A *MOVEMENT* DISORDER SOCIETY UPDATE

Moving Along

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Editorial

With this Winter issue of ***Moving Along***, the official Newsletter of The Movement Disorder Society (MDS), it concludes one of the most interesting and successful years of the MDS. We would like to thank Dr. Werner Poewe for his outstanding job as the MDS President in 2001 and 2002. His effective communication and excellent leadership contributed to the many accomplishments of The *Movement* Disorder Society. We welcome Dr. Warren Olanow as the new president of MDS and look forward to continued success under his direction.


Irene Litvan, MD


Thomas Gasser, MD

The year culminated in the 7th International Congress of Parkinson's Disease and Movement Disorders held at the Fontainebleau Hilton Hotel in Miami Beach, Florida, USA. Not only was the venue spectacular, the number of participants record-breaking, and the atmosphere and social programs fabulous, but the attendants enjoyed an outstanding scientific program reflecting the rapid progress in Movement Disorders. The plenary lectures, given by the leaders in the respective areas provided excellent overviews of all pertinent topics in Movement Disorders.

Many of the lectures also presented original unpublished results of recent research. For example, the cloning and the identification of a novel gene causing autosomal-recessive early-onset parkinsonism was announced by Dr. Bonifati of Rotterdam. This gene, called DJ-1, has been implicated among other things in the cellular response to oxidative stress. Analysis of its function and the consequences of its dysfunction promise to provide novel insights into the molecular mechanism of neuronal degeneration. Other highlights included promising reports on the success of deep brain stimulation in dystonic syndromes (this topic was also represented by a large number of excellent poster presentations), and an important study presented by Dr. Stanley Fahn of Columbia University, NY, concerning early vs. late treatment of PD with levodopa which indicated that this compound is in fact not detrimental to dopaminergic neurons in early PD.

On the other hand, clinical studies do not always provide the results that had been wished for. Professor Warren Olanow from Mount Sinai School of Medicine, NY, our incoming MDS President, presented data from a second placebo-controlled fetal transplantation study. The authors were cautious about the prospects of this form of treatment since a reduction of motor disability was not achieved despite excellent improvement in 18F-L-dopa PET studies and data demonstrating at autopsy solid survival of transplanted neurons. These results once again demonstrate that properly designed clinical trials are the gold standard for the evaluation of treatment progress in PD. The study, once fully assessed, will likely send researchers back to the laboratory benches.

This issue of ***Moving Along*** will once again give you the full spectrum of news, opinions and controversies that makes the life of a Movement Disorders specialist interesting. We are particu-

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For this winter issue of *Moving Along*, I am pleased to look back on a highly successful year for The Movement Disorder Society (MDS). MDS membership has reached an all-time high and now stands at 1620 members. The MDS officers have worked with the Membership Committee to develop a waived dues program for applicants from economically underprivileged countries in order to remove financial barriers to MDS membership. Details of this program will be announced in the first quarter of 2003.

The outstanding highlight of MDS activities in 2002 was its 7th International Congress of Parkinson's Disease and Movement Disorders held in Miami, Florida from November 10 - 14. This turned out to be the most successful international MDS Congress so far, attracting a record breaking attendance of close to 2700 participants from 69 countries. The atmosphere of the whole event was truly splendid and the scientific quality truly spectacular, including presentations of fundamental new and unpublished results of recent research as mentioned in the editorial to this issue of *Moving Along*.

For the first time MDS installed its newly developed category of Honorary Membership for individuals who had made outstanding contributions to the field of Movement Disorders. A number of suggestions had been received from the membership and properly reviewed by the Membership Committee and the IEC so that three outstanding personalities could be made honorary MDS members on the occasion of the 7th International Congress: Stanley Fahn in recognition of his role as founder of MDS and international leader in the field of Movement Disorders, Oleh Hornykiewicz, in recognition of his role in discovering Dopamine deficiency in PD and in introducing L-Dopa replacement therapy, and Gerald Stern, in recognition of his pioneering work in clinical pharmacology of Parkinson's disease.

Following the work of the 2002 Nominating Committee chaired by Joe Jankovic with Stanley Fahn, Oscar Gershanik, Mark Hallett, Pierre Pollak, Evžen Růžička, Eduardo Tolosa, and Nobuo Yanagisawa as members and supplemented by nominations from the MDS membership at-large a slate of candidates for three officers positions and five at-large IEC positions was put to vote at the official election during the annual MDS business meeting on Tuesday, November 12, 2002 in Miami. I am proud to announce that the following highly distinguished MDS members were elected to office: Andrew Lees (President-Elect), Philip Thompson (Secretary-Elect), Daniel Tarsy (Treasurer-Elect) and Paul Bédard, Santiago Giménez-Roldán, Nir Giladi, Kapil Sethi, and Marie Vidailhet for five at-large IEC positions.

In addition, the incoming MDS President, Warren Olanow, has appointed a chairperson to each MDS committee for a two-year term beginning January 1, 2003. These individuals have also made their recommendations for persons to serve as committee members. All proposed chairpersons and members are current paid members of MDS.

I would like to take this opportunity to express words of thanks and appreciation at the end of my term as MDS President to all of you. It has been an extraordinary privilege and honor to serve as president of one of the most active, lively and outstanding subspecialty organizations in the field of neurology. These last two years have been busy and at times also quite challenging but I would not wish to miss a single day of it. The amount of collegiality, friendship and support that I encountered from everyone in the MDS leadership was a truly exceptional and rewarding experience and I look forward to continue working for MDS in the capacity of past-president for another two-year term supporting our new MDS President, Warren Olanow, as much as I did enjoy the support of Mark Hallett. I am sure that under Warren Olanow's energetic and professional leadership, MDS will continue on its path of growth and success - not least through expansion of the MDS educational programs and activities.

Warmest thanks to all of you and best wishes for another successful MDS year 2003.

Werner Poewe
MDS president 2001-2002

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As I embark upon my presidency, I am pleased to report that the state of The *Movement* Disorder Society is strong. When The Society was founded a decade ago, the constitution decreed that we should be founded on three major pillars; the Journal, an International Congress, and an Education Program. Our Journal, *Movement Disorders*, is consistently ranked amongst the top clinical neurological journals, now publishes on-line, has record numbers of subscribers and submissions, and is about to begin monthly publication.

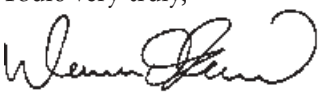
The recently completed 7th International Congress of Parkinson's Disease and Movement Disorders had record-breaking attendance, abstracts, and revenues. Based on the success of this meeting and the rapid pace of scientific, clinical and therapeutic development, the International Executive Committee has voted to begin having annual meetings in 2004. Membership is at an all time high and The Society enjoys profitability with sufficient cash reserves.

We are now ready to begin development of our third initiative, educational programs. An Education Committee has been formed and charged with establishing teaching courses, symposia, and workshops in various academic and practical aspects of Movement Disorders. These programs will be made available to members regionally as well as in conjunction with our International Congress.

It is rare that a Society achieves so much in such a short period of time. For this, we owe an enormous debt to the dedication and leadership of Drs. Stanley Fahn, David Marsden, Joe Jankovic, Eduardo Tolosa, and Mark Hallett, as well as so many others of you who have worked tirelessly and unselfishly. A particular vote of appreciation must go to our retiring president, Professor Werner Poewe, whose hard work, attention to detail, and grace under pressure have contributed in no small part to our present success.

There remain many challenges ahead of us, and I look forward to the opportunity of working with all of you to ensure the continued success of our Society.

Yours very truly,



C. Warren Olanow
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MDS President 2003-2004

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Editorial

larly delighted to include with this issue a CD-ROM created by Dr. Peter Moore on the use of botulinum toxin for the treatment of focal dystonias. This is the first teaching-CD distributed by the MDS to its members and we are extremely grateful to all who have contributed to this endeavor. This is a great example of the use of new media to disseminate knowledge and expertise among the MDS members. The CD shows the technique used to administer botulinum toxin into most of the commonly injected muscles. The authors of this CD hope that it will help to further increase the use and acceptance of this successful treatment modality. The contents of the CD have been approved by a panel of distinguished members of the MDS including Drs. Comella, Deuschl, Lees, Poewe, and Tolosa. Finally, keep an eye on the job opportunities section in this issue. It may be just the time to spark a new career in Movement Disorders!

MDS Sets Forth Strategic Initiatives to Guide Global Mission

MDS leadership took an in-depth look at the current status and future goals of The Society in May, 2002, during the second of two strategic planning retreats. Using a variety of resources, including feedback from MDS membership and a review of current and future challenges, participants identified the 2002-2005 MDS Strategic Plan. The following outline will guide the efforts of MDS as it fulfills its global mission of advancing neurological sciences pertaining to the subspecialty of Movement Disorders.

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MDS 7th International Congress: A Record-Breaking Success

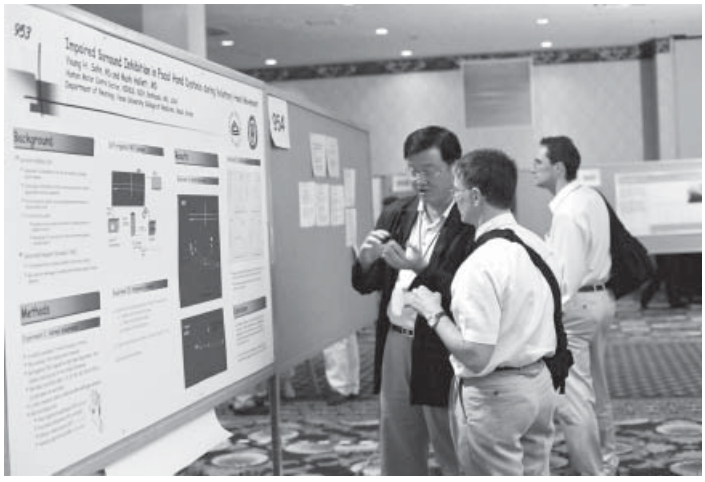
The *Movement* Disorder Society's 7th International Congress of Parkinson's Disease and Movement Disorders was held in Miami, Florida, USA, from November 10th- 14th, 2002, bringing together nearly 2,700 participants from 69 different countries around the globe. The Miami Congress represents a major bench-mark for The Society with numbers and praises surpassing those of previous years.

Dr. Werner Poewe receives an award for outstanding service as MDS President.

Scientific Program

The Congress' Scientific Program commenced on Sunday morning with seven industry-supported Kickoff Seminars. The line-up following the seminars included eight Plenary and six Parallel Sessions, twenty-one late afternoon Wine and Cheese Seminars and ten Video Dinners. Sessions encompassed a wide range of topics including the treatment of Movement Disorders, neuroimaging, gene therapy and public health issues. All scientific session were well received with some sessions offering standing room only.

MDS received and accepted a record-breaking number of abstracts for the 7th International Congress. Over 1,100 abstracts were presented during seven Poster Sessions and due to the large number of presentations, poster session viewing times were somewhat limited. The Society looks forward to accommodating longer viewing periods in 2004. Each abstract was published in a supplement of *Movement Disorders*, the official journal of The *Movement* Disorder Society.



Congress attendees discussing a poster presentation

Other Major Highlights

Faculty

An international faculty of 144 MDS members from 19 countries shared expertise on Movement Disorders and related topics.

Featured Guest

Ms. Janet Reno, former US Attorney General, was a featured speaker at the Congress Opening Ceremony on November 10th, 2002. Ms. Reno discussed her personal perspectives as a patient living with Parkinson's disease.

Janet Reno, speaking to a standing-room only crowd at the Congress Opening Ceremony

Lectureship Awards

On November 11, David J. Brooks of London, UK received the Stanley Fahn Lectureship Award for his outstanding work in Parkinson's disease imaging. Additionally Yoshikuni Mizuno of Tokyo, Japan received the C. David Marsden Lectureship Award in recognition of his research achievements in Parkin and Parkinson's disease.

MDS History Exhibit

Organized by Christopher Goetz, MD, the MDS History Exhibit proved to be a major interest for Congress delegates. Original books, manuscripts, letters, video footage, photographs, medical artifacts and instruments related to the development of Movement Disorders as a discipline were displayed in glass cases, through the duration of the Congress. MDS members were the primary source of original artifacts. Additionally, artifacts were on loan from libraries and private collections.

Exhibitors and Supporters

The 7th International Congress attracted nearly double the

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number of exhibitors from its previous Congress, allowing attendees to network with more international patient organizations, pharmaceutical companies, publishers and other industry leaders. Additionally, MDS was pleased to collaborate with numerous industry leaders on Platinum, Silver and Bronze Support levels in the form of unrestricted educational grants. The generated funds were put toward various Congress initiatives, including sponsorship of Congress Registration Bags, Social Events and Abstracts on CD-ROM.

Social Events

Congress participants celebrated with old and new friends during the Opening Reception on Sunday evening November 10. Guests were guided to the Great Lawn of the Fontainebleau Hilton where they were greeted by stilt walkers, a steel drum band and traditional Cuban faire.

Additionally, attendees were invited to celebrate on Wednesday, November 13 during the Congress Banquet held at the Miami Seaquarium. Guests were fascinated with the Seaquarium's featured stars, during the dolphin and killer whale shows. A wonderful dinner and dancing overlooking Miami's beautiful lagoon topped off the evening.

A steel drum band performs for Congress attendees

The MDS thanks faculty, delegates, exhibitors, sponsors and support staff for their contributions to the most successful Congress in MDS history. Please contact the MDS Secretariat for additional 2002 Congress information, or for ways in which you can participate in the 2004 MDS Congress in Italy.

"United We Win" Art Exhibit and Auction Raises $30,000 for Underprivileged Physicians and Scientists

More Than 850 Attend Event Highlighting Importance of Working Together to Defeat Parkinson's Disease as Part of the MDS 7th International Congress in Miami

Science and the arts are linked in the evolution of culture, and recently that connection took meaningful, literal form as the "United We Win" art exhibition and silent auction raised more than $30,000 to benefit The *Movement* Disorder Society (MDS). More than 850 researchers and clinicians in the field of Movement Disorders attended the "United We Win" event, which was sponsored by Pharmacia Corporation and held at Miami's historic Villa Vizcaya in conjunction with the MDS 7th International Congress on Parkinson's Disease and Movement Disorders.

MDS President Werner Poewe, MD (left) and Bruno Musch, MD, of Pharmacia Corporation speak to attendees of "United We Win."

"We wanted to host an intellectual and cultural event to benefit those involved in Parkinson's research and, at the same time, express a sense of solidarity and social commitment to working together to defeat this disease," said Bruno C. Musch, MD, Pharmacia Corporation.

For the "United We Win" event, internationally renowned Italian artists donated their work and created pieces designed specifically for the exhibition and auction. Utilizing the premise of linking art and science to provide care and sustain hope, the art exhibition was created with a central theme of four primal elements: fire, earth, water and air. In addition to a variety of prints and paintings, each artist created a set of masks to represent each of the four elements.

"The exhibition was an exceptional and unique way to provide support to the MDS organization and to the physicians and clinicians who work in the field of Movement Disorders," said MDS President, Werner Poewe, MD.

Masks were chosen to be part of the exhibition as a symbolic gesture, because Parkinson's disease limits movement. In fact,

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the faces of some patients become almost inexpressive as a result of the disease. Used in Japanese and Italian theater to express feelings, masks can be used to illustrate emotion.

"Art visually expresses feelings of joy and exemplifies ways you can express yourself. Unfortunately, the disease prevents people from being able to express themselves. We took this opportunity to utilize art and the masks to represent a person's well-being. Our objective was to enhance envisioning of art as a way of conveying the messages of the disease we want to defeat," Dr. Musch said.

These masks by Italian artist Gianfranco Pardi, which represent the four elements of fire, earth, water and air, were among the items available in the silent auction.

In total, the exhibit included 10 original paintings, 40 masks (all signed by the artist and not reproduced) and 10 prints (numbered prints out of limited series). All guests received a prestigious catalogue with pictures of all the art works and the artists' biographies.

The art works, including the masks, were sold in a silent auction throughout the entire Congress. A permanent exhibit of the art work was placed at the Congress at the Fontainebleau Hotel to enable all Congress participants to view the exhibit.

The $30,000 raised at the event will benefit the MDS young member program, which provides waived membership fees, free journal access and travel grants to MDS meetings and congresses for those facing financial hardships.

Showing Unity

Ultimately, this event is a way of showing unity among all the professionals in the field who seek cures and treatments for Movement Disorders.

"Many people working together have led to the progress we have seen," Dr. Musch said. "Thousands of people in this field do something every day that ultimately will make a difference. We should remember how important it is for us to find a new drug and develop a new understanding of the disease."

Dr. Poewe agreed, adding that research, scientific and patient care achievements are the result of close team work and joint efforts across industries that may have different institutional goals but whose activities are aimed at the same ultimate objective: patients and their well being. This year's MDS Congress provided an opportunity to think about the value of unity in the field and to make physicians aware they can contribute and make a difference.

"Through common and joint efforts of different bodies, foundations, industries, universities, research centers, we are able to make progress toward the objective of beating this disease. The message is that united, we win. The event signifies the opportunity and need we have to work together based on mutual support and understanding and defeat this disease," Dr. Poewe said.

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The *Movement* Disorder Society 2002-2005 Strategic Plan

Organizational Structure

Goal: Optimize the function and structure of the organization.

- Increase the involvement of the International Executive Committee.
- Improve communication between the MDS leadership and committees, task forces and sections.
- Facilitate and coordinate fundraising efforts.
- Maximize relationships of sections, societies, and delegates.
- Facilitate recognition of MDS as "international" and as being involved in Parkinson's disease.
- Create disease-specific and subspecialty interest sections.

Membership

Goal: Promote growth of MDS membership.

- Enhance awareness of the MDS and its membership benefits.
- Develop new membership benefits.
- Promote membership in Developing Countries through a reduced or waived membership dues program or other region-specific initiatives to reduce membership barriers.
- Target external Movement Disorder societies for membership recruitment efforts.
- Develop a corporate membership program through the Industrial Relations Committee.
- Promote membership among allied health professionals.

Journal

Goal: Maintain and develop the quality, content and impact of the MDS journal.

- Promote the inclusion of review articles.
- Increase the impact factor.
- Enhance the basic science component while maintaining a strong clinical emphasis.
- Use the journal as an educational medium in cooperation with the Education Committee.

Outreach

Goal: Expand the organization's outreach.

- Disseminate educational and other peer-related information.
- Convene a task force to develop and put forth a proposal to create a section for allied health professionals.
- Create links between the MDS Web site and the Web sites of other related organizations.
- Appoint members from other societies to MDS task forces.
- Convene joint meetings or Movement Disorders satellites at the meetings of other related organizations.
- Promote the MDS by exhibiting at the meetings of other organizations and engaging in other promotional activities.
- Continue to cooperate with the World Health Organization (WHO) at Non-governmental Organizations (NGO) meetings and assess epidemiology of Movement Disorders in different parts of the world.
- Develop interactions with related professional/scientific organizations.
- Strengthen relationships with Movement Disorders-related patient advocacy groups through discussion at International Congresses and other meeting forums.
- Continue to co-sponsor the WHO's World Parkinson's Disease Day activities.

Congress

Goal: Enhance Congress and other MDS-sponsored meeting activities.

- Establish an annual Congress by 2005.
- Appoint an MDS task force to review Congress management and structure.
- Continue to develop and fund small topical meetings and workshops.
- Develop and clarify industry involvement in MDS programs.

Basic Science

Goal: Incorporate basic science in all aspects of MDS.

- Increase basic scientific content in the journal.
- Increase basic scientific content in the International Congress.
- Increase membership of basic scientists in the MDS.

Education

Goal: Create educational activities which serve to maintain, develop or increase the knowledge, skills and professional performance of members and non-members.

- Perform needs assessments.
- Catalog educational products already available within MDS.
- Initiate ACCME accreditation process.
- Define policy regarding industry sponsorship for educational programs.
- Develop and prioritize comprehensive educational programs, courses, enduring materials, Web-based/electronic mail forums, and electives and fellowships.

Scientific Issues

Goal: Continue to advance the neurological sciences as they pertain to Movement Disorders.

- Develop core curricula for subspecialty training in Movement Disorders in cooperation with related national and international organizations.
- Communicate scientific and evidence-based committee reports and statements related to state of the art management of patients with Movement Disorders.
- Support (funding) research generated by the IEC and/or committees in the interest of MDS and approved by the IEC.

Public Relations

Goal: Develop a broader awareness of MDS.

- Develop a public relations campaign targeting membership growth.
- Enhance media relations through press conferences, a press section on the MDS Web site, and the development of a journal press release policy.
- Establish a public relations committee.
- Enhance awareness of the term "Movement Disorders" and its meaning.

Microelectrode Recordings in Movement Disorder Surgery

Microelectrode Recordings in Movement Disorder Surgery: Pro

— Jens Volkmann, MD, PhD, Dept. of Neurology, Christian-Albrechts-University, Kiel, Germany, *email: j.volkmann@neurologie.uni-kiel.de*

> *". . . the 'renaissance' of Movement Disorder surgery was driven by academic centers using microelectrode recordings."*

Movement Disorder surgery is not a life saving procedure but aims at restoring quality of life in a disabled person. The requirements of safety and quality of outcome are special in such an elective procedure. When a patient is selected for Movement Disorder surgery, he/she is willing to accept a certain inherent risk of the neurosurgical procedure. In return, he expects the neurosurgeon to take all necessary measures to guarantee the best possible treatment result in his/her individual case. The controversy about the use of microelectrode recordings during Movement Disorder surgery is centered within this risk-benefit dilemma. The proponents of microelectrode recordings believe that this technique is essential to secure an optimal placement of lesions or DBS electrodes, improves efficacy of the treatment and reduces adverse effects related to a misplacement. The most common arguments against microelectrode recordings are safety aspects such as a potentially increased risk of bleeding or the lengthening of the surgical procedure. Unfortunately, there is little evidence supporting either view. Surgical techniques, unlike drugs, are not easy to evaluate in clinical trials. Microelectrode recordings can be performed in numerous different ways. The interpretation of the data and the safety of the method may greatly depend on the quality of the instruments, the experience of the surgical team and a multitude of different other surgical aspects such as the way of stereotactic planning. Surgical techniques are not strictly standardized. They are shaped to the individual needs of a center and they are subject to an individual learning curve. Therefore, it is not surprising, that not a single prospective, randomized trial has ever addressed the issue of efficacy or safety of microelectrode recordings for Movement Disorder surgery.

In many discussions about the pros and cons of microelectrode recordings, we have been presented with literature-based comparisons of the clinical outcome of those groups performing microelectrode recordings to those not using them. They seem to indicate superior results in centers using microelectrodes, when presented by proponents of this technique. Interestingly, Hariz and Fodstad[1] came to the opposite conclusion based on their critical review of the literature and found groups performing Movement Disorder surgery without microelectrode recordings to have an equivalent outcome but a lower rate of adverse effects. The different results simply indicate that a review of the literature is not a valid approach to the problem. As I have outlined before, the way of performing the surgery in those centers being compared may differ in many more aspects than just the simple fact of using a microelectrode or not.

My arguments in favor of microelectrode recordings during Movement Disorder surgery are therefore based on clinical experience rather than non-existing scientific evidence. As a neurologist, I have performed the intraoperative clinical assessment in a large number of functional stereotactic procedures using macrostimulation for physiological target verification before being able to use microelectrode recordings during the last two years. Modern neuroimaging techniques have substantially improved the anatomical targeting in stereotactic neurosurgery. For some of the targets, such as the subthalamic nucleus, direct target visualization can be achieved with special MRI sequences. For other targets, such as the VIM thalamus, indirect targeting based on anatomic landmarks and stereotactic atlases is still necessary, but MRI may help to delineate adjacent structures that need to be spared. The vast majority of neurosurgeons still believe that the special need for accuracy in functional procedures requires additional physiological verification despite the possibility of direct visualization of some target structures in MRI. Besides the inherent uncertainty of landmark based stereotactic targeting, a possible brain shift during the procedure due to CSF leakage or small deviations of the introduced probe with respect to the precalculated trajectory are factors that are difficult to account for otherwise. Such small deviations from the intended target, however, may be decisive for the postoperative outcome. Therefore, Movement Disorders surgery is normally performed in awake and cooperative patients and macrostimulation is considered the minimal requirement to test for clinical benefit and possible side effects at the anatomically predefined target.

Unfortunately, the intraoperative clinical testing is not an easy task even for experienced neurologists. A number of problems may confound the evaluation of macrostimulation effects. A substantial number of patients get confused or drowsy during the procedure and do not cooperate sufficiently during clinical testing. Clinical symptoms may fluctuate in Movement Disorders or they may be masked by prolonged medication effects and one may not be able to provoke them at the time of testing. The microlesioning effect after insertion of the stimulating probe may also reduce or abolish

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Microelectrode Recordings in Movement Disorder Surgery

Microelectrode Recordings in DBS, Yes or No? The case against.

— Marwan I. Hariz, MD, PhD, Professor of Functional Neurosurgery, Department of Clinical Neuroscience, Umeå, Sweden

> *"So far, there is no evidence that microelectrode recording techniques improve results."*

The proponents of the use of microelectrode recordings –rather than macrostimulation– during surgery for Movement Disorders claim that microelectrode recordings improve the accuracy of lesion or DBS electrode placement, that microelectrode recordings decrease surgical complications and that microelectrode recordings improve the clinical results of surgery. However, a careful study of the published scientific literature reveals that the widespread use of microelectrode recordings neither increases surgical accuracy nor improves results of surgery, but definitely increases risks and carries a much higher rate of complications in surgery for Movement Disorders, compared to macro-electrode-stimulation-guided techniques.

It must be kept in mind that stereotactic surgery for Parkinson´s disease (PD) and other Movement Disorders is by definition a "primum nil nocere" ("first to not harm") surgery. Since the ultimate goal of surgery for Movement Disorders is to decrease the symptoms and disability of the patient, not to cure the disease itself, the surgical procedure should therefore not add any new symptom or neurological deficit to the already disabled patient.

To ensure a proper physiological identification of the imaged anatomical target, intra-operative neurophysiological exploration is required prior to lesioning or DBS implant. This exploration can be performed with a variety of methods, the most common of which are either macroelectrode stimulation or single cell microelectrode recording. In a previously published review of the literature (1) it was shown that inaccuracies in placement of pallidotomy lesions or DBS electrodes were not uncommon in publications using microelectrode recordings. The present contribution will emphasize the higher risks of microelectrode recordings, as compared to macrostimulation techniques, such as illustrated in the literature.

Safety of Microelectrode Recordings during surgery for Movement Disorders

At the meeting of The Movement Disorder Society in New York in October 1998, the preliminary results of a multicenter study on DBS in advanced PD were presented: Anthony Lang presented the results of DBS in pallidum in 36 patients (25 bilateral) and reported, among other complications, 28% system complications, 8% hemorrhage, 11% infection, and 3% seizures. He concluded by stating that complications were not uncommon but risk/benefit was quite acceptable (2). José Obeso et al presented the results of DBS in subthalamic nucleus (STN) in 36 patients (33 bilateral), and reported 8% hemorrhage and 22% infections, and concluded that the risk cannot be minimized but the benefit is substantial (3). All centers involved in this study at that time except the one in Lund, Sweden, used microelectrode recording techniques for target identification. The non-microelectrode recordings center of Lund, however, had neither hemorrhage nor infections among their operated DBS patients (Dr Stig Rehncrona, Department of Neurosurgery, Lund, Sweden, personal communication). The higher risk of hemorrhage provoked by microelectrode recordings was later confirmed in the paper published in the New England Journal of Medicine reporting the outcome of STN and pallidal DBS in 18 centers, in which it was found that the incidence of hemorhage correlated with the number of microelectrode passes (4).

The microelectrode recording techniques have been extensively used in many centers during pallidotomy procedures. There are four different studies reviewing the literature on pallidotomy and showing unanimously that when microelectrode recordings were used, complications, especially brain hemorrhage, were significantly higher than when macroelectrode techniques were used.

In a review article from Oxford, UK (5), the authors showed that intracerebral hemorrhage occurred in 7% of microelectrode recordings-operated patients versus 0.6% in non-microelectrode recordings-operated patients. In 2001, the Toronto group published a more extensive survey (6) reviewing 1959 patients from 85 articles at 40 centers in 12 countries; microelectrode recordings was used in 46.2% and macrostimulation in 53.8% of the patients. Cerebral hemorrhage occurred in 2.7% of patients operated with microelectrode recordings and in 0.5% of macroelectrode-operated patients. Overall complications occurred in 26% of microelectrode recordings patients and in 19.2% of macroelectrode patients (6). A meta-analysis study of results of microelectrode recordings versus macroelectrode-guided pallidotomy was perfomed recently by

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Microelectrode Recordings in Movement Disorder Surgery: Pro

symptoms necessary for clinical testing. Unfortunately, the microlesioning effect is not necessarily predictive for an optimal probe placement. Alleviation of tremor e.g., may be observed at rather large distances from the anatomically predefined target, outside of the VIM nucleus which is considered to be the optimal target for a long-term benefit. If one is lucky enough not to encounter any of the problems above, one may experience the next difficulty when the response to stimulation does not correspond to the expected benefit. How to proceed in such a case? The surgical team will have to decide on whether to be satisfied with a moderate intraoperative improvement and to stay with the anatomically identified target or to extend surgery and test an alternative trajectory on the search for a better response. Multiple perforations with a macrostimulation probe, however, increase the risk of tissue damage and lead to a progressive microlesioning effect, which again impairs clinical comparison of the different targets.

Microelectrode recordings provide physiological information about nuclear boundaries which are independent from the cooperation of the patient. They can even be performed under general anaesthesia, which is often necessary in patients with severe dystonia, who cannot be fixed in the stereotactic frame otherwise. The microlesioning effect is minimal when using microelectrodes. Therefore, several trajectories can be explored without compromising subsequent clinical testing during stimulation. Most centers using microelectrode recordings do in fact believe that several simultaneous or subsequent trajectories are essential in establishing a physiological "map" of the target area, that can be used to adjust the atlas based anatomy to the individual brain. The microrecordings are usually combined with stimulation either through the microelectrode itself or a microprobe which is advanced to the target. Using the "Ben-gun" method with five simultaneous parallel microelectrode trajectories, we often find very distinct clinical responses at stimulation sites that are only 2 mm apart. In our own experience, the central trajectory, which corresponds to the anatomically predefined target is used for final implantation of the DBS electrode in only 60-70% of the cases. The other implantation sites are equally distributed over the surrounding trajectories. Our decision to implant a certain trajectory is based on the presence of typical cell discharges in neural recordings and benefit/adverse event ratio during stimulation. If one assumes the intraoperative stimulation to be predictive for postoperative clinical outcome, one must therefore expect a suboptimal electrode placement in approximately 30-40% of the cases when relying on anatomical targeting and electrophysiological exploration of a single trajectory. In a retrospective analysis of 50 pallidotomies, Guridi et al.[2] found an average deviation of 3 mm between the anatomically and physiologically defined targets. In only 45% of the cases, an anatomically defined lesion would have overlapped with the final lesion site. Tsao et al [3] concluded from their series that in only 13/25 pallidotomies, the lesion would have been confined to the internal globus pallidus based on anatomical targeting. Finally, Altermann et al.[4] described a change from the initial anatomical target in 98% of their pallidotomies based on microelectrode recordings with a deviation by more than 4 mm in 12% of the cases. Even for the smaller subthalamic nucleus the mean deviation between anatomically defined target and physiologically defined target may differ between 1.5 and 2.6 mm[5]. Although these studies do not answer the ultimate question whether microelectrode recordings improved clinical outcome in these cases, they demonstrate at the very least the uncertainty of anatomical targeting and of a "single trajectory approach".

Theoretically, multiple brain penetrations should increase the bleeding risk during microelectrode guided interventions. Again, there is no study proving this point. One must not forget, however, that the "renaissance" of Movement Disorder surgery was driven by academic centers using microelectrode recordings. In fact, we base our impression on the safety of Movement Disorder surgery on those clinical studies in which to a large majority microelectrode recordings were used. In practical terms, microelectrode recordings are therefore unlikely to increase the bleeding risk during Movement Disorder surgery beyond the generally accepted range of 1-3% symptomatic hemorrhages.

In summary, I believe that a physiological mapping of the target area using multiple microelectrode trajectories helps to improve the accuracy of electrode or lesion placement in Movement Disorder surgery without significantly increasing the risk. They, moreover, serve as an additional modality for surgical quality control. The extra time needed during surgery is well invested, given the amount of time one has to spend for postoperative adjustments of DBS parameters in a patient with a suboptimal electrode placement.

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Micro Electrode Recordings in DBS, Yes or No? The case against.

the Vancouver group (7). It showed that there were no significant differences between the two techniques in improvement of dyskinesia or UPDRS motor scores. However, the study showed that microelectrode recordings had a significantly higher intracerebral hemorrhage rate (1.3 ± 0.4%) compared to macroelectrode stimulation (0.25 ± 0.2%). The Amsterdam group (8) performed a systematic literature review of morbidity and mortality following pallidotomy in Parkinson´s disease, showing that pallidotomy performed with microelectrode recordings resulted in significantly more morbidity and mortality.

There are no systematic reviews yet of the practice of microelectrode recordings vs. non-microelectrode recordings in DBS procedures. However, the microelectrode recording techniques during DBS are virtually the same as during pallidotomy; therefore it can be assumed that the complications of microelectrode recording techniques during DBS will parallel those documented during pallidotomy, which has already been mentioned in the publication of the multicenter DBS study group (4).

The present author does believe that microelectrode recording technique is an exquisite method for study of the cellular activity of basal ganglia. What is questionable is the efficacy and especially the safety of this technique, when compared to experienced macrostimulation techniques; furthermore, it is dubious whether microelectrode recordings should be imposed on, or practiced by, teams who have neither the training nor the experimental background to be able to use this technique in a way that is safe for the patients. The high rate of complications when using microelectrode recordings in several centers is totally unacceptable for a surgical procedure that is elective, symptomatic, not life-saving, non-curative, minimally invasive, and the aim of which is to improve the disability of the patient.

Conclusions

Microelectrode recordings are not homogeneously used among neurosurgeons. Most usually, microelectrode recording techniques require several passes of several microelectrodes in the brain. Microelectrode recordings are important for research and detailed cellular study of basal ganglia, but may increase surgical risks: prolonged surgery may increase stress reactions and the patient may become unreliable to assess; prolonged surgery may increase infection risk; and multiple passes of sharp probes may increase hemorrhage risk. So far, there is no evidence that microelectrode recordings techniques improve results. But there is accumulating evidence that microelectrode recordings increase the rate of severe complications (death, hemorrhage, paralysis). Several published reviews have shown that microelectrode recording techniques were at least five times more dangerous than macrostimulation techniques in terms of provoking serious complications, especially brain hemorrhage. Whether this very significantly increased risk for serious complication is justified by an alleged and theoretical better clinical improvement in patients operated on with microelectrode recording techniques, will remain to be proven.

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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 compliment or a complaint? Each issue will include a sample of the reader responses we've received. All materials submitted become the property of MDS.

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Stem cells and Parkinson's Disease – Scientific and Public Debate in Germany

— Gerd Kempermann, MD, Max Delbrück Center for Molecular Medicine (MDC) Berlin-Buch, and VolkswagenStiftung Research group, Dept. of Neurology, Charité University Hospital, Humboldt University Berlin, Germany

Movement Disorders rank high among the disorders that in the public perception are suited to be cured by the use of stem cells. A better treatment for Parkinson's disease has been frequently used as a strong argument in the public debate about the use of human embryonic stem cells. Most experts share this assumption to some degree, but the reasons are not always as plausible as they might seem. The main explanation for the optimism is that Parkinson's disease is not only a highly visible disorder with great impact on society, but also that some experience with a cell-based therapy already exists that can serve as a proof of principle. The transplantation of fetal tissue from the ventral mesencephalon into the striatum of patients with Parkinson's disease has shown that at least in some patients it is generally possible to achieve therapeutic benefit with a cell-based therapy.

However, rather limited knowledge exists on why and how these therapies work. Are transplanted cells just vehicles that produce and release dopamine in the striatum or *are* dopaminergic neurons adding an additional beneficial aspect to this strategy? Animal data suggest that in order to achieve best therapeutic results, it is essential that transplanted cells integrate into the host brain, and form connections, a unique feature of neurons. But what cell types are best suited for transplantation and what are the best target areas?

Few, if any, of these complex scientific issues have entered the heated public debate on the use of human embryonic stem cells. In Germany, an unprecedented public discussion has been carried out at all levels of the society: in innumerable newspaper articles, television programs and public and private organizations. Statements have been published by the "Deutsche Forschungs Gemeinschaft" (the major federal research funding agency), and by a newly installed "National Ethics Council". The debate culminated in a decision of the German parliament, in January 2002, in favor of a compromise proposal to allow the use of embrionic stem cells for research under very restrictive terms. Only a limited number of cell lines, which had already been established before January 1st 2002, will be available for this use. This regulation is intended to limit further use of human embryos for research purposes. Given the tremendous and ongoing progress of the neurosciences, it is obvious, however, that scientists working with human embrionic stem cells will not be fully satisfied using only established cell lines. The debate, therefore, will undoubtedly go on.

The question whether embryonic or more general pluripotent stem cells have advantages over the more restricted multipotent adult stem cells is valid and necessary, but it is just one of the pressing scientific questions. The public debate is not so much on stem cells per se, but on very fundamental questions of humankind. What is needed is a responsible guidance of public expectations by the scientific community and the development of integrative concepts that take stem cells in all their complexity and make them part of novel therapeutic options.

Emerging Trophic Factor Treatment for Parkinson's Disease

— Don M. Gash, PhD, Alumni Endowed Chair; Professor and Chair, Department of Anatomy and Neurobiology, College of Medicine, University of Kentucky

Neurotrophic factors are endogenous proteins involved in intracellular communication that turn on signaling pathways regulating neuronal survival, differentiation, growth and regeneration. While numerous studies of neurotrophic factors in culture and animal models over the past 50 years have suggested their applicability for treating brain and spinal cord injuries and diseases, none of the factors tested to date have proven efficacious in large scale clinical trials. The reason may well lie in the methods used for delivery. Administration of factors has been attempted clinically through intraventricular, intravenous or intrathecal routes, resulting in diffusion over large regions of the nervous system or body and often producing unwanted side-effects. Now, converging results from both preclinical studies and preliminary clinical trials strongly suggest that controlled, targeted delivery to specific brain sites is needed to achieve clinical efficacy.

Glial cell line-derived neurotrophic factor (GDNF) provides a case in point. Because of its potent protective and restorative affects on midbrain dopamine neurons in nonhuman primate models of Parkinsonism (1, 2), GDNF holds great promise for treating Parkinson's disease. However, an initial clinical trial testing GDNF in 50 Parkinson's disease patients failed to demonstrate efficacy (3). The problem may have been with the site and method of delivery, monthly injections of the trophic factor into the lateral ventricle. Sufficient quantities of GDNF may not have diffused through the ventricular wall and brain parenchyma to the targeted neuronal population, dopamine neurons in the substantia nigra and their afferent projections to the putamen.

As a practical approach for the targeted delivery of GDNF, our group has evaluated the use of subcutaneously implanted programmable pumps to infuse the trophic factor through catheters stereotactically implanted into specific brain sites in parkinsonian rhesus monkeys (4). In a neurotoxin-induced model of parkinsonism, continuously infused GDNF into the putamen, the brain area showing the most severe dopamine depletion in Parkinson's disease, significantly upregulated dopaminergic functions and diminished parkinsonian features (4). This approach is now in the early stages of clinical studies, with significant improvements in motor functions and significant reductions in levodopa-associated side-effects and off-time reported in five patients (5). Thus, the early results are encouraging. However, as with any new treatment, it is important to keep in mind that only the first steps have been taken towards demonstrating efficacy. Further testing, including double-blinded clinical trials, is essential to demonstrate the safety and clinical effectiveness of targeted trophic factor delivery for the treatment of Parkinson's disease.

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MDS-ES Sponsored EFNS Teaching Course Vitebsk, Belarus, June 6-7, 2002

— Dr. Evžen Růžička

One aspect of The Movement Disorder Society-European Section's (MDS-ES) collaboration with the European Federation of Neurological Societies is our support of the EFNS Teaching Courses in Eastern Europe, the latest of which was held in Vitebsk, Belarus, in June. The program included lectures given by MDS-ES Invited Lecturers, Dr. Dirk Dressler (Germany), who spoke on dystonic syndromes and the use of botulinum toxin in dystonic disorders, and Dr. Evžen Růžička (Czech Republic), who gave presentations on extrapyramidal side effects of neuroleptic treatment, and deep brain stimulation; mechanisms and clinical effects.

Two-hundred and seventeen neurologists from Belarus, Moldavia and Ukraine were registered for the course. In addition, approximately 120 non-neurologists attended; these included medical students, university lecturers from different departments, and local physicians. The course was a very important local event, as evidenced not only by the high number of participants, but also by the attendance at the opening session of the Belarussian Deputy Minister for Health, the Rector of the University of Vitebsk and Professor Antonov, President of the Belarussian Neurological Society.

The course took place at the University of Vitebsk, with lectures presented in English, and written syllabi provided. Translation was not provided, as it was hoped that listening to lectures in English would be useful additional training for participants. However, lack of fluency in English did deter audience participation in discussions, and as a result, small group meetings will be incorporated into future programs.

The course may turn out to be the starting point for ongoing collaboration between Belarussian neurologists and some of the lecturers, for example, with Dr. Evžen Růžička in post-neuroleptic syndromes, and with Dr. Dirk Dressler in dystonia. Such European collaborations are a key aim of MDS-ES, and this is an excellent long-term outcome of the participation of MDS-ES in the Teaching Course.

It was hoped that new MDS members might be identified, but we became aware that individual membership fees would hardly be affordable for most of the participants, as the average monthly salary in Belarus is around $50 USD.

The local organizers, Professor Yuri Alekseenko and his team, took excellent care of the speakers, with accommodation at a charming resort outside of the city, and social gatherings with ample opportunity to talk to Belarussian neurologists. The program for the lecturers included a visit to the Chagal Museum and the house where Chagal spent his childhood, as well as a trip to the datscha of the famous painter Repin, which also gave a good impression of the unspoiled Belarussian countryside.

WHAT'S NEW IN THE FIELD

Parkinsonism and Dementia: Synucleopathies, Taupathies and Beyond, An International Workshop, Istanbul, Turkey, May 9-11, 2002

—Haşmet A. Hanağasi MD, Istanbul, Turkey

Over the last decade, significant progress has been made in understanding the molecular, genetic and clinico-pathological features of Parkinsonian disorders and Dementia. The International Workshop "Parkinsonism and Dementia: Synucleinopathies, Tauopathies and Beyond", supported by Movement Disorder Society-European Section was held on May 9-11, 2002 in Istanbul, Turkey. This important meeting was the first workshop organized by the MDS-ES in Turkey. The meeting chairs were Professors Murat Emre and Andrew Lees. The workshop focused on clinical and pathological features of synucleinopathies (PD, MSA, DLB) and tauopathies (PSP, CBD, FTDP-Chromosome 17). The emphasis was on how new findings changed our way of thinking, resulting in new classification of diseases and the impact of these on future diagnostic and therapeutic means. In total, 210 participants from twenty countries participated in the work-

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shop. Fifteen invited speakers from major research centers around the world constituted the faculty.

In day one, the sessions focused on the normal function and dysfunction of tau and synuclein proteins as well as on the genetic, anatomo-pathological and clinical spectrum of tauopathies and synucleinopathies. The last session of the day, "Hot Topics", created a forum for the presentation of recently completed studies or works in progress. Day two topics concentrated on controversies and on futuristic approaches including new diagnostic tools and potential implications of recent advances on the treatment of tauopathies and synucleinopathies. Controversial issues discussed included the concept of Pick complex-FTD-parkinsonism, spectrum of Chromosome 17 mutations and what causes mental dysfunction in Parkinson's disease.

The well-balanced mixture of presentations on basic and classical concepts, in depth overviews and thought-provoking lectures on controversial issues and future trends was an especially unique and successful feature of this meeting. High quality lectures delivered by world class experts and, in particular ample time for lively discussions at the end of each session were further keys for the success of this timely workshop. Overall, the meeting was extremely successful in all aspects and was highly praised by all participants. The meeting was accredited by the Turkish Medical Association and the European Accreditation Council for Continuing Medical Education (EACCME).

Meetings

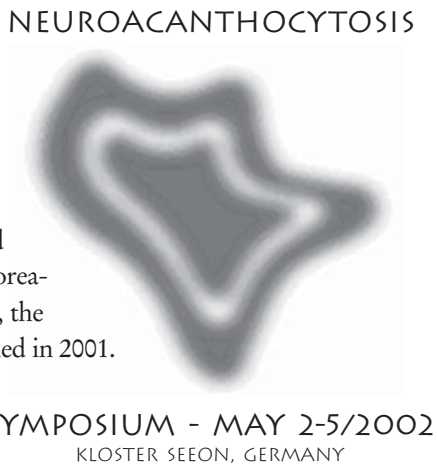
Symposium "Neuroacanthocytosis syndromes: New Perspectives for the Study of Basal Ganglia Degeneration"

— Adrian Danek, M.D., Associate Professor of Neurology, University of Munich, Germany
Kloster Seeon, Germany, May 2-5, 2002

The first ever scientific meeting devoted to neuroacanthocytosis took place in an idyllic setting in southern Bavaria, a former monastery by a lake. During two days in May, 22 short presentations (as well as brief video sessions and a small poster exhibit) alternated with extensive discussion periods that expressed a great collaborative attitude. Presenters and chairpersons drew from an international, still small group of researchers with diverse backgrounds and little connections in the past.

The meeting had been organized by Adrian Danek with support from the Irvine family, the Fritz-Thyssen-Stiftung, Carl H. and Elizabeth S. Pforzheimer, John and Ellen Buzbee, Francesca Roberts, Susan and Kurt Mead, Novartis, Sanofi-Synthelabo, Pfizer, the Wellcome Trust Centre for Human Genetics, the Imperial College Genetic Therapies Centre and John Groom - Helping the Disabled.

Spiky deformation of erythrocytes is typical for these conditions with neurodegeneration mainly of the basal ganglia manifesting with chorea, parkinsonism, dystonia, cognitive impairment, dysarthria,and dysphagia but also with seizures, neuropathy and myopathy.



The topics included the delineation of the different types of neuroacanthocytosis, chiefly the X-linked McLeod syndrome and autosomal recessive chorea-acanthocytosis (ChAc), the gene of which was cloned in 2001. There are at least two additional types, both autosomal dominant, one with intraneuronal inclusions (likely a manifestation of HDL2), and the other with exertion-induced paroxysmal dyskinesias (FADAEP). The exact relationships between what Levine and Critchley originally described in and the hereditary autosomic recesive? HARP syndrome remains to be defined. Despite the heterogeneity, it was agreed to retain neuroacanthocytosis as an

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Meetings

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umbrella term until the molecular correlates are better known.

Normative data from a standardized procedure for easy determination of acanthocytes, were presented. Another basic topic was the physiology of the acanthocyte membrane and the role of the McLeod protein originally identified as an antigen in the Kell system whose main function appears to be endothelin cleavage. The evidence for a role of endothelins as basal ganglia transmitters was reviewed. Several contributions explored Huntington's disease as a paradigm for treatment options and the development of animal models.

Among future interdisciplinary projects, studies of red cell membranes that might share the same defect with the affected neurons were discussed as well as the recently available mice with mutations in the McLeod and ChAc genes. There was general agreement to develop mechanisms to exchange information (clinical data collection with a neuroacanthocytosis questionnaire, sleep study results) and materials (erythrocyte samples, DNA, muscle, nerve, brain specimens) related to these probably still underdiagnosed conditions. Additional collaborators are welcome. There is also a developing patient and family interest group that is looking for partners.

In summary, the first international symposium on neuroacanthocytosis provided an excellent opportunity for exchange about a still insufficiently understood group of syndromes. On the basis of this success, a follow-up meeting is planned for 2004 in Italy.

Additional information: www.nefo.med.uni-muenchen.de/~adanek/index_eng.html .

Interest group: gingerirvine@compuserve.com

From left to right: A. Sano, M. Ho, V. Irvine, G. Irvine, L. Rampoldi, R. Hardie, M. T. Dotti, A. P. Monaco, M. Melone, B. Landwehrmeyer, H. H. Jung, A. Velayos-Baeza, C. Dobson-Stone, T. N. Witt, A. Andreu, A. Weindl, J. Kobal, R. Walker, J. G. de Yebenes, F. Anneser, A. Danek, M. Dose, G. Bosman, M. van den Buuse, A. Storch, F. Tison, M. O. Hengartner, B. Schoser, G. Daniels, B. Gathof, T. Klopstock.

Participants not shown: J. Andrich, T. Brandt, A. Deutschländer, L. de Franceschi, T. Gasser, A. Irvine, C.-M. Kosinski, E. Kraft, H. Meierkord, T. Meyer, R. Reilmann, J. Volkmann, U. Wahlländer-Danek.

Meetings

ASENT Annual Meeting

The American Society for Experimental NeuroTherapeutics (ASENT) announces its 5th Annual Meeting, March 13-15, 2003 at the Capital Hilton Hotel in Washington, DC.

The 5th Annual Meeting features two symposia, "Neuroprotection: Translation of Mechanism and Model Into Therapy" and "Evaluating the Potential of Stem Cells: A Critical Assessment." The meeting also features three workshops entitled, "Placebos and Active Controls of Clinical Trials," "Neuroprotection: Issues in Clinical Trial Design" and "Update on Clinical Trials.

If you would like additional information about ASENT or the 5th Annual Meeting, please visit our web site at www.asent.org or call 414-273-8290.

Announcements

Spring Dystonia Workshops

The American Academy of Neurology (AAN) and The *Movement* Disorder Society (MDS) are pleased to jointly sponsor two educational courses this spring entitled, "Treatment of Dystonia: Workshops Demonstrating the Use of Botulinum Toxin."

The workshops will offer a critical overview of the clinical spectrum, pathophysiology and treatment of dystonia, with an emphasis on Botulinum Toxin (BTX) therapy. Small group, live demonstration sessions in a variety of subtypes will focus on patient assessment and BTX injection for dystonia.

The first workshop will take place in Milwaukee, Wisconsin on May 9, 2003. The second workshop will take place in Durham, North Carolina on June 7, 2003.

If you would like additional information about the dystonia workshops, please visit the MDS Web site, www.movementdisorders.org., or call +1 414-276-2145.

European Dystonia Federation David Marsden Award for Young Scientists - Dystonia Topics

The David Marsden Award will be presented for the first time in 2003 by the European Dystonia Federation. Professor David Marsden (1935 – 1998) was one of the leading neurologists in Europe and the Federation wishes to honour the enormous part he played in developing knowledge of and interest in dystonia.

The Award of $2,500 is intended to encourage research into dystonia in all European countries, especially by young scientists. Submissions are invited of papers (i.e. manuscripts for original publication – no abstracts) on either aetiology, pathogenesis, diagnosis and therapies on dystonia or the psychosocial effects on people with dystonia. Papers will be reviewed by the Federation's Medical Advisory Board.

Through the generous collaboration of The Movement Disorder Society-European Section (MDS-ES) and the European Federation of Neurological Societies (EFNS), the Award will be presented during the EFNS/MDS-ES Congress -August/ September 2003 in Helsinki. The Award winner will make a presentation of his/her findings at the Basal Ganglia Club meeting during the Congress, and at the Federation's own General Assembly in London - September 2003.

More detailed information and a submission form may be obtained at www.dystonia-europe.org.

Parkinson's Institute Fellowship

The Parkinson's Institute is accepting applications for a one or two year neuroepidemiology fellowship at the Parkinson's Institute, supported by the Michael J Fox Foundation. This could be a good experience for a neurology fellow or junior faculty member who is looking for training in epidemiologic research methods as applied to Movement Disorders.

A fellow would have the opportunity to participate in the design, conduct and analysis of many types of neuroepidemiologic projects, including both prospective cohort and case-control designs. The cohorts include the largest population-based incident cohort of Parkinson's disease (more than 500 cases), a large twin study of Parkinson's disease and essential tremor, and a population-based prospective cohort study of elderly persons in China. A population-based study of dystonia is in the planning stages.

One of the fellowship experiences will be to participate as a member of a field examination team for two large NIH funded studies investigating the etiologic factors contributing to Parkinson's disease. The field trips would involve travel throughout the US to perform in-home neurologic examinations on study subjects.

The Institute has a large basic research division as well as an active clinic with four Movement Disorder neurologists and a busy clinical trials program. There is an ongoing series of multidisciplinary conferences involving basic and clinical scientists. Collaborations between the divisions provide a broad perspective on research in Movement Disorders.

Established in 1988, The Parkinson's Institute is an internationally recognized, independent, non-profit research and patient care organization. This is a great opportunity to join a team of dedicated scientists, physicians and other driven professionals who share a commitment and connection to a meaningful mission — to find the cause and cure for Parkinson's disease.

Interested candidates should send a cover letter stating their interests and their curriculum vitae to:

The Parkinson's Institute
Attn: Human Resources
1170 Morse Avenue
Sunnyvale, CA 94089
Fax: 408-734-8427
E-mail: careers@parkinsonsinstitute.org

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Junior Movement Disorder Position

Starting date is negotiable. 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. Previous training and experience with pharmacology, statistics and/or database management is desirable. 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. In addition to evaluation and management of patients, the successful candidate will be responsible for preparing manuscripts for publication. 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:

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

Postdoctoral Fellows

Several positions are available for Postdoctoral Fellows (BAT IIa) at the Department of Neurodegenerative Disorders of the Hertie-Institute for Clinical Brain Research Center of Neurology, University of Tübingen

The research of the Department is focused on the molecular and genetic basis of neurodegenerative diseases (Parkinson's disease, Alzheimer's dementia etc.) and Movement Disorders and the development of novel methods in diagnosis and treatment. The program will provide a thorough clinical education as well as the opportunity to conduct clinical and basic research on an internationally competitive level. The department will be 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. Send applications to:

Prof. Dr. Thomas Gasser
Department of Neurology and
Hertie Institute for Clinical Brain Research
Hoppe-Seyler Str. 3
72076 Tübingen
Tel: 07071-29 86529
Fax: 07071-29 5260
E-mail: thomas.gasser@med.uni-tuebingen.de

Clinical Development Neurologist

MD with a background in neurodegeneration especially Parkinson's needed for prominent world renowned pharmaceutical located in the southeast. Candidate must be a board certified neurologist with a track record in program study management and at least three years clinical development experience.

Individual will assist in clinical strategy for phases III B through phase IV and will also be directly involved in company's phase II projects.

This key person will contribute to growth of company's therapeutic franchise in Neurology. Individual will additionally be responsible for defining, identifying and securing implementation of medical market support and development activities. Some management responsibility and staff development on an as needed basis. Please contact:

Alice I. Whooley
Executive Search Associates
Tel: 617-375-6060 x 206

2003

March 13-15, 2003
Fifth Annual Meeting of the American Society for Experimental Neuro Therapeutics (ASENT). Capital Hilton Hotel, Washington, D.C., USA. Contact: ASENT, 611 East Wells Street, Milwaukee, WI 53202; TEL: +1-414-273-8290; FAX: +1-414-276-3349; E-mail: info@asent.org; Web site: www.asent.org

*March 14-15, 2003
Transcranial Magnetic Stimulation in Movement Disorders. Portorfino Kulm, Genova, Italy. Sponsored by The Movement Disorder Society. Contact: Prof. Giovanni Abbruzzese, University of Genoa; TEL: 39-010-353-7039; FAX: 39-010-353-8631; E-mail: giabbr@csita.unige.it

March 22-25, 2003
8th Prague International Symposium of Child Neurology, Prague, Czech Republic. Contact: Conference Partners, Sokolska 26, 120 00 Prague 2, Czech Republic; TEL: 420-2-2426-2110; FAX: 420-2-2426-2109; E-mail: info@conference.cz ; Web site: www.conference.cz/childneurology

March 29-April 5, 2003
American Academy of Neurology 55th Annual Meeting. Honolulu, Hawaii, USA. Contact: American Academy of Neurology, 1080 Montreal Avenue, St. Paul, MN 55116; TEL: +1-651-695-2703; FAX: +1-651-695-2791; E-mail: web@aan.com; Web site: www.aan.com

April 5-8, 2003
American Association of Neuroscience Nurses (AANN) 35th Annual Meeting. Hilton Atlanta, Atlanta, GA, USA. Contact: AANN, 4700 W. Lake Avenue, Glenview, IL 60025; TEL: +1-888-557-2266; FAX: +1-888-240-4446; E-mail: info@aann.org; Web site: www.aann.org/education/meeting

April 26-May 1, 2003
American Association of Neurological Surgeons Annual Meeting. San Diego, CA, USA. Contact: American Association of Neurological Surgeons, 5550 Meadowbrook Drive, Rolling Meadows, IL 60088; TEL: +1-847-378-0500 or +1-888-566-2267; FAX: +1-847-378-0600; E-mail: info@aans.org; Web site: www.neurosurgery.org/aans/meetings/2003/index.html

May 8-12, 2003
6th International Conference on Alzheimer's and Parkinson's Diseases (AD/PD). Seville, Spain. Contact: Kenes International, 17 Rue du Cendrier, P.O. Box 1726, CH-1211, Geneva 1, Switzerland; TEL: 41-22-908-0488; FAX: 41-22-732-2850; E-mail: adpd@kenes.com; Web site: www.kenes.com/adpd

May 9, 2003 NEW!
Treatment of Dystonia: Workshop
Demonstrating the Use of Botulinum Toxin
Jointly developed by: The *Movement* Disorder Society and the American Academy of Neurology
Milwaukee, WI, USA
E-mail: info@movementdisorders.org
Web site: www.movementdisorders.org

May 30-June 3, 2003
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

June 7, 2003 NEW!
Treatment of Dystonia: Workshop
Demonstrating the Use of Botulinum Toxin
Jointly developed by: The *Movement* Disorder Society and the American Academy of Neurology
Durham, NC, USA
E-mail: info@movementdisorders.org
Web site: www.movementdisorders.org

June 14-18, 2003
13th Meeting of the European Neurological Society. Istanbul, Turkey. Web site: www.ensinfo.com

June 17-21, 2003
Canadian Congress of Neurological Sciences. Quebec City, Quebec, 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

July 10-15, 2003
6th IBRO World Congress of Neuroscience. Prague, Czech Republic. Contact: Secretariat, 6th IBRO World Congress of Neuroscience, Guarant LTD, Opletalova 15, 110 00, Prague 1, Czech Republic; TEL: 420-2-24-21-06-50; FAX: 420-2-24-21-21-03; E-mail: ibro2003@biomed.cas.cz

August 16-19, 2003
World Congress on Huntington Disease 2003, Toronto, Canada. Organized by the Research Group on HD and the WFN, the International Huntington Association, the Huntington Study Group and the Huntington Society of Canada. For more information contact: iha@huntington-assoc.com and Web site: www.hsc-ca.org

August 22 - 24, 2003
21st Annual International Conference of the Benign Essential Blepharospasm Research Foundation, (BEBRF) Inc. Crowne Plaza Hotel, Philadelphia, PA. Contact: BEBRF; Tel: +1-409-832-0788; E-mail: bebrf@ih2000.net

August 30 – September 3, 2003
7th European Federation of Neurological Societies Congress. Helsinki, Finland. Contact: EFNS, Neurological Hospital Rosenhugel, Riedelgass 5, A-1130, Vienna, Austria; TEL: 43-1-880-00-270; FAX: 43-1-88-92-581; E-mail: headoffice@efns.org

September 16 – 20, 2003
27th International Congress of Clinical Neuropsysiology/The 50th Anniversary of the American Association of Electrodiagnostic Medicine Annual Scientic Meeting. San Francisco, California. Contact: AAEM, 421 First Avenue SW, Suite 300E, Rochester, MN, 55902; TEL: +1-507-288-0100; FAX: +1-507-288-1225; E-mail: aaem@aaem.net

October 1-4, 2003
Child Neurology Society Annual Meeting. Miami Beach, FL, USA. Contact: Child Neurology Society, 1000 West County Road E, Suite 290, St. Paul, MN 55126; TEL: +1-651-486-9447; FAX: +1-651-486-9436; E-mail: nationaloffice@childneurologysociety.org; Web site: www. childneurologysociety.org

*October 10-13, 2003
Psychogenic Movement Disorders. Aberdeen Woods Conference Center, Atlanta, GA, USA. Sponsored by The Movement Disorder Society. Contact: Meeting Organizer, Mark Hallett, MD, NINDS, NIH Bldg. 10, Rm. 5N226, Bethesda, MD, 20892-1428; TEL: +1-301-496-1561; FAX: +1-301-402-1007; E-mail: mark_hallett@nih.gov

* Meetings Sponsored/Endorsed by MDS

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October 18-23, 2003
Congress of Neurological Surgeons 53rd Annual Meeting. Colorado Convention Center, Denver, CO, USA. Contact: Congress of Neurological Surgeons, 10 North Martingale Road, Suite 190, Schaumburg, IL, USA, 60173; TEL: +1-847-240-2500; FAX: +1-847+240-0804; E-mail: info@1cns.org

October 19-22, 2003
128th Annual Meeting of the American Neurological Association. San Francisco, CA, USA. Contact: American Neurological Association, 5841 Cedar Lake Road, Suite 204, Minneapolis, MN 55416; TEL: +1-952-545-6284; FAX: +1-952-545-6073; E-mail: lorijanderson@msn.com

November 8-13, 2003
33rd Annual Meeting of the Society for Neuroscience. New Orleans, LA, USA. Contact: Jamie Swank, Society for Neuroscience, 11 Dupont Circle, N.W., Suite 500, Washington, D.C. 20036; TEL: +1-202-462-6688; FAX: +1-202-462-9740; E-mail: info@sfn.org; Web site: http://web.sfn.org

***December 6 - 7, 2003**
World Parkinson's Day International Symposium. Mumbai, India. Contact: Ms. Katie M. Vania; TEL: 91-22-206-8787; FAX: 91-22-283-6926; E-mail: ktvania@vsnl.com

2004

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

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

September 4 –9, 2004
8th European Federation of Neurological Societies Congress. Paris, France. Contact: EFNS, Neurological Hospital Rosenhugel, Riedelgass 5, A-1130, Vienna, Austria; TEL: 43-1-880-00-270; FAX: 43-1-88-92-581; E-mail: headoffice@efns.org

October 3-6, 2004
129th Annual Meeting of the American Neurological Association. The Sheraton Toronto, Toronto, ON, Canada. Contact: American Neurological Association, 5841 Cedar Lake Road, Suite 204, Minneapolis, MN 55416; TEL: +1-952-545-6284; FAX: +1-952-545-6073; E-mail: lorijanderson@msn.com; Web site: www.aneuroa.org

October 23-28, 2004
34th Annual Meeting of the Society for Neuroscience. San Diego, CA, USA. Contact: Society for Neuroscience, 11 Dupont Circle, N.W., Suite 500, Washington DC 20036; TEL: +1-202-462-6688; E-mail: info@sfn.org

October 24-27, 2004
Mental Dysfunctions in Parkinson's Disease. Salzburg, Austria. Contact: Mental Dysfunctions in Parkinson's Disease, Kenes International, 17 Rue du Cendrier, P.O. Box 1726, CH-1211, Geneva 1, Switzerland; TEL: 41-22-908-0488; FAX: 44-847-127-5678; E-mail: PDment2004@kenes.com; Web site: www.kenes.com/PDment2004

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