

International Society for Stem Cell Research

San Francisco, USA, 23-25 June, 2005.

The International Society for Stem Cell Research (ISSCR) held its 3rd annual meeting in San Francisco on June 23 - 25th, 2005. The meeting was opened with an exciting speech by Mr Gavin Newsom, the mayor of San Francisco who has recently signed a lease for the San Francisco headquarters of The California Institute for Regenerative Medicine (CIRM). Mr Robert N Klein, an energetic 60-year-old entrepreneur, who rose to public prominence last year, spearheading the campaign that convinced California's voters to back a plan to create a \$3-billion public fund to advance research on human stem cells, delivered the keynote speech. He spoke of global partnerships and long-term investments in the field of stem cell research, which will save many billions of dollars in the future, and he encouraged complementary and collaborative research.

Many excellent scientific talks and poster sessions showed exciting data and covered the breadth of stem cell biology: from rodent and human stem cells to adult and embryonic stem cells. This conference provided a good opportunity for scientists from all over the globe to interact with industry, lawyers, clinicians, patient groups and the media.

One of the fundamental questions that the researchers are trying to understand is how stem cells self renew and become specialised cells in different tissues. Professor Elaine Fuchs from the Rockefeller University presented work questioning how multipotent stem cells of mammalian skin respond to various external cues to coordinate changes in transcription, cell polarity, adhesion and cytoskeletal dynamics. The work in her group shows that the basement membrane beta1-Integrins provides a



Robert N Klein's commitment to advancing stem cell research originated in his youngest son diagnosis with juvenile diabetes and his mother suffering from Alzheimer's disease.

natural mechanism for asymmetric cell division and stem cell fate determination. Dr. Sean Morrison's group from the University of Michigan has identified cell surface receptors of the SLAM (Signalling Lymphocyte Molecule) family, including CD150, CD244 and CD48 that are differentially expressed among functionally distinct human stem cells. These markers can be used to follow these cells as they differentiate.

The prospective clinical utility of human embryonic stem cells depends on being able to culture the cells in conditions that maintain their pluripotency as well as their genetic and epigenetic stability. Professor Roger Pedersen and colleagues from the University of Cambridge have shown that certain key epigenetic regulators are faithfully maintained in human embryonic stem cells grown in culture, suggesting that their epigenetic status would not be a barrier to their clinical use. Not only does this suggest that human embryonic stem cells are epigenetically quite robust, but it allows us to analyse the epigenetic regulation in early cell types, which is an aspect of human development that was previously difficult to study.

Transplantation of stem cells or their derivatives, and mobilisation of endogenous stem cells in adult brain, have been proposed as future therapies for neurodegenerative disorders such as stroke and Parkinson's disease. Professor Olle Lindvall and colleagues from Lund University in Sweden have shown that lesions in the striatum and cortex caused by stroke lead to neurogenesis in the damaged areas. Stroke increases the number of neural stem cells in the subventricular zone, which then migrate to the damaged striatum, where a few of them differentiate into striatal neurons. This brain repair capacity after stroke was also shown in aged rats. In other experiments neural stem cells were transplanted to the damaged striatum after stroke and resulted in the neural repopulation of the damaged area and in recovery of behaviour, proving that the brain may be repaired by endogenous as well as exogenous neuronal stem cells.

Some scientists, many from outside of the United States, are studying human embryonic stem cells. They are developing better ways to grow these cells in culture and ways to manipulate them to form more specialised cell types. This is important because it is not the undifferentiated embryonic stem cells that might be used for treating patients, but the more specialised cells obtained from them. Today we have a total of 155 stem cell lines, largely created in the U.S. despite President Bush's restrictions on federal funding (although states such as California are acting independently to create better lines). Next in line is Sweden, which has a total of 33 lines. Rising Asian economies such as South Korea, India and Singapore are pouring funds into creating new lines; they have 24, 10 and 7 stem cell lines, respectively. The UK has 3 lines, Spain 2, and finally Iran has 1 line of embryonic stem cells.

A team of scientists at Wake Forest University's Institute for Regenerative medicine are trying to engineer human organs by taking a thumbnail-size biopsy of the patient's own organ, harvesting and nurturing the cells then putting them in a collagen scaffold system - a biodegradable foundation used to encourage stem cell growth. Since the body can integrate only a small amount of tissue without blood vessels, the bioscaffold that has been created is able to preserve the organ's native vascular network and tissue micro-architecture. In this way Dr. Anthony Atala's group has seeded stem cells on the liver matrix that remain viable and progressively organise into a vascularised three-dimensional tissue structure.

Progress in the field of stem cells has been very significant over the past few years, and most attending scientists left with a new level of enthusiasm and new ideas. There are many more fundamental questions to be answered about stem cells and how they can be used for regenerative medicine. Hopefully, these questions will be answered in the future ISSCR meetings: June 29th - July 1st 2006; Toronto, and June 17th-22nd, 2007; Cairns.

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The British Neuropsychiatry Association Annual Meeting

9/10 February 2006



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- Sleep
- Neuropsychiatry/Schizophrenia
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World Congress on Huntington's Disease

Manchester, UK, 10-13 September, 2005.

The World Congress on Huntington's Disease took place over 3 days in Manchester, UK. It was preceded by the 2nd Plenary meeting of the European Huntington's Disease Network (Euro-HD) which is a European-wide organisation aiming to coordinate research efforts across the continent. This meeting opened with a discussion of current issues in HD, in particular targets for intervention, how to predict clinical benefit from preclinical models and possible biomarkers to track disease progression. The thirteen working groups spent a productive day and the final reports were very promising, with a number of groups (cognitive phenotype, behavioural phenotype, motor phenotype, imaging) coming up with quick and useful assessment batteries to be made available to all centres; others emphasised the need to improve guidelines (e.g., quality of life, standard of care) and are currently working on this; others summarised very promising recent research (e.g. biomarkers, genetic modifiers).

The main Congress took place in Manchester's beautiful Midland Hotel. It began with a very interesting summary of the history and genetics of HD by Peter Harper, in which he spoke about both the early pioneers in HD research and the discrimination that those with genetic disorders have faced, and still face. He pointed out that HD has become a model for genetic disorders, from gene mapping and genetic prediction, to collaboration with patient and family associations, notably the International Huntington's Disease Association and the Hereditary Disease Foundation.

The body of the conference then focused on pathogenic mechanisms, genetics, biomarkers, and clinical care, and the main points are summarised below.

The variability in phenotype is reflected in different patterns of cell loss, e.g. those with predominantly motor symptoms show significant cell loss in the motor cortex but not in the cingulate cortex, whilst the reverse is true for patients with predominantly mood symptoms (with the same CAG repeat length). Work is ongoing to look at other brain regions and carry out more prospective studies. The mutation in HD probably leads to multiple parallel pathways with knock-on effects and therefore it could be vital to tackle the mutant protein rather than processes further downstream. Cdk5 can reduce the ability of caspases to cleave Htt which reduces the rate of formation of toxic fragments, but once these fragments start to form they stop Cdk5 from working, so its protection is then reduced. An alternative strategy is to increase clearance of the mHtt, and rapamycin, which increases autophagy, appears to speed up removal of the mHtt exon 1 fragment; mice treated with a rapamycin ester have improved behaviour and reduced aggregation. Further work on reducing cleavage and increasing clearance is needed.

Different phenotypes have different paths of progression, and genetic analysis is important



when searching for treatments as it can provide rules for identifying modifiers of the disease. It has been shown that a TAA repeat on the 3'UTR of the GRIK2 gene accounts for up to 4% of the variance in age of onset; i.e. it has an effect, but only in a small number of people. Correlating shared alleles with age of onset in about 800 DNAs from affected sibling groups has led to the discovery of a pre-onset modifier on chromosome 6; this gene is now being searched for.

Patients of African ancestry HD-like2 is seen in up to 40% of patients with HD symptoms and it is now routinely tested for in diagnostic examination.

The pre-symptomatic testing program is now widely accepted and is a model for other disorders, although uptake is less than expected. There is poor follow-up in those individuals who were most anxious or distressed before testing, and the guilt often felt by at-risk individuals who have a negative test result, as well as the stress or inability to cope felt by partners of those who have a positive test result. These three groups would benefit from further counselling and better follow-up. It was also recommended that sometimes it might be appropriate to delay testing and treat psychiatric disorders in order to prevent an adverse emotional response.

Biomarkers need to be objective and reliable, change predictably over time (preferably linearly and with more than 2% change per year in order to be detected), should predict end points, and should be associated with known pathology mechanisms. Potential biomarkers are MRI, fMRI, PET, MRS, neuropsychology, genome, metabolomic, proteomic. One possible marker is caudate or putamen volume which appears to change linearly over time, to predict onset of motor symptoms, and is related to pathological changes in the striatum. PET imaging has shown reduced adenosine in the caudate, which might be useful in tracking disease progression. 11C-PK11195 PET has shown that there is abnormal microglial activation, associated with neuronal dysfunction (measured by 11C-raclopride PET) in pre-symptomatic patients, and since minocycline inhibits microglial activation it might be useful to trial minocycline in this patient group. Considerations, which need to be taken into account with any biomarker, are its cost, time, invasiveness, site reliability, rate of change, linearity of change, and the disease stage(s) during which change is observed.

The EHDI study on the effect of riluzole in HD showed no effect on any of the outcome measures. A trial of Ethyl-EPA showed some

improvement only in those patients with fewer than 45 CAG repeats, suggesting that EPA is most effective in the high chorea, later age of onset (lower CAG repeat) group.

The conference highlighted the need for multidisciplinary teams to work well together and for hospital and community workers to communicate. Although it seems likely that non-pharmacological treatments such as physiotherapy, occupational therapy, and speech therapy would have much to offer the HD patient, there are very few objective studies of this and more work needs to be done to assess systematically what is needed in HD and how it works. The needs of the patient change as the disease progresses. Several speakers stressed the importance of making the patient and family aware of what was going to happen so that they could plan ahead, for example making advanced directives whilst still capable, discussing what care they would like, talking about the use of PEG. There are also clearly different standards of care depending on whether a patient goes to a specialist HD home, or a general long-term care facility and more resources and/or education of carers could improve this.

The conference drew to a close with talks about possible new treatments. A number of drugs have been tested for their ability to manage the motor symptoms of the disease but few have had useful effects. There are far fewer good quality studies focusing on behavioural and cognitive symptoms. Future studies are looking at effects of CoQ10, creatine, phenylbutyrate, minocycline, and it may be that combination therapies are more effective.

A mechanism to target the HD gene is RNA interference (RNAi). RNAi is a natural phenomenon that stops messenger RNA from making proteins. It is mediated by small (~20 nucleotide) non-coding RNAs which are complementary to the target gene. It's been shown that RNAi delivered by virus to cells with mutant Huntingtin can reduce aggregates, and in the HD-N171-82Q mouse RNAi reduces protein expression in vivo and improves cognitive and behavioural measures. This technique needs to be investigated in primate models, and also delivery methods, targets within the brain, and measures of efficacy in humans need to be discussed, but it appears to be well tolerated in the rodent models and to silence the gene for a significant period of time.

Striatal grafts of foetal tissue have been successful in animals and a number of human trials are underway. In France a safety and efficacy trial in 5 patients found that hypermetabolism correlated with regions of striatal grafts in 3 patients who stabilised on a variety of measures; a 60-patient multi-centre trial is now planned. Using a different technique grafts were less successful on 7 late stage patients in the States; although 1 post-mortem showed good survival of the graft, there were no changes in neuropsychology or PET 12 months post-operatively. The Nest-UK HD study had a successful safety trial with 4 patients undergoing unilateral

al grafts without surgical complication. An efficacy trial, with 10 patients having bilateral grafts over 2 years, is currently on hold pending the EU Tissue Directive, but should be running again soon. A number of issues are still being debated, such as methods, where grafts are best

placed, patient selection and assessment, as well as what tissue to use, for example xenografts or stem cells rather than foetal tissue.

The conference ended with a succinct summary of the 3 days' talks by Anne Young, and the feeling, as she put it, that "the future is now"; we

can look forward to news of much more progress, particularly in the advance of possible therapies, when we meet in Dresden in 2007.

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Primary Care Neurology Congress

Manchester, UK, 29 September, 2005.

The unifying theme of the recent PCNS Congress in Manchester was that many neurological conditions presently dealt with in secondary care can potentially be treated in primary care. Appropriately trained GPs, especially the new GPs with Special Interests (GPSI), working together with multidisciplinary teams tailored to the individual conditions, can manage most patients, leaving secondary care to deal with the more severe or atypical cases. In this way, waiting lists can be cut and more patient-centred services delivered. This type of medical service fits closely with the new GMS Contract and with the recently published National Service Frameworks (NSF) from the Department of Health (DoH).

Dr Chris Clough from King's College Hospital, London reviewed the recent NSF for Long Term Conditions. This was published in April 2005 in response to patient concerns about delays in access to care and poor and/or inconsistent services. The NSF has 11 quality requirements applying to services, patients, carers and the community sector, with an overall theme of the patient being able to see "the right person at the right time at the right place". Key requirements include prompt recognition, diagnosis and treatment, appropriate emergency and acute management and early and specialist rehabilitation. To deliver all this, the right expertise, access and skills have to be in place, and multidisciplinary teams used for the delivery of the services. Lessons that need to be applied include examining patient pathways, the use of appropriate professionals, who may need to acquire new skills, and working in teams across primary and secondary care. The way forward is to bring together all stake holders in PCT and regional networks and develop training schemes with common stems to develop competencies for all appropriate professionals.

Dr Andrew Hansen from Bradford reviewed the case mix of neurological symptoms seen in primary care. Many patients with neurological symptoms do not have any serious or neurological disease, especially those with headache, dizziness, tremor, blackouts and sensory disturbances. Most of these patients can in fact be managed in primary care. He described the experience in Bradford, where new epilepsy and community neurology services run by GPSIs have resulted in reduced waiting times for patients and freed up appointments with consultants.

Dr Chris Manning from Primary Care Mental Health and Education (primhe) discussed methods to manage multiple morbidi-

ties. Forty percent of patients attending their GP have mental health problems, which often manifest as physical symptoms, especially pain. Chronic pain is linked to depression and the risk of suicide. Dr Manning suggests that we "dump Descartes and mind-body splitting" and treat patients holistically. The first step is a 'therapeutic interview', which can elicit reliable data and help to define the management plan.

Dr Susan Mitchell from Mid-Surrey and Ms Lynda Finn from the MS Society described the Neuro-Pact service that has been developed in Surrey to improve services to patients with multiple sclerosis (MS). These patients have huge needs for care from neurologists, GPs, nurses, allied health professionals (e.g. physiotherapists, occupational therapists and psychologists) and social services. Neuro-Pact brings together all these professionals bringing their knowledge and special skills to bear in integrated community-based services. Clinics run by the Neuro-PACT network, GPs and specialist nurses all aim to support the patient and their family at home. The support of the MS Society and other support groups, together with a recently-developed Expert Patient Programme (EPP) are invaluable in this.

Ms Mary Baker of the European Parkinson's Disease Association chaired a question and answer session with a Parkinson's disease patient and carer. Both emphasised the key roles of specialist nurses, speech therapists and community support workers and that it was essential to listen to the needs of patients and their carers. In addition Ms Baker emphasised that "GPs need to be supported in their roles by secondary and tertiary care specialists".

Dr Andrew Dowson from the Migraine in Primary Care Advisors (MIPCA) reviewed current evidence-based guidelines for headache in the UK. Guidance is published covering screening, diagnosis, management and follow up, and a primary care headache team is advocated. In general, tension-type headache and uncomplicated migraine can be managed in everyday primary care, more complicated migraine and chronic headaches by GPSIs, with referral restricted to the rarer headache subtypes. All these initiatives, which were published several years ago, dovetail with current GMS and NSF recommendations.

Mr Stephen Duckworth from Kent and Dr Helen Hosker from Manchester reviewed management of stroke patients in primary care following the introduction of the new GMS Contract and the NSF for older people. These initiatives have had a large influence on primary care stroke management and have resulted in

protocols and audits being developed. Looking to the future, it is desirable to develop an integrated stroke service, clinical trials in primary care and trained professionals to meet needs. Much networking between all the stakeholders is required to make this happen.

Dr Yvonne Hart from Oxford and Dr Greg Rogers from Kent outlined a multidisciplinary approach to epilepsy management. Epilepsy is a highly impactful condition and the aim of therapy should be to make the patient seizure free. A shared-care strategy is implemented, with the GP conducting diagnosis and long term monitoring while the specialist conducts diagnosis, investigations, the management plan and re-evaluation when problems present. Other services are introduced as required. A network of GPSIs has been set up to manage epilepsy in their locality and form a resource to epilepsy colleagues. Commissioning is based in the PCT and forms a locally enhanced service. In the future it is envisaged that primary care will play this integral part in epilepsy services across the country.

Dr Steve Iliffe from the Royal Free Hospital, London presented a joint initiative with the Alzheimer's Society to improve the ability of GPs to manage dementia in conjunction with voluntary services. Currently there is little experience in primary care for managing this complex condition. A CD-ROM based educational project has been set up to rectify this situation, involving small group learning and computer decision support. The curriculum covers diagnosis, investigations, medications, communicating with the patient and carer, and sources of help. A randomised study showed that this education increased GPs' detection rate and knowledge of dementia. The programme is now being rolled out throughout England and Wales, and research networks are being set up.

In conclusion, many of the most common and severe neurological conditions can be managed in primary care by multidisciplinary teams coordinated by GPSIs and utilising the experience of voluntary agencies. Locality-based schemes have proved successful and are likely to be rolled out nationwide. Dr Dowson stated that "The way forward is different professions with special interests". The end result is that most patients are managed rapidly and appropriately in their own localities while secondary care services are reserved for more severe and/or atypical cases. In turn, access to secondary care is faster than has been the case previously due to a reduction in the size of waiting lists.

Pete Blakeborough, Freelance Medical Writer.

European Federation of Neurological Societies

Athens, Greece, 17-20 September, 2005.

Athens: the “cradle of civilisation”; the “birthplace of democracy”, one early success of which was the judicial murder of one of its citizens, Socrates, memorialised (by Plato) for the penetration of his intellect despite his protestations of ignorance. Would his modern day successors find enlightenment or confusion at the 9th Congress of the EFNS? Amongst 9 plenaries, 13 short communications sessions, 18 focused workshops, > 1000 posters (some strangely familiar from ENS 2005!), 4 special sessions, and drug company sponsored satellite symposia, spread over 3 days and 5 floors of the splendid Megaron Athens International Conference Centre, the authors present selected highlights, reflecting, at least in part, their inability to be in more than one place at one time.

Parkinson's disease (PD) and other movement disorders

In a session entitled “Mysteries of PD” we learned that involvement of the dorsal nucleus of the vagus may be implicated in swallowing problems and constipation and age-related cell loss from the ventral tier of the substantia nigra may make normal elderly people appear stooped and have difficulty getting out of a chair. John Hardy (NIH, USA), the only speaker dressed in red shorts, gave an excellent talk drawing together some aspects of the molecular bases of different dementing illnesses and describing how in α -synuclein inherited diseases, the age of onset inversely correlates with the dose of genetic abnormality such that 4 copies leads to a disease onset at age 30 and 3 copies at onset age about 45-50. With relatively small changes having such a profound affect, it is quite possible that smaller changes due to subtle changes in regulators could be implicated in disease in sporadic cases. In the follow-on session, the greatest mystery of all seemed to be that whatever new drug is trialled in PD seems to give 1 hour extra on-time per day, rasagiline or rotigotine. We keenly await a combination miracle pill of 24 new medications to give continuous on.

Amyotrophic lateral sclerosis/Motor neurone disease (ALS/MND)

A plenary devoted to ALS/MND, the first of its kind at a European neurological meeting according to one speaker, included an update on genetics, wherein Andersen (Umea, Sweden) contradicted textbook teaching that 5-10% of MND cases are familial. He stated that the correct figure was at least 20% when a careful family history was taken (cases may be autosomal recessive as well as dominant, or there may be incomplete penetrance), including the delicate topic of non-paternity (estimated to be 5%, although the Liverpool press recently reported a 50% rate in a local commercial clinic!). The heterogeneity of SOD1 mutations, 119 described to date, mostly missense, was presented. Ludolph (Ulm, Germany) was sober about therapeutic prospects, enumerating the difficulties in extrapolating from mouse models to man. Part of the problem is that the patho-



genesis of ALS remains unclear; double transgenic mice carrying SOD1 and dynein mutations, both of which may individually produce an ALS/MND phenotype, seem functionally better than animals carrying a single mutation.

Myasthenia gravis

In a sponsored session devoted to myasthenia gravis, the pathology and treatment were reviewed. The evidence base for thymectomy remains tenuous, although current common practice of offering the treatment to those under 40 was endorsed. Immunosuppressive agents were reviewed and mycophenolate will probably emerge as a useful treatment with more trial evidence to support its use than some of the things we currently use – methotrexate, for example.

Alzheimer's disease (AD) and other dementias

The EFNS guidelines on the diagnosis and management of AD and other dementias (Eur J Neurol 2000;7:133-44) are currently being updated. A focused workshop presented the provisional revision. Significant changes included the relegation of mandatory testing for vitamin B12 and syphilis, and greater emphasis on MRI (although no specific protocol was given) and use of CSF biomarkers ($A\beta$, tau). The audience raised few objections to the projected changes, although one wonders whether such a forum is the best way to seek constructive criticism. It would be interesting to know how widely the original guidelines were adopted or used, since in this age of “guideline fatigue” there is a risk that this may be another worthy yet largely ignored document. Moreover, because the guidelines are (deliberately?) not explicit or operationalised, terms such as “atypical presentation”, “rapid progression”, and “appropriate counselling” remain open to individual interpretation.

Sleep-related disorders

In a plenary devoted to sleep apnoea syndromes, Santamaria (Barcelona, Spain) pointed out that these may parallel neurological disorders (stroke, dementia, PD), be secondary to neurological disease (multiple system atrophy, neuromuscular disease, syringobulbia; ?PD), or induce neurological disease (stroke). Sleep apnoea is thus both a risk factor for and a consequence of stroke; whether these are indepen-

dent is not clear. Bassetti (Zurich, Switzerland) reviewed studies of sleep apnoea prevalence in acute and subacute stroke and TIA, with variable results but around 50% in each case. In neurodegenerative disease, there is similar uncertainty, with figures around 10-20% in AD and PD. In MSA, snoring needs to be differentiated from stridor. Both may be treated with CPAP, although this does not influence REM sleep behaviour disorder which also occurs in MSA (and PD dementia).

Stroke

A plenary devoted to the vexed issue of vascular dementia/vascular cognitive impairment (VaD/VCI) was prefaced by the familiar call to action from Hachinski (London, Canada). From the therapeutic standpoint, Erkinjuntti (Helsinki, Finland) showed that there is clearly a cholinergic deficit in VaD/VCI and reviewed the various studies of cholinesterase inhibitors in this situation, finishing with a plea to “start early” (just as UK regulators may be ensuring that we don't start at all). Early therapy is key to the efficacy of thrombolysis in acute stroke, but how may this be organised in rural areas, where distance precludes rapid transfer to teaching/university hospitals? Vatankhah (Regensburg, Germany) reported a “teletrombolysis” service in Bavaria, showing its feasibility, safety and good outcomes. Neuroprotection is undergoing a renaissance (see Geoffrey Donnan article in this issue of ACNR), with trialists having learned from thrombolysis trials how critical the timing of drug administration may be. The free-radical scavenger NXY-059 has shown early promise in a European trial (SAINT 1) and is now being tried across the world (SAINT 2).

Epilepsy

On a subjective judgement, levetiracetam took the honours for most posters. A drug company symposium addressed the real, not simply potential, problems of generic prescribing.

Multiple sclerosis

Unlike the ENS meeting, MS has a rather recessed position at EFNS, perhaps related to the temporal proximity of the ECTRIMS meeting.

Headache

This topic, the Skoda of neurology, continues to emerge from the gloom to the limelight. In an excellent session we learned that transcranial magnetic stimulation (TMS) has suggested altered thalamic sensitivity in patients suffering migraine with aura. Transformed migraine is a common problem, often analgesia related, but carries a disappointing prognosis with 60% relapse at one year; the speaker argued for early and aggressive treatment with prophylactic agents. Patients with this problem may have reduced metabolic activity in the orbitofrontal cortex, which in other patient groups is associated with compulsive and addictive behaviours. There are now three genes known to be associated with familial hemiplegic migraine and all

affect ion channels. So, is sporadic migraine an ion channel disorder? Evidence is being sought but at the moment remains speculative. For those treating the genetic condition, this speaker recommended flunarizine. Peter Goadsby remains one of the UK's most successful imports. His cocktail of science, clinical observation and pragmatism, topped with delicious irony in describing the trigeminal autonomic cephalalgias, was a highlight of the meeting. I don't see much SUNCT but when I do I shall now know to give lamotrigine – not much use for most other headaches. Why do all these related conditions respond to such different treatments?

Eye movements

Unusually, a session was devoted to eye movements, which are such an accessible model of the nervous system that their science is fascinating. Saccades were described by John Leigh, a true master of the topic (an article by him will be appearing in a future issue of ACNR as part of the Neuroscience of Vision series). He linked

the science of the excitatory burst neurones and inhibitory omnipause neurones to the patterns of eye movements seen in clinical conditions. Other excellent presentations in this meeting concerned eye movement abnormalities in basal ganglia disorders, the vestibulo-ocular reflex (VOR), including useful demonstration of how best to test it clinically. The question is, though it all made perfect sense at the time – how long will we remember it?

“Neurology and Art” and “History of Neurology”

The history special session focused, appropriately, on Ancient Greek medicine. Neurology of art examined neurological disorders in artists, many included in the book edited by Bogousslavsky and Boller, reviewed in this issue of ACNR. Ravel's Bolero cropped up twice: to accompany a pathography of Ravel who may have developed Pick's disease; and as the stimulus for an artwork completed by a patient with frontotemporal dementia reported by Bruce

Miller (San Francisco, USA).

The social event of the meeting was a ballet of “Zorba the Greek” performed by the National Ballet of the Budapest Opera and the Greek Philharmonic Orchestra in the Odeion of Herodes Atticus, an amphitheatre added by the Romans to the base of the Acropolis in about 167 AD. In the story by Nikos Kazantzakis, made famous in film by Anthony Quinn, Zorba grasps life with a passion verging on Hedonism that infects those he comes into contact with. The music by Mikis Theodorakis is melodic and enjoyable and ended with 4 encores of the classic theme played on the Santuri. The dancing and singing were first class and the atmosphere of history on a warm night with the full moon shining onto the stage was unbeatable.

Andrew J Larner, Walton Centre for Neurology and Neurosurgery, Liverpool and Mark Manford, Addenbrooke's Hospital, Cambridge.

CONFERENCE PREVIEW: World Parkinson Congress

22-26 February, 2006; Washington DC, USA.

The first-ever World Parkinson Congress is scheduled to be held from February 22-26, 2006 in Washington, DC. This unique gathering brings together leading researchers, clinicians, allied health professionals (nurses, physical and occupational therapists, speech pathologists, art or dance therapists, nutritionists, dieticians, counsellors, social workers), caregivers and people with Parkinson's disease.

The Congress will feature an extensive programme of plenary sessions, symposia and workshops with presentations and discussions devoted to prevention, diagnosis, treatment and the future of Parkinson's disease research. Workshops will address everything from basic scientific research and translational and clinical science to models of care delivery and national and international approaches to curing Parkinson's. The Congress will also provide opportunities to complete coursework for CME credit.

The Programme Committee for the Congress has organised a varied and extensive programme; there is something of interest for each attendee. The programme has nearly 300 facul-



ty who will address Parkinson-related issues in one of three categories: Science; Care Delivery and Quality-of-Life; and Policy.

Science sessions are designed to offer in-depth presentations focused on specific cutting-edge research in the field of Parkinson's disease. The sessions are geared at physicians, scientists, researchers and those interested in understanding the basic and clinical research conducted to better understand the many facets of PD.

Care Delivery and Quality-of-Life sessions are designed to offer concentrated sessions that focus on the best care delivery practices as well as other quality-of-life topics. Areas covered include speech pathology, physical therapy, occupational therapy, mental health, social work, nutrition, and neuroscience nursing. These sessions will also include topics that look at the therapeutic value of art and creativity and PD, the power of optimism and hope when

dealing with Parkinson's disease and the improvement in quality-of-life when exercise is included in the daily routines of those living with the disease.

Policy sessions are designed to highlight domestic and international policy surrounding Parkinson's disease, chronic diseases for our ageing society and advocacy training. Issues range from funding for research in the neurosciences to current stem cell policy. These sessions will appeal to anyone involved in policy making and to those who are interested in better understanding how policy affects research and work in the area of Parkinson's.

The ultimate goal of the Congress is to advance an all-encompassing approach to the treatment of Parkinson's by bringing together the full spectrum of those who serve the Parkinson's community and those who live with the disease.

A preliminary programme, list of speakers, exhibit details, hotel and registration information are available at www.worldpdcongress.org. The deadline for discounted registration is January 16, 2006.

Neurobehavioral Toxicology
Neurological and Neuropsychological Perspectives

Edited by **James W. Albers** and **Stanley Berent**,
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