

Pharmacology: What is it and how is it important to the Health and Wealth of the UK?

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Pharmacology is defined as the study of the manner in which the function of living systems is affected by chemical agents¹. The UK has a long established tradition of excellence in this field of medical science which is at the very heart of why the UK is still considered a world leader in the development of new medicines.

The British Pharmacological Society (BPS) celebrates its 75th year in 2006. From humble beginnings at our first meeting in the University of Oxford, we now boast an international membership which includes basic scientists and clinicians from both academia and the industrial sector. The BPS also publishes two of the leading scientific journals in this field. Our membership includes several Nobel Laureates, the current Chairman of NICE and many scientists who have been closely involved in the development of ground breaking medicines, some of which are household names. For example Sir David Jack FRS and his team at Glaxo was responsible for the development of a wide range of drugs including salbutamol (Ventolin) for the treatment of asthma, sumatriptan (Imigran) for the treatment of migraine and various glucocorticosteroids for the treatment of inflammatory diseases. Professor Sir James Black FRS, a Nobel Laureate pharmacologist, pioneered the development of beta blockers for the treatment of heart disease and he also developed the H2 blockers that have

revolutionised the treatment of stomach ulcers. UK pharmacologists have also contributed to the development of numerous other drugs including antibiotics, anti-viral drugs, treatments for cancer and heart disease, as well as medicines for many other medical conditions.

However, there are a number of threats to this position. At the basic science end, new drug discovery requires a thriving academic base in pharmacology and chemistry, yet over the past decade Pharmacology Departments have disappeared from a number of UK universities, and many medical schools no longer examine specifically in the areas of pharmacology and clinical pharmacology². The loss of clinical pharmacology is a particular problem given that over 60% of the elderly take at least one prescription medicine per week, 650 million prescriptions are issued per year in the NHS and many patients being admitted to medical wards take 10 or more medicines^{2,3}.

The consequence of this reduction in the academic base of pharmacology and clinical pharmacology is beginning to be seen in the wider community. It is estimated that 5-10% of all hospital admissions are due to adverse drug reactions, many caused by inappropriate prescribing and attributable to a lack of good training in pharmacology^{2,4}. Indeed the Association of the British Pharmaceutical Industry (ABPI), in



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their response to the recently published Leitch Review of Skills, identified that its members were “finding it increasingly difficult to source certain types of graduate skills within the UK – especially those individuals with good chemistry degrees, toxicologists and in vivo pharmacologists. There is certainly a shortage of people wanting to work with animals generally; however, for in vivo pharmacologists there are additional issues concerning the cost of training, administrative workload involved with Licence applications (to the Home Office to obtain permission to work with animals) and under-funding of UK universities leading to fewer scientists being trained in this area”. The US FDA has also recently called for “strengthening and rebuilding of relevant disciplines (eg pharmacology and clinical pharmacology)” as part of its challenge to the scientific community to improve the current stagnation in bringing new medical products to patients⁵.



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Clearly pharmacological approaches to treatment are not on the wane and with an increasing life expectancy (in part due to pharmacological advances in the treatment of cardiovascular disease) giving rise to an ever larger population of the elderly increases the need for experts in all aspects of drug actions². The real possibility of “Personalised Pills” in the near future has already started to capture the imagination and major scientific breakthroughs continue to appear from UK pharmacologists. Nonetheless, to maintain our competitive edge in this field there is no time for complacency and we must address the challenges facing UK pharmacology discussed above so that we will have even more to celebrate over the coming 75 years.

References

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- 3 ABPI Facts and Statistics from the Pharmaceutical Industry <http://www.abpi.org.uk/statistics> (2005)
- 4 Pirmohamed, M, James, S, Meakins, S, Green, C, Scott, AK, Walley, TJ, Farrar, K, Park, BK, & Breckenridge, AM Adverse drug reactions as cause of admission to hospital: prospective analysis of 18,820 patients. Br Med J 329: 15-19 (2004)
- 5 Innovation/ Stagnation: Challenge and Opportunity on the critical path to new medical products FDA White paper, March 2004 <http://www.fda.gov/oc/initiatives/criticalpath/whitepaper.html>



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10 March

Clinical pharmacology and clinical pharmacologists in Europe - past, present and future

ASCPT meeting in Baltimore USA

Lecture by Professor Sir Michael Rawlins

9-11 April

High throughput GPCR pharmacology?

Horsham

This meeting will provide an opportunity to review the advantages and disadvantages of assay techniques commonly in use in most automated high throughput screening laboratories, and will include both industrial and academic perspectives.

27-28 April

Controlling acute inflammation

London

This meeting will focus on the resolution of inflammation and provide an opportunity to hear the views of key workers in the USA, Canada and the UK on resolution of innate and adaptive immunity.

8 June

Pharmacological control of appetite

BJP symposium in Washington DC, USA

4 July

Prostaglandins, Glucocorticoids, Annexin A1 and Inflammation

IUPHAR Congress Beijing, China

Lecture by Professor Rod Flower FRS

4 September

Personalised pills

Norwich

Meeting at the British Association's Festival of Science

11-13 September

The challenges of drug discovery and development

University of Hertfordshire

4th James Black Conference

19-21 December

75th Anniversary Meeting

Oxford

This meeting will include symposia on novel approaches to treating bacterial infections, safety pharmacology, surrogate markers of brain disorders, the historical development of pharmacology teaching, the impact of biotechnology from a pharmacological and drug discovery perspective, cannabinoids, cardiovascular pharmacology and gender and mediator pharmacology, amongst others.