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The Endocrinologist

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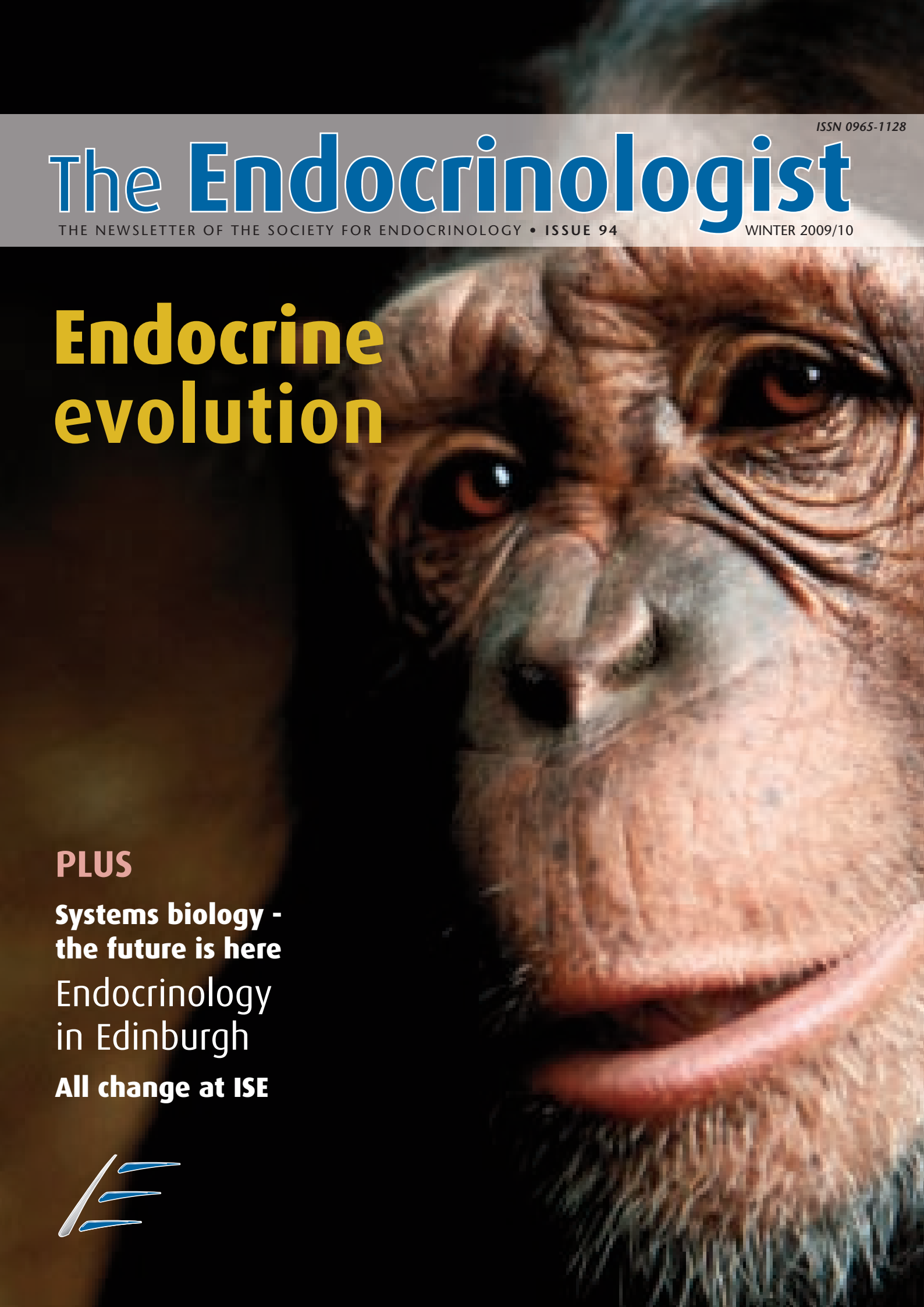


Endocrine evolution

PLUS

Systems biology - the future is here

Endocrinology in Edinburgh

All change at ISE

EDITORIAL

One only need watch a few minutes of the recent BBC 'Life' programmes to experience a re-kindling of a childlike awe for the incredible diversity and adaptations of life on the planet. Clearly, cutting edge photographic techniques married to good old-fashioned graft and 'Heath Robinson' ingenuity have produced what can only be described as jaw-dropping insights into the world about us. Such celebration and visual scholarship would not have been lost on Darwin, with 2009 his Bicentenary and the 150th Anniversary of the publication his most famous book.

In this issue, the theme of evolution is developed further: On page 8 Gavin Vinson makes the case for redundancy in endocrine evolution and the way that the 'pre-adaptation' of hormones and receptors is put to a wide variety of uses by different organisms. Stephen Hillier continues (page 9) by outlining the similarities in the use of endocrine signalling between humans and the lowly slime mould, reminding us of the deep seated part that endocrinology plays in the evolution of species. Following on from this is Michael White's outline of what is meant by 'Systems Biology' (page 13), more of which will be presented at the BES 2010 – highly relevant to those members wishing to successfully 'adapt' to the current funding body environment.

With the conference season soon upon us, it is worth remembering that the 'early bird' deadline for the BES 2010 in Manchester is 18 January 2010. Enhanced advantages of membership of the Society also now include online access to three Society publications, accessed via the BioSciAlliance website (page 3). Meanwhile, on page 7 Paul Stewart outlines the interplay with your Society, other national societies, and the International Society of Endocrinology (ISE).

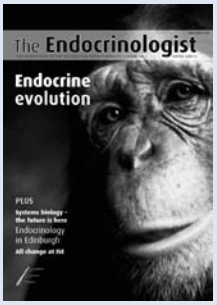
With the merging of the Institute of Biology and Biosciences Federation to form the Society of Biology (page 6), it is timely to congratulate Sue Thorn on being elected to be a Fellow of the new society (page 4). On page 12 she, Pat Barter and Nigel Garland also outline the financial state of your Society and the huge contribution made by BioScientifica.

In this issue, the 'Endo Train' has crossed the Scottish border. The breadth and strength in depth in both clinical and basic science of all the centres that have had the train call on them is all too apparent, and Brian Walker's detailed and impressive report where he expounds all that is 'Edinburgh', is no different (page 10). Future scheduled stops include Oxford and Barts.

The Society continues to make timely innovations in endocrinology, including the establishment of an Obesity Special Interest Group (SIG); the report from the first meeting can be found on page 4 – those interested in future meetings are encouraged to make contact via the website. In addition, Will Drake details plans for a major UK initiative of a multicentre study on dopamine agonists and the heart, funded by the Clinical Endocrinology Trust (page 6), whilst 'Hot Topics' (page 15) highlight some of the recent key papers from the Society's journals.

Finally, to reinforce the notion that appearances can be deceptive we have Galapagos finch beaks and steroid structures (page 9), and then on page 14 we have Hotspur's experience of nose jobs and identity crises!

JOHN NEWELL-PRICE



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Deadline for news items for the Spring 2010 issue: **8 January 2010**. Please send contributions to the above address.

SUMMER STUDENTSHIPS

DEADLINE 5 FEBRUARY 2010

▶ This year the Society has fifteen studentships available to assist undergraduate students in gaining research experience by working in a research environment.

Applications are invited from students whose host supervisor is a Society member. A stipend of £185 per week is offered for a period of study of up to 10 weeks, together with £1000 for host department consumables.

The student will normally be an undergraduate following a course in endocrinology or a related life science subject. Students will normally take up the award during the summer vacation before their final year.

Full details can be found at www.endocrinology.org/grants/grant_summerstudentships.html

Free journal access is here!

▶ From 2010, all Society members will have free access to the most up-to-date research published online in *Journal of Endocrinology*, *Journal of Molecular Endocrinology* and *Endocrine-Related Cancer* included automatically with their membership.

Access to the journals is via the BioSciAlliance website, a new portal designed to enable you to manage your membership effectively (www.biosciallliance.org). This superb new benefit of membership will allow you to search the literature and follow logical pathways in research through reference-linking to and from other journals in the field.

Print subscriptions will continue to be available as an option for members, at the lowest available prices.

New committee members

▶ We welcome the following new committee members: Dr Tim Cheetham and Professor Julian Davis (Clinical Committee), Professor Ann Logan and Dr Mark Vanderpump (Finance Committee), Mrs Marian Lanyon and Mrs Pat Pickett (Nurse Committee), Dr Gareth Lavery and Professor Gareth Leng (Science Committee), Dr Vicky Sharp and Mrs Louise Lloyd (Young Endocrinologists' Steering Group).

We thank the following retiring members of the committees, who have provided invaluable expertise and have given significant amounts of their time during their terms of office: Professor Faisal Ahmed and Dr Miles Levy (Clinical Committee), Mrs Christine Gibson and Ms Viv Thornton Jones (Nurse Committee), Dr Robert Abayasekara (Programme Committee), Professor Karen Chapman, Dr Chris McCabe and Dr Melissa Westwood (Science Committee).

If you would like to have a say in the running of your Society, new committee members will be sought in the Summer issue of *The Endocrinologist*.

Medallists 2011

Thank you to all who sent in suggestions for medallists. We are delighted to announce that the following have accepted their invitations to speak at the 2011 Society BES meeting.

Dale Medal - Professor E R Simpson
Transatlantic Medal - Professor J Kopchick
Society Medal - Professor G R Williams
European Medal - Professor X Bertagna
Hoffenberg International Medal - Professor P Fuller

DON'T FORGET - SOCIETY BES 2011 SUGGESTIONS

Remember to send in your suggestions for scientific sessions at the Society BES 2011 meeting for consideration by the Programme Committee. Suggestions can be made online at www.endocrinology.org/meetings/ScientificSessions/index.aspx by 31 January 2010.

Welcome to new chairmen

▶ We are delighted to welcome the following new Chairs of the Society's committees, who will take up their posts in January. We look forward to working with them as we continue to progress initiatives for all members.

- ▷ **Professor Graham Williams** (Finance Committee)
- ▷ **Mrs Nikki Kieffer** (Nurse Committee)
- ▷ **Dr Alia Munir** (Young Endocrinologists' Steering Group)

The Society thanks the retiring Chairs Ms Maggie Carson and Dr Kim Jonas for their substantial contributions to developing services for nurses and young endocrinologists respectively. Professor Michael Sheppard is moving from his position as Society Treasurer to Chairman of the Board of BioScientifica Ltd; we thank him for all he has done as Society Treasurer and Chair of the Finance Committee.

SOCIETY CALENDAR

23 February 2010
Society for Endocrinology National Clinical Cases Meeting
London, UK

15–18 March 2010
Society for Endocrinology BES 2010
Manchester Central Convention Centre, Manchester, UK

Young Endocrinologists' Prize Lecture winners

We congratulate Dr Vicky Smith for her basic science abstract and Dr Alia Munir for her clinical abstract.

New members elected

We are pleased to welcome the new members who were elected in September. There are 58 from the UK, 4 from Europe and 2 from the rest of the world.

Congratulations

Dr Faisal Ahmed has been made Professor of Developmental Endocrinology at the Royal Hospital For Sick Children, University of Glasgow.

John Connell

Professor Connell has now moved to his new post as Dean of Medicine at the University of Dundee.

Nature Source

▶ The Nature Source event, a careers fair aimed predominantly at postgraduate and postdoctoral students, took place at the Business Design Centre in London on 25 September. The Society was represented with a joint exhibition stand shared with four other learned society members of the new Society of Biology.

The stand was busy all day with large numbers of delegates looking to take the next step in their bioscience careers and interested in what our societies could offer them as members. We also ran a CV surgery offering delegates the opportunity to have their CVs scrutinised for content and layout according to the type of post for which they were applying. This session was hugely popular and delegates were very grateful for our advice. Overall, the event attracted over 1000 scientists and was a golden opportunity to spread the word on careers in endocrinology and the benefits of joining the Society.

Society of Biology success for Sue

▶ The Society for Endocrinology's Chief Executive, Sue Thorn, has been invited to become a Fellow of the Society of Biology and has been appointed Chair of its Membership, Marketing and Communications Committee.

This prestigious appointment sees Sue take on the first term of leadership for one of the new Society's two principal committees. We are delighted that the Society of Biology, the leading professional body in biology, has recognised Sue's potential to provide first class membership initiatives to enable the biological community to work together to strengthen the biological sciences in the UK.

The Membership, Marketing and Communications Committee is responsible for:

- ▷ all Society of Biology publications (including the *Biologist* and *Journal of Biological Education*)
- ▷ external communications and media relations
- ▷ overseeing the network and activities of Society for Biology branches
- ▷ all membership schemes, including those for individual and organisational members
- ▷ member communications

Our Chairman, Professor Julia Buckingham, commented, 'These are exciting times in the world of biology where firm leadership and vision are needed to guide the Society of Biology through its first years and Sue is the right person for this job.'

Sue's Fellowship recognises her prominent contribution to the advancement of biological sciences over the past 20 years, achieved through her hard work and dedication at the Society of Endocrinology.

See page 6 for more about the Society of Biology.

How to ... SET UP AN OBESITY CLINIC

▶ The first symposium entitled 'Obesity management - for the endocrinologist' took place over 1½ days in September at the Institute of Metabolic Science, Addenbrooke's Hospital in Cambridge. It was organised by the convenors of the Society's Obesity Special Interest Group: Dr Sadaf Farooqi (Cambridge) and Professor John Wilding (Liverpool).

The symposium had three main learning objectives:

- ▷ setting up and running a specialist obesity clinic
- ▷ examination and investigation of the severely obese patient
- ▷ motivational interviewing, dietary and medical approaches to treatment

It attracted some of the country's leading figures in the field of obesity, including Rob Andrews, Simon Aylwin, Paddy English, Nick Finer, Gary Frost, Andrew Johnson and Jonathan Pinkney. The relevance of the topics covered, the expertise of the speakers and the interactive nature of the symposium's format made this event an invaluable training opportunity for all those involved in providing care to obese patients.

This positive feedback from the delegates and the speakers (who also found the symposium a useful opportunity to exchange ideas with peers) has encouraged us to hold a second symposium in the autumn of 2010. We will keep you informed. To find out about future training events in obesity, please register your interest in the Obesity SIG at www.endocrinology.org/sig/obesity.html.

CERTIFICATE OF ADULT ENDOCRINE NURSING

We are pleased to announce that Mrs Sangita Sharma has completed all the criteria for her certificate and will be presented with her certificate and badge during the nurses' session at the Society BES 2010 meeting.

LOUIS V AVIOLI FOUNDER'S AWARD

We congratulate Professor Raj Thakker, who has been presented with the Louis V Avioli Founder's Award for fundamental contributions to bone and mineral basic research. He received the award at the American Society of Bone and Mineral Research meeting in September in Denver, CO, USA, and is its first non-American recipient.

AUTUMN RETREAT

▶ October 2009 saw the Society's second Autumn Endocrine Retreat. The highly successful event, at Milton Hill Hall in Oxfordshire, attracted 15 delegates and 6 faculty members. Its main aim was to offer trainee researchers and clinicians the chance to present their research and interact with peers and faculty members in an informal setting.

The delegates (PhD students, postdocs and clinical researchers) gave confident and clear presentations on their career backgrounds, research to date and career aspirations. They were tasked with writing a critical review of selected research papers, then, in groups, researching, writing and presenting a grant proposal generated from the papers.

Each presentation was critically judged by the Society's 'Dragon's Den'-style faculty team. The competition was very close, with the team noting how the groups had excelled in team working, demonstrating their strengths in different areas and exceptional attention to detail.

The Retreat also included thought-provoking presentations from faculty members Professor Alan McNeilly (Serendipity in science), Dr Robert Abayasekara (Tactics in writing a successful grant), Dr Jenny Pell (Your research career in science: how much choice do you really have?) and Dr Rob Fowkes (Grasping the greasy pole of academia: some tricks for survival).

We thank the faculty members for their support, especially convenors Dr Ruth Andrew and Dr Derek Renshaw. The whole faculty agreed that the Retreat was a great success: not just the immediate outcome of the process of grant writing, but also the huge networking and collaborative opportunities that the delegates had been given. The 2009 Retreat delegates have been given a great opportunity for their future research careers, so why don't you give the Retreat 2010 a try next year?

Watch the website for further details www.endocronology. org/meetings

RACHEL EVANS

Bone of contention?

▶ The Society jointly organised another successful public event at the British Science Festival in Guildford in September. Entitled 'Bone of contention? New thinking on osteoporosis', the session saw four experts discuss the causes, prevention and current treatments for osteoporosis.

Professor Saffron Whitehead (St George's, London) took the chair, introducing the speakers and fielding numerous questions from the attentive audience, which included members of the public, patients and healthcare professionals.

The excellent introduction by Professor John Wass (Oxford) explained that bone density decreases with age, and that as many as 1 in 2 women and 1 in 5 men over the age of 50 will suffer from a bone fracture due to osteoporosis. The disease is more common in women because men have a much higher peak bone mass to start with. The audience also learnt the importance of having a bone density scan if you break a bone, as you are six times more likely to suffer another fracture following the first one.

Julia Thompson of the National Osteoporosis Society looked at osteoporosis from a patient's perspective. She runs the Society's helpline, which receives about 50 patient enquiries a day. Approximately 80% of these relate to treatments, with patients usually concerned about the side effects of their medication. Ms Thompson used a case study to describe how a patient's lifestyle can be affected by osteoporosis. If unrecognised at an early stage, osteoporosis can cascade into a series of problems, often resulting in patients being too scared to leave the house.

The causes and prevention of osteoporosis were discussed by Dr Neil Gittoes (Birmingham). Osteoporosis is a disease of ageing, but medical conditions can predispose people to developing the disease (such as an overactive thyroid, parathyroid conditions and kidney and liver problems). Medication taken for an unrelated condition can also decrease bone strength. Studies are looking to identify genes that predispose people to osteoporosis, and some genes have already been identified for the rarer types of the condition.

Professor David Reid (Aberdeen) talked about current treatments. He explained that drugs aim either to prevent the resorption of bone or to stimulate new bone formation. He also discussed how drugs change the rate of breakdown or formation of bone and how they reduce fractures, and how clinicians decide which drugs to use.

Afterwards, Professor Reid and Dr Gittoes took part in a press conference, resulting in some excellent media coverage in *The Times*, *Daily Telegraph*, *Daily Mail*, *The Guardian* and BBC news online.

We extend our thanks to all our speakers and our co-organisers the National Osteoporosis Society, as well as for the support received from the Institute of Biology, Biosciences Federation and the Biological Sciences Section of the festival. To get involved in one of the Society's public ventures, please email public@endocrinology.org.

REBECCA RAMSDEN

DOPAMINE AGONISTS AND THE HEART

▶ All clinical endocrinologists who see pituitary patients will be aware of recent guidelines from the Medicines and Healthcare products Regulatory Authority (MHRA) to arrange baseline (pretreatment) and regular follow-up (annual) echocardiograms in all patients starting or established on ergot-derived dopamine receptor agonist therapy. These result from concern regarding the development of cardiac valvular thickening and clinically significant (moderate to severe) valvular regurgitation.

The data on which the guidelines were drafted came largely from studies of elderly patients with Parkinson's disease with cumulative doses of 3000mg (usually 3g/day or more). It remains unclear whether these data can be extrapolated to patients with lactotroph pituitary adenomas (typically 0.25-0.5mg/week).

Mindful of the resource implications and the potential anxiety caused to many patients already established on therapy without adverse symptoms, a representative group from the Society for Endocrinology's Clinical Committee recently met with officials from the MHRA. They discussed how a co-ordinated UK study of the prevalence of cardiac valvular abnormalities in patients being treated for hyperprolactinaemic states could inform future guidelines.

Using a generous grant from the Clinical Endocrinology Trust, a multicentre study (20 centres, 2000 patients) is being established of the prevalence of valvular heart disease in the routine clinical setting among patients being treated with ergot-derived dopamine agonists for hyperprolactinaemic states. It is anticipated that the study will be adopted by the Clinical Research Network.

With expert cardiological input, a straightforward, standardised, echocardiography protocol has been designed that can be followed in the routine clinical setting by busy cardiac departments. Categorisation of chamber size and valve quantification will follow the guidelines of the British Society of Echocardiography available at www.bsecho.org. A representative sample (10%, 200 patients), appropriately anonymised, will be read centrally by two expert cardiologists to ensure quality. Basic demographic data and the dose and duration of dopamine agonist therapy will be gathered and used to provide information regarding the prevalence of valvular heart disease in 'real life' endocrine practice.

An update on discussions with the MHRA and on the progress of this study is included in the forthcoming programme for the Society BES meeting in Manchester, and interested centres, confident of contributing robust, quality data on 50 patients or more, should contact Dr W Drake at Department of Endocrinology, St Bartholomew's Hospital, London EC1A 7BE, UK (Tel: 020-7601834; Email: public@endocrinology.org).

New Society of Biology launched

▶ The two leading UK biology organisations - the Institute of Biology (IoB) and the Biosciences Federation (BSF) - have united to form the Society of Biology. The Society of Biology will be a single unified voice for biology: advising Government and influencing policy, advancing education and professional development, supporting its members, and engaging and encouraging public interest in the life sciences.

The creation of a single organisation to represent the biological sciences was fully supported by members of both the IoB and BSF, who voted overwhelmingly in favour of the move at annual general meetings held in early 2009. The Society's diverse membership of over 13 000 includes students, practising scientists and interested non-professionals. The numbers are further boosted by individuals from member organisations.

The Society has announced the appointment of its first Chief Executive, Dr Mark Downs. Dr Downs was previously the Director of Science and Enterprise at RNID, and has significant experience in science policy in the government, private and academic sectors.

For information about the Society of Biology, visit www.societyofbiology.org.

E3: enhancing excellence in endocrinology

▶ E3 is a professionally led educational initiative, focusing on personal and professional development, to inspire specialists to deliver excellence in endocrine care. It aims to complement the education and training in endocrinology provided by the Society for Endocrinology.

E3 is funded by an educational grant from Pfizer Ltd and its programmes are developed in close collaboration with the Society for Endocrinology, the British Society for Paediatric Endocrinology and Diabetes and Pfizer Endocrine Care. What it provides is unique. It gives assistance with interview techniques, including practice interviews for SpRs in their final year, provides help to develop CVs, teaches effective communication skills, helps navigate complicated aspects of the NHS environment and gives leadership skills.

There are two meetings each year: one is aimed at senior SpRs, nurses and young consultants and the other at more senior leaders. All have so far been heavily oversubscribed. Future E3 courses will be advertised through the usual Society channels.

You can visit the E3 website at www.e3endocrinology.org, where you can register to become a member of E3 and learn about future courses. Alternatively, contact the E3 Secretariat at Litmus MME, 151 Shaftesbury Avenue, London WC2H 8AL, UK (Tel: 020-76321849; Fax: 020-76321970; Email: e3secretariat@litmus-mme.com).

JOHN WASS, PFIZER E3 FACULTY CHAIR

Changing times at ISE

The International Society of Endocrinology (ISE) was established in 1964 with the laudable task of uniting endocrinologists and promoting the discipline across the globe. This was largely achieved through a stand-alone International Congress of Endocrinology (ICE) every 4 years, overseen by an executive committee that was elected on a 'block vote' system from national societies.

The ISE differs from most national and international not-for-profit societies in that it has no individual members. Its membership comprises the 60 or so national endocrine societies across the world, and relies upon subscriptions from them and income streams from meetings to sustain its activity.

Endocrinology has evolved over the last 10 years, and with it many of the ISE member organisations. For example, over 30% of the membership of the USA-based Endocrine Society is 'international', and at long last the European Society of Endocrinology (ESE) has emerged as a strong unifying organisation across Europe. National societies including our own have developed professional teams to support activities and programmes, including an international dimension. Together these bodies have their own exciting and outstanding meetings structures, but with the result that the annual meetings calendar is now somewhat crowded, with many endocrinologists asking whether we needed another stand-alone ICE meeting.

The ISE has also evolved in order to fulfil its mission of developing endocrinology at a global level. New statutes were passed at the 2008 ICE in Brazil and can be viewed on the ISE website (www.endosociety.com). ISE will focus its resources at three levels.

Firstly, it will promote endocrinology in developing nations by establishing national professional bodies. Here, perhaps the greatest achievement has been development of the Chinese Endocrine Society which has emerged from the Chinese Medical Association, thanks to 3 successive years of ISE-China collaborative meetings. Similar meetings in 2009 in Ghana and Egypt (championed by ISE Executive members Xavier Bertagna and Richard Santen respectively), will launch additional national societies. This activity will continue, targeting countries in Africa, Asia and the Indian subcontinent.

Secondly, ISE will promote geographical partners and programmes, such as those established through ESE, in South America and Asia. This will facilitate the third aim which is to co-ordinate major global initiatives (e.g. around issues such as fertility, iodine supplementation or obesity), through synergy with its major geographical partners. Here ISE has already chaired meetings of ESE and the Endocrine Society, pooling resources for example on evidence-based clinical guidelines.

The ISE meetings structure will change to support these aims, with a new 2-yearly partnership ICE-member society meeting that will replace the stand-alone 4-yearly ICE. These meetings will rotate through geographical regions, commencing with Asia-Oceania in 2010 (Kyoto), Europe in 2012 (contracts with the ESE and Italy have been signed for a meeting in Florence 2012) and the Americas in 2014. These will complement satellite ISE-sponsored symposia in developing nations throughout the calendar year.

National society members will be invited to nominate members to stand for election on to the Executive Committee and a new Executive Committee will take up office after the Japan 2010 meeting.

And so we look forward to Kyoto - the 14th International Congress of Endocrinology (ICE 2010) held in partnership with the Annual Meeting of the Japan Endocrine Society 26–30 March 2010. Read further details about the meeting at www.congre.co.jp/ice2010 and below.

Collectively we still have much work to do in supporting endocrinology across the globe, but we sincerely hope that these new changes within the ISE, in partnership with existing national endocrine societies, will enhance this objective. Kyoto will be a terrific meeting in the new ISE structure and we urge you to participate!

PAUL M STEWART, SECRETARY-TREASURER, ISE

ICE IN THE EAST: DON'T MISS ICE 2010 N JAPAN!

ICE 2010 takes place on 26-30 March in Kyoto, Japan.
This international congress expects around 6000 participants from over 60 countries. The programme has been agreed through a partnership programme organising committee comprising ISE and Japanese delegates. Eleven official satellite symposium are planned before and after the main congress in Kyoto and other cities.
Registration is now open - register before 15 February to save 10%.
For registration and up-to-date details of the congress, visit www.congre.co.jp/ice2010.

International Scholars' Programme

DEADLINE 16 JANUARY 2010

The US Endocrine Society's International Scholars' Programme is open to basic and clinician researchers with between 2 and 5 years' research experience following PhD (or exceptionally, MD). During the time spent as a scholar, the work is predominantly basic laboratory research, with any exposure to patients as an observer. Clinician researchers should have completed their clinical training.

Up to two scholars will be selected by the Society for Endocrinology Awards Committee following shortlisting and an interview during the week commencing 22 February. Successful candidates attend the US Endocrine Society meeting and undergo a further interview process by the host institutions that they have identified.

An application form can be found at www.endocrinology.org/education/resource/isp/isp.html.

On the origin of hormones

As you are probably aware, 2009 is Charles Darwin's bicentenary, and the 150th anniversary of his most famous work 'On the origin of species'. With the help of two well-known members of the Society, we take a look at the evolution of hormones.

Corticosteroids: little change?

'For endocrine evolution is not an evolution of hormones but an evolution of uses to which they are put.'

This perceptive comment was made by Peter Medawar in 1953 (*Symposia of the Society for Experimental Biology VII: Evolution* 320-338), and is the first published statement to this effect, though it was quickly adopted or assumed by others. It is somewhat irritating, since Medawar was a Nobel prize-winning immunologist, not at endocrinologist at all, yet his statement was stunningly accurate, guided perhaps by Peter Krohn and Ian Chester Jones, from whom he sought advice.

There's a remarkable parallel here with the classical concept of skeletal evolution, as interpreted from comparative anatomy. Here, the identity of the skeletal elements that, for example, make up the limbs of coelacanths, amphibia, reptiles, birds and terrestrial or flying mammals has been well understood by generations of undergraduates.

There are many other examples, like the way in which the swim bladder was adapted on land to become an air-breathing lung. Indeed, fins that have become limbs and swim bladders that have become lungs are present in some species today, like lungfish, that are subject to variable availability of their ponds and lakes.

This illustrates the redesignation of structures to different functions as the environment or mode of life changes. It's the product of the essential compromise between the 'maximum parsimony' and 'no-redundancy' concepts that perhaps might once have prevailed in evolutionary thought, before the baggage of unexpressed or otherwise redundant DNA in every nucleus was known.

But how fascinating that the same has occurred in hormones!

Perhaps most striking is the number of uses to which prolactin has been put - osmoregulation in fish, water-seeking behaviour in certain amphibia, pigeon crop secretion and contributing to lactation in mammals - a truncated list for sure.

What of the steroid hormones? Of the steroid-mediated processes that show widest variation in the vertebrates, reproduction ranks high in the list. The steroid hormones are thought (generally) to be essentially identical across the vertebrates, and the same groups of steroids, oestrogens and progestagens are present throughout. Indeed, it is this area that led Medawar to his near-aphorism.

It's in the evolution of corticosteroids that things may seem muddy. Once upon a time, I thought that the first evolutionary appearance of zonation in the mammalian adrenal cortex nicely coincided with the separate production of glucocorticoids and mineralocorticoids, because it's only in mammals that they have distinct functions. It's too neat: the mineralocorticoid-secreting glomerulosa, the glucocorticoid-secreting fasciculata (and the general gloryhole of the reticularis making androgen, sulphoconjugating, and xenobiotic-metabolising) was never as clear as that.

Somehow or other it's mostly the term 'glucocorticoid' that has misled us all. If we understood the essential functions of glucocorticoids, we might begin to understand why mammals appear to require a whole specialised cell type, with its own trophic factor, to make them. From the start it never was thought to be just about carbohydrate metabolism. But the range of functions in which glucocorticoids appear to have a role is huge, and finding a unified physiological and evolutionary explanation for a single control system is elusive.

Even if the actions of mineralocorticoids and glucocorticoids were neat, separated, discontinuous, how could that be explained by the promiscuity with which each binds to the other's receptor (MR and GR) which, moreover, bind to the same response elements in the promoters of target genes?

Recent studies by Bridgham *et al.* (*Science* 2006 **312** 97) on the evolution of corticosteroid receptors show very nicely that MR and GR binding affinities for aldosterone and cortisol are discriminatory even in teleosts, in which aldosterone isn't generally secreted at all. We should look at fish physiology to speculate how the uses to which the corticosteroids are put have evolved.

Marine teleosts, you might think, don't actually need aldosterone. They have no trouble getting enough sodium, their problem is getting rid of it. So they excrete sodium across the gills (and kidneys), a process stimulated by, well, a 'glucocorticoid' - cortisol in fact. Those that live in fresh water have the opposite problem, vanishingly low availability of sodium, so they have a highly effective kidney that (with the gills) resorbs sodium aided, yes, by cortisol again. Associated with this, they must eliminate relatively vast volumes of water, perhaps also facilitated by cortisol.

Here we come across a concept more familiar to a mammalian endocrinologist, for the elimination of a water load, and indeed shifting of water between body compartments is an important 'glucocorticoid' function in mammals. But we are like neither marine nor fresh water teleosts. We terrestrial vertebrates are somewhere in between. Perhaps we're more like euryhaline or estuarine fish, or fish whose watery habitats dry out occasionally. We too have the potential to be subjected to big changes in the availability of water, and of sodium.

So perhaps our ancestors didn't crawl out of the sea at all. They came out of an estuary, or were left high and dry by capricious tides. But they were fully prepared, or 'preadapted', being equipped with limbs, lungs, a 'glucocorticoid' and a balanced set of MR and GR.

The rest is history.

GAVIN P VINSON

Endocrine evolution

The concept of hormones as chemical integrators, flashing through the bloodstream to co-ordinate bodily functions, is well over a century old. However, the molecules from which the first steroid hormones developed are estimated to be over 4000 million years old, and the endocrine system in which they participate has been evolving ever since the first prokaryotic organism existed.

Our understanding of hormone evolution has leapt forward with the application of genome screening to phylogenetics and the emergence of molecular cladistics. Here, I briefly survey some elementary concepts of hormone evolution from the perspective of a steroid 'anorak'.

As an unreconstructed steroid biochemist, I reserve the right to insist that steroid hormones rule, OK? Some pundits claim that steroids did not need to evolve - that they are in fact universal bioregulators that came with the big bang. It has been pointed out that steroids are omnipresent throughout the biosphere of the earth and the cyclopentanoperhydrophenanthrene nucleus is the ultimate primordial biomolecule. Some of the most primitive unicellulate organisms have steroids and many bacteria biosynthesise and utilise these and related molecules. Even plants and invertebrates share the familiar acetyl-coA-mevalonate-cholesterol-pregnenolone pathway.

I particularly like the idea that endocrine steroid signalling may have co-evolved with cyclic AMP signalling. Steroids and cyclic AMP are thought to have co-existed in the planetary prokaryotic clone from which the first eukaryotes evolved.

Mycetozoan taxa provide model systems for studying the origin and evolution of eukaryotes. The cellular slime mould (dictyostelid) has a vegetative growth phase during which individual cells exist as amoeba that feed on bacteria. When the food supply is exhausted, they aggregate to form a slug-like plasmodium, which develops into a spore-containing fruiting body. Once food becomes available, the spores are released to produce individual amoeba and the lifecycle starts anew.

The soluble communication factor that prompts amoeba to aggregate into the plasmodium is none other than 'second messenger' cyclic AMP. It has been posited that cyclic AMP was a prototypic extracellular bioregulator that allowed elementary cell-to-cell communication but was unable to function as a true hormone owing to its chemical lability. On the other hand, the cell surface membranes of primordial unicellular organisms were probably composed of terpenoid derivatives such as steroids and retinoids that gained increasingly diverse signalling roles as metazoans emerged from the primordial gloop.

Present-day prokaryotes and eukaryotes share common biochemical mechanisms of steroid synthesis, action and catabolism. Thus the basic machinery necessary to evolve tissue-specific cell-to-cell signalling via steroids has been preserved across the plant and animal kingdoms. And throughout evolution, cyclic AMP has retained its quintessential communications function in the endocrine system.

The stereochemical determinants of steroid hormone specificity and potency prompt comparison with the impact of beak morphology on the adaptation of Darwin's finches to their various food sources on the Galápagos Islands (see Figure).

We now know that paracrine cell-to-cell signalling involving bone morphogenetic protein-4 was responsible for the variation in beak size and shape among the finches he collected. Who knows, had Darwin been a steroid endocrinologist - in the right lab at the right time - correlation of steroid structure and function might have provided him with equivalent insights on natural selection to the Galápagos finches.

Hormone science has evolved beyond recognition since the term hormone was first coined in 1905. And 150 years after *On the origin of species*, pathway biology has emerged as the 'fifth force' in endocrinology, permitting mapping of the cellular receptors, downstream signalling molecules (including cyclic AMP) and attendant changes in gene expression through which hormones are produced and act on their cellular targets. Thus endocrinology has evolved into a diverse and dynamic specialty that integrates the molecules, mechanisms and medicines upon which post-genomic biomedicine is based. Surely, Darwin would have been impressed.

STEPHEN HILLIER

Further reading

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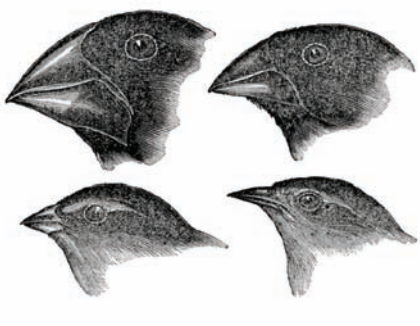
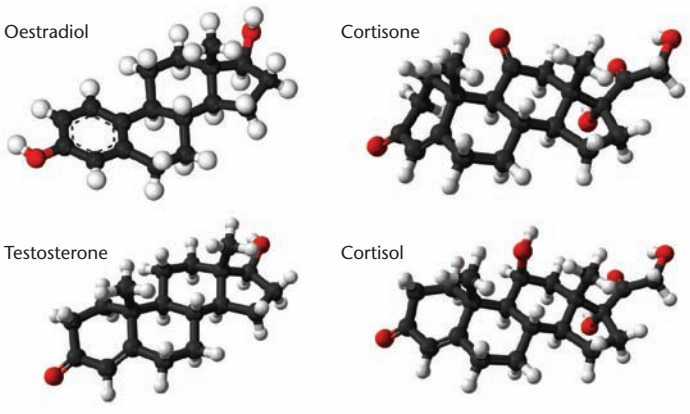
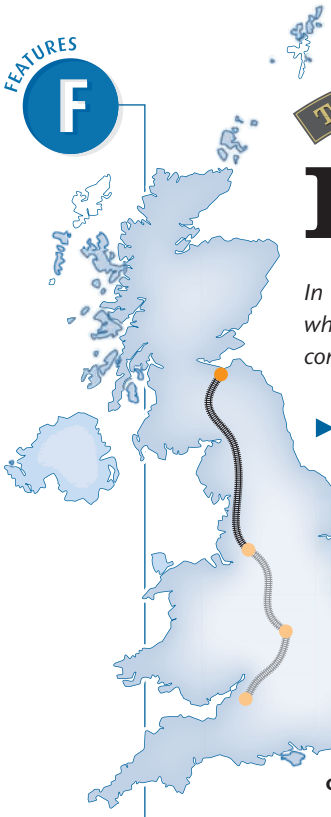


Finches from Galapagos Archipelago



Darwin noted that finches on the Galápagos Islands had beaks of various sizes and shapes that were highly adapted to different food sources. Subtle differences in the stereochemical structures of steroid hormones such as those illustrated confer radical differences in target-tissue specificity and potency, consistent with an evolutionary pattern of steroid signalling in the endocrine system.



THE ENDO TRAIN all aboard for...

Edinburgh

In this issue, Brian Walker explains the excitement about endocrinology in Edinburgh, where multidisciplinary research centres, new buildings, high RAE scores and recent consolidation of clinical services have created a 'buzz'.

Edinburgh has it all: historic beauty, the international arts festival, access to the great outdoors, excellence in education and health, and a leading university. No wonder that most of us who migrate here end up staying! This is a brief overview of the endocrinology scene in Edinburgh today, but if you want to know more please contact us (info@endocrinology.org).

The facilities

There are two major teaching hospitals in Edinburgh, the new Royal Infirmary and the Western General Hospital. Both sites provide clinical services in diabetes and endocrinology side-by-side in 21st century buildings, with enviable specialist nursing and other support. A new Royal Hospital for Sick Children and new neurosurgical facilities are being built at the Royal Infirmary campus.

The vast majority of researchers in endocrinology are based in the Queen's Medical Research Institute (QMRI). Opened in 2005, this £50m building next to the new Royal Infirmary provides state-of-the-art laboratory accommodation for 600 researchers, including numerous expert-led core laboratory facilities and contemporary *in vivo* imaging facilities. Both hospitals boast Wellcome Trust clinical research facilities (www.wtcrf.ed.ac.uk), where all aspects of translational and clinical research are facilitated.

The research base

Research in the University is organised into multidisciplinary centres focused on key disease areas, where researchers with clinical and basic science backgrounds are closely intermingled. Traditionally, endocrinologists have paid little heed to the boundaries between organ-based disciplines, since hormones act in all organs, so it is not surprising that endocrinology is represented in many of these research centres.

Although there is strong representation of endocrinology elsewhere (for example Professors Gareth Leng and John Russell in the Centre for Integrative Physiology), the biggest groups of endocrinologists are based in the Centre for Reproductive Biology (CRB) and in the Centre for Cardiovascular Science (CCS), both housed in the QMRI.

QMRI and the Little France Development

These groups contributed heavily to Edinburgh's UK-leading performance in hospital-based clinical subjects in the recent research assessment exercise, in which 40% of staff were rated 'world-leading' and a further 40% 'internationally excellent'.

The CRB (www.crb.ed.ac.uk) was created in the 1970s and incorporates the MRC Human Reproductive Sciences Unit. Research is focused on fertility in both sexes, endometrial and myometrial disease, polycystic ovarian syndrome in women and prostate disease in men.

A major award in 2007 from Tommy's the Baby Charity supports research on the causes and consequences of obesity in pregnancy. The Jennifer Brown Research Fund supports research on adverse neonatal outcomes. The professoriate in CRB includes clinicians Richard Anderson, Hilary Critchley, Anna Glasier, Chris Kelnar and Jane Norman, and basic scientists Hamish Fraser, Steve Hillier, Henry Jabbour, Gerald Lincoln, Alan McNeilly, Ian Mason, Robert Millar, Philippa Saunders and Richard Sharpe. Many of these people have played key roles in the Society for Endocrinology.

The CCS (www.cvs.med.ed.ac.uk) was founded in the late 1990s and brought together groups previously spread over several different sites, the majority coming from the endocrinology unit that had been built up at the Western General Hospital. There are now more than 70 card-carrying endocrinologists in the Centre, which has benefited from substantial strategic investment, initially from the Wellcome Trust (£7m cardiovascular research initiative) and more recently by serial awards from the British Heart Foundation (such as the recent £7.6m award as a BHF Centre of Research Excellence).

Research themes are focused on the risk factors and outcomes from cardiovascular disease, with notable strengths in steroid metabolism and action in cardiometabolic and neurodegenerative disease, the renin-angiotensin-aldosterone system and blood pressure control, and the molecular basis for early life programming.

The clinical faculty includes Professors Alasdair MacLullich (recent MRC Clinician Scientist), Jonathan Seckl and Brian Walker, and Drs Roger Brown, Mandy Drake (MRC Clinician Scientist), Shareen Forbes (recent Diabetes UK Intermediate Fellow), Moffat Nyirenda (MRC Clinician Scientist) and Rebecca Reynolds. The basic science faculty includes Professors Karen Chapman, Tony Harmar, Megan Holmes and John Mullins, and Drs Ruth Andrew, Paddy Hadoke, Pauline Jamieson, Nik Morton (Wellcome Career Development Fellow) and Joyce Yau (RCUK Fellow). Several NHS colleagues are active researchers and hold academic appointments, including Professors Brian Frier and Paul Padfield, and Dr Mark Strachan.


Edinburgh Royal Infirmary

The clinical service

In the absence of NHS hospital trusts in Scotland, the teaching hospitals in Edinburgh are managed as a single 'division' of Lothian Health. This has allowed us to create the Edinburgh Centre for Endocrinology (ECE), which is closely allied with the Edinburgh Fertility and Reproductive Endocrinology Centre, and provides comprehensive 'joined-up' endocrinology services for Edinburgh and South East Scotland (with a population of approximately 1.5m).

At consultant level, ECE brings together ten adult endocrinologists, four paediatric endocrinologists, four reproductive endocrinologists, four endocrine and pituitary surgeons, three oncologists, one geneticist, two ophthalmologists, and colleagues in clinical biochemistry, pathology and radiology.

Specialist clinics divided between the teaching hospitals comprise general endocrinology, thyroid nodules, neuroendocrine oncology, reproductive endocrinology, paediatric endocrinology, endocrine genetics and endocrine hypertension. In addition, a weekly meeting, which is videostreamed across the city, provides the venue for multidisciplinary team pathology and radiology meetings, protocol review, laboratory liaison, and case discussion.

Training in endocrinology

There are 13 clinical trainees in diabetes and endocrinology at present, who each spend at least 80% of their training in Edinburgh's teaching hospitals, where they enjoy daily 45-minute consultant-led tutorials (the nickname 'morning prayers', coined by Colin Feek 25 years ago, has stuck!) and extensive post-clinic case-based discussion. The training programme is directed by Dr Alan Patrick (Alan.Patrick@luht.scot.nhs.uk).

There is overlap with the training programmes in reproductive and paediatric endocrinology. Feedback from trainees, and results of Joint Committee on Higher Medical Training (JCHMT) inspections, have been consistently positive. Entry to the Edinburgh training rotation has always been highly competitive; please note that in the modernising medical careers system applications for all Scottish Specialty Trainees (ST) posts are currently made centrally.

We are proud of our record of training clinician scientists. In Scotland, although we have Academic Foundation Year (FYA) posts, we do not have pre-doctoral academic clinical fellowships with an associated National Training Needs Analysis (NTNA), so it is important to obtain a NHS-based NTN/ST post before entering academic training. However, we have a generous number of postdoctoral clinical lectureships, parity of access to fellowship funding with the rest of the UK, and the bonus of additional 'Scotland-specific' fellowships. At least half of our clinical PhD students are now in academic posts. Our clinical lecturers have a greater than 50% success rate in obtaining externally funded intermediate or senior fellowships.

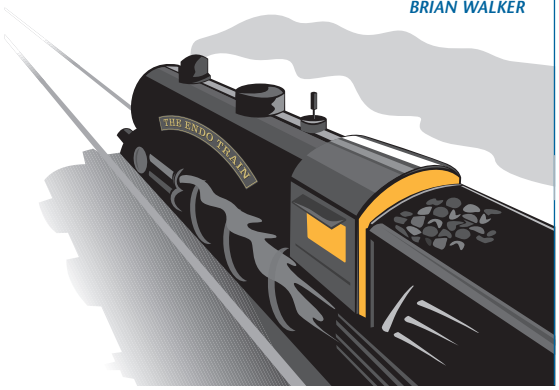
With John Iredale, I have recently been involved in devising several new schemes to support clinical academics at all stages in Edinburgh, including the flagship Edinburgh Clinical Academic Track programme (www.ecat.mvm.ed.ac.uk), which combines a Wellcome Trust PhD training fellowship with run-through training to Certificate of Completion of Training (CCT)as a Clinical Lecturer in any discipline. A similar Scotland-wide scheme, led by David Webb, is available for those with a focus on translational medicine and therapeutics (stmti.mvm.ed.ac.uk).

We also consider training basic scientists to be a high priority. With Wellcome Trust support we launched one of the first 4-year PhD programmes, which now runs with BHF support. We are involved in endocrinology courses for numerous undergraduate and masters programmes, including distance learning programmes (e.g. www.transmed.ed.ac.uk). Under the BHF Centre of Research Excellence, we have funding for novel postdoctoral 'traineeships' in areas of strategic importance and 'transition fellowships' aimed to support postdoctoral scientists as they make the transition to independent funding. There is an active postdoc society and mentoring programme in QMRI, and Edinburgh has prize-winning programmes for transferable skills training. Many of our basic science trainees have now obtained faculty positions.

The prospects

Thinking back 20 years to my first experiments in Edinburgh in a windowless lab, with patients being wheeled past the door in their nighties, or my first clinics in the old Metabolic Unit where the roof leaked and the conversation in the next clinic room was clearly audible, it really is hard to believe how far we have come. I feel very privileged to be working in ultra-modern facilities with state-of-the-art equipment, shoulder to shoulder with basic science colleagues and researchers from other disciplines, and translating our research into novel understanding and therapy. The future looks very bright and exciting. I hope that some of you reading this will be infected with that excitement and might consider boarding the train to Edinburgh!

BRIAN WALKER



Money - too tight to mention?

Have you been wondering how the recent economic crisis has affected your favourite society? After all, our reserves are largely dependent on the stock market and commercial property values, and part of our income comes from bank interest. Journal subscriptions are our largest income stream and university library budgets are hard-pressed at the moment.

On the other hand, a significant proportion of our income is received in US dollars, and this has been in our favour for some time. Inflation is negative, whereas in spring 2008 we were horrified to watch manufacturing input inflation (which might be expected to fuel inflation a few months later) climbing to 35%.

And then again, academic budgets are being cut, which, in addition to causing problems for library journal budgets, is likely to reduce the number of academics available to societies as paid-up members and as conference delegates. And some pharmaceutical companies are finding that current drugs are coming off patent while the pipeline for new products is running slow.

The staff, Finance Committee and Council have been wrestling for the last year with these issues and their implications for the Society's longer-term health and for its programme of activities in support of endocrinology and endocrinologists, which you will remember has been expanded substantially in the last few years.

We have taken two main steps to safeguard the Society's future.

First, we reviewed all expenditure for the year to July 2009 and cut back wherever we could without compromising our core activities. Hopefully, most members were unaware of these cutbacks.

Next, we established a scenario planning framework that enabled us to model all the variables above, and a few others. This enables us to enter optimistic, intermediate and pessimistic scenarios for each of the variables for the years 2009-10 and 2010-11. Then, to simplify a complex model, out 'pops' the value of the Society's reserves at the end of July 2011.

The first of these actions, together with some really good results (again) from BioScientifica, has meant that 2008-9 has ended with a net deficit (after adding in BioScientifica's profit and deducting losses on investments) of £20 000. This compares to a budgeted deficit of £526 000.

Feeding the end-of-year figures into the planning spreadsheet shows that, on current best estimates, we should not have to dip into our defined required reserve by the end of 2011, even though the 2011 Society BES meeting will be at the very expensive venue of Birmingham. We're not complacent about this, because we are aware that 2010 and 2011 are high-risk years for us in several areas. However, these results, together with the scenario planning tool outlined above, give Council some confidence to move ahead with the Society's strategic aims, albeit still with a degree of caution.

SUE THORN AND PAT BARKER

BIOSCIENTIFICA SETS ANOTHER RECORD

As you know, I'm sure, BioScientifica is a trading company owned by the Society and created to generate additional funds to support endocrinology. We have just finished the end-of-year accounts for 2008-9 and the Board, chaired by Steve Bloom, is delighted to tell members that BioScientifica will donate around £428 000 to the Society for the year to July 2009.

This is another record year for BioScientifica and brings the total donated since the company was launched in 1996 to just short of £3 million. We had been cautious about forecasting yet another good year, as trading conditions have not been entirely favourable, to say the least. However, additional pharmaceutical business, plus some cuts in overheads (largely due to deferral of a planned office expansion), have combined to deliver another super result. It goes without saying that we are aware of the challenges ahead in 2010 and 2011 and are not complacent about the future.

So how does BioScientifica generate these funds? We have two main client groups and we provide a range of services to each. We are probably unique in that we provide all the expertise in-house.

For other medical and scientific societies, we provide services such as:

- membership management, and support to councils and committees
- managing conferences and training programmes
- designing and managing websites
- publishing journals, books and newsletters
- book-keeping and accounting services
- public and media relations services
- providing advice on strategy and governance
- providing assistance with setting up companies and registering charities

For the pharmaceutical industry, we provide services such as:

- managing conferences, including satellite sessions at third-party conferences
- publishing conference proceedings, other books and journal supplements
- managing advisory boards and product launch events
- providing medical writing services

One of the benefits of BioScientifica's involvement in these areas is that our staff's knowledge and skills can help promote endocrinology directly by supporting other societies around the world. This is achieved both through the services we provide to other societies and through the BioSciAcademy (www.bioscientifica.com/biosciacademy), which provides advice and training to other learned societies.

If you are involved with a society that needs assistance with membership, conferences, journals or any of the other services mentioned above, contact Sue Thorn (sue.thorn@endocrinology.org) or Nigel Garland (nigel.garland@endocrinology.org).

SUE THORN AND NIGEL GARLAND

Predicting a future for systems biology?

At Manchester's Society for Endocrinology BES meeting next March, you'll be able to learn more about accessing funds and revolutionising your research in systems biology. But just what is this field all about? Here, Michael White helps us define this 21st century approach to biology.

▶ Every few years a new scientific field emerges. Often it is a new subfield, based around a new concept or technology. Alternatively, an established discipline is given a new name.

Systems biology has had an interesting birth, being viewed in very different ways by people from different backgrounds. A mathematician may see systems biology as arising from the rich history of mathematical biology. A physiologist is most likely to see it as originating from the established field of integrative physiology.

To complicate matters, definitions of systems biology vary - at least in the words used. The BBSRC states that systems biology involves 'placing a greater emphasis on the interactions between components and the consequences of such interactions than on the components themselves'. The Institute for Systems Biology characterises it as 'the study of an organism, viewed as an integrated and interacting network of genes, proteins and biochemical reactions which give rise to life ... aided by the infusion of scientists from other disciplines' (www.systemsbiology.org).

I believe systems biology can in part be seen as a return to traditional values. In the 1970s and 1980s the cloning revolution mainly involved single gene/protein reductionist biology. This was a period of tremendous growth, with many new concepts emerging. However, as Sir John Maddox argued in 1992 (*Nature* **355** 201), molecular biology then required a move back towards more quantitative measurement of biological processes. The tendency (which remains today) for use of semi-quantitative assays that average out cellular variation and dynamics leads to a fuzzy and limited mechanistic or poorly integrated view of how biological processes function.

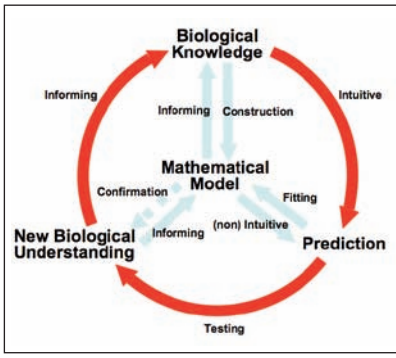
Systems biology is an opportunity to think about things from a different viewpoint. Biologists need to consider more carefully how they measure biological processes. What timescale and spatial resolution are required? How quantitative does the measurement need to be? Can different datasets be quantitatively related using a common set of annotation tools? In many cases we need new quantitative experimental tools (e.g. to measure processes such as dynamic protein interactions) and new ways of handling and relating the data.

Theoreticians approach biological problems from new and different standpoints. Those biologists who develop the skills to interact with them can contribute to developing a better understanding of biological complexity. A key aim of systems biology is to use theoretical models to aid understanding of complex non-linear processes and to make predictions that can then be used to test the biological system. This can save experimental time and give rise to important and non-intuitive discoveries.

Systems biology is a science of complexity. As we have acquired more and more complex and larger datasets we increasingly need new ways to visualise and interpret these data. Obvious examples are genome sequencing and the '-omics' technologies, which involve global measurement of key biological components. This is often not traditional hypothesis-driven research, instead acquiring global datasets from which new biological understanding can be mined.

One (in my opinion, limiting) view of systems biology is that it only involves the application of high throughput and '-omic' technologies. Interestingly, in the USA there seems to often be a more loose interpretation of systems biology as any large scale or global area of biological science.

So is systems biology just a rebadged field? I argue that it represents a new way of approaching biological questions that allows us to handle large volumes of new quantitative data. Interdisciplinary approaches are by no means novel in biology (e.g. Hodgkin and Huxley's work reported in *Journal of Physiology* 1952 **117** 500-544). Denis Noble, pioneer of arguably the longest-standing true systems biology project, modelling ion channels in the human heart (*The Music of Life* 2006 Oxford University Press), argues that the rise in systems biology has resulted from a change in thinking that 'is about putting together rather than taking apart, integration rather than reduction. It requires that we develop ways of thinking about integration that are as rigorous as our reductionist programmes, but different ... It means changing our philosophy, in the full sense of the term'.



An example of a systems biology research cycle showing the relationship between the biological cycle (red) coupled to the use of a mathematical model (blue).

I believe that systems biology represents the opportunity and change in thinking that have been brought about by the volume and/or quality of the new biological data.

In endocrinology, complex systems are very apparent. These include complex dynamic and spatial processes such as the dynamics of hormone secretion, and the resulting effects of hormone secretion on tissue and whole organism physiology. A key recent description by Stavreva *et al.* of how ultradian hormone stimulation induces glucocorticoid receptor-mediated pulses of gene transcription (*Nature Cell Biology* 2009 **11** 1093-1102) illustrates very well the increasing complexity with which we have to view endocrine systems.

Under these circumstances, I argue that there is no alternative apart from a predictive systems biology approach.

MICHAEL WHITE

Thanks to John Ankers, Dave Spiller, Julian Davis, Claire Harper and Colin Miles and colleagues at BBSRC for advice and comments.

Personal identity

Hotspur grapples with 'the meaning of self' ...

The manner and intensity of the celebrations exhibited by a professional footballer after scoring a goal are now monitored closely by officials. For instance, running 90 yards to the opposite end of the ground and sprawling on your knees in front of the opposition supporters is considered inflammatory behaviour, and may result in a caution and ban for the next couple of matches.

My crime was far more innocuous. On the first games afternoon at my new secondary school, I managed to score a couple of goals. As we trudged off the field I must have had a happy expression on my face - no more than that - no boasting, for I didn't know any of the other 11-year-old boys well enough yet to talk to them. It was then that the master, Basher Biggs, approached me and said, 'Wipe that smile off your face, boy. Remember you are no more important than the smallest speck of dust!'

That designated status remained with me, and in the forefront of my mind, forever more. It surfaced on one occasion when, as a pre-clinical student, I was discovered on the wards interviewing a patient who was under the care of the legendary senior cardiologist.

I had been itching to see a patient throughout my pre-clinical studies and so when a friend, a clinical student, arranged for me to see one of his patients, I was delighted. As luck would have it, within 5 minutes of my arrival at the bedside, the curtains were flung back and the half-spectacled, heavily moustached and eyebrowed visage of the senior cardiologist appeared.

'Who are you?'

What a first question for anyone wishing to practise medicine: indeed, a question that I have been wrestling with throughout my life. But on this occasion and, in complete panic, I blurted out, 'I am completely unimportant, sir; I am less important than the smallest speck of dust beneath your feet.'

'That may be so, but for the moment your name would suffice,' he replied.

There is neuropsychological evidence that facial identity is computed separately from facial expression. It was a concern about facial identity not expression that led to my next self-examination and change of behaviour. At the time I was house surgeon to the senior consultant plastic surgeon. This meant that I clerked in all his private patients, mainly individuals who desired a different-looking nose.

I had looked forward to this part of my job, as I expected to come across glamorous female models and film stars requiring a minor alteration to their hooter. How wrong can you be? The typical patient turned out to be a middle-aged woman who had saved up for 20 years for a nose job because she had always hated her nose. Even worse, there was nothing wrong with their noses! Most of those having nose reductions had at the outset a nose smaller than my own!

I resisted the temptation to tell them that there was nothing wrong with their noses, on the grounds that the potential loss of business might affect my reference. History-taking, however, became a highly embarrassing occupation and it was then that I developed the lifelong habit of taking a history and writing my notes with my right hand, whilst covering the centre of my face with my left hand. A technique not described in the literature and one that results in very untidy writing if the table surface is not fixed rigidly.

Nowadays, personal identity is understandably a critical issue for security reasons, but it came as a shock when the subject reared its head at the 2009 American Endocrine Society Meeting in Washington. I arrived at the conference site to collect my programme and documents, having pre-registered online. As an invited speaker, I did not foresee any problem, but to my astonishment I was asked to produce my passport! In a state of incredulity I replied, 'I do not wish to catch a plane.'

My brain was spinning with questions. If I got through immigration control at the airport, why did I have to succumb to another security check at the AES Meeting? If an individual had chosen to impersonate me, would he have been willing to give my talk and, if so, would his talk have been better than the one that I had prepared?

The official with whom I was dealing was called Grace. I explained to her that I did not have my passport with me. Instead I offered my Derbyshire Gold Card - a geriatric concession card. Grace looked at it, nonplussed, and told me that where she came from in Louisiana, the Derbyshire Gold Card cut no ice.

I explained to Grace that the Derbyshire Gold Card allowed me to travel on trains within the Peak District at half price, but, even more relevantly, my picture and name were on the card. The Derbyshire Gold Card was the clincher and it was a done deal. I was relieved, consoling myself with the thought that such nonsense could not happen in the UK.

Well, as it happens, a week or two later I phoned the UK General Medical Council to notify them that my home address had changed. The man who (eventually) answered the phone told me immediately that his name was Geoff. Why did I need to know his Christian name? Did he believe that we were likely to strike up a friendship? Anyway, he informed me that, before he could change the address details, I would need to undergo a security check.

'What is your GMC number?'

I told him the number.

'How do you normally pay your annual fee?'

'Usually in one payment, but I cannot remember whether it is by cheque or credit card. Can I tell you the new address now?'

'No you cannot; I am afraid you have failed the security check!'

Dumbfounded at the requirement for an in-depth security viva, with some questions tougher than the MRCP exam, and all for the sake of notifying the GMC of a change of address, I could barely splutter, 'What happens now?'

Geoff's voice rang out triumphantly.

'Send me your passport!'

'HOTSPUR'

Hot Topics

The latest research in the Society's journals. Resolve the DOI at http://dx.doi.org

Journal of Endocrinology

Effects of GH on memory

GH peaks before puberty and then declines with age. Childhood-onset GH deficiency (GHD) is treated with GH to increase body size during adolescence. It is unclear if early GH replacement can prevent the cognitive deficits observed in adults with childhood-onset GHD. Nieves-Martinez *et al.* have evaluated GH's effect in an animal model. They found that adolescent GHD deleteriously impacts brain function later in life and may lead to early emergence of age-related deficiencies in learning and memory without GH supplementation.

DOI: 10.1677/JOE-09-0323

TRβ activation prevents obesity

Thyroid hormone rapidly increases energy expenditure and lowers serum cholesterol and triglycerides in animals and humans. However, it causes cardiac arrhythmia, bone loss, nervousness and anxiety. Amorim and colleagues studied the response of rats on a high fat diet to the thyroid hormone receptor β (TRβ) selective agonist GC-24 for 1 month. This reduced adiposity, improved insulin sensitivity, and accelerated resting metabolic rate. It induced key BAT metabolic enzymes, but only minimally affected the liver, skeletal muscle and white adipose tissue. GC-24 did not affect the heart. This identifies a potential mechanism for weight loss with important therapeutic implications.

DOI: 10.1677/JOE-08-0539

Calorie restriction improves insulin sensitivity

In this study, Zheng and colleagues investigated the activity of insulin receptor substrate (IRS) protein kinases in obesity-induced insulin resistance. Their data from lean and obese Zucker rats suggest that changes in the activity of IRS kinases may underlie the molecular mechanism behind the improved insulin resistance seen in caloric restriction therapy.

DOI: 10.1677/JOE-09-0181

Journal of Molecular Endocrinology

Regulation of osterix

Osterix, a gene transcription factor expressed in differentiating osteoblasts, has been suggested to play a part in tumour growth and metastasis. Hong *et al.* have demonstrated that prolonged exposure to parathyroid hormone in osteoblastic cell lines inhibits osterix expression, findings that could be beneficial in regulating bone tumour activity.

DOI: 10.1677/JME-09-0012

Cardiomyoblast cell apoptosis

Prevention of cardiomyocyte apoptosis has been identified as a potential strategy for treatment of cardiovascular disorders. Chen and co-workers have demonstrated that the Leu27IGF2 analogue bound to the IGF2/mannose 6-phosphate receptor triggers intracellular signalling that contributes to cell apoptosis. The study suggests that inhibition of this pathway could be used as a treatment to improve heart function in patients with heart failure.

DOI: 10.1677/JME-08-0121

Endocrine-Related Cancer

Array-painting analysis in breast cancer

This paper by Unger and colleagues describes an ambitious approach to discover radiation-induced oncogenic rearrangements in breast cancer cell lines. Several chromosomal translocations were identified and mapped, and aberrant expression of genes participating in the rearrangements were demonstrated. Although the functional consequence of these rearrangements on mammary cell tumorigenesis remains to be studied, this paper provides a valuable approach to scan the genome for potentially novel radiation-induced fusion genes.

DOI: 10.1677/ERC-09-0065

EGFR and VEGFR2 in medullary thyroid carcinomas

Rodriguez-Antona and colleagues have explored the association of genetic or functional changes in EGFR and VEGFR in a large set of primary and metastatic medullary thyroid cancers. These data are particularly timely as small molecule kinase inhibitors of EGFR and VEGFR have shown significant activity in early clinical trials of medullary thyroid cancer.

DOI: 10.1677/ERC-08-0304

Clinical Endocrinology

Natural history of NFPA

O'Sullivan *et al.* analysed case notes of all patients who had undergone surgery for non-functioning pituitary adenomas (NFPAs) in their hospital (1980-2006) in order to improve understanding of the natural history of NFPAs and determine predictors of regrowth. They found that post-operative tumour remnant size and length of follow-up were the best indicators of recurrence. Patients with post-operative extrasellar remnant should be considered for adjuvant radiotherapy.

DOI: 10.1111/j.1365-2265.2009.03583.x

Parathyroidectomy in the elderly

Parathyroidectomy is an effective treatment for primary hyperparathyroidism (PHPT) but may not be offered to elderly patients on the grounds of risk. Stechman *et al.* looked at survival and quality of life in patients who underwent surgery for PHPT. Parathyroidectomy improved the symptoms of patients >75 years old and survival after surgery was similar to that of younger patients, indicating that it is safe and should be considered for all elderly patients with PHPT.

DOI: 10.1111/j.1365-2265.2009.03540.x

Gamma knife in acromegaly

Ronchi and colleagues evaluate the efficacy of gamma knife radiosurgery in a large series of acromegalic patients over a 10 year monitoring period. High cure rates and adequate control with low side effects – such as visual impairment or recurrence – was tempered with an increase in novel pituitary deficiencies in 50% of the patient group.

DOI: 10.1111/j.1365-2265.2009.03589.x

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M015/1064 Date of preparation April 2009

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