PHARMACOLOGY MATTERS

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

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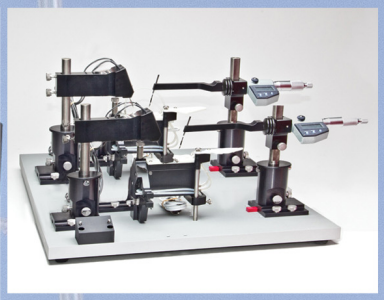

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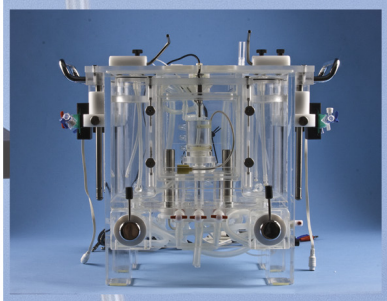

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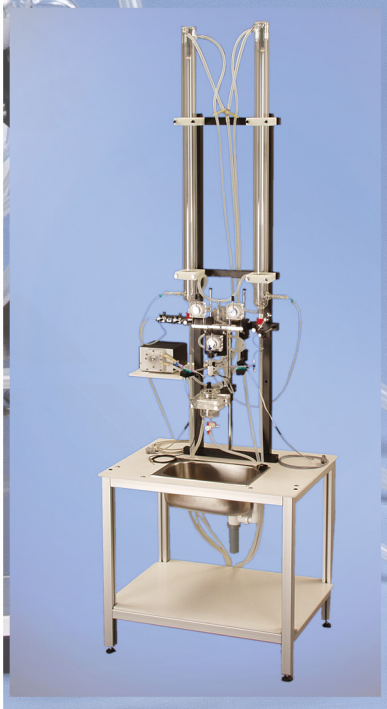

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Editorial

In this issue of *Pharmacology Matters* we report on another immensely successful year for BPS particularly in respect to the ongoing development of member services, activities, events, education and public engagement. We are beholden to BPS members, editors, contributors, committees and staff for their unstinting support and efforts that enhance the Society's national standing and international reach.

Following Jono's review of BPS activities over the past year (p4) Katharine Richardson and Chris Garland (p10) update us on the BPS Fellows' Reception evening celebrating the work of distinguished pharmacologists past and present. Of note was the JR Vane Prize Lecture and the recipients honoured in the inaugural year of the *BPS Pharmacology Hall of Fame*.

In the first of two articles themed on personalized medicine, Tanya Heare (p5) provides an insightful commentary on the complex patent laws governing personalized medicines and the challenges facing innovators in the biopharmaceutical and medical devices industry. The issue of patentability is discussed in relation to novelty of innovation for personalized medicine in context of recent legal cases along with current perspectives from the European Patent Office.

In the second article, bioinformatics scientist Fiona Nielsen (p7) conveys the importance of advancing research in the post-genomic era by means of efficient data-sharing. DNA-Digest.org is a new approach that aims to solve the problem of data inaccessibility using a web-based platform enabling researchers to connect to multiple genomic datasets.

In other articles, an historical and current perspective on pharmacology education and research at the University of East London is given by Samir Ayoub (p12); and a book review related to personalized medicine is provided by Donald Singer (p8).

Finally, it is with regret that this issue will be my last as Editor-in-Chief and I will be passing on the reigns to my successor for the 2014 programme. I would like to thank the Editorial Board members and the numerous contributors who have supported *Pharmacology Matters* over the years. It has been a pleasure working with the Board and the Editorial Team at the Society, and I wish them all much continued success.

I hope you enjoy this festive edition and on behalf of the Editorial Board thank you for your continued membership of BPS and for supporting *Pharmacology Matters*.

Wishing you all a very Merry Christmas and prosperous New Year.

Tim

Tim Atkinson
Editor-in-Chief
Pharmacology Matters

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Your BPS

Jonathan Brüün
BPS Chief Executive

It seems incredible that it is already December as we go to print on this edition of P*harmacology Matters*. The year has absolutely flown by, and I'm happy to report that there has been a tremendous amount of activity by our members, committees, officers and staff which we can celebrate in these pages, and at our annual meeting, *Pharmacology 2013*.

Pharmacology 2013, the new name for our annual BPS Winter Meeting, looks set to offer its usual high quality mix of scientific programming, networking, prize giving, and exhibition. But there have also been some significant developments, besides the name change, of which we hope our members and guests will take full advantage. In response to increased demand for attendance in the past few years, we have taken a bigger venue within the QEII conference centre, and hope to attract up to 1,000 delegates. The new space will also provide better facilities for our attendees and exhibitors, and more opportunity for BPS to showcase its achievements and activities to its members and guests. I recommend that you visit the Your BPS Forum opposite the BPS stand [stand 1] to catch up on projects including: the *Guide to Pharmacology* online database of drug targets; the *Prescribing Safety Assessment* which tests the prescribing skills of the UK's undergraduate medical students; and the BPS mentoring scheme which has paired in the region of 80 women in pharmacology.

We have also moved our Annual General Meeting (AGM) to the heart of *Pharmacology 2013* – at noon on Wednesday 18 December, as we hope to attract many more of our members to this important event. If you are attending the conference, I would encourage you to come along and hear how your Society is being run, to take part in elections and to vote on key proposals that affect your membership.

The 2013 Member Engagement Survey, which was a big undertaking with the driving purpose of more closely matching the Society's activities with the needs of its members, has reported, and a summary of findings along with next steps can be found in your *Pharmacology 2013* delegate bag, or via our website [www.bps.ac.uk]. I would like to thank all our members who took part in the survey – your input has given us a valuable, quantifiable steer as to how you would like BPS to operate and we will be working hard to deliver the outcomes in the coming years.

Another important activity was the initiation of a review of our governance structure, which was commissioned by Council in response to the recommendations of its 2012 strategy retreat. This review has already provided a fascinating insight into the areas where BPS is succeeding as a charity and as a member organization established to support and promote pharmacology, and where improvements may be made. The review will continue into the New Year, with proposals on committee structure, governance and management, and the appropriate delegation of authority being raised with members and Council throughout the year, before being taken forward to our AGM in December 2014. Again, I would encourage you to monitor and engage with this important process throughout the year. But the activities that will be highlighted during *Pharmacology 2013* are not the only things we've been up to in the past year. . As part of our member engagement campaign, we delivered projects including *Putting UK Pharmacology on the Map*, the *Pharmacology Hall of Fame* and a highly successful Fellows' reception, as well as the commissioning of a new member database. We have closely monitored developments in Open Access policy, which may yet have serious implications for the health and welfare of the Society, and have contributed policy statements, consultation responses and activities, including the launch of our own Open Access journal, *Pharmacology Research & Perspectives*. We have also been heavily involved in policy work around transparency in clinical trials, sending submissions to, among others, the European Medicines Agency for consideration. Education and outreach work has grown exponentially over the year, with fantastic responses to our programmes of workshops, public engagement and careers events, support for *in vivo* skills, grants and awards. International engagement has continued to thrive - we have held joint meetings and events with the American Society of Pharmacology and Experimental Therapeutics (ASPET), the Chinese Pharmacological Society, the European Association of Clinical Pharmacology and Therapeutics (EACPT) to name a few – while relationships with partner organizations in the UK life science sector appear stronger than ever.

So, I hope you will agree a great deal of exciting work has taken place in 2013. I would like to thank the staff at The Schild Plot – our head office – for all their endeavours and commitment throughout 2013, my first full year as CEO of BPS. Their energy, professionalism and enthusiasm has been truly first class and I am indebted to them for delivering just about everything I have covered above.

I should also like to say a special thank you to our committee members, editors, Senior Editors, Chairs, Vice Presidents, Officers and Trustees, particularly those who are demitting this year, and without whom the Society simply could not operate. The dedication of these groups of members to the Society, its journals and other activities, and to the protection and promotion of pharmacology and clinical pharmacology throughout the world is fantastic to witness. My thanks to all who are stepping down this year, but in particular to: our Vice Presidents for Clinical, External Affairs, and Meetings, John Thompson, Chris Garland and David Webb respectively; our joint Chairs of CHOPT (the Committee of Heads and Professors of Pharmacology and Therapeutics), Ian Kitchen and Donald Singer; and Trustee Helen Cox.

But I should reserve my biggest note of thanks to our outgoing President Phil Routledge, who also demits at the end of this year. Phil has offered vision, wise counsel, and great commitment to the Society and its members in the last four years (two as President-Elect, two as President). He has been a tremendous support to me and the team at The Schild Plot and, in overseeing a period of change and development in the Society and in the life sciences as a whole, leaves the BPS in fine shape for his successor, Humphrey Rang, who takes over in 2014.

Patenting Personalized Medicines

Tanya Heare
Venner Shipley LLP

Tanya is a Chartered and European Patent Attorney with considerable experience in all patent matters relating to UK and European patents and applications, and also international patent applications. She regularly liaises with attorneys outside of Europe to prosecute applications elsewhere. Tanya's particular areas of interest are in pharmaceuticals and biotechnology, including Personalized medicines. Tanya received her BSc (Hons) in Applied Biochemistry from the University of Liverpool and her DPhil, also in Biochemistry, from the University of Oxford.

Personalized medicine is an emerging field that promises to bring radical changes in healthcare. In essence it is the tailoring of the right therapeutic strategy to the right person at the right time. By way of brief explanation, it is now recognized that an individual's genetic makeup may contain specific variants that correlate with observable traits such as a predisposition to a particular disease condition or the likely response to a particular drug. By screening for the presence of the specific variant in genetic samples, individuals who are likely to develop the particular disease condition and/or respond well to the particular drug can be identified, and timely and targeted therapy can be delivered. Personalized medicine based on non-genetic biomarkers, such as the occurrence of a particular protein or by metabolic profiling, is also known.

However, while this new field of medicine is incredibly exciting and holds great potential for the future of healthcare, it poses some tricky issues for the patent industry.

Medicines and diagnostics are both eligible for patent protection. As many readers may be aware, a patent is a legal right to stop third parties from using the invention as claimed in the patent. It affords the patentee an opportunity to commercialise its invention without direct competition, as a reward for the time and money invested in research and development. It is also a return for the patentee having to disclose its invention via publication of the patent specification, and an asset which can be traded and sold. Patents thus play a key role in healthcare, as they encourage innovation and investment in this vitally important field.

As many readers may also be aware, patents are awarded for inventions that are new, amongst other things. What this means is that the claimed invention cannot have been disclosed to the public prior to the date on which an application for a patent is filed.

Does a patentable invention, then, lie in the treatment of a group of patients having a particular biomarker, when the biomarker was previously unidentified, but nevertheless present, in at least some of the patients that had the associated disease condition and were being treated with the indicated drug? In other words, can the treatment of a known disease with a known drug be considered new, and therefore potentially patentable, by virtue only of the identification of the biomarker and, therefore, a "new" group of patients to be treated?

In an early case[1] in which the European Patent Office (EPO) had to consider this issue, the Board decided that, in order to be patentable, the new patient group must be distinguished from the known patient group by its physiological or pathological status. In the Board's view this meant that, firstly, the new patient group could not overlap with the known patient group (e.g. sero-positive vs. sero-negative or non-haemophilic vs. haemophilic subjects) and, secondly, the identified biomarker (e.g. being sero-positive or being non-haemophilic) must have a real impact on the therapeutic or pharmacological effect achieved.

However, the Boards in subsequent cases at the EPO have not adopted this two-part test. They have allowed patents relating to the treatment of "new" patient groups that overlap with known groups. In one case[2], for example, the Board allowed a patent relating to the treatment of a particular group of hepatitis C virus (HCV) patients (antiviral treatment naïve chronic HCV genotype 1 patients with a specific virus load) with a known active agent. A very high percentage of all HCV infections were genotype 1 infections, which were known to be associated with a high virus load. Thus, in general, by following the established teaching to treat chronic HCV patients with the indicated active agents, patients with the indicated biomarker (the specific HCV genotype and associated virus load) would automatically have been treated. However, the Board reasoned that, in the patent in suit, the data convincingly showed that it was exactly the patient group as recited in the claims of the patent that profited most from the recited treatment. On this basis, the Board held that the recited biomarker was capable of distinguishing the claimed invention from that already known.

So where does this leave us?

At the EPO it seems as though a definitive answer could be on the horizon. In a fairly recent meeting between the EPO and the Biotech Committee of the European Patent Institute (the professional institute for European Patent Attorneys)[3], the EPO essentially said that, where a patent is based on the identification of a genetic marker to treat a disease, the claimed invention can lack novelty, as one patient with the marker will inevitably have been treated, even if the so-called "prior art" does not explicitly say so. This message has seemingly filtered down to EPO patent examiners who, unofficially at least, are now assessing Personalized medicine inventions by indeed considering the inevitability of one patient with the biomarker previously having been treated.

In this regard, the standard of proof for lack of novelty at the EPO is "beyond reasonable doubt"[4], which is interpreted in line with statistical standards in the art. Consequently, the later claimed Personalized medicine invention will be considered to lack novelty (and therefore patentability) if it is beyond reasonable doubt that, in the successfully treated group of patients in the prior art, at least one of them had the identified biomarker. The relevant test involved uses a 95% confidence interval and assumes a normal distribution.

All is not lost in that situation, however, as a European patent for the invention can seemingly still be obtained by making explicit reference in the claims of the patent specification to the actual step of diagnosing patients having the biomarker. The diagnostic step thus forms part of the intended therapeutic use and consequently confers novelty on the claimed invention. Suffice to say, therefore, that Personalized medicines are patentable at the EPO, provided the claims of the patent specification are drafted appropriately.

Personalized medicines are also patentable elsewhere, although patent offices in other countries may take a different approach to the EPO.

For example, the US Patent and Trademark Office (USPTO) considers Personalized medicines to be patentable, provided the claims of the patent specification do not amount to an unpatentable "law of nature". Guidelines[5,6] intended to help in this regard have been issued by the USPTO to its patent examiners.

The guidelines contain three questions to determine patentability:

Firstly, one must ask whether the claim is directed to a process or method defined as an act or as a series of acts or steps (such as a method involving the taking of a sample from a patient and the assaying of a biomarker).

Next, one must ask whether the claim is focused on a law of nature (such as an indication that the biomarker is correlated with a drug response).

If both of these criteria are met, then one must ask whether the claim includes additional steps that cause the law of nature to be practically applied, i.e. to ensure that the claim amounts to significantly more than a law of nature.

So what is "significantly more than a law of nature"?

There is, as yet, no definition of this, but the guidelines[5,6] illustrate that it is clearly something more than simply obtaining a sample from a patient and measuring the level of the biomarker. The claimed method must include a practical application of the identification of the biomarker, for example, a further positive step of increasing or decreasing the drug dosage in light of the biomarker being present.

Quite how the EPO will officially resolve the issue of novelty for Personalized medicines is not yet known. Quite where the USPTO will draw the line on "laws of nature" is also not yet entirely clear. However, patent offices have a moral duty, in my view, to permit patents for these 'biomarker' cases. Without being able to obtain patents for Personalized medicine, there would be no reward for such innovation, which could negatively impact upon research and development in this very promising field. Optimistically, patent examiners appear to see the vast potential that such medicines hold and so I am hopeful that the EPO, USPTO and other patent offices will decide on the relevant points of law favourably.

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BPS Journals: Editors' picks (bit.ly/17Pv4UO)

***BJCP* Editors picks from volume 76 issue 5**
Selected by *BJCP* Editor Adam Cohen

Improving clinical outcomes for naltrexone as a management of problem alcohol use
G K Hulse
As the festive season, with its inevitable use of ethanol, will soon be upon us the review by Hulse about the use of naltrexone in alcohol abuse, and aspects of personalized medicine, is of particular interest.

Early QT assessment – how can our confidence in the data be improved?
B Darpo, C Garnett
This article demonstrates how to deal with QT prolongation data in early development projects.

Identifying the translational gap in the evaluation of drug-induced QTc interval prolongation
A S Y Chain, V F S Dubois, M Danhof, M C J M Sturkenboom, O Della Pasqua
Chain and colleagues demonstrate how you can translate effects on QT from dog to man.

Pharmacology 2.0
R J Flower
BPS Honorary Fellow Rod Flower talks about new pharmacology, appropriately termed Pharmacology 2.0. This means new tasks and challenges for the pharmacologist. BJCP readers will be relieved to know that there are no intermediate updates planned (Pharmacology 2.01, etc).

***BJP* Editors' picks from volume 170, issues 5 and 6**
Selected by *BJP* Senior Editors Arthur Weston and Sue Wonnacott

Evaluation of the insulin releasing and antihyperglycaemic activities of GPR55 lipid agonists using clonal beta-cells, isolated pancreatic islets and mice
A M McKillop, B M Moran, Y H A Abdel-Wahab and P R Flatt
A GPCR with an unknown physiological function should always be of interest to BJP readers. In this paper, the authors describe the glucose-lowering effects of (cannabinoid-related) agonists at GPR55, which is located on pancreatic beta (but not alpha) cells, and speculate that such ligands could be of therapeutic use in Type 2 diabetes. This paper is both an interesting general read and could also form the basis for many different experiments in the search for elucidating the role not only of this GPCR but also whether it should be designated as a CB3 or CB4 receptor.

Agonist pharmacology at recombinant α1A- and α1L-adrenoceptors and in lower urinary tract α1-adrenoceptors
H Yoshiki, J Uwada, H Umada, T Kobayashi, T Takahashi, T Yamakawa, A Yamaguchi, O Yokoyama and I Muramatsu
Pharmacological characterization of recombinant receptors, and comparison with native tissues from both rat and human, defines which isoform is present in lower urinary tract with implications for more targeted therapies for urinary tract conditions.

DNA-Digest.org: A new approach to the data sharing problem

Fiona Nielsen
DNA digest

Fiona is a bioinformatics scientist – turned entrepreneur. In 2013 she left her job when she saw a problem that needed to be solved and founded DNAdigest together with a group of individuals in Cambridge who all want to advance genomics research and do whatever they can to find cures for genetic diseases.
Web: http://dnadigest.org/
Twitter: @DNADigest

The post-genomic era brings with it the promises of immense progress in Personalized medicine, both in terms of enabling sequencing-based diagnostics and using personal genomics to inform the choice of treatment. Since genetic profiling of genes as well as whole genomes is only useful to the extent to which it can be interpreted, the genetic interpretation is the first step of any Personalized diagnosis.

The knowledge of genetic variation is steadily increasing, but due to the complex nature of the genome, there is a lot of variation between individuals, and often analysis results in the discovery of novel genetic variations of unknown consequence. The complexity of the problem demands that we use data from a large number of different people in order to have strong evidence that specific variations are really connected to diseases. This is the situation in which every geneticist is eager to find and access datasets for comparison.

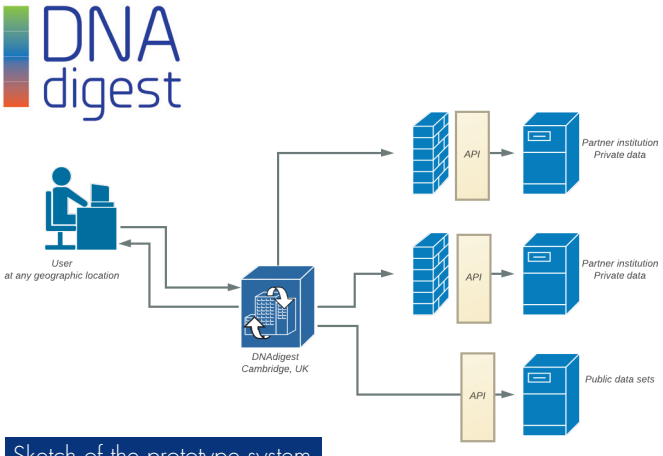
Large quantities of genomic data for different medical conditions have already been collected in hospitals, clinics and research centres all over the world, and more data is being generated daily. However, while a lot of human genomic data exists, the data sharing is fraught with difficulties. A researcher first has to learn about the existence of a useful dataset, then find out where it is stored, then apply for permission to use that specific dataset. The process can involve considerable effort and months of waiting time, and has to be repeated for every dataset of interest. This in turn slows down the progress of biomedical science, as researchers don't have enough data available to collect substantial statistical evidence.

These delays work against the interest of the patient. Patients often undergo difficult biopsies in order to give samples for research to advance research progress for their disease, but the data obtained ends up having limited impact because of a lack of data sharing. Indeed, data sharing of medical data is not straight forward – in order for the data to be useful for research, the associated medical information about the person it came from must also be included with it, but this in turn raises consent and anonymity issues.

The aim of DNA Digest is to provide a solution to this problem – enabling widespread access to data for research, while ensuring complete patient anonymity. The way we are doing this is by designing a data broker mechanism to connect existing data repositories and setting up an interface that enables researchers to query the data independent of data location. The broker mechanism enables anonymisation by aggregation: We ensure anonymity by a query interface that only provides aggregate statistics of the DNA variation. For example, a researcher can do a search for genome regions that have variation associated with schizophrenia, and compare it to a control cohort (healthy individuals), and such retrieve the frequency for the selected variation in the two cohorts. Although not a replacement for more sophisticated analysis that require unlimited data access, this query approach provides valuable information for researching genetic variance, without giving access to any individual genomes. For example, for interpretation of the genetic variants for an individual, a careful custom selection of datasets for comparison will reveal insights into which variants that are common and specific in the population of the individual, and which variants are novel for the population and more likely to be related to the disease in question.

Enabling queries across existing datasets increases the impact of the available genomics data in multiple ways: it pools data together and allows researchers to run tests and comparisons that are statistically powerful, and therefore identify potentially new genetic effects. For example common variants may be found between diseases that were not known to have a common genetic basis. It also means that the patient data can be used in multiple contexts – as the sample data for one disease, and as a control sample for other diseases. This will gives researchers a better overview of genetic variance present in human populations, allowing them to make predictive tests more accurate by cross-comparison with relevant reference cohorts.

By working together with patients and researchers worldwide, we envisage that this type of data sharing has the potential to transform the landscape of 21st century medicine.



Sketch of the prototype system

Review of *Me Medicine vs. We Medicine: reclaiming biotechnology for the common good*

Donald RJ Singer
University of Warwick

The key premise of this seductive book by Donna Dickenson is that 'we medicine' (medicine aimed at maximizing the health of the nation) and 'me medicine' (medicine customized for individual patients) are mutually exclusive. The author, an Emeritus Professor of Medical Ethics and Humanities at the University of London, chooses to focus on pharmacogenetics and pharmacogenomics as the major relevant examples of personalized medicines. The author bases much of her argument on her perception of the polarity that 'genetics and genomics reveal more profound truths than other sciences'. However, there is no clinical consensus that these are disciplines that operate in isolation. Genetics and genomics complement other medical sciences.

In fact, good therapeutic practice concerns applying a wide range of clinical and laboratory tools to select the right drug(s) for the right disease and the right patient, at the right time, at the right dose, by the right route of administration, and for the right duration. In addition to emerging pharmacogenetic and pharmacogenomic tests, personal biomarkers of treatment response that should be used as a regular part of good medical practice include age; gender; ethnicity; lifestyle; co-morbidity; concomitant prescribed and non-prescribed regular and occasional medicines; and key lab phenotypes, such as renal and liver function. By using these tools to apply a personal approach to patient management, prescribers are more able to select effective treatment options, and less likely to select treatments that may cause serious adverse effects.

With regard to the specific issue of pharmacogenetic and pharmacogenomic tests, the author considers these to be unreliable, elitist and qualitatively different from other forms of testing. In practice, the state of current technology for pharmaceuticals, pharmacogenetics and pharmacogenomics is such that new diagnostic approaches will be used in clinical practice to stratify selection of treatment options, rather than to provide unique treatments for each individual.

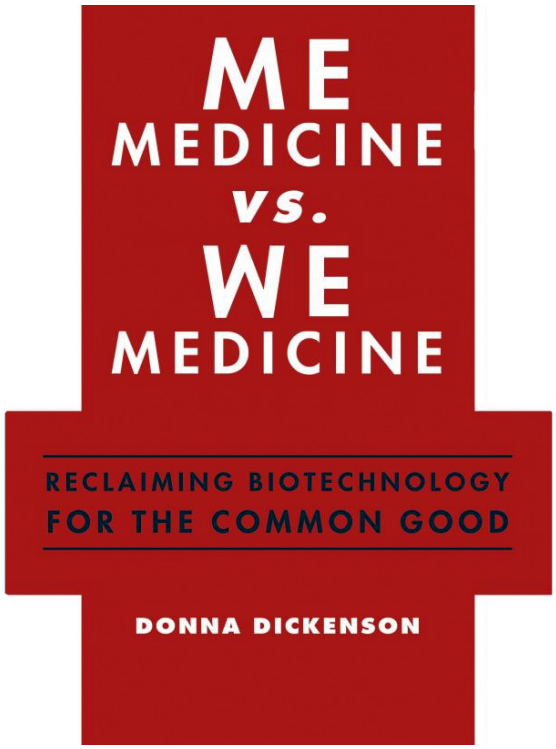
She asserts that, "No probability will tell you whether or not you will respond to a drug." There are however many examples of medical tests that are used to help in diagnosis, rather than being 100% diagnostic. For example, similar shadowing on a chest X-ray may be due to infection, lung hemorrhage, or cancer. And a raised level of the peptide N- terminal BNP may indicate heart failure or chronic kidney disease. Nonetheless, in context and with other information, these investigations may be very helpful.

Of course, diagnostic support algorithms will also needed to make best use of newer pharmacogenetic, pharmacogenomic and related functional tests. However, some newer tests are already well-established as reliable in supporting use or not of a treatment: for example, the presence of the EGFR (epidermal growth factor receptor) as required for selection of trastuzamab to treat breast cancer (1); while low activity of the enzyme thiopurine methyl transferase (TPMT) predicts very high of severe and potentially lethal bone marrow suppression by 6-mercaptopurine or azathioprine, with intermediate TPMT enzyme activity an indication for more intensive monitoring of bone marrow function (2).

The author expresses concern that new biomarkers to personalize use of medicines will not only be used to decide who will respond but will also identify other patients who will not respond and will not be offered treatment. Where drugs will not be effective or would be predictably very toxic, it would not be ethical on clinical or cost grounds to prescribe them. Drug toxicity is common and may be serious. Pirmohamed and colleagues estimated that around 6% of acute medical admissions to hospital may be largely drug-related and that two-thirds of these should be preventable (3).

Furthermore, new knowledge from emerging biomarkers should help to identify the causes of previously idiopathic syndromes, and poorly understood diseases – and spur development of new treatments.

The text includes many examples of vague or incorrect comments on medical science and medical risk; for example, not realising that wrong blood type transfusion guarantees both antibodies and potentially serious reactions. She conflates pharmacogenetic testing with genetic enhancement and she is dismissive of appropriate testing for cardiac risk in young athletes.



Author: Donna Dickinson, Columbia University Press, New York 2013
ISBN 9780231159746 | Published 18 June 2013

Several aspects of her discussion have been superseded by rapid development in medical technology; for instance, large trials are already underway into clinical and cost benefits from scanning a baby's genome at birth.

Some concerns are general for any new technology. The need for standardized methods is not a reason to reject new forms of testing. Meanwhile, the obvious response to her concerns about sharp marketing practice is that robust governance needs to be in place. As for considering new tests elitist, and saying that 'Me technologies' will "never be mass technologies", most new technologies are initially expensive, with tests becoming more affordable through economies of scale as tests become more widely used, and as technology improves. Consider the parallels of the early days of penicillin. In the case of pharmacogenetics there is already an established negative exponential Moore's Law for genetic technology. Through the combined impact of Moore's and Metcalfe's Laws (benefits as more institutions engage), cost-effectiveness will become more and more realistic in general medical populations.

Areas raised in the book which do need attention include informed discussion on criteria for testing, not least where a test may identify a serious illness for which no treatment is currently available; and there needs to be protection of patient confidentiality from intrusion by insurers, by employers, and by the financial sector.

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Young Pharmacologists: an update

Hannah Watson
Editor, *Pharmacology Matters*

Interested in a career in Pharmacology?

The BPS website (www.bps.ac.uk) is an excellent resource for those undergraduates who might be reading Pharmacology Matters and wondering if a career in pharmacology is for them. To be found are thought-provoking career case studies, committee member experiences, videos and informal podcasts that can help provide insight into a career in this exciting area of science. Whether you are a scientist or a clinician, or both, pharmacology can provide incredible opportunities.

Pharmacology 2013

At the time of writing, this three-day meeting will soon be upon us with as much anticipation as ever! The scientific programme features areas of widespread interest for scientists and clinicians alike. Importantly, the social programme looks equally as exciting! The historic venue of Sixty One Whitehall will be the location of the Young Pharmacologists' Welcome Reception. This is the perfect event for delegates to network with other like-minded people from across the UK and further afield.

Keep up to date with BPS and all things pharmacology related by following us on Facebook, Twitter and LinkedIn.

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A night to remember: BPS Fellows' Reception & the *Pharmacology Hall of Fame*

Professor Chris Garland
BPS Vice President – External Affairs

Katharine Richardson
BPS Head of Communications & Membership

On 5 September 2013, BPS hosted a specially arranged evening reception to celebrate the current and historical achievements of pharmacologists. Acknowledging the contribution of these members the first ever BPS Fellows' Reception coincided with the JR Vane prize lecture and the announcement of the first five winners of the *Pharmacology Hall of Fame*.

BPS Fellows' Reception

The BPS Fellowship was established to recognize members who have demonstrated distinction and peer recognition in pharmacology. BPS is proud of the substantial contributions made by our Fellows to the discipline of pharmacology, through their work, publications and/or attendance at Society meetings.

Since our first Fellows were elected in 2004 the group has grown to 186, including our 14 new Fellows who were officially announced in *The Times* on 7 January 2013. The Fellowship was invited to meet for the first time this year, and the reception was expressly designed to encourage networking and to welcome our newest Fellows. Over 80 BPS Fellows and their guests attended in order to catch up with former colleagues and meet others in the field.

Following the success (96% of attendees rated the event as 'excellent' or 'very good') of the Fellows' Reception, the Society plans to invest in supporting networking by its members and looks forward to inviting the wider membership to similar events in 2014 and beyond. Please look out for further information on the BPS website and member newsletters.

The next group of Fellows will be officially announced in January 2014. Self-nominations for Fellowship can be submitted at any point before the twice-yearly application deadlines (1 January and 1 June), but must be supported by two existing Fellows of the Society.

BPS Fellowship Networking

JR Vane prize lecture

The highlight of the evening was undoubtedly the prize lecture from the 2013 JR Vane Medal winner, which is awarded annually for outstanding work in an area designated by BPS Council. This year's winner Professor Graeme Henderson spoke on "Inspirations" and acknowledged the individuals who influenced his career in pharmacology.

We cannot adequately convey the warmth and humour with which Graeme described some of the key individuals and milestones in his career. Fortunately, a video of the lecture is available on the BPS website http://bit.ly/19jScQs. Graeme will officially collect the JR Vane Medal at the BPS Prize-Giving on 18 December – so if you have the opportunity to watch the video before then, we would strongly recommend it!

Professor Graeme Henderson delivering the 2013 JR Vane prize lecture

Pharmacology Hall of Fame

Over 200 BPS members eagerly voted for the *Pharmacology Hall of Fame*, part of the 'Your BPS' member engagement campaign. At the Fellows' Reception, BPS President Phil Routledge officially announced the names of the five distinguished individuals from the history of pharmacology who were honoured in the inaugural year of the *Hall of Fame:*

- Sir James Black
- Edith Bülbring
- Sir Henry Dale
- Sir John Gaddum
- Sir John Vane

Visitors to the Schild Plot will see the *Pharmacology Hall of Fame* has taken up permanent residence in the hallway, while the contributions to science made by the five names elected in 2013 will be showcased as part of the Society's ongoing activities,

including scientific meetings, workshops and science fairs across the UK. In addition, the achievements of these individuals will help the Society demonstrate the impact on drug discovery and development in the UK on the international standing of UK science and our economy.

The initiative also meant a lot to the families and those who worked closely with the five winners, many of whom attended the Fellows' Reception for the official announcement and/or provided the following notes of thanks:

Lady Daphne Vane

Phyllis Champion (left), Clare Champion (centre) and Susan Schanche (right)

Professor Antony Galione (left) and Professor Chris Garland (right)

Sir James Black's wife, Professor Rona Mackie Black:

"I am sure that my dear husband would be truly grateful for the honour bestowed on him today. While working in Glasgow, his original mind and ideas caught the attention of a visiting rep from ICI [now part of AstraZeneca] who encouraged the ICI Director of Research to come north and talk to this unusual young man. This happened, and Jim was then invited to Alderley Park and to join the staff. The rest is history but I wonder if this career pathway could ever happen in 2013."

Dr Frances Lannon, Principal of Lady Margaret Hall, Oxford:

"I am delighted that Edith Bülbring's distinguished work in pharmacology is being recognized. Her scientific contribution is all the more admirable because she faced antisemitism in Nazi Germany and then exile. In addition to these achievements, she was also known in Oxford as a widely-cultured and hospitable person. Music played an important part in her life. I am sure that Edith herself would welcome this honour and want it to be an encouragement to other scientists to overcome formidable obstacles."

Sir Henry Dale's granddaughter, the Hon. Mrs Helen Brown:

"On behalf of the Dale family I would like to express our delight that my late grandfather, Sir Henry Dale, is to be honoured as one of the first five members of the Hall of Fame. His achievements, like those of the other four members, are fundamental to a substantial part of modern pharmacology. Today histamine and oxytocin are almost household words, and acetylcholine is widely known to scientists. We are very proud that the Society has chosen to highlight Sir Henry and his pioneering role in the investigation of the functions in the body of these and other pharmacologically active substances."

Sir John Gaddum's daughter, Phyllis Champion:

"The family is delighted that his work continues to inspire generations of pharmacologists almost half a century after his death. He would have loved this honour from his colleagues and would have done his best to turn up tidy in a suit and tie."

Sir John Vane's wife, Lady Daphne Vane:

"I am proud and delighted to receive the news that John has been elected by BPS members to be inducted into the Pharmacology Hall of Fame in its inaugural year. This is a unique and significant recognition of his science. I warmly appreciate the Society's generosity in giving this honour. A star shines again in his darkened skies!"

We would like to join them in thanking the membership for contributing to this new honour and for providing 17 further names to be considered in the future. *Pharmacology Hall of Fame* will return in 2014 and we look forward to BPS members' continued involvement.

Pharmacology at the University of East London: Past, Present and Future

Samir S Ayoub
University of East London

A fact perhaps not well established, but the University of East London (UEL) has over the years contributed significantly to the number of UK graduates in pharmacology, some of whom are now well recognized pharmacologists in their own disciplines of pharmacology or pharmacological research. To mention but a few: Professor Roger Corder, William Harvey Research Institute, who studied MSc Pharmacology at UEL (1981) is now a world-renowned research scientist in cardiovascular diseases; Dr Mark Birrell, co-founder of the Respiratory Pharmacology Research Group at the National Heart and Lung Institute at Imperial College London obtained his BSc (Hons) degree in pharmacology from UEL in 1991; Dr Clifford Whelan, ex-senior lecturer at Hertfordshire University is also a UEL BSc pharmacology graduate.

Early Beginnings

Pharmacology tuitions started in 1965 at the Barking Regional College of Technology (BRCT), one of the forerunner constituent colleges which eventually became UEL. This was from the request of Professor Frank R Winton, who at the time was educational advisor to May & Baker chemical company, Dagenham; to give some academic training to their research technicians. This was quite a novel idea as up to then pharmacology was mainly taught as a postgraduate subject. A whole range of courses both full and part time (day release) was set up at BRCT, and they included Higher National Certificates and Diplomas as well as BSc courses. Initially, the degree courses were Applied Biology, with Pharmacology being the most popular subject. These courses were sandwich degrees with the students working in industry in the third year of the four year course. In this way these students could be trained in pharmacology plus get an academic qualification in the process. The part-time courses were filled with a large number of research technicians from local pharmaceutical firms such as Glaxo, Burroughs Wellcome, Pfizers, Beechams, Huntingdon Life Sciences, and May & Baker. The proximity of the College to the firms meant that they were all within relatively easy travelling distance. Masters' degrees, both full and part time were also set up about this time. In the early 1970s Pharmacology moved to Stratford where the Faculty of Science was based, and, the North-East London Polytechnic (NELP) was formed in 1976.

Pharmacological research at NELP became well-established. Professor Geoff West became the head of the Pharmacology section in 1970, and he quickly established a small research group of postgraduate students who worked in the immunopharmacology field. Professor West was the first to demonstrate that tissue mast cells were the main storage site of histamine. He retired in 1982 for health reasons, but continued to visit the pharmacologists on a regular basis until his death in 1990.

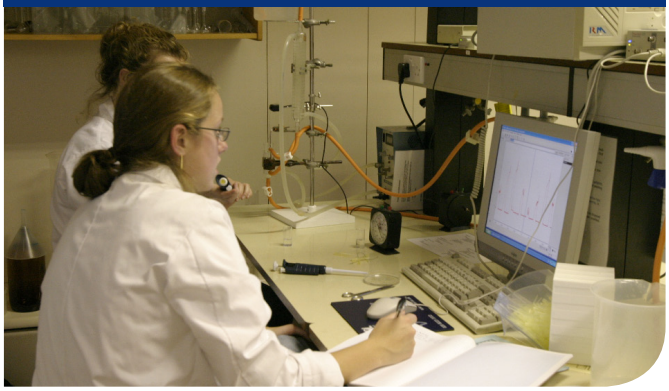
From the early 1990s, after the formation of the University of East London (UEL) in 1993, the BSc Pharmacology degree became much more popular with a large number of students graduating each year with the sandwich placement option and successfully securing employment in fields related to pharmacology including medical sales, pharmacovigilance and of course pharmacological research within the pharmaceutical industry and academia. During this time, pharmacology teaching and research at UEL was led by a strong and dedicated team of pharmacologists that included Drs Alun Morinan, Gill Sturnam, Pat Freeman, Barry Jones, Mike Salmon and Wilson Steele.

Teaching Pharmacology at UEL

The pharmacology BSc and MSc degrees continue to attract a large number of students with diverse ethnic backgrounds, some coming from as far as the USA, India and Brazil.

Some of the BSc pharmacology graduates of 2013 at a farewell party held at the Student Union. Also in the picture, Dr Michael Seed, Reader in Pharmacology (last row, second from left), Dr Winston Morgan, Principle Lecturer in Toxicology (front row, first from right) and Dr Samir Ayoub, Lecturer in Pharmacology and Pharmacology Programme Leader (front row, third from left)

Basic pharmacological concepts are taught through the use of experimental techniques as such the guinea pig ileum organ bath preparation



Students are taught through the use of a diversity of teaching methods. A huge emphasis is placed on the teaching of pharmacology through practical classes where the students are encouraged not only to carry out experimental procedures independently, but also to attempt at solving scientific problems. Pharmacological concepts such as drug potency, efficacy

and drug-receptor interactions are taught through the use of the same *in vitro* techniques such as the guinea pig ileum organ bath apparatus that gave birth to the basic receptor pharmacology concepts that we know today. Students are also made to appreciate the significance that modern molecular and biochemical techniques play in the processes of drug discovery and development.

Outside of the teaching labs, increasingly less and less of the teaching is delivered through lectures. Most teaching is delivered through student-centred and led problem-based learning, workshops, tutorials and oral presentations by the students.

During the final year of the degree, most of the students are offered to undertake laboratory-based research projects throughout the whole academic year. These projects address important research questions in the areas of research interests of the supervisors. Projects undertaken by students include research on mechanisms that regulate inflammatory resolution, mechanisms of drug addiction, mechanism of action of analgesic and antipyretic drugs, and mechanism of actions and quality control on herbal extracts used for medicinal purposes. These projects help to equip the students with strong research and technical experience, which have proved useful in securing graduate employment in biomedical research.

Placements

The pharmacology programme at UEL has strong links with the Medicines and Healthcare Products Regulatory Agency (MHRA), a number of small to medium size pharmacovigilance organisations, as well as reputable academic research organisations, where students are offered the opportunity to undertake either short summer placements for around two months or one year sandwich placements. The placements have proved extremely useful for the students when they start looking for jobs after they graduate. Second and third year students have also been accepted and this year successfully completed the *in vivo* short course organised and funded by the Physiological Society.

Student Support

One comment that we continuously receive from students is that throughout their time at UEL they felt that they were well-supported academically. In fact, this is one aspect that makes UEL stand out as an institution. Having been a pharmacology student at UEL myself, this is something that I can relate to. A significant proportion of our students come from disadvantaged backgrounds or are mature students with family commitments. These students, along with all other students, receive various types and level of support spanning from academic support such as in essay writing to disability support and employability and career advice.

We do place a great deal of emphasis on helping the students to develop core employability skills ; for example, we run CV check sessions as well as mock interviews. This year, we organized a Bioscience Career Conference, which included talks on career options and pathways for bioscience graduates, delivered by guest speakers most of whom are UEL alumni and working in different fields related to bioscience and pharmacology. A number of recruitment agencies exhibited at the conference, so the students had the chance to ask questions on a one-to-one basis and to register with these agencies. Similar career conferences will take place on an annual basis.

In 2011 the students set up the UEL Pharmacology Society, providing a forum for the students to discuss matters related to their academic life and to support each other, as well as to socialise. Over the past two years, a number of trips and social events have been organized by the students, which included a trip to Barts Pathology Museum.

Facilities

Pharmacology practicals take place in the pharmacology laboratory with capacity for up to 40 students. The lab was refurbished in 2001 to serve as a purpose-built teaching and research lab, and is well equipped with set ups for various isolated tissues and organ baths experiments. In the chemistry laboratory, the students get to learn the basics of HPLC and its applications to pharmacological research, along with other chromatographic techniques. The pharmacology degree does encompass all relevant areas of biomedical sciences; thus the students get to also carry out experimental procedures in molecular biology, biochemistry, histology, microbiology and human physiology.

The University is also equipped with dedicated cell culture, molecular biology, microbiology and flow cytometry research laboratories.

The Geoff West Memorial Pharmacology lecture

Professor Geoff West left a lasting legacy for pharmacological research at UEL. To celebrate this, the University organized the Geoff West Memorial Pharmacology lectures from 1991 until 2004, with the first lecture being delivered by the world renowned Nobel Prize Laureate Professor Sir John R Vane.

Professor Sara M Rankin, Imperial College London delivering the Geoff West Memorial Pharmacology lecture of 2013

Students, staff and external guests attending the 2013 Geoff West Memorial Pharmacology lecture

The lecture series has now been re-ignited with this year's lecture delivered in April by Professor Sara M Rankin of the National Heart and Lung Institute, Imperial College London. Professor

BSc Pharmacology graduates of 2000 standing in front of the University House entrance. The author, then a UEL student, on the far right hand side

Rankin received the Geoff West Medal in recognition of her exciting research on stem cells and regenerative medicine. Next year's Geoff West Memorial lecture will be delivered on 3 April 2014 by Professor David Nutt of Imperial College, on his cutting-edge research on neuropsychopharmacology and mechanisms of action of illicit drugs.

Current research programmes

In the research arena, a strong team of researchers with an established track record of publications and PhD students supervision are now leading pharmacological research at UEL. The team is part of the Medicines Research Group (MRG) in the School of Health, Sport and Bioscience (HSB), which harbours diverse research interests within biomedical research (www.uel.ac.uk/mrg/index.htm), and offers a forum for cross-disciplinary research and collaborations. HSB has an excellent track record for PhD students completion, all of whom are now successful post-doctorate scientists and leaders in their own fields of research. As of this year, four new PhD students will be starting research projects (bringing the current total of PhD students to 24) addressing important questions in pharmacological research, including the role of novel cyclooxygenase variant enzymes in physiological and pathological processes. Funding for pharmacological research at UEL mostly comes from the last RAE, in which HSB was awarded £1million, and all predictions point to the School exceeding this figure significantly for REF 2014.

The future of pharmacology at UEL

Without a shadow of a doubt, the future for pharmacology at UEL is a bright one. With current PhD projects, it is expected that there will be more scientific papers published in peer-reviewed high impact factor journals and also a better success rate in external grant capture. UEL Pharmacologists have an excellent network of collaborators in research and teaching and are looking to expand on that.

My academic life....from and to UEL Pharmacology

I graduated with BSc pharmacology (Hons) sandwich degree from UEL in 2000, having received research training as an undergraduate student during my industrial sandwich placement at the Institute of Neurology, London. After completion of my undergraduate studies, I moved to the William Harvey Research Institute to undertake a PhD programme under the supervision of the late Professor Derek Willoughby, where I spent the next four years investigating the mechanism of action of paracetamol. As a post-doc I moved to work with Professor Rod Flower FRS with whomI was involved in research addressing the role of annexin-A1 in pain modulation as well as the role of prostaglandins in animal models of multiple sclerosis. At this time, I was awarded a Leverhulme Trust-funded Early Career Fellowship to investigate the role of novel cyclooxygenase enzymes in thermoregulation, which allowed me to collaborate with and work for a period of time in Professor Dan Simmons's Laboratory in the USA. In 2010, I moved to Imperial College London to work with Professor Sara Rankin investigating the mechanisms through which mesenchymal stem cells induce angiogenesis. In 2011 I went back to "the birth place of my academic life", to lecture pharmacology at UEL and to set up my own research programme. I was later appointed as the Pharmacology Programme Leader.

Acknowledgement

The author is much indebted to Dr Gill Sturnam for providing useful insights on the history of pharmacology at UEL.

Taking a career break

Julie Keeble
King's College London

Julie Keeble is currently a lecturer in pharmacology in the Institute of Pharmaceutical Science, School of Biomedical Sciences at King's College London. She is the Chair of the BPS Outreach Committee and a member of the Education and Training Committee.

I have been a member of the BPS since I started my PhD at King's College London in 2008. In fact, the BPS funded my PhD project with Professor Phil Moore, making my association with them very strong. I attended many BPS conferences, both in the UK and abroad, greatly supported by the bursaries available to young pharmacologists. In 2001, I began my first three year post-doctoral position at King's College London with Professor Sue Brain. Again, I attended many BPS conferences and benefited greatly from the opportunity to network with pharmacologists from around the world.

I gave birth to my son at the very end of the three year contract. I essentially had no job to return to and every penny of my wages was needed for basic life essentials at that time. Fantastic support from Sue Brain ensured that I could go back to the lab after eight months of maternity leave on a part-time basis until a grant was secured. However, all non-essential costs at that time had to be avoided and my BPS membership payments were one such sacrifice. By the time I returned to work, I had not attended any meetings for over one year and had received no membership benefits, so the BPS kindly waivered a year's membership for me. However, it would have been such an excellent opportunity for me at that time to have been able to take advantage of career break membership. I know that it would have made such a difference during the unstable career period that post-doctoral research positions offer, especially with maternity leave combined. It was my stability that had dwindled, not my interest in the BPS or pharmacology in general.

This career break was a pivotal time in my career and I considered myself extremely fortunate to have the support I did in returning back to work as a pharmacologist. Without this support, my financial vulnerability may have led me to an alternative career path. Returning to work part-time was an ideal step for me with a new baby. Although this had significant financial implications, I was very much enjoying my work at that time and was very focused on being as productive as possible during the time I was at work. I completed a paper from data that I had obtained before my break and worked concomitantly with a PhD student on setting up an assay with expertise I had acquired during my own PhD. Eventually, when a new grant came through, I went back to working full time. In 2007, I was awarded a five-year fellowship within the Centre for Integrative Biomedicine at King's College London and, in the same year, was awarded the BPS Aptuit Prize for the most promising young *in vivo* pharmacologist. My career was back on track.

In 2008, I gave birth to my daughter. This time, I was in a much better financial position and continuing with my BPS membership was not nearly such a problem, especially as I had a secure, full-time contract with my fellowship. Furthermore, I attended a BPS meeting within two weeks of giving birth and within another two weeks of returning to work seven months later. During the time I spent away on leave, my mind was never too far from work and, in fact, I mentally devised a successful grant application during my sleepless nights with my baby. I have therefore had two relatively short career breaks that brought with them very different experiences. I am in no doubt that career break membership would ensure that those in a more vulnerable position would have a far more viable way to stay in touch with pharmacology. Indeed, I can think of several post-docs, with and without maternity leave, who would find it a very useful form of membership.

Apply for a Career Break Membership

Career Break Membership is available to any member out of work, for reasons including, but not limited to, redundancy, maternity leave, any members who have taken extended leave to perform a carer role, and/or as a consequence of relocation following a partner's career path.

To apply please contact the Membership and Awards officer Paul Tizard (pt@bps.ac.uk)

BPS Meetings 2012–2013

David Webb
BPS Vice President - Meetings

My term as VP Meetings is coming to an end and I would like to take this opportunity to review our activities over the last two years. First of all, there are of course the meetings that were either organized by BPS or involved BPS as a partner organizer. In 2012 we were involved in the very successful joint meeting with the Physiological Society and Wiley Blackwell in London, *Biomedical Basis of Elite Performance; the 4th Focused Meeting on Cell Signalling in Leicester; the BPS Focused Meeting on Neuropeptides* held in London in association with the European Neuropeptide Club and the American Neuropeptide Summer Conference; the *6th European Congress of Pharmacology* in Granada; and of course the *BPS Winter Meeting* in London. In 2013 we have been involved in the *Festival of Neuroscience*, as one of 19 partner societies supporting with this inaugural event in London; the *6th European Workshop on Cannabinoid Research* in Dublin; a joint meeting with ASPET during Experimental Biology in Boston; the *EACPT Summer School* in Edinburgh; a Joint Symposia with the Chinese Pharmacological Society in Shanghai; and our Winter Meeting, now newly named *Pharmacology 2013* in London.

Meetings Committee also continues to provide sponsorship for external meetings in a number of different areas – including the inaugural smooth muscle meeting, International Narcotics Research Conference 2013, and Advances in Microcirculation 2013 – to name just a few. This has enabled us to raise awareness of BPS, and the importance of pharmacology, with an audience who might not necessarily attend our meetings.

In addition, we continue to provide bursaries for our members to attend BPS meetings as well as international pharmacology meetings. We conducted a Meetings Survey at the end of 2012, which confirmed that the increasing costs for attending conferences contribute to members struggling to present their work at meetings. We have seen an increase in bursary applications over the last two years and I am pleased that the BPS is able to support our members in this regard, especially those in the early career stages.

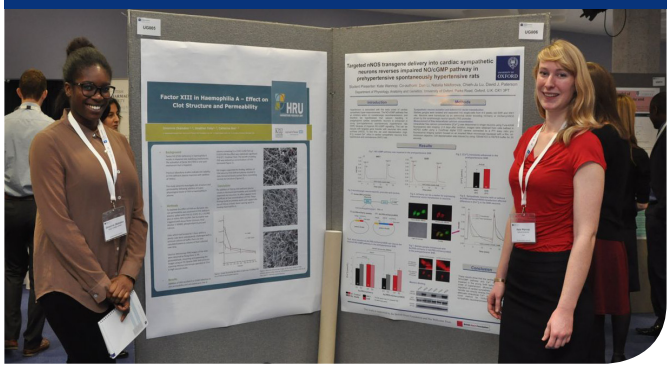
The Meeting Survey, together with the wider Membership Survey in 2013, also provided us with valuable feedback and pointers for our future planning. We were delighted to see how BPS meetings are generally rated very highly in terms of the scientific content as well as by providing opportunities for networking.

As always, the year will end with our annual meeting – rebranded as *Pharmacology 2013*. After the meeting was fully booked for two years in a row, we have secured a larger and a better configured space at the Queen Elizabeth II Conference Centre to allow a larger number of delegates to attend, to more effectively display poster presentations, and to better support our exhibitors. The increased number of abstracts we received this year is an indication for that this has been worthwhile. We will also welcome more exhibitors to the meeting and, following last year's success, we will again be organizing a Treasure Hunt and a photo booth is available for delegates to take home personal mementos of the event.

We are also launching our first Meetings App at *Pharmacology 2013*. Delegates will be able to put their itinerary together and access the programme and speaker profiles on their smartphones and tablets. This should also give our exhibitors and sponsors a wider exposure. We hope you will find this useful and look forward to receiving your comments about how best to use this technology.

One of the highlights of my term as VP Meetings was working on the BPS bid to host the IUPHAR 2022 congress in Glasgow. I am delighted that the bid has been shortlisted and we look forward to presenting our case at the IUPHAR Council meeting in Cape Town in July next year. I would very much like to thank everyone who has supported us so far and hope that we can count on your continued backing.

Undergraduate poster session at the Winter Meeting 2012



Finally, I would like to thank the members of Meetings Committee for their contributions over the last two years. My work, and that of the Committee, has been very ably supported by Karen Schlaegel (Head of Meetings and Events), to whom I am indebted for outstanding support for our meetings, and without whom we could not have made anything like as much progress over the past two years. I wish my successor all the very best.

Professor Robin Ferner delivers the Lilly Prize Lecture

Biochemical Society
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FEBS

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DEADLINES
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Earlybird registration:
7 APRIL 2014

A joint FEBS/Biochemical Society Focused Meeting

Membrane, Morphology and Function

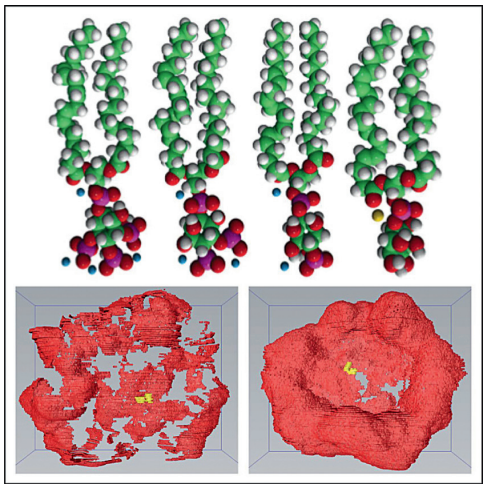

Image kindly supplied by Banafshe Larijani (Cancer Research UK LRI, UK)

Organizers:

Banafshe Larijani
Marco Falasca
Mary McCaffrey

Overview:

The functions of cells that lead to the exquisite processes of organismal development rely on communication. Signals are necessary for cells to communicate and co-operate with each other, alter their programmes of gene expression and fates, and re-organize themselves into a diversity of shapes and sizes. Most of these signalling pathways cross cell membranes. Due to the advances in the analytical tools, which can be applied to membrane morphology, new opportunities exist to understand these signalling mechanisms.

Topics:

* Membrane trafficking * Mechanism of membrane fusion and fission * Role of membrane domains in fission and fusion * Phosphoinositide signalling * Lipid signalling * Lipid phosphatase signalling * Lipid mass spectrometry of lipids * Autophagy * Phosphoinositide-dependent proteins * Advanced electron microscopy

Reviews by the speakers, based on their presentations at this major international meeting, will be published exclusively in *Biochemical Society Transactions* (due to be published in October 2014).

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

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Biochemical Society TRANSACTIONS

BPS Meetings 2014–2015: A preview

Karen Schlaegel
BPS Head of Meetings and Events

David Webb
BPS Vice President - Meetings

With a new VP Meetings at the helm from 1 January 2014, we are looking forward to another busy year. The *5th Focused Meeting on Cell Signalling* will be held at the University of Leicester in April. For the first time the meeting is held in association with the Biochemical Society and we are hoping to attract even more delegates from a broader background.

In July we will be heading to Cape Town for the *17th IUPHAR World Congress of Basic and Clinical Pharmacology 2014*. BPS is a Gold Sponsor of the congress and we are supporting three symposia, all organized by BPS members:

- Regulatory challenges in herbal and traditional medicines
- Communicating with the public and the policy community
- Using clinical toxicology studies to improve biomarkers and regulatory decisions

We are also sponsoring four plenary lectures:

- Pharmacology education: Professor Simon Maxwell
- Cardiovascular pharmacology: Professor Sir Salvador Moncada
- Drug safety science: Professor Munir Pirmohamed
- Antimalarial pharmacology: Professor Nicholas White

Bursaries will be available for BPS members presenting at the meeting. In addition, BPS is able to offer bursaries to African scientists, through sterling work from the Young Pharmacologists Committee who have been raising funds for this purpose over the last few years.

Last but not least, we will be presenting our bid to host IUPHAR 2022 in Glasgow and are very much hoping for a positive outcome of the vote.

In September 2014, we will be organizing the follow up meeting to the *James Black Meeting – Biologics for the New Millennium*, which we successfully ran in 2011. The meeting will take place in Cambridge and will focus on respiratory pharmacology.

Following a clear steer from the Membership Survey, a decision was taken to stay in London for the medium term. We will therefore return to the Queen Elizabeth II Conference Centre in London for *Pharmacology 2014* (16–18 December 2014).

Looking further ahead, we have started planning for our joint meeting with the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT) in Hong Kong in May 2015 and a joint meeting with the Austrian Pharmacology Society in Graz in July 2015.

Please come and speak to us during *Pharmacology 2013*, or feel free to email us, if you have any ideas and suggestions for our future meetings.

We look forward to seeing you in London!

David and Karen

Thank you David

On behalf of the Meetings Committee, I would like to thank David for his work as Vice President - Meetings over the last two years! The continuously positive feedback – both from specific meetings as well as from the member surveys – demonstrates that our scientific meetings have been highly valued by attendees and members. I look forward to working with the new VP to continue offering scientifically excellent meetings and even further improve what we do wherever possible.

Karen

Too cool for just school

BPS Education and Outreach has had a record year of activities for pharmacologists and would-be pharmacologists

Jess Strangward
BPS Head of Education

Future BPS members get a taste of pharmacology at the Big Bang Fair 2013

Get 'em young: BPS Outreach

As you may recall, the BPS 2012 meeting and accompanying *Pharmacology Matters* included content encouraging members to undertake Public Engagement activities. This kick-started 2013, which saw BPS deliver a record amount of outreach activities! Recent highlights are summarized below.

Big Bang Fair

The Big Bang Fair is the premier hands on science festival in the UK – welcoming 65,000 delegates over 4 days and it felt as though nearly half of them were crowded round the BPS stand! Our stand was entitled 'Pharmacologists: Drug Hunters' and demonstrated how drugs affect living things. We deployed the classic *daphnia* and caffeine experiment to great effect, and also invited Understanding Animal Research to share our stand. The *daphnia* have become a key tool for BPS at numerous other events, including the Cheltenham Festival and the Queen Mary Science Fair (where the BPS stand was featured in a local newspaper article).

Biology Week

BPS participated in October's nation-wide 'Biology Week' organized by Society of Biology. We contributed towards two events, which catered for very different audiences in contrasting settings:

- Cambridge Big Biology Day attracted over 1,000 members of the public. BPS ran a hands-on stand with daphnia and a matching activity.
- '3D Prescriptions' looked at the future of personalized medicine and the possibility of printing drugs, with presentations by BPS members. Professor Munir Pirmohamed and Professor Mark Caulfield spoke during this evening event hosted at the Dana Centre.

Not content with our success this year, we have already lined up appearances at Big Bang Fair, Brighton Science Festival, Cheltenham Science Festival and Edinburgh Science Festival in 2014!

Early careers support

To date, our 'Careers in Pharmacology' and 'How do drugs work?' leaflets have been very well received by 'potential pharmacologists' who are considering studying pharmacology. However, we are keen to build upon these to provide further careers resources for school leavers and student pharmacologists.

The Education and Training Committee recognizes the importance of good quality careers education, information, advice and guidance. Co-funded with other Learned Societies, we have published a booklet called 'Next Steps', which is aimed primarily at providing guidance to undergraduate students studying for a bioscience degree, and includes:

- Job seeking strategies
- Employability skills
- Postgraduate study options (within and outside research)
- Making applications
- Interview techniques

'Next Steps' also includes example CVs, information on careers in areas including teaching and medicine, and a comprehensive resource list. An online version is available at: www.societyofbiology.org/nextsteps. It has already been widely distributed at UK careers fairs, is frequently requested by teaching coordinators for university open days and careers events, and received positive feedback from students and careers advisers alike (see Box). Boxes of 50 copies can be ordered at cost price, by contacting education@bps.ac.uk.

> Jane Pooler, the Biology Liaison Officer at AGCAS and Careers Consultant at Imperial College London, said:
>
> *"'Nextsteps: options after a bioscience degree' is a recommended resource for all bioscience undergraduates. It provides an overview of the types of careers open to bioscience graduates and emphasises the importance of developing skills from the very start of a degree, by undertaking work experience and extra-curricular activities - thus helping to increase the employability of bioscience students".*

BPS team ready and waiting to inspire the next generation of pharmacologists

BPS itself exhibits at events to encourage the uptake of pharmacology, including at UCAS fairs but also the Life Sciences Careers Conference. The Nature Careers Conference is where we see the most post-graduate students. Many BPS members have volunteered to talk at these events and we're grateful for their enthusiasm and support.

Life Long (pharmacological) Learning

An art installation at the British Museum entitled *Cradle to Grave* seeks to illustrate medical progress by knitting together a lifetime's supply of prescribed drugs for a typical man and a typical woman into two lengths of fabric. Seeing a lifetime of prescriptions, got me thinking: couldn't Life Long Learning in pharmacology follow a similar story?

BPS regularly team up with Understanding Animal Research at Science Festivals

Life Long Learning is more than just a buzz-phrase for BPS Education – we are passionate about providing educational resources that our members find engaging and valuable throughout their lifetimes.

The type of drugs you need change during your lifetime – and it's the same with education. Similar to the education of under 16s, the medicines (specifically vaccinations) prescribed when you are young are frequent, and if effective provide you with long-lasting benefits. As Einstein reportedly said, "Education is what remains after one has forgotten what one has learned in school."

To take the analogy full circle, towards the end of your professional life you may seek more choice in the educational experiences you undertake, juggling your professional interests with other commitments in and outside work - just as poly-pharmacy in mature patients requires careful management.

Cradle to Grave installation at the British Museum

As a result of the recent BPS membership survey and our commitment to Life Long Learning, we will be mapping and tailoring our educational services and resources according to the needs of BPS members as their professional circumstances change.

BPS is also determined to add a spoonful of sugar to your continuing professional development (CPD) by ensuring recognition for members who participate in educational activities. All BPS meetings and workshops offer attendees the opportunity to claim CPD points – usually Society of Biology and/or the Federation of the Royal Colleges of Physicians of the United Kingdom (or one of its member Colleges). On behalf of the BPS Education and Training Committee, I would urge members to collect CPD points for these events: you are broadening your pharmacological knowledge, so why not claim the points that would demonstrate the time you have committed? CPD points are also easy to claim: all you typically need to do is to remember to sign at the registration desk, or in the case of *Pharmacology 2013* at the BPS stand in the exhibition area.

Women in Pharmacology: Role Models

Liang Yew-Booth
Imperial College London

Yvonne Dempsie
Glasgow Caledonian University

Yvonne Dempsie, Lecturer in Pharmacology, Glasgow Caledonian University, interviewed by Liang Yew-Booth, currently a PhD student in the Respiratory Pharmacology group, Imperial College London.

1. Why did you choose to study pharmacology at university?

I loved biology at school and knew this was what I wanted to study at University. During the first two years at University we studied subjects such as physiology, pharmacology, genetics, sports science and anatomy. I found pharmacology absolutely fascinating. I loved learning about how different drugs work and also about the research which is going on to find new drugs.

2. What was your PhD project on and which aspects did you enjoy the most?

My PhD was on central regulation of appetite, under the supervision of Dr Rob Mason and Dr Sharon Cheetham at the University of Nottingham. I was very lucky that my PhD was part funded by BASF Pharma which meant I spent just over a year on placement there, which I really enjoyed. Another aspect I enjoyed was collating my data, thinking about what my results meant and planning my next set of experiments. I also got to go to Christchurch, New Zealand to present some of my findings at the International Union of Physiological Sciences conference, so that was a definite highlight of my PhD!

3. What made you specialise in cardiovascular pharmacology?

I became interested in pulmonary arterial hypertension (PAH) whilst doing my PhD as some appetite suppressant drugs have been linked to development of PAH. A great post-doc position came up to study PAH in Prof Mandy MacLean's lab in the University of Glasgow just as I was writing up my PhD. I was lucky enough to get the job and have been working in cardiovascular pharmacology ever since.

4. Why did you decide to stay in academia after your PhD?

During my PhD I spent time working in both academia and industry, so I had experience of both and I knew that I enjoyed working in either an academic or an industrial setting. Therefore I would have happily taken a job in either sector. However, I was fortunate to get an exciting post-doc position and so stayed in academia.

5. What is your current position and what does the role involve?

I am currently a lecturer at Glasgow Caledonian University. My job involves conducting research into the pathophysiology of pulmonary arterial hypertension, a very rare but life threatening condition which predominantly affects females. In addition, I also teach various aspects of pharmacology to a variety of students throughout the School of Health and Life Sciences.

6. How did you reach your current position?

I've just recently taken up my first lectureship, so I'm at the start of my career as an independent scientist. As a post-doc, I was very lucky to work in large, multidisciplinary team. This meant lots of opportunities to learn different techniques, to publish and to go to conferences and present my work. It's important to take every opportunity offered to you to strengthen your CV.

7. How have you maintained a work/life balance working in academia?

Anyone who wants a career in academia has to work hard as it's so competitive. However, it's also very flexible, which makes it easier to achieve a work / life balance. I have a young daughter, so plan my day so that I can be home early enough to spend some time with her. Usually I need to make up for this by working in the evening – but it's great to have the flexibility to be able to do that.

8. Have any female pharmacologists been your inspiration or role model?

I have been very lucky to work with inspirational women throughout my career. During my PhD I worked with Dr Sharon Cheetham, a senior manager at BASF Pharma, who then went on to become co-founder and executive director of RenaSci, a pharmaceutical consultancy business. I then worked under Prof Mandy MacLean (Professor of Pulmonary Pharmacology at the University of Glasgow) for nine years. Among Mandy's many accolades, she was recently elected a Fellow of the Royal Society of Edinburgh, has been awarded an MBE for services to Science, won the 2013 BPS AstraZeneca prize for Women in Pharmacology and was awarded a Royal Society Leverhulme Trust Senior Research Fellowship. So I think it's fair to say both Sharon and Mandy were pretty inspirational women to work for!

9. Do you have any advice for those (or any specific advice for women) starting an academic career in pharmacology?

Take every opportunity which is given to you. Go to as many conferences as you can and get your name known. For women, the BPS mentoring scheme is a great way to get help with your career. I was mentored by Dr Gillian Gray who gave me loads of valuable career advice.

DAP Diploma in Advanced Pharmacology

Who is eligible?

The Diploma is a Masters level programme, open to both BPS members and non-members. Diploma students will receive Associate Diploma Student membership of the Society, which is free for the first year. Students should normally be working at the time of application and have suitable data to present as part of their Diploma.

What is the Diploma?

The BPS Diploma in Advanced Pharmacology has been developed and is run by experts from academia, industry and healthcare, and is intended to provide an advanced pharmacological education alongside normal employee duties for researchers who are new to the field of pharmacology, or who wish to develop their expertise further.

Participation in the Diploma programme will:

- Broaden and deepen pharmacological knowledge and skills
- Offer career development opportunities
- Involve interaction with cutting edge researchers
- Provide networking opportunities with a range of scientists in industry, academia and healthcare
- Develop transferable skills such as oral communication skills, presentation skills and written communication skills

What is involved?

Attendance at six core and specialist workshops
Oral and poster communications at BPS meetings
A 6,000—7,000 word dissertation

Costs and registration

The cost of registering for the Diploma is £200, plus fees for the six workshops. For further details including how to apply please visit bit.ly/1cnlUS3 or contact Becca Tibbs at rebecca.tibbs@bps.ac.uk

The Diploma has been a great experience and one of the most worthwhile things I have done
Dr David Winpenny, BPS Diploma graduate 2010

The Diploma helped me develop my presenting skills, gave me an opportunity to network and just helped me remember how to learn!
Dr Laurice Fretwell, BPS Diploma graduate 2012

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

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University of Leicester
28—29 April 2014

5th Focused Meeting on Cell Signalling

In association with the Biochemical Society

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About the BPS

The British Pharmacological Society (BPS) is the primary learned society in the UK concerned with research into drugs and the way they work. Its members teach and carry out research in higher education, the pharmaceutical and biotechnology industries, hospitals, and health services. Many members play a key role in teaching medical students the principles of pharmacology, which underpin safe and effective prescribing in the NHS. Others are responsible for the clinical trials that translate new medicines from molecule to society.

Join us

If you are interested in networking with our members and strengthening our community, you should identify which of the individual categories you are eligible to apply for:

Member
For Pharmacologists and Clinical Pharmacologists.

Standard Tariff - £90

Associate Member
Open to individuals having a professional interest in pharmacology or a closely related subject who do not have the necessary qualifications to become Members.

Standard Tariff - £60

Postgraduate Member
Open to individuals studying for higher degrees in pharmacology, or closely related subjects. Also open to clinicians in training who have a specific interest, or intend to follow a career in clinical pharmacology.

Standard Tariff - £20

Undergraduate Member
Open to individuals studying for degrees in pharmacology and other undergraduates whose courses include a substantial pharmacology component. Also open to medical students at any stage of training.

Standard Tariff - Free

Benefits

Free attendance to BPS scientific meetings including the annual meeting *Pharmacology* held in London in December

Enjoy access to the full online versions of the *British Journal of Pharmacology* and *British Journal of Clinical Pharmacology*

Become eligible for bursaries and travel grants to attend meetings in the UK and overseas

Apply for prestigious study awards and prizes: A J Clark Studentships; GSK Prize for Young Investigators

Receive regular editions of *Pharmacology Matters*, the BPS magazine

Opportunities to network and contribute to furthering pharmacology, across a range of activities, through the Society's committees, special interest groups and working parties

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