

Moving Along

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What's New in Imaging?

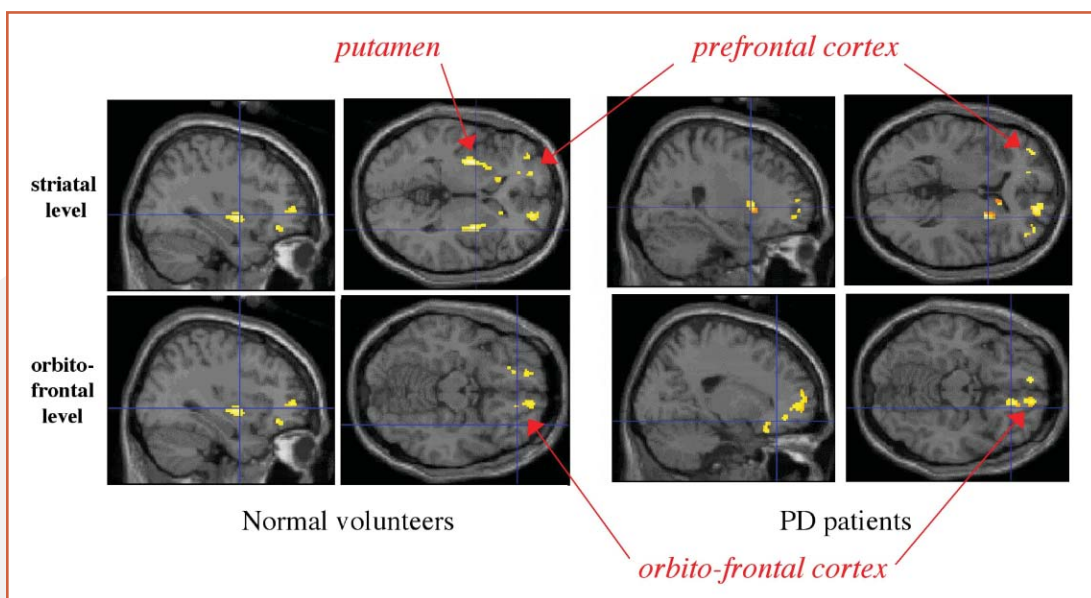
— Paola Piccini and David J. Brooks, Division of Neuroscience and MRC Clinical Sciences Centre, Hammersmith Hospital, Imperial College London, London, United Kingdom

Garnett *et al*, in 1983 ⁽¹⁾, first reported the use of ¹⁸F-dopa positron emission tomography (PET) to visualize the nigrostriatal dopaminergic system *in vivo*. In an elegant description, they addressed many of the practical issues of ¹⁸F-dopa PET scanning and explained why they believed that the distribution of fluorine-18 in the tomographic slices reflected the distribution of the dopaminergic pathways. Since then functional imaging for the study of Movement Disorders has come a long way as new tracers for many of the brain neurotransmitters systems and new methods of analysis have been acquired.

However, 20 years on ¹⁸F-dopa PET is still one of the most used research tools to evaluate new

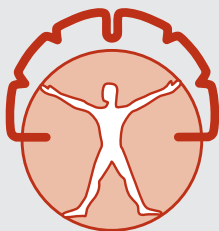
therapy strategy in PD and has been made more powerful by the application of statistical parametric mapping to localize changes in dopamine storage capacity at a voxel level. Gill and co-workers recently used this method to assess *in vivo* the neurorestorative effects of GDNF in PD patients ⁽²⁾. GDNF is a potent neurotrophic factor known to prevent the degeneration of dopamine neurons in rodent and primate models of PD. In their study, ⁽²⁾ GDNF was directly infused, via indwelling catheters, into the putamen of five patients with advanced PD for over a year. All the patients showed significant sustained improvements in a wide range of clinical scales including off medication motor

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Sagittal and transaxial projections of statistical parametric maps.

The yellow-orange areas represent areas of significant decreases in ¹¹C-raclopride BP after methamphetamine in 6 normal volunteers and in 6 patients with PD. Note that although in PD patients there is a reduction in dopamine release in striatum (particularly putamen), the release in prefrontal areas is similar in both groups. ⁽⁵⁾



This Fall issue of *Moving Along*, the official newsletter of The *Movement Disorder Society*, brings you a full spectrum of news, opinions and controversies that we hope will continue to motivate you. This issue's cover page led by Drs. Piccini and Brooks from the Hammersmith Hospital, London, UK, provides a state-of-the-art review on where we are and where the field of neuroimaging is moving. They show that modern functional imaging techniques not only provide insight into the disease process in Parkinson's disease (PD), but are also increasingly useful in clinical practice, e.g. for the early differentiation of parkinsonian syndromes and evaluation of novel therapeutic strategies.



Irene Litvan, MD



Thomas Gasser, MD

This issue also provides up-to-date views on the uninterrupted controversy of the timing of starting levodopa therapy in PD, which is thoughtfully discussed by two scholars in the field, Dr. Jankovic from Baylor College of Medicine, Texas, US, and Dr. Rajput, from the Saskatchewan Centre for Parkinson's Disease and Movement Disorders, Saskatoon, Canada. Both make valuable points that will hopefully help you decide which is the best approach to be used in your practice.

Dr. Boer from the Netherlands Institute for Brain Research, Amsterdam, who is in charge of ethical issues at the "Network of European CNS Transplantation And Restoration" (NECTAR) provides a thorough review of the "Ethics and Politics of Embryonic and Fetal Tissue Transplants". As he points out, curtailing this type of research may eliminate the possibility of developing efficacious therapies for poorly treatable Movement Disorder patients. The uncertain future of this type of research leads us to ask our readership if MDS should have a more active role in promoting more research funds in this area. We look forward to receiving your comments. We would like *Moving Along* to be not only a good way to disseminate knowledge and expertise among the society membership, but to also spark controversy and action. We encourage you to send your comments on this and other issues so we can all contribute to making *Moving Along* a true newsletter for MDS.

Finally, for those searching for a new career in Movement Disorders, don't forget to check the growing section of job opportunities included in every issue.

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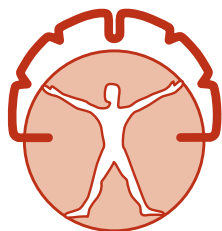
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**NEWLY ADDED SECTION
 LETTERS TO THE EDITORS
 Your Comments and Questions
 Are Always Welcome**

Editorial Policy

As part of its democratic commitment, MDS welcomes the input of all its members about the features and articles that appear in this newsletter. Have a comment or question? Each issue will include your responses in the "Letters to the Editor" section. All materials submitted become the property of MDS.

Address your communications to:

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Movement Disorders, The *Movement Disorder Society's* (MDS) premier publication, continues to be the leading peer-reviewed journal in the field of Movement Disorders. Over the past couple of years, *Movement Disorders*, has substantially increased its impact factor to currently rank within the top 25 clinical neurological journals.

With the beginning of the 2003 calendar year, MDS made a giant leap forward in moving *Movement Disorders* to a monthly publication schedule. With this change, we hope to bring a greater awareness of Movement Disorders, as well as provide more up-to-date information to the neurological community.



Anthony Lang, MD, FRCP

At the close of this year, Drs. Anthony Lang and Andrew Lees will hand over *Movement Disorders'* chief editorial reigns. On behalf of the entire Society, I would like to commend and thank Drs. Lang and Lees for their hard work, expertise, and dedication as Co-Editors-In-Chief of our journal. Under their tenure, the journal has reached the level of excellence the entire neurological community enjoys today.

After a careful selection process by the MDS leadership, Drs. Günther Deuschl and Christopher Goetz agreed to take on the challenge of managing the MDS journal as the new Co-Editors-In-Chief, beginning in January 2004. We are delighted that they have accepted and are already embracing their new roles with great enthusiasm.



Andrew Lees, MD, FRCP

Drs. Deuschl and Goetz will begin their tenure in an exciting time in the Society's history, as we move into an annual Congress format and enhance our journal with electronic article submission. With their combined vision and goals for the journal, the success of the *Movement Disorders* is sure to continue for many years to come.

The capability to accept electronic article submissions for *Movement Disorders* is a long awaited feature. This is yet another step forward in making the voice of MDS strong, and to increase our already broad reach in the field. We anticipate that this exciting new system will be in place and fully operational in late 2003. Stay tuned for further details as

this project comes to fruition.

Movement Disorders is stronger than ever and will continue to thrive and serve members and the entire Movement Disorders field. Thank you for your continued support and contributions.



Günther Deuschl, MD



Christopher Goetz, MD

C. Warren Olanow
MDS President 2003-2004

CALL FOR APPLICATIONS FOR MDS MEETING GRANTS

The *Movement Disorder Society* is now accepting applications from meeting organizers who wish to receive MDS grants for scientific meetings in 2005.

Applications are available on the MDS Web site at www.movementdisorders.org or from the International Secretariat by contacting Caley Kleczka, Executive Director, at +1 414-276-2145 or by e-mail at ckleczka@movementdisorders.org.

The deadline for applications for 2005 meetings is March 15, 2004.

Grant requests should be e-mailed to ckleczka@movementdisorders.org or faxed to +1 414-276-3349.

All completed applications will be referred to the MDS Officers who will make recommendations to the International Executive Committee (IEC).

Advantages of Delaying Introduction of Levodopa

— Joseph Jankovic, MD, Professor of Neurology, Director of Parkinson's Disease Center and Movement Disorders Clinic, Department of Neurology, Baylor College of Medicine, Houston, Texas, USA

Preventing the onset of levodopa-related complications is probably the main reason why most parkinsonologists favor delaying levodopa therapy until parkinsonian symptoms begin to interfere with patients' social and occupational functioning and begin to compromise patients' quality of life. The other reason traditionally evoked for this practice has been the theoretical concern that levodopa is neurotoxic. The support for this latter statement is, however, waning since there is only *in vitro* but no *in vivo* evidence that levodopa is neurotoxic. Furthermore, the recently completed, yet unpublished, ELLDOPA trial, provides further evidence that levodopa does not produce clinically observable deterioration in parkinsonian state. In this study, 361 patients with no prior dopaminergic treatment for their Parkinson's disease (PD) were randomized to receive placebo or levodopa at 150, 300, or 600 mg/day for 40 weeks, followed by a 2-week washout (extended to 4 weeks for a subset of patients). The post-washout motor condition, as assessed by UPDRS, did not significantly deteriorate even in the high-dose group. While the percent decline of striatal beta-CIT uptake, measured by SPECT, was significantly more pronounced in the levodopa groups than in the placebo group, the interpretation may be confounded by levodopa's pharmacodynamic effect on the dopamine transporter rather than causing damaging effects on the dopaminergic neurons.

Although "levodopa neurotoxicity" is no longer a valid reason for delaying levodopa treatment, the desire to postpone the onset of levodopa-related complications makes this strategy not only an intuitively good approach, but is regarded by many as prudent clinical practice, if not the standard of care. While levodopa-related motor complications can be initially managed by various pharmacological manipulations, many patients, particularly those with young-onset PD, become disabled by the fluctuations and dyskinesias, and as a result require potentially risky and costly surgical therapy, such as deep brain stimulation.

In order to delay or prevent levodopa-induced complications, many parkinsonologists recommend using dopamine agonists and other strategies as the initial or early form of dopaminergic therapy. Several studies have demonstrated that when used early in the course of treatment, dopamine agonists delay the development of dyskinesias and possibly motor fluctuations. Although dopamine agonists provide only modest improvement in parkinsonian symptoms and lower the UPDRS score significantly less than levodopa, the difference is not clinically meaningful. Indeed, the improvement may be sufficient to

delay the introduction of levodopa by several months or years. Furthermore, dopamine agonists when used alone (monotherapy) produce little or no clinical fluctuations and dyskinesias. Some ammunition to the opponents of levodopa delaying strategy came recently from the four-year follow-up of the levodopa versus pramipexole (CALM-PD) study showing that pramipexole treatment was associated with a higher risk of freezing, somnolence, edema, and cellulitis, and there was no difference in quality of life between patients initially treated with levodopa or pramipexole [Parkinson Study Group, 2002]. Nevertheless, the study showed that more subjects initially assigned to levodopa reached the primary endpoint (first occurrence of levodopa-related motor complication) than those assigned to pramipexole: 74% vs 52% ($p < 0.0001$).

To the extent that levodopa produces motor complications, delaying levodopa therapy and levodopa sparing strategies is a reasonable and desirable approach, supported by a large body of experimental evidence. In contrast to levodopa, dopamine agonists do not induce dyskinesias in primates rendered parkinsonian by MPTP, but if the animals have been previously exposed to even a single dose of levodopa the risk of subsequent dyskinesia is markedly increased. This finding that levodopa primes for the development of dyskinesia provides additional rationale for delaying levodopa therapy. Furthermore, there is a growing support from various clinical [Simpkins and Jankovic, 2003] and experimental [Le and Jankovic, 2001] studies for the notion that dopamine agonists not only provide meaningful symptomatic benefit, but also exert a neuroprotective or disease modifying effects that extend beyond their levodopa-sparing action. This is supported by various imaging studies indicating relatively slower loss of dopamine terminal function in patients treated initially with dopamine agonists than those initially treated with

"Preventing the onset of levodopa-related complications is probably the main reason why most parkinsonologists favor delaying levodopa therapy..."

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Long Term Effects of Early Levodopa Therapy

— Ali H. Rajput, MD, FRCPC, Director, Saskatchewan Centre for Parkinson's Disease and Movement Disorders, Saskatoon, Saskatchewan, Canada

In 1961 the dramatic resolution of Parkinson's disease (PD) symptoms in patients treated with levodopa (LD) was reported, representing a major advance in neurology¹. Significantly, substantial improvement was noted in all *de novo* PD patients². Despite these benefits, complications associated with long term levodopa therapy have contributed to ongoing controversy regarding the optimal timing of its introduction.

In an attempt to resolve this issue, it is helpful to compare two scenarios: a PD patient initiating LD two years after disease onset and another starting 6 years after onset.

In the first scenario, a PD patient with modest disability is started on LD two years after disease onset. This patient would experience improvement in motor functions and for the purpose of this paper, I will classify this new disability level as D2. After the peak benefit on treatment however, there would be progressive worsening. By the end of 6 years, this patient would have a higher disability score, D6.

Another *denovo* patient, who 6 years after onset had advanced disability, would also improve after initiation of LD therapy. The treated disability score would be comparable to the first LD treated patient (D6) after 6 years of onset². However, this patient would never improve to D2 disability². Although the subsequent course in the two patients would be similar, the early LD treated patient would have sustained a lower level of disability for 4 years longer than the late LD treated patient. In addition, the first patient would have a longer life expectancy². Longer survival associated with the early introduction of LD (before Stage 2.5) has also been noted in another study³.

Currently, we have a choice to start patients on LD or a dopamine agonist (DAg). Toxicity of LD is no longer a consideration; as LD is not toxic to normal or the PD human substantia nigra^{3,4}. Decision of initial drug therapy should, therefore, be based on symptomatic benefit and the adverse effects (AE) profile.

Every study so far has concluded that compared to DAg, initial LD therapy produces significantly better motor function and activities of daily living up to 10 years⁵⁻⁷. In addition, there is a 33% slower progression of disability on LD⁶. LD benefits last longer than those of DAg. Only 16% to 20% of patients can be maintained on DAg monotherapy for more than 5 years, compared to more than 50% on LD monotherapy⁵. In addition, half the cases benefit from LD for their entire life⁸. Five to 10 years of significantly better function on LD compared to DAg therapy is a major consideration and now, nearly every PD patient is treated with LD at some point⁹.

Sacrificing this overwhelming Quality of Life (QOL) advantage offered by LD can only be justified if the AE were significantly more common and/or more serious on LD. The incidence of dyskinesia in the LD initiated cases was higher than on DAg⁵⁻⁷, but the incidence of "clinically relevant" dyskinesia was not different in a large (782 patients) 10 year study⁶. Significantly higher incidence of wearing off on LD reported in one study⁷ was not observed by others^{5,6}. Hallucinations, vomiting and leg edema on the other hand are more common on DAg⁵. Thus the overall AE profile of LD is not significantly different from DAg.

In summary, early initiation on LD provides a longer period of superior motor control, higher QOL and increased life expectancy without added AE risk. Therefore, early use of LD is the best choice for PD treatment.

"...early initiation on levodopa provides a longer period of superior motor control, higher quality of life and increased life expectancy without added adverse effects risk."

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Ethics and Politics of Embryonic and Fetal Tissue Transplants

— Gerard J. Boer, Dept. Neuroregeneration, Netherlands Institute for Brain Research, Amsterdam, The Netherlands

Parkinson's disease (PD) has been used as the test bed for clinical neurotransplantation with fetal brain tissue. The rationale was simple. Restore the dopaminergic input of the denervated caudate-putamen complex of the patient by striatal implantation of mesencephalic dopaminergic neurons. Research on rodent and primate models for PD had shown that immature dopaminergic neurons isolated from the embryonic or fetal mesencephalon can reinnervate the striatum and largely reverse the experimentally induced motor deficits. So, why not explore this in the human patient for whom no effective treatment is available in the late stages of the disease? At the time, the first reports on this approach reached the journals in 1990¹, negative reactions could be heard both in the scientific and public domain. It was not the experimental approach that was criticized so much, but ethical objections were raised against the use of donor tissue obtained through elective human abortion. The societal debate about this issue was very much influenced by the acceptance of human elective abortion within population groups. According to the critics, human dignity was at stake and this practice would push up the number of abortions. However, the legal acceptance of termination of early pregnancy in many countries, and the option that the decision about ending pregnancy and about donation of the abortion remains could be separated, has led to ethically justified guidelines for the use of human embryonic or fetal tissue for experimental and clinical neurotransplantation and research in many Western world countries. In Europe, the Network of CNS Transplantation And Restoration (NECTAR) published such guidelines in 1994², and this was embraced as one of the background documents for the ethical review of science projects involving the use of embryonic and fetal tissues within the EC framework programs. Clinical experimentation with human prenatal tissues from abortion clinics was therefore not blocked in most countries, with the exception of Germany, Poland and Ireland.

Meanwhile, allografting of embryonic dopaminergic neurons did as yet not appear the ultimate treatment for the PD patient^{3,4}. Grafts survive and effectively release dopamine, and positive effects on motor scores were significant, but the therapeutic outcome was variable and a successful treatment would require the use and donation of brain tissue from up to 10 human abortions. Logistically a mission impossible, especially at a time when the number of elective abortions was on the decline. The search for alternatives started.

Xenografting with porcine embryonic mesencephalon as source of the dopaminergic neurons received attention and was tested in a small group of patients in the USA⁵. Therapeu-

tic effects were hardly seen, but now the animal protectionists protested against the introduction of yet another possible biopharma industry that violates animal welfare and animal integrity. Political decisions evolved against xenografting in human patients. The arguments for this ban were not so much animal protection, but more the concerns around zoonosis. Scientists themselves warned of the risk to public health by viral diseases known now to be able to jump the species barrier⁶. The possible danger would even be enhanced by the immunosuppression treatment that had to be given life-long in xenograft-receiving patients.

The development of cell therapies for human diseases got a new and challenging momentum when the possibilities of pluripotent and multipotent stem cells became apparent^{7,8}. Stem cells can divide and multiply into themselves, but under appropriate conditions also differentiate into cells with specified organ functions. 'Stem cells for tissue repair', according to the headings in scientific and news journals. A continuous supply of dopaminergic neurons for grafting in PD patients? Animal model experiments again proved the principle of action of stem cell-derived dopaminergic grafts, and the use of human stem cells in patients thus seems a logical step. Stem cells can be isolated at various stages of life and from different sources in the body. However, the embryonic stem cells from inner cell mass of the pre-implantation embryo at the blastocyst stage multiply more easy and differentiate better than the somatic stem cells isolated from organs of post-implantation embryo, fetus or adult. The isolation, use and application of neuroprogenitor (i.e., multipotent stem) cells from the remains of a human embryo after elective abortion is regulated under the above mentioned guidelines. The isolation of human embryonic stem cells from the blastocyst stage however, reactivated societal and political debate. Sources for stem cells are either the pre-implantation embryos discarded by parents from an in vitro fertilization (IVF) program, or those conceived in vitro for this purpose only, either by IVF techniques or the technique of nucleus transfer (therapeutic cloning). The use of spare IVF blastocysts compares to the use of the embryonic remains after an elective abortion as otherwise they should have been destroyed. While human life protectionists made no difference in the negative judgement on the use of spare blastocysts from the IVF clinic and the creation of a blastocyst solely to destroy it for potential benefit to others, others in society voiced mainly against the latter. The use of specially created blastocysts was seen as exploitation of human

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life and therapeutic cloning as a first step towards unwanted reproductive cloning of human beings. Currently there is no need to create embryos, as long as the spare IVF embryos can be made available for research and a proof of principle can be sought with human embryonic stem cells⁹. For cellular therapies in the central nervous system it may not even be necessary at all to initiate therapeutic cloning known to be of importance to circumvent immune rejection, as the brain is an immunoprivileged site.

Nationally and internationally, scientists are presently trying to explain - publicly and in discussions with policy makers - the importance to investigate embryonic stem cells as source cells for the development of restorative cellular implants. The potencies of somatic stem cells for this goal seem less, and a ban would therefore impede the promising drive on the new roads towards 'organ repair by cell injection'. Since the use of cells of the aborted human embryo, under strict regulations, can now be used for research into cell therapies, it is not easy to explain why the cells of the pre-implantation embryo that will never be elected for intrauterine growth cannot be used as a cell source as well. Ethically, the protection of the in vitro human blastocyst should not be qualified higher than that of an intrauterine human embryo. In many European countries, political decisions are made in favor of the use of human embryonic stem cells from spare IVF blastocysts. Within the EU however, consensus will be difficult to reach, so that it may become impossible for the EC to sponsor programs dedicated to research on human embryonic stem cells for

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levodopa [Marek et al, 2002; Whone et al, 2003]. While the interpretation of the imaging studies is somewhat controversial, the data provide additional support for early treatment with dopamine agonists rather than with levodopa.

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grafting purposes, just like the ban of the US government on embryonic stem cell research. Stem cell-based therapies may still be a hype for neurodegenerative disease like PD, but a ban on research grants in this area will also steal the hope for an efficacious therapy from the severely affected and poorly treatable PD patient.

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Have you renewed your membership?

The *Movement Disorder Society's* 2004 dues renewal process is well underway. If you have not yet renewed for 2004, you may do so by visiting our Web site, www.movementdisorders.org, or by contacting the MDS International Secretariat at +1 414-276-2145. Don't miss out!

MDS Introduces a New Element to its Congress Scientific Program

In an effort to further enhance the Rome Congress Scientific Program and promote upcoming scientists and physicians, as well as novel research, in the fields of Parkinson's disease and Movement Disorders, the MDS Congress Scientific Program Committee (CSPC) will introduce a new format to its program entitled "Platform Presentations."

Individuals that submit an abstract for poster presentation at the Congress will have the option to request his/her abstract for consideration as a Platform Presentation. Once all abstracts have been submitted and reviewed by the CSPC, 24 will be selected for oral Platform Presentation at the Congress. The abstracts chosen will feature newsworthy and cutting-edge information about Parkinson's disease and Movement Disorders, will be held as main Parallel Sessions and will be open to all Congress delegates. Furthermore, all Platform Presentations will be announced on the MDS Web site, in the Spring 2004 edition of *Moving Along*, as well as in the Congress Final Program.

While this new feature will be added to the program, the CSPC has ensured popular sessions and formats from previous Congresses will remain. Several exciting and innovative lectures have been prepared to appeal to nearly every Congress participant. A preview of several Plenary and Parallel Session topics that will be presented in Rome is listed *to the right*.

Rome Congress Plenary Session Topics

- Etiopathogenesis of cell death in Parkinson's disease
- The basal ganglia pathophysiological model: Contributions and limits
- Experimental interventional therapeutics for Movement Disorders
- Challenges and advances in the diagnosis and management of Parkinsonism
- Cognitive and behavioral dysfunctions in Movement Disorders
- Dyskinesias in Parkinson's disease
- Update on Movement Disorders
- Surgery
- Controversies and debates in Movement Disorders and Parkinson's disease

Please stay tuned for additional Scientific Program topics and speakers, announced in the 2003 Winter edition of *Moving Along*, as well as on the MDS Web site, www.movementdisorders.org.

National Spasmodic Torticollis Association (NSTA) Travel Award

At each *Movement Disorder Society (MDS) International Congress of Parkinson's Disease and Movement Disorders*, the NSTA, with funds provided by the Arizona Dystonia Institute Foundation for Clinical Neuroscience, offers an award of \$1500.00 USD to attend the International Congress for the best essay on cervical dystonia. The award is available for the MDS 8th International Congress in Rome, Italy from June 13-17, 2004.

- **Eligible:** Residents/Fellows/Trainees in Neurology or Movement Disorders.
- **Topic:** Any aspect of etiology, pathophysiology, diagnosis or treatment of cervical dystonia.
- **Length:** At least 10 typed, double spaced pages of text and references.
- **Language:** English
- **Deadline:** April 1, 2004
- **Decision:** May 15, 2004
- **Judges:** Medical Advisory Board NSTA
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The *Movement* Disorder Society
**8th International Congress of Parkinson's
 Disease Movement Disorders**

June 13-17, 2004 • Rome, Italy • Palazzo dei Congressi



Important Dates to Remember

- November 1, 2003: Online Abstract Submission Available
- December, 2003: Preliminary Program available on MDS Web site
- January 26, 2004: Paper/Disk Abstract Submission Deadline
- February 2, 2004: Online Abstract Submission Deadline
- March 23, 2004: Early Registration Deadline
- April 15, 2004: Housing Registration Deadline
- April 23, 2004: Full Registration Deadline

For more information about the MDS Congress, please contact:

MDS International Secretariat
 Director of Meetings
 611 East Wells Street
 Milwaukee, WI 53202, USA
 Tel: +1 414-276-2145
 Fax: +1 414-276-3349
 E-mail: congress@movementdisorders.org

COMMITTEE / TASK FORCE UPDATE

Unified Parkinson's Disease Rating Scale (UPDRS) Revision Task Force

In the year 2002, The *Movement* Disorder Society (MDS) initiated a critique of the Unified Parkinson's Disease Rating Scale (UPDRS) under the auspices of the Society's Task Force for the Development of Rating Scales for Parkinson's Disease. Upon conclusion of this project, the Task Force members and Expert Consultants recommended modifications to the existing scale.

It is with this recommendation that MDS has instituted the UPDRS Revision Task Force for the sole intent of revising the current UPDRS scale. This project will be chaired by Dr. Christopher Goetz, and will be comprised of six additional Steering Committee members. Each Steering Committee member, assisted by an appointed subcommittee, will be responsible for one section of the scale. Serving on the Steering Committee are:

Christopher G. Goetz – Chair
 Matthew Stern – UPDRS Part II
 Pablo-Martinez-Martin – UPDRS Part IV
 Cristina Sampaio – Appendices

Werner Poewe – UPDRS Part I
 Stanley Fahn – UPDRS Part III
 Glenn Stebbins – Scale Development Standards
 Barbara Tilley – Clinimetric Testing Recommendations

The target date for completion of the revised scale is Spring 2004. The Task Force is planning to present the new scale and plans for clinimetric testing during the Society's 8th International Congress of Parkinson's Disease and Movement Disorders to be held in Rome, Italy, June 13-17, 2004. Stay tuned for additional information.

Continued from cover...

and daily-living sub scores of the UPDRS. By using ^{18}F -dopa PET it was possible to demonstrate in the treated patients a significant increase of DA storage not only directly in putamen but also in the substantia nigra indicating that the nigral cell bodies were also responding to the GDNF delivered to putamen nerve terminals, possibly through retrograde transport.

One of the most interesting new applications of PET is its role for imaging changes in neuroreceptor availability to radioligands reflecting synaptic neurotransmitter fluxes in the living human brain. When endogenous dopamine (DA) binds to D_2 receptors it competes with the reversible antagonist ^{11}C -raclopride. Using this method, Piccini et al. demonstrated endogenous release of dopamine from human fetal striatal grafts after an amphetamine challenge in a patient with Parkinson's disease (PD)⁽³⁾. ^{11}C -raclopride displacement studies have been subsequently used to evaluate whether changes in synaptic levels of DA underlie diurnal oscillation in mobility in PD patients with motor fluctuations. De la Fuente-Fernandez and colleagues⁽⁴⁾ found that in patients who had "wearing off" problems, synaptic levels of DA an hour after administration of oral levodopa were three times higher than in the "stable" responder group but only the latter was able to maintain levels of synaptic DA for four hours.

More recently, extra-striatal endogenous release of DA has been studied after amphetamine challenges in normal subjects and advanced PD patients with ^{11}C -raclopride PET⁽⁵⁾. Statistical parametric mapping localized similar release of endogenous DA in dorsal prefrontal and in orbitofrontal cortex in both cohorts (figure). These findings suggest that the capacity to release normal DA levels in prefrontal areas following a pharmacological challenge is preserved even in severe stages of PD and provide further evidence that reduced striatal rather than frontal DA release is likely to be the most relevant to the locomotor and cognitive disabilities associated with PD.

In recent years, diffusion-weighted MR imaging (DWI) has been proposed in the field of imaging as a diagnostic tool for the differential diagnosis of parkinsonism. DWI is used to determine the random movement of water molecules that is aligned with fiber tracts in the CNS. Quantification of the diffusion is possible by applying field gradients producing different degrees of diffusion sensitization, allowing the calculation of an apparent diffusion coefficient (ADC) tensor in tissue. Pathological processes such as neuronal loss and astrogliosis increase the mobility of water molecules within the CNS tissue architecture and the regional ADC. Using this technique, Schocke and colleagues⁽⁶⁾ reported that it was pos-

sible to completely discriminate patients with the Parkinson variant of multiple system atrophy (MSA-P) from those with PD as MSA-P patients showed significantly higher regional ADC in the putamen. More recently the same group⁽⁷⁾ demonstrated that DWI was also able to discriminate PSP from PD patients although on the basis of this technique alone a differential diagnosis between PSP and MSA-P was not possible.

References

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Botulinum Toxins in Neurological Practice Workshop

January 30, 2004, London, UK

Arrangements are well in hand for the first MDS-ES workshop on Botulinum toxins in neurological practice, to be held in London in January 2004. Details of the workshop and registration forms are available on the MDS Web site, www.movementdisorders.org, or from the MDS Secretariat. The workshop is now fully subscribed, and any new applicants will be put onto a priority list for a place if there are any cancellations. A second workshop will be planned during 2004.

European Federation of Neurological Societies Congress, Helsinki, August 2003

— Eduardo Tolosa, MD, Chairman, MDS-European Section

MDS-ES was well represented at the EFNS Congress. The sessions that focused on Movement Disorders started with a full day teaching course held on Saturday, August 30.

MDS-ES held its business meetings during Sunday, August 31 starting with the MDS-ES Officers and European Section Executive Committee meeting followed by the Section's Annual Business Meeting, attended by 25 members. During the afternoon, MDS-ES Officers, Eduardo Tolosa, Wolfgang Oertel, Andrew Lees, and MDS President, Warren Olanow, met the President and Officers of EFNS to agree to the continuation of the collaboration between the two societies. Both societies expressed their pleasure at the success of the partnership, and the current agreement will continue until it is reviewed again in 2006. Additional joint activities were agreed upon, including sponsorship of bursaries for young neurologists to attend the EFNS Congress to present research on Movement Disorders. Also, at future EFNS Congresses, MDS-ES will institute a prize for the best free communication in Movement Disorders.

The Movement Disorders scientific program was held on Monday, September 1. The Plenary Session, New Frontiers in Movement Disorders, was well attended and included the following presentations: "Evidence-based medicine: Pharmacotherapy and/or functional neurosurgery", "Movement disorders and sleep disorders", and "Stem cells and Movement Disorders".

The European Basal Ganglia Club meeting continues to be very popular, with a capacity audience in the 500-seat lecture theatre. Dr. Joseph Jankovic presented the MDS-ES invited lecture entitled "Etiopathogenesis and Treatment Strategies in Dystonia". Dr. Mark Edwards received the David Marsden Memorial Prize for research into dystonia from the European Dystonia Research Foundation for his paper "Different Patterns of Electrophysiological Deficit in Manifesting and Non-Manifesting Carriers of the DYT1 Gene". The session concluded with video presentations of unusual cases, with lively discussion between the chairs, presenters and audience about pathology and likely diagnoses.

The satellite symposia on Movement Disorders were well attended, starting with the session on practical approaches to the use of apomorphine in late-stage Parkinson's disease (PD). Increasing recognition of the prevalence of Restless Legs Syndrome, and the recent advent of effective therapy, ensured an enthusiastic audience for the first satellite symposium to be held on this syndrome during an EFNS Congress.



Dr. Joseph Jankovic at the Sibelius Monument, Helsinki, Finland.

Neuroimaging continues to be a focus of interest, both with respect to early and correct diagnosis of Parkinson's disease, and in trials of the neuroprotective properties of pharmacotherapy. Three symposia focused on Parkinson's disease, with reviews of the role of COMT inhibition; clinical rationale and evidence for the use of dopamine agonists in early Parkinson's disease, and an introduction to rasagiline as a novel treatment for early and advanced stages of PD.

A focused workshop on assessment of PD in clinical practice was organized by Martin Horstink, Chairman of the EFNS Panel on PD and other Movement Disorders. The workshop discussed how to assess Parkinsonian impairment and disabilities, whether the most widely used scales can be improved for more accurately interpretable scores, and whether scores can be replaced by scans.

The Movement Disorders program was completed by free communications sessions, with 62 oral and poster presentations. MDS-ES is clearly succeeding in our work to ensure that the specialty of Movement Disorders is firmly established in Europe!

MDS Visiting Professorship

The first MDS Visiting Professorship has been awarded to Romania. Eduardo Tolosa has accepted the invitation to be the MDS Invited Lecturer and will travel to Romania April 1-3, 2004. Cristian Falup-Pecarariu is organizing the meeting program and plans to ensure the wide participation of neurologists from Romania and neighbouring countries.

The Fourth PSP International Medical Workshop

July 21– 23, 2003, Stowe School, Buckinghamshire, United Kingdom, “Toward Better Diagnosis of PSP”

— Dominic Paviour, Institute of Neurology, London, United Kingdom
— Andrew J. Lees, MD, Rita Lila Weston Institute of Neurological Studies, London, United Kingdom

The fourth PSP international medical workshop recently took place at Stowe school. The impressive school buildings are set in 365 acres of some of the most historically important landscape gardens in England. They were established by Charles Bridgeman working for the Temple family in the early 18th century and expanded over the years by William Kent and Lancelot “Capability” Brown amongst others for descendants of the family, including The Duke of Buckingham.

The workshop was organized by The PSP (Europe) Association with generous support from Eisai and Amersham and chaired by Andrew Lees, Chairman of the PSP Association (Europe) Medical Advisory Panel.

Presentations by internationally renowned speakers focusing on the diagnosis of PSP provided the background for lively brainstorming sessions. The clinical aspects of PSP and how to apply diagnostic criteria were covered first (Andrew Lees and Irene Litvan) followed by an update on the large European trial of Riluzole in PSP and MSA (Nigel Leigh). Subsequent presentations reviewed the use of structural and functional imaging in PSP (Dominic Paviour, Nick Fox, David Burn and David Brooks) and the ability of these techniques to differentiate akinetic-rigid syndromes. The use of bedside assessments of cognitive function (Bruno Dubois) and measures of eye movements (Adolfo Bronstein and Dominic Paviour) as aids to diagnosis were discussed during the afternoon and this was followed by presentations on the nature of falling in PSP (Bas Bloem) and how neurophysiological tests might help diagnose PSP (Josep Valls-Sole). Larry Golbe ended the proceedings with a cutting-edge review on recent research findings in PSP.

The meeting finished with a lively and enjoyable dinner in the State rooms at the School, where Atomic Kitten had changed the night before for the Formula 1 Silverstone celebrations.

Have you visited the newly redesigned MDS Website at

www.movementdisorders.org?

New features include:

- Additional on-line services
- Increased navigational capabilities
- Expanded information on the Society and the field of Movement Disorders

Third International Workshop on Dementia with Lewy Bodies and Parkinson’s Disease Dementia

September 17-20 2003, Newcastle upon Tyne, United Kingdom

— David J. Burn, MD, FRCP, MA, Regional Neurosciences Centre, Newcastle General Hospital, Newcastle upon Tyne, United Kingdom

Continuing a theme of the last *Moving Along* issue, in which the controversy “Dementia with Lewy bodies (DLB) and Parkinson’s disease (PD): One Disease or Two?” was debated, a speaker and chair panel of over 50 distinguished international experts came to Newcastle upon Tyne for this meeting to discuss DLB and related topics. The meeting was sponsored by The *Movement* Disorder Society and was attended by nearly 300 delegates. Although two previous DLB workshops had been held (October 1995 in Newcastle and August 1998 in Amsterdam), this meeting included PD dementia (PDD) for the first time. There was therefore a stimulating mix of subspecialty interests present, undoubtedly contributing to the success of the meeting, not least through lively debate!

Sessions included the clinical features of DLB / PDD and treatment strategies, neuroimaging in these disorders, clinico-pathological forums, molecular pathology and genetics. Over 50 posters featuring recent unpublished work were also presented. As in previous DLB workshops, a highlight was the final morning in which the appointed chairpersons (in parallel clinical, pathology and management sessions) had the daunting task of collating and summarizing the new findings and controversies, with the intended outcome of producing recommendations for the modification of existing guidelines and sign-posting for future research initiatives. It is intended that conclusions of these sessions will be published. Suffice it to say, there was general acceptance of the current DLB diagnostic criteria, particularly the “probable” category, although it was recognized that operationalization of clinical features would be helpful. The main area that attracted debate here was whether or not to dispense with the “one year” rule, currently separating DLB from PDD on the basis of the duration of prior parkinsonism. Increasing specificity of the “possible” DLB diagnostic category was discussed, perhaps through the addition of suggestive clinical features like falls and syncope. Inclusion of REM Sleep Behavioural Disorder as a suggestive feature was also recommended. It was acknowledged that the role of investigations, particularly imaging, in the diagnosis of DLB / PDD required revision, since several new findings (for example, the role of FP-CIT SPECT in differentiating DLB from Alzheimer’s disease) had emerged since the last consensus meeting. The lack of clear diagnostic criteria for PDD and

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the clinicopathological overlap between this disorder and both DLB and AD were identified as priority areas for future research, together with efforts to identify biomarkers for early dementia in PD. The potential modifying effect of Alzheimer pathology on the clinical DLB syndrome and an improved pathological staging system were also discussed.

The busy meeting schedule, arranged by Professor Ian McKeith, still allowed time for an excellent social program and a chance to discuss the day's hot topics over a drink (or two). I believe delegates left with a feeling of "unfinished business" but with renewed optimism that an ever closer international alliance between different specialists will lead to significant increases in our understanding of these Lewy body disorders.



Third International Workshop on Dementia with Lewy Bodies and Parkinson's Disease Dementia, September 17-20 2003, Newcastle upon Tyne, UK

PROFESSIONAL NOTICES

Announcements

Integrating the Evidence to Optimize Parkinson's Disease Patient Care

Management of Parkinson's Disease Symptoms: An Evidence-Based Review

Drug and surgical interventions as well as physical treatments are all used in the management of Parkinson's disease yet their real clinical value, as measured by their impact on clinically relevant outcomes, has not always been established through high quality, randomized, controlled clinical trials.

The authors of the *Movement Disorders Journal Supplement, Management of Parkinson's Disease: An Evidence-Based Review*, have designed a once day course of the same name to address this issue. The first course offering, to be held in Miami on **January 16, 2004**, will use lecture as well as case-based discussion, to provide the clinician with an overview of the current state of Parkinson's disease (PD) management. In the morning session faculty members Christopher G. Goetz, MD, Werner Poewe, MD, Cristina Sampaio, MD, PhD, and Olivier Rascol, MD, PhD, will review the evidence available for current pharmacological and select non-pharmacological approaches for PD patients. The afternoon session will integrate this information using a case-based format to enable the clinician to make optimal patient management decisions.

To register or obtain more detailed course information, visit the MDS Web site at www.movementdisorders.org

European Parkinson's Disease Association 5th Multi-disciplinary Conference

'Working in Harmony – The Team Approach'

May 6 – 9, 2004, The Marriott Hotel, Lisbon, Portugal.

The EPDA is making this conference a truly multidisciplinary event and the program is continuing to grow with the addition of three satellites being held on Thursday, May 6:

- **European Parkinson's Nurses Network (EPNN)** *'Exploring Partnerships in Assessing and Managing Challenging Aspects of Parkinson's Disease'* followed by their first Business Meeting
- **Association of Physiotherapists in Parkinson's Disease Europe (APPDE)** *'First Satellite Symposium'*, followed by their General Meeting
- **European Occupational therapist Network (EOTN)** *'For OT's who are working with people with Parkinson's in everyday practice'*

For information on the conference and satellite programs, poster submissions, registration details, hotel accommodations and social itinerary, please visit: www.epdaconferences.org or please contact, Conference Secretariat, Penny Callaghan, Universal Conference & Incentive Travel Ltd, Universal House, 20-22 High Street, Iver, Buckinghamshire, SLO 9NG, UK Tel: +44 1753 632019; Fax: +44 1753 654325; E-mail: Penny@epdaconferences.org.

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Announcements

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The National Parkinson Foundation Grant Program

The National Parkinson Foundation (NPF) is pleased to announce its individual grant program for 2004. The NPF funds meritorious original research in Parkinson disease and related Movement Disorders, with awards up to \$40,000 for a one-year period. Both preclinical and clinical research is supported, with the program open to faculty members and post-doctoral fellows. No indirect costs are allowed. For further information, visit the NPF web site at www.parkinson.org or contact Pam Olmo, NPF Controller at polmo@parkinson.org or at 305-243-3886. Deadline for receipt of applications is March 15, 2004.

Job Openings

Exciting Faculty Opportunity

An exciting faculty opportunity is available at the Parkinson's Disease Center and Movement Disorders Clinic, Baylor College of Medicine for an energetic individual who has completed a Movement Disorders fellowship and is interested in clinical and/or basic science research. The interested individual should contact Joseph Jankovic, MD, the Director of the Center, at +1 713-798-5998 or by e-mail: josephj@bcm.tmc.edu.

Fellowship in Movement Disorders

One year program offered to high quality applicants at Beth Israel Deaconess Medical Center, Parkinson's Disease & Movement Disorders Center beginning July 1, 2004. Includes training in diagnosis and treatment of a wide variety of Movement Disorders, participation in Parkinson's disease, tremor, and dystonia DBS surgical program, a large dystonia and botulinum toxin treatment program, participation in clinical trials, and other clinical research opportunities. Send CV and three letters of recommendation to: Daniel Tarsy, MD, Beth Israel Deaconess Medical Center, KS-228, 330 Brookline Avenue, Boston, MA 02215, USA; Tel: +1 617-667-0519; Fax: +1 617-975-5454. Beth Israel Deaconess Medical Center is an equal opportunity employer that values the strength diversity brings to the workplace.

Open Position for Neurologist

Memorial Hospital of Rhode Island is seeking a neurologist, who will qualify at the Assistant Professor level at Brown Medical School. Must be ABPN Board eligible or certified in neurology, preferably with fellowship training in Movement Disorders. Must be qualified to provide expert care for Movement Disorders and to assist with expansion of an existing Movement Disorders patient care service and teaching service. The successful applicant will be expected to share outpatient and inpatient clinical services, teaching of medical, neurology and psychiatry housestaff and fellows in geriatric neurology, geriatric psychiatry, and geriatric medicine, as well as engage in pharmacologic and other clinical research in Movement Disorders. The Memorial Hospital of Rhode Island Hospital is an EEO/AA employer and actively solicits applications from minorities, women and protected persons. Review of applications will begin immediately and continue until the position is filled or the search is closed. Send C.V. and names of three references to Dr. Joseph Friedman, Search Chairperson, Department of Medicine, Division of Neurology, 111 Brewster Street, Pawtucket, RI 02860, Tel: +1 401-729-3757, E-mail: Joseph_Friedman@mhri.org.

Movement Disorder Specialist – Southern California

Have it all: Life in one of the most beautiful regions in the United States and a private practice affiliated with the young but rapidly growing *California Neuroscience Institute* at St. John's Regional Medical Center in Oxnard, California. Your practice will draw from the Central California Coast to the West San Fernando Valley, an enormous population currently served by only one specialist. Association with the Institute at St. John's means association with one of the most comprehensive DBS programs in the country, a small but exciting research lab and the opportunity to participate in and help guide its growth. For more information about this opportunity, please contact Kimberly Seidman, Director of the California Neuroscience Institute. E-mail: Kseidman@chw.edu; Tel: +1 805-988-7599; Fax +1 805-988-8992.

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Job Openings

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Postdoctoral Fellowships Available

Department of Neurodegenerative Disorders, of the Hertie-Institute for Clinical Brain Research, Center of Neurology, University of Tübingen, Germany

The research of the Department is focused on the molecular and genetic basis of neurodegenerative diseases and Movement Disorders and the development of novel methods in diagnosis and treatment.

We are presently seeking highly motivated researchers focusing on the molecular biology and genetics of Parkinson's disease. Current projects include the generation and characterization of animal models as well as the biochemical study of interacting genes and proteins (using gene expression profiling) and the genetic analysis of patient populations.

The department is closely interacting with the other departments of the Neuroscience Center (Dept. of General Neurology, Dept. of Cognitive Neurology, Dept. of Neurobiology) as well as with other groups (Human Genetics, Neuroimaging, Neuropathology) with a major interest in the Neurosciences. The resulting synergies should allow the institute to evolve to one of the leading centers for brain research.

Applications to: Prof. Dr. Thomas Gasser
Department of Neurology and
Hertie Institute for Clinical Brain Research
Hoppe-Seyler Str. 3
72076 Tübingen, Germany
Tel: 07071-29 86529
Fax: 07071-29 4839
E-mail: thomas.gasser@med.uni-muenchen.de

Neurologist

Evanston Northwestern Healthcare, which operates the Evanston and Glenbrook Hospitals, seeks a member of its Department of Neurology. The position is for an adult neurologist with training in Movement Disorders in a full-time hospital-based practice, Evanston Northwestern Healthcare Medical Group. Applicants must have academic credentials for faculty appointment at the Instructor or Assistant Professor Level, non-tenure track, at The Feinberg School of Medicine. The proposed starting date is July 1, 2004. Salary is negotiable. Send C.V. to Michael Rezak, MD, PhD, Dept. of Neurology, Movement Disorders Center, Glenbrook Hospital, 2100 Pfingsten Road, Glenview, IL 60025, USA. Evanston

Northwestern Healthcare and Northwestern University are Affirmative Action/Equal Opportunity Employers. Hiring is contingent upon eligibility to work in the United States. Women and minorities are encouraged to apply.

Junior Movement Disorder Position Available

The Department of Neurology at the University of Louisville is seeking a full-time Board Eligible or Board Certified Neurologist with a completed Fellowship training in Movement Disorders. ECFMG Certification for foreign candidates is essential. The position is designed for a clinician-scientist at the Instructor or Assistant Professor level who wants to succeed in Academic Medicine. The successful candidate will be responsible for the clinical care of Movement Disorder patients in inpatient, consultation, and outpatient settings. He/she will participate in the development and conduction of research studies.

The position is funded by the Department of Neurology of the University of Louisville, one of the major state Universities in KY, and offers a competitive salary and generous benefits package. The successful candidate will achieve intensive experience in clinical assessment and management of patients with unusual Movement Disorders, participation in ongoing clinical research studies and development of original research projects. The position is oriented towards strengthening skills for a career in clinical neuroscience research and offers opportunities to develop areas of professional interest. Interested candidates should send a resume, statement of career interests and objectives, and three letters of recommendation to:

Irene Litvan, M.D.
Director, Movement Disorder Program
Department of Neurology
University of Louisville
500 South Preston
A Building, Room 113
Louisville, KY 40202
Phone: 502-852-3655/ FAX: 502-852-6344
E-mail: i.litvan@louisville.edu

Women and minorities are encouraged to apply. The University of Louisville is an Equal Opportunity Employer.

2004

January 12-16, 2004

15th International Congress on Parkinson's Disease. Beijing, China. Contact: XV International Congress on Parkinson's Disease; c/o International Convention Services; Chinese Medical Association; 42 Dongsi Xidajie; Beijing 100710, China; TEL: 86-10-6524-9989 ext. 2456; FAX: 86-10-6512-3754 / 6524-4086; E-mail: xvicpd@chinamed.com.cn

***January 16, 2004**

Management of Parkinson's Disease Symptoms: An Evidence-Based Review. Miami Beach, Florida, USA. Jointly sponsored by The Movement Disorder Society and the Medical College of Georgia Division of Continuing Medical Education and School of Medicine. Contact: Jody McCarthy, MDS Director of Education; TEL: +1 414-276-2145; FAX: +1 414-276-3349; E-mail: jmccarthy@movementdisorders.org; Web site: www.movementdisorders.org

***January 30, 2004**

Workshop on Botulinum Toxins in Neurological Practice. Queen Square, London, United Kingdom. Sponsored by the The Movement Disorder Society's European Section. Contact: Karen Henley, MDS Associate Executive Director; E-mail: khenley@movementdisorders.org; Web site: www.movementdisorders.org

***February 20-21, 2004**

First Symposium on Paediatric Movement Disorders. Barcelona, Spain. Contact: Marta Pla, Suport Servicio, Calvet, 30.08021, Barcelona, Spain; TEL: +34 93 2017571; FAX: +34 93 2019789; E-mail: martapla@suportserveis.com

March 14-16, 2004

First Congress of The Cuban Society of Clinical Neurophysiology. Meliá Havana Hotel, Havana, Cuba. Contact: Dr. Calixto Machado, MD, PhD, President, First Congress of The Cuban Society of Clinical Neurophysiology, Instituto de Neurología y Neurocirugía, 29 y D, Vedado, Apartado Postal 4268, Ciudad de La Habana 10400 ; TEL: 537-553022 Ext. 218; FAX: 537-202 8382; E-mail: nfccubana@infomed.sld.cu/braind@infomed.sld.cu; Web site: http://www.sld.cu/eventos/nfccubana/index.htm

***March 20, 2004**

Update on the Management of Motor Complications in Parkinson's Disease. Houston, Texas, USA. Jointly sponsored by The Movement Disorder Society and the National Institutes of Health/Foundation for Advanced Education in the Sciences, Inc. Contact: Jennifer Kehoe, MDS Program Manager; TEL: +1 414-276-2145; FAX: +1 414-276-3349; E-mail: jkehoe@movementdisorders.org; Web site: www.movementdisorders.org

April 24-May 1, 2004

American Academy of Neurology 56th Annual Meeting. San Francisco, CA, USA. Contact: American Academy of Neurology, 1080 Montreal Avenue, St. Paul, MN 55116; TEL: +1-651-695-1940; E-mail: web@aan.com; Web site: www.aan.com

May 6-9, 2004

EPDA 5th Multi-disciplinary Conference 'Working in Harmony – The Team Approach'. The Marriott Hotel, Lisbon, Portugal. Contact: Penny Callaghan, Universal Conference & Incentive Travel Ltd, Universal House, 20-22 High Street, Iver, Buckinghamshire, SLO 9NG, UK; TEL: +44 1753 632019; FAX: +44 1753 654325; E-mail: Pennyc@epdaconferences.org; Web site: www.epdaconferences.org

***May 22, 2004**

Update on the Management of Motor Complications in Parkinson's Disease. New York City, New York, USA. Jointly sponsored by The Movement Disorder Society and the National Institutes of Health/Foundation for Advanced Education in the Sciences, Inc. Contact: Jennifer Kehoe, MDS Program Manager; TEL: +1 414-276-2145; FAX: +1 414-276-3349; E-mail: jkehoe@movementdisorders.org; Web site: www.movementdisorders.org

June 8-12, 2004

Canadian Congress of Neurological Sciences. Calgary, AB, Canada. Contact: Canadian Congress of Neurological Sciences, P.O. Box 5456, Station A, Calgary, AB, T2H 1X8 Canada; TEL: +1-403-229-9544; FAX: +1-403-229-1661; E-mail: brains@ccns.org

June 11-12 2004

3rd Brain Stem Society Meeting. University La Sapienza, Rome, Italy. Contact: Monica Daliana O.I.C. s.r.l., Viale G. Matteotti 7, 50121 Firenze, Italy; TEL: +39 055 5035205; FAX +39 055 570227; E-mail: m.daliana@oic.it

***June 13-17, 2004**

8th International Congress of Parkinson's Disease and Movement Disorders. Palazzo dei Congressi, Rome, Italy. Offered by The Movement Disorder Society. Contact: The Movement Disorder Society, 611 E. Wells Street, Milwaukee, WI, USA; TEL: +1-414-276-2145; FAX: +1-414-276-3349; E-mail: congress@movementdisorders.org; Web site: www.movementdisorders.org

***June 17-18, 2004**

2nd International Meeting on Multiple System Atrophy (MSA). Palazzo dei Congressi, Rome, Italy. Contact: Carlo Colosimo, MD, Dipartimento di Scienze Neurologiche, Università La Sapienza, Vialle dell' Università 30, I-00185, Rome, Italy; TEL: +39 06 4991 4711; FAX: +39 06 4457 705 ; E-mail: carlo.colosimo@uniroma1.it

June 26-30, 2004

14th Meeting of the European Neurological Society. Barcelona, Spain. Web site: www.ensinfo.com

September 4-9, 2004

8th European Federation of Neurological Societies Congress. Paris, France. Contact: EFNS, University Campus, Alser Str. 4, Courtyard 1, 1090 Vienna, Austria; TEL: +43 1 889 05 03; FAX: +43 1 889 05 03 13; E-mail: headoffice@efns.org; Web site: www.efns.org

***September 10, 2004**

Update on the Management of Motor Complications in Parkinson's Disease. Chicago, Illinois, USA. Jointly sponsored by The Movement Disorder Society and the National Institutes of Health/Foundation for Advanced Education in the Sciences, Inc. Contact: Jennifer Kehoe, MDS Program Manager; TEL: +1 414-276-2145; FAX: +1 414-276-3349; E-mail: jkehoe@movementdisorders.org; Web site: www.movementdisorders.org

September 20-24, 2004

II International Congress on Neuroregeneration. Rio de Janeiro, Brazil. Contact: CONGREG do Brasil, Av. Presidente Wilson, 20030-020 - Rio de Janeiro, BRASIL, TEL: +55 (21) 3974-2001; FAX: +55 (21) 2509-1492; E-mail: icn@congreg.com.br; Web site: http://www.neuroregeneration2004.med.br

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