

RICHARD LENDE  
WINTER  
NEUROSURGERY  
CONFERENCE

JANUARY 30<sup>TH</sup> – FEBRUARY 4<sup>TH</sup>, 2009  
CLIFF LODGE  
SNOWBIRD, UTAH

## **35th ANNUAL RICHARD LENDE WINTER NEUROSURGERY CONFERENCE**

Richard Lende Winter Neurosurgery Conference originated during the winter of 1972-1973 when a small group of similarly motivated neurosurgeons met at the Alta Peruvian Lodge and at Snowbird, where papers and ideas were exchanged in an informal meeting. The meeting was obviously well received and plans were laid for future gatherings. The future was clouded however, by the injury of Dr. Richard Lende, then Chairman of Neurosurgery at Albany, who suffered a severe leg fracture requiring hospitalization at the University of Utah Medical Center. After a lengthy stay, he returned to Albany, where he tragically suffered cardiac arrest and expired while being anesthetized for a minor surgical wound revision.

The spirit and intent of the original meeting has been preserved for more than two decades. It is open to Neurosciences only, providing a forum for free exchange of ideas and presentation of innovations in neurological surgery and allied fields. This meeting of research and clinical applications in a relaxed setting has endured the test of time as a popular tribute to the memory of Dr. Richard Lende.

The Richard Lende Winter Neurosurgery Conference is jointly sponsored by the AANS.



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## **DAVID L. KASDON**

This and all Lende meetings since 1988 are dedicated to the memory of "Deel", whose untimely passing shocked all of us who were privileged to know and love him. The void, which we feel, cannot be filled, for he was so much a part of the vitality of this unique yearly gathering. His ability to enjoy life, to make work seem like play, is truly the spirit embodied in the Lende meeting.

### **PAST KASDON LECTURERS**

1988	VINKO V. DOLENC, M.D., Ph.D.	2000	L. NELSON HOPKINS, M.D.
1989	BENNETT M. STEIN, M.D.	2001	PETER W. CARMEL, M.D.
1990	JOHN M. JACOBS, M.D.	2002	JAMES T. RUTKA, M.D., Ph.D.
1992	MADJID SAMII, M.D.	2003	STEVEN L. GIANNOTTA, M.D.
1993	RUDOLF FAHLBUSCH, M.D.	2004	DAVID G. PIEPGRAS, M.D.
1994	ROBERT F. SPETZLER, M.D.	2005	EDWARD H. OLDFIELD, M.D.
1996	AXEL PERNECZKY, M.D.	2006	VOLKER K.H. SONNTAG, M.D.
1997	NICHOLAS de TRIBOLET, M.D.	2007	ROY A. PATCHELL, M.D.
1998	BERNARD GEORGE, M.D.	2007	MICHAEL P. POWELL, M.D.
1999	M. PETER HEILBRUN, M.D.	2008	WARREN R. SELMAN, M.D.

### **THE 2009 KASDON LECTURER**

MANFRED WESTPHAL, M.D.



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### ACCREDITATION/CONTINUING MEDICAL EDUCATION

This activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the AANS and the Richard Lende Winter Neurosurgery Conference. The AANS is accredited by the ACCME to sponsor continuing medical education for physicians.

The AANS designates this educational activity for a maximum of 28 *AMA PRA Category 1 Credit(s)*™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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Some drugs and medical devices demonstrated or described on the print publications of the Richard Lende Winter Neurosurgery Conference, and jointly sponsored by the AANS have FDA clearance for use for specific purposes or for use only in restricted research settings. The FDA has stated that it is the responsibility of the physician to determine the FDA status of each drug or device he or she wishes to use in compliance with the applicable law.

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## 2009 ANNUAL MEETING LEARNING OBJECTIVES

Upon completion of this CME activity, participants should be able to:

1. Describe various vascular surgical treatment employed and outcomes.
2. Describe current surgical techniques and options pertaining to spinal surgery.
3. Recognize the importance of laboratory tumor research and clinical trials.
4. Recognize the contribution of the pediatric neurosurgeon.
5. Recognize the appropriate use of surgery, chemotherapy, radiation therapy, and stereotactic radiosurgery in the management of patients with brain tumors

### **Future Meeting Dates**

**January 29th- February 3rd, 2010**

## Disclosure Information

The AANS controls the content and production of this CME activity and attempts to ensure the presentation of balanced, objective information. In accordance with the Standards for Commercial Support established by the Accreditation Council for Continuing Medical Education (ACCME), speakers, paper presenters/authors and staff (and the significant others of those mentioned) are asked to disclose any relationship they or their co-authors have with commercial interests which may be related to the content of their lecture. The ACCME defines “relevant financial relationships” as financial relationships in any amount occurring within the past 12 months that create a conflict of interest.

**Speakers, paper presenters/authors and staff (and the significant others of those mentioned) who have disclosed a relationship\* with commercial interests whose products may have a relevance to their presentation are listed below.**

<u>Name</u>	<u>Disclosure</u>	<u>Type of relationship</u>
Ronald Apfelbaum	Aesculap/Integra	Consultant
Ronald Apfelbaum	Medtronic	Stockholder
Ronald Apfelbaum	Aesculap/Synthes/Depuy	Other Financial Support
William T. Couldwell	BioMet	Grant
Daniel Fults	NIH-RO1	Grant
Michael Glantz	Myriad/Enzon Pharmaceuticals/Novartis	Grant
Michael Glantz	Enzon Pharmaceuticals/Mundipharma	Honorarium
M. Peter Heilbrun	Accuray, Inc.	Consultant
Dan Kadrmas	Siemens Molecular Imaging	Grant
Bill J. Salter	Siemens/Elekta/Impac	Consultant
Bill J. Salter	GE	Speaker Honorarium
Karen Salzman	Amirsys	Consultant/Author
Theodore Schwartz	NINDS	Grants
Theodore Schwartz	Neurologix	Shareholder

\*Relationship refers to receipt of royalties, consultancy, funding by research grant, receiving honoraria for educational services elsewhere, or any other relationship to a commercial interest that provides sufficient reason for disclosure.

**Speakers, paper presenters/authors and staff (and the significant others of those mentioned) who have reported they do not have any relationships with commercial interests:**

Mandy Binning  
Frank Bishop  
Samuel R. Browd  
Taryn M. Bragg  
Peter Carmel  
Valerie Coon  
Daniel Fassett  
Michael Finn

Nathan Friedline  
Steven L. Giannotta  
Robert Goodman  
Lisa Hazard  
Zachary L. Hickman  
L. Eric Huang  
Randy Jensen  
John Kestle  
James Liu  
Michael Mumert  
Hiroshi Nakagawa  
Toba Niazi  
James P. McAllister, II  
T.C. Oritano  
David Piepgras  
Michael Powell  
Lawrence Recht  
Tina Sayama  
Richard Schmidt  
L. Gerard Toussaint III  
Michael Walsh  
Manfred Westphal  
Nicholas M. Wetjen  
Brad Zacharia

2009 ANNUAL MEETING EXHIBITORS

Aesculap  
Aesculap Implant Systems  
Anspach Companies  
Aestellas  
Carl Zeiss Surgical, Inc.  
CMF Medicon Surgical/Medicon Instrumente  
Codman  
Eisai, Inc  
Globus Medical  
KLS Martin, L.P.  
Leica Microsystems  
Medtronic Navigation/Medtronic Spine and Biologics  
Medtronic Neurologic Technologies  
Novus Surgical, Inc.  
OsteoMed Corporation  
Porex Surgical, Inc.  
Rocky Mountain Surgical Solutions, LLLC  
Schering Corporation  
Stryker Spine  
Stryker Navigation  
Synthes CMF/Synthes Spine

## SOCIAL PROGRAM

<b>FRIDAY</b> January 30 <sup>th</sup>	7:00 pm - 8:30 pm	Opening Family Reception, Ballroom II, Level B
<b>SATURDAY</b> January 31 <sup>st</sup>	12:30 pm - 2:00 pm 6:30 pm - 7:30 pm 7:30 pm - 9:00 pm	Family Ski Lunch in Golden Cliff, Level B Family Presentation, Ballroom I Family Dinner Buffet in Golden Cliff, Level B (Tickets Required for Buffet)
<b>SUNDAY</b> February 1 <sup>st</sup>	12:30 pm - 2:00 pm 6:30 pm	Family Ski Lunch in Golden Cliff, Level B Super Bowl in Ballroom I, Level B
<b>MONDAY</b> February 2 <sup>nd</sup>	12:30 pm - 2:00 pm	Family Ski Lunch in Golden Cliff, Level B
<b>TUESDAY</b> February 3 <sup>rd</sup>	12:30 pm - 2:00 pm 7:00 pm - 8:30 pm	Family Ski Lunch in Golden Cliff, Level B Closing Family Reception, Wasatch Room, Level C
<b>WEDNESDAY</b> February 4 <sup>th</sup>	7:45 am	First Tram Adventure, meet at Tram Center

### Locations for Events:

Participant Breakfast (7:00 am – 8:30 am)	Saturday- Tuesday: Ballroom II, Level B/Cliff Wednesday – Inside Ballroom I, Level B/ Cliff (8:30 am – 10:00 am)
Lende Meeting starts at 8:00 am	Ballroom I, Level B/Cliff
Opening Family Reception	Ballroom II, Level B/Cliff
Family Ski Lunches	Golden Cliff, Level B/Cliff
Family Presentation	Ballroom I, Level B/Cliff
Family Buffet Dinner	Golden Cliff, Level B/Cliff (Tickets required)
Super Bowl on Big Screen	Ballroom I, Level B/Cliff
Exhibitors	Ballroom II, Level B/Cliff
Closing Family Reception	Atrium, Level B/Cliff
First Tram Adventure	Tram on Plaza

**FRIDAY JANUARY 30<sup>TH</sup>, 2009**

**Brain Tumors Update: Huntsman Cancer Institute 6<sup>th</sup> Floor Auditorium**

**Course Director, Randy Jensen, M.D., Ph.D.**  
**Co-Director Michael Glantz, M.D.**

- 7:30 Continental breakfast – Huntsman Cancer Institute 6<sup>th</sup> Floor Lobby
- 8:00 Welcome--Randy Jensen, M.D., Ph.D. – Huntsman Cancer Institute
- 8:05 Opening remarks---Mary Beckerle, Ph.D., Executive Director HCI

**SESSION I STEM CELLS AND BRAIN TUMORS**

Moderator—Randy Jensen, M.D., Ph.D.

- 8:10-8:40 Stem cells in gliomas – Manfred Westphal, M.D.
- 8:40-8:45 Questions
- 8:45-9:15 Bedside to Bench; A Clinician’s Wish List for Glioma Biologists – Lawrence Recht, M.D.
- 9:15-9:20 Questions
- 9:20-9:50 Stem Cell-Directed Therapy for Patients with Glioblastoma Multiforme – An HCI Initiative – Michael Glantz, M.D.
- 9:50-9:55 Questions
- 9:55-10:10 BREAK

**SESSION II MANAGEMENT OF REFRACTORY MENINGIOMAS**

Moderator—William T. Couldwell M.D., Ph.D.

- 10:10-10:40 Bench to Bedside, Experimental Therapies for Meningioma—Randy Jensen, M.D.
- 10:40-10:45 Questions
- 10:45-11:15 SOM230 and Other Targeted Therapies – Hitting the Bull’s Eye or Missing the Mark Entirely—Michael Glantz, M.D.
- 11:15-11:20 Questions
- 11:20-11:50 Radiation Therapy for Meningiomas—Lisa Hazard, M.D.

11:50-11:55 Questions

11:55—12:25 Surgical Strategies for Protection of Pituitary Function and Optic Apparatus in Cavernous Sinus Meningiomas—William Couldwell, M.D., Ph.D.

12:25-12:30 Questions

12:30-1:30 LUNCH

**SESSION III MANAGEMENT OF HYDROCEPHALUS AND LEPTOMENINGEAL DISEASE**

Moderator—Michael Glantz, M.D.

1:30-2:00 Pathophysiology of Hydrocephalus – Pat McAllister, Ph.D.

2:00-2:05 Questions

2:05-2:35 Imaging of hydrocephalus and leptomenigeal disease – Karen Salzman, M.D.

2:35-2:40 Questions

2:40-3:10 Treatment of leptomenigeal disease —Lawrence Recht, M. D

3:10-3:15 Questions

3:15-3:45 BREAK

**SESSION IV EXPERIMENTAL IMAGING AND THERAPEUTICS**

Moderator Randy Jensen M.D., Ph.D.

3:45-4:15 Multi-tracer PET imaging of brain tumors – Dan Kadrmaz, Ph.D.

4:15-4:20 Questions

4:20-4:50 Hypoxia and Genetic Instability in GBM – Eric Huang, M.D., Ph.D.

4:50-4:55 Questions

4:55-5:25 Experimental radiation targeting approaches – Bill Salter, Ph.D.

5:25-5:30 Questions

5:30-5:45 Closing Remarks—Randy Jensen, M.D.

**SATURDAY MORNING JANUARY 31<sup>ST</sup>, 2009**

**TUMOR**

- 8:00-8:15 am Prostate Metastatic Mistaken for Meningioma.  
NATE FRIEDLINE, M.D., Salt Lake City, UT  
Nate Friedline
- 8:15-8:25 am Discussion
- 8:25-8:40 am Molecular Therapy Targeting Sonic Hedgehog and Hepatocyte Growth  
Factor Signaling in a Mouse Model of Medulloblastoma.  
VALERIE COON, M.D., Salt Lake City, UT  
Valerie Coon, Lyn Pedone, Daniel Fults
- 8:40-8:50 am Discussion
- 8:50-9:05 am The Role of MicroRNA in Human Brain Tumors.  
RANDY JENSEN, M.D., Ph.D., M.D., Salt Lake City, UT  
Randy Jensen
- 9:05-9:15 am Discussion
- 9:15-9:30 am Endoscopic Endonasal Transclival Resection of Chordomas: Operative  
Technique, Clinical Outcome and Review of the Literature.  
THEODORE SCHWARTZ, M.D., New York, NY  
Theodore H. Schwartz, Justin F. Fraser, Gurston G. Nyquist, Nicholas  
Moore, Vijay K. Anand
- 9:30-9:40 am Discussion
- 9:40-10:10 am **KASDON LECTURER**  
Promise and Pitfalls of Antiangiogenesis.  
MANFRED WESTPHAL, M.D., Germany  
Manfred Westphal, Katrin Lamszus
- 10:10-10:30 am Discussion
- 10:30 am Adjourn

**SATURDAY AFTERNOON, JANUARY 31<sup>ST</sup>, 2009**

**SPINE**

- 4:00-4:30 pm            Surgical Strategies in Cervical OPLL.  
HIROSHI NAKAGAWA, M.D., Nagoya, Japan  
Hiroshi Nakagawa, Tohru Mitsugi
- 4:30-4:40 pm            Discussion
- 4:40-5:10 pm            Spinal Cord Bypass Surgery Using Peripheral Nerve Transfers: Review of  
Translational Studies and a Case Report of its use Following Complete  
Spinal Cord Injury in a Human.  
BRAD ZACHARIA, M.D., New York, NY  
Brad E. Zacharia, Jeffrey S. Oppenheim, Daniel E. Spitzer, Christopher J.  
Winfree
- 5:10-5:20 pm            Discussion
- 5:20-5:50 pm            The Syndrome of Intracranial Hypotension and Occult Spinal CSF Leak:  
Perspectives on Diagnosis and Management.  
DAVID PIEPGRAS, M.D., Rochester, MN  
David G. Piepgras, Bahram Mokri, Patrick H. Luetmer
- 5:50-6:00 pm            Discussion
- 6:00-6:20 pm            Silicated Hydroxyapatite as a Bone Graft Substitute in Spinal Trauma.  
KENNETH S. YONEMURA, M.D., Salt Lake City, UT  
Ken S. Yonemura, Michael Finn, Mical Samuelson
- 6:20-6:30 pm            Discussion
- 6:30 pm                    Adjourn

**SUNDAY MORNING, FEBRUARY 1<sup>ST</sup>, 2009**

**SKULL BASE**

- 8:00-8:15 am      The use of the Operating Microscope and More Recently, Endoscopy has Allowed for an Expanded Role of the Transsphenoidal and the Extended Transsphenoidal Approaches for a Number of Non-Pituitary Lesions.  
MICHAEL WALSH, M.D., Salt Lake City, UT  
Michael Walsh
- 8:15-8:25 am      Discussion
- 8:25-8:40 am      Developing a Pituitary Surgery Unit in an Emerging Country: The Birth of Transsphenoidal Surgery in Uzbekistan.  
MICHAEL POWELL, M.D., London, UK  
Michael Powell, Kozim Mahkharov, Yuldoz Urmanova
- 8:40-8:50 am      Discussion
- 8:50-9:05 am      Optimization of Microsurgical Technique of MVD for Trigeminal Neuralgia: Reduced Hearing Impairment.  
STEVEN GIANOTTA, M.D., Los Angeles, CA  
Aaron Bond, Dawn Fishback, Gabriel Zada
- 9:05-9:15 am      Discussion
- 9:15-9:30 am      Zones of Exposure for Hypoglossal Nerve Lesions Using an Extended Far lateral Approach: A Cadaveric Morphometric Analysis Using Frameless Stereotaxy.  
JAMES K. LIU, M.D., Evanston, IL  
James K. Liu, Gregory J. Anderson, Sean O McMenomey, Johnny B. Delashaw
- 9:30-9:40 am      Discussion
- 9:40-10:10 am      **KASDON LECTURER**  
The Meningioma: Why it is a Problem to Under-Research a Benign Disease.  
MANFRED WESTPHAL, M.D., Germany  
Manfred Westphal
- 10:10-10:30 am      Discussion
- 10:30 am            Adjourn

**SUNDAY AFTERNOON, FEBRUARY 1<sup>ST</sup>, 2009**

**GENERAL NEUROSURGERY**

3:30-4:30 pm

**NEUROSURGICAL FORUM**

A Scientific Based Competition between Residents and Faculty with the Objective of Discussing Controversial Topics Pertaining to General Neurosurgical Knowledge.

4:30-9:00 pm

**SUPERBOWL PARTY**

**NOTES:**

**MONDAY MORNING, FEBRUARY 2<sup>nd</sup>, 2009**

**VASCULAR NEUROSURGERY**

- 8:00-8:15 am Brain Capillary Telangiectasias (BCT) are Clinically Benign, Usually Small and Often Found Incidentally at Autopsy.  
TINA SAYAMA, M.D., Salt Lake City, UT  
Tina Sayama
- 8:15-8:25 am Discussion
- 8:25-8:40 am Hemorrhagic Complications of Ventriculostomy: What are the Data?  
L. GERARD TOUSSAINT, III, M.D., College Station, TX  
Daniel Binz, L. Gerard Toussaint, Jonathan Friedman
- 8:40-8:50 am Discussion
- 8:50-9:05 am Direct Intraluminal Heparin Infusion for Post-Traumatic Venous Sinus Thrombosis: Case Series and Literature Review.  
FRANK BISHOP, M.D., Salt Lake City, UT  
Frank S Bishop, Mical M Samuelson, Michael Finn, Perry Ng, Richard Schmidt
- 9:05-9:15 am Discussion
- 9:15-9:30 am Impact of Mannose-Binding Lectin Polymorphisms on Functional Outcome Following Aneurysmal Subarachnoid Hemorrhage.  
ZACHARY HICKMAN, M.D., New York, NY  
Zachary L Hickman, Brad E Zacharia, Andrew F Ducruet, Alexander C Sisti, Joshua I Chalif, Steven G Smith, Stephan A Mayer, E Sander Connolly
- 9:30-9:40 am Discussion
- 9:40-10:10 am The Role of Surgery for High-Grade Intracranial Dural Arteriovenous Fistulas: Importance of Obliteration of Venous Outflow.  
JAMES K. LIU, M.D., Evanston, IL  
James K Liu, Aclan Dogan, Dilantha Ellegala, Jonathan Carlson, Gary M Nesbit, Stanley L Barnwell, Johnny B Delashaw
- 10:10-10:30 am Discussion
- 10:30 am Adjourn

**MONDAY AFTERNOON, FEBRUARY 2<sup>ND</sup>, 2009**

**FUNCTIONAL/ TRAUMA/INFECTION**

- 4:00-4:30 pm            Prolonged Enhancement of a Sterile Abscess on Diagnostic Imaging:  
Abscess Treatment Implications.  
MICHAEL MUMERT, M.D., Salt Lake City, UT  
Michael Mumert, Edward Quigley, Paul House
- 4:30-4:40 pm            Discussion
- 4:40-5:00 pm            Cortical Reorganization in Patients Undergoing Hemispherectomy for  
Intractable Seizures: A Functional MRI Study.  
SAMUEL R. BROWD, M.D., Seattle, WA  
Samuel R Browd, Andrew Poliakov, Jeffery G Ojemann
- 5:00-5:10 pm            Discussion
- 5:10:5:35 pm            Interictal High Frequency Oscillations Recorded from a Dense  
Microelectrode Array in Human Epileptic Neocortex.  
ROBERT R. GOODMAN, M.D., Ph.D., New York, NY  
RR Goodman, CA Schevon, AJ Trevelyan CE Schroeder, GM  
McKhann, RG Emerson
- 5:35-5:45pm            Discussion
- 5:45-6:15 pm            Development of Hypertonic Saline Protocol for Resuscitation of Acute  
Brain Injuries.  
RICHARD H. SCHMIDT, M.D., Salt Lake City, UT  
Richard H Schmidt, Tony Bernstone
- 6:15-6:30 pm            Discussion
- 6:30 pm                    Adjourn

**TUESDAY MORNING, FEBRUARY 3<sup>RD</sup>, 2009**

**GENERAL NEUROSURGERY**

- 8:00-8:15 am            Neurosurgical Training and Assessing Surgical Competence.  
RANDY JENSEN, M.D., Ph.D., Salt Lake City, UT  
Randy Jensen
- 8:15-8:25 am            Discussion
- 8:25-8:40 am            Integration of Faculty Physician Foundations and Academic Health Care  
Systems: The Role and Effect Upon Neurological Surgery Departments.  
TC ORIGITANO, M.D., Ph.D., Maywood, IL  
TC Origitano
- 8:40-8:50 am            Discussion
- 8:50-9:05 am            What will Happen to Neurosurgeons in the Obama Administration?  
PETER CARMEL, M.D., Newark, NJ  
Peter Carmel
- 9:05-9:15 am            Discussion
- 9:15-9:30 am            Why Radiosurgery?  
M. PETER HEILBRUN, M.D., Alta, UT  
M. Peter Heilbrun
- 9:30-9:40 am            Discussion
- 9:40-10:10 am           Sir Victor Horsley: The First Neurosurgeon.  
MICHAEL POWELL, M.D., London, UK  
Michael Powell
- 10:10-10:30 am           Discussion
- 10:30 am                 Adjourn

**TUESDAY AFTERNOON, FEBRUARY 3<sup>RD</sup>, 2009**

**SPINE**

- 4:00-4:20 pm            Surgical Techniques for Difficult Odontoid Fractures.  
RONALD I. APFELBAUM, M.D., Salt Lake City, UT  
Ronald I Apfelbaum
- 4:20-4:30 pm            Discussion
- 4:30-4:50 pm            Comparative Biomechanical Evaluation of Dynamic Posterior Lumbar  
Instrumentation in a Progressively Destabilized Spine.  
FRANK S. BISHOP, M.D., Salt Lake City, UT  
Frank S Bishop, Wade K Jensen, Mical M Samuelson, Oren Gottfried,  
Alpesh A Patel, Michael D Daubs, Richard Vance, Kent N Bachus,  
Darrel S Brodke
- 4:50-5:00 pm            Discussion
- 5:00-5:20 pm            Intraoperative Localization of Thoracic Spine Levels with Percutaneously  
Placed Guglielmi Detachable Coils.  
MANDY BINNING, M.D., Salt Lake City, UT  
Mandy Binning
- 5:20-5:30 pm            Discussion
- 5:30-5:50 pm            Economic Impact of Bone Morphogenic Protein use in Spinal Surgery.  
DANIEL FASSETT, M.D., Peoria, IL  
Daniel Fassett
- 5:50-6:00 pm            Discussion
- 6:00-6:20 pm            Electromagnetic Navigation and Radiation Exposure in the Placement of  
Percutaneous Pedicle Screws.  
MICHAEL A. FINN, M.D., Salt Lake City, UT
- 6:20-6:30 pm            Discussion
- 6:30 pm                    Adjourn

**WEDNESDAY MORNING, FEBRUARY 4<sup>TH</sup>, 2009**

**GENERAL NEUROSURGERY**

- 8:00-9:00                    **FIRST TRAX**
- 9:00-9:30 am                Cookbook Shunt Surgery.  
JOHN KESTLE, M.D., Salt Lake City, UT  
J Kestle, J Wellons, J Riva-Cambrin, C Shannon, T Bach, W Whitehead, S  
Nguyen, A Kulkarni, L O'Connor, T Simon for the Hydrocephalus  
Clinical Research Network
- 9:30-9:40 am                Discussion
- 9:40-10:10 am              Time Course of Syringomyelia Resolution Following Decompression of  
Chiari I Malformation.  
NICHOLAS M. WETJEN, M.D., Rochester, MN  
Nicholas M Wetjen, John D Heiss, Edward H Oldfield
- 10:10-10:20 am             Discussion
- 10:20-10:50 am             Pediatric Neurosurgery.  
TOBA NIAZI, M.D., Salt Lake City, UT  
Toba Niazi
- 10:50-11:00 am             Discussion
- 11:00 am                     Business Meeting
- 11:30 am                     Meeting Adjourn