Confidences de Salon

ERS Science Council Chair, Stephen Holgate, is Medical Research Council Clinical Professor of Immunopharmacology at the Faculty of Medicine, Southampton, UK. He undertook his medical training in London before spending 2 years at Harvard Medical School to acquire skills in allergic disease mechanisms. He established his research group in Southampton in 1980, where his work has focused on the mechanisms of asthma.

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Did you always dream of being involved in medical research/healthcare?

On the way to school each morning I used to pass the ICI (now AstraZeneca) chemical and pharmaceutical company and I always wondered what they did. At a school careers meeting aged 16, I was able to talk to a group from ICI about biochemistry as a career, a subject I was becoming increasing fascinated by. They told me that the best way to pursue this was to obtain a medical degree; so this is what I did at Charing Cross Hospital Medical School. Prior to the interview, my mother told me about a relative who had been a surgeon by the name of Christopher Addison (of Addison's plane and surface marking for the appendix not Addison's disease of the adrenal glands). He was highly successful in government and eventually headed the House of Lords. Addison was an inspiration to me being born into a poor Lincolnshire farming family and one of nine children. It turned out that he worked at Charing Cross Hospital as an anatomist, before entering politics in 1910 when he became the Liberal MP for Shoreditch. I found out that he was one of the people who helped found the UK Medical Research Committee (later renamed the Medical Research Council). A Medical Research Committee, of which Addison was a member, had been brought into being as a result of the National Health Insurance Act of 1911. In 1918 it was generally assumed that this would become the research department of the new Ministry of Health, but Addison refused to allow this, and insisted that research should be set up independently of the executive departments of government.

What is the best advice you had when you were starting your professional career?

Throughout my career, I have had strong mentors who have encouraged and guided me. These have included Professors Dame Margaret Turner-Warwick (Royal Brompton Hospital, London), Jack Howell (School of Medicine, University of Southampton) and K. Frank Austen (Harvard Medical School, Boston). Each of them gave me encouragement to take on new challenges in medical research with the view that "if it looks difficult it's worth doing"!

What advice would you give someone at the beginning of their professional career?

Mentorship is the key to a successful career. Indeed, it is key that aspiring medical researchers find and are guided by such individuals. Another empowering process is to gain experience outside ones comfort zone, especially a period of time overseas and in a different culture. This not only creates new research opportunities but helps create a more adventurous individual with greater resilience. Thus, on returning to the "home base", this experience creates greater opportunities to introduce change since successful and progressive research is rarely linear but disruptive requiring courage to open up new directions and opportunities.

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What has been the greatest change to make a difference in your field in your lifetime?

When I first entered research the cellular and molecular mechanisms of many lung diseases were unknown. For example, when I went to Boston the inflammatory basis of asthma was only just emerging as an underlying mechanism with the identification of mediators of inflammation restricted to biological functions rather than cellular and molecular characteristics. The identification of a myriad of inflammatory mediators in the form of leukotrienes, prostaglandins, enzymes, cytokines and chemokines responsible for the inflammation, and the advent of monoclonal antibodies directed to them is now revolutionising treatment in the direction of precision/personalised medicine. A second major influence has been the sequencing of the human genome, which has enormous implications in understanding the heritability of diseases such as asthma and again is feeding into the emergence of personalised approaches to diagnosis and treatment. Finally, understanding that chronic diseases such as asthma have their origins in early life and even prenatally and evolve over the life course is bringing an important new focus on prevention, such as discouraging maternal smoking, reducing exposure to air pollution and dietary influences.

What do you foresee being the next great thing and what do you foresee as being the biggest challenge in your field in the next 10 years?

One of the greatest challenges that we face is the ageing population and how healthcare will be afforded, especially as the new medicines targeting causative disease pathways are becoming increasingly expensive. New methods to analyse complex large datasets ("big data") both from new technologies such as genomics, proteomics and metabolomics and data from whole populations related to disease and lifestyle will lead to the discovery of new ways of preventing and reversing disease. The increase in the public's knowledge of disease will further feed the personalised medicine agenda, eventually resulting in individual patients owning their own medical records and having greater control over disease prevention/management. One rather worrying concern is the emergence of antimicrobial resistance, not only involving bacteria but also viruses and fungi, compounded by the low incentive for industry to develop new drugs in this field (the difficult business model of developing a drug for very few patients). While delivering quality healthcare to an increasingly ageing population will be extremely challenging, another key challenge is the harnessing the massive data revolution including the digitisation of biology and medicine. We need more people willing to cross the divide between the physical and biological sciences to do this and to begin to adopt approaches that have been so successful in astronomy and physics. Embracing this challenge requires multidisciplinary teams and recognising the contributions of the individual researcher in such "team science" needs solving to enable career development. The breaking down of traditional subject-specific barriers not only in healthcare and higher education institutions, but also in professional scientific societies such as the ERS will become necessary.

What is your favourite scientific breakthrough from any field?

While sequencing the human genome was originally very costly ($200 million in 2001 when Craig Venter's genome DNA sequence was published in Nature), the extraordinary advances in technology have resulted in the cost plummeting to around $1500, thereby creating the opportunity of harnessing this for future healthcare. However, more recently the uncovering of new immunological treatments for cancer, *e.g.* check point inhibitors such as monoclonal neutralising antibodies targeting PD-1 or PD-L1 and CTL-4 for lung cancer, is a massive breakthrough and offers the chance of eventually curing this terrible disease.

How do you see the future of the ERS?

The ERS is a hugely successful Society and now leads the world in representing our speciality. I have been privileged over the past 3 years to help increase and develop its scientific base across the majority of its activities. With the help of an extraordinarily committed Science Council and amazing support from the Offices in Lausanne, Brussels and Sheffield, there have been many successes. These include the highly recognised and lauded International Congress, the Lung Science Conference, Seminars, Fellowships, Clinical Research Collaborations, and the soon to be launched Research Agency. With the data/information revolution now underway, it is important the ERS is fully prepared and engaged in the new scientific and medical advances that will flow from this – a great challenge but also an opportunity. The second key challenge is to consider how we embrace these challenges in the way the ERS is organised and functions. Careful consideration needs to be given to adjusting the assembly structure to one fit for purpose. The Clinical Assembly is by far the largest and will

continue to grow in size with the large increase in international members. The Basic Science Assembly is one of the smallest and yet contains some of our brightest scientists. In viewing its future the ERS has to encourage bringing clinical and basic scientists together across all of its Assemblies, but at the same time maintain the important professional interactions. This will be challenging, but is essential for the future of the ERS.

The gradual withdrawal of industry support from our Congress, resulting from regulatory decisions by EPHA and by governments, means we will need to make our Congresses even more attractive so that individuals paying for themselves will still wish to come. The Executive of the ERS has recognised this and will be enacting changes to achieve this end.

When are or were you happiest?

Professionally, I like to see individuals who are committed, enjoying their work and pushing forward the scintillating edge of their discipline. Personally, I enjoy being with my family and walking in beautiful countryside and coastlines. We have a lovely cottage to escape to close to the sea, in Dorset, England, which is idyllic in achieving the latter, especially watching beautiful sunsets. I also love vegetable gardening and gain great enjoyment from seeing plants grow across the seasons and, of course, being rewarded by the crops that (hopefully) follow!

What do you dislike most?

I really hate to see conflict in any form, whether between individuals or countries. There is so much good in the world, I find it puzzling why people have to challenge, confront and fight each other. This is especially the case in the strange times we live in. I am so fortunate never to have been involved in a war, but I am very upset and alarmed over Brexit.

Who has been your greatest inspiration?

So many people have inspired me, but I believe the person who has influenced me most professionally has been Jack Howell, the Founding Professor of Medicine at the University of Southampton where I am still at employed. He encouraged me to pursue my research career and always supporting me when things were not going quite so well, as happens to us all. Sadly he died last year. K. Frank Austen, my mentor at the Brigham and Women's Hospital in Boston, Massachusetts, has been a great influence on my career and still supports and guides me.

Whom would you most like to thank?

Without doubt my wonderful wife, Elizabeth and our four children Matthew, Edmund, Katharine and Michael. They have not only been my guiding light, but have provided me with the love that has added so greatly to my enjoyment of life. They have taught me that there is much more to life than work!

What do you consider your greatest achievement?

Identifying a greatest achievement is not easy. Professionally, having the opportunity to host and help develop researchers from across the world and to see them blossom and become leaders in their own countries (including the UK) ranks high up in the achievements I am most proud of. Discovering the first novel asthma susceptibility gene (ADAM33) and with my colleagues Donna Davies, Ratko Djukanovic and Peter Wark (now back in Newcastle Australia) uncovering the defect in airway epithelial production of interferon β as being, in part, responsible for viral exacerbations of asthma have been career highlights. The latter enabled us to form a new university spin out company in 2003, Synairgen. From an overall research perspective, placing the airway epithelium at the centre of asthma pathogenesis in orchestrating chronic inflammation, exacerbations and remodelling has been very rewarding.

Who are your favourite authors?

Reading literature has never been my strong point, although I am being increasingly educated by Elizabeth taking me to wonderful theatre and exposing me to a world that I previously had no experience of. As for a favourite author, I really do not have one and will read anything providing there is a strong story.

Who are your heroes in real life?

My heroes are people who have fought against prejudice wherever this has occurred and those that defend the principles of freedom and democracy. Examples include Queen Elizabeth II, Nelson Mandela and Winston Churchill all of whom have selflessly pursued freedom and liberty and in life's journey, put others before themselves. To me they are all "real life".

Where would you most like to live?

I live in a lovely English town on the edge of the New Forest in Hampshire, England. Idyllic – I would

wish to live nowhere else. We have our cottage by the sea, called Gentle Calm, where we and our children go at weekends; what more could one want? I feel we are fortunate indeed.

What is or was your greatest journey?

The greatest and most important challenge in my and my family's lives was the move to Boston for 2 years. It was a truly liberating personal and professional experience that has shaped our lives ever since. Moving away from your own comfortable environment into an entirely different culture was game changing for us. During this time we changed a lot, but when I returned to the UK the same conversations were still taking place as when we left 2 years earlier! This experience gave me the courage to challenge orthodoxy and established views in research, and as a consequence, to build a new and adventurous research group.

What qualities do you appreciate most in your friends?

Openness, kindness and respect for those less fortunate than us.

What qualities do you appreciate most in your colleagues?

Thinking of others before oneself and maintaining a happy disposition even when the going gets tough.

What is your personal motto?

If it is difficult it is worth doing!

What do you consider to be your strengths and weaknesses?

This is a very difficult question! Strengths: I like to take on challenges and difficult tasks, I find great enjoyment in trying to help others (if I can) and realising that there are many things I don't know much about, but I am willing to learn. Weaknesses: I am not always the best at listening, being a workaholic, and not planning ahead far enough.