries to members who are presenting an abstract at the meeting. Registration remains complimentary for members and we are delighted to offer discounted registration fees to members of the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT), the British Association for Psychopharmacology, the British Society for Cardiovascular Research, the Medicines and Healthcare Products Regulatory Agency (MHRA) and the Federation of European Pharmacological Societies (EPHAR).

After last year's success, we will return to One Great George Street for the annual dinner on Wednesday 16 December. We were almost fully subscribed in 2014, so early booking is recommended!

21st Scientific Symposium of the Austrian Pharmacological Society - Joint meeting with the British Pharmacological Society and the Pharmacological Societies of Croatia, Serbia and Slovenia, Graz
16–18 September 2015

The BPS keynote lecture will be given by Professor Mauro Perretti, William Harvey Research Institute, Barts and The London, on *"Resolution Pharmacology: therapeutic innovation in inflammation"*.

XIX International Congress of the Polish Pharmacological Society 50th Anniversary of the Polish Pharmacological Society
17–19 Sept, Swinoujscie, Poland

Dr Steve Alexander from the University of Nottingham will give the BPS keynote lecture on *"The endocannabinoid system as a nexus of signalling complexity"*.

Stratified medicine and prevention of adverse drug reactions - Joint Meeting of the British Toxicology Society and the British Pharmacological Society, Edinburgh
5–6 October 2015

Online registration and online abstract submission are now open. Please visit the BPS website (**www.bps.ac.uk**) for further information.

Last but certainly not least, we would like to welcome Susanne Schweda, who joined BPS as Events Manager in April. Susanne previously worked at the Royal Society of Medicine where she looked after a number of medical specialities and organised clinical and non-clinical meetings and events. Previously Susanne lived and worked in Bournemouth and Brussels where she organised educational and pharmaceutical conferences in Europe and North America. At BPS Susanne is responsible for the logistical organisation and management of upcoming meetings and events.

And as always, if you have any questions or suggestions, please do not hesitate to contact us at **meetings@bps.ac.uk**.

Auf Wiedersehen

After more than seven years, the time has come to say goodbye.

When I get asked what I enjoy most about my job, I always reply: working with our members. I've found the enthusiasm for pharmacology as well as the Society inspiring and it's been a pleasure to have met and worked with so many of you. There have been challenges and many opportunities – I'm grateful for all of them and feel that I have learned a lot along the way. I've greatly appreciated the support I've received and the friendships I've made and sincerely hope to keep in touch.

I would like to thank everyone for making my time at the Society so memorable. And please do connect via LinkedIn and/or Facebook!

With all best wishes
Karen

BRITISH PHARMACOLOGICAL SOCIETY

Today's science, tomorrow's medicines

15—17 December, London, UK

Registration and full programme
www.bps.ac.uk/meetings/pharmacology2015
e: meetings@bps.ac.uk
t: +44 (0)207 239 0176

Pharmacology 2015

Join colleagues from around the world for three days of the highest quality scientific content and invaluable networking opportunities. Featuring a diverse selection of topical symposia, plenary lectures, free oral communications and poster sessions covering the whole spectrum of pharmacology from basic to clinical science.

Registration is open!

Abstract submission deadline 14 September