

CURRICULUM VITAE

WILLIAM SANFORD ROSENBERG, M.D.

ADDRESS: Midwest Neurosurgery Associates
6420 Prospect Street, Suite T411
Kansas City, MO 64132
(816) 363-2500

BIRTHDATE: December 27, 1961

BIRTHPLACE: Lancaster, California

MARRIED: June 2, 1985 to Kathi Shaivitz Rosenberg

CHILDREN: Ariane Elizabeth 1988
Alexa Jo 1990



EDUCATION

College of Creative Studies, University of California, Santa Barbara 1982 B.A.
Harvard Medical School, Boston, Massachusetts 1987 M.D.

EMPLOYMENT HISTORY

Postgraduate Training

Massachusetts General Hospital, Department of Surgery, Internship 1987-88
Massachusetts General Hospital, Department of Neurosurgery, Residency 1988-92
Training
Massachusetts General Hospital, Department of Neurosurgery, Chief 1993
Resident

Faculty Positions

Assistant in Neurosurgery, Massachusetts General Hospital, Boston, 1994
Massachusetts
Assistant Professor, Department of Neurosurgery, University of Cincinnati 1994-98
College of Medicine, Cincinnati, Ohio
Director, Division of Neurotrauma and Critical Care, University of 1994-97
Cincinnati College of Medicine, Cincinnati, Ohio
Research Director, Center for Computational Neurobiology, University of 1995-98
Cincinnati, Cincinnati, Ohio

Adjunct Assistant Professor, Department of Aerospace Engineering and Engineering Mechanics, College of Engineering	1996-98
Assistant Professor-In-Residence, University of California School of Medicine, San Francisco, Department of Neurological Surgery	1998-2002
Co-Director, Neurospinal Disorders Program, University of California School of Medicine, San Francisco, Department of Neurological Surgery	1998-2002
Medical Director, Menorah Medical Center CyberKnife Center, Menorah Medical Center, Overland Park, KS	2004-09

Clinical Appointments

Children's Hospital Medical Center, Cincinnati, Ohio	1994-98
Veterans Administration Medical Centers Cincinnati, Ohio	1994-98
San Francisco, California	1998-2002
Menorah Medical Center, Overland Park, Kansas	2002-2010
Research Medical Center, Kansas City, Missouri	2002-
St. Luke's Health System, Kansas City, Missouri	2010-2011

HOSPITAL ADMINISTRATION

Founder and Medical Director, Center for the Relief of Pain, Midwest Neuroscience Institute, Research Medical Center <i>Mission: To manage complex pain, using a patient-centered, evidence-based approach, through innovation, research, and collaboration, with surgical skill, experience, specialized knowledge, compassion, and empathy, that views each individual's pain experience as unique, in order to improve quality of life.</i>	2011-
Informatics Committee, Research Medical Center, Kansas City, Missouri	2013-
Chairman, Department of Neurosurgery, Menorah Medical Center, Overland Park, Kansas	2003-2008
Executive Committee, Menorah Medical Center	2005-2008
Chairman, IRB Committee, Menorah Medical Center	2005-2007
Informatics Committee, Menorah Medical Center	2005-2007

TEACHING EXPERIENCE

Core Clerkship in Neurology and Neurosurgery #110, One and one-half hour ward rounds and lectures, University of California Medical Center, San Francisco, California

Core Clerkship in Neurology and Neurosurgery #110, Neurotrauma Lecture (3 hours), University of California Medical Center. San Francisco, California

Neurosurgery Residents, Intern and Student Teaching, 1-4hrs/day on rounds, in operating room and in conferences, (5 days/week – continuous), University of California Medical Center, San Francisco, California

Faculty Lecture Series for Student Teaching, Department of Neurosurgery, University of California Medical Center, San Francisco, California

RESEARCH SUPERVISION

Graduate Students

Mentor and Thesis Committee member, Ms. Ying Huang, Master of Science, Department of Electrical Engineering, University of Cincinnati, “Quantitative Characterization of the Effect of Medication on Heart Rate Variability of Patients in a Critical Care Environment”, 1997.

Mentor and Thesis Committee member, Dr. Hao Hu, Doctor of Philosophy, Department of Aerospace Engineering and Engineering Mechanics, University of Cincinnati, “Modeling of Human Head Impact Response”, 1997.

Mentor, Mr. William Palm, Master of Science/Doctor of Philosophy, Department of Mechanical Engineering, University of California, Berkeley, 1999-2000

Post Doctoral

Michael Liebschner, Ph.D. 1999-2000

Praveen Mummaneni, M.D. 1999-2001

RESEARCH POSITIONS

Harvard Medical School, Boston, Massachusetts

Research Fellow in Neuroscience, McLean Hospital (Ole Isacson, Ph.D.) 1991-94

Charles A. Dana Fellow, Department of Molecular Neurogenetics and Neuroscience, Massachusetts General Hospital (Xandra O. Breakefield, Ph.D.) 1990-92

Research Fellow, Department of Immunology (K. Frank Austen, M.D.) 1985-86

University of California, Santa Barbara

President’s Undergraduate Research Fellow, Department of Virology (Charles E. Samuel, Ph.D.) 1980-81

GRANT SUPPORT AND CLINICAL RESEARCH

Co-principal investigator with Peter B. Nagy, Ph.D. □4th Biomedical Seed Grant, University of Cincinnati College of Engineering, “Development of an Ultrasonic System for Monitoring Intracranial Changes in Head Injured Patients”, \$30,000	1996-97
Principal Investigator, HealthSouth Corporation, “Neurotrauma Database Project”, \$50,000	1996-97
Co-investigator with Lea McLaughlin, Ph.D. and Frank Zemlan, Ph.D., Small Business Innovation Research Program Phase I Grant (DHHS-PHS), “CSF Cleaved-Tau in Traumatic Brain Injury”, \$99,332	1997-98
Principal Investigator, University of California Academic Senate Grant, “Biomechanics of Vertebroplasty” (Co-investigator: Tony M. Keaveny, Ph.D.), \$29,973	1998-99
Principal Investigator, Sofamor-Danek, Inc. Unrestricted Research Funding, \$250,000	1998-00
Principal Investigator, Midas-Rex, Unrestricted Research Funding, \$50,000/year	1998-2002
Principal Investigator, St. Jude Medical, "Determination of Somatosensory Evoked Potential (SSEP) Collision Testing Parameters During Spinal Cord Stimulation for Characterization of Physiologic Midline/Lead Position Relationship and Dermatome Sensory Thresholds (Protocol C-11-16)."	2011
Principal Investigator, St. Jude Medical, “A Retrospective Evaluation and Data Collection Study to Evaluate the Specificity of the Penta™ Paddle Lead in Patients Implanted with an ANS 16-Channel Implantable Pulse Generator (IPG) (Protocol C-11-04)”	2011
Study Principal Investigator, SI-Bone, “INSITE - <u>I</u> nvestigation of <u>S</u> acroiliac <u>F</u> usion <u>T</u> reatment” – multicenter, randomized, blinded trial of minimally-invasive sacroiliac fusion	2012-
Site Principal Investigator, SI-Bone, “SIFI - <u>S</u> acroiliac <u>J</u> oint <u>F</u> usion with <u>i</u> Fuse Implant System” – multicenter, single arm study of minimally-invasive sacroiliac fusion	2012-
Co-Investigator, “Post-operative Pain Control in Spine Surgery Patients With Use of Ketorolac	2014-

LICENSURE AND CERTIFICATION

National Board of Medical Examiners	1988
Diplomate, American Board of Neurological Surgeons	1999
Recertified	2009
Massachusetts License	1988
Ohio License	1994

Kentucky License	1994
California License	1998
Kansas License	2002 (current)
Missouri License	2002 (current)

MILITARY EXPERIENCE

Captain, Medical Corps, United States Army Reserve 1990-2000

PROFESSIONAL ORGANIZATIONS

Cancer Pain Research Consortium (Founder) 2013-
President 2013-

A multidisciplinary physician group, comprised of practitioners from across North America representing many major cancer centers and large practices, dedicated to generating and promoting interdisciplinary, patient-centered, evidence-based care for cancer-related pain and suffering.

American Association of Neurological Surgeons 1993-
Abstract Reviewer, 2015 Annual Scientific Meeting

North American Neuromodulation Society 2009-
Reviewer, *Neuromodulation* 2009-
Member, Website Committee 2011-
Member, Education Committee 2011-

International Neuromodulation Society 2009-

American Academy of Pain Medicine 2011-
Scientific Review and Guidelines Committee 2012-

Congress of Neurological Surgeons 2000-
CNS University Editorial Board, Pain Section 2013-

American Board of Neurological Surgeons
Written Examination Review Committee 2001-2003

AANS/CNS Clinical Outcomes Committee 2000-2002
Representative from Joint Section on Spine and Peripheral Nerves

AANS/CNS Joint Section on Neurotrauma and Critical Care 1994-1998

AANS/CNS Joint Section on Pain 2009-
Executive Council 2013-

AANS/CNS Joint Section on Spine and Peripheral Nerves 1998-
Scientific Program Committee, 2000 Annual Meeting 2000
Guideline Committee 2000-2002
Clinical Outcomes Committee 2000-2002
Executive Committee 2001-2002

American Society for Stereotactic and Functional Neurosurgery 2011-
Education Committee 2014-

American Society for Clinical Oncology 2012-

Advisory Board, *Spine* (journal) 2000-2002

North American Spine Society 1999-2013

San Francisco Neurological Society 1999-2002

American Brain Injury Consortium 1994-97

Academy of Medicine, Ohio State Medical Association 1994-98
Emergency and Disaster Services Committee 1994-98
Electronic Comm. and Data Interchange Committee 1994-98

INDUSTRY AND CONSULTING

Medtronic Sofamor-Danek: Initially consultant with Sofamor-Danek from 1993 and then with Medtronic after acquisition. Evaluated and developed a number of systems for spinal fixation, minimally-invasive surgery and computer-aided image-guided surgery. Participated in business planning and market strategy development. More recently, consultant with Medtronic Neuromodulation on issues regarding neurostimulation and targeted drug delivery.

Medtronic Midas Rex: Consultant from 1997. Evaluated and developed ideas related to robotic surgery and power-driven tools.

Medtronic Neuromodulation: Beginning in 2011, consulting on all aspects of neuromodulation, including deep brain stimulation, spinal cord and peripheral nerve stimulation and intrathecal drug delivery. Chairman of National Cancer Pain Advisory Committee. Faculty for various seminars.

Depuy/Acromed: Consultant from 1999. Intellectual property resulted in patented instruments for implantation of cervical systems now distributed world-wide. Evaluated and developed systems for cervical fixation.

Spine Wave, Inc.: Founding Consultant and Advisor to clinical start-up with intellectual property regarding intradiscal reconstruction. Revised market and regulatory strategy, developed FDA presentation and assisted in venture capital acquisition. Currently assisting in design and clinical trial architecture of several platform products.

St. Jude Medical: Consulting on all aspects of neurostimulation. Serving on Surgeon Advisory Panel. Faculty for various seminars, events, etc.

SI-Bone: Consultant from 2012. Involved in all clinical aspects, including refining technique and implant and clinical study design and implementation for minimally invasive sacroiliac joint fusion procedure. Study principal investigator for centerpiece national, multicenter, randomized, blinded study on procedural efficacy.

CyberKnife Associates: Founder and Managing Partner of LLC bringing cutting edge full-body stereotactic radiosurgical equipment (CyberKnife, Accuray Inc.) to Kansas City. Currently in joint venture with HCA.

Menorah Medical Center CyberKnife: Managing Partner of joint venture between CyberKnife Associates, LLC and HCA bringing stereotactic radiosurgery to Kansas City.

Sunflower Biotechnology Group: Principal and Founder of multidisciplinary group focused on development of internal intellectual property related to medical devices.

KTEC Pipeline Fellow: Selected for the inaugural class of fellowship (www.ktecpipeline.com), sponsored by the Kansas Technology Enterprise Corporation (a public/private venture; www.ktec.com), designed to foster and support entrepreneurship in technology.

Anjon, LLC: Vice President of Business Development. Assisted private equity group Tech Investments, LLC (www.ti-kc.com) in due diligence to acquire medical device contract manufacturer, Anjon, LLC (www.anjoninc.com). Responsible for developing strategic contacts and partnerships for Anjon, as well as participating with engineering team in executing projects.

OsteoGeneX: Chief Medical Officer to clinical startup (www.osteogenex.com) developing bone growing technology for both systemic and local therapies. Responsible for all facets of startup, including determining strategy and business model, helping design and deliver presentations, raising venture capital, overseeing clinical strategies, physician relations and regulatory issues, assembling and chairing Scientific Advisory Board.

Patient Resource: First non-oncologist appointed to the National Advisory Board (www.patientresource.com). Revised and developed pain content for all materials related to cancers that generate pain as a dominant symptom. Supervised content selection, organization and creation for new *Cancer Pain Guide*, in collaboration with the Cancer Pain Research Consortium.

Have evaluated business opportunities and clinical intellectual property for a number of venture capital funds, including **Canaan Partners**, **MPM Capital** and **Medica Venture Partners**.

PATENTS

Rosenberg et al., Spinal Rod Approximator, US Application Num 10/352,687, Filed June 28, 2003, Pub. No. US 2004/0147936 A1

Ellies and Rosenberg, Gamma-lactam compounds for promoting bone growth, US Application Num 12/472,134, Filed May 26, 2009, Patent Number 8,080,575

Ellies and Rosenberg, Vinpocetine And Eburnamonine Derivatives For Promoting Bone Growth, Treating Renal Damage And Cancer, And Devices Thereof, US Application Num 12/494,670, Filed June 30, 2009, Patent Number 8,198,292 B2

LECTURES, TALKS, PAPER PRESENTATIONS

Invited Faculty, *Cancer Pain*, Neuromodulation Workshop for Pain Fellows and Neurosurgery Residents, North American Neuromodulation Society 18th Annual Meeting, Las Vegas, Nevada, December 11, 2014

Invited Faculty, *Intrathecal Therapy Maintenance*, Certificate of Attendance Neuromodulation Workshop, North American Neuromodulation Society 18th Annual Meeting, Las Vegas, Nevada, December 11, 2014

Invited Faculty, *Advanced Neurosurgical Procedures for Cancer Pain*, Midwest Pain Society 38th Scientific Meeting, Chicago, Illinois, October 24, 2014

Invited Speaker, *Complex Cancer Pain Cases*, Management of Cancer Pain (Section on Pain), Congress of Neurological Surgeons 14th Annual Meeting, Boston, Massachusetts, October 20, 2014

Co-moderator, *Management of Cancer Pain*, Section on Pain, Congress of Neurological Surgeons 14th Annual Meeting, Boston, Massachusetts, October 20, 2014

Invited Faculty, *Neurosurgical Options for Treatment of Cancer Pain*, Third Annual Cancer Pain Conference, Phoenix, Arizona, April 25, 2014

Invited Faculty, *Optimizing Patient Care Through Collaboration*, Third Annual Cancer Pain Conference, Phoenix, Arizona, April 25, 2014

Invited Presentation, Children's Mercy Hospital, *Neurosurgical Treatment of Pediatric Cancer Pain*, Kansas City, Missouri, March 11, 2014

Grand Rounds, Department of Neurosurgery, Kansas University Medical Center, *Neurosurgical Treatment of Cancer Pain*, Kansas City, Missouri, January 10, 2014

Moderator, *Cancer Pain: The Continuum of Care*, North American Neuromodulation Society 17th Annual Meeting, Las Vegas, Nevada, December 6, 2013

Moderator, *Treatment of Neuropathic Pain Symposium*, Kansas City Southwest Clinical Society 91st Annual Meeting, Overland Park, Kansas, November 1, 2013

Invited Speaker, *Role of Neuromodulation in the Treatment of Neuropathic Pain*, Treatment of Neuropathic Pain Symposium, Kansas City Southwest Clinical Society, Overland Park, Kansas, November 1, 2013

Invited Speaker, *Efforts to Control Prescription Drug Abuse: The Other Side of the Coin*, National Association of State Controlled Substances Authorities 29th Annual Educational Conference, Kansas City, Missouri, October 24, 2013

Invited Speaker, *Profitably Integrating Spinal Cord Stimulation Into Your Practice*, Neuromodulation 2013: What Every Neurosurgeon Needs To Know, Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 20, 2013

Invited Speaker, *The Difficult Paddle Lead*, Neurosurgical Approaches to the Pain Patient, Congress of Neurological Surgeons Annual Meeting, San Francisco, California, October 19, 2013

Invited Speaker, *Neurotechnology – Leaders in Industry and Medicine Meet Promising Israeli Companies*, Ernst & Young JOURNEY Conference, Tel Aviv, Israel, October 17, 2013

Invited Faculty, *Management of Chronic Intractable Cancer Pain: A Dialogue* (Medtronic), Dallas, TX, January 2013

Invited Lecturer, *Neuroablative Techniques for the Treatment of Pain*, Southwest Clinical Society, Overland Park, Kansas, November 2, 2012

Invited Faculty, *Management of Chronic Intractable Cancer Pain: A Dialogue* (Medtronic), Minneapolis, MN, October 2012

Grand Rounds, Department of Neurosurgery, North Shore – Long Island Jewish Health System, *Neurosurgical Treatment of Cancer Pain*, Manhasset, New York, October 2012

Invited Faculty, *Cancer Pain Forum*, Scottsdale, Arizona, April 2011

Grand Rounds, Department of Neurosurgery, Johns Hopkins School of Medicine, *Image-Guided Spinal Surgery*, Visiting Professor, Baltimore, Maryland, December 2000

Congress of Neurological Surgeons 50th Annual Meeting, *Spinal Infections: Contemporary Diagnosis and Management*, Invited Lecturer, San Antonio, Texas, September 2000

Fundamental Principles & Techniques of Spinal Surgery, *Discogenic Back Pain – Diagnosis, Work-Up, and Patient Management*, Invited Lecturer, Barrow Neurological Institute, Phoenix, Arizona, June 2000

Fundamental Principles & Techniques of Spinal Surgery, *Safe Navigation of the Spine*, Invited Lecturer, Barrow Neurological Institute, Phoenix, Arizona, June 2000

American Association of Neurological Surgeons Annual Meeting, “Anterior Lumbar Interbody Fusion” in *Lumbar Spine Fusion: Indications, Patient Selection and Current Techniques*, Invited Faculty, San Francisco, California, April 2000.

American Association of Neurological Surgeons Annual Meeting, *Low Back Pain*, Invited Lecturer, San Francisco, California, April 2000.

Practical Innovations in Image Guided Surgery, *Intraoperative 3D and Fluoroscopic Guided Spinal Surgery*, Program Chairman; University of California, San Francisco, California, April 2000.

Current Techniques in Lumbosacral Fixation: Minimizing Complications in Spine Surgery, *Pseudarthrosis*, Invited Faculty; University of California, San Francisco, California, April 2000.

Current Techniques in Lumbosacral Fixation: Minimizing Complications in Spine Surgery, *Transforaminal Lumbar Interbody Fusion*, Invited Faculty; University of California, San Francisco, California, April 2000.

Congress of Neurological Surgeons 49th Annual Meeting, *Lumbosacral Fusions: Cages, Dowels, and Pedicle Screws*, Invited Faculty, Boston, Massachusetts, October-November 1999

Congress of Neurological Surgeons 49th Annual Meeting, “Operative Treatment of Spinal Infections” in *Spinal Infections: Contemporary Diagnosis and Management*, Invited Lecturer; Boston, Massachusetts, October-November 1999

Clinical Neurosciences by the Bay, *Surgical Treatment of Myelopathy*, San Francisco, California, September 1998

Grand Rounds, Dept. of Emergency Medicine, University of Cincinnati College of Medicine, *Management of Intracranial Pressure*, Cincinnati, Ohio, October 1996

Pulmonary Critical Care Lecture Series, University of Cincinnati College of Medicine, *Intracranial Hypertension*, Cincinnati, Ohio, April 1996

Emergency Medicine Symposium 1995, *Emergency Management of Head Injuries*, Cincinnati, Ohio, May 1995

Advances in Clinical Neurosurgery, Mayfield Winter Neurosurgical Symposium, *Demonstration of Cervical Spine Stabilization*, Snowmass, Colorado, March 1995

Advances in Clinical Neurosurgery, Mayfield Winter Neurosurgical Symposium, *Lumbar Spine Stabilization Techniques*, Snowmass, Colorado, March 1995

Orthopedic Grand Rounds, The Christ Hospital, *Post-laminectomy Kyphosis*, Cincinnati, Ohio, January 1995

ABSTRACTS

Rosenberg WS, Kowall NW: Early changes in subpopulations of cortical neurons and immediate early gene products in human cerebral contusions. **J Neurosurgery** 74:350-351A, 1991

Schumacher JM, Rosenberg WS, Short MP, Bossi SR, Breakefield XO, Isacson O: Genetically engineered cells producing NGF reduce the neurotoxicity of quinolinate and quisqualate *in vivo*. **Soc Neurosci Abstr** 17:18, 1991

Davar G, Meaney C, Andersen JK, Kramer M, Bebrin W, Vos BP, Burstein R, Garber D, Rosenberg W, Maciewicz R: Gene delivery to rat sensory ganglia and spinal cord cells using herpes virus vectors. **Soc Neurosci Abstr** 17:1004, 1991

Rosenberg WS, Breakefield XO, Isacson O: A potential new method of delivery of an expressed gene to central neurons of the adult rat. **Soc Neurosci Abstr** 17:1439, 1991

Rosenberg WS: Role of Rigid Cervical Orthoses Following Internal Fixation, **Joint AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 12th Annual Meeting**, Lake Buena Vista, Florida, February 1996

Rosenberg WS, Stankovitz L, Nagy P: Noninvasive Real-Time Detection of Acute Intracranial Mass Lesions Using Ultrasonic Fingerprinting, **American Association of Neurological Surgeons Annual Meeting**, Denver, Colorado, April 1997

Rosenberg WS: Geographic Distribution of Head Trauma Injuries in the Greater Cincinnati Metropolitan Area in 1996, **Association of American Geographers Annual Meeting**, Ft. Worth, Texas, March 1997

Hu H, Nayfeh AH, Rosenberg WS: Modeling of Human Brain Movability During Impact. **Proceedings of 5th International LS-DYNA Users Conference**, 1998

Rosenberg WS: Transforaminal Lumbosacral Interbody Fusion: Technique, Complications and Early Results, **Joint AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 15th Annual Meeting**, Orlando, Florida, February 1999

Kager C, Weiner N, Rosenberg WS: Analysis of the Codman Ti-Frame System for Posterior Cervical Stabilization, **Joint AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 15th Annual Meeting**, Orlando, Florida, February 1999

Chun J, Rosenberg WS: Use of Titanium Mesh and Vertebral Autograft in the Reconstruction of Anterior Spinal Column **Joint AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 16th Annual Meeting**, Palm Desert, California, February 2000

Liebschner MAK, Rosenberg WS, Keaveny TM: Effects of Bone Cement Volume and Distribution on Vertebral Body Stiffness Recovery after Vertebroplasty, **Orthopedic Research Society 46th Annual Meeting**, Orlando, Florida, March 2000. ["Best Basic Science Study" Award for New Young Investigators]

Mummaneni PV, Haddock SM, Yeh O, Keaveny TM, Rosenberg WS: Low Cycle Fatigue Behavior of Human Vertebral Trabecular Bone, **Orthopedic Research Society 46th Annual Meeting**, Orlando, Florida, March 2000.

Mummaneni PV, Haddock SM, Yeh O, Keaveny TM, Rosenberg WS: Low Cycle Fatigue of Human Vertebral Trabecular Bone. **American Association of Neurological Surgeons 68th Annual Meeting**, San Francisco, California, April 2000

Chun J, Rosenberg WS: Use of Titanium Mesh and Vertebral Autograft in the Reconstruction of Anterior Spinal Column. **American Association of Neurological Surgeons 68th Annual Meeting**, San Francisco, California, April 2000

Rosenberg WS, Liebschner MAK, Keaveny TM: Biomechanics of Vertebroplasty: A Computational Study. **American Association of Neurological Surgeons 68th Annual Meeting**, San Francisco, California, April 2000

Mathern BE, Matthews HH, Long BH, Bartie B, Stratmann J, Moldawer T, Rosenberg WS: Clinical Experience Following Application of ADCON-L Anti-adhesion Gel. **13th Annual International Intradiscal Therapy Society Meeting**, Williamsburg, Virginia, June 2000

Mummaneni PV, Rosenberg WS: Transforaminal Lumbar Interbody Fusion: A Clinical Series, **Congress of Neurological Surgeons 50th Annual Meeting**, San Antonio, Texas, September, 2000.

Mummaneni PV, Rosenberg WS: Transforaminal lumbar interbody fusion: the UCSF experience, **Spine+Science+Management Symposium**, New Orleans, Louisiana, November, 2000.

- Rosenberg WS, Palm WJ IV, Keaveny TM: Effect of Implant and Bone Material Properties on Load Transfer in Cylindrical Interbody Cages: A Computational Study, **AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 17th Annual Meeting**, Phoenix, Arizona, February, 2001.
- Mummaneni P, Haddock S, Liebschner M, Keaveny T, Rosenberg W: Biomechanical Evaluation of a Double-Threaded Pedicle Screw in Elderly Vertebrae, **AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 17th Annual Meeting**, Phoenix, Arizona, February, 2001.
- Rosenberg WS, Liebschner MAK, Keaveny TM: Cortical Shell Carries Negligible Load in Human Thoracolumbar Vertebrae, **AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 17th Annual Meeting**, Phoenix, Arizona, February, 2001
- Liebschner MAK, Kopperdahl DL, Rosenberg WS, Keaveny TM: Contribution of Cortical Shell and Endplate to Vertebral Body Stiffness, **ASME (American Society of Mechanical Engineers) Summer Bioengineering Conference**, San Diego, California, June, 2001
- Liebschner MAK, Rosenberg WS, Keaveny TM: Effects of Cortical Shell Concavity on Vertebral Body Compressive Properties, **BED-Vol. 51, ASME Advances in Bioengineering**, 2001
- Quinones-Hinojosa A and Rosenberg WS: The Use of Computer-Assisted Fluoroscopic Navigation in the Lumbar Spine *In Vivo*: Accuracy Over Space and Time, **AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 18th Annual Meeting**, Orlando, Florida, February-March, 2002
- Crawford RP, Keaveny TM, Rosenberg WS: Prediction of Vertebral Body Compressive Strength Using Automated QCT-based Finite Element Modeling, **AANS/CNS Section on Disorders of the Spine and Peripheral Nerves 18th Annual Meeting**, Orlando, Florida, February-March, 2002
- Koffman BH, Rosenberg WS, Nguyen DM, Pointer AM, Cates JA, Edwards FM: Large Lung and Liver Tumors Can Be Treated with CyberKnife, **CyberKnife Users' Meeting**, Carlsbad, California, February 2006
- Rosenberg WS, Koffman BH, Rosenthal HG, Hendon E, Pointer AM, Edwards FM: Stereotactic Radiosurgery of Large Volume Intracranial and Spinal Tumors, **American Association of Neurological Surgeons 74th Annual Meeting**, San Francisco, California, April 2006
- Rosenthal HG, Rosenberg WS, Koffman BH: Stereotactic Radiosurgery in the Treatment of Soft Tissue Sarcomas, **Musculoskeletal Tumor Society**, Key West, Florida, June 2006
- Rosenberg WS: Spinal Anesthesia for Placement of Surgical Spinal Cord Neurostimulation Paddle Electrodes: A Case Series, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2011

Rosenberg WS: Concurrent Use of Intrathecal Pharmacotherapy and Midline Myelotomy in Treatment of Distant Regions of Cancer-Related Pain: A Case Report, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2011

Feler C, Peloza J, Sabo R, Richter E, Rosenberg WS: Pain Coverage and Programming Optimization Using a Programming Algorithm for a 5-Column Paddle Lead, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2011

Rosenberg WS, Helgeson SA: Concurrent Intrathecal Pharmacotherapy and Percutaneous Cordotomy in the Control of Cancer Pain: A Case Report, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2012

Rosenberg WS: Percutaneous Cervical and Thoracic Spinal Cord Paddle Stimulation for Complex Central Pain Syndrome, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2012

Bentley JN, Vishwanathan A, Rosenberg WS and Patil PG: Treatment of Medically Refractory Cancer Pain with a Combination of Neuromodulation and Neuroablation, **Congress of Neurological Surgeons**, San Francisco, California, October 2013

Rosenberg WS: Assessment of Spinal Cord Stimulation Efficacy in Patients Implanted with a Five-Column Paddle Lead, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2013

Clark CM, Rosenberg WS: Intrathecal Medicine Toxicity Presenting as Reversible Brown-Sequard Syndrome, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2013

Clark CM, Rosenberg WS: Placement of Spinal Cord Neurostimulation Paddle Electrodes Using Advanced Fluoroscopic Techniques, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2013

Rosenberg WS: Use of the PlasmaBlade System in Revising Neuromodulation Implants, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2013

Basara HG, Kelnipeter S, Rosenberg WS, Richter EO: Neural Networks and Patient Perspectives for Paresthesia Coverage of Complex Pain, **North American Neuromodulation Society**, Las Vegas, Nevada, December 2013

Viswanathan A, Raslan A, Patil PG, Richter EO, Rosenberg WS: CT-Guided Percutaneous Cordotomy for Refractory Cancer Pain: A Multicenter Experience, **American Association of Neurological Surgeons**, San Francisco, California, April 2014

PUBLICATIONS

- Rosenberg WS, Swearingen B, Poletti CE: Contralateral trigeminal dysesthesias associated with second cervical nerve compression: A case report. **Cephalgia** 10:259-262, 1990
- Rosenberg WS, Rosenberg AE, Poletti CE: Cervical disc herniation presenting as a mass lesion posterior to the odontoid process. Report of two cases. **J Neurosurgery** 75: 954-959, 1991
- Rosenberg WS, Breakefield XO, DeAntonio C, Isacson O: Authentic and artifactual detection of the *E. coli LacZ* gene product in the rat brain by histochemical methods. **Mol Brain Res** 16:311-315, 1992
- Frim DM, Short MP, Rosenberg WS, Simpson J, Breakefield XO, Isacson O: Local protective effects of nerve growth factor-secreting fibroblasts against excitotoxic lesions in the rat striatum. **J Neurosurgery** 78:267-273, 1993
- Rosenberg WS, Harsh GR IV: Penetrating Cerebral Trauma, Including Scalp Lacerations, Depressed Fractures, and Missile Wounds. In: Loftus CM (ed.): **Neurosurgical Emergencies**, Volume 1, Chapter 4. New York: McGraw-Hill; 1994, pp 59-72
- Godley CD, McCabe CJ, Warren RL, Rosenberg WS: Traumatic subarachnoid-pleural fistula: Case report. **J Trauma** 38:808-811, 1995
- Rosenberg WS, Harsh GR IV: Penetrating Wounds of the Head. In: Wilkins RH, Rengachary SS (eds.): **Neurosurgery, 2nd Edition**, Volume II. New York: McGraw-Hill; 1996, pp 2813-2820
- Rosenberg WS, Tew JM Jr.: Tew cranial/spinal retractor. **Neurosurgery** 40:1096-1098, 1997
- Hu H, Nayfeh AH, Rosenberg WS: Composite modeling of human cranial bone. In: Mahmood HF, Barbat SD, Baccouche MR (eds.): **Crashworthiness, Occupant Protection and Biomechanics in Transportation Systems**, AMD-Vol. 225/BED-Vol. 38. New York: ASME; 1997, pp 221-32
- Roberson JB, Rosenberg WS: Traumatic cranial defects reconstructed with the HTR-PMI cranioplastic implant. **J Cranio-Maxillofacial Trauma** 3:8-13, 1997
- Rosenberg WS, Salame KS, Shumrich KV, Tew JM Jr.: Compression of the upper cervical spinal cord causing symptoms of brainstem compromise. A case report. **Spine** 23:1497-500, 1998
- Rosenberg WS, Harsh GR IV: Penetrating Cerebral Trauma. In: Grossman, GR and Loftus CM (eds.): **Principles of Neurosurgery, 2nd Edition**, Philadelphia: Lippincott-Raven Publishers, 1999
- Nagy PB, Rosenberg WS, Stankovits LM: Non-invasive monitoring of acute intracranial mass lesions using ultrasonic fingerprinting. In: **Nondestructive Characterization of**

- Materials in Aging Systems**, Pittsburgh: Materials Research Society, Volume 503, pp. 249-54, 1998
- Hu H, Rosenberg WS, Nayfeh AH: Modeling human brain movability effect on brain response during impact. In: Mahmood HF, Barbat SD, Baccouche MR (eds.): **Crashworthiness, Occupant Protection and Biomechanics in Transportation Systems**, AMD-Vol. 230/BED-Vol. 41. New York: ASME; 1998, pp 267-80
- Zemlan FP, Rosenberg WS, Luebbe PA, Campbell TA, Weiner NE, Cohen JA, Rudick RA, Wood D: Quantification of axonal damage in traumatic brain injury: affinity purification and characterization of cerebrospinal fluid Tau proteins. **J Neurochemistry** **72**:741-50, 1999
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