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The Physiological Society Magazine

Oxford Meeting

Features on:

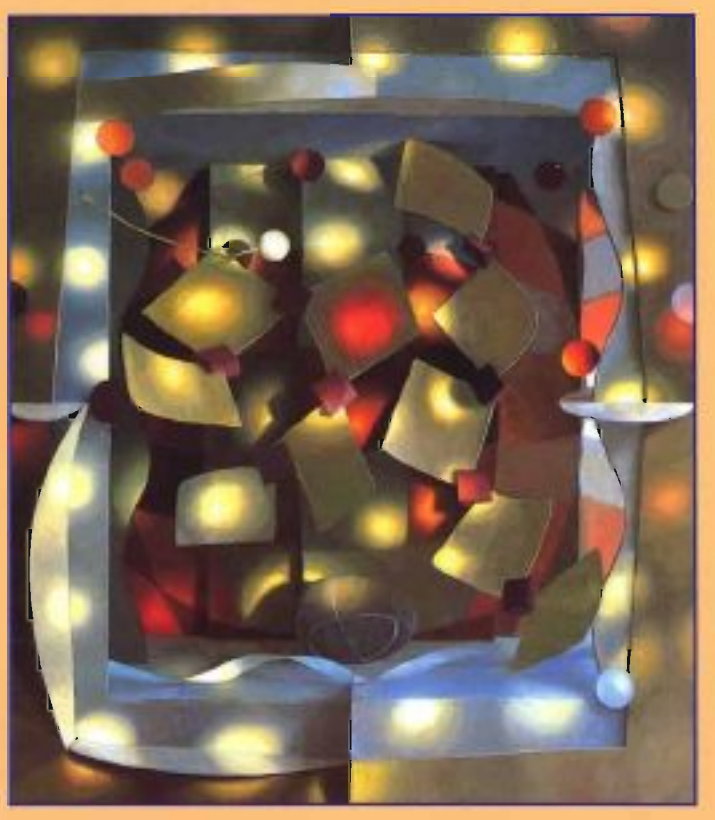
Science Week

Sodium channels in nociceptive neurones

Musicians & physiologists

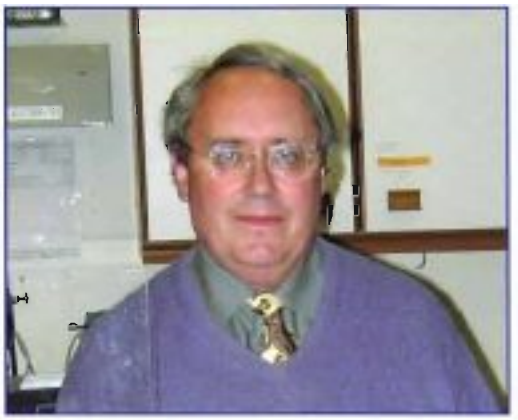
The Marae of New Zealand

The Institute for Learning and Teaching



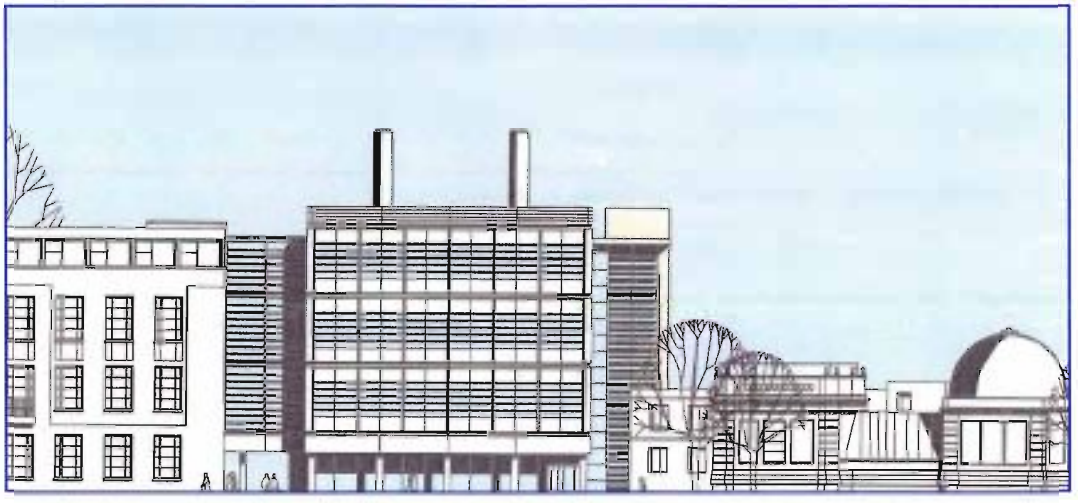
Spring 2001
No 42

Students working in a First Year Physiologists Practical Class



Professor Clive Ellory, Head of Department

The new NMR facility



Artist's impression of the new building extension for Professor Frances Ashcroft and Professor Kay Davies

Front cover: Fran Ashcroft's collaboration with artist Benedict Rubbra depicting Insulin-Secretion

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ACTION POINTS

Affiliate Travel Grant Scheme: The next deadlines for receipt of applications are 31 March and 31 May 2001.

MSc Bursaries: The next deadline for receipt of applications is 31 May 2001.

BSc Intercalated Bursaries: The next deadline for receipt of applications is 30 June 2001.

Postgraduate Support Fund: The next deadline for receipt of applications is 31 July 2001.

Change of Address: Members should inform the Administration Office of any changes of address, telephone, fax or email addresses. Changes can be emailed to: jreif@physiology.demon.co.uk

Sheffield Meeting (3-4 July 2001): Abstracts must be submitted to the Meetings Secretary's Office by 12 April 2001.

Bristol Meeting (5-7 September 2001): Abstracts must be submitted to the Meetings Secretary's Office by 7 June 2001.

Address for abstract submissions: The Meetings Secretary, The Physiological Society (Abstract Submission), Dept of Biomedical Science, The University of Sheffield, Western Bank, Sheffield S10 2TN

Magazine: Letters and articles and all other contributions for inclusion in the Summer issue should reach the Administration Office by 16 March 2001. Please cite all references in articles in the style of The Journal of Physiology.

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GUIDELINES FOR CONTRIBUTORS

These guidelines are intended to assist authors in writing their contributions and to reduce the subsequent editing process. The Magazine Editorial Group is trying to ensure that all articles are written in a journalistic style so that they will have an immediate interest value for a wide readership and will be readable and comprehensible to non-experts. In particular, scientific articles should give a good overview of a field rather than focus on the authors' own research.

Format of articles

The main message or question posed should be introduced in the first paragraph. The background for the topic should then be established, leading up to the final dénouement or conclusion.

Length of articles

This will be determined by the subject matter and agreed between the contributor and the commissioning editor. Articles will vary in length from 500 to 2000 words.

Submission of articles

Authors should submit text in the form of a disk accompanied by a printout wherever possible. Use of disks reduces the risk of introduction of errors during re-typing. It is helpful to give brief details of the computer, operating system and software package(s) used.

Deadlines for submission

Contact the Editor's office or the Administration office for submission dates. Late submissions will not be accepted or publication will be deferred to a later issue.

Illustrations

Authors are encouraged to submit diagrams, drawings, photographs or other artwork to illustrate their articles or, if they cannot provide these themselves, to suggest what artwork might be appropriate. Photographs may be colour or black & white, prints or transparencies.

Author photographs

The Magazine normally includes photographs of the authors of articles. These may be colour or black & white; prints are preferable if cropping is required.

References

Authors are requested to keep the number of references to a minimum (preferably no more than two or three), in the style of the Journal of Physiology.

Suggestions for articles

These should be made either to the Editor, to the Editorial Assistant or to a member of the Magazine Editorial Group (see below).

Magazine Online

The magazine is now available on our website.

WELCOME TO THE UNIVERSITY OF OXFORD

Department of Physiology
University of Oxford

It is nearly six years since The Society met in Oxford, and we are having to learn again many of the details associated with running this major meeting, although very welcome expert help is now forthcoming from London and Sheffield. There have been several changes in Faculty and premises since 1995, but much will remain familiar. Faculty who have retired include Ann Taylor, Peter Matthews, Marianne Fillenz, and Michael and Hilary Brown. Long term research fellows leaving include Alan Larkman, Bruce Cumming, Peter Kind, Philip Benson and Kieran Kirk. Ann, Peter and Marianne, and Abe Guz continue to be active in the Department, writing and experimenting. New appointments as lecturers include Christoph Korbmacher who carries on the tradition of epithelial physiology, Ole Paulsen who joined us from Pharmacology and is working on cellular neuroscience, and most recently Keith Buckler working on oxygen sensing and the carotid body.

Dr. Ole Paulsen

The cardiac scientists in the Department (Denis Noble, Trevor Powell, Richard Vaughan-Jones, David Paterson, Chris Ashley and Peter Kohl) have combined with other cardiac groups university-wide to form the Oxford Cardiac Research Group (OCRG). The consortium has been successful in acquiring a 500MHz wide bore NMR spectrometer, a BHF-funded molecular physiology laboratory, and HEFCE funding for a new Cardiac Science Centre which is presently at the detailed planning stage. The strong commitment to computing is reflected by new parallel and supercomputing facilities for modelling studies being carried out by Denis Noble and David Paterson's groups. The Vaughan Jones lab continues to use confocal and fluorescence imaging to study pH and calcium transients and regulation in cardiac myocytes. Chris Ashley continues to investigate the details of contractile machinery in muscle and has a fruitful collaboration on troponin in cardiac muscle with the new Professor of Cardiology, Hugh Watkins. David Paterson has recently informed the Society of his work on nitric oxide and the autonomic control in the cardiovascular system via the G.L. Brown Lecture.

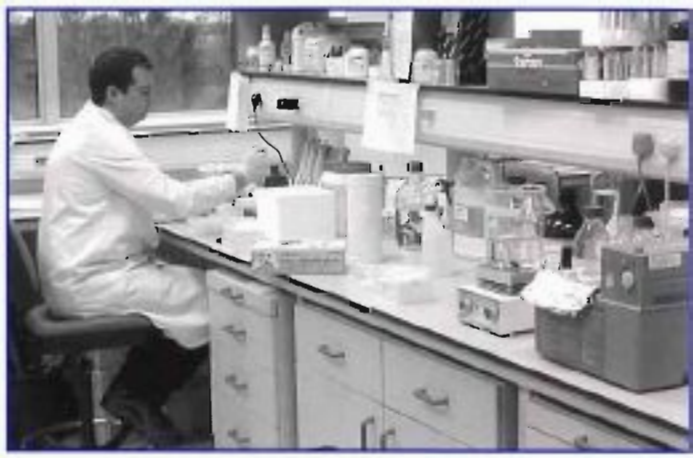
The traditional research strength in neuroscience continues with exciting new initiatives in several directions. The Wellcome Trust provided major refurbishment costs for the conversion of teaching space into new laboratories for cellular neuroscience including work on synaptic connections by Julian Jack, and for Andrew Parker's group to develop their cognitive neuroscience programme. Colin Blakemore's group continues to work in many areas of cellular and sensory neuroscience, using new methods including neuronal coculture, slice and transgenic mouse techniques. Their recent work on a Huntington's transgenic

Professor Julian Jack

mouse model, the timing of whose disease onset depended on the animals' environment has attracted a lot of interest. Colin has also been very active promoting and popularising science via the British Association, the Royal Society and the media. Ian Thompson has continued his work in neuronal development and connectivity. Stuart Judge is studying eye movements and their control, which leads on to work with dyslexic children and children with hearing defects a major interest of the laboratories of John Stein and David Moore. Their human work has been facilitated by the addition of a new laboratory facility in the west end building extension funded by Catherine Cookson and the Barclay Trust to allow testing of visual and auditory testing of human subjects under ideal conditions. Further human work in progress includes collaborative MRI projects with the clinicians, and joint programmes in psychophysics and cognition with Psychology and the clinical departments. More basic experimental work on sensory and motor cortex continues with the groups of Chris Miall and Andy King who are Wellcome Senior Fellows.

Human systems physiology continues to be represented by the work of David Paterson (mentioned above) on the cardiovascular system, and respiratory studies by Keith Dorrington, Piers Nye and Peter Robbins. Peter Robbins in particular is continuing the Departmental tradition of human respiratory studies using hypobaric chambers to study short and long term effects of alterations in oxygen and carbon dioxide levels on the control of respiration. Their findings are of direct importance to anyone flying the Atlantic, since they have shown adaptive changes in respiration over a six hour time period of exposure to differences in gas composition. Piers has made a significant contribution to our knowledge of the history of respiratory research in the department, where the work of Haldane, Barcroft and Douglas established Oxford as a centre for respiratory science equivalent to the role of Sherrington for the nervous system.

Dr. David Paterson and his Research Group



Dr. Simon Golding in the new British Heart Foundation Molecular Biology Laboratory

Cellular physiology is represented by the work of Fran Ashcroft's group on ion channels, concentrating on KATP channels, and looking at structure, function and control, particularly in the pancreas. Fran has also found the time to write two physiology books recently, a major monograph on channelopathies, and a more populist book on physiological adaptation. She has also collaborated with an artist, Benedict Rubbra on representation of science in art, resulting in a recent exhibition of paintings in the University Natural History Museum. Together with Kay Davies, Fran made a successful JIF bid

for £10m towards a £14m building the Oxford Centre for Gene Function. This will be an extension of 2000m^2 to the east of our present building, for post genomic research on physiological function. In fact this represents one of four building projects to which we are currently committed, meaning that the department will continue to grow and change over the next three years.

Further cellular physiology includes the work of Jill Urban, and Robert Wilkins in the area of chondrocyte and connective tissue biology. The chondrocyte is a cell whose physiology is neglected, but which is responsible for synthesis of cartilage and matrix, and which exists in one of the most extreme environments of hypoxia and hypertonicity in the body. Christoph Korbmacher is studying epithelial salt transport in a model tight epithelium, and collaborating with several groups on ENAC and CFTR. Our work on sickle red cells in collaboration

Professor Denis Noble (Burdon Sanderson Professor of Cardiovascular Physiology) and his Research Group

with John Gibson is also proving exciting and productive, and the regulatory role of oxygen is turning out to be pivotal in understanding the role of Band3 and membrane bound haemoglobin in controlling KCl cotransport.

The department has been extended and refurbished extensively in the last five years, but still retains the design aura of

A First Year Medics Practical Class

the 1950s. We have put considerable effort into our major teaching classroom, becoming computerised later than most other physiology departments, and not without some effort by Tim Pragnell, our responsible computing scientist. This year we will increase our intake to 150 medical students, and soon we are to have a major new centralised preclinical teaching block, which will free up more space, and allow us to increase our research effort. The QAA and RAE have preoccupied us for a lot of this year, and there seems to be continuous building work going on, but I am confident we will give you a warm welcome, and we look forward to a successful and productive meeting.

Professor Clive Ellory
Head of Department of Physiology
University of Oxford

NATIONAL SCIENCE WEEK, 16 – 25 March 2001

From 16 – 25 March 2001, National Science Week will involve over a million people in all manner of science events throughout the UK. Shopping centres, disused railway stations, art galleries, pubs and bars will host hands on activities, debates, drama, films, competitions and demonstrations. The week, co-ordinated by the BA, aims to provide the best in science activities and events for all members of the population.

Exploding Custard and Jurassic Jellies will entertain and inspire young people in London at the BA's annual BAYSday. In Doncaster, at an 'alternative' archaeological dig, school children will retrieve what remains of their lunches buried 6 months earlier. Jobseekers in Rochdale will build radio controlled Mad Max cars for a 'Robot Wars' inspired demolition derby. Members of Parliament can discover the hottest young researchers in the UK at a showcase of up and coming scientists. Sixth Formers will gather in Canterbury to compete for prizes related to their scientific research. For art lovers, Joan Miro's 'Constellations', with its links to astrology and physics, will be exhibited. In Southampton the City Art Gallery's workshops will allow the public to examine the science behind 14th century paintings. Chicken Run characters will be built weatherproof and predator proof homes in Lincoln, whilst children in Halifax can stay out all night at the Eureka Science Centre Sleep over. Richard Dawkins, Susan Greenfield, Frank Close, Simon Singh and Peter Snow are amongst the stars of the world of science taking part this year.

This is the 8th National Science Week and it is expected to see a further increase in the 6,600 opportunities for involvement achieved in 2000. The week is endorsed and supported by the Government through the Department of Trade and Industry.

The full programme of events will be available in February 2001 in printed form and on the web at www.britassoc.org.uk.

THE POLITICS OF ANIMAL EXPERIMENTATION

Report on the RDS Annual General Meeting

As usual this was an excellent half-day, the business being concluded in an enviable 15 minutes and the rest of the time devoted to some excellent presentations. Professor Susan Greenfield was as entertaining and informative as ever on the science of pleasure and pain, and there was an interesting discourse from Dr James Fawcett on repairing spinal cord injuries. Hearing first hand from their Managing Director, Brian Cass, what life has been like at Huntingdon Life Sciences over the last two years was an incredible tale of determination in the face of shockingly devious and frankly criminal activities on the part of the anti-vivisection community. This tale was preceded by a talk from Dr Stephen Ladyman, MP, on the topic of the politics of using animals in research, which deserves special mention.

Dr Ladyman started by pointing out the paradox that although in the future the country will need to make more and more of its money from the knowledge based industries, of the 650 MPs, probably only 20 would openly say they supported research on animals – experiments which are of course at the heart of such work. Why? Because this does not win votes. Polls show that whereas several hundred people in each constituency make their voting decision based positively on MP's anti-vivisection tendencies, those constituents choosing on the basis of MPs supporting vivisection are too few to register. So although market research shows that most people do find medical research on animals acceptable, this is not translating to an observable number showing active support, just acceptance, whilst the opposing side is as passionate as ever. In addition, there are currently 3 postcard campaigns conducted by different anti-vivisection organisations. These organisations mail out postcards, pre-addressed to MPs, to individuals so that all the recipient has to do is tick a box, sign it and put it in the post box. The wording is such that naturally impossible cruelty to animals and medical research using animals are one and the same. The result of these campaigns is that MPs receive at least one anti-vivisection postcard or letter a day, and are thus likely to conclude that the majority of their constituents are in favour of increased regulation and decreased use of animals. Added to this is of course that any MP, similar to any scientist, who is prepared to speak out for animal experimentation then becomes a target for the more extreme end of the anti-vivisectionists. And although Tony Blair has publicly stated his support of science he has thus far been quiet on the more difficult issue of animal experimentation.

So, what can be done to alter this alarming trend? Any large scale campaigning needs funding such that only the pharmaceutical companies are probably in a position to provide, but as an academic, even if you are not directly involved with animal experimentation, you should be engaging your MP in communication about this issue. The possible ramifications of the anti-vivisectionists activities could affect us all and so the time to act is now.

Maggie Leggett

SODIUM CHANNELS IN NOCICEPTIVE NEURONES

Here Jim Elliott describes tetrodotoxin resistant sodium currents and suggests that knowledge of them is a potential route to the development of more specific analgesics

History

Kostyuk and co-workers proposed nearly twenty years ago that rat sensory neurones express two different sodium currents (I_{Na}). One was a "classical" current readily blocked by tetrodotoxin (TTX). The other had different electrophysiological properties and was also resistant to TTX block (Kostyuk *et al*, 1981). When we presented data on this TTX-R I_{Na} to the Society in the early 1990s, there was still a tendency to believe that the TTX-R current was either an artefact (induced by culture conditions or enzyme treatment) or a primitive form expressed in neonates but with no role in the adult animal (Elliott & Elliott, 1993). However, this sceptical view has been replaced over time and the modality-dependent expression of various Na channel isoforms by sensory neurones is now seen as a potential route to the development of more specific analgesics (e.g. Porreca *et al*, 1999).

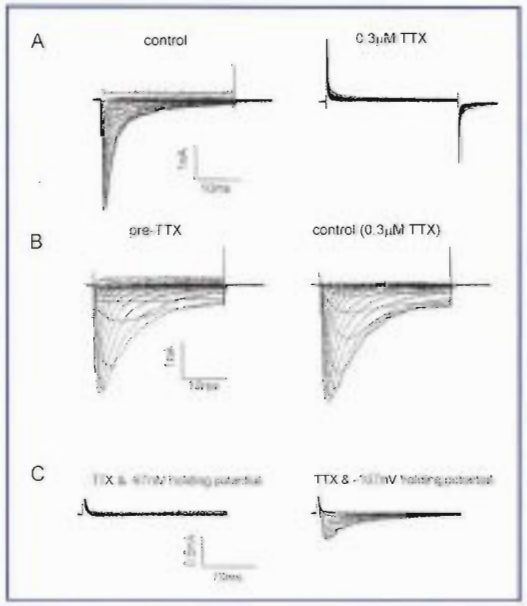


Figure 1. *Voltage-gated Na current families recorded from three different adult rat dorsal root ganglion cells. These were selected to show: (A) TTX-S currents, (B) the main (TTX-R1, SNS/PN3) TTX-R current and (C) a further TTX-R current (TTX-R3, SNS2/NaN). Full experimental details are given in Rush et al (1998).*

Clones

The cloning and expression of a TTX-R Na channel α-subunit , now called either SNS or PN3, gave a molecular identity to the main TTX-R current and reinforced its association with small diameter, potentially nociceptive, neurones in sensory ganglia (Akopian, Sivilotti & Wood, 1996). However, SNS/PN3 appears to have a TTX-R partner, also with a double-barrelled name, SNS2/ NaN (Tate *et al*, 1998). A number of Na channel α-subunits probably contribute to the recorded TTX-S Na current. Expression of SNS/PN3 and the occurrence of a recordable TTX-R current are not absolutely restricted to small cell diameter (ca. 20μm) sensory neurones. The Waxman group (Renganathan *et al*, 2000) suggest that some large (>40μm diameter) cutaneous afferent neurones also express SNS/PN3.

Electrophysiology

Figure 1 shows current families recorded from small rat dorsal root ganglion cell bodies (adapted from Rush *et al*, 1998). The cell in figure 1A expressed an apparently pure, kinetically fast, TTX-S current. The much slower current shown in figure 1B was unaffected by 0.3μM TTX and is probably due to SNS/PN3. The smaller TTX-R current shown in figure 1C, visible only with a more negative holding potential than our usual -67mV, may be caused by SNS2/NaN. We referred to the resistant currents as TTX-R1 and TTX-R3 respectively (the existence of TTX-R2 as a truly separate species is more debatable and will not be considered here). As shown by the availability and current-voltage curves presented in figure 2, TTX-R1 has a higher threshold for both inactivation (availability) and activation (I-V) than TTX-S. TTX-R3 is more readily activated than TTX-R1 but is also easily inactivated. We have suggested that the resistance of TTX-R1 currents to fast inactivation may allow them to continue to function in a relatively high external potassium environment such as that of physically damaged tissue. TTX-R1 and TTX-S currents have complex inactivation kinetics, with time constants ranging from milliseconds to hundreds of seconds. The

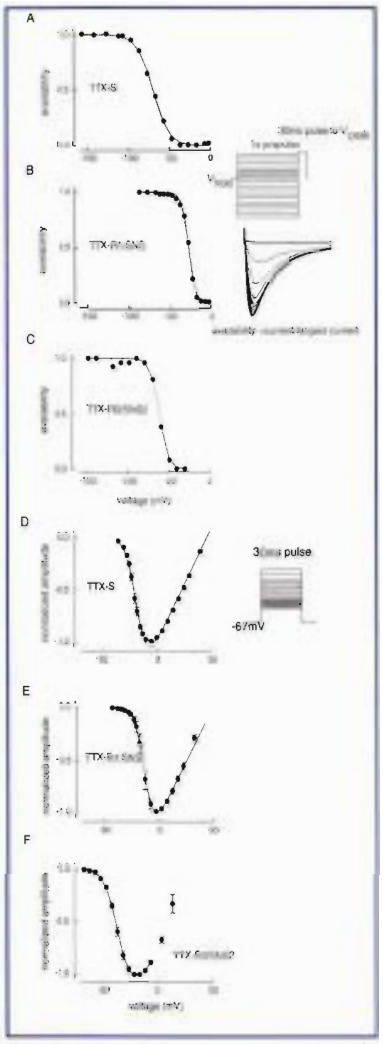


Figure 2. *The voltage dependence of current inactivation and activation. A-C show 1s prepulse availability curves while D-E show single pulse I-V curves for each of the current subtypes illustrated in figure 1. TTX-R1 currents have the highest threshold for both inactivation and activation.*

exact contribution of that kinetic richness to the control of firing behaviour, both in normal and abnormal states, is an interesting but so far open question. Waxman and co-workers have suggested that because SNS2/NaN activates at relatively hyperpolarized voltages, and generates relatively persistent currents at very negative potentials, it could play a role in determining action potential threshold. Electrophysiological studies of SNS2/NaN have been greatly assisted by the development of an SNS/PN3 null-mutant mouse by Wood and co-workers.

Modulation of channel properties and of channel expression

England *et al* (1996) showed that prostaglandin E_2, a hyperalgesic agent released during the inflammatory response to tissue damage, lowers the activation threshold of the TTX-R1 current subtype. This effect could, at least in part, explain the increased excitability of nociceptive neurones in inflamed tissue. The modulation of TTX-R channel gating parameters by a variety of algogenic substances has been the subject of considerable research (see e.g. Gold, 1999).

The cloning of sensory neurone Na channel α-subunits led to the development of subtype-specific channel markers and the ability to knock out particular channels through antisense oligonucleotides or the production of transgenic animals. These techniques have in turn increased our understanding of changes in channel expression and distribution in various pain-related models and syndromes (e.g. Porreca *et al*, 1999; Coward *et al*, 2000). One popular hypothesis is that the reduction in expression of SNS/PN3 channels in cell bodies following nerve damage is due to the translocation of channels from the soma to the actual sites of damage, where channel accumulation is postulated to result in hyperexcitability. This would account for the observed increase in expression of TTX-R channels in neuromas. However, expression of TTX-S isoforms in the cell body may actually increase in response to nerve damage so TTX-R channels should not receive exclusive attention.

Interest in and publications related to the different types of Na channel expressed by sensory neurones have grown enormously in the last five years and unfortunately I have only been able to mention a fraction of the relevant literature here. Part of that growth has resulted from drug-discovery programmes instituted by a number of major pharmaceutical companies. If TTX-R Na channels in particular live up to their promise, perhaps the next five years will see the introduction of greatly improved analgesics along with even more academically interesting papers.

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MUSICIANS & PHYSIOLOGISTS

In this article Geoffrey Walsh discusses the complex motor acts involved in musical peformance

Professional musicians train intensively and their skills reach levels of sensori-motor control far beyond those of many others. Early scientific thoughts about musical scales were formed by observations of the behaviour of a monochord, a single string stretched between supports mounted on a box. Studies of the Greeks at the time of Pythagoras in the sixth century BC led to an appreciation of the relationship between the length of the vibrating string and the pitch of the note; if the length was halved the note shot up an octave and so on. There have been many recent studies of the acoustics of musical instruments; fine articles may often be found in the Journal of the American Acoustical Society. A distinguished member of the Physiological Society, Giles Brindley, made a bassoon where the valves were operated electrically, it was once demonstrated to the Society. It eased problems of fingering and improved inferior notes. The 'holing', the pattern of open and closed holes, could be separated from the 'fingering', the patterning of finger movements (Brindley 1968). The great nineteenth century scientist, Hermann von Helmholtz, wrote a famous book, 'On Sensations of Tone' in which for the first time the physical basis of harmony was successfully explored.

Musical performance involves motor acts and, with woodwind and brass instruments, careful breath control. No doubt in all, especially during training, auditory and other forms of fine sensory feedback are needed. Clearly there are rich and much under-explored scientific areas for possible research. For the most part there have been just scattered studies by persons with some interest in music and access to appropriate scientific techniques. In a short and notable report Faulkner & Sharpey-Schafer (1959) noted the very high air pressures sometimes needed when playing the trumpet; the circulatory effects were those of a formidable Valsalva manoeuvre, whilst bag-pipers and recorder players may hyperventilate. For flute players, in soft passages, the problem is to keep a steady pressure of 0.5cm of water – much lower than in speech. If a deep breath has been taken the recoil of the chest must be resisted, the inspiratory muscles must gently and controlledly allow their lengths to increase (Draper *et al*, 1960). Singers have to regulate the air pressure in the trachea and complexly control the vibrations of the vocal cords, making at the same time adjustments to the resonances of the throat and mouth. Rapid movements are often called for as, for instance, in violinists' vibrato and drum beats; these cannot usually exceed about seven per second because of the limitations of muscle properties (Schlapp 1973, Shivas 1988).

When playing from a score the movements of the eyes are rather similar to those during reading; the eyes move in jerks, resting momentarily in an apparently almost random way but there is a tendency to fixate notes and bar lines rather than spaces (Kinsler & Carpenter 1995). The musician will not be playing the notes at which he is looking, but those that have been detected a little earlier.

I was fascinated to learn last summer that there is a special institute associated with the Hanover University of Music and Dance. It is the:

Institut für Musikphysiologie und
Musiker-Medizin Hannover

The university, 'Hochschule', has an interestingly designed modern building in the shape of an ear; it is in a pleasant wooded setting about 2 miles from the centre of the city; the institute is about half a mile away. The director of the institute, Professor E. Altenmüller, a member of the German Physiological Society, has had both medical and musical training and has published extensively on a variety of aspects of the physiology of music. There is a Web page about the institute at:

http://plathner1.hmt-hannover.de/

Advice, and if necessary treatment, is given to musicians associated with the university if they develop neuromuscular or other problems which may impair their performances.

For many years I have been interested in the control of finger movements and particularly in the errors which are sometimes quite large when people try to move two fingers in opposite directions at the same time (Walsh 1997a). Such manoeuvres are frequently needed when playing most instruments (Walsh 1997b). On being invited I jumped at the opportunity to carry out some investigations of the young and talented people in the university. I packed my lap top, an interface the size of a match box, and associated apparatus, and took a flight to Hanover in October. In a stay of 2 weeks I was able successfully to make computer based analyses of the finger skills of some 65 advanced musicians. This was a wonderful opportunity, an experience not to be missed.

I have not in any way answered the inquiry of Pickles (2000) about ageing and music, and music may still be appreciated by people suffering seriously from Alzheimer's diease. But it is not only the old who need consideration; Pythagoras commended the use of special melodies as antidotal to special passions and, 'by a solemn air brought back to reason a youth who, maddened by love and jealousy' was about to burn down his mistress's house (Naumann 1886). A cure for pyromania?

There is probably nothing which has sometimes therapeutic merit which does not at others cause distress or injury. Enforced listening to piped music in public places, such as swimming pools super-markets and banks can be upsetting. Conversation during dining at a restaurant can be marred by incessant, unwanted and ill-selected jangles. Shop assistants may dread the coming of Christmas when they may be subjected, during their whole working hours, to endless repetion of canned carols. I have often protested about 'wall-paper music', sometimes achieving my goal of having it turned off. There is an organisation, 'Pipedown', which seeks to bring together people with similar views. For more information see:

http://www.btinternet.com/~pipedown/

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IUPS August 2001
WELCOME (*te pōwhiri*), The *Marae* of New Zealand

Denis Noble, Secretary-General, IUPS

Introduction

Physiologists worldwide will soon be turning their attention to Christchurch, New Zealand and the 2001 Congress. To go or not to go? For some, I suspect many, the decision will turn not only on the science and the Congress itself, but also on the excitement of visiting New Zealand. Doubtless, many will also make it a family holiday.

I first travelled to New Zealand as a Visiting Professor at Auckland 10 years ago, so I can't yet be regarded as a cultural expert. But I did immediately become an enthusiast for this extraordinary and beautiful country. If you have never been, you will find many things to surprise and intrigue you.

First, the wildlife is an island biological treasure. There are many unusual species of animals (some sadly now lost) and plant life, including magnificent trees unique to New Zealand. You will notice the sniffer dogs at the airport trained to detect any vegetation being brought in. I once came with a magnificent bunch of roses for a friend, only to see the whole lot taken to be destroyed! I couldn't even keep a single red rose petal for my friend. Preserving what is unique about New Zealand wildlife is now a priority.

Second, the countryside is spectacular. You will be bombarded with tourist information on this, so I will let it pass – only to say that even what would appear to be the wildest exaggerations of the tourist agencies are actually true.

The *Māori*

No, my real reason for devoting this article to New Zealand is to highlight what for me is the most intriguing cultural treasure of all: the *Māori*.

These Polynesian travellers arrived by boat around 1000 years ago, so for around 8 centuries they had New Zealand all to themselves. It is haunting to go to the rugged north eastern coasts where they must first have arrived. I once tried

to follow a New Zealand colleague around one of the rocky outcrops as the waves lashed into us. I finally arrived safely back on the beach a literally bloody mess: he emerged without a single scratch!

After the tiny Pacific Islands of Polynesia, the *Māori* must have regarded New Zealand as a fabulous, apparently boundless paradise, with food in abundance. Most probably, there were several waves of arrivals. Although a millennium has passed, much of this historical event survives in the stories and oral tradition of the *Māori*. Until the language adopted roman script, it was not written down, so the oral tradition of recording history was very strong.

The language

The language itself is a major cultural treasure. Polynesian languages in fact provide one of the best natural experiments in language development for we can trace the changes as people progressively spread from the East Asian

mainland through the chains of islands, then across the far-flung Pacific sea gaps, until finally reaching at one extreme Easter Island and at the other extreme New Zealand. By correlating the vocabulary with the times of arrival we can estimate how long it takes for vocabulary to diverge. It takes around 2000 years for over 90% of the vocabulary to change, by which time, following all the usual criteria, a new language has emerged.

Yet, some features clearly did not change. To anyone familiar with Japanese or Korean, there are extraordinary parallels. All vowels are voiced separately, with a characteristic rhythm. Grammar is located in special particles. Nouns are simultaneously singular and plural. Strictly, one should not say the *Māoris*. They are the *Māori*. Incidentally, we are the *Pākeha*. So are all New Zealanders of Western origin. *Pākeha*, not *Pākehas*.

New Zealand is of course the *Pākeha* word for the country. The *Māori* call it *Aotearoa*. Its meaning is long white cloud and from what I have said about vowels you will already have a fair idea how to pronounce it: there are six syllables here, *A-o-te-a-ro-a*, just as there would be if this was a Japanese or Korean word. Strictly speaking this is the *Māori* name for the North Island. Not surprisingly for people of Polynesian descent, a separate island requires a different name. The South Island (which is where the Congress will be held) is *Te Wai Pounamu* which means the 'the greenstone water (island)'.

The culture and the Treaty

Māori culture has immense and obvious impact on the New Zealand of today. Outside towns with obvious Western names like Auckland, Wellington and Christchurch virtually all the place names are *Māori*. And even the big towns also have *Māori* names. Christchurch, where the Congress will be held, is *Ōtautahi*, while Auckland is *Tāmaki makau rau* – yes, also like Japanese, Maori has double-length vowels so this is strictly 9 syllables long! (*Ta-a-ma-ki ma-ka-u ra-u*).

Moreover, unlike the relationship between many indigenous peoples and their recent invaders, there is a formal legal basis to the relationship between the *Māori* and the *Pākeha*. This is the Treaty of *Waitangi*, entered into on behalf of Queen Victoria (and a reason why many *Māori* will probably resist New Zealand becoming a republic: the Queen can be viewed as the legal guardian of their rights in this treaty).

The Marae

And this treaty takes me to the central point of this article. Different cultures have different concepts of land and society, which can be a deep problem when it comes to interpreting legal documents. Land belongs to a tribe not to individuals. It is often said too that *Māori* face the future walking backwards with

eyes on the past and their ancestors. The *Māori* concepts of land, ownership and the roles of society, the tribe, are therefore very different from *Pākeha* concepts.This is best explained by saying something about the title of this article: the *Marae*.

Many will already know the *Marae* as the beautiful *Māori* meeting places. Constructed in wood, with colourful decoration, they are renowned worldwide

as the symbol of *Māori* culture. But the concept of *Marae* does not have to have a physical existence in this form. Its cultural significance can be viewed as being the location of the rituals that must be followed when the members of one tribe meet with another. There are about 35 North island tribes and 5 South Island tribes, each with their own rituals. But they all have in common this concept that certain rituals must be observed when one visits the territory of another tribe. A *Marae* is wherever these rituals are observed.

In this sense, all of New Zealand is a *Marae*. It is the earth-mother, the basis of all *Marae*, for they are also the home of the ancestors. We will be the guests, or *manuhiri*. Strictly speaking, we cannot set foot in New Zealand without following the courtesies of arriving at a *Māori Marae*.

The *Māori Pōwhiri*

There will therefore be a *Māori pōwhiri* (welcome) at the opening of the Congress, and we intend to do the best we can to follow the traditions and reply to this welcome in a way that respects *Māori* culture.

I finish with a lovely speech addressed by Hiwi Tauroa (*see reference*) to his home *Marae*

Te marae e takoto nei
The marae lying here
Tēnā koe
I greet you
Papatuanuku te whāea
Papatuanuku the Earth Mother
Tēnā koe
I greet you
I ahau e tu ake nei
While I stand here
Ka huri oku whakaaro
My thoughts turn
Ki a rātou, ōku tipuna
To them, my ancestors
I tu ake hoki i nga wā o mua
Those who also stood in years gone by.

When we are welcomed in *Ōtautahi* we will be facing people for whom the respect for ancestors (including those heroic canoeists of 1000 years ago), and the expression of this respect in the rituals of the *Marae* are very deep. They will almost certainly use certain *Māori* words to welcome us, including *haeremai* (welcome), *manuhiri* (visitors) and *tūārangi* (from afar)

Haeremai e te manuhiri tūārangi
Welcome visitors from afar

We have yet to compose our reply, but its spirit will be a *mihi* (greeting) to the *Marae* and those present to welcome us:

Te whare e tu nei
The house standing here
Te marae e takoto nei
The marae lying here
Tēnā korua
Greetings to you both
Nga hau e whā
People of the four winds
Nga iwi e tau nei
People gathered here
Tēnā koutou katoa
Greetings to you all.

D Noble
University Laboratory of Physiology
Parks Road
Oxford OX1 3PT

Reference:

Hiwi & Pat Tauroa (1986) *Te Marae: A guide to customs and protocol*. Auckland: Reed books.

THE INSTITUTE FOR LEARNING & TEACHING

In the two articles below Sally Brown explores the value of the ILT to the academic community whilst Chris Prior reflects on signing up for the "experienced staff" entry scheme

What's in it for the academic community?

Launched in June 1999, the Institute for Learning and Teaching is a fast growing membership body for all who teach and support learning in higher education in the UK. It aims to enhance the status of teaching, improve the experience of learning, and to support innovation in higher education. This paper aims to inform colleagues about the ILT and its activities, together with the principal benefits of joining.

The ILT was established as a result of recommendations in the Dearing report[1] to:

- accredit programmes of training in higher education
- commission research and development in learning and teaching practices
- stimulate innovation (Dearing report 1998 Recommendation 14)

The ILT aims to work closely with colleagues active in networks committed to fostering learning and teaching in higher education. On behalf of the UK funding councils, the ILT has been charged with the task of managing the Learning and Teaching Support Network, including the Generic Learning and Teaching Centre and the JISC funded Technology Integration Centre.

How to join

The ILT is currently both accrediting programmes on learning and teaching for academics, and admitting individual members who can demonstrate their expertise in five broad areas of relevant experience. These are: teaching and/or support learning, designing and planning learning activities, assessing and giving, developing effective learning environments/ student support systems, and best practice through personal development.

Until September 2001, academics with three or more years experience (pro rata for part-timers) can apply directly to the ILT for initial membership by providing a summary of professional experience under these headings, accompanied by two appropriate references. There is a processing fee of £25 for this route.

Those who have completed one of the increasing number of programmes of learning and teaching in higher education (which have been accredited by the ILT) need to complete a simple application, and provide evidence of their award once their institution has registered with the ILT. A list of programmes that have achieved this status is available from victoria.eaton@ilt.ac.uk Once you have successfully been admitted to membership, there is an annual fee of £75, which can be set against personal income tax.

Membership applications are currently being received from a variety of constituencies in widely differing contexts. Both long-serving academic staff with considerable experience of teaching and new lecturers at the beginning of their careers are joining. We also have a number of senior academics, including Deans, Pro Vice Chancellors and two Vice Chancellors among our members, as well as academics and learning support staff across the subject range in all kinds of higher education institutions.

Support from institutions

Many institutions across the UK are demonstrating the value they place on the ILT by including references to ILT membership in their Learning and Teaching Strategies, with many of them including targets or goals for the number or proportion of members of their staff they intend to encourage to join. Many institutions are also offering their staff additional support in the form of payment of processing fees, annual membership or both, and by providing internal workshops for staff on putting together a successful application. In a number of institutions, senior staff are demonstrating their commitment by completing their applications themselves, to encourage other staff to join. Some institutions are going further, by providing financial incentives for successful applicants, or by linking membership to appointment or promotion, and many are encouraging those new to teaching in higher education to undertake an accredited programme leading to membership eligibility.

What's in it for individuals?

By joining the ILT individuals will:

- gain recognition for experience and expertise in supporting student learning
- become a member of a professional membership body, with the kudos of accredited status
- be recognised by students, institutions, peers and external scrutinisers as having a strong commitment to student learning
- have the opportunity to shape the direction of this developing organisation

Members' benefits include:

- access to the ILT Website, including, from Summer 2000, areas restricted to members, with networking opportunities and members' forums, as well as focussed digests of current research on learning and teaching
- two issues per year of the ILT international journal, Active Learning in Higher Education. The journal has the explicit aim of improving practice in higher education learning and teaching, and contains articles, case studies, accounts of innovations and work in progress and reviews, both topical and scholarly
- three issues per year of the members' newsletter containing members' information and updates
- discounts and priority booking at ILT events, including our regionally distributed seminars and our annual conference in York in June. This year it will be held 27th-29th June
- members' discounts on a growing range of goods and services, including books in the ILT series

Universities and colleges of higher education have the dual functions of both creating and disseminating knowledge. Academics who take learning and teaching seriously should consider joining the ILT and to encourage their colleagues to do likewise, as part of their professional commitment to foster and encourage student learning.

If you want to find out more about the ILT, please contact us by e-mailing enquiries@ilt.ac.uk or visiting the website at http://www.ilt.ac.uk

Sally Brown
Institute for Learning and Teaching
Genesis 3
Innovation Way Science Park
York YO10 5DQ

Reference

1. DfEE (1998) The Learning Age: a Renaissance for a new Britain (The Dearing/Garrick report) National Committee for Enquiry into Higher Education, Department for Employment and Education

ON JOINING THE ILT

The "experienced staff" entry scheme for the ILT is available until September 2001. However, I took the decision to apply soon after the opening date for a number of reasons. The establishment of the ILT is timely development in higher education. My school teacher friends have always been astounded that I call myself a lecturer on the basis of 2 days formal instruction and 15 years on-the-job development of my learning and teaching skills. Clearly, with the continually broadening base of higher education there is a greater need now, than ever before, for a professional body overseeing standards. However, I have no desire to return to the classroom myself, believing that, for all its rights or wrongs, my fifteen years have seen me through to a competent standard.

As a membership led organisation, the ILT should develop along the lines that its members feel most appropriate. Therefore, only by becoming actively involved right from the start will one be able to ensure that one's own views are reflected and personal interests are protected. What will be important in the future is how the ILT develops entry schemes for newly appointed members of academic staff. Any scheme for these staff must not compromise their ability to pursue the equally important development of their independent research career, possession of which is of great benefit for effective teaching in the higher education sector.

Application for membership of the ILT by experienced staff involves the completion of a two-part form and the submission of two references. The first part of the form is a simple summary of personal and professional details taking no more than a few minutes to complete. The second consists of a set of six "mini-essays" (of around 500 words each) detailing the expertises of the applicant in a number of areas relating to learning and teaching. At the time of my application, the web-based application form was cumbersome and required that the whole application was prepared and submitted in a single web-sitting (clearly inappropriate for most individuals). Therefore, I downloaded the application pack PDF and worked from that.

The main sections on the second part of the form are headed:

- Teaching and the support of learning
- Contribution to the design and planning of learning activities
- Assessment and giving feedback to students
- Developing effective learning environments and student learning support systems
- Reflective practice and personal development

Completing this part of the application was made very much easier for me by the recognition that many of the topics closely match those present on my biennial staff review. Filling out the ILT form consisted mostly of re-working material with which I was already familiar. Some sections were quite easy. I doubt whether there are many individuals involved in learning and teaching in higher education uncertain of the teaching methods they employ! That said, I felt it important to place these methods in the context of their desired outcome. It is difficult to see how one can claim to be teaching physiology or pharmacology at the highest level without recognising the importance of laboratory based investigative learning or how the scientific mind of a student can be developed without appropriate interpretative study. Similarly, the ways in which students are assessed and the ways in which we communicate with students should be clear to all

experienced individuals. However, once again, context is important and the appropriateness of a particular method of examination to the learning aims and objectives must be made clear.

The sections I found hardest to write were the second and fourth. My expertise in "developing effective learning environments and student support systems" comes through my "contribution to the design and planning of learning activities" – i.e. one question answers the other and so considerable care was necessary to avoid being unnecessarily repetitious.

In all, completing the application took me no more than a day's work. Submitted applications are reviewed by accreditors; educationally minded individuals appointed by the ILT from within the higher education sector. Groups of accreditors meet regularly to make recommendations for ILT membership. I was informed of my successful application for membership within a month of submitting my application.

Overall, considering the small effort involved and the current political climate in higher education, I believe that for any individuals eligible to use the "experienced staff" entry route, early application for ILT membership should be seriously considered. The ILT is here to stay and only by joining and taking part in its early evolution can individuals hope to see it develop into a professional body with which they are proud to be associated.

Dr. Chris Prior
Department of Physiology & Pharmacology
University of Strathclyde
Glasgow G4 0NR

CALL FOR NOMINATIONS FOR BIOCHEMICAL SOCIETY AWARDS

Medals and Lectures

The Awards Committee of the Biochemical Society is seeking nominations for its Medal Lectures for 2002. These prestigious awards recognise excellence in the fields of biochemistry across different stages of science careers. The following Medallists and Lecturers will be selected during 2001 for award and presentation in 2002:

New

Biochemical Society Award. For 2002 this new award will recognise Scientific Communication in the Public Domain

Colworth Medal

Sir Frederick Gowland Hopkins Memorial Lecture Wellcome Trust Award for Research in Biochemistry Related to Medicine

Full details are available on the Biochemical Society website at: http://www.biochemistry.org.uk/meetings/medlect/callnom2002.htm

The Awards Committee stresses that it is essential that, in nominating an individual, you include the following:

1 A letter from the nominator which summarises the nominee's principle achievements and clearly describes the context in which these meet the criteria for that award.

2 The scientist's current CV and list of relevant publications. The 10 most significant (5 in the case of the Colworth Medal) publications should be highlighted.

3 At least two supporting letters from eminent colleagues describing the area of work undertaken and highlighting the nominees achievements in relation to the criteria.

For awards with age limits the Committee will exercise considerable discretion when considering nominees with significant breaks in their careers.

Information

If you have any questions about nominations please contact Sheila Mills

sheila.mills@biochemistry.org
Tel: 020 7299 4441

Nomination should be sent to:

Sheila Mills
Director, Society Activities
The Biochemical Society
59 Portland Place, London W1B 1QW

Deadline for nominations: 1 June 2001

YOUNG PHYSIOLOGISTS DESCEND ON READING

In the Hollywood film "Field of Dreams," Kevin Costner plays the part of a farmer obsessed with the idea of building a baseball pitch. He has no players or audience, and the bank is about to foreclose on his farm, but a voice inside his head keeps whispering, "Build it and they will come." This scenario will be painfully familiar to those who have hosted conferences, which have to be organised and paid for long before it is known whether there will be speakers or an audience.

Fortunately for Kevin Costner, players and audience did appear, and the same was true for the Young Physiologists Symposium held during September in the School of Animal and Microbial Sciences, University of Reading. The symposium, entitled "Cardiovascular Cells in Health and Disease," was in part a celebration of the rapid expansion of cardiovascular research in the School over the last few years, and the topic and venue proved popular: talks from more than twenty participants were squeezed into the one-and-a-half day meeting.

The young physiologists came from as far afield as France, Holland and Chile, and although their youth could sometimes be questioned, their enthusiasm and presentation skills could not. In fact, one conclusion from the meeting was that the Physiological Society might consider instituting Old Physiologists Symposia, wherein the more mature amongst us could learn to emulate the excellent Power Point presentations of our younger colleagues.

In addition to contributions from the young physiologists', three plenary lectures were given by staff from the School (David Leake, Gavin Brooks and Jon Gibbins) and a keynote talk by the Head of School, Professor Lowry, described the recent breakthrough concerning pre-eclampsia made by his group. The highlight of the meeting, however, was the superb banquet held at Colley's Victorian Supper Rooms. Victorians are renowned for the quantity as well as the quality of their food – they didn't admire thin people – and here even the hungriest PhD students had to admit defeat when offered a third dessert.

With talks of such high quality, it proved impossible to choose one best presentation; discretion was found to be the better part of valour and three prizes were awarded, the recipients being Marlene Bertelsen (William Harvey Research Institute), Lauren Mackenzie (Babraham Institute) and Amanda Wyatt (King's College London). Many thanks to Giovanni Mann, Maggie Leggett, and Tracey Staughton and her crew, without whose organisational skills the Symposium would surely have collapsed, and to Aubrey Lambert from Zeiss, who supplemented the funds received from the Physiological Society.

Dr Peter Weinberg
(Symposium organiser)

MEDIAWATCH

An occasional column noting mentions of Physiology or Physiologists in the mass media

Physiology is "*New Age*" – Official

A recent article in the Sports Section of *The Observer* reported that European football coaching courses now contain "such new age subjects as sports psychology, physiology and nutrition".

Note: Other new age subjects are Buddhism, meditation, and the study of crystals (surely that's biophysics? – *Editor*).

SIXTH FORM PHYSIOLOGY WORKSHOP UNIVERSITY OF NEWCASTLE

September 2000

For those involved, September 12th and 13th were a hive of activity as more than 100 sixth formers from 65 different schools (all within about 2 hours car ride from Newcastle) trundled into town to sample the delights of Physiology. The day started off with refreshments kindly donated by Marks and Spencer followed by a talk/demonstration about how to create a human using a few simple ingredients (water, salts etc.) by Dr David Sanders. There then followed two days of hands on laboratory experiments where the students were essentially tortured in various ways. First Drs Mike Gray and Jim Reed made them pedal until exhausted on exercise bikes (whilst measuring their ECG), before they retired to one of the computer clusters on the fifth floor of the Medical School with Dr Alex McDougall to learn about the muscles they had just used. They then spent the rest of the afternoon debating some topical issues concerning the use of animals in society and science, where Dr Mark Matfield of the Research Defence Society ran a well-received session. Then we all retired to Castle Leazes for some refreshments and a well-deserved rest (which was almost had by all). The next day the students were again experimenting on each other, this time Dr Adrian Rees taught them about sound and hearing before Jim Coates forced them to experience what it feels like to have asthma. The event was rounded off by a careers talk by Dr Maggie Leggett from the Physiological Society and a brief summary of Physiological Sciences at Newcastle by Prof. Michael Whitaker.

Alex McDougall
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Medical School
Framlington Place
University of Newcastle-upon-Tyne,
Newcastle-upon-Tyne NE2 4HH

UKLSC CAREERS CONFERENCES 2000

University of Edinburgh, 4 November 2000
UMIST, 18 November 2000
Queen Mary and Westfield College, 2 December 2000

This year these events were an unprecedented success. With attendance at all three conferences at over 250, and both Edinburgh and London being over subscribed, the enthusiasm among delegates was obvious. There was also a higher percentage of postgraduates than ever before; at London they outnumbered the undergraduates. These are the only careers events specifically aimed at Life Science students. The increased attendance shows a growing realisation among students at all stages not only that they need to know about the range of possible careers available, but also that thinking ahead and gathering information is a necessary process in a competitive market.

The days follow a standard format with different speakers depending on location. There are presentations on working in the pharmaceutical industry, clinical careers, postdocs and academic research, science communication, technology transfer or patent law and teaching in schools. At every event there was a presentation from the main sponsor, Science Nextwave, who run a website specifically for careers in science (www.nextwave.org), and also a session on CVs and interviews. More popular than ever was the CV clinic, where students send in their CVs before the event and have a 15-minute slot with one of the exhibitors for help and guidance. Despite being a Saturday the exhibition was large at all locations with most of the big names being represented.

It is difficult to single out particular presentations. Alan Knott, from St Martins College (a large teacher training institution), who was kind enough to speak at all three conferences, was so entertaining that one can't help envying his students, but also managed to give a realistic portrayal of the profession without being discouraging. Likewise Dr Liz Sockett of Nottingham University should be commended not only for her informative presentation on life in academia but also for being a ruthless and very efficient chairman. The standard of all presentations was extremely high and we are indebted to all those who gave up their time.

The conferences are organised by a consortium of The Physiological Society, The British Pharmacological Society, The Immunological Society, The Society for General Microbiology, The Biochemical Society and The Society for Experimental Biology. The SGM took the lead this year and deserve special praise for their excellent administration. It is likely that The Physiological Society will take a more active role next year, and so any suggestions of careers we should cover, offers of speaking, chairing, or simply attending to help with students queries will be greatly appreciated. The locations have not been finalised but are likely to be London, Bristol and Dublin. I look forward to seeing you there.

Maggie Leggett

No notice is carried for more than three successive editions. Notices are starred so that readers can see at a glance whether this is the first (one star) or final (three stars) appearance of the notice. Notices for the Summer 2001 edition should reach the ***Administration Office by 16 March.***

TECHNIQUES WORKSHOPS 2001

There will be three techniques workshops this year. Further information will be circulated and will also be in available on the website, but queries can be forwarded to Maggie Leggett at mleggett@physiology.demon.co.uk
Equally prospective bids to host workshops for 2002 should in the first instance be forwarded to Maggie Leggett.

Confirmed workshops include:

University of Glasgow, Workshop on Fluorescence Imaging Using Confocal Microscopy, September/October 2001 (details to follow)

University of Bristol, Teaching Symposium on "Dynamic confocal imaging of living brain", 30 June 2001. Organisers: Drs. S. Kasparov and J.F.R. Paton

This symposium will bring together the leading international experts in confocal imaging of cells within living brain slices and/or in situ brain preparations. Three main topics will be of particular interest: 1) motility of nerve cells, 2) use of fluorescence resonance energy transfer (FRET) in real-time imaging 3) advances in two-photon imaging in integrative preparations. Not more than 8 talks (preferably 6) of 30 - 35 minutes each will be presented and demonstrations will be organized during the lunch break.
Further, we will encourage other members of the Bristol Imaging Group to present their data and take part in the discussions.
Proposed list of speakers and their topics:

USA:

1 Yuste, R. Motility of neurites in living brain slices. Department of Pathology, Columbia University, College of Physicians and Surgeons, 630 West 168th Street, New York, NY 10032; United States.

2 G.Y. Fan – Two-photon imaging using cameleons Dr. G.Y. Fan, Microscopy/Imaging Res. Natl. Ctr., Department of Neurosciences, University of California, San Diego, CA 92093; United States.

3 K. Svoboda Experience-dependent plasticity of dendritic spines in the developing rat barrel cortex in vivo Cold Spring Harbor Laboratory, 1 Bungtown Rd, Cold Spring Harbor, NY 11724; United States.

Europe:

4 A. Konnerth. NMDA mediated Ca signals. TU Munchen, Institut fur Physiologie, 80802 Munchen; Germany.

5 T. Bonhoeffer (or F. Engert). LTP-related dendritic spine changes. Max-Planck Institute of Neurobiology, Am Klopferspitz 18A, 82152 Munchen-Martinsried; Germany

UK:

6 Blakemore C. Morphology and growth patterns of developing thalamocortical axons. University Laboratory of Physiology, University of Oxford, Parks Road, Oxford OX1 3PT; United Kingdom.

7 Kasparov S. / Paton J.F.R. – Bristol. Understanding physiology of the NTS using FRET fusion proteins.

8 A talk from Leica. Advancements in confocal imaging in living tissue (and novel fluorophores?).

Other potential speakers:

J.E. Lisman, Volen Center for Complex Systems, Brandeis University, Waltham, MA 02254; United States. A role of actin filament in synaptic transmission and long-term potentiation.

K. Krnjevic, McIntyre Centre, 3655 Drummond St., Montreal, Que. H3G 1Y6; Canada. Intraneuronal [Ca2+] changes induced by 2-deoxy-D-glucose in rat hippocampal slices*

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YOUNG PHYSIOLOGIST'S SYMPOSIA 2001

There will be two Young Physiologist's Symposia in 2001. Further information will be circulated and will also be in available on the website, but queries can be forwarded to Maggie Leggett at mleggett@physiology.demon.co.uk
Equally, prospective bids to host symposia for 2002 should in the first instance be forwarded to Maggie Leggett.

Symposia for 2001:

University of Cambridge
"Sensational Physiology" Date to be confirmed, details to follow.

University of Southampton
"Endothelial Cells – The Ultimate Interface?" 22 May 2001.
The aim of this one-day symposium is to bring together young scientists from a wide range of research backgrounds who share a common interest in the biology of endothelial cells, and their functional role at the blood-tissue interface.

The symposium will provide graduate students, PhD students and postdoctoral researchers with the opportunity to present and discuss their research in an informal and friendly atmosphere, and to forge new links with other young scientists in the field. We plan an integrated physiological symposium and therefore welcome a broad range of scientists to participate with backgrounds including physiology, pharmacology, immunology, biochemistry and molecular biology.

All delegates will be expected to contribute to the meeting by presenting an oral communication (10 minutes + 5 minutes discussion time) or poster. A prize will be given for the best oral communication and the best poster. The meeting will finish with a lecture by Professor Tom MacDonald, University of Southampton.

There is no fee to register for the meeting, and no charge for the symposium dinner in Ocean Village. Places are limited and will be allocated on a first-come-first-served basis.

Email Dr Dean Brown (dwb1@soton.ac.uk) for further details and a registration form. Deadline for registration and receipt of abstracts is 31st March 2001. Successful applicants will be notified by mid April 2001.*

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Please note that while members are welcome to advertise relevant events in the Magazine and on the website, advertisements via email will be restricted to events sponsored by the Society

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THE 673rd BIOCHEMICAL SOCIETY MEETING MOLECULAR COMMUNICATIONS

10-12 April 2001
University of Bristol UK

Scientific Programme:

- Molecuar Communications
- Assembly and Repair of Membrane-bound Electron Transport Complexes: Impact on Plant Physiology and Medicine
- Membrane Active Peptides
- Insulin Action
- The Interface of Receptor Signalling and Trafficking

Best Poster Prize

The Biochemical Society will award £200 for the best student poster displayed at the meeting and £50 for the runner up. The judges will consider scientific content and presentation when deciding the winner. Entrants must be a student member of the Biochemical Society.

Poster abstract deadline: 15 January 2001
Registration deadline: 26 February 2001

Information

The full programme and registration form is available at:
http://www.biochemistry.org/meetings

Registration fee:
Biochemical Society Members: Free
Members: £25.00
Non-members: £100 per day
Student members of scientific societies: Free

Biochemical Society membership
Join before the meeting and save £££s. Contact the Biochemical Society for details.

Membership fee: Full £47, Student £14

Travel grants are available to support both full and student members of the Biochemical Society attend this meeting.

For further information contact:
The Meetings Office, Biochemical Society,
59 Portland Place, London W1B 1QW
Tel: 020 7580 3481 Fax: 020 7637 7626
E-mail: meetings@biochemistry.org*

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ELECTRONIC SUBMISSION TO THE JOURNAL OF PHYSIOLOGY

The Journal of Physiology now accepts manuscripts submitted electronically via the World Wide Web. The submission form, together with author instructions, can be accessed from:
http://www.jphysiol.org ***

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3RD EUROPEAN FEDERATION OF AUTONOMIC SOCIETIES (EFAS) MEETING

In conjunction with the annual meeting of the sections 'Autonomic Nervous System' of the German Neurological Society, 'Diabetes and Nervous System' of the German Neurological Society, and 'Autonomic Nervous System at the University of Erlangen-Nuremberg, Germany.

At The Department of Neurology, Friedrich-Alexander-University Erlangen-Nuremberg, Schwabachanlage 6, D-91054 Erlangen, Germany.

Organising Secretariat: Prof Dr M J Hilz, Department of Neurology, University of Erlangen-Nuremberg, Schwabachanlage 6, D-91054 Erlangen, Germany. Tel: +49 9131 8534444; Fax: +49 9131 8534328

Congress Language: English

Internet: http://www.neurologie.med.uni-erlangen.de/oeffentliche_Veranstaltungen.htm

Abstract submission: all communications submitted will be presented as posters. In addition to the specific topics of 'Baroreceptor Reflexes, Gastrointestinal Dysfunction, and Diabetic Neuropathy', free topics of the various aspects of the Autonomic Nervous System are particularly welcome.

Deadline for Abstract Submission: 20 December 2000.

Publication: Abstracts and summaries of the invited lectures will be published in 'Clinical Autonomic Research'. **

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Jacques Duysens and Herman Kingma kindly invite you to:

ISPG 2001

June 23-27th 2001
Symposium of the International Society for Postural and Gait Research

CONTROL OF POSTURE AND GAIT

Website:
http://www.mbfys.kun.nl/ispg2001

First Announcement and Call for Papers

Congress to be held at
MAASTRICHT, The Netherlands

Organized by:

Herman Kingma, PhD
Division of Balance Disorders Research:
Maastricht Research Institute Brain & behaviour
Health care:
Dept. of ORL and Head and Neck Surgery
University Hospital Maastricht
E-Mail: H.Kingma@kno.azm.nl
and
Jacques Duysens, MD, PhD
Dept. of Medical Physics and Biophysics
University of Nijmegen, KUN
jaak@mbfys.kun.nl
Health care: SMK-research
Sint Maartenskliniek, Nijmegen, The Netherlands
E-Mail: j.duysens@smk-research.nl

Themes

- Falls in the elderly
- Cognitive loading in posture and gait
- Development of posture and gait
- Robotics and models
- Gait navigation
- Central Pattern Generators and their control
- Interlimb coordination
- Neuro-imaging of gait and posture
- Anticipatory postural control
- Pathology: Parkinson and cerebellum
- Gait and posture in stroke
- CP and Botulinum toxin
- Gait and posture in microgravity
- Gait and posture training programs
- Rehabilitation of gait and posture
- Orthopaedic aspects
- Perturbations of gait and posture
- Vestibular aspects of posture and gait
- Spinal lesion
- Vision and Posture & Gait

Workshops on
- EMG
- Force measurements
- 3-D motion analysis
- Rehabilitation technology

The final program of the parallel sessions will be arranged in accordance with the registered number of speakers and participants

PROCEEDINGS AND PUBLICATIONS

Congress book
As in former versions of the congress, all participants (oral sessions and posters) are entitled to submit a 4-page paper. This paper will be the basis for selection of some of the oral presentations. Normally these papers will be included in the book but a reviewing process will be used to screen for papers which have to be revised or even excluded. The book will be published by NPI with ISBN registration. This book will be handed out to all registered participants at the meeting.

Submission of papers
Prospective participants are requested to E-mail a draft paper in either WORD or WORDPERFECT (maximum 1200 words, including 1 or 2 illustrations; without illustrations the maximum is 1280 words). All participants should send their paper to

cal.conferenceagency@wxs.nl

for review by the International Program Committee. All submissions must be written in English, starting with a succinct statement of the problem, the results achieved, their significance and a comparison with previous work. The following sections should be present: title, authors with affiliation and addresses, introduction, methods, results, discussion, references. The format for these papers is the same as for the papers for the "Posture and Gait" journal except that a summary abstract is not needed and that there is a strict limitation of number of words. If photographs are used for illustrations the authors should provide an original. For examples for the 4 page papers one can also consult the books from previous meetings of ISPG.

The submission should also include a cover sheet with:
- Preferred format:
  Oral or Poster presentation
- Name of author to contact for correspondence
- E-mail address, tel. # and fax # of contact author
- Topics which best describe the paper (max. 5 keywords)
- Theme of session or workshop

Important dates:
- December 15th ,2000: Submission deadline for papers
- February 1st, 2001: Notification of acceptance; possibly advise for adjustments
- March lst 2OOl: Delivery of adjusted papers
- June 23-27th: ISPG2OO1 congress

SESSIONS

Oral presentations
There are both invited speakers and free oral presentations. Those wishing to present an oral paper should indicate their choice when sending their paper. On the basis of the papers a selection will be made for oral presentations. A limited number of speakers will be invited for plenary lectures.

Poster presentations
Poster presentations are encouraged for people who wish to receive peer feedback. The papers based on the posters can besubmitted for inclusion in the book. Format instructions for the poster will follow.

Congress Language
The official conference language is English. No simultaneous translation service will be provided.

CONGRESS LOCATION

Address:
Crowne Plaza Hotel Maastricht
Ruiterij 1
6221 EW Maastricht
The Netherlands

Telephone: +31 (0) 43 350 91 91
Telefax: +31 (0) 43 350 91 92
E-mail address:
cpmaastricht@bilderberg.nl
http://www.crowneplaza.com/

Maastricht, Congress Site
Situated close to the borders of Belgium and Germany, the Roman city of Maastricht has a cosmopolitan atmosphere. It is the capital of the province "Limburg" in the southernmost part of the Netherlands. To visit Maastricht is like traveling through time. Walk on Roman cobble stones from 150 BC and visit the halls where the Maastricht Treaty was signed in 1992. Enjoy Maastricht"s skyline of church's spires and towers and its tree lined squares. But also be sure not to miss 'In den Ouden Vogelstruys', the Netherlands' oldest pub. We guarantee that Maastricht and its people will delight and charm you.

REGISTRATION

See our website for instructions:
http://www.mbfys.kun.nl/ispg2001

Organizing Secretariat
Conference Agency Limburg
P.O. Box 1402
6201 BK Maastricht
The Netherlands

Telephone: +31(0)43 361 91 92
Telefax: +31(0)43 361 90 20
E-mail address:
cal.conferenceagency@wxs.nl*

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BREAKING SYMMETRY IN HAEMODYNAMICS 23-24 April 2001

A two day workshop on the role of breaking symmetries in large vessel flows sponsored by the British Heart Foundation

Imperial College of Science, Technology and Medicine
Chaired by Colin Caro (Imperial, UK) and Morton Friedman (Ohio State, USA)

The geometry of large vessels substantially determines the blood flow field within them. This, in turn, markedly influences their biology and the development of disease. It has been usual practice to model the geometry of large vessels as planar and the associated flow as axisymmetric or symmetrical about a plane of curvature. The geometry of large vessels is, however, commonly non-planar and the associated flow is asymmetric. As recently recognised, there may be, in consequence, important effects on vascular biology and disease. The aims of the workshop are:
- To increase the understanding of large vessel geometry and flow
- To consider recent advances in understanding of the effects of large vessel geometry and flow on vascular biology and pathology, including the implications for vascular interventions such as bypass grafts.

The two-day programme will consist of six keynote lectures and a series of five invited discussion groups supplemented by poster presentations

Places will be strictly limited and a small charge to cover the conference dinner, lunch and refreshments will be made.

Further details from the Conference Secretary, Gill Cash –
Email: g.cash@ic.ac.uk**

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STRUCTURE AND FUNCTION OF ION CHANNELS 2-5 September 2001

Fairmont Resort Blue Mountains, Leura, Australia. **An official satellite of the 34th IUPS Congress**

Scientists of all disciplines with an interest in ion channels are invited to attend and participate in this exciting satellite symposium on the Structure and Function of Ion Channels.

The symposium will embrace the new ideas and challenges of ion channel research.

Plenary Lecture
Prof. Frances Ashcroft, Oxford University

Invited speakers include:

Henry Lester	Walter StChmer
Michel Lazdunski	Boris Martinac
Chris Miller	Gary Housley
Clay Armstrong	Arthur Karlin
Steve Sine	Joe Lynch
Annette Dolphin	Karl Magleby
Francisco Bezanilla	David Clapham

As an official satellite symposium of the 34th IUPS Congress you can register for this symposium when you register for the IUPS Congress, or directly with the organisers. The IUPS Congress is in Christchurch, New Zealand 26-31 August 2001.

This satellite symposium follows the Congress.

Further information can be found at the symposium website-
http:\\www.garvan.unsw.edu.au\public\Conferences\Channels*

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MICROELECTRODE TECHNIQUES FOR CELL PHYSIOLOGY
18th Workshop 5 – 19 September 2001

Laboratory of the Marine Biological Association of the UK, Citadel Hill, Plymouth, PL1 2PB

Information for applicants

- The workshop provides intensive practical experience of a number of microelectrode, patch clamp and optical techniques applied to single cells. It is intended for postgraduate students, post doctoral workers or established scientists wishing to apply these techniques in their research.
- The following basic techniques are offered: Two electrode voltage clamp, Patch clamp, Single electrode voltage-clamp, Dye injection, Ion-sensitive microelectrodes, Fluorescent indicators.
- There are 16 places. Participants work in pairs and have the opportunity to do three 3-day experiments in the two weeks. In addition, lectures and practical sessions on electronics, data acquisition and computer analysis, and microscopy will be given. Daily lectures given by teachers and visiting lecturers cover the basic techniques taught and certain specialised topics. A copy of the Plymouth Microelectrode Handbook will be provided.
- Accommodation (for 14 nights – arrive & depart on Wednesday) is close to the laboratory and includes breakfast. Lunch is provided in the lab each day and an allowance is given for an evening meal.
- The course fee of £1100 includes accommodation, meals and tuition. Participants are responsible for their own travel arrangements.

THE CLOSING DATE FOR APPLICATIONS IS 30 APRIL 2001 A meeting to assess applications will occur during May and all applicants will be notified of the outcome.

How to apply:

There is no application form.

1 Please give a concise description of your research, your reasons for wishing to attend and your experience of techniques taught on the work-shop. List in order of priority four techniques you would like to learn.

2 Provide a brief CV (2 sides maximum) and list of publications.

3 The application must be accompanied by a letter of recommendation from an academic referee, preferably PhD supervisor or Head of Laboratory. This letter should indicate how your career, the laboratory in which you work and the area of research that you intend to pursue will benefit from your participation in the workshop.

4 What is your likely source of funding?

Funding

Applicants with MRC or BBSRC Studentships – Simply state you have a studentship in your application. Do not apply to the Research Council directly.

Dale and Rushton Funds of the Physiological Society – help with funding is usually available for young physiologists working in the UK. If you wish to apply please indicate in your application to the workshop. There is no need to apply directly to the Dale and Rushton funds before workshop applications are assessed.

Bursaries – The workshop can provide some half bursaries – if you think you will have difficulty finding the full fee please indicate in your application.

Applications should be sent to:
David Ogden, Microelectrode Techniques, NIMR, The Ridgeway, London NW7 1AA, UK
email: dogden@nimr.mrc.ac.uk
Information on internet:
www.nimr.mrc.ac.uk/Events/microelectrode.htm