Sir David Jack CBE FRS, FRPharmSoc. FRSE  
BSc(Glas), PhD(Lond)

This obituary first appeared in *The Times* on 18 November 2011  
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**Distinguished pharmacologist who developed drugs that have saved the lives of thousands of asthma sufferers around the world**

Drug discovery today is a highly technical process involving computerised screening of libraries of chemical compounds for their ability to react with preparations containing possible drug targets, and selecting those which respond positively for further development. But it was not always thus. Most of the medicines we use today for treating common diseases such as asthma, angina pectoris and peptic ulcer were discovered in a different manner by small teams of chemists, experimental pharmacologists and clinicians, often led by a visionary scientist whose understanding of drug development and the nature of the underlying disease process were the key to successful drug discovery.

David Jack, who died in November 2011, was such a visionary. It is due to his grasp of the complexity of how the lungs respond to chemicals in both a beneficial and adverse manner that he and a small team were able to invent a series of medicines which have saved the lives of countless asthma sufferers and allowed most other asthmatics to live a normal symptom free life. The citation awarding him the Fellowship of the Royal Society of Edinburgh in 1978 named him one of the world's most successful inventors of significant new medicines.

David Jack was born in Markinch, Fife, the sixth and youngest child of a coal miner. After secondary education at Buckhaven High School, he became an apprentice pharmacist with Boots the Chemists in Cupar, eschewing the opportunity to study mathematics at Edinburgh University. His ambitions at that time were to work in retail pharmacy but, having completed his apprenticeship, in 1944 he entered the BSc course in Chemistry and Pharmacy at the Royal Technical College in Glasgow where he won every undergraduate prize open to him and graduated with first class honours. David became an Assistant Lecturer in experimental pharmacology in the University of Glasgow, having turned down an offer to study for a PhD. Increasingly uncomfortable with experimental animal work, he joined Glaxo Laboratories as a pharmacist where his main role was to formulate new products and supervise their transfer to production. But he found this work repetitive and unfulfilling and in 1953 moved to Smith Kline and French as Senior Development Pharmacist while at the same time studying for an external PhD at Chelsea College under the supervision of Professor Arnold Beckett. His exceptional research potential was easily recognised and in 1961 he was invited to become Director of Research and Development at Allen and Hanburys, whose parent company was Glaxo. There, he created the unusually productive team which he deemed necessary to achieve his ambitions of inventing medicines to treat important human diseases, a venture new to the Glaxo group at that time.

It is interesting to note that in the same small corner of West Fife in 1924 two clinical scientists were born who invented medicines which have had an overwhelming influence on world health. Their career paths were different but the end results were equally impressive. David Jack was responsible for inventing drugs to treat asthma and to prevent it (salbutamol, beclamethasone, fluticasone) while James Black invented drugs to treat angina and hypertension (propranolol) and peptic ulcer (cimetidine). Both were giants of drug discovery to whom society owes a great debt.

David Jack is best known for the discovery of some of the most important drugs to treat asthma and other chronic lung diseases. He appreciated the importance of delivering asthma treatments directly to the lungs by an inhalation device to produce a more rapid effect and to have fewer side effects than drugs given by mouth. Working with Roy Brittain he invented salbutamol (Ventolin), the first selective beta 2 receptor agonist which opens the airways and rapidly relieves asthma symptoms. Salbutamol was a major success and remains the most widely used asthma drug in the world today. But its duration of action is short and patients had to use it frequently. This led David and his team to develop the first long lasting beta 2 receptor agonist, salmeterol.
Allen and Hanbury already had a steroid skin cream and it was argued that that similar steroids could benefit asthma sufferers by damping down inflammation in the lungs. Moreover, if given by inhalation they could avoid producing the troublesome adverse effects of oral steroids. This led Jack’s team to develop the first inhaled steroid beclamethasone dipropionate (Becotide) which was launched in 1972. Inhaled steroids have literally revolutionised the therapy of asthma, cutting down asthma attacks, preventing hospital admissions and reduced the death rate from asthma which in UK was one of the highest in the world.

But David Jack also discovered other important drugs. His friend James Black had invented a new treatment for peptic ulcer, cimetidine which acted by blocking histamine receptors in the stomach. David improved on cimetidine to develop ranitidine (Zantac) which had fewer side effects and was to become the biggest selling drug in the world. Other discoveries followed - sumatriptan (Imigran) for the treatment of migraine, ondansetron (Zofran) for the treatment of nausea following chemotherapy and fluticasone (Flixotide) a more potent inhaled steroid than beclamethasone. This succession of drug discoveries made Glaxo one of the most successful pharmaceutical companies in the world.

Not surprisingly, many honours came his way. Knighted for his services to the British Pharmaceutical Industry in 1993, having previously been awarded the CBE, he was made FRS in 1992 and awarded its Mullard medal the same year. Scotland had recognised his achievements by making him FRSE in 1978. The British Pharmacological Society, the Royal Pharmaceutical Society and the Royal Society of Chemistry all bestowed their highest awards and he was given honorary degrees by seven universities.

David Jack was passionate about science and was the catalyst for the work of many others both in industry and academia. His logical approach to drug development and to solving the difficult problems of invention have been the inspiration to a generation of basic and clinical scientists. This is one of his most important memorials. His enthusiasm for science which was evident long into retirement was coupled with great kindness especially to junior colleagues who remember him with great affection as well as great respect. The high standards that he espoused and his unwillingness to accept anything less have left an indelible mark.

In all this, David was ably supported by a strong and stable family life. Lydia, his wife whom he met as pharmacy students in Glasgow, gave him the support he needed when negotiating the caprices of the pharmaceutical industry and she survives him with their two daughters.

A wide circle will mourn the passing of David Jack, of whom it can truly be said that he made a real contribution to the health and wellbeing of society.

Sir David Jack, BSc(Glas), PhD(Lond). Born 22 February 1924. Elected FRSE 1978. Died 8 November 2011