

CURRICULUM VITAE Russ P. Nockels, M.D.

OFFICE ADDRESS: Department of Neurological Surgery
 Loyola University Stritch School of Medicine
 Loyola University Medical Center
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 Maywood, IL 60153

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**BOARD
 CERTIFICATION:** Diplomate, American Board of Neurological Surgeons

EDUCATION: Loyola University of Chicago, Chicago, Illinois
 B.S. - Biological Sciences (1980), Cum Laude

Loyola University of Chicago Stritch School of Medicine,
 Maywood, IL
 M.D. (1984)

**POST-DOCTORAL
 TRAINING:** Loyola University Medical Center Foster G. McGraw Hospital
 Maywood, Illinois
 Intern - General Surgery 1984-1985

New York University Medical Center, New York, New York
 Resident - Neurosurgery, 1985-1990

St. Vincent's Medical Center, New York, New York
 Chief Resident - Neurosurgery, 1989

Bellevue Hospital Center, New York, New York
 Chief Resident - Neurosurgery, 1990

House Physician and Registrar in Neurology
 Department of Neurology
 The National Hospital, Queen Square
 London, England, 1988

Visiting Surgeon, Complex Spinal Deformity Surgery
 Klinikum Karlsbad - Langensteinbach gGmbH
 Professor Jurgen Harms
 Karlsbad, Germany 1999

Visiting Surgeon, Complex Spinal Deformity Surgery
 University of Miami School of Medicine
 Harold Shufflebarger MD
 Miami FL 2000, 2001
 Visiting Surgeon, Complex Spinal Deformity Surgery
 Centres du Masseur
 Dr. Pierre Rousouilly
 Lyon France 2000

APPOINTMENTS: Associate Professor of Neurological Surgery
Loyola University Stritch School of Medicine
Loyola University Medical Center, Maywood, IL 1999-

Vice-Chairman, Department of Neurological Surgery
Residency Program Director
Chief, Division of Neurosurgical Spinal Disorders
Director, Center for Spinal Cord Injury Repair
Loyola University Stritch School of Medicine
Loyola University Medical Center, Maywood, IL 1999-

Senior Staff
Director of Spinal Disorders and Neurotrauma
Director, Spinal Cord Injury Laboratory
Department of Neurological Surgery
Henry Ford Health Sciences Center, Detroit, Michigan, 1995-1999

Acting Chief of Clinical Neurosciences, 1993
Attending Physician, Clinical Neurosciences, 1991-1993
Mount Zion Medical Center of UCSF, San Francisco, CA

Director, Spinal Neurosurgery Service, 1993-1995
Mount Zion Hospital of UCSF
University of California, San Francisco

Assistant Chief of Neurosurgery, 1991-1993
Attending Physician, Neurosurgery, 1991-1995
San Francisco General Hospital, San Francisco, CA

Assistant Professor in Residence
Department of Neurosurgery, University of California, San Francisco
San Francisco, CA, 1991-1995

Teaching Assistant in Neurosurgery
Department of Neurosurgery, New York University Medical Center
New York, New York, 1990

HOSPITAL
APPOINTMENTS:

San Francisco General Hospital

- Ethics Committee 1991
- Operating Room Committee 1991
- Trauma Quality Assurance Committee 1991
- Medical Executive Committee 1992
- Discharge Planning Committee 1992

Mount Zion Medical Center of UCSF

- Surgical Services Committee 1993
- Ethics Committee 1993
- Steering Committee, Cooperative Care Unit 1993
- Critical Care Committee 1993
- Operating Room Committee 1993

Henry Ford Hospital

- ICU Executive Committee 1995-
- Medical Director, 6N ICU 1995-
- Medical Director, F5 Neuro Unit, 1995-
- Spinal Disease Management Steering Committee 1996-
- HFH Center for Spinal Disorders Steering Committee 1998
- Ad Hoc Advisory Group to the HFHS Board of Trustees 1998

Loyola University Medical Center

- Residency Program Director 2000-
- Medication Administration Practice Committee Executive Group 1999-
- Web Executive Steering Committee 2000-
- New Technology Committee 2000-

COMMITTEES:

- Abstract Review, Congress of Neurological Surgeons, Annual Meeting, Section on Neurotrauma and Critical Care 1991,1996
- Grant Review, Spinal Cord Research Foundation, 1991, 1998
- Scientific Committee, Joint Section on Spine and Peripheral Nerve American Association of Neurological Surgeons, 1993-1994, 1998-9
- Abstract Review, American Association of Neurological Surgeons, Annual Meeting, Joint Section on Spine and Peripheral Nerve, 1993, 1994, 1997, 1998
- Chair, Search Committee, VAMC Assistant Chief in Neurological Surgery, 1994
- Search Committee, Chief of Plastic Surgery, San Francisco General Hospital, 1994
- Steering Committee, Cooperative Care Unit, UCSF/Mount Zion, 1993-1994
- Committee on Postgraduate Education, American Association of Neurological Surgeons, 1996- present
- Scientific Committee, AANS/CNS Joint Section on Spine and Peripheral Nerve, 1997
- Chairman, Postgraduate Courses, AANS/CNS Joint Section on Spine and Peripheral Nerve, 1997
- External Grant Review, Paralyzed Veterans of America, Research & Training 1993, 1994, 1998
- Planning Committee, Biannual Symposia on Spinal Cord Injury Research, 1998
- Editorial Review, "Neurosurgical Focus" American Association of Neurological Surgeons 1999-
- Scientific Committee, AANS/CNS Joint Section on Spine and Peripheral Nerve, 2000

**RESEARCH
SUPPORT:**

Principal Investigator, San Francisco
Third National Acute Spinal Cord Injury Study (NASCIS III)
NINDS NS15078-12 (1992-1996)

Principal Investigator, Detroit
Third National Acute Spinal Cord Injury Study (NASCIS III)
NINDS NS15078-12 (1995-1996)

Co-Investigator, San Francisco
Multicenter Animal Spinal Cord Injury Study (MASCIS)
NINDS (1994-1997) National Institutes of Health, 1994-1995
Principal Investigator, Detroit
Multicenter Animal Spinal Cord Injury Study (MASCIS)
HFH Neurosurgery(1995-1996)
Henry Ford Health Systems Small Projects Grant

Principal Investigator, Detroit
“Novel Delivery Systems to Acute Spinal Cord Injury”
HFH Neurosurgery (1995 - 1999)
AAA of Michigan Neurotrauma Research Award

Principal Investigator, Detroit
“A Proposal to Establish an Annual Educational Workshop in Spinal
Cord Injury Techniques”
Education and Training Foundation, Paralyzed Veterans of America
(1997-2000)

Principal Investigator, Detroit
“Effects of Focal Irradiation on Acute Experimental Spinal Cord
Injury”
American Paralysis Association (1998-2000)
Pending

Philanthropic Support:
The Mike Wallace Foundation, The Detroit Lions, The Economic
Club of Detroit, The Heidi Van Arnem Foundation (1998-)

ACTIVE RESEARCH PROTOCOLS:

The Behavioral Effect of HiB5 Neural Stem-Like Cell Transplantation into the Experimentally Contused
Rat Spinal Cord LUMC 2000-2003

Development of A Rabbit Skeletal Metastasis Model LUMC 2000-2003

Effect of Delayed Treatment with Progesterone on Behavioral Recovery after Experimental SCI
LUMC 2000-2003

Development of a Rat Vertebral Metastatic Model LUMC 2000-2003

Multicenter Trial of Cervical Fusion with carbon Fiber cages (IDE) 1999-2004
Development of a Cervical myelopathy Hand Outcome Scale LUMC 2000-2004

PUBLICATIONS:

1. **Nockels RP**, Young W. Pharmacological Strategies in the Treatment of Experimental Spinal Cord Injury, in *J Neurotrauma*. 1992 Mar;9 Suppl 1:S211-7. Review.
2. Tanno H, **Nockels RP**, Pitts LH, Noble LJ. Breakdown on the Blood-Brain Barrier and Induction of Heat Shock Protein after Fluid Percussive Head Injury in the Rat, Part 1. Distribution and Time Course of Protein Extravasation. *J Neurotrauma*. 1992 Spring;9(1):21-32.
3. Tanno H, **Nockels RP**, Pitts LH, Noble LJ. Breakdown of the Blood-Brain Barrier after Fluid Percussive Head Injury in the Rat, Part 2. Effect of Hypoxia on Permeability of Plasma Proteins. *J Neurotrauma*. 1992 Winter;9(4):335-47.
4. **Nockels RP**. Minor Head Injuries. *Audio-Digest Emergency Medicine*, Vol 9, No 7, April 6, 1992
5. Ransohoff J, **Nockels RP**. Olfactory Groove and Planum Meningiomas. *Brain Surgery, Complication Avoidance and Management*, Apuzzo M (ed) 1993.
6. Pitts LH, **Nockels RP**. *Craniocerebral Trauma in Current Surgical Diagnosis and Treatment*, Way H (ed) 1993
7. **Nockels RP**, Pitts LH. *Spinal Cord Injury in Current Surgical Diagnosis and Treatment*, Way H (ed) 1993
8. Tanno H, **Nockels RP**, Pitts LH, Noble LJ. Immunolocalization of Heat Shock Protein after Fluid Percussive Brain Injury and Relationship to Breakdown of the Blood Brain Barrier, *J Cereb Blood Flow Metab*. 1993 Jan;13(1):116-24.
9. **Nockels RP**, McCormack B. Management of Thoracolumbar and Lumbar Trauma, in Youman's *Textbook of Neurological Surgery*, 1995
10. Kingdom TT, **Nockels RP**, Kaplan MJ. Transoral-transpharyngeal Approach to the Craniocervical Junction, *Otolaryngol Head Neck Surg*. 1995 Oct;113(4):393-400.
11. Kim D, **Nockels RP**, Gutin P, Nathan D, Yu J, Noble L. Treatment with genetically engineered fibroblasts producing NGF or BDNF can accelerate recovery from traumatic spinal cord injury in the adult rat. *Neuroreport*. 1996 Sep 2;7(13):2221-5.
12. Basso DM, Beattie MS, Bresnahan JC, Anderson DK, Faden AI, Gruner JA, Holford TR, Hsu CY, Noble LJ, **Nockels RP**, Perot PL, Salzman SK, Young W. MASCIS Evaluation of Open Field Locomotor Scores: Effects of Experience and Teamwork on Reliability. *J Neurotrauma*. 1996 Jul;13(7):343-59.
13. Bracken M, Shepard MJ, Holford TR...**Nockels RP**, et al. Methylprednisolone administered for 24 or 48 hours, or 48 hours of tirilazad mesylate in the treatment of acute spinal cord injury: Results of the Third National Acute Spinal Cord Injury Randomized Controlled Trial, *JAMA* May 28, 1997 - Vol 277, No. 20 pp. 1597-1604
14. Shaffrey CI, Shaffrey ME, Whitehill R, **Nockels RP**. Surgical Treatment of Thoracolumbar Fractures, *Neurosurgical Clinics of North America*, *Neurosurg Clin N Am*, Oct 1997 Oct; 8 (4)::519-40. Review
15. Shaffrey CI, Kaptain G, **Nockels RP**. Bone Graft Options and Harvesting Techniques, *Techniques in Neurosurgery*. *Techniques in Neurosurgery* 3(4): 1998
16. Bracken M, Shepard MJ, Holford TR...**Nockels RP**, et al. Methylprednisolone administered for 24 or 48 hours, or 48 hours of tirilazad mesylate in the treatment of acute spinal cord injury: Results of the Third National Acute Spinal Cord Injury Randomized Controlled Trial, *J Neurosurg*, 1998 Nov, 89:5, 699-706

17. Thomas A, **Nockels RP**, Pan H, Shaffrey CI, Chopp M. Progesterone is Neuroprotective after Experimental Spinal Cord Injury, **Spine** 1999 Oct 15;24(20):2134-8.
18. Thomas A, **Nockels RP**, Shaffrey CI. The Anatomy and Biomechanics of Bone-Bone Interface in Spinal Fusion, in *Bone Fusion: Biology to Biomechanics*. Lebanon, NH AANS Publications 1998
19. Rauzzino MJ, Shaffrey CI, Abel M, **Nockels RP**. Classification of Spinal Deformity and Indications for Correction. In *Textbook of Neurological Surgery* ed Batjer HH, Loftus CM Lipincott-Raven Philadelphia, 1999
20. Rauzzino MJ, Shaffrey CI, **Nockels RP**, Abel M Adult Idiopathic Scoliosis of the Thoracolumbar Spine. In *Textbook of Neurological Surgery* ed Batjer HH, Loftus CM Lipincott-Raven Philadelphia, 1999
21. Rauzzino MJ, Shaffrey CI, Wagner J, **Nockels R**, Abel M: Surgical Approaches for the management of idiopathic thoracic scoliosis and the indications for combined anterior-posterior technique. *Neurosurg Focus*, 6 (5): Article 6, 1999
22. Rauzzino MJ, Thomas AJ, **Nockels RP**, Abel M, Shaffrey CI. Congenital Abnormalities of the Thoracic and Thoracolumbar Spine. ed Fessler RG, Sekhar LN *Atlas of Neurosurgical Techniques* 1999
23. **Nockels RP**, Shaffrey CI, Neural Protection and Medical Management of Spinal Cord Injury. In *Textbook of Neurological Surgery* ed Batjer HH, Loftus CM Lipincott-Raven Philadelphia, 2000
24. **Nockels RP**, Shaffrey CI, Thoracolumbar Classification and Grading. In *Textbook of Neurological Surgery* ed Batjer HH, Loftus CM Lipincott-Raven Philadelphia, 2000
25. **Nockels RP**, Shaffrey CI, Thoracic Fractures. In *Textbook of Neurological Surgery* ed Batjer HH, Loftus CM Lipincott-Raven Philadelphia, 2000
26. **Nockels RP**, Dillon W, McDermott M, Wilson C. Stereotactic Removal of Thoracic Intramedullary Cystic Tumor, *in preparation*
27. **Nockels RP**, Hoover D, Thomas A, Pan H, Chopp M. Behavioral Effects of Focal Irradiation after Experimental Spinal Cord Injury, *in preparation*
28. **Nockels RP**, Wiggins G, Shaffery CI, Intraoperative Avoidance of the Vertebral Artery in Posterior C1-C2 Transarticular Screw Fixation, *in submission Neurosurgery*, 1999
29. **Nockels RP**, Xui Pan, Bradley Snyder, Li Y, Cecelia Powers, Chopp M. Cyclin D1 expression following experimental spinal cord contusion, *in submission J Neurosurg*
30. **Nockels RP**, Christopher Shaffrey, Manprit Dhillon, Michael Rauzzino. Occipito-Cervical Fusion Utilizing Curved Titanium Plates and Screws *in submission Neurosurgery* 1999
31. Monla-Hassan M, Eichenhorn M, Spickler E, Talati S, **Nockels R**, Hyzy R. Duropleural fistula manifested as a large pleural transudate: an unusual complication of transthoracic discectomy. *Chest*, 1998 Dec, 114:6, 1786-9
32. Hoover D, **Nockels RP**, Thomas A, Shaffrey CI, Chopp M. Comparison of Methylprednisolone and Prednisone after Acute Experimental Spinal Cord Injury. *in submission Journal of Neurosurgery*, 1999
33. Wiggins GC, Rauzzino M, Shaffrey CI, **Nockels RP**, Whitehill R, Shaffrey M, Wagner J, Alden T. A new technique for the surgical management of unstable thoracolumbar burst fractures: a modification of the anterior approach and an outcome comparison to traditional methods. *Neurosurg Focus* 7 (1): Article 3, 1999

34. Rauzzino M, Shaffrey CI, Wiggins GC, **Nockels RP**, Whitehill R, Shaffrey M, Wagner J, Alden T. The anterior management of unstable thoracolumbar burst fractures using a titanium mesh cage and the Kaneda system: a report of 21 cases. *in submission J Neurosurgery*
35. **Nockels RP**, Pan H, Shaffrey CI, Rauzzino M, Mikkelson T. A rodent model of vertebral metastases, *in preparation 2000*
36. Rauzzino M, Shaffrey C, Bartkowski H, **Nockels R**, **Wiggins G**. Multilevel thoracic pedicle aplasia causing congenital thoracic kyphosis: case report. *Neurosurgery*. 2000 Apr;46(4):988-90; discussion 990-1.
37. Rauzzino M, Shaffrey CI, **Nockels RP**, Wiggins GC, Rock J, Wagner J, Anterior Lumbar Fusion using Titanium Threaded and Mesh Interbody Cages *Neurosurg Focus 1999 Volume 7 issue 6*
38. **Nockels RP**, Xui Pan, Bradley Snyder, Li Y, Cecelia Powers, Chopp M. Radiation induces Neuronal Cyclin D1 Expression in the Adult rat Spinal Cord, *in preparation 1999*
39. Rauzzino M, Shaffrey CI, Wagner J, **Nockels RP**, Abel M. Surgical approaches for the management of idiopathic thoracic scoliosis and the indications for combined anterior--posterior technique. *Neurosurg Focus*, May 1999, Volume 6, issue 5
40. Wiggins G, Shaffrey C, Bartkowski H, Rauzzino M, Nockels R. Complex Pediatric Thoracolumbar Spinal Deformity: Neurosurgical Management, *in submission J Neurosurg 2000*
41. Bracken MB, Aldrich EF, Herr DL, Hitchon PW, Holford TR, Marshall LF, Nockels RP, Pascale V, Shepard MJ, Sonntag VK, Winn HR, Young W. Clinical measurement, statistical analysis, and risk-benefit: controversies from trials of spinal injury. *J Trauma*. 2000 Mar;48(3):558-61.
42. **Nockels RP**. Nonoperative Management of Acute Spinal Cord Injury. *Spine Focus in press 2001*
43. **Nockels RP**. Imaging of Acute Spinal Cord Injury. *Spine Focus in press 2001*

PRESENTATION:

1. Nockels RP, Young W, DeCrescito V. Effects of 21-aminosteroids on experimental spinal cord contusion. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Washington, D.C., April 1989.
2. Nockels RP, Miller D, Zagzag D, Ransohoff J. A Clinicopathological Model for Predicting Recurrence in Meningiomas. Presented at the Annual Meeting of the AANS. New Orleans, LA, April, 1991.
3. Tanno H, Nockels RP, Pitts LH, Noble LJ. HSP72-like Immunoreactivity After Fluid Percussive Brain Injury in the Rat: Relationship to Cell Type. Presented at the International Conference on Recent Advances in Neurotraumatology, Karilzawa, Japan, September 23-26, 1992
4. Nockels RP. Results of Recent Clinical Trials in Spinal Cord Injury. Presented at the International Conference on Paraplegia, Kobe, Japan, 1994
5. Nockels RP, Pitts LH, Mack E. Surgical Treatment of Cervical Spondylitic Myelopathy in Patients with Cervical Dystonias. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
6. Nockels RP, McDermott M, McCormack B. Early Experience with Spinal Stereotaxy. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995

7. Sundaresan S, McCormack B, McDermott M, Nockels RP, Weinstein P. Placement of Pedicle Screws Using Frameless Stereotaxy in a Cadaver. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
8. McCormack BM, Nockels RP, Weinstein P, Sundaresan S, Hu SS, Heath S, Scanlon J. Fixation of Lumbar Vertebra with both Pedicle Screws and Laminar Hooks: An Instrumentation Technique for Thoracolumbar Fractures. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
9. Kim D, Gutin PH, Nockels RP, Yu J, Noble L. Treatment with Nerve Growth Factor or Brain Derived Growth Factor Accelerates Recovery from Acute Traumatic Spinal Cord Injury in the Adult Rat. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Minneapolis, MN 1996
10. Nockels RP, TK Swoboda, Y Li, M Chopp. Evidence of Apoptosis in an Acute Spinal Cord Injury Model. Presented at the Annual Meeting of the Society of Neuroscience, Washington, DC, 1996
11. Anterior Cervical Spine Reconstruction in Neoplastic Disease using a "Chest Tube" Anchored Methylmethacrylate Strut. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Minneapolis, MN 1996
12. McCormack BM, Nockels RP, Weinstein P, Sundaresan S, Hu SS, Heath S, Scanlon J. Fixation of Lumbar Vertebra with both Pedicle Screws and Laminar Hooks: An Instrumentation Technique for Thoracolumbar Fractures. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Minneapolis, MN 1996
13. Swoboda TK, Li Y, Nockels RP, Chopp M. Evidence of Apoptosis in an Acute Spinal Cord Injury Model. Presented at the Annual Meeting of the Society for Neurosciences, Washington, DC, 1996
14. Nockels RP, Pan H, Snyder B, Yi L, Chopp M. Ultrastructural and light microscopic evidence of apoptosis after spinal cord injury, Fourth International Neurotrauma Symposium, Seoul Korea, 1997
15. Nockels RP, Pan H, Snyder B, Yi L, Chopp M. Expression of Cyclin D/cdk4 after Experimental Spinal Cord Injury, Fourth International Neurotrauma Symposium, Seoul Korea, 1997
16. Nockels RP, Pan H, Noble L. Transplantation of genetically engineered fibroblasts to a region of acute experimental spinal cord injury, Fourth International Neurotrauma Symposium, Seoul Korea, 1997
17. Nockels RP, Pan H, Snyder B, Yi L, Chopp M. Experimental Spinal Cord Stereotaxy, Fourth International Neurotrauma Symposium, Seoul Korea, 1997
18. Eichbaum E, Rezai A, Nockels R, Cooper P, McCormack B. Initial Circumferential Surgery for Cervical Osteomyelitis, Presented at the Annual Meeting of the Congress of Neurological Surgeons, New Orleans, 1997
19. Morlock R, Nerenz D, Benzel E... Nockels RP, Pfiefer B, Ward R. Variation in the rate of Low-Back Surgery Offerings. Presented at the Annual Meeting of the Congress of Neurological Surgeons, New Orleans, 1997
20. Morlock R, Ward R, Nerenz D, Benzel E ... Nockels RP, Pfiefer B, Shaffrey CI. Evaluation of the MODEMS Pain and Disability and Expectation Scale and a Short Form of this Scale, Presented at the Annual Meeting of the Congress of Neurological Surgeons, Seattle, WA, 1998
21. Morlock R, Nerenz D, Benzel E ... Nockels RP, Pfiefer B, Ward R. Low-Back Surgery Evaluations and Treatment Expectations, Presented at the Annual Meeting of the Congress of Neurological Surgeons, Seattle, WA, 1998

22. Nockels RP, Thomas A, Pan H, DePas M, Chopp M, Shaffrey CI, Brown S. Focal Irradiation Improves Behavioral Recovery after Experimental Spinal Cord Injury. Presented at the Annual Meeting of the Congress of Neurological Surgeons, Seattle, WA, 1998
23. Morlock R, Ward R, Nerenz D, Benzel E ... Nockels RP, Pfeifer B, Shaffrey CI. Evaluation of the MODEMS Pain and Disability and Expectation Scale and a Short Form of this Scale, Presented at the Annual Meeting of the Congress of Neurological Surgeons, Seattle, WA, 1998
24. Nockels RP, MD, Hui Pan MD, Ajith Thomas MD, Mary Ann Depaz MD, Michael Chopp PhD, Steven Brown PhD Focal Irradiation Increases Oligodendroglial Apoptosis and Improves Behavioral Recovery after Experimental Spinal Cord Contusion. Presented at the Annual Meeting of the Congress of Neurological Surgeons, Seattle WA, 1998
25. Nockels RP, MD, Shlomo Mandel MD, Lawrence Mitchel MD, Robert Morlock MS, Christopher I. Shaffery MD, Michael Rauzzino MD, Mark Rosenblum MD Application of Disease Management Principles to Spinal Disorders: Early Experience in a Group Practice Managed Care Environment, Presented at the Annual Meeting of the Joint Section of Spine and Peripheral Nerve Disorders AANS/CNS, Orlando FL, 1999
26. Nockels RP, Ajith Thomas MD, Hui Pan MD, Christopher Shaffrey MD, Michael Chopp PhD. Progesterone is Neuroprotective After Experimental Spinal Cord Injury, Presented at the Annual Meeting of the North American Spine Society, San Francisco, 1998
27. Nockels RP, Brad Snyder, Hui Pan, Cecelia Powers, Nancy Allar, Yi Li, Michael Chopp, Cyclin D Expression following Acute Experimental Spinal Cord Injury, Presented at the Annual Meeting of the Congress of Neurological Surgeons, Seattle, 1998
28. Morlock R, Nerenz D, Nockels RP, Ward R. Low back surgery, ethnicity and expectations. Presented at the 15th Annual Meeting of the Association for Health Services Research, Washington DC, 1998
29. Nockels RP, Chris Shaffrey , Manprit Dhillon, Michael Rauzinno. Occipito-Cervical Fusion Utilizing Curved Titanium Plates and Screws, Annual Meeting of the Congress of Neurological Surgeons, Boston, 1999
30. Hoover D, Nockels RP, Thomas A, Shaffrey CI, Chopp M. Comparison of Methylprednisolone and Prednisone after Acute Experimental Spinal Cord Injury, Annual Meeting of the Congress of Neurological Surgeons, Boston, 1999
31. Nockels RP, Pan H, Snyder B, Powers C, Allar N, Li Y, Shaffrey C, Chopp M. Cyclin D Expression following Experimental Spinal Cord Injury: Potential Role as a Stress-Related Protein, Annual Meeting of the Congress of Neurological Surgeons, Boston, 1999
32. Wiggins G MD, Russ P. Nockels MD, Christopher Shaffery MD, Michael Rauzzino MD Intraoperative Avoidance of the Vertebral Artery in Posterior C1-C2 Transarticular Screw Fixation, Annual Meeting of the Congress of Neurological Surgeons, Boston, 1999
33. Morlock R, Nerenz D, Benzel E, Nockels R, et al. Patient Presentation, the Surgery Decision, and Outcomes in Lumbar Patients., Annual Meeting of the Congress of Neurological Surgeons, Boston, 1999
34. Morlock R, Nerenz D, Benzel E, Nockels R, et al. Gender and Racial Differences in Presentation and Initial Improvement Following Lumbar Surgery. submitted to the Annual Meeting of the Congress of Neurological Surgeons, Boston, 1999
35. Wiggins G, Shaffrey C, Bartkowski H, Rauzzino M, Nockels R. Neurosurgical Management of Complex Pediatric Thoracolumbar Spinal Deformity, submitted to the Annual Meeting of the American Association of Neurological Surgeons, San Francisco 2000

36. Wiggins G, Shaffrey C, Bartkowski H, Rauzzino M, Nockels R. **Complex Pediatric Thoracolumbar Spinal Deformity: Neurosurgical Management**, submitted to the Annual Meeting of the American Association of Neurological Surgeons, San Francisco 2000
37. Nockels R, Pan H, Li Y, Shaffrey C, Hoover D, Chopp M. **Neuronal Cell Cycle Protein Expression Following Experimental Adult Spinal Cord Injury**. submitted to the Annual Meeting of the American Association of Neurological Surgeons, San Francisco 2000
38. Nockels, R., Shaffrey C, Rauzzino M, Shea J, Orogitano TC **Rigid Fixation of the Occiput in the Management of Craniovertebral Junction Abnormalities** submitted to the Annual Meeting of the North American Skull Base Association, Scottsdale AZ, 2000
39. Nockels R, Leppla D, Rauzzino M. **Correction Techniques in the Neurosurgical Management of Adult Lumbar Scoliosis**, presented at the Annual meeting of the Congress of Neurological Surgeons, San Antonio TX 2000
40. Nockels R, Thomas A, Chopp M, **Comparison of Progesterone and Methylprednisolone following experimental Spinal Cord Injury**, presented at the Annual meeting of the North American Spine Society, New Orleans, LA 2000
41. Nockels R, Thomas A, Mikkelsen T, **An Experimental Model Of Vertebral Metastases in the Rat**, presented at the Annual meeting of the North American Spine Society, New Orleans, LA 2000

SCIENTIFIC EXHIBITS:

1. Chuman CM, Nockels RP. **The effect of fourth ventricular compression on the autonomic regulation of gastric acid secretion and cardiovascular homeostasis**. Presented at the Meeting of American Association of Neurological Surgeons, Honolulu, Hawaii, April 1981.
2. Nockels RP, Young W, DeCrescito V. **Comparison of the effects of Methylprednisolone and U74006F on experimental spinal cord contusion**. Presented at the Annual Meeting of the American Association of Neurological Surgeons, New Orleans, LA, April 1991.
3. Tanno H, Nockels RP, Noble LJ. **Neuronal uptake of protein following fluid percussion head injury in the rat**. Presented at the Annual Meeting of the Neurotrauma Society, New Orleans, LA, November, 1991.
4. Nockels RP. **Preservation of the frontotemporal nerve during pterional craniotomy: Application of the Gill's maneuver**. Presented at the Annual Meeting of the American Association of Neurological Surgeons, San Francisco, CA, April 1992.
5. Tanno H, Nockels RP, Pitts LH, Noble LJ. **Immunolocalization of immunoglobulin g (IgG) in the normal adult rat brain**. Presented at the 1992 Neuroscience Meeting, Anaheim, CA, October 25-30, 1992.
6. Tanno H, Nockels RP, Pitts LH, Noble LJ. **Microglial reaction to mild head injury**. Annual Meeting of the Neurotrauma Society, Anaheim, CA, October 1992.
7. Nockels RP, Pitts LH, Mack E. **Surgical Treatment of Cervical Spondylitic Myelopathy in Patients with Cervical Dystonias**. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
8. Nockels RP, McDermott M, McCormack B. **Early Experience with Spinal Stereotaxy**. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995

9. Sundaresan S, McCormack B, McDermott M, Nockels RP, Weinstein P. Placement of Pedicle Screws Using Frameless Stereotaxy in a Cadaver. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
10. McCormack BM, Nockels RP, Weinstein P, Sundaresan S, Hu SS, Heath S, Scanlon J. Fixation of Lumbar Vertebra with both Pedicle Screws and Laminar Hooks: An Instrumentation Technique for Thoracolumbar Fractures. Presented at the Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
11. Anterior Cervical Spine Reconstruction in Neoplastic Disease using a “Chest Tube” Anchored Methylmethacrylate Strut. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Minneapolis, MN 1996
12. McCormack BM, Nockels RP, Weinstein P Fixation of Thoracic Vertebra with both Pedicle Screws and Laminar Hooks. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Minneapolis, MN 1996
13. McCormack BM, Nockels RP, Weinstein P Anatomy of the Thoracic Pedicle. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Minneapolis, MN 1996
14. Swoboda TK, Li Y, Nockels RP, Chopp M. Evidence of Apoptosis in an Acute Spinal Cord Injury Model. Presented at the Annual Meeting of the Society for Neurosciences, Washington, DC, 1996
14. Eichbaum E, Rezai A, Nockels R, Cooper P, McCormack B. Surgical management of cervical osteomyelitis with significant spinal deformity: an indication for circumferential surgery. Presented at the Annual Meeting of the Congress of Neurological Surgeons, Montreal, Canada, 1996
15. Nockels R, Hysell S, Shaffrey CI. Reuse of implanted spinal fiducials for percutaneous stereotactic treatment of a spinal cord teratoma. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Philadelphia PA, 1998
16. Nockels RP, Snyder B, Pan H, Yi L, Powers C, Shaffrey CI. Cell cycle protein expression following acute spinal cord injury. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Philadelphia PA, 1998
17. Wiggins G, Shaffrey CI, Nockels RP, Rauzzino, M. Perioperative Complications and Blood Transfusion Requirement for Pediatric and Adult Complex Deformity Surgery. Presented at the AANS/CNS Joint Section on Spine and Peripheral Nerve Disorders, Orlando FL , 1999
17. Wiggins G MD, Russ P. Nockels MD, Christopher Shaffery MD, Michael Rauzzino MD Intraoperative Avoidance of the Vertebral Artery in Posterior C1-C2 Transarticular Screw Fixation, Presented at the Annual Meeting of the Joint Section of Spine and Peripheral Nerve Disorders AANS/CNS, Orlando FL, 1999
18. Nockels RP, MD, Hui Pan MD, Ajith Thomas MD, Mary Ann Depaz MD, Michael Chopp PhD, Steven Brown PhD Effect of Focal Irradiation on Behavioral Recovery after Experimental Spinal Cord Injury. Presented at the Annual Meeting of the Joint Section of Spine and Peripheral Nerve Disorders AANS/CNS, Orlando FL, 1999
19. Nockels RP, Yoo K, Leppla D, Rauzzino M. Rigid Stabilization of the Cervicothoracic Region with Combined Lateral Mass and Hook Rod Implants. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Toronto, Ontario, 2001
20. Nockels RP, Yoo K, Klafeta S. Posterior Management of Thoracic Anterior Column Metastases with Segmental Thoracic Pedicle Fixation. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Toronto, Ontario, 2001

21. Nockels RP, Anterior Release Procedures in the Management of Degenerative Lumbar Scoliosis. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Toronto, Ontario, 2001

22. Nockels RP, Yoo K, Techniques of Thoracic Pedicle Screw Fixation: Improvement of Technique without Intraoperative Fluoroscopy. Presented at the Annual Meeting of the American Association of Neurological Surgeons, Toronto, Ontario, 2001

POSTGRADUATE COURSES:

1. Course Director, "Update on Cervical Spine Instrumentation", University of California, San Francisco Department of Neurosurgery, March 19, 1992
2. Course Instructor, "Techniques in Thoracolumbar Stabilization", American Association of Neurological Surgeons Postgraduate Course, San Francisco, CA, 1993
3. Course Instructor, "Techniques in Thoracolumbar Stabilization", American Association of Neurological Surgeons Postgraduate Course, Rochester MN, 1993
4. Course Instructor, "Consultants Corner on Spinal Surgery", Annual Meeting of the Congress of Neurological Surgeons, Vancouver, British Columbia, October 3, 1993
5. Course Instructor, "Introduction to Thoracolumbar Instrumentation", Annual Meeting of the Congress of Neurological Surgeons, Vancouver, British Columbia, October 3, 1993
6. Moderator, "Cervical Spondylitic Radiculomyelopathy", Moderator, Annual Meeting of the Joint Section on Spine and Peripheral Nerve, Fort Lauderdale, FL 1994
7. Course Instructor, "Techniques in Thoracolumbar Stabilization", American Association of Neurological Surgeons Postgraduate Course, San Francisco, CA, 1994
8. Course Instructor, "Management of Spinal Trauma", International Symposium on Spinal Trauma, Kyoto, Japan, 1994
9. Course Instructor, "Techniques in Thoracolumbar Stabilization", Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
10. Course Instructor, "Comprehensive Health Systems and Neurosurgery", Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
11. Course Instructor, "Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, 1995
12. Speaker, "Management of Thoracolumbar Trauma: A Clinical and Biomechanical Perspective" Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
13. Speaker, "Modern Approaches to Occipitocervical Stabilization", Spine Update Seminar for Nurses, Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA, 1995
14. Instructor, "Thorascopic Spinal Surgery", 12th Annual Meeting of the Joint Section on Disorders of the Spine and Peripheral Nerves, March 2, 1996

15. Course Instructor, "Techniques in Thoracolumbar Stabilization", American Association of Neurological Surgeons Postgraduate Course, Minneapolis MN, 1996
16. Course Instructor, "Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, 1996
17. Course Director, "Techniques in Thoracolumbar Stabilization", Annual Meeting of the Congress of Neurological Surgeons, Montreal Canada, 1996
18. Course Director, "Modern Management of Degenerative Spine Disorders", Annual Meeting of the Michigan Medical Society, Lansing MI, 1996
19. Moderator, Scientific Session, 13th Annual Meeting of the AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves, Newport Beach, CA 1997
20. Course Director, "Techniques in Thoracolumbar Stabilization", Annual Meeting of the Congress of Neurological Surgeons, New Orleans, LS, 1997
33. Course Instructor, "Lumbar Instrumentation and Fusion Practical Course", Annual Meeting of the Congress of Neurological Surgeons, New Orleans, LS, 1997
21. Course Instructor, "Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, 1997
22. Course Instructor, "Anterior Approaches to Thoracolumbar Pathology" Annual Meeting of the American Association of Neurological Surgeons, Denver, CO, 1997
23. Course Instructor, Orthopedic Resident Review Course in Spinal Disorders, Henry Ford Hospital, 1997
26. Course Instructor, "Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, 1998
27. Course Co-Chairman, "Spinal Surgery: A Comprehensive Approach for Young Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, 1998
29. Course Instructor, Orthopedic Resident Review Course in Spinal Disorders, Henry Ford Hospital, 1998
31. Course Director, "Modern Management of Cervical Myelopathy", Annual Meeting of the Congress of Neurological Surgeons, Seattle, 1998
34. Seminar Panelist. " Management of Thoracolumbar Trauma" Annual Meeting of the AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves, Ranch Mirage CA 1998
28. Moderator, "Contemporary Management of Syringomyelia" Annual Meeting of the American Association of Neurological Surgeons, New Orleans, 1999
24. Moderator, Scientific Session, 13th Annual Meeting of the AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves, Orlando FL 1999
25. Course Instructor, "Techniques in Pedicle Fixation", Annual Meeting of the AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves, Orlando FL 1999
30. Course Instructor, "Techniques and Outcomes of Anterior Interbody Fusions", Annual Meeting of the Congress of Neurological Surgeons, New Orleans, LS, 1999

32. Course Instructor, "Contemporary Management of Spinal Cord Injury", Neurointensive Care Review Course, Annual Meeting of the Congress of Neurological Surgeons, New Orleans, LS, 1999
33. Moderator, "Artificial Cervical Disc Replacement" First Annual Cervical Think Tank, Big Sky, MT, 1999
34. Moderator, "Biology of Bone Fusion and Bone Grafting Techniques", Annual Meeting of the Congress of Neurological Surgeons, Boston MA 1999
35. Course Instructor, State of the Art of Spinal Fusion 2000, 'Posterior Cervical Instrumentation: Indications, Techniques and Complications', Vancouver BC 2000
36. Course Instructor, State of the Art of Spinal Fusion 2000, 'Posterior Lumbar Interbody Fusion: Indications, Techniques and Complications', Vancouver BC 2000
34. Moderator, "Biology of Bone Fusion and Bone Grafting Techniques", Annual Meeting of the Congress of Neurological Surgeons, San Antonio TX 2000

LECTURES:

1. "Future Trends in Management of Pediatric Head Injury", Pediatric Grand Rounds, University of California, San Francisco, July 23, 1991.
2. "Minor Head Injury, Reducing Long-Term Morbidity". The California Trauma Conference, University of California, Davis, Sacramento California, January 9, 1992
3. "Critical Care Management and Long-Term Outcome of the Neurosurgical Patient". Seminar in Selected Topics in Intensive Respiratory Care, San Francisco General Hospital. January 24, 1992.
4. "New Pharmacological Strategies in Experimental Spinal Cord Injury". Annual Meeting of the San Francisco Neurological Society, Monterey, CA, March 7, 1992
5. "Spine and the Single Surgeon" UCSF Medical Seminar Series, September 16, 1992
6. "Degenerative Cervical Spine Disease and Internal Fixation" UCSF Department of Neurological Surgery Grand Rounds, July 30, 1992
7. "Neurosurgical Emergencies" UCSF Department of Neurology Grand Rounds, August 26, 1992.
8. "Modern Management of Spine Trauma" John Muir Medical Center, Walnut Creek, CA, September 6, 1992
9. "Evaluation and Management of Spinal Trauma in the Emergency Department" Emergency Services Grand Rounds, SFGH, October 11, 1992.
10. "Sacral Chordomas" UCSF Department of Neurological Surgery Grand Rounds, February 4, 1993.
11. "Pure Ligamentous Injury to the Cervical Spine" UCSF Department of Neurological Surgery Grand Rounds, March 11, 1993
12. "Tumors and Infections of the Spine" Osler Lecture Series, Review Course for Neurological Surgery, San Francisco, CA March 20, 1993.
13. "Degenerative Disease of the Spine" UCSF/Mount Zion Department of Medicine Grand Rounds, July 30, 1993.

14. "Management of Cervical Spondylosis in Complex Movement Disorders" UCSF Department of Neurology Grand Rounds, September 26, 1993
15. "Progress in Spinal Cord Injury Research", Bay Area Spinal Cord Injury Conference, San Francisco, CA, 1993
16. "Future Trends in the Treatment of Neurotrauma" Kentfield Annual Brain Injury Symposium, Napa, CA October 14, 1993.
17. "Surgical Approaches to the Spine. I & II". Department of Surgery Grand Rounds, UCSF, 1993
18. "Anatomical Principles in Spinal Surgery". UCSF Department of Anatomy Lecture Series, 1993.
19. "Spinal Neurooncology" Surgical Grand Rounds, UCSF/Mount Zion, 1994.
20. "Fundamentals of Outcomes Research" Neurosurgery Grand Rounds, UCSF 1994
21. "Early Experience with Spinal Stereotaxy", Neurosurgery Grand Rounds, UCSF 1995
22. "Emergency Management of Spine Injury" Department of Emergency Services Grand Rounds, Henry Ford Hospital 1995
23. "Biomechanics of the Thoracic and Lumbar Spine" Orthopedic Resident Lecture Series, Henry Ford Hospital 1995
24. "Spinal Cord Injury" Orthopedic Resident Lecture Series, Henry Ford Hospital 1995
25. "Lumbar Stenosis" Orthopedic Resident Lecture Series, Henry Ford Hospital 1995
26. "Lumbar Disc Disease" Orthopedic Resident Lecture Series, Henry Ford Hospital 1995
27. "Degenerative Diseases of the Cervical Spine" Orthopedic Resident Lecture Series, Henry Ford Hospital 1995
28. "Adult Low Back Pain" Orthopedic Resident Lecture Series, Henry Ford Hospital 1995
29. "Modern Management of Spinal Disorders", Michigan State Medical Society Annual Meeting, Lansing MI 1995
30. "Critical Care Management of Spinal Trauma", Critical Care Grand Rounds, Henry Ford Hospital, 1995
31. "Management of Patients with Low Back Pain", Neuroscience Symposium, McLaren Regional Medical Center, January 20, 1996
32. "Head and Spine Trauma" Paramedic Certification, Detroit Fire Department, January 22, 1996
33. "Spinal Disease Management and Occupational Health" Concentra Medical Staff Meeting, May 7, 1996
34. "Biomechanics of Degenerative Spine Disease" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1996
35. "Management of Occipitocervical Pathology" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1996

36. "Spinal Deformity Correction - Principles" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1996
37. "Pedicle Fixation, Hook-Claw and Wire Techniques for Spinal Stabilization" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1996
38. "Biomechanics of Degenerative Spine Disease" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1996
39. "Management of Occipitocervical Pathology" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1997
40. "Cervical Spondylosis" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1997
41. "Pedicle Fixation, Hook-Claw and Wire Techniques for Spinal Stabilization" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1997
42. "Posterior Instrumentation of the Cervical Spine" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1997
43. "Management of Occipitocervical Pathology" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1998
44. "Spinal Deformity Correction - Principles" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1998
45. "Pedicle Fixation, Hook-Claw and Wire Techniques for Spinal Stabilization" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1998
46. "Anterior Instrumentation of the Thoracolumbar Junction" Spinal Surgery: A Comprehensive Approach for Neurosurgeons" American Association of Neurological Surgeons Postgraduate Course, Albuquerque NM, May 1998
47. "Cranio-cervical Instability" Annual Meeting of the American Association of Neurological Surgeons, Seattle, 1998
48. "Thoracolumbar Trauma- an Overview" Annual Meeting of the American Association of Neurological Surgeons, Seattle, 1998
49. "Posterior Approaches to Cervical Spondylosis" Southeastern Conference on Spinal Disorders, Key West 1998
50. Molecular Changes following Acute SCI, Wayne State University Symposium on Neurotrauma, Nov 1998

52. "Post-traumatic Manipulation of Molecular Changes following Acute Spinal Cord Injury", Neurosurgical Grand Rounds, Loyola University Medical Center, 1998
51. "Life, Death and SCI", Neurosurgical Grand Rounds, Washington University, St Louis MO, 1998
52. "Spinal Cord Repair", Neurosciences and Psychiatry, Loyola University Medical Center, 1999
53. "Modern Management of Spinal Cord Injury" Department of Surgery Grand Rounds, Loyola University Medical Center, 1999
54. "Posterior Cervical Spine Fusion" Department of Neurosurgery Grand Rounds Loyola University Medical Center 2000
55. "Lumbar Deformities" Department of Neurosurgery Grand Rounds Loyola University Medical Center 2000
56. "Scoliosis" Department of Neurosurgery Grand Rounds Loyola University Medical Center 2000
57. "The Future of Spine Surgery" Department of Neurosurgery Grand Rounds Loyola University Medical Center 2000
58. "Spinal Disorders" Department of Neurosurgery Nursing Postgraduate Course 2000

PROFESSIONAL SOCIETIES:

Congress of Neurological Surgeons
 American Medical Association
 American Association of Neurological Surgeons
 Neurotrauma Society
 Joint Committee on Neurotrauma and Intensive Care, AANS
 Joint Section on Disorders of the Spine and Peripheral Nerves, AANS
 San Francisco Neurological Society
 California Association of Neurological Surgeons
 Michigan Medical Society
 Michigan Association of Neurological Surgeons
 North American Spine Society

CURRENT RESEARCH IN PROGRESS:

1. Evaluation and manipulation of molecular changes after experimental spinal cord injury
2. Pharmacologic, neurotrophic and surgical strategies to preserve white matter tracts after spinal cord injury
3. Dose response of the injured spinal cord to radiation therapy
4. Development of an animal model for vertebral metastases with clinical and MRI correlation
5. Treatment of subacute spinal cord injury with Prednisone
6. Transplantation of stem cells into adult experimental spinal cord injuries