

# AMERICAN SOCIETY FOR PERIPHERAL NERVE

## Newsletter



Spring 2006

### **PRESIDENT'S MESSAGE**

#### **Dear Colleagues,**

I am greatly enthusiastic regarding assuming the Presidency of the ASPN this year. This year we will see the further consolidation of our website launched last year. One aspect will be that the newsletter will be incorporated in an electronic format within the website. The highlight and culmination will be putting together a stimulating program for this year's 2007 meeting in Puerto Rico. Our scientific program chairman, Dr. Robert Spinner, will be detailing this elsewhere in the newsletter.

The ASPN Council has committed to continuing the trilateral arrangement with the AAHS and ASRM Societies with the January meeting well into the future. This will allow us greater input for setting venues and priorities at appropriate time and place committee meetings with these two societies. Furthermore, it allows further strategic integration of our meeting program with the other two groups. We wish to avoid overlap in nerve topics, and moreover influence their programs so that nerve content can be in closer association and timing to our own meeting sandwiched between the two other societies.

### **FROM THE EDITOR'S DESK**

Welcome to the first edition of the online ASPN newsletter. Since this the first issue to be published entirely online, we are greatly interested in getting a feedback from the membership. Do you like the online publication or you prefer the printed newsletter. The online edition should give us more space to publish review articles or research topics.

The American Society of Plastic Surgeons (ASPS) has introduced a "Pathways to Leadership" program that is based on the premise that future leaders are made, not born. The program combines elements of organizational education, skills training and mentoring/guided experiences while covering the philosophy, principles and practice of leadership, as they relate to plastic surgery, state and specialty society leaders. The goal of the program is to identify, train, encourage, and evaluate those individuals who will become future leaders in all of organized plastic surgery as well as in other fields, including academic medicine. The ASPS requested the ASPN to nominate individuals from our organization that have demonstrated a commitment, have potential for growth, and will likely serve in a leadership capacity in plastic surgery or organized medicine at the state, regional or national level. Our nominee, Dr. Paul Cederna, from the University of Michigan in Ann Arbor, has been accepted as a participant in the 2006-2007 Pathways to Leadership Program. Dr. Cederna is one of 27 participants selected from more than 50 nominees. Selections were based on achievements to date and in recognition of the potential as a future leader.

**Rajiv Midha, MD**  
**President**

Furthermore, it will allow the publication of colored photographs, movies and video clips.

This is a very exciting step in exploring the technological advances that promise to improve our ability to share information, ideas, techniques and practice pearls. I would encourage all the members to share with all of us their experiences either in research or in clinical applications. This would be

extremely helpful to the membership and most importantly to our patients.

Please feel free to send your suggestions of how we can utilize this format in a more effective way and how to infuse new blood to the ASPN newsletter.

## **ANNUAL MEETING REPORT**

As Program Chairman for the 2006 15<sup>th</sup> Annual ASPN meeting held in Loews Ventana Canyon Resort in Tucson, I wish to thank everyone who contributed to a successful and exciting meeting. Our relationship with the AAHS and ASRM continues to be successful and productive as the combined program began the weekend's events. This year unfortunately still number of functions overlapped between ASPN and ASRM, but for the next year meeting, all three societies agreed to minimize the chances of this issue from recurring.

A joint panel entitled 'Composite Tissue Allografts' followed by a presidential lecture discussing new era in the treatment of the war injuries introduced the members with new treatment issues we a faced. Both were presented with distinguished guests and members of the society. Presentation of the best nerve papers submitted to each society concluded the combined morning program and included excellent clinical and basic science research. Dr. Richard Ransohoff from the Cleveland Clinic and Case Western Reserve University on Saturday afternoon presented a superb overview of chemokines interactions in the neural inflammation. Free papers followed for the balance of the afternoon. The evening event was reserved for the AAHS/ASRM/ASPN Reception.

Sunday morning presentations were highlighted by Dr. Bruce Trapp from the

Thank you!  
**Nash Naam, MD**

**Editor**  
drnaam@handdocs.com

Neuroscience of the Cleveland Clinic, who discussed another great basic science topic, the axon-glia interactions in development and disease. Combined ASRM/ASPN panel followed and included an up-to-date discussion on the Current Management Of Complex Peripheral Nerve Disorders, where the treatment of various difficult nerve problems were presented, reviewing their applications and limitations. Dr. Ayan Gulgonen from Turkey, in the afternoon presented clinical review of a 20-year experience in treating complex nerve injuries in upper extremities.

The instructional courses were well-attended and continue to provide expert instruction and advice in a more interactive setting. The most significant component remains the participation and attendance by our members and guests. A record number of high-quality abstracts were received for this meeting. The participation in our annual meeting continues to grow to make it a leading forum for the advancement of the latest techniques and the exchange of ideas in peripheral nerve biology and surgery. We can look forward to an exciting meeting next year in beautiful Puerto Rico for the 16<sup>th</sup> Annual ASPN meeting. With your continued help and involvement, we can keep on expanding the scope and impact of our society in our combined efforts with the AAHS and ASRM.

**Ivica Ducic, MD, PhD**  
**2006 Annual Meeting Program Chairperson**



Dr. Siemionow, ASPN President,  
With Program Chair Dr. Ducic



Dr. Siemionow presents  
Dr. Ransohoff, the  
presidential speaker.



Incoming President, Dr.  
Midha with Dr.  
Siemionow.

## **2007 ANNUAL MEETING**

The 16th annual meeting of the American Society for Peripheral Nerve will be held January 13 and 14<sup>th</sup> 2007 at the Westin Rio Mar Beach Resort, Rio Grande, Puerto Rico. This Caribbean paradise offers a host of activities with an exotic flair. Its oceanfront conference center (not to mention 2 golf courses and spa) will help balance business and pleasure.

The format will be similar to that in the past. Special arrangements are being made to coordinate programs and facilitate participation in the AAHS and ASRM meetings. Saturday morning will consist of a shared session with the other organizations. Combined panels on "War Injuries in the Upper Extremity" and "Brachial Plexus Surgery" are being planned. Outstanding nerve papers selected by the 3 groups will be presented. Dr. Richard Gelberman has been asked to deliver the Presidents' Invited Lecture.

The ASPN will meet Saturday afternoon and Sunday. Professor YD Gu from Shanghai will be a keynote clinical speaker on Sunday. Two esteemed basic scientists have been asked to give invited

lectures as well. A variety of instructional courses are being planned for Sunday morning dealing with obstetrical brachial plexus palsy, cortical reorganization, reinnervating muscle, peripheral nerve tumors and intraoperative monitoring. An ASRM/ASPN panel on free functioning muscle transfer will be held. Free clinical and research papers will be admixed.

A lively social program will complement the scientific program. Beautiful weather is on the agenda. Bring your family along to share in the fun and the sun.

Members and guests are encouraged to submit abstracts. They are being accepted through an on-line process until Tuesday June 1, 2006. Additional information can be obtained on our website <http://www.peripheralnerve.org/>

Please plan to attend this event. It promises to be a rewarding, enjoyable and memorable experience.

**Robert J. Spinner, MD**  
**2007 Annual Meeting Program Chairperson**

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## ASPEN CREATES A CANDIDATE MEMBERSHIP CATEGORY

The membership decided to add a Candidate Membership category to our association to encourage new and continued membership among our new trainees and researchers. Candidate Members may attend scientific meetings and social functions. They benefit from greatly reduced membership dues and scientific meeting registration fees based only on recovering administrative fees. However, candidate members may not hold office, serve on committees, or vote at the annual business meeting.

Requirements for candidate membership are: 1) an expressed interest in the field of neural regeneration and 2) current enrollment or completion of a residency/PhD program that includes neural regeneration training or research. Candidate membership status may be extended for one year beyond board certification (MD's) or for two years after a PhD degree is conferred with a maximum of five years as a candidate member.

To apply the candidate or sponsor should access the application form at ASPN's website, <http://www.peripheralnerve.org/>. The applicant needs the sponsorship of an active member and the endorsement of two other members (active or associate). Submit the completed application to the ASPN office for review by the membership committee, the executive council, and approval by the active membership.

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**Melanie Urbanchek, PhD**  
**Bylaws Committee Chairperson**

## INTERESTING CASE PRESENTATION

Several years ago, I was making hospital ward rounds with the plastic surgery residents. I was standing at the nurses' station and noticed the ward secretary holding her pen in a strange way. I asked her what was wrong with her hand. She described an old injury which had occurred 10 years earlier when she cut her distal forearm on a glass window pane. She was told she had "nerve and tendon lacerations", which were all repaired primarily. Unfortunately, she stated her hand had never worked right since the injury.

When I examined her hand, she had complete anesthesia in the median nerve distribution, thenar muscle atrophy, lack of thumb opposition and no sublimis tendon function to her ring finger. She had a strong Tinel's sign in the area of the volar wrist scar. I told her that her nerve repair was definitely not working, and that I might be able to repair it with nerve grafts and that a tendon transfer from the long finger might help her thumb opposition.

She eventually consented to surgery and we prepared her for sural nerve grafts and tendon transfer. I re-opened the wrist to find that the proximal median nerve had been sutured to the distal ring finger sublimis tendon, while the distal median nerve was sutured to the proximal ring finger sublimis muscle tendon unit. While this new anatomical arrangement had done little to restore median nerve or ring finger sublimis tendon function, it had held the nerve ends out to length. The abnormal repairs were taken down and we were able to perform a 10 year delayed direct median nerve repair. The sublimis tendon was divided distally and using a Pulvertaft weave reconnected to the proximal ring finger sublimis muscle tendon unit. This reconstructed tendon was then used as an Opponensplasty transfer for the thumb.

The patient obtained good thumb opposition and two-point discrimination of 8 mm in the median nerve distribution. This case demonstrates the possibility for delayed sensory nerve regeneration ten years after an injury and the use of a reconstructed muscle tendon unit that had already been sacrificed to restore hand function. The primary surgeon's technique to hold the median nerve ends to length, however, is not recommended.

**Robert C. Russell, MD, FACS, FRACS**

## SERIAL APPROACH TO NERVE MORPHOMETRY

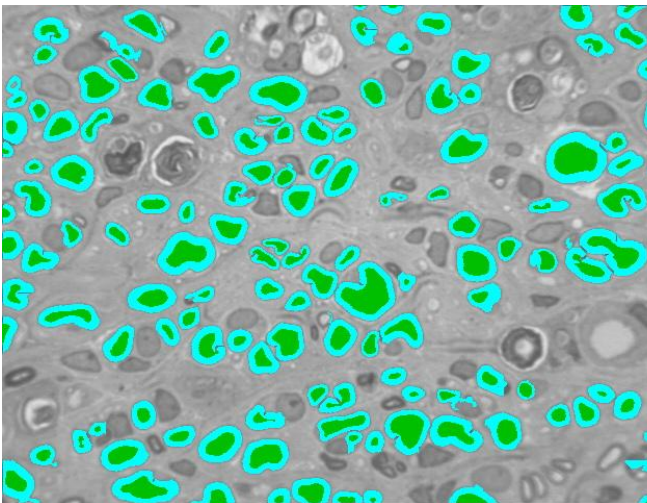
**Daniel A. Hunter, R.A., Arash Moradzadeh, M.D., Elizabeth L. Whitlock, B.A., Susan E. Mackinnon, M.D.**

Histomorphometry is the current gold standard for objective measurement of nerve architecture and its components. Despite the advances in computer software and histological techniques there remains wide variation in histomorphometric analysis. A recent publication from Urso-Baiarda & Grobbelar (JNM, 2006) focused on the use of Photoshop and ImageJ software for rapid and reliable measurement of nerve morphometry. The goal of this technique was to combine the speed of automated morphometry with the accuracy of manual and semi-automated methods while only requiring a digital image of the nerve section and two widely available software packages. While this method is reliable for evaluating axon area it does not allow for quantification of other morphological parameters.

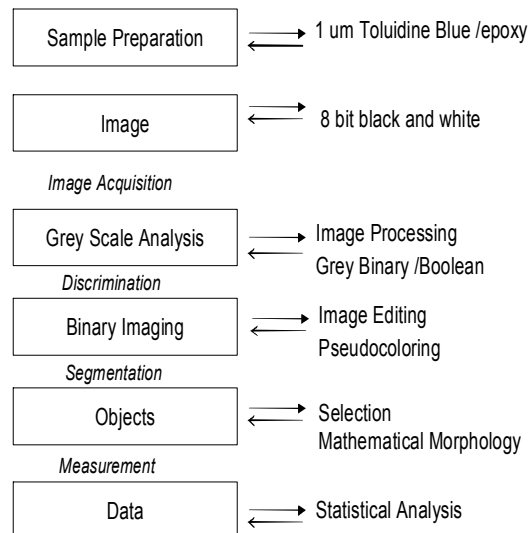
The approach our lab developed in 1989 uses a series of binary imaging macros to completely quantitate all nerve fiber components including

individual fiber area and width, axon area and width, and myelin area. The macros allow for the discrimination and segmentation of nerve fibers with the addition of mathematical morphology to exclude nonviable fibers and also provide a measurement of fiber debris. Additionally, our program provides stratification of raw data by nerve component, complete statistical analysis and a graphical representation of fiber characteristics. In 15 minutes or less, 800 nerve fibers can be completely evaluated.

Currently described techniques do not permit thorough analysis of nerve components. Our approach allows a more rapid, reproducible, and detailed assessment of nerve regeneration in various treatment modalities. Future integration of binary histomorphometric imaging and design based stereology techniques will augment our understanding of nerve regeneration.



### Image Processing Algorithm



## MICROSCALE SURGERY ON SINGLE AXONS

**David W. Sretavan, M.D., Ph.D. Wesley Chang, Ph.D. Elizabeth Hawkes, M.S. Christopher Keller, Ph.D. Michel Kliot, M.D.**

**OBJECTIVE:** The lack of meaningful axon regeneration after central nervous system damage and poor functional recovery after serious peripheral nervous system nerve injuries have been long-standing problems of substantial interest to both neurosurgeons and neurobiologists. As an alternative to strategies that seek to promote the regeneration of adult axons, our research group has taken advantage of advances in microtechnology to develop a paradigm of direct axon repair involving the substitution of damaged axon regions with healthy segments from donor axons.

**METHODS:** This repair methodology uses a novel combination of microtechnology, electrokinetic axon manipulation, and the well-established biological principle of cell fusion. These three fields of research have been integrated in a multidisciplinary

approach to develop a solution for a significant clinical problem that currently has no specific treatment.

**RESULTS:** The findings reported here provide some initial proof of principle for the core technologies we intend to use for axon repair. Functional recovery from nerve damage of course is clinically challenging, and many obstacles would need to be overcome before such axon repair procedures can be contemplated for therapeutic use. We identify some of the clinical issues that must be addressed for microtechnology-assisted axon repair to transition from the realm of research into actual surgical settings.

**CONCLUSION:** It is hoped that each advance in axon repair technology will spur additional research to provide us with a comprehensive understanding on how best to pursue neurosurgical intervention at the microscale.

**KEY WORDS:** Axon, Microdevice, Microsurgery, Nanotechnology, Nerve injury, Repair  
*Neurosurgery* 57:635-646, 2005 DOI: 10.1227/01.NEU.0000175545.57795.ac  
www.neurosurgery-online.com

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**Small Bone Innovations, INC** *\*\*Proud sponsor of the guest room key cards*

**CONGRATULATIONS!!!!!! THE AWARDS GO TO.....**

**BEST RESIDENT RESEARCH AWARD**

During the Annual Meeting in Tucson the Program Committee awarded Godard DeRuijter, MD, the award for the Best Resident Research Presentation. Dr. DeRuijter, from Mayo Clinic in Rochester, Minnesota received this award for his work entitled, "Accuracy of Motor Axon Regeneration across Single Lumen and Multi-channel Nerve Tubes".

**TIME AND PLACE SURVEY DRAWING WINNER**

The Time & Place Committee would like to extend a special thanks to those members and meeting attendees that completed the online survey regarding the Annual Meetings of the American Association for Hand Surgery, American Society for Reconstructive Microsurgery and American Society for Peripheral Nerve. Your comments and suggestions will be taken into careful consideration as we plan future meetings for the society.

Congratulations to Marga Massey, MD for being selected to receive complimentary registration to the 2007 AAHS-ASRM-ASPN Annual Meetings taking place January 10-16, 2007 at the Westin Rio Mar Beach Resort in Rio Grande, Puerto Rico.

**ASPN CALL FOR ABSTRACTS  
DEADLINE June 1, 2006**

THE ABSTRACT SUBMISSION DEADLINE FOR THE  
AMERICAN SOCIETY FOR PERIPHERAL NERVE IS  
JUNE 1, 2006. PLEASE SPREAD THE WORD AND ENCOURAGE  
YOUR COLLEAGUES TO SUBMIT AN ABSTRACT.

FOR MORE INFORMATION GO TO:

[www.peripheralnerve.org](http://www.peripheralnerve.org)