

Winter

Schwann cells
and nerve
conduction
velocity revisited

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purpose of this organisation is to lobby Brussels concerning issues relating to animal experimentation in medical research to

● The Committee was delighted to welcome Judy Pratt from Glasgow and Helen Hodges from London as new members at the meeting in September, after their nominations were accepted. Judy and Helen replace Chris Thompson and Huseyin Mehmet who we thank for their contributions to the committee over the last three years and more.

● At every committee meeting, we have a report from our Treasurer and discussion of how BNA funds are managed and used. We have recently made some changes to the accounts used to maintain our cash assets in order to maximise the return on them. As always, the financial details of the BNA are reported by the Treasurer to the membership at the Annual General Meeting. In the years when our own National meeting is not held, it is often difficult to find a place, date and time for the AGM when sufficient members are able to attend and the scheduled meeting in Vienna during the last FENS meeting was unfortunately inquorate. The next AGM has, therefore, been scheduled to take place during the Christmas Symposium and it is likely that in future we will hold AGMs on alternate years at Christmas and then in the following spring at our National Meeting.

● The regulation of animal experimentation is something that affects many of us working in Neuroscience. The EU is currently revising their Directive on animal experimentation and there is concern in some quarters about how this could impact on research. Some of these are described in a letter from the Wellcome Trust posted on the BNA website under "News" and "EU Legislation" links. The Coalition for Biomedical Research has been established by Mark Matfield, last year's recipient of the BNA's annual Award for Public Service. The sole

ensure that views of academic biomedical scientists are represented during the EU Directive revision process. As the revised Directive has the potential to impact on Neuroscience research, members of the BNA committee will be attending the first meeting of the coalition this November (see page 16, for further details).

● The Wellcome Trust has a new initiative called "Masterclasses in Clinical Neuroscience", details of which can be found on the Trust's website. This scheme is aimed at enhancing interactions between basic scientists and clinicians to enhance translational research. To do this, the Trust will provide funding for the organisation and running of small meetings which address key clinical problems. However, applicants who wish to organise such a meeting must do so in partnership with a UK learned society. One of these is, of course, the BNA. Our role will be to provide the administrative support required to organise and run the Masterclass. Anyone who wishes to propose a Masterclass in conjunction with the BNA should contact our Executive Secretary, Yvonne Allen, as a letter of support has to be included with the proposal to the Trust (see Opinion, pages 5/6, for further discussion of this new scheme).

Teased myelinated fibres immunostained with various antibody combinations and in some cases counterstained with fluorescent conjugated phalloidin or DAPI nuclei staining. Confocal microscopy reveals the protein compartmentalisation in axons and Schwann cells. See review article by Felipe Court, pages 13-15.

DATES FOR YOUR DIARY: BNA EVENTS 2006/2007

- **14th December, 2006:**
Christmas Symposium:
'The Legacy of Cajal and Golgi: past, present and future', The Royal Society, London, SW1
- **1st - 4th April, 2007:**
19th National Meeting, International Centre, Harrogate, North Yorkshire, in association with Neuroscience Ireland
- **9th May, 2007:**
One Day BNA-Promemoria Symposium and Workshop:
Functional Cellular Neuroimaging and Microscopy, at The Open University, Milton Keynes
- **27th June, 2007:**
Controversial Issues in Neuroscience:
Talking therapies - all in the mind?, a café-bar discussion at The Dana Centre, London, SW7
- **13th - 17th July, 2007:**
IBRO World Congress, Melbourne, Australia
- **4th - 8th September, 2007:**
8th European Meeting on Glial Cells in Health and Disease, at Imperial College, London
- **26th September, 2007:**
Controversial Issues in Neuroscience:
Bioterrorism and the Brain, a café-bar discussion at The Dana Centre, London, SW7
- **17th October, 2007:**
One Day Symposium: 'Bench to bedside in acute stroke: Lost in translation?', University of Edinburgh
- **12th December, 2007:**
The Christmas Symposium, at The Royal Society, London, SW1

The British Neuroscience Association Bulletin is published regularly and distributed to over 2,000 members of the BNA. The views expressed in the Bulletin are the authors' own and are not necessarily the opinion of the BNA committee.

DEADLINE FOR SUBMISSION OF ITEMS FOR THE NEXT BULLETIN: 1st FEBRUARY 2007

The BNA Bulletin is produced by Yvonne Allen in the BNA Conference Office.

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INTERVIEW



Mike Robins is the recipient of the BNA Award for Public Service this year, to be presented at The Royal Society during the proceedings of our annual Christmas Symposium in December. He was one of the first patients to undergo deep brain stimulation (DBS) to alleviate his debilitating Parkinson's tremor, and has worked tirelessly ever since to promote the technique, the disease, and the animal work that was, and still is, so vitally important to refining and developing the procedure. Mike willingly agreed to be interviewed for the BNA Bulletin in the hope that this would publicise DBS further still and make it more readily available in the UK to all suitable candidates.

'When my wife and I were warned of the things that may go wrong, I was genuinely not concerned...My whole life was screaming for this tremor to stop.'

Can you tell us a little about yourself - what did you do before your illness, what are you doing now?

I went to sea in 1960 serving on board tankers, container ships, bulk carriers and general cargo ships and was promoted to Master in 1975. After 5 years in command I was made redundant in 1981. I then went on to teach 'ship operations' to potential shipmasters at a maritime academy on the south coast of England. In 1991, I met a Russian seafarer who had followed a similar career pattern to me and who showed me a couple of computer programs which had been developed by him and his colleagues. One was a product that made use of the GPS configuration of satellites and, although it was designed to be used with sea-charts as a backdrop, was the fore-runner of the in-car navigation system that is popular in luxury cars today. At the end of our first meeting, I had persuaded him, or he had persuaded me, to go into business with each other and so started a business that today has annual revenues of several million pounds.

In recent years though, I have worked increasingly part-time, more as a consultant nowadays but doing much the same thing.

When did you first notice a tremor and what did you do about it?

The first sign that something was wrong with me occurred when I knew (but it was invisible to the naked eye) that I had a 'twitch' in my right upper arm, rather like the twitch one often gets in the area surrounding the eye. Secondly, the index finger of my right hand would not do as it was told - for instance, it would not move to knock the ash off a cigarette. I sought help from my GP in about 1994. Over the following 18 months, I visited two GPs, two psychologists, one psychiatrist, one alternative medical practitioner and one chiropractor - each one had independently diagnosed stress as being the cause of my tremor.

Shortly after that, on arrival in Shanghai to open another office, I suffered a burst appendix, had it removed, met a neurologist who wanted to improve her English and the second thing she said to me was that I had Parkinson's Disease. At last I had some kind of diagnosis that seemed to make sense.

How did you come to meet Tipu Aziz?

This diagnosis was confirmed by two neurologists upon my return to UK and I was put on a 'hit and miss, trial and error' drug cocktail regime. No criticism is intended in this regard as every case is unique so every solution is unique. But six years

after recognising the first signs of PD, I was at my wits end. I had tried about eight different drugs, none helped but each gave me horrible side effects. I was quickly becoming marginalised. I sat in a chair all day shaking my life away. I didn't wash or shave (until I was bullied to by my wife), cried spontaneously, was frightened of visitors, and prayed that I would get tired so that I could sleep the rest of my life away.

I had heard that there was a surgical procedure in its infancy but that trials to date had been more than encouraging. I found out who had the greatest success and went to meet him - Tipu Aziz. He was an inspiration. I sat square in the chair, my back straightened, I smiled, I heard the words "I think we may be able to help you, Mr. Robins" - I felt elated!!

What were your first thoughts about undergoing such an innovative procedure such as DBS?

First, I had absolute faith in Tipu Aziz. Second, my mindset was so different then. The nearest that I get to my old mindset is when I switch off my impulse generator. When my wife and I were warned of the things that may go wrong, I was genuinely not concerned that there was 0.5% chance of death, a 3% chance of stroke, a 2% chance that I would lose the power of speech or go blind. All of these odds, percentages, risks, chances, gambles, uncertainties were totally insignificant. My whole life was screaming for this tremor to stop. But I'm sure my wife was inwardly wincing.

And what are your thoughts now?

I am delighted with the result, grateful beyond measure to the surgical team, and recognise that I had met one of the truly courageous surgeons who presently devotes his whole life to improving the quality of life for some and in restoring human dignity to others.

What motivates you to help promote an awareness of progress in brain research?

In a word - gratitude - but also the realisation of how lucky I've been. Lucky that my condition is not life-threatening, that the PD is one-sided, that MEDTRONIC developed a suitable device, that I was a suitable candidate, that PD has a high public profile, that the team is so dedicated, and that I have a neurosurgeon with such skill and courage.

All too often, people with neurological disorders lose the ability, or perhaps the will, to articulate their hopes, desires and needs - but perhaps most of all their fears for future. The one phrase that caused me the most trouble before I had DBS was "...for the rest of my life." I just couldn't get my mind around it. The progress that has been made in brain research needs to be shouted out loud to everyone but particularly to give hope to those who are waiting patiently for a cure or at least a suppression of their symptoms.

Can you tell us more about the kind of things you have done over the years to promote this awareness?

In the first few years after my diagnosis, I sought to raise the profile of the operation itself. When I first heard the words uttered by the Southampton and SW Hampshire Health Authority "I'm sorry Mr Robins - but that procedure [DBS] is not available in this Region" I realised that we did not have a national health service but rather we had a series of local health services (or fiefdoms with a number of hospitals, ambulances, doctors, clinics, staff etc.) each with its own CEO who protected his/her fiefdom jealously. I had fallen foul of 'post-code lottery' so I targeted national government - one talk to a small group of MPs, another to a much larger group including Lords as well. My local MP was John Denham (Minister of Health) so I attended his surgery and demonstrated my device. This continues to this day as I am attending a breakfast meeting this month (November) in Westminster. As a result of my (and many others) lobbying for DBS to be funded when all other forms of treatment have failed, there has now been a DBS trial established.

More recently, I divide my actions and promotion of brain

research into several distinct areas of activity: numerous TV appearances; several televised discussions for the use of animals in medical research; a few letters and several articles in *The Times*, *The Telegraph*, *The Daily Mail*, *The Observer* and *The Guardian* similarly on this debate. I have also given support to many fundraising initiatives for Oxford University and The Parkinson's Appeal.

Have there been any repercussions for you? Any regrets?

I have been the subject of a hostile response from a large number of anti-vivisectionists but there have been few repercussions really, nothing when compared to those who work in animal research establishments, those who take care of the animals, those who supply animals. I am not in the same league as those who have devoted a large part of their working lives to eradication of disease, alleviating pain and controlling the symptoms of some of the world's most debilitating illnesses. So, no, I have no regrets whatsoever.

What are your plans for the future?

To pour myself a large glass of sauvignon blanc, raise it to Tipu Aziz and to simply get on with my life. Cheers Tipu!!

OPINION

'Masterclasses in Clinical Neuroscience': A lesson in funding initiative



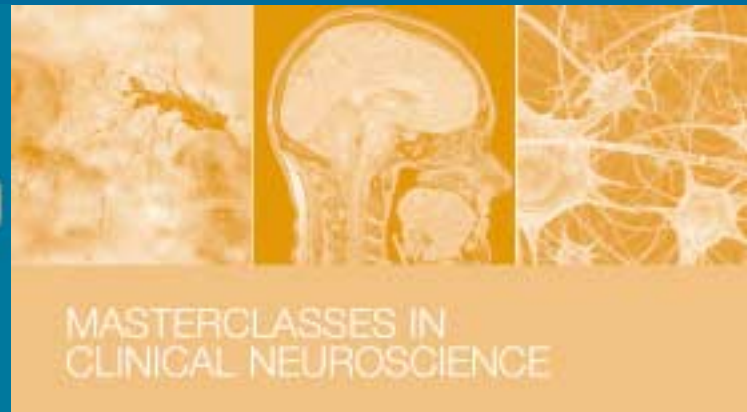
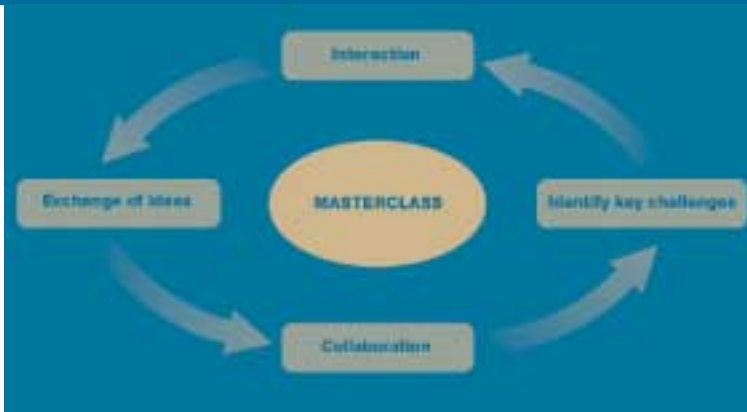
In July this year, the Wellcome Trust launched a new pilot funding initiative 'Masterclasses in Clinical Neuroscience'. This scheme offers a unique opportunity to apply for funding to create and host innovative workshops - 'masterclasses' - which address key challenges in Clinical Neuroscience. Jess Hendon and Pamela Reid were invited to tell us more about this scheme and, with some insight from Professors Hugh Perry (University of Southampton) and Nicholas Rawlins (University of Oxford) the Chairs of the Neuroscience and Mental Health Funding Committees, convince us of its perceived need.

In October 2005, the need to bring together basic researchers and clinicians to tackle key clinical problems in the Neuroscience field and to promote translational research was highlighted by The Wellcome Trust's Neuroscience and Mental Health Strategy Committee. The Masterclass scheme was conceived as a practical and achievable solution. Professors Hugh Perry and Nick Rawlins have been involved in developing this scheme with us and as members of the Neuroscience and Mental Health Strategy Committee and Chairs of the Neuroscience and Mental Health Funding Committees, they have provided insight to help flesh out the original idea into something more tangible. Hugh and Nick were recently asked for their thoughts on the scheme and both agreed that there is a pressing need for more communication between clinical and basic scientists.

"As everyone in the biomedical research community is aware, there is a growing emphasis on translational research in many funding agencies. We have, over the years, collected an enormous amount

of information, published very large numbers of papers and discovered new and often unexpected components of nervous system biology. However, to use this information in an applied context is another problem altogether, not least because of the extraordinary complexity of many diseases and the complexity of the underlying biological processes.

"A forum in which basic and clinical scientists are brought together to appreciate the complexities of each others' approaches and disciplines is an obvious way forward. My own experience in the Nikolas symposia, (an annual meeting on Langerhans Cell Histiocytosis [LCH]) that brought together basic scientists (immunologists, cell biologists, neuroscientists etc.), with clinicians (paediatric oncologists, endocrinologists, pathologists etc.), the children with LCH and their parents, was a wonderful example of how valuable such a meeting can be. If basic scientists understand more about diseases of the brain, this will offer new avenues for the application of knowledge. Similarly, clinicians who have to deal with



diseases will learn about new techniques and concepts that may be of value in treatment of a given disease. The more communication there is between clinical and basic scientists the better - it seems to me to be a win-win scenario.” **Prof Hugh Perry**

“I think there's a real need at present to update basic scientists on what clinicians see as some of their key problems, as well as showcasing some of the huge strengths of UK basic science to clinicians and patients, who may not find it easy to know what's going on in the labs and perhaps even harder to figure out whether, and how, this might eventually apply to them.” **Prof Nick Rawlins**

From The Wellcome Trust's perspective, the aim of the masterclass is not only to expose senior basic and clinical scientists to a disease in all its complexity, but also to encourage the participation of more junior researchers at the postgraduate and postdoctoral level. The masterclasses scheme embraces the fact that Neuroscience is a diverse and challenging field and offers researchers an educational vehicle and an innovative forum for developing interdisciplinary research collaborations.

‘The more communication there is between clinical and basic scientists the better - it seems to be a win-win scenario.’

‘A forum in which basic and clinical scientists are brought together to appreciate the complexities of each others' approaches and disciplines is an obvious way forward.’

“Neuroscience extends from the molecule to thought and behaviour, both in sickness and in health. Mental illness has a huge cost, and so do neurological disorders. These facts fuel a need for scientists with an extraordinary mix of underlying skills and techniques. Successful neuroscientists will

be contributing to solving some of the trickiest of our clinical problems, but, in order to do so, will need to be either more interdisciplinary than ever before, or embedded in more effective interdisciplinary networks than ever before. Schemes like this, which build links between basic and clinical research activities, offer ways to establish those crucial skills and networks so that the right expertise is brought to bear on the right problems.” **Prof Nick Rawlins**

“I believe that the Masterclasses scheme offers an invaluable opportunity for basic scientists (such as myself), who may have only a superficial or text book view of a particular condition, to learn about the full complexities and far reaching consequences of a neurological or neurodegenerative disease. My own interactions with clinical scientists at Southampton have been invaluable in their impact on some of the research that we now do.” **Prof Hugh Perry**

As a new pilot scheme the Wellcome Trust has no set expectations of what a masterclass should look like. It is a chance for the research community 'to get creative' and come up with an original programme. It is also hard to predict what the level of interest will

be from the scientific community. However, based on the enquiries received to date there are already some exciting ideas taking shape and we are confident that interest in the scheme will be high.

“This is a chance to find out from experts, working at many different levels of a shared clinical research concern, what's going on across the field. I would expect individuals working in diverse areas to attend - to see whether there are lessons to translate to their specific area of work, as well as those individuals who are attending to have the best possible update of their own field.” **Prof Nick Rawlins**

“I would be very surprised if persons from both the basic and clinical community did not see the potential value in Masterclasses.” **Prof Hugh Perry**

One requirement of the masterclasses scheme is that applications should be made in partnership with a UK-based learned society. These societies have professional administrative staff who are geared up to organising workshops and conferences and would, therefore, make excellent partners in the scheme. As well as the BNA, a number of other learned societies have shown real enthusiasm for the scheme including the Anatomical Society, the British Association for Psychopharmacology, the British Pharmacological Society and the Physiological Society. From The Wellcome Trust's perspective, the scheme also offers a good opportunity to enhance communication with the learned societies and their constituent members.

If the scheme is successful, it could be a funding avenue made available in all The Wellcome Trust's funding streams. We are relying on the Neuroscience community to embrace the concept and submit innovative proposals.

“I hope that the need for and value of Masterclasses will be demonstrated in the Neuroscience funding stream and it would make good sense to then make it available to the others.” **Prof Hugh Perry**

“Although Neuroscience may be exceptionally broad, its interests in linking basic research capacity to clinical research questions and opportunities will be duplicated across the other funding streams. If we get these workshops right, I would expect to see them developing across the board.” **Prof Nick Rawlins**

Hopefully, in the future, the *BNA Bulletin* will be full of reports about exciting masterclasses BNA members have attended.

As previously circulated to BNA members, the deadline for masterclass applications is 1st December, 2006, We are really looking forward to receiving your proposals and encourage any potential applicants to contact us to discuss their ideas. More information is available on the website: www.wellcome.ac.uk/neuromasterclasses

By Jessica Hendon & Pamela Reid (nmh@wellcome.ac.uk)

FUNDING ISSUES: Thinking big

This is the second article in a series to keep you informed about the current activities of the Biosciences Federation and what it plans to do in the future

By Richard Dyer
Chief Executive
Biosciences Federation

How does one get the money to support a really big project? Programme grants are difficult to get and very many research scientists think that their chance of a project grant submission being successful will be diminished if the amount sought is much out of the ordinary. Funders deny that this is the case but are not really believed. So the active researcher wanting to develop a largish team and research programme resorts to writing a portfolio of grant applications. In a sense, the major project is "salami sliced" into smaller projects that fit better with the system.

However, these tactics are not helpful if one seeks to develop a really big project. If this had been the tactic for mapping the human genome, I wonder how much would have been achieved today. And, of course, there are other big projects to be undertaken across the biosciences.

Currently, the Karolinska is leading a major attempt to raise antibodies to all human proteins. The main sponsors of this work are The Wellcome Trust and the Wallenberg

Foundation, although industry is also making an important contribution to the overall cost. This arrangement, whereby major funders come together uniquely for a particular project, is a very interesting approach to finding support for a big project. Indeed, in some cases, it may be the only way to obtain large sums of money.

Hitherto, these arrangements have been rather ad hoc: there has been no platform for making introductions. The new Eurobiofund (a dreadful name because it is not a fund at all!) has the potential to change the landscape and will certainly provide the necessary platform to introduce exciting large scale science to consortia of funders. The Eurobiofund is essentially a forum for scientists to interest public and private funders in large scale projects. The first forum will be in Helsinki in December and is supported by the European Commission. In January, *Nature* (439, p244) stated that the Eurobiofund "may end up being just a small step towards the ideal, but it is the biggest single step that we have seen for some time. European scientists should give it their full support". The call for expressions of interest closed on September 4th - but there will be another one next year. No matter what area of the biosciences you are in, if you have a grand idea and can muster persuasive arguments in its support, you might find the Eurobiofund to be of interest.

Closer to home, the BSF is beginning to think about how it can make a distinctive and effective contribution to discussions about the Research Assessment Exercise. Clearly, there will be another RAE and, equally clearly, metrics will play an important role in the outcome. The key question concerns the metrics used and how they are interpreted. There is a possibility that different metrics will be used for different areas. For example, the metrics for the Humanities do need to be different from the metrics for the Biosciences.

However, one can also argue that different metrics could be applied usefully to different biosciences - for example, is it sensible to compare numbers of spin out companies in ecology with the numbers arising in biochemical areas? "Certainly not", many would say but all the biosciences will have to cope with a single array of metrics. A strength of some of the metrics is that they arise from the peer review process. This obviously applies to grants and refereed publications but it also applies elsewhere - for example, to funds obtained from venture capitalists or seed funds. However, this is not true for some important activities that should be included in the analyses. For example, assessment of quality is much more problematic when one considers outreach activities. I would certainly welcome individual views on how to tackle this question.

This is an "interesting" time for enquiries that will impact upon the research landscape. The BSF has already responded to a Parliamentary enquiry about Research Council Institutes and we are currently developing our views about the coalescence of MRC funds with the research funds of the Department of Health. The real difficulty in all of this is to understand the detail - and where there is no detail, to predict what it might eventually be. Consider the merging of MRC and DoH research money; at one level it seems a sensible idea to have a single fund of public money for research in this area. However, the idea immediately seems less attractive to many if a consequence of change is altered accountability.

All of our responses to enquiries require effort and research. Currently, there is too much for our small team to tackle. However, thanks to increased support from some Member Organisations, we are now able to strengthen our team (see our update on activities report, page 9).

Catching them when they're young

The advent of Doctoral Training Accounts (DTA) may provide a route by which learned societies can swell their herds of members. The instigation of DTAs by the Research Councils requests that supervisor and departments put in place some explicit training to provide students with research-based and other key transferable skills. Many of the prescribed skills will be acquired and matured during the day to day development of the project (for instance, problem solving, report writing). However, some of the other suggested skills may be more difficult for the student to acquire and the supervisory body to demonstrate provision.

The School of Biological Sciences at the University of Southampton has decided to use some of the graduate school funds to pay for first year of membership to one learned society

that best fits with their proposed research project. Of course, Southampton' neuroscience post-graduates will be informed about the virtues of becoming a BNA member. This catches the student early and provides a clear route to networking (conference attendance), understanding of research agendas etc., while fostering a sense of belonging within the wider scientific community. In view of the generous funding that societies like the BNA provide for young scientists, the activities (dependent on a minimal association with the society) that such membership allows should encourage early participation with their peers on both a national and potentially international level.

Vincent O'Connor
School of Biological Sciences, University of Southampton

ANNUAL SUBSCRIPTIONS TO RISE BY 10p PER WEEK

The BNA regrets that it must raise the annual subscription fee from 1st March, 2007 for all members by a modest £5 per year, to reflect inflationary increases in its operational costs over the last year that, in many cases, have risen by nearly 10%. Unfortunately, we now have to ask for 10p per week from everyone to help us maintain and improve the service we can offer. This means the annual subscription for full members paying by direct debit will be £69 per annum, and the student fee will be £35. Please remember that this fee also includes your membership subscriptions to FENS, IBRO and the Biosciences Federation that the BNA pays on your behalf - three for the price of one! So do remember to include membership of all these societies as well on your CV.

The benefits of BNA membership now include:

- (1) FREE admission to many events throughout the year including 'One Day Symposia' and the ever popular Christmas Symposium
- (2) Reduced registration fees (up to 50%) to the National Meeting
- (2) Regular BNA Bulletin and other relevant mailings
- (3) Regular 'BNA Email Alert' service
- (4) Student prizes, and bursaries for attendance at BNA and FENS meetings
- (5) Free on-line access to European Journal of Neuroscience
- (6) Concessionary (SfN membership rate) registration fees and sponsored abstract forms for Society for Neuroscience annual meeting (now handled by FENS)
- (7) Free advertising in the BNA Bulletin and on the BNA Website
- (8) Inclusive membership of the Federation of European Neuroscience Societies (FENS), the International Brain Research Organisation (IBRO) and the Biosciences Federation (BSF).

We do hope you agree that this is tremendous value for money and that you continue to support as many of our events as possible.

For further information on any of these benefits, contact:
membership@bna.org.uk

Coalition Launched to Lobby on Animal Research Directive

Earlier this month, the European Coalition for Biomedical Research was launched at a meeting in Brussels to represent academic researchers in the political debate about the revision of the European Directive on animal experimentation.

Directive 86/609 controls the way that animal research is regulated across the EU by setting out a framework of legislation that all Member States are obliged to adopt. The revision process started in 2001 and has been slowly gathering pace. Earlier this year, the European Commission held an internet-based consultation about their proposals for the revised Directive and it is expected that the draft Directive will be published early in 2007. The crucial debates within the European Parliament will start within weeks of the publication.

To ensure that academic researchers can make their voice heard in these debates, forty academic associations, with over 40,000 members across Europe, have formed the European Coalition for Biomedical Research. Almost all of the major neuroscience associations in Europe have joined, including the BNA.

The driving force behind the Coalition is Mark Matfield, the former Executive Director of the Research Defence Society and recipient in 2005 of our BNA Award for Public Service.

"Most of what is being proposed for the revised Directive is pretty sensible and based on the UK's legislation," Mark told

us, "but there are two or three quite dangerous proposals. One of them would pretty much end the use of old-world primates (macaques) in research in Europe. Another, on public access to information, would create a huge administrative burden - far greater than the licensing process."

"We also have to prepare for what the animal protection lobby is going to demand. Our current understanding is that they will be lobbying for an end to primate research and limits on the numbers of animal procedures conducted across Europe. The problem is that the European Parliament has traditionally been very sympathetic to animal protection lobbying."

By his own admission, Mark's proposals for how the Coalition will work are "not rocket science". Members of the European Parliament pay a lot of attention to personal communications, particularly from their own constituents. With over 40,000 scientists across the EU in their member associations, the new European Coalition has a potentially enormous lobbying force. At every crucial juncture in the parliamentary debates, the Coalition will be contacting as many of these scientists as possible to ask them to e-mail their MEPs.

You can find out more about the European Coalition for Biomedical Research and join their mailing list for information about how to lobby your MEP via their web site at www.ecbr.eu.

Biosciences Federation: an update on activity

The BSF has grown in strength during the summer months. This is because we have made two important appointments to help with the policy work. First, we have recruited Dr Caroline Wallace. She will have particular responsibility for our Animals Science Group and our European Liaison Group. Caroline has a PhD in molecular biology and has worked with us for the last two years in a contract/consultancy role. The second appointee is Dr Richard Bateman. He has resigned from a senior position at The Natural History Museum to become our Head of Policy in a part time capacity. With his background in systematics and plant science he will increase the width of our "in house" skill base. These important appointments have become possible because of increased membership and, importantly, a substantial voluntary increase in the subscription paid by several BSF member organisations. As a consequence of these appointments, we will be even more effective than hitherto in reacting to Government and other enquiries and initiatives. More significantly, we will be able to be more proactive. That is, we can start to identify initiatives as they are born and influence their gestation, and also give birth to some ourselves. In this context, the BSF will look to you, the member organisation and the individual, to help with horizon scanning and the identification of areas where we should take the lead.

Have you seen our response to the Cooksey enquiry? If you haven't, it is on our web site and it gives you some idea about what we are doing for you. I am sure you know that Cooksey is concerned with putting the funding for NHS Research and Development under the same umbrella organisation as MRC grant awards. Following our submission, the BSF was invited to a meeting with the Cooksey team to discuss four questions. In summary, these can be distilled down to two points. They were about translation (the conversion of world class science to medicines and improved clinical practice) and the incentives to offer scientists, Departments and Universities in order to achieve this goal. We sat at tables of eight and took it in turns to give our answers to the questions. Interestingly, the answers reflected a broad swathe of agreement that both translation and incentives were not only desirable but essential. However, we did not tackle what I believe to be a central concern for the BSF. That is, under which *modus*



vivendi will the new joint fund operate? Will it be that of the MRC or that of the NHS? We are absolutely clear about this question: it has to be that of the MRC. We should only give grants for potentially excellent world class research. If areas need strengthening, we should not pretend that the science is excellent in order to make an award. If the country needs to strengthen an area, then earmarked funds should be used for this explicit purpose. The marriage of funds for world class research and capacity building generally reduces the integrity of awards for both.

By the time that you read this we will have submitted our views about new RAE metrics to the Department for Education and Skills. The BSF strongly holds the view that a metrics only approach to the RAE after 2008 is wholly undesirable. The Federation takes the view that metrics should be there to guide and inform panels but we cannot imagine a suitable series of stand alone algorithms for dealing with all the complexities and different emphases across the biosciences. We also hold the view that metrics should not only be about inputs (for example, grant income) but also about outputs (for example, citations). However, the key element is that metrics are assessed by people and not software.

How do we undertake these policy reviews? From this summer, we have developed a closer relationship with the BNA in order that we might work together more effectively on key policy issues for the biosciences. As an issue comes to the fore, we write to all BSF member organisations and ask them if they want to nominate someone to be a member of an ad hoc task force to work on our response. Therefore, if this sort of work interests you at all - and you have something to say (!) - you should let the BNA know.

And finally, are you a postdoc or graduate student looking for a job? If you are, you should find a new page on our web site helpful. This page provides links with very many of the sites that you might want to look at for job advertisements. If you think that there are important links missing, please inform Dr Emma Southern (esouthern.bsf@physoc.org)

By Richard Dyer, Chief Executive, BSF.

ANNUAL GENERAL MEETING 2006

The BNA will be holding its Annual General Meeting this year during the Christmas Symposium

at The Royal Society, London, SW1

3.30pm, Thursday, 14th December, 2006

All members are invited to attend

New kids on the block! The BNA Committee welcomes Helen Hodges and Judith Pratt

The BNA warmly welcomed this autumn Helen Hodges and Judith Pratt to the national committee. Two nominations from the membership were proposed and seconded over the summer for the two vacancies arising. Chris Thompson and Huseyin Mehmet both retired after contributing tremendously to the activities of the BNA for the last few years. The rest of the committee and the secretariat were extremely grateful for their invaluable help.

Helen Hodges began her academic career in a very different field - she was a history teacher at a top north London school! But she switched to Psychology after raising a family, taking a BSc followed by a PhD at Birkbeck College, London, on mechanisms of anxiety, at Birkbeck College. Most of her career thereafter was in the Psychology Department, Institute of Psychiatry (IOP), from which she never looked back, eventually obtaining a personal chair in 2003.

For many years, Helen investigated the efficacy of brain grafting for cholinergic lesions, global and focal ischaemic brain damage, and hippocampal and striatal lesions. But practical and ethical problems associated with primary foetal grafts led her team to develop conditionally immortal stem cell lines as a more promising source of tissue for clinical use. The temperature sensitive MHP36 cell line was found to be widely successful in reducing functional deficits in rats and marmosets after a variety of lesions. So, together with John Sinden and Jeffrey Gray, Helen was enthused to develop a business plan to take conditionally immortal human stem cell lines to the clinic. This led in 1997 to the birth of the stem cell company ReNeuron, backed by Merlin Ventures Ltd. ReNeuron moved to purpose-built laboratories in Guildford in 2000, where she worked to set up animal behavioural testing models and procedures for assessing stem cell graft efficacy, before moving back to the IOP as an emeritus professor in 2004.



Helen Hodges (left) and Judith Pratt (right)

Judith Pratt is currently Professor of Neuroscience at the University of Strathclyde, a post she has held since 2003 where she leads the Integrative Mammalian Biology Research group. In 1997, she co-founded the Yoshitomi Research Institute of Neuroscience in Glasgow (YRING) and is still Co-Director. YRING is a multimillion pound joint initiative between the Universities of Strathclyde and Glasgow and Mitsubishi Pharma Co (formerly Yoshitomi).

Judith describes herself as a systems neuroscientist, with expertise in schizophrenia and drug addiction/dependence. Her main aims are to identify the neural systems recruited in these diseases and the mechanisms through which these systems become dysfunctional. She achieves this by employing a multidisciplinary approach incorporating molecular, neurochemical, functional brain imaging and behavioural approaches. She is particularly well known for applying 2-deoxyglucose imaging to the understanding of drug-induced behaviours.

Judith's major research achievements so far include spearheading the first group to develop a rodent model of the prefrontal cortex deficits of schizophrenia that mirrors many of the pathophysiological and cognitive deficits of the disease. "YRING closely integrates clinical psychiatry with laboratory-based neuroscience and the current phase of the research is focused on the identification and characterisation of genes that lead to the development of schizophrenia", she said.

Her second achievement, she feels, is being the first to discover that distinct brain circuits are recruited at different rates during tolerance development to diazepam, and that activity in the identified circuits correlated well with behavioural measures of dependence.

Currently, Judith is researching on cannabinoids, concerned with the cognitive aspects of acute and repeated drug treatment. In collaboration with Dr Ros Brett, her group was the first to demonstrate that Tetrahydrocannabinol (THC)-induced impairments in cognitive flexibility are associated with deficits in activity of a prefrontal cortex-striatal network. Importantly, this may relate to compulsive drug use. The current application aims to explore the mechanisms underlying these effects and to establish if such deficits are exacerbated following drug exposure during adolescence. Clearly, both Helen Hodges and Judith Pratt will bring a wealth of experience and new ideas to the BNA Committee.

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The Christmas Symposium: 2006

The Legacy of Golgi and Cajal: past, present and future

1.00pm - 5.00pm, Thursday, 14th December, 2006,
at The Royal Society, 6 - 9 Carlton House Terrace, London, SW1

A symposium to commemorate the contribution of Golgi and Cajal to modern neurobiology upon the centenary of their Nobel Prize

Chaired by Richard Frackowiak (London) and Paul Bolam (Oxford)

Speakers:

Javier De Felipe (Madrid)

The legacy of Cajal

Alain Prochiantz (Paris)

The brain as a multi-cellular syncytium

Thomas Klausberger (Oxford)

How individual neurons contribute to global activity in the hippocampus

Annette Dolphin (London) Calcium channelopathies leading to cerebellar ataxia

Antoine Triller (Paris) Surface trafficking of receptors between synaptic and extrasynaptic membranes

Michael Coleman (Cambridge) Transgenic models giving insights into axon degeneration mechanisms

The BNA Awards for 2006 will be presented during the proceedings to:
Professor Horace Barlow FRS (for Outstanding Contribution to British Neuroscience)
and to Mr Mike Robins (for Public Service)

**Organised in partnership with the
European Dana Alliance for the Brain (EDAB)**

One Day BNA Promemoria Symposium and Workshop

Wednesday,
9th May, 2007
At The Open
University,
Milton Keynes

Functional Cellular Neuroimaging and Microscopy

Chaired by Mike Stewart (Milton Keynes)

Speakers include: Paul Bolam (Oxford), Patrick Brundin (Lund), Javier DeFelipe (Madrid), Nigel Emptage (Oxford), Jozsef Kiss (Geneva), Dimitri Rusakoff (London), Nicola Sibson (Oxford), Hansjuergen Volmer (Tubingen)

This event is FREE for BNA members (non-members, £60; student non-members, £30) and includes refreshments, lunch and evening reception.

Tickets must be reserved in advance:

contact events@bna.org.uk, or tel: 0151 794 4943.

CALL FOR ABSTRACTS

19th National Meeting

- in association with Neuroscience Ireland
Harrogate North Yorkshire, 1st - 4th April, 2007

A celebration of neuroscience to mark the 10th anniversary of the BNA! An eclectic programme exploring the very latest findings in

- neurodegenerative diseases ● addiction
- learning and memory
- neural signalling ● cortical development
- neuroimaging

PLENARY LECTURERS

Graham Collingridge (Bristol, UK)
Salvador Moncada (London, UK)
John Lowry (Dublin, Ireland)
Edvard Moser (Oslo, Norway)
Yves Barde (Basel, Switzerland)
Helen Mayberg (Atlanta, USA)
Joe LeDoux (New York, USA)

SYMPOSIA

- The Neuropathology of Autism: recent advances in understanding neurochemical mechanisms
- Ubiquitination dependent regulation of synaptic development and plasticity
- Neuroreparative approaches using stem cell biology
- A role for inflammation in neurodegeneration: Where do we stand?
- Cannabinoids: fate, food and fear
- Purines in physiology, plasticity and pathology
- Circadian rhythms in the brain
- Sleep and Anaesthesia: common mechanisms?
- Synaptic Origami: protein folding at the synapse
- Emotion and Cognition: anatomical substrates and therapeutic targets
- Subcellular and proteomic approaches to dissect neuronal signalling pathways
- From cell-cell recognition to memory formation
- Alcohol: molecular and cellular mechanisms of intoxication, tolerance and addiction
- Multi-sensory Processes
- Alzheimer's Disease: current therapies and progress on the development of drugs to slow disease progression
- Discovering drug effects through functional brain imaging
- Hippocampal neurogenesis in mood disorders and their treatment.
- Basal Ganglia subcortical connections: exploring the brainstem.
- Thalamocortical development
- New mutant models for neurodevelopmental and neurodegenerative disorders

There will also be over 50 themed poster sessions, a full exhibition, several peripheral events and a lively social programme. Registration opens 31st October, 2006.

Abstract deadline will be 31st January, 2007.

Bursaries will be available for student members of the BNA.

Enquiries: www.bna.org.uk ● or email: bna2007@bna.org.uk ● or tel: 0151 794 4943/5449

Morphological parameters regulating saltatory nerve conduction in myelinated fibres

Felipe Court deservedly won the BNA's postgraduate prize last year for his thesis that examined the cellular organisation of peripheral nerves and neuromuscular junctions, supervised by Peter Brophy and Richard Ribchester at the Centre for Neuroscience, Edinburgh. Here, he describes his work that culminated in discovering the importance of subcellular compartments ('Cajal bands') in determining internodal length, and measured for the first time the erstwhile long suspected effect of internodal length on nerve conduction velocity. Felipe Court now holds an EMBO Postdoctoral Fellowship at the San Raffaele Institute of Milan.



Figure 1. Cajal bands are absent in 3-week old periaxin null Schwann cells
 (a) Silver staining of a nerve fibre by Santiago Ramón y Cajal (Ramón y Cajal, 1933) reveals the heterogeneity of the Schwann cell cytoplasm as bands that run longitudinally along the Schwann cell. These longitudinal domains are connected by transverse trabeculae. A node of Ranvier can be seen in the middle of the picture. (b) Teased fibres from 3-week old WT and KO quadriceps nerve, labelled with an antibody against the cytoplasmic protein S100. The cytoplasm in WT Schwann cells is arranged in longitudinal and transverse bands. In contrast, the Schwann cell cytoplasm in KO fibres is continuous. Scale bar, 20 μm .

Myelination of axons constitutes an important acquisition of vertebrate evolution, allowing the fast propagation of action potentials in relatively small diameter axons at low metabolic costs. In addition, it represents one of the most extraordinary examples of cell-cell inter-relationships, in which axons and glial cells depend on each other to develop and maintain their structural organisation. In the peripheral nervous system, Schwann cells associate with a segment of an axon and wrap it with myelin. The myelin sheath manufactured by a single Schwann cell is referred to as internode (Webster, 1971). This is interrupted by nodes of Ranvier at regular intervals where two Schwann cells meet each other. This arrangement permits the discontinuous regeneration of the action potential and was verified experimentally by Tasaki and Huxley & Stämpfli in the 1940s who demonstrated that the inward sodium ionic current flow in individually dissected nerve fibres was restricted to nodes (Huxley and Stämpfli, 1949; Tasaki, 1939). The rapid internodal conduction, permitted by the high electrical resistance and low capacitance of the myelin sheath, makes the action potential appear to skip from node to node. They, therefore, described this form of conduction as "saltatory" (from the Latin saltare, to leap).

'The difference in internodal lengths between WT and KO Schwann cell appeared to offer a unique opportunity to assess experimentally whether nerve conduction velocity is sensitive to changes in internodal length, an influence that had been proposed thus far only on theoretical grounds.'

More recent investigations have shown that different morphological features of Schwann cells and axons, as well as interface domains between these cells, create the necessary conditions for saltatory nerve conduction. The experiments I conducted during my PhD work addressed how structural parameters related to the axon-Schwann cell unit influence conduction of the action potential in myelinated nerve fibres. In this report, I first describe the relation between cytoarchitectural parameters of myelinated nerve fibres. In the second part, I discuss the electrophysiological consequences of myelination and our own data showing that the distance between nodes of Ranvier (referred to as internodal distance, or the length of a single myelinating Schwann cell) directly influences nerve conduction velocity. Previously, this relationship had only been predicted from long-standing theoretical calculations. We were able to confirm the predictions directly, using a combination of physiological and morphological techniques applied to transgenic and knockout mice that show remarkable peripheral nerve phenotypes.

Novel cytoarchitectural features of myelinated axons

The myelinated nerve fibre, a functional unit comprising an axon and its associated glial cell, displays different domains critical for saltatory nerve conduction. The myelin, with its high lipid to protein ratio (70-80% lipids and 20-30% proteins;

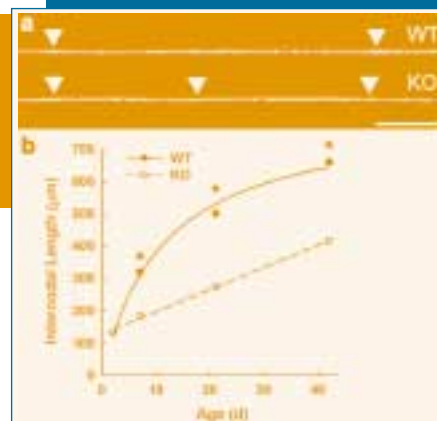


Figure 2. Internodal elongation is decreased in periaxin null Schwann cells lacking Cajal bands.
 The time course of internodal length (IL) growth was studied in P2, P7, 3 weeks and 6 weeks WT and KO quadriceps nerves. (a) At 3 weeks, KO internodal lengths measure about the half of WT values. Nerve fibres stained with FITC-conjugated Phalloidin. Arrowheads indicate nodes of Ranvier. Scale bar, 100 μm . (b) WT and KO internodal lengths are similar at P2, thereafter the WT growth rate (continuous black line) increases following a rectangular hyperbola function and KO growth rate (dashed black line) follows a straight line. (Asterisks, $P < 0.0001$; Student's t-test for internodal lengths).

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Garbay et al., 2000) and the exclusion of almost all the conductive extracellular and cytoplasmic material during myelin compaction, presents a much higher transverse resistance and lower capacitance than a normal cell membrane, reducing the current flow across the internodal axonal membrane. The node of Ranvier, in turn, is devoid of myelin and the axonal membrane is exposed to the extracellular space. Voltage-gated sodium (Na⁺) channels are highly concentrated in the axolemma at the node (approximately 1000/μm²) and a much lower density along the internodal region under the myelin sheath (<25/μm²) (Ritchie and Rogart, 1977). Flanking nodes of Ranvier, the compact myelin sheath opens and forms a cytoplasmic corridor that spirals around the axon and tightly associates to the axolemma by junctional complexes, known as axoglial junctions. Observed in longitudinal sections they appear as cytoplasmic loops derived from each turn of the myelin wrap.

The juxtaparanodal region is located under the compact myelin sheath adjacent to the innermost paranodal loop. The axonal membrane at this region is enriched in delayed rectifier K⁺ channels, Kv1.1 and Kv1.2.

During postnatal development, myelinating Schwann cells grow extensively in length, at the same time they produce a compact myelin sheath around the axon. Schwann cell growth and maintenance of several distinct structural domains along its length requires an efficient mechanism for trophic support of distal regions. At the same time, this mechanism should correctly target components to their proper locations.

Santiago Ramón y Cajal was the first to report that the cytoplasm of Schwann cells is arranged as an intricate reticular array of cytoplasmic channels along the axonal region of the cell (Ramón y Cajal, 1933) (Fig 1a). He speculated that this cytoplasmic arrangement was probably required for trophic support of the entire Schwann cell. More recent studies have shown that between cytoplasmic regions, an orderly pattern of apposition is present between the plasma membrane of the Schwann cell and the outermost loop of the myelin sheath (Sherman et al., 2001). Appositions are devoid of cytoplasm, delimit the cytoplasmic arrays and are enriched in a dystrophin-glycoprotein complex (DGC) associated with the proteins DRP-2 and periaxin.

Starting from this knowledge, I explored the possibility that periaxin was directly involved in the structural maintenance of appositions and analysed the role of appositions in the formation of cytoplasmic domains in Schwann cells (Court et al., 2004). Teased fibres (representing a functional unit between the axon and its associated Schwann cell) from 3-week old wild-type (WT) and Periaxin-null (KO) quadriceps nerves were immunostained with an antibody directed to the Schwann cell cytoplasmic protein S100 and examined by confocal microscopy. As shown in Figure 1b, immunolabelling with S100 antibody in WT fibres reveals the longitudinal and transverse cytoplasmic channels in the Schwann cell, we named Cajal bands. In contrast, cytoplasmic channels were absent in periaxin-null Schwann cells, which present a continuous signal from the S100 immunostaining along the Schwann cell (Fig. 1b). The lack of appositions and the homogenous distribution of cytoplasm in KO fibres were confirmed by electron microscopy (EM) analysis (for details see Court et al., 2004).

Ramón y Cajal proposed that the cytoplasmic arrangement of Schwann cells could have a trophic support function (Ramón y Cajal, 1933). Schwann cells elongate extensively during postnatal development, reaching internodal lengths up to a millimetre long. Hence, according to Ramón y Cajal's proposal,

intact Cajal bands should be required for Schwann cell elongation. To test this hypothesis, we measured internodal lengths from WT and KO quadriceps nerves at postnatal day (P)2, P7 and 1, 3 and 6 weeks of age. At P2, when myelinated Schwann cells have associated in a 1:1 relationship with segments of the axon, WT and KO internodal lengths were similar (Fig. 2). In older nerves, KO internodal lengths were strikingly decreased compared to WT (Fig. 2). Axonal elongation has been proposed to control the elongation of the associated Schwann cell but the exact relation is still debated (Hildebrand et al., 1996; Hiscoe, 1947; Nilsson and Berthold, 1988), therefore I tested whether the decreased KO internodal lengths was due to abnormal axonal extension. The lengths of quadriceps nerves were measured from spinal cord exit to muscle insertion point. Elongation rate of WT and KO quadriceps nerves was similar at all ages examined and correspond to the internodal elongation rate. These results indicate that in WT nerves, Schwann cells associate with the axon and then grow at the same rate as the growing nerve. Periaxin-null Schwann cell lacking Cajal bands had lower growth rates in spite of the fact that their nerves grow at a normal rate.

The next question was how a continuous cytoplasmic arrangement can affect the Schwann cell's internodal elongation. We found that the microtubule network in KO Schwann cells is disrupted as it approaches the paranodal regions, contrasting with the WT situation in which the microtubule network organises in Cajal bands and extends from the perinuclear area up to the paranodes. Microtubules and their associated molecular motors are known to be responsible for the transport of organelles, proteins and mRNAs to their target locations in many cell types (Carson et al., 1998; Pokrywka and Stephenson, 1995; Rogers and Gelfand, 2000). Therefore, their disruption should affect the cell growth capacity, especially in Schwann cells undergoing longitudinal extension and production of large membrane surfaces.

Armed with these new cytological data and the periaxin null-mutant mice, we proceeded to address the enduring question of the physiological consequences of internodal length.

Demonstrating a physiological role for internodal length

As a result of the characteristic molecular and cellular organization of the myelin sheath, the regeneration of the action potential takes place only at nodes, as a consequence of the movement of Na⁺ ions into the cell (down their electrochemical gradient) through voltage-sensitive Na⁺ channels. The local current generated at the node spreads electrotonically (passively) through the relatively low-resistance axoplasm with a small decrease in amplitude as a result of the insulation provided by the myelin sheath. This local current then depolarises the membrane and activates Na⁺ channels in the subsequent node. Nodes of Ranvier are analogous to the old system of amplifiers that were situated along sub-Atlantic telephone cables; telephonic signals decreased in size as a result of leakage across the cable, but were regenerated at regular intervals by the amplifiers. The high velocity of local current spread along the axon and the regeneration of the action potential limited to the nodes results in a high conduction velocity of the action potential (in the range of 20 to 120 m/s).

Electrophysiologically, axoglial junctions act as barriers for ion diffusion away from the node and spatially separate Na⁺ and K⁺ channels between the node and the juxtaparanode respectively. Although the physiological role of K⁺ channels Kv1.1 and Kv1.2. in the adult nerve fibre is not fully understood, it has been shown that their presence is critical for stabilisation

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of the action potential in branch points of the myelinated fibre near the neuromuscular junction (Zhou et al., 1999) and it has also been suggested that they may provide a protective function in partially demyelinated nerve fibres (Poliak and Peles, 2003).

Theoretical and experimental work had previously suggested that four parameters of the myelinated fibre influence the conduction velocity of the action potential, namely axonal diameter, myelin thickness, internodal length and the tightness of the axoglial junction at the paranodal region. In theory, internodal length (IL) should influence nerve conduction velocity as the presence of more nodes in a given segment (decrease IL) increases the action potential regeneration events, thus increasing the time for the action potential to travel along the nerve fibre. But since its theoretical formulation, this has not been experimentally verified, since both axonal diameter and myelin sheath thickness positively covaries with internodal length making it virtually impossible to dissect the extent of these influences one from the other. Nevertheless, simulations of action potential conduction in myelinated fibres were used to address this issue (Brill et al., 1977; Moore et al., 1978), showing that nerve conduction velocity is independent of the IL from changes around 1500 μm , but becomes dependent at shorter internodal lengths (25-750 μm).

From an electrophysiological perspective, the difference in internodal lengths between WT and KO Schwann cell appeared to us to offer a unique opportunity to assess experimentally whether nerve conduction velocity is sensitive to changes in internodal length, an influence that had been proposed thus far only on theoretical grounds (see above). We were able to perform the required experimental validation, due to the fact that 3-week old periaxin null nerve fibres exhibit otherwise normal parameters known to influence nerve conduction velocity, including axonal diameter, myelin sheath thickness, nodal architecture, and the proper localisation of Na⁺ channels.

We measured nerve conduction velocity from acutely isolated quadriceps nerves from 3-week old WT and KO. Nerve conduction velocities in KO quadriceps nerves were significantly reduced compared to WT values (WT, 21.9 \pm 1.2; KO, 9.9 \pm 0.6; mean (m/s) \pm SEM). Therefore, reduced internodal lengths in KO nerve fibres results in slower nerve conduction. Importantly, these results represent the first experimental verification of the relation between internodal length and nerve conduction velocity.

The myelinated nerve fibre represents a remarkable example of intercellular organisation, leading to a radical modification of the propagation mode of the action potential and increasing nerve conduction velocity dramatically. In order to implement the “saltatory” conduction of the action potential, the cytoarchitecture of both Schwann cells and axons become compartmentalised into defined domains (e.g. myelin sheath, node of Ranvier) and morphological parameters are finely regulated, including the length of the Schwann cell. From the work undertaken during my PhD studies and partly presented here, we have revealed the organization of another Schwann cell domain, i.e. cytoplasm, and defined its requirement for cell elongation. In addition, we have demonstrated the critical role of periaxin in the restriction of Schwann cells cytoplasm to longitudinal bands we termed Cajal bands to acknowledge Santiago Ramón y Cajal's first description of this subcellular organisation. Finally, we used these new observations to settle a long-standing issue in neurophysiology: the role of internodal length in defining the conduction velocity of action potentials.

Acknowledgment

I wish to thank my supervisors Professor Peter Brophy and Professor Richard Ribchester for their advice and support. I am also grateful for the funding received during my PhD studies from the Wellcome Trust and the ORS Awards Scheme.

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European citizens speak out on neuroscience

By Tom Ziessen

Public Participation Projects Coordinator
The Science Museum's Dana Centre

In July this year, members of the public from across the UK went to the House of Commons to let policy-makers know how they thought we should use our increasing knowledge of the brain. Amongst their recommendations were that they wanted significantly greater investment in brain research to help reduce the future costs of an ageing population, that the use of brain imaging techniques in courts or by the police should be prohibited, even for public security reasons, and they also wanted to ensure that scientists were coached from early in their careers to use common language when describing their work without oversimplifying the information.

Photo kindly provided by Frank Toussaint.



So why were members of the public in Parliament and making these recommendations? What right do they have to have a say about the way brain science is used and how scientists are trained? To answer these questions, I will start with two assertions. First, the outcomes of research into the brain reach far beyond the realm of science and have the potential to affect all areas of society. Secondly, much of the scientific research that is done is publicly funded through research councils and charities. For these reasons, the public have a right and a need to have their say about brain science. As one of the UK panel members put it, “this is what democracy is all about.” In order to enable them to make considered recommendations, a panel of citizens from the UK and across Europe spent almost a year discovering and deliberating on some of the issues thrown up by advances in neuroscience in an ambitious new experiment in modern democracy, a project called *Meeting of Minds*.

Meeting of Minds, the largest ever trans-European public consultation on science has, for the first time, allowed citizens from nine European countries to come together with experts in the field of brain science, as well as a wide range of other stakeholders, to discuss and compare views on how developments in brain science could alter people's lives. The task was huge, as the citizens were asked to answer the question 'How should we use our new found knowledge of the brain?' However, over the course of a year, they first defined a series of broad 'themes' based on their initial hopes and concerns that they considered most in need of deliberation. They then formulated questions under each of these themes and these questions were then investigated further through national assessment meetings and a final European-wide meeting. These meetings resulted in nine national assessment reports and one European report containing recommendations on the future of brain science. In total, there were 17 UK-specific recommendations and 37 European-wide recommendations.

One question that remains is whether these recommendations are useful or not. At a European level, there are obvious benefits to this type of project as it enables citizens to actively take part

‘Controversial issues and societal implications arising from neuroscience will continue as long as there is still mystery surrounding our brains - a situation likely to continue for generations to come.’

in European policy-making - a process that may otherwise be perceived to be something citizens have no role in. In January 2006, the

European citizens' panel presented the European-wide findings at the European Parliament. Janez Potocnik, the EU Commissioner for Science and Research, said this kind of project proved that citizen participation is “not only possible but also highly desirable” as it gave policy-makers at the European Parliament valuable insight into the views of European citizens. Furthermore, Dr Quintana Trias, the Director of the Directorate of Health at DG Research of the European Commission, mentioned specific actions that the Directorate would take that tied in with the recommendations and concluded by telling the panel that “their recommendations will be taken very seriously.”

But what about at a national level? The 17 UK-specific recommendations are relevant to UK national interests as they were derived from UK citizens. UK policy-makers should also take a great deal of interest in the European wide recommendations. This is not just because UK nationals contributed to them but also because they provide a valuable insight to the views of the public on an issue that has no national borders. One of the participants commented that they were “amazed how much agreement there was and how much we had in common when our governments have so many disagreements.”

The *Meeting of Minds* project is only one part of a much larger process. Controversial issues and societal implications arising from neuroscience will continue as long as there is still mystery surrounding our brains - a situation likely to continue for generations to come. As one expert who took part in *Meeting of Minds* put it, “the depths of what we don't know is mind boggling.” Continuing dialogue between the public, neuroscientists, policy-makers and other stakeholders will therefore be essential, both at national and trans-national levels, to ensure we move forward in the most desirable direction for all.

This project has been an important step towards engaging the public in a wider conversation about brain science and

increasing their ability to participate in policy-making. Indeed, one member of the UK citizens' panel commented that "the recommendations are a basis for further debate and we would hope they will be further developed." I hope that many readers are already involved in public engagement and debating brain science, and for those yet to take the plunge, I hope you find an opportunity to do so soon. It is an experience that is not only interesting for the general public, but is also rewarding and informative for scientists. Brain science affects all members of society at some point in their lives, either directly or indirectly. We would be wise to all be involved in the conversation about its future.

• For copies of the UK or European-wide reports including all of the citizens' recommendations, or for any further information on the project, please contact me at tom.ziessen@nmsi.ac.uk.

• Meeting of Minds was organised by a partner consortium of technology assessment bodies, science museums, academic institutions and public foundations, led by the King Baudouin Foundation and supported by the European Commission with additional support for the UK delivery of the project from the Dana Foundation.

• The steering committee of Meeting of Minds, European Citizens' Deliberation on brain science, comprises a consortium between the King Baudouin Foundation (project coordinator and co-funder), the University of Westminster, the Flemish Institute for Science and Technology Assessment, the Danish Board of Technology, the Cité des Sciences et de l'Industrie, the Stiftung Deutsches Hygiene-Museum, the Fondazione IDIS - Città della Scienza, the Rathenau Institute, the Science Museum, the University of Debrecen, the Eugenides Foundation and the University of Liège.

This was an impressive event organised by the Royal Society for Chemistry (RSC), chaired by Dr Brian Iddon MP, and was very well attended by Parliamentarians and people from the scientific community. The whole event was certainly an eye opener about what can be achieved by a Learned Society with enough clout, and we hope that we may eventually be able to stage something similar in future years under the umbrella of the BSF.

The opening address was from Margaret Beckett MP, the Secretary of State for Foreign and Commonwealth Affairs. She commended the occasion for being the most important scientific event in the Parliamentary calendar. She felt that Britain's standing abroad was very much linked to our status as a scientific nation, but the global scientific landscape is shifting with the emergence of India and China as being possibly the next knowledge superpowers. China has trebled its spending on R&D in the last few years and India now produces more science graduates than the whole of Europe. This could be a positive development for Britain if we seek to fully engage with them and build new collaborations - Science thrives on diversity. The Foreign and Commonwealth Office (FCO) Science and Innovation network of Attaches posted around the world is poised to help us build these collaborations.

Dr Simon Campbell FRS FRSC, President of the RSC, stressed that RSC was not UK-centric in its outlook, it wants to be the most effective international organisation for advanced chemical science. Various initiatives help them do



More Gossip From Parliament: Parliamentary Links Day on Science and Globalisation, 27th June 2006

this. They publish about 45 leading textbooks every year, hold international joint meetings with the help of the FCO, have made their journals free to all African scientists, produce education materials for the developing world and have an initiative called Chemistry Aid. He highlighted some of the potential threats to R&D in the West - dominance of Eastern low wage economies, for instance, could undermine manufacturing industry in the West. Politicians have sometimes looked to the service sector to plug economic gaps left by the decline of manufacturing, but service industries cannot be expected to invest in R&D in the same way as manufacturing. Over regulation in Europe and the USA, for example REACH, might also drive companies eastwards. Places like Singapore which are now investing heavily in R&D and infrastructure will be only too happy to attract them. Companies like Government support, access to an educated workforce and sensible tax regimes. It is vital that the UK provides this sort of environment to encourage inward investment.

Dr Robert Kirby-Harris, Chief Executive of the Institute of Physics (IOP), said that Physics is a major force for development through education work in the developing world, for instance. It is a core underpinning discipline for industry and medicine, for example magnetic resonance imaging and materials for transplants. The UK leads the world in laser physics, non-linear optics and photonics. The IOP has made a serious investment in its international activities. They have offices in China, Japan and Russia. Their education projects include funding mobile labs in a lorry which tour Africa introducing Science to young people, setting up training programmes

in entrepreneurship for developing countries and supporting relevant African Learned Societies to create a pan African network.

Dr Alan Malcolm of the Institute of Biology presented a case history of a very controversial area of Science and Globalisation, GM crops. He made the point that this could be viewed as both a failure and a success. A decade ago, the technology had hardly impinged on the international scene, now over one million square kilometres are under GM cultivation. Momentum in this area is considerable, more than 50% of soya produced worldwide is now GM herbicide tolerant, and about 25% of maize is GM insect resistant. The technologies are very popular and widely applied in China, India and the USA, but with almost no uptake in Europe through inadequate addressing of consumer concerns and political pressures. His conclusion was that the globalisation of science would continue in spite of Luddites in some regions, and that what had proved to be true for GM crops would also apply to other potentially controversial technologies such as stem cells. New technologies have to be effectively managed rather than resisted.

Dame Julia Higgins, Foreign Secretary of the Royal Society (RS) stated that the RS very much views itself as an international organisation. It actively recruits foreign members and provides funding to stimulate international collaborations, including engaging academics worldwide on major policy issues. The RS spends about £7M per annum on international interactions, including a programme of international lectures, an MEP Pairing Scheme for young scientists (based on the very successful UK MP Pairing Scheme) which aims to increase awareness of science in the European Parliament and an understanding of Brussels amongst scientists. The RS has been very active in tackling development issues including input to the G8 2005 joint statements on Science and Technology for African development, and has been very vocal to the Department for International Development (DFID) on the role of science in eliminating poverty in Africa and elsewhere. Africa is a priority for the RS at the moment. They are strengthening the role of African Science Academies to provide advice to their Governments in partnership with the Network of African Science Academies, are launching a new grant scheme for partnerships between UK and African scientists to promote capacity building in the developing world, and have funded several African Academies to become members of the International Council of Scientific Unions (ICSU).

Peter Saraga OBE of the Royal Academy of Engineering, gave a personal perspective from his experience of working globally for Phillips. Industry needs to combine the best of global science and technology to create globally marketable products. Global businesses looking to access the best talents are looking towards Asia, for example Phillips is locating more of its R&D in China, but they are still investing in good R&D in the UK. Successful knowledge transfer is based on user needs and he noted the emergence of a new trend in international collaboration toward open innovation, with more emphasis on sharing knowledge as a route to success rather than the more secretive intellectual property route.

Zhiyong Jin, First Secretary for Science and Technology at the Chinese Embassy in London, talked about Chinese Government emphasis on international co-operation in S&T development. The Chinese economy is booming and is becoming very dependent on S&T. Chinese S&T development

and reformation of the S&T system is directed by three main strategies, in human resources, patents and standards. They are looking to strengthen audit and evaluation of research, develop new science policies, laws, regulations and public science engagement. They are promoting knowledge transfer by new S&T intermediaries and incubators and high tech industrial development zones. The Chinese are now very keen to support international scientific collaboration and have signed Inter-Governmental S&T Agreements with 96 countries including the UK. There is a biennial China-UK S&T Joint Commission Meeting which promotes collaborations and seeks to remove obstacles. His presentation was followed by Jason Hahn, the Science and Technology Counsellor of the United States Embassy who noted that international science promotes the values of free societies and respect for diverse views, and is essential in tackling issues of global concern such as climate change and epidemics.

Phil Willis MP, Chair of the House of Commons Select Committee on Science and Technology, commented that international co-operation in S&T is now of vital interest to Parliament. Science is about picking a route through uncertainty, and politicians need to be engaged in global science that addresses global concerns such as energy supplies and climate change. He noted that there is still a problem of scepticism and ignorance about science amongst some parts of the general

'What had proved to be true for GM crops would also apply to other potentially controversial technologies such as stem cells. New technologies have to be effectively managed rather than resisted.'

public, and gave perceptions of animal research as being a particular issue. He concluded that MPs have a key role to play in maintaining public confidence in science.

Sir David King, the Government Chief Scientific Adviser, ended

the session by highlighting that science and innovation was expected to play a key role in the wealth creation agenda supporting vital services such as pensions, education and health. The success of S&T has been amply demonstrated through increased life span and an explosive growth in world population. How we manage this in a limited-resource environment is the big challenge for 21st Century technology in water and energy, health, medicine and other key areas. This is a big opportunity, and the Government is looking to support the UK as the partner of choice for international scientific collaborations. He noted that the Government's Foresight processes had changed to get scientists and social scientists to work together to tackle major issues such as Flooding and Coastal Defence. Other Foresight exercises that he mentioned included ones on Brain Science, Addiction and Drugs, the Determination and Identification of Infectious Diseases and Tackling Obesities.

The session was wrapped up with a few complimentary remarks by Mark Lancaster MP, the son of the famous firework maker the Reverend Lancaster, who was apparently in the audience. Alas, no firework displays were available on the day but they consoled us with a good buffet lunch. All of the above gave me much food for thought in possibilities for developing the Biosciences Federation's international activities and input to Government policy. Amongst other things that I will be investigating in the forthcoming months will be how we can get our scientists involved in Government Foresight exercises and other policy development activities. Members with any ideas about this are more than welcome to contact me.

By Liz Bell, The Physiological Society (ebell@physoc.org)



Fifth Forum of European Neuroscience Societies (FENS) 2006, Vienna, 8th - 12th July

Unquestionably, FENS 2006 was a tremendous success with nearly 5,200 registrants from almost 70 different countries ranging from Bangladesh to Belarus, Malta to Mexico. Germany provided the most delegates (859), followed by France (465), UK (459), Italy (421) and Spain (385). Austria (259) and Switzerland (246), as two smaller societies, were also enormously supportive of the event. In all, there were 3,542 abstracts covering an eclectic and inspirational programme with something for everyone to enjoy. It is little wonder some of our students (below) readily provided such laudable reports. Vienna provided a truly magnificent venue, architecturally and hospitably. The local organising team, spearheaded by Alois Saria, should be wholeheartedly congratulated for their dedication and hard work. FENS 2008 will be held in Geneva, and members should note that the Call for Symposia closes on 28th February 2007 (see back page for further details).

By Patrick Howorth, University of Bristol

This year has been eventful for several reasons, from getting engaged to submitting my first paper and presenting at FENS. This is the third time I have attended FENS: I briefly went to Brighton (2000) to attend an electrophysiology workshop; in Paris (2002), I went courtesy of Merck Sharp and Dohme and had an opulent time. However, this time was different - I am full-time PhD student and a research assistant, funded by a Wellcome Trust grant, with no money for attending conferences.

Fortunately, I had work to present, so after registering I initially approached FENS for a student stipend. Alas, I was told that I am too old to be considered for a stipend, I'm 38 and FENS will only consider students who are under 35! However, BNA has no age restrictions for student travel bursaries and I applied. Thankfully, I was awarded a travel bursary and without any further ado, I made my final arrangements for the trip.

I flew out to Vienna on 8th July, with the dulcet tones of Ultravox's Vienna ringing in my ears. I met up with two colleagues at Heathrow, who were also flying out that day and we discussed our plans for the meeting. More importantly, we wanted to find a bar that would be showing the playoff for 3rd place in the World cup, that evening!

This was my second time in Austria, but my first visit to Vienna. I was pleasantly surprised by Vienna, small but perfectly formed capital. Although my meeting schedule was pretty full, I still managed to do some sightseeing, especially in the evenings when it was cooler. It is simply a beautiful city, full of baroque

architecture. The transport system, a combination of buses, trains and trams, was excellent and enabled quick travel across the city. More so, the local meeting organisers had arranged that participants could have free travel in Vienna, for the duration of the meeting. All the participants I met thought this was an excellent idea which should be repeated at other meetings in the future.

The scientific content of the meeting was excellent and brought together a plethora of scientists from all disciplines and fields. I was particularly impressed by the standard of electrophysiology posters. I have recently started patch-clamping neurones from brains slices in culture and I was given numerous tips on these techniques. Two communications stood out above all others, largely for their breakthroughs in technology (A039.8 - the glass brain and A109.17 - 12 patch clamp recordings). In terms of symposia, two also stood out. Jurgen Sandkühler had arranged an excellent series of talks on how to erase memory traces of pain and Tomas Hökfelt spoke eloquently on the role of galanin in pain.

My poster (A144.11) - Activation of pontospinal noradrenergic neurones during a nociceptive behaviour - was well received. I got some excellent feedback and useful suggestions. It was good to share ideas on the use of viruses for retrograde tracing and insertion of genes into cells.

At previous meetings, I did not have the opportunity to attend any of the social programmes organised by FENS. However, this time it was different, the sulky trotting race at Kriau was brilliant. The weather during the conference was hot and air-conditioning is sparse, the locals point out that they have nine months of cold and bitter weather, so they wish to make the most of any warm weather!

However, rather than stifling the evenings' entertainment, it added to the ambiance. The local food and beer was good (and plenty!). I met up with old friends such as Mark Eyre (Budapest) and renewed acquaintances, such as Mino Belle (Liverpool). The world cup final was on at the bar and who can forget that chest butt by Zidane, followed by the cries of angst by the French participants!

In all, the FENS meeting in Vienna provided an excellent opportunity to meet leading experts in their field and to discuss work (sometimes in a social setting). The symposia and communications were good, and it was a great opportunity to discuss things further. Finally, on a social note, Vienna was a great city to meet old friends and to make new contacts. I am very grateful for the BNA for awarding a student bursary and thus making it possible for my attendance at FENS this year.

By Janet Holley, Peninsula Medical School, Plymouth

Vienna was the city to host the 5th Forum of European Neuroscience (FENS) in 2006. FENS was the first international conference I had been fortunate enough to attend, thanks to the generous bursary from the BNA. I was amazed by the large number of delegates at the conference, as well as the many different nationalities of those attending. With neuroscience attendees numbering over 5000, the conference consisted of a diverse and far reaching number of topics which had been thoughtfully selected to satisfy the research expertise of all the delegates.

The first day of the meeting consisted of a series of workshops on a variety of themes including molecular imaging, proteomics, non-invasive high-resolution recording and challenges in the discovery of novel therapeutics for neurological and psychiatric diseases. The day was concluded with the official opening of the conference during which Gyorgy Buzsaki gave an excellent presentation on variable spike pattern assemblies and how central coordination of events may impact on cognition.

The conference began in earnest on day two. For me, with my main interest being in glial cells, and in astrocytes particularly, I was thrilled to see that there were so many symposia involving glial cell biology. I will discuss some of the presentations I found most interesting. The symposium entitled 'Gliotransmitters in Action' consisted of an exciting set of presentations showing evidence of new roles for astrocytes. It is well known that for many years astrocytes were considered passive, supporting cells. However, it is now known that astrocytes play roles in transmitter release, receptor function and synaptic plasticity.

During the afternoon symposium 'Brain immunity as a double edged sword', Lars Stoltze gave an interesting presentation on immune cells in mouse models of Alzheimer's disease. The work showed that T-cells and macrophages were associated with amyloid plaques and activated microglia were found around the plaques. The numbers of microglia increased, indicating that they also migrate into the area although the plaques remain stable and phagocytosis by macrophages or microglia could not be seen using electron microscopy. Professor Hugh Perry from the University of Southampton delivered exciting and thought provoking evidence of how systemic inflammation plays a role in the progression of neurodegeneration. Using murine prion disease



as a model of chronic neurodegeneration, his group has shown that in the early stage of disease microglia are morphologically activated but have an anti-inflammatory phenotype and there is no neuronal loss. In this state, microglia are considered to be 'primed'. A subsequent secondary infection results in a phenotypic change to one that is pro-inflammatory and there is evidence of neuronal loss. Systemic infection could indeed be crucially important in the progression of several central nervous system diseases.

For me, the main highlight of the meeting was the elegant demonstration by Frank Kirchhoff, from Goettingen, Germany, who presented 2-photon imaging of astrocytes *in vivo*. Using a functioning network from mouse brainstem and astrocytic GFP-tagged glial fibrillary acidic protein, the detailed imaging of the dynamics of astrocyte processes were visualized. Astrocyte processes were seen in close contact with synapses. The processes, consisting of lamellipodia, glide along the neuronal processes. From the lamellipodia, filopodia extend and retract making contact with neurites. The purpose of such contacts is without doubt intriguing and further research will ultimately determine the consequence of these exciting interactions.

The Vienna International Conference Centre was an ideal venue with numerous lecture theatres, halls and meeting rooms. The poster display areas were well organised and it was easy to locate posters of interest even though the number of posters was so high. The staff were always helpful and the facilities excellent. The centre provided an ideal base for many of the pre-arranged sightseeing tours and, with such diversity of neuroscience topics at the meeting, there was ample time to do some sightseeing in the beautiful city of Vienna. The public transportation system was better than I had ever experienced making it extremely easy to travel between sights across the city, but there were also many interesting buildings within easy walking distance. I was very fortunate to visit St Stephens Cathedral, the famous Hofburg Museum and, of course, the Vienna State Opera House, which was too much of a golden opportunity to miss! And I was delighted to attend a Mozart concert performed in traditional dress of the era at the opera house.

Overall the FENS meeting was a wonderful experience and I am truly grateful to the BNA for the generous bursary.

By Peng Kang, University of Edinburgh

Along with one of the biggest events in music to commemorate the 250th anniversary of the genius musician Mozart's birth, this summer Vienna also welcomed the prominent festival in neuroscience, the 5th Forum of European neuroscience. This year more than 5000 neuroscientists from all over the world descended



proliferating cells of adult rat's dentate gyrus, indicating these two subunits are critical for the neurogenesis in rat hippocampus.

Next, Rodney Rietze (Brisbane, Australia) reported growth hormone (GH) can regulate symmetric cell divisions of neural stem cells (NSC), by showing that addition of GH in vitro caused increased number of NSC and that there is a significant reduction of the NSC in GH receptor knockout mice. This study suggests the potential role for GH in preventing, or even reversing, the deleterious effects of ageing.

The third speaker in this symposium, Xavier Fontana (Barcelona, Spain), talked

on the Austria Centre Vienna (ACV), a cool and spacious place on the banks of the River Danube where many of the delegates were able to shade from the intense heat of the Austrian summer.

The packed five-day programme meant that I had to plan my itinerary with military precision so that I could get to attend the many interesting symposia, plenary lectures and, of course, posters. My journey started from the opening lecture given by György Buzsáki (Newark, USA), in which he talked about the oscillatory control of cell assemblies. Based on the discoveries using large-scale recording from neuronal ensembles, he provided several possible ways in which the brain orchestrates perceptions, thoughts and actions from its neurons' spiking activity.

The next morning, in the symposium on 'Stress, corticosteroid hormones and depression', Isabella Heuser (Berlin, Germany) talked about the physical consequences of increased HPA-system activity in depression. She showed that an overactive HPA-system in stress-related disorders such as depression appeared to promote the development of visceral obesity and contribute to metabolic syndromes. She also presented data from a two-year follow-up study in which depressed patients in remission accumulated disproportionately more visceral than subcutaneous fat in comparison to the never-depressed controls.

The second speaker, Paul Lucassen (Amsterdam, Netherlands), presented the relationship between structural hippocampal plasticity, stress and antidepressant action. He indicated that stress effects on hippocampal structure were adaptive and reversible rather than permanent. Then he went on to discuss possible mechanisms by studying vasculature and the expression of vascular endothelial growth factor (VEGF) in the structural hippocampal plasticity after stress and also utilizing glucocorticoid receptor antagonist RU486 and anti-apoptotic drug tianeptine to illustrate the changes of neurogenesis and the cell cycle in a chronic stress model. It appeared that stress affects the turnover of dentate gyrus cells in an adaptive and reversible manner and RU486 treatment can counteract the effects of chronic stress or corticosterone while tianeptine has a different effect.

Laurence Lanfumey (Paris, France) described serotonin receptors in relation to depression by generating several transgenic models under conditions matching "antidepressive" or "prodepressive" phenotypes. His data showed that, in most cases, depression caused changes in 5-HT neurotransmission, HPA axis hyperactivity and neuronal proliferation in the hippocampus. However, he emphasized that depression should not be treated simply as a disorder of alterations in 5-HT-HPA interactions.

In the symposium on 'Signalling cues for neuroprogenitors', Juan Nacher (Valencia, Spain) introduced the role of NMDA receptor in neuronal development and connectivity and showed that expression of NMDA subunits NR1 and NR2B was in certain

about cellular prion protein (PrPc), which is thought to be involved in the development of neurons and glia in CNS and also remains highly expressed during mouse lifespan. He described work in vitro and in vivo with mutant mice that PrPc shares some similar patterns in cell proliferation with cyclin dependent kinase (cdk) inhibitors, hence, negatively regulates neural stem cell proliferation in CNS.

The last speaker, Ludwig Aigner (Regensburg, Germany), described transforming growth factor (TGF)-beta1 as a negative modulator in adult neurogenesis which acts by arresting proliferation of neural stem and progenitor cells both in vivo and in vitro but does not affect differentiation. This implies TGF-beta1 is an important signaling factor in control of cell proliferation in CNS and potentially linked to the neurogenesis in various TGF-beta1 related CNS diseases.

But perhaps the highlight of the meeting for me was the plenary lecture given by Eric R. Kandel, the Nobel Laureate from Columbia University, New York, USA, which made me open my eyes to the philosophical angles in science.

Throughout the meeting there were numerous posters, sectioned into different themes. It is obviously impossible to mention all of them, but all were of a considerably high standard and well-prepared. To present my work in such a venue was truly challenging and exciting, and I was fortunate and delighted to have had this opportunity to meet many other people in my field of research, be able to exchange ideas, solve problems, get valuable advice etc. Certainly in my mind, the 5th FENS Forum was a great success.

By Stuart Greenhill, University of Bath

I approached the Vienna FENS Forum with more than a hint of trepidation, being as it was my first really large conference. Would my hard-earned PhD data be ridiculed in a rich variety of languages and accents? Would I disgrace myself in front of the great and good of the neuroscience world? The humble PhD student often carries with him the fear that his work, upon being brought to conference, will be scooped, mangled and plagiarised by some shadowy pseudo-scientist who long ago parted ways with his scruples and has never looked back since - I was no exception.

Having flown into Vienna on the Friday, and realising that we had no workshops booked for Saturday, my lab-mate and I took the opportunity to explore the amazing city, making the most of the glorious weather that persisted throughout the week. Our first real foray into the business of the Forum was attending the opening ceremony on Saturday night, during which we were treated not only to a lecture by Gyorgy Buzsaki, but to a performance from an avant-garde accordion player. This went against our expectations by turning out to be rather good after all.

Sunday morning and the conference really got down to business, with a varied programme of symposia that catered to most tastes, and a fascinating plenary lecture by Tim Bliss on the synaptic basis of memory. More memorable, however, was the Hertie Foundation lecture given by Eric Kandel, on the relation of medical study in Vienna to the Austrian art movement of the early 20th century. Having one of the world's most eminent neuroscientists assure a spellbound audience that "the eroticism was incredible" was an experience few will quickly forget.

The rest of the day, and indeed most of the rest of the conference, was spent sneaking in and out of various symposia (the advantage of such a large conference centre is that there is always room at the back of even the most well-subscribed sessions), and looking around the twice-daily poster sessions. I found this to be the most rewarding aspect of the conference, being able to engage the researchers in conversation about work that may be close (perhaps a little too close) to your own work, or simply a new technique or research avenue that piques your curiosity. My own poster was presented during the Tuesday morning session, admittedly after I had become a little too acquainted with Herr Weissbier and his mates the previous night. However, it seemed to go down rather well, and if any ridiculing was being directed my way then at least it wasn't to my face.

Overall, the 5th FENS Forum was a resounding success - the consensus amongst those who have been before was that this was definitely the best yet. The only criticism I would have is that it may have been nice to have a few symposia given by and targeted to us lesser mortals, the post-grads. I'm certain that it would encourage even more active participation in future conferences. Nevertheless, the Forum would seem to have arrived as a genuine alternative for those who do not want to make the trek to SfN, and can only progress onwards and upwards. I'd like to thank the BNA for their travel grant, which made my attendance possible. Geneva 2008, anyone?

By Lasani Witjetunge, University of Edinburgh

After glancing through the impressive list of guest speakers for FENS 2006, most of whose seminal work I have read in text books as an undergraduate, to actually listen to talks given by them, all at one place, was too good an opportunity to miss out on. So armed with my own poster tube and itinerary, I was quite keen to explore what FENS 2006 and, of course, Vienna itself had to offer. It has to be said that the summer's full blast in Vienna when we arrived was a welcome surprise to the rather damp weather we left behind in Edinburgh.

Amongst the masses of data presented and discussed, my highlights have to be drawn from symposia and lectures held on both Sunday and Monday. These days encompassed some wonderfully charismatic talks on synaptic plasticity both by well-established researchers and also by new researchers that are making waves within the field. To cite a few among many, Bliss (London, UK) started early (at 8.00 am!) summarising his familiar work and concluding with some insightful thoughts on synaptic tagging and plasticity. From a cellular and molecular perspective, Nicoll (San Francisco, USA) presented exciting new data from his lab on the dynamic role of post-synaptic density (PSD) scaffolding proteins in synaptic transmission and evidence for compensatory mechanisms within this family. Sheng (Cambridge, USA) presented data on Shank, another member of the PSD scaffolding protein family, and some fascinating behavioural and spine data to signify a role for Shank in synapse maturation. Lohmann (Munich, Germany) presented wonderful imaging of interactions between

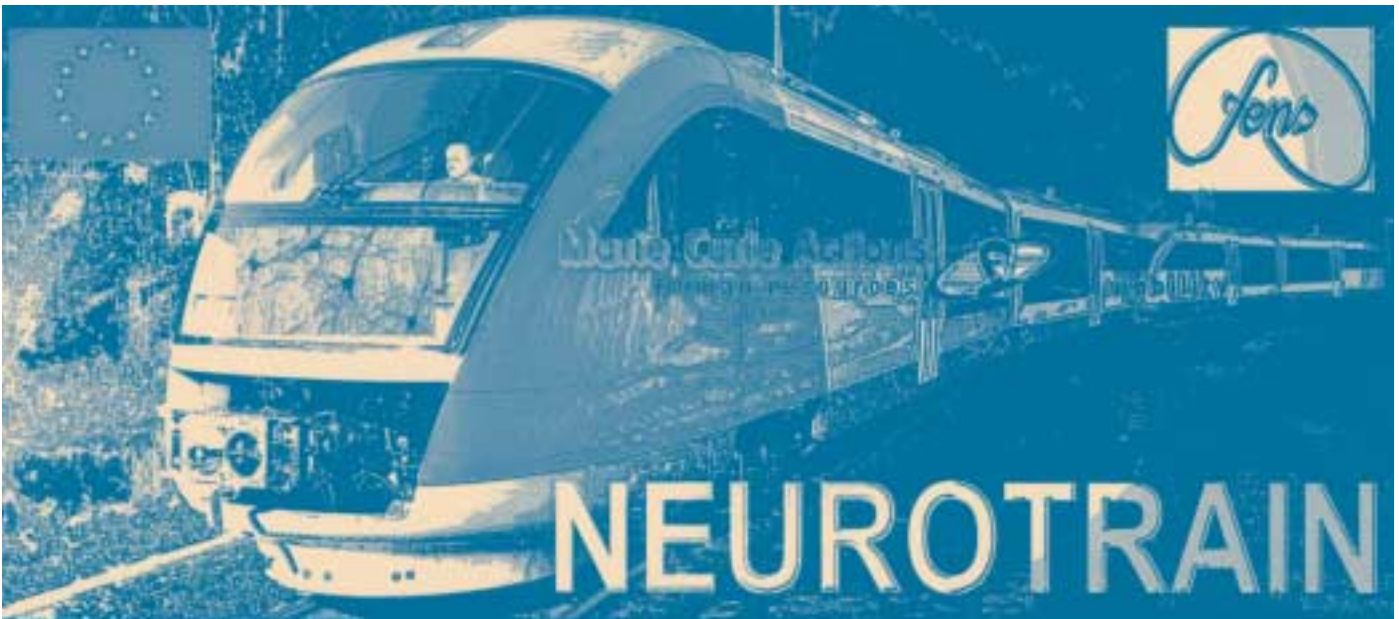
axons and dendrites during synapse formation. The only grievance I do have is that a couple of times there were interesting talks of a specific interest going on simultaneously, which inevitably resulted in missing out on one or the other.

Given the fact that I did have a hard enough time trying to make it to all the posters on my 'must see' list, an attempt to summarise poster sessions would be quite a lengthy one. But suffice to say that it was a thoroughly enjoyable experience, especially because you get the chance to converse with the presenters and ask specific questions on either their experimental paradigm or interpretation of results etc. A problem shared is a problem halved as I found out by conferring with a couple of poster presenters who had experienced similar difficulties in optimising a particular imaging protocol. It was brilliant to exchange ideas to find a solution to our collective problem! Although presenting my poster on Tuesday afternoon was an apprehensive experience, it was great to receive feedback and new ideas. Also, it was extremely rewarding to realise that the data may even be useful for peers outside my immediate research scope. In addition, it was immense fun to finally meet a couple of researchers that I've only conversed with via a trail of e-mails!

I feel that I would commit a grave injustice to my FENS 2006 experience if I do not mention anything about Vienna itself. One of the main problems I encountered was trying to decide where to start as I was spoilt for choice with, unfortunately, not enough time to see all. Kandel (New York, USA) spoke engagingly about how the scientific discoveries at the Vienna school of medicine influenced the infamous characters such as Sigmund Freud and Gustav Klimt during the Ringstrasse era. The talk prompted me to visit the Secession and the Leopold museum and it was a great pleasure to see their expressionist and art nouveau collections. Since we were in Vienna, and 2006 is, after all, the 150th anniversary of Mozart, we were quite determined to make it to a music performance even without being coaxed frequently by performers in full 19th century costume. So we were elated to have an evening out at the Hofburg and to be thoroughly entertained by the Wiener Hofburg orchestra. The amazing baroque architecture, the giant ferris wheel (about 100 years old but could still take you on a ride!), the picturesque sight of horse drawn carriages lined up in front of St. Stephen's Cathedral, the state opera house, the Vienna riding school, the museum quarter, the Karlsplatz station, palaces and the city park are only few of the sights among many in Vienna that make it such an aesthetic city to be in. Also, the city is truly a hub of evening activities with its numerous cafes, restaurants and bars. So it was really no problem to find evening amusement with fellow neuroscientists at the end of a day at the conference.

One of the memorable evenings would definitely have to be at the 'Krieau' trotting race course where the delegates enjoyed betting/cheering on the president's race whilst being entertained by the Vienna brass ensemble after having been reassured that not just the second half but the whole world cup final would be televised at the premises. There is no getting around the truth, although I was quite sceptical when I read 'Vienna... an experience for all your senses' on one of the tourist brochures, I am compelled to say that it is not far from the truth.

On the last day of the conference, at the stroke of midnight, whilst soaking up the spectacular atmosphere in front of the illuminated Vienna City Hall with some fellow postgraduates, I can remember thinking that it was the perfect ending to my rather successful experience at FENS 2006! Finally, it would be remiss of me if I do not thank BNA for awarding me a travel bursary that cheered me up to no end when I was agonising over the travel costs.



Neuroscience Training in Europe

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<http://neurotrain.fens.org>

Training Course

Choosing the right models for research on cognition and its disturbances
Ofir, Portugal, June 20 – 27, 2007

Training Course

Neuronal plasticity: Neuron/glia interaction, protein aggregation and genetics of
neurodegenerative disease
Dubrovnik, Croatia, September 11-16, 2007

Training Course

Neuronal plasticity and neurodegenerative disorders: Dysfunction and treatment
Kitzbühel, Austria, June 22-29, 2008

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Controversial Issues in Neuroscience: Neuroimaging-uses and abuses in the 21st century.

A café-bar discussion at the Dana Centre, 165 Queens Gate, London SW7, 28th June, 2006

If you think that mind-reading is the stuff of science fiction, or the sole domain of Derren Brown and his like, then think again. For there is plenty of evidence that advances in brain imaging techniques might one day reveal our innermost thoughts, and that these revelations might be used in a court of law, for instance, or even by advertisers seeking to refine their products to meet our deepest desires. Orwellian? - indeed, yes. But can it be true? Will a brain scan convict a murderer one day? Will there be registers of potential sex offenders based on predictions of MRI scans? Or will the scanning machine replace 'focus groups' in market research?

Discussing this issue were Paul Matthews, Head of the GSK Imaging Centre, London, Lori Moseley, Oxford, James Hasslacher, a criminal barrister, and James Middlehurst, from MBA Advertising. The event was chaired by Hazel Genn, Professor of Law, UCL.

Not surprisingly, Paul Matthews was cautious. He described the powerful diagnostic potential of the technique in determining, for instance, whether a headache is migraine or brain tumour-derived. He was optimistic that fMRI will refine our understanding of brain function and brain pathology further still, allowing us to visualise changes early on in a disease process and, hence, intervene much more swiftly. But of whether it could truly reveal our 'thoughts', he was sceptical. Finer and finer detail of the tiny physiological changes that accompany our perceptual and thought processes will undoubtedly be revealed in the foreseeable future, he said. But it was surely unlikely that the differences between thinking about your next meal or holiday, or committing a bank robbery could ever be reliably differentiated. Yes, fMRI can indeed reveal the substrate for

thought, but this is a long way from 'mind reading' with any degree of accuracy.

Lori Moseley was more confident and suggested, for instance, that pain is a sensation where imaging is clearly in alignment with experience. And it doesn't have to be direct experience either, for the same pain centres are also activated when empathically watching people in pain too. So, would it ever be possible to manipulate these changes and perhaps train the mind to 'light up' unrelated areas of the brain as well? Preliminary evidence with chronic back pain sufferers strongly suggests this might well be the case.

So, the possibility of 'cheating' the scanner makes it less and less likely that fMRI imaging will ever be admissible in a court of law, then argued James Hasslacher. He was also especially concerned with the reliability of the technique. With the aim of our criminal justice system to convict the guilty and acquit the innocent, fail-proof lie detection is indeed alluring. But the slightest suspicion that offenders might manipulate their thought processes means that brain scanning per se, like the polygraph before it, is increasingly unlikely to deprive someone of their liberty. More certainty is required, he warned, as mistakes are already far too prevalent using forensic tools previously considered to be scientifically sound.

Whereas medicine and law require precision and reliability, conversely the world of commerce makes fewer demands but, arguably, raises more sinister implications. Will we be even more at the mercy of huge multi-nationals, seduced by subliminal images to buy products we neither want nor need? Market research at present uses 'focus groups' and surveys to pry the market, but these techniques are crude and measure nothing at the subconscious level. What if brain scanning could predict buying trends and preferences more accurately, James Middlehurst mused. But surely this begins to push a few ethical boundaries? Not really, James argued, for it would seem a perfectly legitimate advancement in marketing prowess, much like the introduction of computers to the field, say, a couple of decades ago. Indeed, it could make advertising more efficient and targeted, bombarding us less rather than more. At the moment, this is still prohibitively expensive in the UK but, not surprisingly, some larger companies in the US are already indulging. Scary stuff - and clearly not just the stuff that dreams are made of. Big Brother may be alarmingly closer than we think.

By Yvonne Allen
BNA Executive Secretary

Media Training at the Postgraduate Symposium, University of Southampton, 13th September, 2006



Communicating science effectively to a lay audience is indeed a challenge. But a lucky group of postgraduate students was privileged to attend an excellent introductory workshop in these techniques, courtesy of the BNA, and kindly hosted at the University of Southampton's School of Biological Sciences, on 13th September, 2006.

The tutor was Myc Riggulsford (The Walnut Bureau), who has specialised in 'Communication and Issue Management' for many

years after a successful career in journalism and radio presenting. Aply assisted by Elaine Snell, a public relations expert, and Huseyin Mehmet, Reader in Neuroscience, ICL, Myc used a host of activities, ranging from a mock press conference, to writing newspaper articles, to live radio interviews to get his message across. Overridingly, this message was *simplicity*. In other words, however complex the message, convey it in a simple style.

This is far from easy, as the students were soon to find out, as it doesn't mean simply 'dumbing down'. But, as the day concluded, they were amazed to find they could describe their work in a few punchy sentences whereas, previously, they'd needed almost a full page.

In this day and age, when lay summaries are increasingly required by leading grant awarding bodies, where accountability to the public purse is obligatory and the 'sound bite' culture is rife, being trained in this art is increasingly a prerequisite for a successful academic career. Myc Riggulsford is an outstanding pedagogue to whom the students, and Yvonne Allen who invited him to participate, are hugely indebted. However, unfortunately, too few BNA students took advantage of this training course to make the continuance of future BNA postgraduate workshops viable. Hence, the BNA Committee recently decided to suspend these for the time being. They will resume when we feel we can justify the expense from our tight budget. In the meantime, we are indebted to Vincent O'Connor for rescuing this event with a delightful group of Southampton students who unanimously agreed that the loss to student members of the BNA was unquestionably their gain.



Tim Bliss



John Garthwaite, Graham Collingridge and John O'Keefe in the audience.



Tim Bliss FRS retires - reflections on a celebratory symposium

22nd September, 2006, at the National Institute for Medical Research, London, NW7

By Vincent O'Connor, University of Southampton

They travelled from far and wide to pay homage to the man, his three-letter acronym and more. Timothy Vivian Pelham Bliss, or Tim, is to retire after over 40 years service to the field of Neuroscience. Organised with support from The Physiological Society and the British Neuroscience Association (BNA) to celebrate Tim's career, the symposium and following party were a delight indeed.

Tim's pre-eminence among the international neuroscience community reflects his seminal description of the phenomenon of Long Term Potentiation (LTP). However, the assembled hoards, the breadth of contribution from attendees encompassing cleaning staff, former artist-in-residence, and a veritable collective noun of research scientists, reflects affection and esteem that goes beyond just the key scientific contribution. Indeed, the ambience and spirit of the meeting truly reflected the contribution of one of the most British of Neuroscientists. His description of LTP (we assume it naturally exists so will not argue for its discovery) provides an experimental model of a long lasting synaptic plasticity that has captured the imagination and we may yet see the day when such synaptic plasticity is proven to be the very basis of memory. The phenomenon, which has its roots in two seminal papers published over 30 years ago in the *Journal of Physiology*, the first with Terje Lomo and the second with Tony Gardner-Medwin, both of whom happily were present at the celebration, and arose out of Tim's early nomadic journey into the cortical substrates of learning. Yes - it appears he was looking for something akin to what he found! This settled him to his task and he became a staff member in the Neurophysiology Division at the National Institute for Medical Research (NIMR) in Mill Hill.

Safely ensconced in his permanent home, LTP became a driving force for many experiments conducted by Tim and co-workers. The research effort has also extended into the wider community in behavioural, systems, cellular and molecular neuroscience. Perhaps most impressive, even to those who have not been bitten by the LTP bug, is the way in which LTP has been at the heart of numerous research efforts and careers that have tried to integrate investigation across distinct organisational levels of the nervous system. It is through collaboration and the direct effort of his own lab that Tim's efforts have continued to shape the field and this sentiment was broadly reflected in the contributions made to his retirement symposium.

The event took place at Tim's current great passion, the aforementioned NIMR, and was centred on a symposium at which collaborators and friends each gave some perspectives on their current work and how their personal interactions with Tim over the years have affected some of their research. **John O' Keefe** (University College London) set the standard in describing the role of CaMKII in refining

'His description of LTP provides a cellular measure of a long lasting synaptic plasticity that has captured the imagination and may yet be shown to underlie it.'

place fields in the hippocampus while simultaneously regaling us with tales of two seafarers. In this vein, the photographic evidence suggested that, despite his nautical heritage, Tim did well to discover his liking for synaptic plasticity and, as keenly scored by Professor O'Keefe, his penchant for bright shirts and outrageous socks. Before we could "slap him in irons", O'Keefe left the stage to **Graham Collingridge** (University of Bristol) who went on to give us two distinct lessons in metrics. The first involved highlighting the outrageously successful LTP review he had co-authored with Tim in 1993 and the incredible number of citations that this article had received. Based on citations alone it might well be screening soon as a classic adaptation in the BBC's Sunday Night drama spot. In the second, Graham went on to describe the distinct role that sub-types of the NMDA receptor play in particular forms of synaptic scaling, based on his and collaborators' work in Bristol.

Graham was followed by the meeting's furthest-travelled attendee - **Cliff Abraham** (University of Otago, New Zealand). Cliff has been a regular visitor to NIMR and a long-standing contributor to the debate about the existence and role of LTD in the mature nervous system. Cliff has pondered why plasticity can be so variable in slice and *in vivo* preparations and highlighted, with the support of mathematical modelling, why tonic activity or its loss in the slice may confound studies of LTD. Indeed, the supporting photographic homage to Tim on trips to the Southern hemisphere will likely lead to a long queue for sabbatical leave to New Zealand.

After Cliff, we left the hippocampus and delved into a world of pain as viewed by **Steve Hunt** (UCL). Steve touched on the existence of LTP among several other plasticity paradigms that might subservise a role in pain transmission in the spinal cord. Despite his long-standing collaboration with Tim, it was not clear who introduced who to whom. Nevertheless, Steve highlighted the contribution their collaboration had made in pointing towards the role of gene transcription in LTP. Steve reminded us of the charm that was, and is, Bliss before the pain of hunger kicked in. Participants retired to the pavilion for lunch.

The postprandial session opened with **Serge Laroche** (Université Paris Sud, Orsay) taking guard and hitting us with insights into the role of transcription factors in LTP and, by experimental extension, memory and learning. Serge built up from here and highlighted that, at the time of the silver anniversary of his collaboration with Tim, there was plenty of scope to investigate how neuronal remodelling and neurogenesis supports brain plasticity.

Our next speaker, **Marina Lynch** (Trinity College, Dublin), informed us that she had required all her convent training to dodge questions about Saint Paul during the interview she had been subjected to on applying for a post-doctoral position at NIMR. In true 'Bliss'-style, the interview, and thus the selection of Marina as co-worker, had not actually been conducted by Tim. His views on Saint Paul remain unknown. Nevertheless, Marina assured us that she had been delighted with her time with Tim and she illuminated how her investigations of a potential role of arachadonic acid in LTP had led to her current focus on neuroinflammation in the aged brain. Like many, Marina has

MEETING REPORTS

successfully used hippocampal LTP as a robust assay of synaptic transmission and scores perturbation in its induction and maintenance as a measure of dysfunction. Despite Marina's self-deprecation about her own work, it was clear to the audience that it is in the arena of addiction, stress and neurodegenerative biology that LTP will continue to feature in the future.

Post-Marina, we were schooled in the optical imaging of synaptic transmission from a host of Tim's collaborators and one-time co-workers. These talks focused on the development and use of optical methods to decipher the cellular basis of LTP. The first of these was from **Alan Fine** (NIMR/Dalhousie University) who detailed how live and sequential imaging of neuronal structure and function could be used to re-open the long standing debate over the presynaptic component to the expression of LTP, and the degree to which structural re-organisation contributes to synaptic plasticity. Alan's talk also reminded us of Tim's long affiliation with Canada and its Universities, having gained his PhD at McGill. However, most revealing was Alan's assertion that Halifax, the home of his own University, was a town built on Bliss, or at least its ancestral line.

Tea was duly taken before the gathered throng returned to hear from an Ashes-less visitor from the University of Melbourne. **Chris Reid's** talk focussed on optical investigations of that less Blissful form of LTP seen at mossy fibre synapses. Chris described the potential unsilencing of active zones during this form of LTP, which might strike a chord with those searching for unifying theories of synaptic plasticity, wherever it might happen. More importantly, Chris reminded us all of what is clearly a remnant of Tim's halcyon days (i.e. his Mini). Chris's recollection of that first car ride with Tim struck a chord with those who were privileged (or unlucky enough) to accompany the renowned hippocampologist as he "scooted" from the heights of Mill Hill into Town for a social and/or scientific meeting.

Our final speakers were certainly among the best dressed and were much more restrained in a sartorial sense than our retiree. **Antonio Malgaroli** (Universita' Vita-Salute San Raffaele, Milan) described peptide-based reagents that could be used to fluorescently mark

important synaptic compartments with a view to achieving further real time images of synaptic function. The finale came from **Nigel Emptage**, who provided further evidence of Tim's penchant for the life at sea by showing pictures of a wet-suited Professor. Nigel's talk described work honed during his time as a post-doc with Tim and he detailed how variations in the optically recorded pre-synaptic responses could be used to provide further insights into NMDA receptors. The observations discussed by Nigel led him to make the case that NMDA receptors, the post-synaptic guardian of LTP induction, may also be present in the pre-synaptic compartment. Overall, the presentations, scientific content and ambience of contributions made for a most satisfying and educational symposium and one worthy of Tim's contributions to the field.

However, as intimated above, the day was to reflect more than the sum of Tim's scientific contribution. Accordingly, the science was followed by a most cordial social soiree that included Pimm's served by "Boater Clad Dandies", a Jazz band, a Shakespearean play (Melvyn Sherwood Productions) and the acceptance speech from the Belle of the Ball. One would be failing the wider community if one did not mention the outstanding thespian performance of **Mick Errington**, the young Bliss's long-standing able assistant and doyen of *in vivo* LTP. Mick had come out of his own retirement to tread the Mill Hill boards. His performance was only surpassed by the beautiful and vivacious pantomime dame Ophelia, as played by **Abdul Sesay**, who reduced many a watching man to tears. Having received thanks and a gift from **Sir John Skehel**, the Director of NIMR, Tim was left to add his own words to the day. The premise of the speech was that he would speak for longer than his former colleague, the recently retired Errington. Anecdotes were told, points of contention clarified, collaborators and co-workers thanked, mentors homaged, absent friends remembered and loved ones bowed to. It was well received, warmly applauded, its wit, length and grammatical precision noted. The scientific contribution of the speaker is clear. But importantly, as Tim stepped into retirement, the good manners and charm that go with his scientific contribution will be among the longest lasting of memories.

Sam Cooke, NIMR, is gratefully acknowledged for his constructive comments on this article.

BOOKS AND REVIEWS

Vacation Stories - Five Science Fiction Tales

By **Santiago
Ramón y Cajal**

Published by University
of Illinois Press, 2001
ISBN 0-252-07355-X

Translated from the
Spanish by **Laura Otis**



Santiago Ramón y Cajal (1852-1934) won the Nobel Prize for Medicine in 1906 for proving that neurons are independent cells. The previous year, he published these stories (under the pseudonym "Dr. Bacteria"), partly as a warning and partly as a way of promoting his own ideas. These five ingenious tales take a microscopic look at the nature, allure, and danger of scientific curiosity.

Ramón y Cajal waited almost twenty years to publish these stories because he feared they would jeopardise his scientific career. Featuring the up-to-the-minute science of the mid-1880s (microscopy, bacteriology, and hypnosis), they explore the seductive power that comes from scientific knowledge and investigate how the pursuit of such knowledge alternately redeems and ensnares the human race.

Here, revenge is disguised as research and common fraud as moral cleansing. Of Cajal's five protagonists (all male), two are evil manipulators, driven by sexual jealousy and fantasies of wealth and power; one is a pessimistic misanthropist who learns to become involved in life again; and two are enthusiastic optimists, using their knowledge of science and engineering to banish superstition and bring about a prosperous and confident future.

The often quoted section from Cajal's autobiography, regarding synapse formation being likened to the protoplasmic kiss climaxing an epic love story, appears mild when compared with the professor of bacteriology's interpretation of the tracings that he has found after the couplings of his wife and her lover on the laboratory sofa!

Now available for the first time in English, Ramón y Cajal's stories reveal a great deal about human nature and the involvement of ambition and greed that prey on the hapless and thoughtless.

Laura Otis is a professor of English and liberal arts at Emory University, Atlanta, Georgia, USA. She holds an M.A. in neuroscience, a Ph.D. in comparative literature, and is the recipient of a MacArthur "genius" grant.

By Samantha Potts
BNA Conference Office (s.potts@bna.org.uk)

BOOKS AND REVIEWS



AMERICAN MANIA *When More Is Not Enough*

A Cautionary Tale for Britain

With a new preface

PETER WHYBROW

30 June 2006 • £9.99 • Paper • ISBN 0 393 32849 X

To Peter Whybrow, a writer-physician trained in endocrinology and neuropsychiatry, America's turbocharged life-style—with its information saturated, super-size consumer culture—comes as no surprise. But despite an astonishing appetite for life and relative affluence, Whybrow reveals that many Americans feel overworked, overstressed and dissatisfied. Here in **AMERICAN MANIA**, he offers a unique

explanation for this paradox and presents a cautionary tale for Britain.

The US is an unusual social and genetic experiment. As a self-selected nation of acquisitive migrants, Americans are voracious in their pursuit of more. In this age of information and globalisation, the natural constraints of time and distance have been removed and the ambition and restlessness—characteristic of the émigré temperament—have been left unfettered. By nature humans are curiosity-driven, reward-seeking and harm-avoiding creatures and it is these instincts of self-preservation which are critical to the success of any market-based economy. But Whybrow argues that America has become confused by its affluence and has yet to learn how to use it positively. As evolved creatures that first thrived under frugal circumstances, biologically humans are designed to strive for more. However the insatiability of such efforts threaten our physical and social health and promote self-destructive addictions to money, food and technology.

AMERICAN MANIA is illustrated with both cautionary and positive examples. An Asian-American lawyer, ostensibly living the 'American Dream', who is unable to get out of the rat-race, despite losing his family and his health because of it; a global investor, suffering burnout, who manages to turn his life around, using his entrepreneurial skills to create 'self-help' programmes for others; a young farmer whose traditional values and commitment to his family and community give him a sense of fulfilment and happiness. Whybrow also explains how our rapidly advancing knowledge of brain science can help guide human behaviour in constructive ways both individually and collectively. In a provocative neurobiological re-evaluation of Adam Smith's economic theory and his dream of a stable market society, he explores the roots of empathy and social commitment as the natural constraint to the reward-driven behaviour that threatens our happiness.

Whybrow is compassionate and intelligent in his search for a solution. He offers principles through which to instill priority and purpose in our life choices, making time for family and community and reclaiming our own creative space to achieve a measure of personal happiness through individual responsibility.

AMERICAN MANIA is an important book detailing with wisdom and empathy how to overcome these troubling times.

PETER WHYBROW is the Director of UCLA's Jane and Terry Semel Institute of Neuroscience and Human Behavior. Dr Whybrow has lectured extensively throughout Europe and the US and is the author of several previous books including *A Mood Apart: The Thinkers Guide to Emotion and its Disorder*. He was born in Hatfield, Hertfordshire and moved to the US in 1970.



Please send two original copies of any reviews to Najma Pover



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THE ROYAL SOCIETY OF MEDICINE SYMPOSIA

Bench to Bedside: Neuroprotection, regeneration and restoration of function in the nervous system

Date:

Tuesday 12 December 2006

Venue:

The Royal Society of Medicine

This symposium will first address the acute mechanisms that are believed to influence the subacute and later neurobiological responses to the lesion, and then move on to explore natural recovery processes and the potential role of stem cell therapy in restoring different aspects of normal function. Recent progress in stem cell research and its probable clinical applications will be reviewed, together with potential alternative approaches to management of neurodegenerative processes.

The objectives are to provide up-to-date information from leading authorities and to develop a greater understanding of the interactions between natural recovery processes and novel therapeutic interventions now being developed.

The meeting will be of great interest and relevance to Neurologists, Neurosurgeons, Neuropathologists, to all of the professions involved in rehabilitation: Physicians, Occupational Therapists, Physiotherapists, and to Basic Scientists contributing to research in this area.

Topics include:

- Understanding and manipulating CNS damage: the first 72 hours
- Clinical trials in neuroprotection
- Synaptic plasticity and stroke
- Cell therapies for Parkinson's disease
- Cell therapy in multiple sclerosis
- Cell transplantation and spinal cord injury
- Manipulation of growth factors in Parkinson's disease
- Prevention of progression in Alzheimer's disease

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Mechanisms of Iron Induced Neurodegeneration: A Focus on Parkinson's Disease

5th - 6th January, 2007

Sir Alexander Fleming Building
Imperial College, London at South Kensington Campus, London SW7
Further details: Contact pdbank@imperial.ac.uk

Programme, registration forms and poster guidelines:
<http://www.parkinsonstissuebank.org.uk>

The VIIIth EUROPEAN MEETING ON GLIAL CELLS IN HEALTH AND DISEASE 4th to 8th September, 2007, LONDON

The BNA is pleased to announce that it is collaborating with the UK Glial Cell Club to organise the 2007 European Glial Cell meeting at Imperial College, London, located in the heart of the museum and cultural district of the city.

The European Glial Cell meetings have provided an international focus for scientists interested in neuro-glia interactions since they started in 1994. The 2007 London meeting will deal with the biology of glial cells in development, health and disease, in addition to general issues in developmental neurobiology, stem cell biology and regeneration. It will offer:

- nine plenary lectures
- over twenty symposia
- extensive poster sessions

Other important dates:

- Registration and submission of abstracts opens 1st December, 2006.
 - Abstract deadline will be 30th April, 2007
- Booking deadline for low cost accommodation at Imperial College and University College, London, student halls of residence will be 31st July, 2007.

There will also be an exhibition and a full social and partners' programme of events to enjoy. For regular updates and all further information, consult the website:

<http://www.euroglialcell.org>

The European Brain and Behaviour Society Meeting – Trieste, Italy 16-19 September, 2007

www.sissa.it/EBBS2007/

Abstracts will be published in Acta Neurobiol Exp.

ROYAL COLLEGE OF SURGEONS, DUBLIN

Research Technician (Neuroprotection and Neurodegeneration)

We are seeking an experienced technician to coordinate our *in-vivo* studies involving transgenic mouse models of neurodegenerative conditions. The work includes basic colony maintenance, as well as physiological and behavioural assessment of mice.

A keen and flexible graduate in a biological field is required, with good organizational skills. Previous experience working with animal models is essential, and training will be given in behavioural assessment techniques. The lab environment is friendly, flexible and enthusiastic.

Appointment: Full time, post available from October 1st 2006. Interested candidates are invited to send their CV to Dr Dairin Kieran (daikieran@rcsi.ie) and Prof Jochen Prehn (jprehn@rcsi.ie)

Post-doctoral Fellowship, Proteomics of Ischaemic Brain Injury Post-doctoral Fellowship, Molecular Imaging of Neurodegenerative Processes

These Health Research Board-funded Post-doctoral fellowships are available within the RCSI Neuroscience Research Centre and the Department of Physiology. The project will utilize proteomics, protein biochemistry and single cell imaging to investigate the role of protease activation in neuronal cell death signalling in response to cerebral ischaemia / stroke. Candidates should have a background in biochemistry/biophysics and molecular biology, and experience in either proteomics and mass spectrometry or molecular imaging. Previous research in the area of Neuroscience would be an advantage.

Appointment: Full time, posts available from October 1st 2006, for up to 2 or 3 years. Interested candidates are invited to send their CV to Prof Jochen Prehn (jprehn@rcsi.ie).

Research Senior Lecturer / Lecturer Restorative Biology and Gene Delivery

(Experienced Researcher with > 10 years research experience after completion of primary degree; see <http://www.cordis.lu/mariecurie-actions/> for details)

The successful candidate will lead a research group focusing on restorative biology and gene/protein delivery within the Department of Physiology and the RCSI Neuroscience Research Centre. Funding is provided under the EU/Marie Curie ToK "System Proteomics for the Implementation of Neuroscience". Research in the Department includes *in vitro* and *in vivo* models of stroke, epilepsy and ALS and the application of state-of-the-art proteomics, genomics & live cell imaging techniques. Experience in viral vector (e.g. AAV, lentivirus) production and delivery is essential. Additional experience with RNA interference and a background in neuroscience preferred.

Candidates must have worked outside Ireland for previous 5 years.

Appointment: Full time post, initially for two years with the possibility of extension. Competitive salary and allowance package. Interested candidates are invited to submit their CV to

Prof. Jochen Prehn (jprehn@rcsi.ie)

UNIVERSITY OF BRISTOL DEPARTMENT OF PHYSIOLOGY

Funded PhD Studentship (3 year) available starting before October 2007

Neural changes in the vomeronasal system underlying chemosensory learning and mate recognition in mice.

In addition to their main olfactory system, mice possess a vomeronasal system that conveys the effects of pheromones on reproductive, aggressive and social behaviour. This sub-neocortical sensory system has a relatively direct influence on endocrine, autonomic and behavioural hypothalamic output, via the amygdala. Female mice are able to recognise the pheromonal signal of their mate. This simple form of learning is one of the few mammalian examples in which learning can be explained by changes in transmission at identified synapses (between mitral and granule cells in the accessory olfactory bulb). The proposed project seeks to determine how learning-associated changes in inhibitory feedback affect the synchronized oscillatory neural activity in the accessory olfactory bulb and amygdala and the consequences for transmission of chemosensory information by the vomeronasal system.

This studentship is open to UK applicants who have, or expect to obtain a 2:1 or first class honours degree in a relevant subject. Informal enquiries welcome. Interested applicants should submit a CV with names, email addresses and telephone numbers of two referees and a statement of interest (1 page A4) to:

P.Brennan@bristol.ac.uk
Dr Peter Brennan

Department of Physiology, University of Bristol, Medical School Building, University Walk, Bristol BS8 1TD
0117 331 7672

For further information about the Department of Physiology <http://www.bris.ac.uk/Depts/Physiology>

No closing date

2nd UK-Korea Neuroscience Symposium

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11-12 December 2006

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