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The Endocrinologist

SPECIAL ISSUE

Animals in Research

The Endocrinologist

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Deadline for news items for the Summer 2001 issue: **23 March 2001**.
Please send contributions to the above address.

EDITORIAL

I can't believe how fast the millennial year passed, and am astonished to find myself welcoming you to the winter issue of *The Endocrinologist*.

Now the festive period is over, we hope that you will take some time out to read and digest this special issue, which focuses on the use of animals in research. I realise that this is a very serious subject for our newsletter, and some may be surprised to see it presented here. However, there are very few fora in our professional life for discussion of the ethical and practical issues that surround this highly emotive subject. I feel that our newsletter needs to confront contentious issues from time to time, and address them head on.

Our writers on the subject have been drawn from a wide range of backgrounds, and each certainly has a different viewpoint. But, if we can take one recurrent theme from them, it is 'Education, education, education...'. The articles (on pages 8-14) aim to raise awareness of the issues involved, thereby stimulating informed discussion both within our profession and externally with the general public. This subject confronts those who work in biomedical research daily, but we have been very shy of raising the level of debate in the public domain. Perhaps the time has come for more openness and awareness of the issues at stake. Contacts for further information, resources and discussion can be found in the individual articles. Do let us know your views on the subject.

Despite the serious focus of this issue, you will find features here to make you smile. The highly amusing deliberations of Sir Humphrey Lyggande and Dr Rhys Eppter continue on page 15, and a new contributor to *The Endocrinologist*, one Master Pepys, features on page 5 as he reports on his first visit to a Society for Endocrinology meeting. It seems that he was most entertained. Together with our usual round-up of Society and general news and views, hot topics, conference reports, book reviews and notices, there is much here to stimulate the little grey cells. Happy New Year to you all!

ANN LOGAN

SPECIAL ISSUE

Animals in Research

Marjorie Robinson Fellowship

Applications are invited for this 2-year Fellowship, which will fund research into pituitary and/or adrenal functions. It includes a salary on the RA1A scale, up to a maximum of £25 213 in the second year (plus London weighting if applicable), with £10 000 pa available towards the project's running costs.

Prospective Fellows should apply, and should formulate their own proposals with the support of a sponsor. The successful Fellow must be resident in the UK, and will be expected to join the Society if not already a member, and to participate in the Society's activities during the term of the Fellowship. The sponsor must be a member of the Society.

The closing date for applications is 31 March 2001 and interviews will be held in early May. Forms are available from the Society's web site (www.endocrinology.org/sfe/grants.htm) or from Ann Lloyd in the Bristol office.

Members on the move...

T A M Abdu to New Cross Hospital, Wolverhampton; **K A Adamson** to Western General Hospital, Edinburgh; **W E Clarke** to Lawson Health Research Institute, Canada; **A Dalrymple** to St Thomas' Hospital, London; **A Dixon** to Princess Royal Hospital NHS Trust, Telford; **N A Hanley** to Southampton General Hospital; **F J L Kaplan** to The Middlesex Hospital, London; **H Kinoshita** to Kagawa Medical University, Japan; **K Kos** to Royal Preston Hospital; **J S W Li Voon Chong** to Royal Hampshire County Hospital, Winchester; **G S MacColl** to Royal Free and University College Medical School, London; **J W Mockridge** to Imperial College School of Medicine, London; **H Nicholson** to University of Otago, New Zealand; **B S F Shine** to John Radcliffe Hospital, Oxford; **J W Stephens** to Royal Free Hospital, London; **W Suriyasathaporn** to Khon-Kaen University, Thailand; **A A Toogood** to Queen Elizabeth Hospital, Birmingham; **J Whitley** to Victorian Institute of Animal Science, Australia

New Chairman for the Nurse Committee

We are pleased to announce that Maggie Carson is the new chairman elect of the Nurse Committee following a recent ballot within the committee. Maggie will shadow Mavis Harris, the current chairman, for the coming year and will take over from her in October 2001.

All change for Bristol office 'phone and fax numbers

The Bristol office has had a new telephone system installed and this has been in operation since the beginning of December. As a result our phone and fax numbers have changed (see the inside front cover of this issue for details). However, should you forget them, we are assured that the old 'phone and fax numbers will continue to work for quite some time into the future..

Congratulations...

to **Richard Ross**, who has been awarded a personal Chair at Sheffield University.

Hormone Film Nominated

The documentary 'Hormone Heaven', screened by the BBC in February 2000, as part of the Body Chemistry series, was nominated for an award at the 2000 Beijing International Scientific Film Festival. The Society assisted in the early planning of the series, and the associated publicity attracted around 250 patient enquiries to the Society office.

SOCIETY CALENDAR

12 February 2001
Clinical Cases Meeting
Royal Society of Medicine, London

26-29 March 2001
BES 2001
Waterfront Hall and Hilton Hotel, Belfast

9-13 July 2001
Summer School 2001
Monkbar Hotel, York

13 July 2001
Focus on Endocrinology
- see page 2 for details
St William's College, York

11-13 September 2001
Endocrine Nurse Training Course
Kelvin Conference Centre, Glasgow

3-4 December 2001
192nd Meeting of the Society for Endocrinology
Royal College of Physicians, London

New Treasurer

Following the recent AGM, we are pleased to announce that the Society's new Treasurer will be Professor Anne White, who will take over from Julia Buckingham at the 2001 AGM.

Steve Franks (Chairman), Steve Bloom (General Secretary) and Malcolm Parker (Programme Secretary) were all re-elected for a further year.

Medal Winners

2002 Dale Medal **David Baird**

2002 Transatlantic Medal **John Challis**

2001 European Medal **Björn Vennström**

2001 Asia & Oceania Medal **Iain Clarke**

2001 Society Medal **Paul Stewart**

Grants for Lab Visits

The Society for Endocrinology is offering grants for young endocrinologists to visit labs to learn a technique or to carry out experiments essential to their project. Up to £500 is available for visits to labs based in the UK or Europe, and up to £1000 for labs based in the rest of the world.

Applicants should be members of the Society who:

- are under 35 and no more than 6 years post-PhD/MD/MRCP
- have signed up with the Young Endocrinologists discussion list (to join, send an e-mail to: young-endocrinologists-request@mailbase.ac.uk).

Grant applications should be made in writing to the Treasurer at the Society's Bristol office, and should include a brief summary of the work you propose to undertake (on one side of A4), together with a letter specifying (a) your destination and why you have chosen it, (b) the date and length of your intended visit, (c) the costs of travel and accommodation and (d) your reasons for requesting a grant. The letter will also need to be signed by your head of department.

The Vase by Pat McBride

Endocrine Nurse News

Committee

Mavis Harris' term as Chair comes to an end in October 2001; following in her footsteps will be a daunting task! Nominations for new committee members will be invited in the next issue of *The Endocrinologist*.

Events

Feedback from our fourth training course in Oxford last September showed that delegates found the sessions very interesting and relevant, and deemed the standard of speakers excellent. Attendees appeared enthused, networking heavily and actively participating in all sessions. In October, some of our members took part in the ICE in Sydney, giving talks and presenting posters.

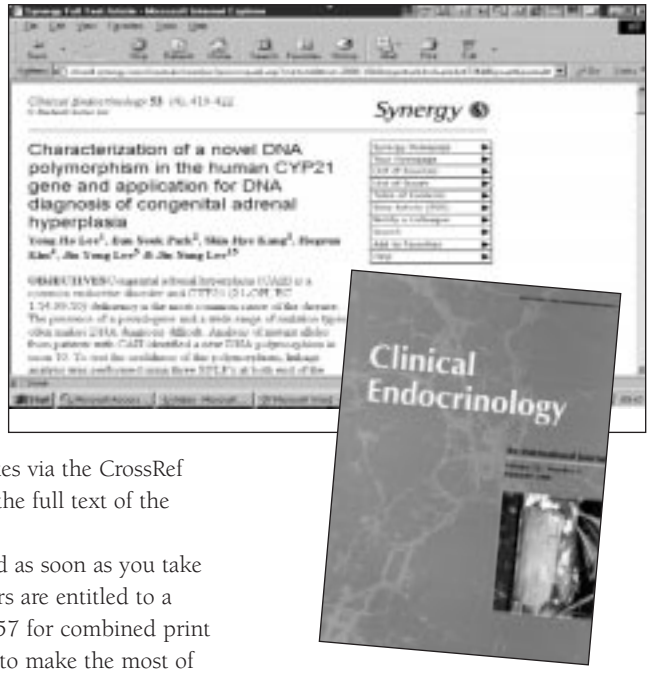
Diary dates

The forthcoming BES meeting in Belfast will include a Nurses session entitled 'Loop the growth hormone loop from deficiency to excess', with some case presentations. It takes place on 26 March 2001 at 13.00-15.00. The 2001 training course will be held at Glasgow University from 11 to 13 September.

MAGGIE CARSON

Clinical Endocrinology Online

All Society members who take out a paper subscription to *Clinical Endocrinology* in 2001 will also be entitled to access the electronic version on the Blackwell Science Synergy site (www.blackwell-synergy.com) for only a small extra charge. As well as access to all 2001 material upon publication, users will be able to view 1999 and 2000 material for the journal, and full tables of contents and abstracts for all other Blackwell Science journals.



Articles from *Clinical Endocrinology* will be available in both PDF and HTML formats. PDF is ideal for printing, whereas HTML presents material for reading on screen, with links within articles to figures, tables and references, and links from references out to other databases including PubMed. Recent references often link to other publishers' sites via the CrossRef system - in many cases to a free abstract, and sometimes to the full text of the referenced article.

Details about accessing the online service will be supplied as soon as you take out your 2001 subscription. Remember that Society members are entitled to a special low subscription rate for *Clinical Endocrinology* (£56.57 for combined print and online). Take out your 2001 subscription straight away to make the most of the extra online benefits!

And so to the Meeting...

'Tis the time of year when our masters in physick hold many of their meetings, and so it was to the Royal College that I took myself in the month of November. 'Twas a goodly assembly, above 400 or so souls I am told, who braved the inclement elements.

Many practitioners of the physick, plus not a few dabblers in the sciences, were entertained by many worthy fellows. Of the so-called plenaries, I was most instructed by Master O'Rahilly, who took as his subject the pleasures of the feast. This goodly man, who clearly knows much of such pleasures, entertained us hugely with talk of molecules and receptors, and other new-fangled things. In essence, as the bard says, it is in the stars and not in ourselves. A man after mine own heart. A goodly luncheon together with the guilds, and then much talk by our younger fellows: most splendid! Another plenarie with great of lady's receptors in men's glands, which studies even impressed the masters of physick there present. The day ended with much feasting and dancing. Music and women I cannot but give way to, whatever my business is, but sadly Mistress Pepys required me home. And so to bed.

On the morrow, another fellow discussed much of this male business, and strange therapies including stickie unguents to be applyed to the skin. Much discussion here. And then, more talk from a Master Smith who had journied from the land they call New Holland, in the Antipodes. The fellow himself was full of the misteries of labour, and all that causes much travail. If ever I was foxed it was now, and determined to share such insightes with Mistress Pepys. Before repast, a battle of wills to the most usefull therapie for the odd state of large extremities. One great gladiator verilie knifed by his own fellow - great sport indeed! To the end, then: talks of strange growths with many chemicals, and powerful rays which destroy such growths. Would I that the guilds did provide such therapies.

And so, back to my billet hard on Pye Corner (where 'tis said a new infirmarie will replace that which has stood for half a millennium). A much enjoyed meeting with the splendid fellows. I trust they will invite me again.

S PEPYS (AKA ASHLEY GROSSMAN)

Posters win prizes!

Congratulations to the poster prize winners at the recent Society Meeting. Three prizes of £100 were awarded in each of the clinical and basic science categories to young endocrinologists (under 35 and no more than 6 years post-PhD/MD/MRCP). The lucky recipients were:

Clinical

DR Woods, G Onambele, R Woledge, D Skelton, S Bruce, S Humphries & H Montgomery (University College London/Imperial College School of Medicine at St Mary's)

JR Katz, J Patel, H McGarrigle, JS Yudkin & SW Coppack (University College London)

C Perry, A Spiers, SJ Cleland, JR Petrie & JMC Connell (Glasgow Western Infirmary)

Basic science

RC Fowkes & JM Burrin (St Bartholomew's/Royal London School of Medicine and Dentistry)

J Burch & RC Fowkes (St Bartholomew's/Royal London School of Medicine and Dentistry)

D Bouyoucef, K Lomthaisong, P Lowry, A Bicknell & S Baigent (University of Reading)

Publishing in Partnership

You may not realise that the Society for Endocrinology can work in partnership with other societies through BioScientifica. If you are involved with a society whose journal is currently published for them by a commercial publisher, consider talking to us about the potential for collaboration.

Our aim is partnership between non-profit organisations. We can be more flexible than some publishers (e.g. regarding page budgets).
Our other strengths include:

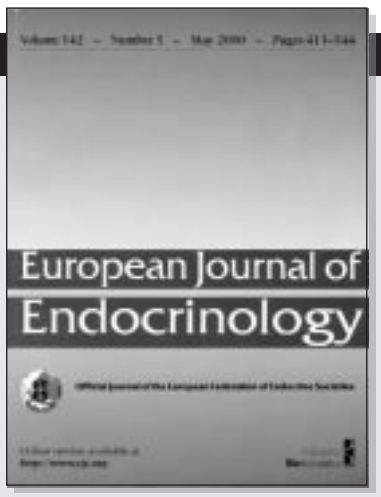
- our close contact with academics in the life sciences
- our simple and cost-effective electronic publishing service, which provides facilities comparable with most leading publishers
- experience with our own electronic journals, whose substantial usage exceeds many commercial e-publishing web sites
- the ability to work with external e-publishing services, such as HighWire
- development of an individual promotion plan for each journal, with more specific promotion of mature titles than most publishers
- our competitive prices!

Journal publishing faces a more uncertain future now than ever before. Societies may no longer be able to derive surpluses from their journals to fund their other activities. At the extreme, proposals by the NIH for all articles to be free on the web (funded by submission and peer review charges) would make a major difference. We are excellently positioned to help other societies assess the risks and plan for the future. This is true across the whole range of a society's activities.

For more details contact:
Sue Thorn (sue.thorn@endocrinology.org) or
Steve Byford (steve.byford@endocrinology.org) or
Tom Parkhill (tom.parkhill@endocrinology.org)
at the Bristol office.

BioScientifica
www.bioscientifica.com

CASE STUDY



We have published *European Journal of Endocrinology* in this way since 1997. We have beaten our target publication time on most issues, and it's impact factor has increased from 1.695 in 1996 to 2.421 in 1999 (clearly other factors also affect this). The full text of the journal was on the web soon after we took over publication, and the journal receives more web traffic than many larger titles.

European Journal of Endocrinology is the official journal of the European Federation of Endocrine Societies, and they are so pleased with our work that they have also asked us to publish their newsletter, *EFES News*, and to set up and run the EFES web site.

Webspinning

PubCrawler

www.pubcrawler.ie

PubCrawler acts as an 'alerting service' that scans daily updates to the NCBI Medline and Genbank databases, using criteria specified by the user. These include sequences and specified laboratories, amongst others. Results can be posted to a Web page or e-mailed daily and signing up is easy - and free! Last, but not least, PubCrawler has a great tag line that sums up the attitude of the site: 'It goes to the library. You go to the pub'. We can all drink to that!
SERVICES: D, O (automatic database searches); STRONG POINTS: Simple free access to a time-saving tool; WEAK POINTS: None; RATING: Excellent

Oncology Tools

www.fda.gov/cder/cancer/

Most of the US federal government's Web sites relating to health are superb, and this one is no exception. Vistors will find an incredible collection of useful information including approved cancer drugs and their applications, disease summaries, the cancer liaison programme (feedback for cancer patients), and other miscellaneous data. A well-designed section of links adds to the information sources at this site and the search engine is second to none. This is a fine site, check it out.
SERVICES: D, N, L, S; STRONG POINTS: Thorough coverage; WEAK POINTS: None; RATING: Excellent

Herbed

www.herbmed.org/

One of the biggest complaints about herbal medicine is the lack of data and scientific evidence to back the claims. HerbMed provides a partial solution to these complaints. It contains an incredible collection of scientific reports on studies of compounds found in herbal medicines. These are listed by organism on the side of the opening page, with such categories as Evidence for activity, Warnings and Mechanism of action. Within these are sub-categories, such as Human clinical data, Interactions, and Suppliers. These sub-categories contain links to PubMed articles. You'd be right to think that this site holds a huge amount of information!
SERVICES: D, L; STRONG POINTS: Immense amount of data covered, design; WEAK POINTS: Slowness, some poor design; RATING: Excellent

KEY

Services provided at Web sites:
- **T** Tools - Analytical computing tools
- **D** Data - Searchable or downloadable database information
- **G** Goods - FTP delivery of useful items (e.g. full package, bug fix or demo software)
- **L** Links - Useful links to other sites
- **N** News - News of interest
- **S** Support - Feedback in response to users' enquiries
- **O** Others - e.g. Innovative use of Web tools, appearance, editorial point of view

Ratings: Excellent, Very Good, Good
Nothing below good will be reported here.

Thanks to Kevin Ahern and *Genetic Engineering News*.
Don't forget to visit the Society for Endocrinology on the Web: www.endocrinology.org; tell us about your favourite Web site: a.logan@bham.ac.uk.

Wellcome Trust Prize

The Wellcome Trust Writing Competition is open to all professional life scientists who have not previously published any popular science books. The winner will receive £25 000 towards the cost of writing such a book, which will be published and promoted by Weidenfeld and Nicholson.

The aim is to write an important or influential book that will not only stimulate and inform the general lay reader, but will also open up new ways of thinking about the world and set the agenda for future debate and discussion.

For further details, see www.wellcome.ac.uk. The closing date for submissions is 2 March 2001.

BRITISH SOCIETY FOR PAEDIATRIC AND ADOLESCENT GYNAECOLOGY

Academic Meeting and AGM

19 March 2001

Institute of Child Health, University College London

Covering
- **vaginoplasty**
- **teenage sex**
- **ovarian cryopreservation**

All welcome. Discounted registration fee for members of BSPAG. (Membership fee £25 pa.)

Contact: Adam Balen, Consultant Obstetrician and Gynaecologist, Clarendon Wing, Leeds General Infirmary, Belmont Grove, Leeds LS2 9NS
Tel: 0113-3922728 Fax: 0113-3922446

Apologies... to Novo Nordisk, who were unfortunately omitted from the list of benefactors in the BES preliminary programme. We thank them for their understanding and support.

Animal Research: Right and Wrong?

Animal research remains a controversial topic. This issue of The Endocrinologist *gathers together a range of thoughts on the current status of the issue.*

In the popular mind, the ethical basis of animal experimentation is generally regarded as simple utilitarian calculus. Human life and well being are worth more than animal life and well being, and so if the suffering or death of the latter will benefit the former, then so be it.

Of course, there are confusions about what constitutes 'benefit' - does this include better cosmetics, for example? - and further confusions about the necessity of particular procedures. How experimental are we prepared to be? Is a 1% chance of human benefit worth imposing pain or death on a rabbit, or do we require a higher probability? Such arguments can plainly go on forever.

In recent years, however, the basis of this calculus has been questioned. What if, for example, we lower the species barrier and extend our utilitarianism into the animal realm? This is exactly what the philosopher Peter Singer did in his celebrated insistence that the life of a healthy chimpanzee was more valuable than that of a handicapped child. And some American lawyers have argued that we should extend the legal concept of personhood to bonobos (pygmy chimps) as a way, in the short term, of saving them from extinction and, in the long term, of legalising our acceptance of the depth of their experience and the quality of their lives.

Clearly, once we go down this path, the privileged status of human experience vanishes and new considerations emerge. For example: how do we assess the quality of life of an animal, and how do we then balance it against human quality of life? This is seen by many as distasteful or, worse, an act of imperialistic arrogance by human beings against nature.

The novelist JM Coetzee dramatised this idea in his recent book *The Lives of Animals*. His heroine has become obsessed with the conviction that there is no difference between experimental labs and factory farms and the Nazi concentration camps. We live surrounded by systematic torture and murder. Speaking of an imprisoned ape, she says: 'The question that truly occupies him, as it occupies the rat and the cat and every other animal trapped in the hell of the laboratory or zoo is: Where is home, and how do I get there?'.

The point here is that to weigh the experience of the ape against that of a human is intrinsically wrong. The desire to escape its imprisonment is as important and real to the ape as it would be to a human. This undermines any utilitarian calculation, since it draws a line beyond which no such calculation is possible. We are simply not allowed to instrumentalise nature in any such way. It also undermines the arguments of anglers that fish feel little pain and no fear, so very little or no suffering is involved in catching them. As the philosopher Roger Scruton has pointed out, whatever the actual experience of having a hook in one's lips, we can be sure it means as much to the individual fish as it would to us. Yet Scruton is in favour of fox hunting because he weighs the benefit of a whole human way of life - that of the countryside - against the suffering of the fox.

'Is a 1% chance of human benefit worth imposing death on a rabbit?'

In their war against the hunters and the anglers, the animal liberationists have either gone down the extreme road of Coetzee's heroine or they have focused on our ignorance of what animals experience. Chimps seem to be able to develop some kind of language. Even pigeons can solve an experimental problem in which they are required to peck at a button exactly 45 times. A bird called Clark's nutcracker can hide up to 33 000 seeds in 6600 locations and find almost all of them months later. And so on. Who are we to say that these achievements are inferior to our own?

The difficulty here is sentimental anthropomorphism. Marc Hauser, a Harvard professor, analysed this attitude in his recent book *Wild Minds*. He points out that we may empathise with the mothering instincts of animals, but we can deduce nothing of their minds from that spectacle. They merely look as though they are feeling what we feel. In addition, chimp language experiments have been ambivalent in their results and, in any case, even the most gifted chimps have required very high levels of human coaching. Plainly there is much that is unknown and possibly unknowable here.

Equally plainly, any utilitarian calculus will not be as rigorous as it might seem. It will depend on prevailing assumptions within the culture - how else can we even talk about 'the quality of life'?

On that basis, I think it is clear that society is moving in the direction of greater concern for animals. People are becoming more concerned with nature as a whole. This, I believe, means that animal experimentation will encounter much greater resistance and will, as a result, become much more difficult, if not impossible, to justify. Whether scientists like it or not, the human world is turning against any form of science that sees nature as a legitimate occasion for limitless experimentation.

BRYAN APPLEYARD
FREELANCE COMMENTATOR ON SOCIETY AND ETHICS

Public Perceptions

One of the problems with trying to assess public attitudes to all but the simplest of issues is that opinions and beliefs are often complex, conditional and in flux. Results are also closely related to the use of language in the questionnaire, and the assumptions they may create.

This may be especially true of surveys on the use of animals in medical research, where most people have no direct knowledge, and may not form a firm opinion until the moment they are asked. When the MRC recently commissioned MORI to conduct an in-depth survey of public attitudes to use of animals in medicine and science, MORI used a combination of focus groups and a quantitative survey among a representative sample (>1000 people) to overcome these problems. A summary of the results follows here.

In the discussion groups, people appeared ambivalent about the use of animals in medical research, but almost all accepted that it could be right, in principle, to use animals. Support was strongest for research into life-threatening disease. Some regretfully considered their use inevitable and a 'necessary evil' with no practical alternative. People were less certain about the use of animals in the development of treatments for non-life threatening conditions, preventive medicine, or basic research.

The quantitative survey confirmed these observations: 32% either supported animal experiments for any purpose if there really was no alternative, or were not bothered about animal use at all - and up to 84% accepted experiments if the right conditions applied (e.g. if they addressed life-threatening disease). A frequent precondition was that the experiments were for medical research and that there was no alternative available.

At the same time, 44% either said they did not support animal experiments (39% strongly agreed or tended to agree) or would favour a ban (26%). Yet two-thirds of those who 'did not support' animal experiments would accept them in some cases, representing 29% of the public overall. Public opinion must not be dismissed as irrational because of contradictions like these. The survey showed that people were often well aware of inconsistencies between their attitudes towards animal experiments and their use of animals or products derived from animals.

Many could recall stories in the media and seeing campaign materials produced by groups opposed to animal use in research. However, people did not accept such materials at face value. Campaigning materials were also perceived to be biased towards using the worst possible images. Yet, despite this mistrust, media campaigns do exert a powerful influence on the way people think about the issue.

Many people recognised that they normally only saw information opposing animal studies, and were unsure where to find out why animals are used, or how to obtain impartial information. Most linked animal experimentation with secrecy and unaccountability and, when people were asked what might make them trust the system of regulation, honesty and openness were mentioned most often (33% of responses), followed by access to better information (21%).

When groups were asked to identify the controls they felt should be in place, there was a close match between what they wanted and the UK's Animals (Scientific Procedures) Act 1986. At the same time, there was only limited awareness of the UK regulatory system, little knowledge of what it might be like, and very little trust in it (65% did not trust it).

In general, this survey provides qualified reassurance to UK scientists. Most people approach the issue in a sophisticated, rational way, and want to form opinions based on the facts. The vast majority accept in principle that animal experiments are sometimes necessary.

There is also clearly a great deal of work to be done. Most of those who are inclined to support the use of animals in research have not firmly made up their mind, and most people notice the absence of balanced, reliable information on animal experimentation. The survey confirms that the UK already has in place a regulatory system that would probably be widely supported if people knew about it.

This article is adapted from a summary by Declan Mulkeen and Dr Simon Carter, which can be found at www.mrc.ac.uk/whats_new/MORI_animals.html. The full report is available at www.mori.com or from MRC External Communications (Tel: 020-76365422).

Results from one set of questions

	Agree	*Disagree*	*Neither / Don't Know*
Not bothered if animals are used in experimentation	12%	78%	10%
Agree with animal experimentation for all types of research where there is no alternative	27%	60%	12%
I can accept animal experimentation so long as it is for medical research purposes	64%	24%	12%
I can accept animal experimentation so long as there is no unnnecessary suffering to the animals	69%	21%	11%
I agree with animal experimentation for all types of medical research where there is no alternative	60%	25%	14%
Animal experimentation for medical research purposes should be for life-threatening diseases only	58%	27%	15%
I do not support the use of animals in any experimentation because of the importance I place on animal welfare	39%	38%	23%
The Government should ban all experiments on animals for any form of research	26%	55%	19%
I have a lack of trust in the regulatory system about animal experimentation	64%	11%	24%
I would like to know more about animal experimentation before forming a firm opinion	64%	19%	16%

Exercising Ethics

Our moral values permit the use of animals in research, but polls show that this view is declining. All uses of animals are increasingly questioned - farms, zoos, circuses. Our exploitation of wild animals for sport and the destruction of their habitats are also under scrutiny.

Why are we changing our minds? The recent MORI poll (see page 9) showed that 44% of those questioned did not accept the need to use animals in research compared with 32% that did. Paradoxically, 84% approved the use of animals for medical research providing there were safeguards!

Those against animal research claim that alternatives make it unnecessary and that it has misled science in the past. Scientists, on the other hand, say that such work is essential and, what's more, should not be delayed by excessive bureaucracy. Currently, the debate centres on transgenic animals. Their genetic manipulation is seen as fundamentally wrong by the 'antis' and as salvation leading to a 'disease-free' life for humans and animals by the 'pros'. So, what underpins these disparate views?

Animal rights supporters (ARs) claim that animals, like humans, have an inherent intrinsic value, independent of their utility to humans, and so have certain natural rights, extending to a right to life and a right not to suffer. In humans, such rights normally come with responsibilities, but these are waived for groups who cannot understand them (e.g. the young). Animals too are unable to understand, and so ARs see them as akin to incompetent humans.

The basis for animal rights turns on whether there are any significant moral differences between humans and animals that justify different treatments. For example, compare a mentally retarded child with a chimpanzee - if we would not experiment on one, why is it right to do so on the other? This leads ARs to argue that, as nearly all animal users cause suffering or death, these activities are wrong and should stop.

While animal welfarists have a similar view on animal suffering and killing, they will countenance these if the benefits are sufficient. They may differ on what constitutes an adequate justification, but argue that some animal research is necessary and justifies killing animals and causing them to suffer providing that the suffering is kept to a minimum. However, they might have serious doubts about testing household products, food additives and cosmetics, and even research directed at gaining knowledge, e.g. comparative zoology.

The principles of humane experimental technique by Russell & Birch (1959) provided an ethical framework which has become the basis for nearly all legislation world wide - known as the 'three Rs':

- whole animals should not be used if alternatives are available (replacement)
- the minimum number of animals should be used, no more and no fewer (reduction)
- the least amount of suffering should be caused to achieve the scientific objective (refinement); this should be extended to enhance positive animal well being and not simply to minimise negative welfare.

Examples of application of these principles are as follows:

Replacement Recently three *in vitro* methods have been accepted by the regulatory authorities for specific safety tests, and their use is increasing. *In vitro* methodology often forms part of a programme of investigation, but it is not always possible to replace the integrated responses of animals. Interactive computer programmes are frequently used in education.

Reduction This has been the focus of several analytical papers criticising standards of statistical analysis in published work. The use of a statistician before work starts should be strongly encouraged.

Refinement Husbandry can cause animals more mental distress and physiological dystress (stress with which they cannot cope) than the research experiments. Enriching their environments with cage 'furniture' and more natural substrates and diets, or keeping animals like rabbits and ferrets in groups in pens rather than singly in cages, can eliminate abnormal behaviour - without detracting from the science. It has been repeatedly shown that rats and mice, when kept in 'animal friendly' environments, are fitter, more able to complete mental tasks, and physiologically more normal, when compared with littermates raised in 'barren' conditions.

Finding out what animals want can partly be determined from 'choice' experiments, where they choose between environments. Animals can also be made to work to gain access to something, for example cages that contain paper to nest-build compared with only sawdust. Such experiments give an insight into animal thinking and how strongly they feel about something. Being deprived of their preferred environment may lead to mental suffering, even though their nutritional and physiological needs are being met.

Addressing issues like post-operative pain, poor husbandry and poor technique may avoid experimental variance. Competence of the researchers in the procedures they perform is essential, as are early end-points so that animals do not suffer unnecessarily (using pre-lethal end-points rather than death). Experiments can often be refined to cause less suffering and also produce better science. Examples include: pilot studies; carrying out key experiments first; carefully choosing and justifying the species, sex and strain of animals to be used; justifying the need for control groups; using a progressive approach to experimental insults when measuring the biological effects; and limiting tumour size to test novel anti-cancer drugs.

The 'three Rs', are a good starting point, and help avoid unnecessary suffering. To these should be added having an empathetic attitude to the animals, thinking hard about the alternatives, and justifying the work to those that fund the research (the general public).

DAVID B MORTON
PROFESSOR OF BIOMEDICAL ETHICS
UNIVERSITY OF BIRMINGHAM

Politics and Protests

Animal experimentation in the UK appears to be under siege from two quite different quarters: animal rights extremism and government regulation.

On the one hand, the animal rights extremists are taking their campaigns to new heights. The tactics of violent mass demonstrations, harassing individuals in their homes, and attacking secondary targets have taken their toll. In the last 3 years, extremists have succeeded in closing down four laboratory animal breeding/supply establishments. The heavy targeting of Huntingdon Life Sciences, a major European contract research company, is hardly ever out of the newspapers. According to the police, animal rights extremists carried out 1200 attacks and caused £2.6m damage in the UK in 1999.

On the other hand, the regulatory burden on animal experimentation in the UK is such that over 100 eminent scientists, including five Nobel laureates, felt compelled to write to Science Minister Lord Sainsbury in June 2000, to warn the Government that UK science and industry would suffer unless the bureaucracy was eased. Animals could also suffer if research is moved to countries where regulations offer less protection.

Many believe that politics underlies the increasing regulatory burden and the extremist pressure. The current Labour Government raised unrealistic expectations about animal welfare before it came to power in May 1997. The pre-election policy document *New Life for Animals*, alongside general attitudes within the Labour party in opposition, led to the view that a Labour Government would be the natural ally of animal rights groups and would be more likely to adopt 'animal friendly' policies. As far as animal experimentation is concerned, this has indeed happened, leading to the bureaucratic burden that now faces scientists.

'The Government raised unrealistic expectations about animal welfare before it came to power'

But despite the fact that the Government has acted on most of its pledges in this area, the animal rights activists are not satisfied and continue to exert pressure. Perhaps the Government doesn't realise that they will only really be satisfied by total abolition of animal experimentation. The form this pressure takes, in the vacuum created by ineffectual moderate animal rights groups, is an escalation in extremism.

So the same factors are involved both in the increasing Government red tape and, perhaps paradoxically, in the rise in extremism that the Government has promised to tackle. And at the root of much of this lie misperceptions about public opinion. Both extremists and Government say they are simply acting on public opinion, which they claim is opposed to the use of animals in research. While it is no surprise that the animal rights groups ignore surveys which show they do not have much public support, it is puzzling that this populist Government is either unaware of, or chooses to ignore, public opinion on this issue.

The recent survey by MORI for the MRC (see page 9) showed that public support for animal experimentation is probably greater than it has ever been. Over 80% accepted that it is necessary as long as certain conditions are met: if suffering is minimised, the research is for medical purposes or for life-threatening diseases, and/or alternatives are fully considered. There is a widespread lack of knowledge but, in particular, the survey showed that the greatest ignorance is of the regulations. Over 90% of those surveyed readily admitted that they did not know much about the regulation of animal experimentation. However, when asked which factors should be considered in drawing up regulations, people opted for those which are already part of the system.

Despite their lack of knowledge, it is reassuring that most people accept the need for animal experimentation if certain conditions are met. Most animal procedures do indeed meet these conditions, and we believe the UK already has in place a regulatory system that would be supported if people knew about it. People want to know more, particularly on alternatives to animals, animal use in different types of research, medical advances due to animal experiments, and current regulations.

The Government funds much medical research involving animals, requires that new medicines are tested on animals, and regulates to make sure the research is carried out properly. Yet it leaves all the public communications effort to scientists, and criticises scientists for not doing enough to explain the need for animal experimentation and the medical benefits that arise from it. This is despite the fact that many scientists are, understandably, intimidated into silence by the activities of the animal rights extremists. Sensible debate about the rights and wrongs of animal experimentation is in danger of being stifled, and UK scientists have yet another incentive to take their work abroad. Scientists feel abandoned by Government in more ways than one.

Nevertheless, the RDS is determined to continue its efforts to inform key audiences - the media, school children and politicians - on these issues. But we can only do so effectively with the help of the UK medical research community, which is why we are currently mounting a membership drive. Equally, there are benefits to members in the form of advice on how to avoid becoming a target, how to deal with being targeted, information on regulatory issues, regular updates on animal rights campaigns, and more.

To find out more about RDS and the issues discussed here, or to print out a membership form, please visit our web site (www.rds-online.org.uk).

BARBARA DAVIES
DEPUTY DIRECTOR
RESEARCH DEFENCE SOCIETY

Education, education, education...

Young people's attitudes have changed radically in recent years. They tend to adopt a much more structured approach to life, they plan more seriously for their careers, they no longer regard profit as a dirty word and they take a much more pragmatic approach to contentious issues.

Changes in the teaching profession have helped foster the development of this new realism amongst young people. Teachers have become much more accountable for what goes on in their classrooms and are keen to promote balanced views of controversial issues. Critical analysis of the activities of pressure groups is embedded in the curriculum, resulting in students being much more discerning in their intake of information from groups such as anti-vivisection organisations.

BRET (the Biomedical Research Education Trust) addresses the need for specialist speakers to visit schools and explain why animal research is still essential. The Trust seeks to provide factual, science-based information about why and how animals are used to advance our understanding of basic biological sciences and develop new medical and veterinary treatments, preventative measures and diagnostic techniques. It also addresses the ethical aspects of this subject. Our aim is to balance the input into schools from various anti-animal experimentation groups. The anti-vivisection organisations all have extensive school speaker programmes and distribute information packs for use in schools. Particularly active among the single-issue groups are BUAV, NAVS, the Hadwen Trust and UNCAGED, the first two having very large budgets. Other more general animal welfare organisations, notably Animal Aid and Compassion in World Farming, will also furnish an anti-vivisectionist school speaker on request. There appears to be extensive liaison between these groups; a teacher contacting one will often be offered a talk from another.

Of particular concern is the lack of any meaningful monitoring of the material distributed by these organisations, and the lack of any mechanism to challenge its factual content. Schools request information, and, as solicited material is essentially outside the remit of the Advertising Standards Agency, we cannot even appeal to them for a judgement on its validity. With the exception of the Hadwen Trust, the anti-vivisection organisations are not registered charities, and so escape any regulatory pressure that the Charity Commissioners may bring to bear. The classroom teacher is the arbiter of what is truthful and valid, and, unless they have a bioscience background, their knowledge of the issue will probably be as scant as any member of the general public.

Our experience is that suitable trained and equipped speakers are the most effective way to present the views of the research community to young people. These volunteer speakers, who are mostly research scientists or animal technicians, do not usually have experience of giving talks on this subject to secondary school audiences. To assist them, BRET produces a school speakers' pack containing information, 35mm slides, speakers' notes and examples of the more commonly asked questions, with sample responses. These are complemented by training to help speakers prepare for their audience. In addition, BRET distributes leaflets, resource guides, videos and other materials from a variety of organisations.

'Our aim is to balance the input from anti-animal experimentation groups'

So, what space in the crowded school timetable is there for this topic? Though not yet part of the formal science curriculum, the use of animals in biomedical research often features elsewhere: religious education, English, personal and social education (PSE) and general studies.

At GCSE level, the National Curriculum has severely restricted teachers' freedom to choose their own subject material. As a result, this once popular topic is now less frequently touched on by 14- to 16-year-old students. However, school managers often find A level general studies a useful method for boosting their points score in league tables. The availability of information and the controversial nature of the animals issue make it a very popular topic for both general studies examiners and teachers. In addition, the use of animals in biomedical research is now entering the mainstream post-16 curriculum with the continuing growth of the AQA Examination Board AS specification in the public understanding of science. This syllabus, which has only been widely available this year, has a section on drug development and animal testing and on the ethics of animal-based research. As a result of these developments, 6th formers make up some 90% of BRET audiences - usually in large groups of about 100 students. Younger students tend to be in class groups of about 30.

The vast majority of medical researchers view school talks as a laudable and important activity. However, the prospect of talking to a group of school students about the need for animal-based research fills many otherwise confident adults with a sense of dread. The expectation is a hostile, anarchistic audience well-versed in anti-vivisection propaganda. Aspiring school speakers who accompany me on visits are usually staggered at the level of support for their work shown by older school students. This usually runs in excess of 95% amongst 6th formers, and is yet another indicator of how the Government appears to be paying far too much attention to the views of a very small, but very vociferous, minority on this issue.

BRET was originally set up in 1985, assuming its present form in 1990. Its trustees are eminent scientists, drawn from various fields of biological and biomedical research, and educational experts. For further information about the Trust, or samples of the resources we distribute to schools, please contact BRET at Suite 501, International House, 223 Regent Street, London W1R 8QD (Tel: 020-72872595; Fax: 020-72872627; Email: t.g@bret.org.uk; web: www.bret.org.uk).

DR TED GRIFFITHS
DIRECTOR, BRET
BRET is a registered charity (no 292366).

A Scientist's View

Concerns about the increasing bureaucracy surrounding animal use in research culminated in an open letter to Lord Sainsbury, the Minister for Science, in June 2000. The letter was signed by 110 leading UK scientists.

Many were surprised by the extensive, positive media coverage the letter received. But the media are quite astute. They expect the scientific community to speak out about some issues, but not about the use of experimental animals - and certainly not to put their name to an open document. To do so risks attracting violent attacks from extreme animal rights groups. As one scientific correspondent from a major newspaper commented 'A letter such as this is quite unprecedented and suggests that scientists are facing serious problems'.

Growing bureaucracy has a major impact on academic and commercial research in the UK. The system for approval of a research programme is long and complex, involving several layers of administration. Soon the requirements of the Freedom of Information Act will add further to that burden. Some researchers have already 'opted' out and chosen different lines of research, which do not require the use of animals. In other cases, animal experiments, sometimes along with the scientists themselves, are moving abroad. Many believe that the UK is already losing its competitive edge in major areas of research, and is likely to fall further behind in the near future. Recent studies have documented the delays in obtaining approval for research or amendments to existing projects, and indicate that these are substantially greater than in other countries.

But is this bureaucracy the price we must pay for high standards of animal welfare? The UK has not only the most stringent and rigorously applied legislation, but also the highest standards of welfare in the world. This is greatly valued and supported by the scientific community, which hopes to see further improvements and rigorous implementation of the three Rs (replacement, reduction and refinement of animal experiments). But the benefits to animals of this red tape are not obvious. Indeed, the current system may have a detrimental effect. The very people charged with responsibility for welfare - the Home Office Inspectorate, the Named Veterinary Surgeon, the Named Animal Welfare and Care Officer and even the scientific project directors - are spending more time on administration, and less on actually looking at the animals and thinking about ways to improve their welfare and reduce their use.

'The benefits to animals of this red tape are not obvious'

As with most complex issues it is not possible to point the finger at a single cause. Each stage of the process of obtaining approval can be unwieldy and bureaucratic, and delays are variable.

The preparation of the licence application by the scientist has become a daunting task. It is a long and complex document, which does not represent the way that many scientific projects are conceived or conducted, and serves many different purposes. It must provide the scientific background and justification for the project, the cost/benefit analysis, the protocol for experiments, the limits of permissible suffering and the action to be taken in the event of adverse responses.

New project licences may take several months to obtain, and scientists are often frustrated by changing requirements for the licence and variations between institutions. Recent analyses indicate that the ethical review process (ERP) has introduced further delays. The aim of local ERPs within each institution was to improve both animal welfare and the quality of licence applications submitted to the Home Office, by acting as a source of advice for the certificate holder. In many institutions the ERP seems to be achieving these aims - though as yet there is no proof of the direct benefits of ERPs, or evidence of reduced times for Home Office approval. However, at some institutions, the ERP is highly complex, with several layers of time-consuming administration. Resources available at the Home Office clearly have an effect on the speed of approval, in addition to the effects of the licence's complexity and the revisions required.

The Government acknowledges the problem faced by scientists, and ongoing discussions seek ways of improving the current system, while maintaining or improving animal welfare. Communication between the scientific community and the Home Office clearly has room for improvement on both sides. A new project licence form with new guidelines is about to be issued, but many scientists feel that a major review of the form will be required. The Home Office are currently reviewing the ERP, but there is scope here for the scientific community and their institutions to determine whether their own ERP is effective. The Home Office will consider revisions to existing ERPs at any time, and we may be able to learn by best practice at institutions where ERPs operate efficiently. There are many other issues under discussion, including funding within the Home Office - scientists have urged the Government to provide additional inspectors and support staff.

In attempting to solve some of the problems, and reduce the bureaucracy needed to obtain Home Office approval, we must never lose sight of the impact on animal use and potential suffering, or forget that the UK public are very concerned about animal welfare. However, if these problems are not addressed it is likely that animals will suffer because the research will move to countries where standards and concerns are much lower. And then, of course, animals will not be the only ones to lose out.

NANCY ROTHWELL
CHAIRMAN, UK LIFE SCIENCES ANIMAL SCIENCE GROUP
PROFESSOR OF PHYSIOLOGY
UNIVERSITY OF MANCHESTER

Laying down the Law...

The use of all animals in research in the UK is regulated by the Home Office under the Animals (Scientific Procedures) Act 1986 - the most rigorous legislation in the world. Most scientists strongly support the extensive measures taken to minimise animal suffering and improve welfare in the UK.

Recently, the Home Office has requested comment on several aspects of animal experimentation and thus, we assume, is considering further changes in the implementation of the Act. The UK Life Sciences Committee (UKLSC) has been asked to comment on 'emerging biotechnologies' and the Animal (Scientific Procedures) Act 1986. This relates mainly to genetically modified animals (see www.homeoffice.gov.uk/animact/biotech.htm for the Home Office's questions).

A summary of the UKLSC's response follows. All members of the Society who believe that animal use remains an important part of biomedical research should write to their MPs to support this position.

BARRY FURR
SOCIETY FOR ENDOCRINOLOGY REPRESENTATIVE
UKLSC ANIMAL SCIENCE GROUP

'In spite of significant improvements in our understanding of normal biological processes and disease, and in the discovery of new and improved medicines, there are still major gaps in our knowledge, and many diseases of man and animals remain poorly managed or untreated. Emerging biotechnologies will have a major impact on our understanding of normal biology and pathobiology, and will be critical to the discovery of the new medicines which are desperately needed, and in which the UK has enjoyed great success, both scientifically and commercially. Thus, we believe that, if the UK is to maintain its competitive position in both fundamental and applied science, research using developing biotechnologies must increase. However, we support the need to be vigilant concerning animal welfare and believe that this is already well protected by the Act.

Several emerging technologies are likely to influence the use of animals, and we believe that the use of genetically modified animals will increase substantially, particularly as models of human disease. Emerging science is likely to provide better and more relevant models of human disease and should thus reduce the use and limit the overall suffering of animals in traditional experiments.

These emerging technologies can offer significant scientific and biomedical value. These include 'conditional' gene 'knock out' and 'knock in' techniques, allowing genes to be carefully and variably up- or down-regulated at any time, but particularly in postnatal life. This will avoid the production of potentially damaging developmental lesions that are carried forward into adulthood; the use of specific promoters to regulate the expression of genes in selected cells; transgenic expression of human genes (which should limit the use of higher species, and improve selection of effective and safe clinical treatments); and expression in animals of mutated genes identified as possible mediators of human disease. In addition it will remove the need for gene delivery via viral vectors as part of an approach to gene therapy to correct defective genes in inherited and other chronic diseases; delivery of proteins by transplantation of cells (including stem cells) over-expressing genes for these proteins; and the use of animals to produce proteins (e.g. proteins required as medicines) which may be highly expressed and secreted in fluids such as saliva or milk or in chicken eggs.

Increasing use of genetically modified animals could influence animal welfare because of the introduction of genes or modified genes which are believed to contribute to human (or animal) disease, unexpected effects of gene modification, or suffering due to sub-optimal techniques for production or breeding of genetically modified animals.

However, these can and will be limited. Intentional introduction of genes to mimic human diseases will be planned on appropriate licences and a benefit/animal cost analysis will always be made. The very nature of science is such that results are unexpected (and these often produce the greatest advances). The current legislation deals adequately with such issues. Sub-optimal production or breeding is unacceptable and should be limited under current legislation.

The current legislation is rigorous and extensive and adequately covers existing and likely experiments using emerging biotechnologies. Measures are already in place to assess and limit suffering due to these new technologies, and all involved act continually to seek further improvements.

The vast majority of genetically modified animals show no adverse effects or suffering whatsoever, yet even such animals bred, but not used for experiments, are defined as 'experimental' under the Act. This seems unreasonable in view of the position on other natural and spontaneous mutations (and extensive selective breeding in other areas of animal production and use). Thus, the reporting of genetically modified animals needs to be reconsidered, particularly where these are healthy and show no evidence of incapacity or suffering.

Finally, we must consider the potential impact of further legislation or implementation of such legislation. The interpretation and implementation of the Act has changed dramatically within recent years. Thus, the bureaucracy, detail and paperwork, and delays connected with even the simpler and more benign experiments (including those which may improve animal welfare!) have increased substantially. In many cases, there is no obvious or apparent benefit of such changes to animal welfare, but there is considerable and increasing harm to scientific and medical advances and to UK competitiveness. These concerns, although general and covering all aspects of animal experimentation, are increasingly applying to the newest and most promising biomedical advances such as genetically modified animals.'

An end to '-ologies'!

Last to leave the bar as usual, Professor Sir Humphrey Lyggande and Dr Rhys Eppter have had a hard day at the Society meeting. With the barman dozing in the corner, Sir Humphrey leaps to defend 'endocrinology'. But, after all, isn't it just another dinosaur subject, waiting to die in the 21st century?

RE: Humphrey, I've been thinking about the future of our much-loved endocrinology...

HL: Good grief - you're not going down with belated millennial fever are you?

RE: No, I think I'm alright, but it is tempting to wonder what the next century holds for us. In the last hundred years, endocrinology, the study of circulating 'chemical messengers', has become fully realised as a science. In 1900 it would have been hard to foresee the knowledge that we take for granted now.

HL: Are you anticipating radical change then? Are we facing some sort of crisis, or a scientific revolution?

RE: I hadn't thought of it in such dramatic terms, but perhaps we are. The genome project really might change everything. We've coped with the 20th century explosion of bioscience by neatly compartment-alising everything into little packages: this bit's immunology, this bit's endocrinology, this bit's biochemistry, and this one is molecular biology. Now our self-imposed divisions are breaking down around us. I have the feeling that all the narrow '-ologies' will be swept away in a new integrated 21st century bioscience.

HL: What - you really think there will be no such thing as endocrinology in the future? I like excitement and challenge, but I think you're wrong!

RE: Well, don't count on it. I think the real advances, the papers you read in *Nature*, *Science* and *Cell*, are hard to pigeonhole in a single discipline. Look at intracellular signalling, for example - is it endocrinology, cancer biology, immunology, or what?

HL: But that's always been a cross-disciplinary field. Endocrinologists have capitalised on the general advance in knowledge to illuminate their particular part of physiology.

RE: But that's the point - in the future we won't have 'particular parts of physiology' any more, we'll have real integration. The trendy new discipline will be systems. We'll need to study our systems not in rats, fish, sheep and humans, but in a whole range of lower organisms - yeast, flies, and worms - to be able to analyse the vast amounts of new information successfully.

HL: Well, this doesn't sound so new after all! Systems biology has been around for a while. Endocrinologists, immunologists and developmental biologists have been among the first to harness the discoveries of new proteins in *Drosophila*. And complex organisms have more complex systems. The whole point of being a systems biologist is to understand the particular ways in which body systems can work, for example, by secreted substances acting in distant parts of the organism - and you can't study long-range organism communications in yeast! It sounds like an interesting science, what should we call it, how about 'endocrinology'? Ha ha! This new bioscience thing seems to be a case of a new dog learning old tricks…

RE: Aren't you the cynical one tonight! But you see my point, don't you - we need to broaden our horizons beyond our favourite hormone, or our favourite tissue. Otherwise we will remain pedestrians while the new science accelerates out of our reach. Our journals need to reflect this too - a journal of 'endocrinology' sounds pretty antiquated to me, and unlikely to capitalise on the rate of change...

HL: I think you're getting carried away with a Utopian vision here at the expense of hard science. Certainly, the whole point is that science needs to keep changing, but the change should be one of synergy and not of reinvention. Einstein threw the world into turmoil a hundred years ago, but physics and astronomy didn't cease to exist - they developed independently as disciplines. What about clinical medicine, anyway? If you have a rare pituitary problem, do you want to see a general 'systems practitioner' who'll be pretty good at broad vision and first principles, or would you prefer someone who's actually experienced in the disease? There's a case for specialist '-ologists' when you're the one who's ill.

RE: Well it may just be a question of words - by saying that we need to move beyond the specific '-ologies', I mean that we need to keep pace with our vision of science. It's going to be a challenge for our meetings and for our journals to remain truly broad in scope if they're going to be of any interest to future readers.

HL: I think one thing is certain - science is getting more exciting faster than ever before. I'm not sure that we've managed to conceive of systems that will really help us to manage all this new information. It'd be interesting to have this conversation again in 50 years. I bet we'd still be 'endocrinologists', whatever those are, but who knows what sort of meeting we'd be at...

What kind of meeting would you imagine attending in 2050? Will it be about hormones and receptors, and how many lectures would be comprehensible to us if we jumped forward to then? Will endocrinology be transformed, or will the same paradigms frame similar questions to those of today? Answers please, on the back of an e-mail, to editorial@endocrinology.org

The Society is pleased to be able to support the attendance of conferences by its members. Here are summaries from a few recent recipients.

4th International Symposium on Fish Endocrinology

Seattle, WA, USA, 31 July-3 August 2000

The conference concentrated on developmental and reproductive endocrinology, but other sessions ranged from behaviour to endocrine disruption. The neurohypophyseal peptide arginine vasotocin (AVT) is the focus of my research, and so the session on hormonal control of salt and water balance was of particular interest, with lectures by long-standing and important osmoregulatory scientists like JA Brown and T Hirano. I presented a poster on AVT's interaction in the stress pathway, which received an enormous amount of interest, and generated a lot of helpful advice and contacts for the future.

Other stimulating sessions covered behavioural endocrinology, neuroendocrinology and the mechanism of pituitary hormone regulation. The last of these included, in my opinion, the best lecture of the symposium. In this talk, RJ Borski provided further evidence for non-genomic steroid receptor action, and indicated that cortisol may use an IP_3 second messenger pathway.

18th Scientific Meeting of the International Society of Hypertension

Chicago, IL, USA, 20-24 August 2000

The opening session on genetics was particularly interesting, and emphasised the generation of congenic strains to identify QTLs influencing cardiovascular disease. It culminated with a superb talk from Theodore Kurtz on 'Congenic strains, cDNA microarrays and the molecular pathology of human hypertension'. The ability to produce congenic strains with identical genetic backgrounds allows precise identification of the pathologies associated with a particular section of chromosome. Furthermore, the ability to generate different strains and then perform kidney transplants between them allows the role of the kidney itself to be examined, without the influence of high blood pressure.

Don Heistad's talk on 'Gene transfer to study vascular biology' was very informative. His group, like ours, has been looking at the transfer of NOS and SOD in an attempt to improve endothelial dysfunction in models of cardiovascular disease. They, like us, have found that NOS has the anticipated therapeutic effect, but that SOD, for some reason, seems to have none.

I presented our own work, which was well received. Surprisingly there was more enthusiasm for our work on superoxide generation and the underlying molecular mechanisms than for the gene transfer systems. Superoxide generation seems to be coming very much into vogue, and I suspect it will have picked up more steam by the next meeting,

20th Conference of European Comparative Endocrinologists

Algarve, Portugal, 5-9 September 2000

Several sessions were relevant to my research, including 'Endocrine control of water and ion movement' and 'Receptors and signalling pathways'. Dr Vaudry's lecture on adrenal evolution set the scene for an interesting conference, while the session on urotensins was very useful for me as a fish physiologist.

My presentation on the intrarenal renin-angiotensin system of the rainbow trout was well received and generated some interest. At the Friday poster session I made contact with a group from Belgium who, like my own group in Exeter, study angiotensin-converting enzyme-like activity in invertebrates. I also made contact with a number of the other presenters, discussing subjects as diverse as the *Fugu* genome project, competitive RT-PCR and the cardiovascular effects of angiotensin II injected intracerebroventricularly.

European Renal Association Meeting

Nice, France, 17-20 September 2000

The meeting offered an excellent opportunity for interactions between basic and clinical research, though 3 days was not long enough to speak to very many of the numerous investigators who were present.

I was attracted by the sessions related to renal endocrinology. Most of the research focused on angiotensin, PTH and erythropoietin. The presentation delivered by Professor Elnahaas on the progression of chronic renal failure and the role of angiotensin converting-enzyme inhibitors was superb.

The conference was a great opportunity to refresh my motivation - very useful as I am now approaching the last 6 months of my PhD!

3rd World Congress on Stress

Dublin, Ireland, 24-27 September 2000

The symposium 'Norepinephrine: a link between stress and affective disorders' was particularly relevant, as my PhD has been concerned with the role of noradrenaline in mediating the HPA axis response to acute and chronic stressors. All five talks in the session were interesting - especially Clare Stanford's work employing *in vivo* microdialysis to investigate the central noradrenergic response to naturalistic environmental stimuli. Clearly, combining neurochemical techniques with behavioural paradigms is a valuable way to investigate central aspects of the stress response.

In their plenary lectures, Cary Cooper gave a very lively, entertaining and informative talk on stress in the workplace, while Ted Dinan spoke eloquently on neuroendocrine aspects of stress in relation to clinical findings. A highlight of the meeting was The Hans Selye Memorial Lecture by Jean Rivier. He spoke on the highpoints and lowpoints during the discovery of CRF, together with an overview of the importance of this neuropeptide.

Many thanks to Helen Bond, Julia Brosnan, Jonathan Aust, Mohamed Hassan Ahmed and David Finn for their contributions.

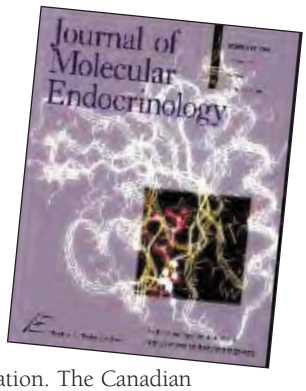
Hot Topics

More highlights from forthcoming articles, selected for you by Carolyn Cowey.

Oestrogen needed for aggression

The involvement of testosterone in aggressive behaviour is widely accepted. However, according to researchers from Kochi Medical School in Japan, it is oestrogen, rather than testicular androgen, that is required to develop the potential for adult aggressive behaviour. Inhibition of aromatase, which converts androgen to oestrogen, prevented male aggressive behaviour. Toda *et al.* generated aromatase knockout (ArKO) mice by targeting disruption of the aromatase P450 gene (CYP19). Behavioural observations showed that ArKO mice, unlike wild-type animals, did not react aggressively towards intruding males. The effectiveness of 17β-oestradiol (E_2) in restoring the potential for aggressive behaviour was improved by early and continuous E_2 supplementation.

(See the full article in Journal of Endocrinology ***168(2)****, February 2001)*



Connexin 43 in prostate cancer

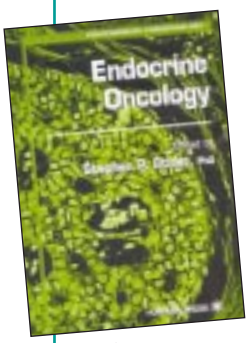
Androgens are understood to promote prostate cancer, the most common cancer in men, but how this is achieved is not known. Huynh *et al.* have discovered that androgens regulate expression of the connexin 43 (Cx43) gene in prostate tissue from normal and castrated rats. This is a member of a family of genes that control gap junctional intercellular communication, which helps mediate tissue homeostasis, including cell proliferation and differentiation. The Canadian researchers demonstrated that Cx43 mRNA increased in castrated rats, which coincided with the induction of apoptosis and a reduction in prostate weight. Androgen replacement by treatment with testosterone or dihydrotestosterone (DHT) prevented these effects. The authors suggest that strategies to up-regulate Cx43 might be useful in the treatment and prevention of prostate cancer, due to an inhibitory effect on cellular growth and malignant transformation.

(See the full article in Journal of Molecular Endocrinology ***26(1)****, February 2001)*

EGF-CFC gene family in cancer

Cripto-1 (CR-1) is a member of the EGF-CFC gene family, which encodes a group of structurally related proteins that function, amongst other things, to establish left-right asymmetry, form the mesoderm and endoderm and establish the anterior/posterior axis. Salomon and colleagues provide a comprehensive review of the developmental and oncological aspects of this gene family and highlight their potential applications. For example, CR-1, which is expressed at high levels in various types of human malignancy, may be a useful experimental therapy in human cancer patients. The authors comment on the great diversity of biological effects induced by the EGF-CFC proteins, and suggest that their ability to induce cell motility in embryonic epiblast cells, in mouse mammary epithelial cells and in human carcinoma cells is worth noting.

(See the full article in Endocrine-Related Cancer **7(4)***, December 2000)*



Endocrine Oncology

Ed SP Ethier, Humana Press, 2000, 395 pp, $145, ISBN 0 896 03621 9

The title of this book might suggest that it deals with the whole field of endocrine cancer. In fact, it is directed very much towards breast cancer, with other chapters covering prostatic, ovarian and endometrial cancer. Furthermore, the emphasis is largely on molecular and cellular aspects of disease, and clinical aspects are not generally covered.

A huge amount of research followed the discovery in the 1960s and 1970s of oestrogen and progesterone receptors, and their fundamental role in the growth and development of normal and neoplastic breast tissue. However, we still are left with much to understand about the details. This is well illustrated in the first five chapters of the book, which consider the roles of oestrogen, progesterone and their receptors in normal breast physiology and in breast cancer. A chapter on anti-oestrogens then reviews the three major prophylactic tamoxifen trials, and also deals with the selective oestrogen receptor modulator, raloxifen.

The role of prolactin in breast cancer is still unclear, and this hormone and hCG are considered in the next two chapters. Recent years have seen a growing appreciation of the fundamental role of growth factors in tumour development, and, appropriately, four chapters are devoted to this topic.

Perhaps reflecting the fact that prostate cancer attracts rather less research effort than breast cancer, only three chapters deal with this subject. They cover in detail the role of receptors, growth factors, and the clinical aspects of hormonal manipulation. The development of hormone-independent pathways is discussed. As with breast cancer, this represents a major research challenge, and is the key to more effective treatment of advanced disease.

Ovarian cancer and endometrial cancer are covered next, although the latter is in the context of the role of tamoxifen-induced disease. The final three chapters consider the BRCA genes, the role of apotosis, and transcriptional co-activators.

This is a nicely produced book which is a pleasure to read. The chapters are well written and adequately referenced (one chapter has nearly 500 references). The editor has done well to bring together a large team of experienced contributors who together have provided a valuable overview of current endocrine cancer research in these areas.

V H T JAMES

Endocrine Facets of Ageing in the Human and Experimental Animal
London, UK, 30 January-1 February 2001.
Contact: Bursary Scheme Administrator, The Novartis Foundation, 41 Portland Place, London W1B 1BN, UK (Tel: +44-20-76369456; Fax: +44-20-74362840; Email: bursary@novartisfound.org.uk; Web: http://www.novartisfound.org.uk/bursary.htm).

3rd National Clinicopathological Conference on Pituitary Disease
London, UK, 31 January 2001.
Contact: Dr Mark Vanderpump, Department of Endocrinology, Royal Free Hospital, Pond Street, London NW3 2QG, UK (Tel: +44-20-78302414; Fax: +44-20-78302416; Email: m.p.j.v.@btinternet.com) or Dr GS Conway, Cobbold Laboratories, The Middlesex Hospital, Mortimer Street, London W1N 8AA, UK (Tel: +44-20-73809451; Fax: +44-20-76369941).

1st World Congress on the Fetal Origins of Adult Disease
Bombay, India, 2-4 February 2001.
Contact: Ms Alifiya Motiwala (Tel: +91-22-6516439/6456763; Fax: +91-22-6516438; Email: mrcssc@vsnl.com; Web: http://www.sneha-india.org).

Intercollegiate Certificate Course on Human Nutrition
Aviemore, Scotland, 5-9 February 2001.
Contact: Carolyn Fraser, Department of Human Nutrition, RHSC, Yorkhill, Glasgow, G3 8SJ (Tel: 0141-201-9264; Fax: 0141-201-9275; Email: cf24f@clinmed.gla.ac.uk).

International Meeting on Steroids and Nervous System
Torino, Italy, 11-14 February 2001.
Contact: G Panzica, Department of Anatomy, Pharmacology and Forensic Medicine, c.so M D'Azeglio 52, Torino, Italy (Email: giancarlo.panzica@unito.it; Web: http://medicina.medfarm.unito.it/dipart/dafml/gcp/info/).

Society for Endocrinology Clinical Cases Meeting
London, UK, 12 February 2001.
Contact: Society for Endocrinology, 17/18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org; Web: http://www.endocrinology.org).

XVIth Testis Workshop
Newport Beach, CA, USA, 22-25 February 2001.
Contact: Registrar, XVIth Testis Workshop, Serono Symposia USA, Inc., 100 Longwater Circle, Norwell, Massachusetts 02061, USA (Fax: +1-781-982-9481).

Preventive Care for the Menopausal Generation: Focus on Skeletal & Cardiovascular Disease
Naples, Florida, 1-3 March 2001.
Contact: Registrar, ASRM, 1209 Montgomery Highway, Birmingham, Alabama 35216-2809, USA (Tel: +1-205-9785000; Fax: +1-205-9785005; Email: asrm@asrm.org; Web: http://www.asrm.org/Professionals/Meetings/pgcourse.html).

1st Asian ISSAM Meeting on the Aging Male
Kuala Lumpur, Malaysia, 1-4 March 2001.
Contact: Yenli Lim, Conference Manager, 1st Asian ISSAM Meeting, c/o Subang Jaya Medical Centre, 1 Jalan SS12/1A, Subang Jaya, 47500 Petaling Jaya, Selangor, Malaysia (Tel: +603-730-6570; Fax: +603-730-6571; Email: ilney@tm.net.my; Web: www.apsir.org).

Introduction to Molecular and Cellular Research
Wyndham Miami Biscayne Bay, FL, USA, 2-5 March 2001.
Contact: Tel: +1-888-3636274; Email: ahall@endo-society.org; Web: http://www.endo-society.org/scimtgs/scipub.htm).

1st International Conference on the Genetics of Bone Disease
Davos, Switzerland, 17-21 March 2001.
Contact: Janet Crompton, The Old White Hart, North Nibley, Dursley GL11 6DS, UK (Tel: +44-1453-549919; Fax: +44-1453-548919; Email: janetcrompton@compuserve.com; Web: http://www.janet-crompton.com/genbone2001).

British Society for Paediatric and Adolescent Gynaecology Annual Meeting
London, UK, 19 March 2001.
Contact: R Stanhope, Institute of Child Health, Biochemistry, Endocrinology and Metabolism Unit, University College London, 30 Guilford Street, London WC1N 1EH, UK (Tel: +44-20-79052159; Fax: +44-20-74046191).

BES 2001 - 20th Joint Meeting of the British Endocrine Societies
Belfast, UK, 26-29 March 2001.
Contact: British Endocrine Societies, 17/18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org; Web: http://www.endocrinology.org).

4th International Symposium on Angiotensin II Antagonism
London, UK, 3-5 April 2001.
Contact: Secretariat, Hampton Medical Conferences Ltd, 127 High Street, Teddington, Middlesex, TW11 8HH, UK (Tel: +44-20-89770011; Fax: +44-20-89770055; Email: AIIA@hamptonmedical.com).

673rd Biochemical Society Meeting : Molecular Communications
Bristol, UK, 10-12 April 2001.
Contact: The Meetings Office, Biochemical Society, 59 Portland Place, London W1B 1QW, UK (Tel: +44-020-7580-3481; Fax: +44-020-7637-7626; Email: meetings@biochemistry.org; Web: http://www.biochemistry.org/meetings).

11th International Conference on Second Messengers and Phosphoproteins
Melbourne, Australia, 22-26 April 2001.
Contact: Email: email@secondmessengers.com; Web: http://www.secondmessengers.com.

12th International Workshop on the Development and Function of the Reproductive Organs
Ma'ale Hachamisha, Jerusalem, Israel, 30 April-3 May 2001.
Contact: Secretariat, Dan Knassim Ltd, PO Box 1931, Ramat Gan 52118, Israel (Tel: +972-3-6133340 ext 208; Fax: +972-3-6133341; Email: team2@congress.co.il).

11th Annual Meeting of the European Neuropeptides Club (ENC) & American Summer Neuropeptides Conference
Jerusalem and Tel Aviv, Israel, 7-12 May 2001.
Contact: Illana Gozes, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv 69978, Israel (Tel: +972-3-6407240; Fax: +972-3-6408541; Email: igozes@post.tau.ac.il or meeting@unitours.co.il).

International Conference: The Consequences in Adult Age of Endocrine Diseases in Childhood
Thessaloniki, Greece, 11-12 May 2001.
Contact: Prof GE Krassas, Panagia Hospital, Department of Endocrinology and Metabolism, 22 N Plastira Str., N Krini, GR-55132 Thessaloniki, Greece (Tel: +30-31-447444; Fax: +30-31-282476; Email: krassas@the.forthnet.gr).

9th International Meeting of the Psychoneuroimmunology Research Society: "Psychoneuroimmunology: Molecules to Disease Models"
Utrecht, The Netherlands, May 16-19, 2001.
Contact: Virginia Sanders (Email: pnirs@pnirs.org, Web: http://www.PNIRS.ORG).

44ème Journèes Internationales d'Endocrinologie Clinique: Obesity: Come-back to Endocrinology
Paris, France, 17-18 May 2001.
Contact: Dr G Copinschi, Laboratory of Experimental Medicine, Brussels Free University, CP 618, 808 Route de Lennik, B-1070 Brussels, Belgium (Fax: +32-2-5556239).

Glasgow Symposium on Endocrinology & The Fleming Lecture
Glasgow, UK, 24-25 May 2001.
Contact: Mrs Margaret Cooper, Royal College of Physicians and Surgeons of Glasgow, 232-242 St Vincent Street, Glasgow, G2 5RJ, UK (Tel: +44-141-2273236; Email: mgt.cooper@rcpsglasg.ac.uk).

14th International Congress of Comparative Endocrinology
Sorrento, Italy, 26-30 May 2001.
Contact: Studiocongressi, Via S Anna dei Lombardi 38, 80134 Napoli, Italy (Tel: +39-081-5511668; Fax: +39-081-5528835; Email: studiocongressi@napoli.com; Web: http://www.napoli.com/studiocongressi).

IBMS-ECTS Satellite Meeting on Comparative Endocrinology of Calcium Regulation
Madrid, Spain, 5 June 2001.
Contact: Dr Janine Danks, St. Vincent's Institute of Medical Research, 41 Victoria Parade, Fitzroy 3065, Australia (Tel: +61-3-92882594; Fax: +61-3-94162676; Email: j.danks@medicine.unimelb.edu.au).

5th International Workshop on Resistance to Thyroid Hormone
Verbania, Italy, 6-8 June 2001.
Contact: Prof. Paolo Beck-Peccoz, Institute of Endocrine Sciences, Ospedale Maggiore IRCCS, Via F. Sforza 35, 20122 Milan, Italy (Fax: +39-02-55195438; Email: endosci@mailserver.unimi.it; Web: www.infinito.it/utenti/endocrinology).

1st Joint Meeting of the International Bone and Mineral Society and European Calcified Tissue Society (IBMS/ECTS 2001)
Madrid, Spain, 5-10 June 2001.
Contact: Aurelio Rapado, Chair Local Organising Committee, c/o Tilesa OPC, SL Londres 17, 28028 Madrid, Spain (Tel: +34-91-3612600; Fax: +34-91-3559208; Email: IBMS-ECTS2001@tilesa.es; Web: http://www.intercongres-2001.com).

21st Annual Meeting of the American Society for Reproductive Immunology
Chicago, IL, USA, 9-12 June 2001.
Contact: Joanne YH Kwak-Kim, Finch University of Health Sciences/The Chicago Medical School, 3333 Green Bay Road, North Chicago, IL 60064, USA (Tel: +1-847-5788767; Fax: +1-847-5788572; Email: kwaki@finchcms.edu; Web: http://www.theasri.org).

5th European Congress of Endocrinology
Turin, Italy, 9-13 June 2001.
Contact: CCI Centro Congressi Internazionale - Via Cervino, 60-10155 Torino, Italy (Tel: +39-011-2446921; Fax: +39-011-2446900; Email: efes2001@ibow.com; Web: http://www.ibow.com/efes2001).

EULAR 2001: Annual European Congress of Rheumatology
Prague, Czech Republic, 13-16 June 2001.
Contact: Tel: +41-1-3839690; Fax: +41-1-3839810; Email: eular@bluewin.ch.

VII International Congress of Andrology
Montreal, Quebec, Canada, 15-19 June 2001.
Contact: http://www.isa2001.org/

ENDO 2001: 83rd Annual Meeting
Colorado, USA, 20-23 June 2001.
Contact: Beverly Glover, Administrative Assistant, Meetings, The Endocrine Society, 4350 East West Highway, Suite 500, Bethesda, MD 20814-4410, USA (Tel: +1-301-9410220; Fax: +1-301-9410259).

Bone and Tooth Society Meeting
Warwick, UK, 4-5 July 2001.
Contact: Janet Crompton, The Old White Hart, North Nibley, Dursley GL11 6DS, UK (Tel: +44-1453-549929; Fax: +44-1453-548919; Email: janetcrompton@compuserve.com; Web: http://www.janet-crompton.com).

Pediatric Endocrinology 2001
Montréal, Canada, 6-10 July 2001.
Contact: PedEndo Secretariat, 1110 Pine Avenue West, Montrèal, Quèbec, Canada H3A 1A3 (Tel: +1-514-3983770; Fax: +1-514-3984854; Email: pedendo@ums1.ian.mcgill.ca; Web: www.med.mcgill.ca/pedendo).

Society for Endocrinology Young Endo–crinologists Day at Summer School 2001
York, UK, 9 July 2001.
Contact: Society for Endocrinology, 17/18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org).

Society for Endocrinology Molecular Endocrinology Workshop at Summer School 2001
York, UK, 10 July 2001.
Contact: Society for Endocrinology, 17/18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org).

29th British Congress of Obstetrics and Gynaecology
Birmingham, UK, 10-13 July 2001.
Contact: BCOG Secretariat, Congress House, 65 West Drive, Cheam, Sutton, Surrey SM2 7NB, UK (Tel: +44-20-86610877; Fax: +44-20-86619036; Email: info@conforg.com).

Society for Endocrinology Advanced Endocrine Course at Summer School 2001
York, UK, 11-12 July 2001.
Contact: Society for Endocrinology, 17/18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org).

Society for Endocrinology Clinical Practice Day at Summer School 2001
York, UK, 13 July 2001.
Contact: Society for Endocrinology, 17/18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org).

Society for Endocrinology Focus on Endocrinology
York, UK, 13 July 2001.
Contact: Society for Endocrinology, 17/18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org).

Recent Progress in Hormone Research
Washington, DC, USA, 4-8 August 2001.
Contact: Beverly Glover, Administrative Assistant, Meetings, The Endocrine Society, 4350 East West Highway, Suite 500, Bethesda, MD 20814-4410, USA (Tel: +1-301-9410220; Fax: +1-301-9410259).

27th Meeting of the European Thyroid Association
Warsaw, Poland, 25-29 August 2001.
Contact: Prof. Janusz Nauman (Email: euro-thyroid-assoc@cf.ac.uk).

20th International League of Associations for Rheumatology World Congress
Edmonton, Canada, 26-31 August 2001.
Contact: Tel: +1-905-2733080; Fax: +1-905-27323611; Email: healthcarecomm@sympatico.ca.

34th International Congress of Physiological Sciences
Christchurch, New Zealand, 26-31 August 2001.
Contact: The Conference Company, PO Box 90-040, Auckland, New Zealand (Fax: +64-9-3601242; Email: info@tcc.co.nz; Web: http://www.iups2001.org.nz).

Joint Meeting with the British Pharmacological Society and Physiological Society
Bristol, UK, 5-7 September 2001.
Contact: The Physiological Society, Department of Biomedical Science, The University of Sheffield, Western Bank, Sheffield S10 2TN, UK (Tel: +44-114-2222390; Email: meetings@physoc.org).

11th International Society for Chromaffin Cell Biology (ISCCB-11) Meeting
San Diego, CA, USA, 3-11 September 2001.
Contact: Dan O'Connor, Department of Medicine and Center for Molecular Genetics, University of California, 3350 La Jolla Village Drive, San Diego, CA 92161-9111H, USA (Tel: +1-858-5528585 ext 7373 (office), 2632 (lab); Fax: +1-858-6426331 (office), +1-858-6426425 (lab); Email: doconnor@ucsc.edu; Web: http://medicine.ucsd.edu/hypertension or http://elcapitan.ucsd.edu/hyper/).

Endocrine Nurse Training Course
Glasgow, UK, 11-13 September 2001.
Contact: Society for Endocrinology, 17-18 The Courtyard, Woodlands, Bradley Stoke, Bristol BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org; Web: http://www.endocrinology.org).

28th Meeting of the British Society for Paediatric Endocrinology and Diabetes
Sheffield, UK, 13-14 September 2001.
Contact: BioScientifica, 16 The Courtyard, Woodlands, Bradley Stoke, Bristol, BS32 4NQ, UK (Tel: +44-1454-642200; Fax: +44-1454-642222; Email: info@endocrinology.org; Web: http://www.bioscientifica.com/#Confs).

Thyroid and Graves Ophthalmopathy Symposium
Graz, Austria, 21-22 September 2001.
Contact: S Ramschak-Schwarzer (Tel: +43-316-3852383; Fax: +43-316-3853428; Email: sigrid.ramschak-schwarzer@klinikum-graz.at).

4th Biennial Congress of the European Society for Sexual and Impotence Research
Rome, Italy, 30 September-3 October 2001.
Contact: SC Studio Congressi, Via F Ferrara 40, 00191 Rome, Italy (Tel: +39-06-3290250; Fax: +39-06-36306897; Email: sc.congressi@agora.stm.it; Web: http://www.essir2001.it).

The Sixth International Congress on Endocrine Disorders
Tehran, Iran, 5-9 October, 2001.
Contact: Fereidoun Azizi, P.O. Box 19395-4763, Tehran, I.R. Iran (Tel: +98(21)2416282; Fax: +98(21)2416264; Email: iced@erc-iran.com; Web: http://www.erc-iran.com/iced).

Clinical Endocrinology Update: 2001
Illinois, USA, 7-10 October 2001.
Contact: Beverly Glover, Administrative Assistant, Meetings, The Endocrine Society, 4350 East West Highway, Suite 500, Bethesda, MD 20814-4410, USA (Tel: +1-301-9410220; Fax: +1-301-9410259).

American Society of Bone and Mineral Research
Phoenix, Arizona, USA, 12-16 October 2001.
Tel: +1-202-8571161; Fax: +1-202-2234579; Email: asbmr@dc.sba.com.

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Bert O'Malley 'Nuclear receptor co-activators: the link to hormone biology'

Wilmar Wiersinga 'The Janus face of thyroid/amiodarone interactions'

Ernst Nieschlag 'Clinical use of testosterone: how, when and for whom?'

Kris Chatterjee 'Nuclear receptors and human disease'

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Thyroidal and extrathyroidal iodide uptake

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Pregnancy with a fetus at risk of congenital adrenal hyperplasia

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See the Experts take on adrenal incidentaloma, differentiated thyroid cancer, amenorrhoea, 'difficult' hypokalaemia, and sweating and flushing in 'What would the Expert do?'

Further details from
Helen Gregson, BES,
17/18 The Courtyard, Woodlands,
Bradley Stoke, Bristol BS32 4NQ, UK
Tel: +44-1454-619347; Fax: +44-1454-616071;
Email: helen.gregson@endocrinology.org:
Web: www.endocrinology.org/SFE/confs.htm)