

## CURRICULUM VITAE

**Richard Donald Bucholz, M.D., F.A.C.S.**

### **B. Education:**

Undergraduate degree and major

Phillips Exeter Academy, 1966-70  
Exeter, New Hampshire  
Cum Laude

B.S., Yale College, 1970-73  
New Haven, Connecticut  
Cum Laude  
Molecular Biophysics and Biochemistry

Graduate degree and major

M.D., Yale University School of Medicine, 1973-77  
New Haven, Connecticut

Postgraduate training

Yale New Haven Medical Center, 1977-78  
Intern, General Surgery

Yale New Haven Medical Center, 1978-83  
Resident, Neurosurgery

### **C. Board certification and Licensure:**

**1985** Diplomate, American Board of Neurological Surgery

**1987** Certified Instructor, Advanced Trauma Life Support

**1998** Certification, Gamma Knife Radiosurgery, Stockholm, Sweden

**2004** Certification, CyberKnife Radiosurgery, Sunnyvale, California

#### ***State Medical Licenses:***

Connecticut #22293  
Missouri #R9C25  
Illinois #036-067229

**2001** Certified for Conducting Human Subjects Research at Saint Louis University,  
Institutional Review Board

**D. Current position and address:**

Professor and Vice Chairman, Department of Neurosurgery  
K. R. Smith Endowed Chair in Neurosurgery  
Director, Jean H. Bakewell Section of Image Guided Surgery  
Saint Louis University School of Medicine  
St. Louis, Missouri

Graduate Faculty and Ph.D. Mentor  
Saint Louis University  
St. Louis, Missouri

Program Director  
Neurological Surgery Residency Training Program  
Saint Louis University School of Medicine  
St. Louis, Missouri

Professor of Radiation Oncology  
Saint Louis University School of Medicine  
St. Louis, Missouri

Saint Louis University Health Sciences Center  
Division of Neurosurgery  
3635 Vista Ave. at Grand Blvd.  
St. Louis, Missouri 63110-0250  
Telephone: (314) 977-4751  
Fax Number: (314) 977-8564  
Laboratory No.: (314) 577-8570  
Pager: (314) 490-6891  
Cellular: (314) 757-0376

**E. Previous Professional Experience:**

- 1982-83** Instructor in Neurosurgery  
Yale University School of Medicine
- 1983-91** Assistant Professor of Surgery  
Saint Louis University School of Medicine
- 1991-96** Associate Professor of Surgery with tenure  
Saint Louis University School of Medicine

**F. Clinical Staff appointments:**

- Saint Louis University Hospital  
St. Louis, Missouri
- SSM Cardinal Glennon Children's Hospital  
St. Louis, Missouri
- SSM St. Joseph Hospital West  
Lake St. Louis, MO
- VA Medical Center, John Cochran Division  
St. Louis, Missouri

**G. Professional Society Memberships:**

- American Medical Association
- St. Louis Metropolitan Medical Society
- Missouri Medical Association
- American Association of Neurological Surgeons
- Congress of Neurological Surgeons
- Southern Medical Society
- St. Louis Surgical Society
- Missouri State Neurosurgical Society
- Society of Neurological Anesthesia and Critical Care

Pediatric Section  
American Association of Neurological Surgeons

Joint Section on Neurotrauma and Critical Care  
American Association of Neurological Surgeons

Joint Section on Tumors  
American Association of Neurological Surgeons

Joint Section on Stereotactic and Functional Neurosurgery  
American Association of Neurological Surgeons

Appointee, Joint Council of State Neurosurgical Societies

Fellow, Stroke Council, American Heart Association

American Society for Stereotactic and Functional Neurosurgery

World Society for Stereotactic and Functional Neurosurgery

North American Skull Base Society

Fellow, American College of Surgeons

International Stereotactic Radiosurgery Society

International Society for Computer Aided Surgery

St. Louis Society of Neurological Sciences

Society for Minimally Invasive Therapy

International Society for Optical Engineering

Institute of Electrical and Electronics Engineers, Inc.

Southern Medical Association

International Society for Neurosurgical Instrument Inventors

The Society of Neurological Surgeons

American Association of Neurological Surgeons Digital Technology

CyberKnife Society

Intraoperative Imaging Society

**H. Honorary Societies, Honors and Awards:**

- May 1977** Keese Prize in medical research, for M.D. thesis entitled: "The Effect of Stimulation of the Nucleus Fastigii and Precentral Gyrectomy on the H Reflex Recovery Curve in the Cat"
- April 1987** Elected to Faculty Senate, Saint Louis University
- November 1989** Physician's Recognition Award, American Medical Association
- April 1990** Re-elected Faculty Senate, Saint Louis University
- October 1992** Physician's Recognition Award, American Medical Association
- October 1992** Fellow, American College of Surgeons
- January 1994** Visiting Professor  
Loma Linda University School of Medicine  
Loma Linda, California
- October 1994** Visiting Professor, Floyd S. Barringer Lecture  
Southern Illinois University School of Medicine  
Springfield, Illinois
- November 1994** Visiting Professor  
University of New Mexico  
Albuquerque, New Mexico
- December 1995** Physician Recognition Award, American Medical Association
- April 1996** Continuing Medical Education Award in Neurosurgery  
American Association of Neurological Surgeons
- June 1996** Group Moderator, Image Guided Therapy Session  
Robotics and Computer Assisted Medical Intervention Workshop  
Bristol, England
- October 1997** Founding Member and Academician of the World Academy of  
Biomedical Technologies
- 1998** Member, Society of Neurological Surgeons
- September 1998** Physician Recognition Award, American Medical Association
- May 1999** Visiting Faculty, Department of Physiology & Biophysics, Mayo  
Foundation, Rochester, Minnesota

- March 2000** Grand Rounds Invited Speaker, Department of Surgery, University of Nebraska Medical Center, Omaha, Nebraska
- Nov. 1 2000** Grand Rounds Invited Speaker, Department of Neurosurgery, Yale University, New Haven, Connecticut.
- January 2001** James B. Eads Award for the Application of Computer Technology to Neurosurgical Procedures, Academy of Science of St. Louis
- June 10-11, 2002** Review board for the first annual site visit at the NCCR CO-ME Swiss National Science Foundation, ETH, Zurich, Switzerland
- June 2002** Review Panel, Site Visit of the NCCR CO-ME, Swiss National Science Foundation, Zurich, Switzerland.
- April 2003** Beks Lecturer, Dutch Neurosurgical Society, Garderen, The Netherlands.
- May 2003** Guest Examiner, Spring Oral Examinations of the American Board of Neurological Surgery, University of Cincinnati.
- June 2003** National Science Foundation Annual Site Visit Team for Computer-Integrated Surgical Systems & Technology (CISST), Baltimore, Maryland.
- June 2003** Review Panel, Site Visit of the NCCR CO-ME, Swiss National Science Foundation, Zurich, Switzerland.
- Feb 11, 2004** Distinguished Visiting Professor, The University of Missouri School of Medicine, Division of Neurosurgery
- February 2004** Missouri Inventor of the Year Award, Bar Association of Metropolitan St. Louis
- May 2004** Review Panel, Site Visit of the National Center of Competence and Research – Computer Aided and Image Guided Interventions, Zurich, Switzerland
- June 2004** National Science Foundation Annual Site Visit Team for Computer-Integrated Surgical Systems & Technology (CISST), Baltimore, Maryland.
- May 2005** Peer Review Consultant, American Medical Foundation for Peer Review & Education
- May 2007** Review Panel, Site Visit of the National Center of Competence and

- Research – Computer Aided and Image Guided Interventions,  
Zurich, Switzerland
- March 2008** External Advisory Board, Neuroimaging Analysis Center, National  
Institutes of Health, Boston, MA
- May 2008** Review Panel, Site Visit of the National Center of Competence and  
Research – Computer Aided and Image Guided Interventions,  
Zurich, Switzerland
- October 2008** Health Care Hero Award, St. Louis Business Journal
- January 2009** External Advisory Board, Neuroimaging Analysis Center, National  
Institutes of Health, Boston, MA
- April 2009** Review Panel, Site Visit of the National Center of Competence and  
Research – Computer Aided and Image Guided Interventions,  
Zurich, Switzerland
- November 2009** Participant, Cyberonics Leadership Summit: Shaping the Future of  
Medical Devices for Epilepsy, Houston, TX
- December 2009** Participant Healthcare IT Systems Workshop, National Science  
Foundation, Washington, DC
- January 2010** Distinguished Visiting Professor, Lewis Cancer & Research  
Pavilion, Savannah, GA
- February 2010** Visiting Professor, East Carolina University, Greenville, NC
- February 2010** External Advisory Board, Neuroimaging Analysis Center, National  
Institutes of Health, Boston, MA
- September 2010** Faculty Innovation Award, Saint Louis University Office of  
Research and Innovation
- January 2011** External Advisory Board, Neuroimaging Analysis Center, National  
Institutes of Health, Boston, MA
- May 2011** Visiting Professor, Department of Neurological Surgery, University  
of Texas Southwestern Medical Center, Dallas, TX
- June 2011** Review Panel, Site Visit of the National Center of Competence and  
Research – Computer Aided and Image Guided Interventions,  
Zurich, Switzerland

**I. Professional Services:**

**I. Committee memberships**

- 1986-1991** Member, Surgical Care Review Committee, Saint Louis University Health Sciences Center
- 1988-1990** Chairman, Surgical Care Review Committee, Saint Louis University Health Sciences Center
- 1988-1990** Member, Quality Improvement Committee, Saint Louis University Health Sciences Center
- 1990-1991** Member, Educational Policy Committee, Saint Louis University School of Medicine
- 1990-** Member, Institutional Review Board, Saint Louis University Health Sciences Center
- 1991-** AANS Appointee, Joint Council of State Neurosurgical, Societies of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons
- 1991-** Member, Technology Assessment and Terminology Committee, Saint Louis University Health Sciences Center
- 1991-** Member, Computer Technology Subcommittee, American Association of Neurological Surgeons and Congress of Neurological Surgeons
- 1992-1993** Member, Operating Room Committee, Saint Louis University Health Sciences Center
- 1992-1993** Member, Ad Hoc Patients' Services Committee, Saint Louis University Health Sciences Center
- 1992-1994** Member, Radiology Chair Search Committee, Saint Louis University School of Medicine
- 1993-1994** Member, Patient Services Committee, Saint Louis University Health Sciences Center
- 1993-1995** Member, Joint Task Force on Stereotactic Radiosurgery of the American Association of Neurological Surgeons and Congress of Neurological Surgeons

- 1993-1994** Member, Department of Neurology Review Committee, Saint Louis University Health Sciences Center
- 1994-1995** Member, Department of Otolaryngology Search Committee, Saint Louis University Health Sciences Center
- 1995-** Executive Council, Joint Section on Stereotactic and Functional Neurosurgery, American Association of Neurological Surgeons
- 1995** Member, University Medical Group Physician Advisory Committee
- 1996** Co-Chairperson, Image Guided Procedures Subcommittee, Robotics and Computer Assisted Medical Interventions Workshop, Bristol, England
- 1996-** Promotions Committee, Saint Louis University Health Sciences Center
- 1996** Program Committee, First Joint Conference of CVRMed II and MRCAS III
- 1996-** Executive Board, International Society for Computer Aided Surgery
- 1997** Program Committee, Computer Integrated Surgery  
Linz, Austria
- 1997-1999** Program Committee, Computer Assisted Radiology 1998  
Tokyo, Japan
- 1997-** Membership Committee, International Society for Computer Aided Surgery
- 1997** Program Committee, Computer Assisted Orthopedic Surgery,  
Bern, Switzerland
- 1997** Program Committee, Medical Image Computing and Computer Assisted Interventions - Image Guided Surgery
- 1997-98** Faculty Board, Minimally Invasive Techniques and Image Guided Surgery in ENT and Skull Base Surgery 1998, Toulouse, France
- 1998** Congress of Neurological Surgeons Education Committee  
“Think Tank” and Computer Subcommittee
- 1998-** Member, International Advisory Board, Computer-Aided Surgery of the 21st Century
- 1998-2000** Cancer Committee, Saint Louis University Health Sciences Center

- 1998-** Member, Executive Committee USA, CARS 2000
- 1999-** Member, Graduate Medical Education Committee, Saint Louis University School of Medicine
- 1999** Member, Biomedical Engineering Search Committee, Parks College of Engineering and Aviation, Saint Louis University
- 1999-** Member, Trauma Quality Peer Review Committee, University Medical Group, Saint Louis University
- 1999-** Member, Program Committee, CAOS 2000
- 1999-** International Advisory Board, ISRACAS 2000, Haifa, Israel
- 1999-** Member, Program Planning Committee, MICCAI 2000
- 2000-** Member, Program Committee, CARS 2001
- 2000-** Member, Program Board, MICCAI 2001
- 2000** **Dec. 6-7.** Panelist, National Cancer Institute Initial Review Group on Development of Novel Imaging Technologies, U.S. Department of Health and Human Services, Gaithersburg, Maryland
- 2001** **July 12-13.** Panelist, National Cancer Institute Special Emphasis Panel, U.S. Department of Health and Human Services, Gaithersburg, Maryland
- 2002-** Member, Medical Executive Committee, SSM Cardinal Glennon Children's Hospital
- 2002** Member, Scientific Advisory Board, International Symposium of Computer Aided Surgery around the Head (CAS-H), February 27-March 1, 2003, Interlaken, Switzerland
- 2002** Member, Search Committee for Director, Department of Radiation Oncology, Saint Louis University
- March 2002** Member, American College of Surgeons Oncology Group,
- 2003** Member, Scientific Review Committee, MICCAI 2003
- 2002** Saint Louis University Health Sciences Center Research Building Advisory Group

- 2002 Program Committee, Computer Assisted Radiology and Surgery 2003, London, England
- 2003- Member, Committee on Emerging Surgical Technology and Education (CESTE), American College of Surgeons
- 2003 Member, International Advisory Board, ISRACAS'04
- 2003 Member, Program Committee, CARS 2004
- 2005- Member, Board of Directors, CyberKnife Society
- 2007- Chair, Protocol Development Committee, CyberKnife Society
- 2007 Member, 2007 Scientific Program Committee, International Stereotactic Radiosurgery Society
- 2007 Member, Committee on Video-Based Education, American College of Surgeons
- 2007- Member, Board of Directors, Mid-America Transplant Services
- 2007- Member, Critical Care Task Force, Mid-America Transplant Services
- 2008 Treasurer, Intraoperative Imaging Society
- 2009 Member, Board of Directors, Mid American Transplant Services

## II. Editorial and Journal review boards

- 1992- Ad Hoc Reviewing, *Neurosurgery*
- 1994- Ad Hoc Reviewing, *Institute of Electrical and Electronic Engineers*
- 1994-1997 Editor-in-Chief, *Journal of Image Guided Surgery*
- 1996-2002 Editorial Board, *Neurosurgery://On-Call*
- 1996- Editor, *Neurosurgery Email List*
- 1997- Editor-in-Chief, *Computer Aided Surgery*
- 1998- Editor, *Journal of Radiosurgery*
- 1999- Editorial Board, *Ippocrate*

2000- Editorial Board, *Neurosurgery Coding Alert*

**J. Research Support:**

- 1985-1987** Primary Investigator, "Effect of Chronically Elevated Intracranial Pressure on Cerebral Blood Flow."  
Biomedical Research Support Grant (BRSB), \$17,500.
- 1987-1990** Primary Investigator, "Brain Mapping of Patients Receiving Anticonvulsants."  
Biological Systems Corporation, Mundelein, Illinois, \$6,000.
- 1988-1992** Co-investigator, "North American Symptomatic Carotid Endarterectomy Trial (NASCET)."  
National Institute of Health
- 1989-1991** Co-investigator, "Cognitive Effects of Carbamazepine in Patients Recovering from Physical Brain Trauma."  
Warner-Lambert Pharmaceutical Research Division, \$250,000.
- 1991-1995** Primary Investigator, "Intrathecal Infusion of Baclofen for Spasticity."  
Infusaid Corporation, \$15,000.
- 1992-1997** Primary Investigator, "Sygen GM<sub>1</sub>, Therapy in the Treatment of Acute Spinal Cord Injury."  
Fidia Pharmaceutical Corporation, \$361,550.
- 1992-1993** Primary Investigator, "Intrathecal Baclofen in the Treatment of Spasticity."  
Medtronic Corporation, \$8,900.
- 1995-** Editor-In-Chief, *Computer Aided Surgery (formerly Journal of Image Guided Surgery)*  
Developed World Wide Web Journal of Image Guided Surgery with John Wiley and Sons Publishing, New York, New York, \$154,800  
Subsequent Year Funding \$120,500.
- 1995-** Primary Investigator, "Advanced Application of Image Guided Surgery."  
Surgical Navigational Technologies, Inc., \$25,000 yearly.
- 1996-1998** Primary Investigator, "Prospective Open-Label Parallel-Group Randomized, Multicenter Trial Comparing the Efficacy of Surgery, Radiation and Injection of Murine Cells Producing Herpes Simplex Thymidine Kinase Factor Followed by Intravenous Gancyclovir

- Against the Efficacy of Surgery and Radiation in the Treatment of Previously Untreated Glioblastoma.”  
Genetic Therapy Inc., \$60,525 yearly.
- 1996-** Primary Investigator, “Clinical Investigation of Deep Brain Stimulation for Treatment of Tremor Using the Medtronic Model 3382 DBS.”  
Medtronic Neurological, \$5,000.
- 1997-** Primary Investigator, “Anatomical Surface Contour Utilization for Improved Efficiency of Image Registration in Image Guided Neurosurgery.”  
Saint Louis University
- 1997-** Primary Investigator, “Assessment of the Degree of Brain Shift Using an Intraoperative Ultrasound Device.”  
Stealth Technologies, Inc.
- 1997-1999** Primary Investigator, “Treatment Protocol 100-9501 Open Label, Multicenter Clinical Trial of Gliadel for Patients with Recurrent Malignant Glioma.”  
Guilford Pharmaceuticals
- 1997-1999** Primary Investigator, “CO3/IUB/131 A Multicenter, Randomized, Double-Blind, Placebo-Controlled Trial of Marimastat in Patients with Glioblastoma Multiforme or Gliosarcoma Following Completion of First Line Treatment.”  
British Biotech, Inc.
- 1997-** Primary Investigator: “A Pilot Study to Evaluate the Head Mounted Display System with Informatix Information Software.”  
Vista Medical Technologies, Inc.
- 1999-** Co-Investigator: “A Double-Blind, Placebo-Controlled, Multicenter Study to Evaluate the Safety and Efficacy of a Single Intravenous Dose of CP-101,606 in Subjects with Severe Head Injury.”  
Pfizer Central Research
- 1999-** Principal Investigator: Phase I/II Study of a Recombinant Chimeric Protein Composed of a Circularly Permuted IL-4 and a Mutated Form of the Pseudomonas Exotoxin Termed IL-4 (38-37)-PE38KDEL (IL-4 Toxin) for the Treatment of Recurrent Malignant Astrocytoma.  
Neurocrine Biosciences
- 2001-2002** Principal Investigator: Use of a See-through Retinal Scanning Display in the Viewing of Cranial Images During Neurosurgery. Microvision, Inc.

- 2001 - 2005** Sub-Investigator: A Prospective, Randomized Start, Multi-center, Double-Blinded, Concurrently Placebo-Controlled Study to Evaluate the Effect of Flow-Regulated Ventriculoperitoneal Shunting On Progression of Alzheimer's Disease: An Investigation of the Safety and Effectiveness of the Cognishunt CNS Fluid Shunt System. Eunoe, Inc.
- 2001-** Principal Investigator: A Randomized, Dose-Ranging, Safety and Tolerability Study of NBI-3001 Administered by Continuous Intratumoral Infusion Followed by Surgical Resection in Patients with Recurrent Glioblastoma Multiforme. Neurocrine Biosciences
- 2001-** Principal Investigator: Anatomical Surface Contour Utilization for Improved Efficacy of Image Registration in Image Guided Neurosurgery. Medtronic.
- 2001-** Principal Investigator: Transcranial Magnetic Stimulation of Chronic Intractable Phosphenes in Traumatically Blinded Individuals. Saint Louis University.
- 2002-2003** Principal Investigator: Double-Blind Placebo-Controlled, 12-Week Parallel Group Study to Evaluate Safety and Efficacy of Oral Fampridine-SR in Subjects with Moderate to Severe Spasticity Resulting from Chronic, Incomplete Spinal Cord Injury. Acorda Therapeutics, Inc.
- 2002-** A Phase III Randomized Trial of the Role of Whole Brain Radiation Therapy in Addition to Radiosurgery in the Management of Patients with One to Three Cerebral Metastases. National Cancer Institute/American College of Surgeons Oncology Group/Duke University
- 2002-** Principal Investigator: A Phase I/II Open-Label, Single-Dose Study of Intracavitary Administered <sup>131</sup>I-TM-601 in Adult Patients with Recurrent High-Grade Glioma. TransMolecular, Inc.
- 2002-** Principal Investigator: A Phase III Comparative Study of Interstitial I-chTNT-a/B versus Temozolomide for the Treatment of Recurrent Glioblastoma Multiforme (GBM). Peregrine Pharmaceuticals.
- 2003-** Principal Investigator: A Phase III Multicenter Study of Intratumoral/Interstitial Therapy with TransMID Compared to Best Standard of Care in Patients with Progressive and/or Recurrent, Non-resectable Glioblastoma Multiforme. Xenova, Inc.
- 2003-** Principal Investigator: Clinical Study of the Medtronic Durepair Dura Regeneration Matrix. Medtronic.

- 2004-** Principal Investigator: A Phase II Open-Label, Multiple Dose Study of Intracavitary Administered I-TM-601 in Adult Patients with Recurrent High-Grade Glioma. TransMolecular, Inc.
- 2004-** Principal Investigator: Phase III Randomized Evaluation of Convection Enhanced Delivery of IL13-PE38QQR Compared to GLIADEL Wafer with Survival Endpoint in Glioblastoma Multiforme Patients at First Recurrence. Neopharm, Inc.
- 2005-** Principal Investigator: Retrospective Outcome Analysis of Stereotactic Radiosurgical Treatments. Saint Louis University.
- 2008-2009** Sub-Investigator: National Acute Brain Injury Study: Hypothermia IIR (NABISH:IIR), University of Texas Medical Center, Houston
- 2008-** Principal Investigator: Evidenced Based Multimodal Neurodiagnostic Imaging of Traumatic Brain Injury and Post-Traumatic Stress Disorder at the Saint Louis University Advanced Neurosurgical Innovation Center. Congressionally Directed Medical Research Programs (CDMRP)
- 2010-** Investigator: Mapping the Human Connectome: Structure, Function and Heritability, in collaboration with Washington University and the University of Minnesota, National Institutes of Health

**K. Bibliography:****I. Papers published, in press, or accepted for publication in peer-reviewed journals**

1. Chehrazi B, Parkinson J, Bucholz R: Evoked Somatosensory Potentials to Common Peroneal Nerve Stimulation in Man. *J Neurosurg* 55:733-741, 1981.
2. Shively R, Bermant M, Bucholz R: Separation of Craniopagus Twins Utilizing Tissue Expanders. *Plast Reconstr Surg* 765-772, November 1982.
3. Bucholz R, Yoon K, Shively R: Temporoparietal Craniopagus. *J Neurosurg* 66:72-79, 1987.
4. Bucholz R, Cheung K: Halo Vest Versus Spinal Fusion for Cervical Injury: Evidence from an Outcome Study. *J Neurosurg* 70:884-892, 1989.
5. Pittman T, Bucholz R, Williams D: Efficacy of Barbiturates in the Treatment of Resistant Intracranial Hypertension in Severely Head-Injured Children. *Pediatr Neurosci* 15:13-17, 1989.
6. Awwad EE, Murali S, Bucholz RD: Post Traumatic Spinal Synovial Cyst with Spondylolysis: CT Features: *J Comput Assist Tomogr* 3 (2):334-337, 1989.
7. Awwad EE, Martin DS, Smith KR, Jr., Bucholz RD: MR Imaging of Lumbar Juxta-articular Cysts. *J Comput Assist Tomogr* 14 (3):415-417, 1990.
8. Kraus G, Bucholz R, Weber T: Spinal Cord Arteriovenous Malformation with an Associated Lymphatic Anomaly. Case Report. *J Neurosurg* 73:768-773, 1990.
9. Kraus G, Bucholz R, Smith K, Awwad E: Open Depressed Skull Fracture Missed on Computed Tomography: A Case Report. *Am J Emerg Med* 9:34-36, 1991.
10. Gomez CR, Backer RJ, Bucholz RD: Transcranial Doppler Following Closed Head Injury: Vasospasm or Vasoparalysis? *Surg Neurol* 35:30-5, 1991.

11. Kraus G, Bucholz R, Yoon K, Knuepfer M, Smith K: Cerebrospinal Fluid Endothelin-1 and Endothelin-3 Levels in Normal and Neurosurgical Patients: A Clinical Study and Literature Review. *Surg Neurol* 35:20-9, 1991.
12. Herzog JA, Bucholz RD, Hoffman W: The Transsigmoid, Transtentorial Retro-labyrinthine Approach to the Brainstem. *Otolaryngol Head Neck Surg* 104(1):130-1, 1991. Part of the American Neurology Society's Silver Anniversary Issue, 1991.
13. Bucholz R, Pittman T: Endoscopic Coagulation of the Choroid Plexus with Nd:YAG Laser: Initial Experience and Proposal for Management. *Neurosurgery* 28(3):421-7, 1991.
14. Awwad E, Martin D, Bucholz R: Synovial Cyst of the Mid Thoracic Spine. *AJNR Am J Neuroradiol* 12:562-63, 1991.
15. Martin HB, Gibbons JJ, Bucholz RD: An Unusual Presentation of Spinal Cord Tumor After Epidural Anesthesia. *Anesth Analg* 75:844-46, 1992.
16. Clohisy JC, Akbarnia BA, Bucholz RD, Burkus JK, Backer RJ: Neurologic Recovery Associated with Anterior Decompression of Spinal Fractures at the Thoracolumbar Junction (T12-L1). *Spine* 17(8S):S325-S330, 1992.
17. Smith KR and Bucholz RD: Computer Methods for Improved Diagnostic Image Display Applied to Stereotactic Neurosurgery. *Automedica* 14:371-382, 1992.
18. Bucholz RD, Ho HW, Rubin JP: Variables Affecting the Accuracy of Stereotactic Localization Using Computed Tomographic Scanning. *J Neurosurg* 79:667-673, 1993.
19. Bucholz RD: The Central Sulcus and Surgical Planning. *Am J Neuroradiol* 14:926-927, 1993.
20. Benzel EC, Lewine JD, Bucholz RD, Orrison Jr WW: Magnetic Source Imaging: A Review of the *Magnes* System of Biomagnetic Technologies Incorporated. *J Neurosurg* 33(2):252-259, 1993.

21. Bucholz RD, Smith KR, Henderson J, McDurmont L, Schulz D: Clinical Applications of Modern Imaging Technology. Society of Photo-Optical Instrumentation Engineers (SPIE) Proceedings, Vol. 1894, Intraoperative Localization Using a Three Dimensional Optical Digitizer. (Abund O. Wist, Ed.), SPIE Publisher, Bellingham, Washington, 1994:312-322, 1993.
22. Bucholz RD: Comment: Ranging Accuracy Test of the Sonic Microstereometric System. *Neurosurgery* 34(4):754-755, 1994.
23. Henderson JM, and Bucholz RD: Accurate and Ergonomic Method of Registration for Image-Guided Neurosurgery. *Comput Med Imaging Graph* 18(4):273-277, 1994.
24. Gallen CC, Bucholz RD, and Sobel DF: Intracranial Neurosurgery Guided by Functional Imaging. *Surg Neurol* 42:523-530, 1994.
25. Bucholz RD, Smith KR, McDurmont L, Baumann CK, Frank K: Frameless Image Guided Surgery Utilizing an Optical Digitizer. Society of Photo-Optical Instrumentation Engineers (SPIE) Proceedings, 2132:78-89, 1994.
26. Gomez CR, Malkoff MD, and Bucholz RD: Life Threatening Cerebral Edema Following Biopsy for Idiopathic Hypertrophic Cranial Pachymeningitis. *J Neuroimaging* 4(1):65, 1994.
27. Bucholz RD, Smith KR, Baumann C, McDurmont L, and Schulz D: Intraoperative Localization with an Optical Digitizer. Proceedings of the XIth Meeting of the World Society for Stereotactic and Functional Neurosurgery. *Stereotact Funct Neurosurg* 63(1-4):100, 1994.
28. Heilbrun MP, Bucholz RD, Day R, Koehler S, MacDonald P, Petres W, Seimionow V, Smith K, and Wiker C: Methodology for Visually Guided Intracranial Localization by Matching Image-Derived Surface Contours with Video Images of the operative field. Proceedings of the XIth Meeting of the World Society for Stereotactic and Functional Neurosurgery. *Stereotact Funct Neurosurg* 63(1-4):100-101, 1994.
29. Gallen CC, Schwartz BJ, Bucholz RD, Malik G, Barkley GL, Smith J, Tung H, Copeland B, Bruno L, Assam S, Hirschkoﬀ E, Bloom F: Presurgical Localization of Functional Cortex Using Magnetic Source Imaging. *J Neurosurg* 82:988-994, 1995.

30. Bucholz RD, Robinson E, and McDurmott LL: A Head Mounted Display for Use During Image Guided Surgery. Proceedings reprint of the International Society for Optical Engineering, San Diego, CA, February 26, 1995.
31. Myles GL, Malkoff MD, Perry AG, Bucholz RD, and Gomez CR: Therapeutic Intervention Scoring System Used in the Care of Patients in Pentobarbital-Induced Coma to Determine Nurse-Patient Ratios. *Am J Critic Care* 5:74-79, 1996.
32. Bucholz RD, Barnett GH, Roberts DW, et al. Intracranial frameless stereotaxis: Principles and Applications. *Perspectives in Neurological Society* 1996; 7:49-59.
33. Goldsmith MM, Bucholz RD, Smith KR, and Nitsche N: Clinical Applications of Frameless Stereotactic Devices in Neurotology: A Preliminary Report. *Am J Otol*, accepted for publication.
34. Sargent EW, Bucholz RD: Middle Cranial Fossa Surgery with Image-guided Instrumentation. *Otolaryngol Head Neck Surg* 117(1): 131-4, July 1997.
35. Hogan RE, Lowe VL, Bucholz RD: Triple-Technique (MR Imaging, Single-Photon Emission CT, and CT) Coregistration for Image Guided Surgical Evaluation of Patients with Intractable Epilepsy. *AJNR Am J Neuroradiol* 20:1054:1058, 1999.
36. Citardi M, Cox AJ, Bucholz RD: Acellular dermal allograft for sellar reconstruction after transsphenoidal hypophysectomy. *Am J Rhinol* 14:69-73, 2000.
37. Hogan RE, Mark KE, Wang L, Joshi S, Miller MI, Bucholz RD: Mesial Temporal Sclerosis and Temporal Lobe Epilepsy: MR Imaging Deformation-based Segmentation of the Hippocampus in Five Patients. *Radiology* 2000; 216: 291-297.
38. Hogan RE, Bucholz RD, Choudhuri I, Mark KE, Butler CS, Joshi S: Shape-analysis of hippocampal surface structure in patients with unilateral mesial temporal sclerosis. *J Digit Imaging* 2000; 13:(Suppl 2):39-42.
39. Bucholz RD, Macneil W, Fewings P, Ravindra A, McDurmott L, Baumann C: Automated rejection of contaminated surface measurements for improved surface registration in image guided neurosurgery. *Stud Health Technol Inform* 2000; 70:39-45.

40. Citardi MJ, Herrmann B, Hollenbeak C, Stack BC, Cooper M, Bucholz RD: Comparison of scientific calipers and computer-enabled CT review for the measurement of skull base and craniomaxillofacial dimensions. *Skull Base Surgery: An Interdisciplinary Approach*, in press.
41. Bucholz RD, Smith KR, Laycock KA, McDurmont LL: Three-Dimensional Localization: From Image-Guided Surgery to Information-Guided Therapy. Krieger D, ed. *Methods* 2001; 25(2).
42. Hogan ER, Bucholz RD, Joshi S: Hippocampal Deformation-Based Shape Analysis in Epilepsy and Unilateral Mesial Temporal Sclerosis. *Epilepsia* 44(6) 800, 2003.
43. Weber F, Asher A, Bucholz R, Berger M, Prados M, Chang S, Jeffrey B, Hall W, Raniow NG, Westphal M, Warnick R, Rand RW, Floeth F, Rommel F, Pan H, Hingorani VN, and Puri RK: Safety, tolerability, and tumor response of IL4-Pseudomonas exotoxin (NBI-3001) in patients with recurrent malignant glioma. *J Neuro-Oncol* 64: 125-137, 2003.
44. Hogan RE, Wang L, Bertrand ME, Willmore LJ, Bucholz RD, Nassif AS, Csernansky JG: MRI-based high dimensional hippocampal mapping in mesial temporal lobe epilepsy. *Brain* 2004; 127:1731-1740.
45. Hogan RE, Wang L, Bertrand ME, Willmore LJ, Bucholz RD, Nassif SA, Csernansky JG: Predictive value of hippocampal MRI-based high-dimensional mapping in mesial temporal epilepsy; preliminary findings. *American J Neuroradiology*, 27:2140-2154, 2006.
46. Bucholz RD, Laycock KA, McDurmont L: Operating room integration and telehealth. *Intraoperative Imaging, Acta Neurochirurgica Supplementum*, Vol. 109, 2010.
47. Bucholz RD, Laycock, KA: Cyberknife stereotactic radiosurgery for intracranial neoplasms, with a focus on malignant tumors. *Technology in Cancer Research & Treatment (TCRT)*, 9(6): 541-50, December 2010.
48. Clifton G, Valadka A, Zygun D, Coffey C, Drever P, Fourwinds S, Janis LS, Wilde E, Taylor P, Harshman K, Donley A, Puccio A, Levin H, McCauley S, Bucholz R, Smith KR, Schmidt J, Scott J, Yonas H, Okonkwo D: Very early hypothermia induction in patients with severe brain injury (the National Acute Brain Injury Study):

Hypothermia II): a randomized trial. *The Lancet Neurology*, 10(2):131-139, February 2011.

## II. Book Chapters:

1. Pittman T, Bucholz R: "Endoscopic Choroid Plexectomy." In: Manwaring KH and Crone KR, eds., Annals of Neuroendoscopy. Maryanne Liebert Publishers: New York; Chapter 10, 1985.
2. Bucholz RD, Smith KR: "A Comparison of Sonic Digitizers Versus Light Emitting Diode Based Localization." In: R. Macunias, ed., Interactive Image-Guided Neurosurgery. The American Association of Neurological Surgeons, Park Ridge, Illinois. Chapter 16, pp. 179-200, 1993.
3. Bucholz RD: "Management of Intractable Spasticity Using Intrathecal Baclofen." In R. Katz, ed., Physical Medicine and Rehabilitation: State of the Art Reviews. Hanley & Belfus, Inc., pp. 565-577, 1994.
4. Bucholz RD: Chapter 12. In: Douglas L. Beck, ed., Handbook of Intraoperative Monitoring, Singular Publications, San Diego, CA, Chapter 12, pp. 209-238, 1994.
5. Foley KT, Smith KR, Bucholz RD: Image-guided intraoperative spinal localization. In: Andrews RJ, eds., Intraoperative Neuroprotection. Williams and Wilkins Publishers: Baltimore; Chapter 19, pp. 325-340, 1996.
6. Bucholz RD, Greco DJ: "Image guided surgical techniques for infections and trauma of the central nervous system." In: R. Macunias, ed., Neurosurgery Clinics of North America, W.B. Saunders Co. Philadelphia: 7(2):187-200, 1996.
7. Sturm CD, Bucholz RD, Henderson JH: Cerebral Endoscopy: current applications and new developments. In: Andrus C and Longo W, eds. Minimally Invasive Surgery: Principles and Technique, Harwood Academic Press, London, 1998.
8. Bucholz RD, Sturm CD, Hogan E: "The Use of Three Dimensional Images in Stereotactic Neurosurgery." In: Gildenberg PL and Tasker RR, Eds., Textbook of Stereotactic and Functional Neurosurgery. McGraw-Hill Companies, Inc., pp. 337-350, 1998.
9. Bucholz RD, Marzouk S, Levy AL: "Image Guidance of the Operating Microscope: Stealth and Neural Navigation." In: Alexander E,

- Maciunas, RJ, eds., Advanced Neurosurgical Navigation. Thieme Medical Publishers, Inc., 1999.
10. Bucholz RD, Sturm CD, Hogan E: "The Use of Three Dimensional Images in Stereotactic Neurosurgery." In: Gildenberg PL and Tasker RR, eds., Textbook of Stereotactic and Functional Neurosurgery. McGraw-Hill Companies, Inc., pp. 337-350, 1998.
  11. Bucholz RD, Levy AL, Marzouk S: "Computed Tomography and Magnetic Resonance Imaging as Neurosurgical Imaging Data Sets." In: Alexander E, Maciunas, RJ, eds., Advanced Neurosurgical Navigation. Thieme Medical Publishers, Inc. 1999.
  12. Bucholz RD, Levy AL, Marzouk S: "Stereotactic and Image Guided Techniques." In Kaye AH and Black P McL., eds., Operative Neurosurgery. Churchill Livingstone, 2000.
  13. Bucholz RD, Laycock KA: "Moving Stereotaxis Beyond the Dura: a Neurosurgical Perspective on Computer-Aided Otorhinolaryngology." In Citardi M, ed., Computer-Aided Otorhinolaryngology - Head and Neck Surgery. Marcel Dekker, Inc. 2001.
  14. Bucholz RD, McDurmont L: "From Discovery to Design: Image-Guided Surgery." In McKhann G, ed., Clinical Neurosurgery. Lippincott, Williams & Wilkins, 50:13-25, 2003.
  15. Bucholz RD, Laycock, KA: "Image-Guided Surgery." In Vo-Dinh, T., ed. Biomedical Photonics Handbook. CRC press, 2003.
  16. Bucholz RD, McDurmont L: "Image Guidance in Minimally Invasive Surgery." In Black P McL and Proctor MR, eds., Minimally Invasive Neurosurgery. The Humana Press, Inc., 2005.
  17. Bucholz RD, Macneil W, McDurmont L: "The Operating Room of the Future." In McKhann G, ed., Clinical Neurosurgery. Lippincott, Williams & Wilkins, 51, 2004.
  18. Bucholz RD: "The Next Generation of Navigational Technologies." In Sindwani, R, ed., Otolaryngologic Clinics of North America: Image-Guided Surgery of the Paranasal Sinuses. W. B. Saunders Company, 2005.
  19. Bucholz RD, McDurmont L: "Stealth/Medtronic Image Guided Systems." In Gildenberg P, Lozano AM, and Tasker R, eds., Textbook of Stereotactic and Functional Neurosurgery. Springer Verlag, 2009.

**III. Abstracts**

1. Bucholz RD: Temporo-parietal Craniopagus. *Rivista di Neuroradiologia* 3 (Suppl 4):16, 1990.
2. Kraus GE, Bucholz RD, Yoon-KW, Knuepfer MM, and Smith KR, Jr.: Cerebro-spinal Fluid Endothelin-1 and Endothelin-3 Levels in Normal and Neurosurgical Patients: A Clinical Study and Literature Review. *Cerebrovascular and Brain Metabolism Reviews*, May/June 1991.
3. Kraus GE, Bucholz RD, Yoon-KW, Knuepfer MM, and Smith KR, Jr.: Cerebro-spinal Fluid Endothelin-1 and Endothelin-3 Levels in Normal and Neurosurgical Patients: A Clinical Study and Literature Review. *Endothelium* 2(4), 1991.
4. Smith KR, Joarder K, Bucholz RD and Smith KR: Multimodality Image Analysis and Display Methods for Improved Tumor Localization in Stereotactic Neurosurgery. Proceedings of the 13th International Conference of the Institute of Electrical and Electronic Engineers, Engineering in Medicine and Biology Society, November 1991.
5. Bucholz RD and Pittman T: Endoscopic Coagulation of the Choroid Plexus Using the Nd: YAG Laser: Initial Experience and Proposal for Management. *Annual Review of Hydrocephalus*, 10:110-111, 1992.
6. Heilbrun MP, Bucholz RD, McDonald PR, Wiker C, Koehler S, Peters W, Siemenov V: Machine Vision Stereotactic Localization: A Universal System for Surgical Navigation. *American Society for Stereotactic and Functional Neurosurgery*, 142, 1993.
7. Lewine JD, Bucholz RD, Baldwin NG, Orrison WW, Maclin EL, Sanders JA, Astur RS: Event-Related Magnetic Fields and Neurosurgical Practice. *Biomagnetism: Clinical Aspects*, 1994.
8. Gallen CC, Bucholz R, Sobel DF, Schwartz BJ, Hirschkoff EC, Barkley G, Malik G: Magnetoencephalography with Advanced 3D MR Imaging in Pre-Surgical Planning and Intraoperative Monitoring. *Biomagnetism: Clinical Aspects*, January 25, 1994.
9. Hogan RE, Bucholz RD: MR Coregistration with CT and ICTAL SPECT in patients with intractable partial epilepsy; applications for epilepsy surgery. Proceedings of the International Society for Magnetic Resonance in Medicine 5<sup>th</sup> Scientific Meeting, 3:2020,1997.

10. Hogan RD, Mark, KE, Wang L, Joshi S, Miller MI, Bertrand ME, Bucholz RD: MR imaging deformation-based segmentation of the hippocampus in patients with mesial temporal sclerosis and temporal lobe epilepsy. *Epilepsia*. 1999;40;(Suppl 7): 192.
11. Kokoska MD, Hardeman S, Bucholz RD, MacNeil W, Cooper M, Citardi MJ: Assessment of Computer-Aided Sequential Reduction of Zygoma Fractures. Spring Triological Meeting 2000, submitted.
12. Alvarez VL, Mamelak A, Raubitschek A, Rosenfeld S, Nabors B, Fiveash JB, Khazaeli MB, Shen S, Bucholz R, Hablitz D, Gonda MA: A Phase I/II Clinical Trial for Adult Recurrent Glioma Using 131I-TM-601, an Iodinated Peptide Derived from Scorpion Venom Which Targets a Receptor Found on Tumor Cells. The 20th International Conference - A Celebration, Advances in the Application of Monoclonal Antibodies in Clinical Oncology, June 30 - July 2, 2003, Latchi, Cyprus.
13. Farghaly HR, Stout J, Bucholz RD, Kaushik A, Osman MM, Nguyen NC: Seizure Diagnosis Using Multimodality Imaging of MEG, MRI, PET and SPECT. RSNA 2009, 95<sup>th</sup> Scientific Assembly and Annual Meeting Program, 1033.
14. Bucholz RD, Laycock KA, McDurmont LL, Macneil WR: An Integrated Surgical Communication Network – SurgON. *Medicine Meets Virtual Reality 18*, J.D. Westwood et al (Eds.), IOS Press, 2011.

**L. Current and past teaching responsibilities:**

- |                |   |
|----------------|---|
| <b>1982-83</b> | Instructor in Neurosurgery<br>Yale University School of Medicine            |
| <b>1993-91</b> | Assistant Professor of Surgery<br>Saint Louis University School of Medicine |
| <b>1991-96</b> | Associate Professor of Surgery<br>Saint Louis University School of Medicine |
| <b>1996-</b>   | Professor and Director,<br>Jean H. Bakewell Section of Image Guided Surgery |

**M. Thesis, dissertation, post-doctoral supervision:**

N/A

**N. Supplemental Material:****I. Presentations**

1. Bucholz R, Pittman T, and Williams D: Efficacy of Barbiturates in the Treatment of Resistant Intracranial Hypertension in Severely Head-Injured Children. Pediatric Section, American Association of Neurological Surgeons, Chicago, Illinois, December, 1987.
2. Bucholz R, Backer R, and Akbarnia B: Transthoracic Decompression and Short Fusion for Spinal Cord Injuries: Long Term Outcome Study. Joint Section on Disorder of the Spine and Peripheral Nerves of the American Association of Neurological Surgeons, Washington, DC, April 2-3, 1989.
3. Herzog J, Bucholz R, Hoffman W: The Trans-sigmoid, Retrolabyrinthine, Trans-tentorial Approach to the Brainstem. American Neurological Society, Palm Beach, Florida, April 27, 1990.
4. Bucholz R: Temporoparietal Craniopagus. International Skull Base Study Group, Sienna, Italy, May 2-5, 1990.
5. Bucholz RD, Ahuja SD, Roy TS: Localization Accuracy of a Modified BRW Floor Stand for Using Radiosurgery with a Medical Accelerator. International Stereotactic Radiosurgery Symposium, Pittsburgh, Pennsylvania, June 17-21, 1991.
6. Clohisy JC, Akbarnia BE, Bucholz RD: Neurologic Recovery Associated with Anterior Decompression of Thoracolumbar Fractures. Scoliosis Research Society, September 1991.
7. Bucholz R, Heilbrun P, McDermont L: Use of an Intraoperative Sonic Digitizer in a System for Free Hand Stereotactic Surgery. Congress of Neurological Surgeons, Orlando, Florida, October 26-31, 1991.
8. Bucholz RD, Smith KR, Henderson J, McDermont L, Schultz D: Intraoperative Localization Using a Three Dimensional Optical Digitizer. Society of Photo-Optical Instrumentation Engineers, Los Angeles, California, January 19, 1992.
9. Bucholz R: Intracranial Endoscopy. Second International Workshop on Endoscopic Stereotaxy, Marburg, Germany, January 30 - February 1, 1992.

10. Bucholz R: Intraoperative Lesion Localization with a Computer Linked Digitizer. American Association of Neurological Surgeons, San Francisco, California, April 11-16, 1992.
11. Bucholz R: Course Instructor for Stereotactic Surgery, BRW Frame. American Association of Neurological Surgeons, San Francisco, California, April 11-18, 1992.
12. Heilbrun P, Bucholz R, McDonald P, Weiker C, Koehler S, Peters W, Siemenow V: Machine Vision in Stereotactic Localization: A Universal System for Surgical Navigation. American Association of Neurological Surgeons, San Francisco, California, April 11-18, 1992.
13. Littlefield JL, Bucholz RD, Conlin CJ, McDurmont LL, Wittry MD, Fletcher JW. PET Guided Stereotactic Brain Biopsy. Missouri Valley and Central Chapter SNM Meeting, St. Louis, Missouri, October 16-18, 1992.
14. Bucholz RD: Three-Dimensional Stereotactic Digitizers in Neurosurgery: Principles, Techniques, and Instrumentation. Congress of Neurological Surgeons. Washington, D.C., November 1, 1992.
15. Bucholz RD: Stereotactic Surgery: Principles, Techniques, and Instrumentation. Practical Clinic XIV, Congress of Neurological Surgeons, Washington, D.C., November 1, 1992.
16. Bucholz RD: Stereotactic Surgery: Principles, Techniques, and Instrumentation. Practical Clinic XX, Congress of Neurological Surgeons, November 1, 1992.
17. Bucholz RD, Smith KR, Henderson J, McDurmont L, Schulz D: Intraoperative Localization Using a Three Dimensional Optical Digitizer. SPIE International Symposia-The International Society for Optical Engineering, Los Angeles, California, January 19, 1993.
18. Bucholz RD, Henderson J, Smith KR, and McDurmont L: Intraoperative Localization with an Optical Digitizer. St. Louis Surgical Society, St. Louis, Missouri, January 19, 1993.
19. Bucholz RD: Frameless Stereotaxis -- The Future of Stereotactic Surgery. Keynote Address, American Association of Neurological Surgeons, Boston, Massachusetts, April 27, 1993.
20. Bucholz RD: Practical Clinic V, Three-Dimensional Stereotactic Digitizers in Neurosurgery: Principles, Techniques, and

- Instrumentation. (course director). American Association of Neurological Surgeons, Boston, Massachusetts, April 24, 1993.
21. Bucholz RD: Practical Clinic XIV, Stereotactic Surgery: Principles, Techniques, and Instrumentation (faculty). American Association of Neurological Surgeons, Boston, Massachusetts, April 25, 1993.
  22. Bucholz RD: Non-Linkage (Frameless) Stereotaxis of the Brain (moderator and panelist). American Association of Neurological Surgeons, Boston, Massachusetts, April 27, 1993.
  23. Bucholz RD: Three-Dimensional Intraoperative Ultrasonography Using an Operative Digitizer. American Association of Neurological Surgeons, Boston, Massachusetts, April 27, 1993.
  24. Bucholz RD and Rubin JP: The Accuracy of Stereotactic Localization Using MR Imaging. American Association of Neurological Surgeons, Boston, Massachusetts, April 27, 1993.
  25. Gallen CC, Bucholz RD, Soble DF, Hirschkoff EC, Schwartz BJ, Bloom FE: Noninvasive functional mapping of cortex combined with MRI and MRA to guide surgery. Platform Presentation, American Academy of Neurology Scientific Program, April 27-29, 1993.
  26. Bucholz RD, Smith KR, Baumann C, and McDurmont L: Image Guided Surgery Using an Optical Digitizer. Society of University Neurosurgeons, St. Louis, Missouri, May 6, 1993.
  27. Bucholz RD: Computers in the Operating Room. The Accuracy of Stereotactic Localization Using MR Imaging. Computer Multimedia Applications in Medical Practice. Saint Louis University School of Medicine, St. Louis, Missouri, May 14-16, 1993.
  28. Bucholz RD: Interactive Frameless Stereotaxy: Optical Systems. Stereotactic and Computer-Assisted Neurosurgery Course. Cleveland Clinic Foundation, Cleveland, Ohio, May 14, 1993.
  29. Bucholz RD: Frameless Craniotomy: General Uses of Interactive Frameless Stereotaxy. Stereotactic and Computer-Assisted Neurosurgery Course. Cleveland Clinic Foundation, Cleveland, Ohio, May 14, 1993.
  30. Bucholz RD, and Smith KR: Stereotactic Guided Microsurgery Using an Optical Digitizer. Minimal Invasive Techniques Within Neurosurgery, Wiesbaden, Germany, June 15-19, 1993.

31. Bucholz RD: Post-Traumatic Epilepsy. Second Annual Symposium: Care of the Head-Injured Patients, Saint Louis University Health Sciences, St. Louis, Missouri, June 30, 1993.
32. Gallen CC, Bucholz R, Sobel DF, Schwartz BJ, Hirschkof EC, Barkley G, Malik G: Magnetoencephalography with Advanced 3D MR Imaging in Pre-Surgical Planning and Intraoperative Monitoring. Invited Talk, BIOMAG, Vienna, Austria, August 14-20, 1993.
33. Bucholz RD: Frameless Stereotaxis and Intraoperative Navigation (course director). Congress of Neurological Surgeons, Vancouver, British Columbia, October 2-7, 1993.
34. Henderson JM, Bucholz RD, and Baumann CK: Image-Guided Techniques for Ventricular Catheter Placement. Congress of Neurological Surgeon, Vancouver, British Columbia, October 3, 1993.
35. Bucholz RD: Frameless Stereotaxy for Open Craniotomy (panelist). Congress of Neurological Surgeons, Vancouver, British Columbia, October 4, 1993.
36. Bucholz RD, Smith KR, and McDurmont L: Intraoperative Localization with an Optical Digitizer. St. Louis Surgical Society, St. Louis, Missouri, December 15, 1993.
37. Bucholz RD, McDurmont L, Baumann CK, and Smith KR: Frameless Image-Guided Surgery Utilizing an Optical Digitizer. The Society of Photo-Optical Instrumentation Engineers International Symposium, Los Angeles, California, January 23, 1994.
38. Henderson J, and Bucholz RD: An Accurate and Ergonomic Method of Registration for Image-Guided Neurosurgery. The Society of Photo-Optical Instrumentation Engineers International Symposium, Los Angeles, California, January 23, 1994.
39. Bucholz RD: Stereotactic Applications in Neurosurgery and Radiation Therapy. Loma Linda University Medical Center, Loma Linda, California, January 24, 1994.
40. Bucholz RD: Stereotactic Applications in Neurosurgery and Other Procedures. The Sixth Annual Joseph E. Flynn Lecture Series, St. Louis, Missouri, January 26, 1994.
41. Smith KR, Bucholz RD: The Neurostation: Applications in minimally Invasive Neurosurgery. Medicine Meets Virtual Reality II, San Diego, California, January 29, 1994.

42. Bucholz RD: Stereotactic Digitizers (faculty). American Association of Neurological Surgeons Practical Workshop, San Diego, California, April 9, 1994.
43. Bucholz RD: Practical Course: Stereotactic Surgery (faculty). American Association of Neurological Surgeons, San Diego, California, April 10, 1994.
44. Bucholz RD: Frameless Stereotaxis; Principles and Applications (moderator). American Association of Neurological Surgeons, San Diego, California, April 11, 1994.
45. Lawson D, Gallen CC, Schwartz BJ, Waltz TA, Copeland B, Bucholz R, Sobel DF, Squires KC: Motor activity source localization using a large array biomagnetometer. Platform Presentation, American Academy of Neurology Meeting, Washington, D.C., May 3-5, 1994.
46. Gallen CC, Bucholz RD, Greenblatt R, Schwartz BJ: Noninvasive functional mapping of cortex combined with MRI and MRA to guide surgery. Platform Presentation, American Academy of Neurology Meeting, Washington, D.C., May 3-5, 1994.
47. Greenblatt RE, Gallen CC, Bucholz RD, Schwartz BJ: Somatosensory evoked responses from ECoG and MEG combined with MRI. International Society for Brain Electromagnetic Topography, Muenster, Germany, August 2, 1994.
48. Boyd JH, and Bucholz RD: Stereotactic Radiosurgery and Otolaryngology - Head and Neck Surgery: Scientific Exhibit, American Academy of Otolaryngology - Head and Neck Surgery Foundation, Inc. (AAO-HNS), San Diego, California, September, 1994. Awarded First Place, President's Award.
49. Bucholz RD: Otolaryngological Navigational Surgery (faculty). American Academy of Otolaryngology - Head and Neck Surgery Foundation, Inc. (AAO-HNS), San Diego, California, September 20, 1994.
50. Boyd JH, and Bucholz RD: Stereotactic Surgery for Otolaryngology. American Academy of Otolaryngology - Head and Neck Surgery Foundation, Inc., (AAO-HNS) San Diego, California, September 21, 1994.

51. Bucholz RD: Practical Applications of Frameless Stereotactic Surgery (faculty). Congress of Neurological Surgeons, Chicago, Illinois, October 2, 1994.
52. Bucholz RD: Stereotactic Assisted Craniotomy (moderator). Congress of Neurological Surgeons, Chicago, Illinois, October 4, 1994.
53. Bucholz RD: Floyd S. Barringer Lecture, Southern Illinois University, Springfield, Illinois, October 7, 1994.
54. Bucholz RD: Frameless Stereotactic Techniques for Brain Tumors. Decade of the Brain Conference, George Washington University Neurological Institute, Washington, D.C., November 4, 1994.
55. Bucholz RD, Henderson JM, Smith KR, Smith KR, Jr: Decreased Length and Cost of Hospital Stay for Patients Undergoing Craniotomy with an Optical Surgical Localization Device. American Academy of Neurological Surgery, Sea Island, Georgia, November 5, 1994.
56. Bucholz RD, Smith KR, and McDurmont LL: Image Guided Surgery Utilizing an Optical Digitizer. First Asian Congress of Stereotactic, Functional and Computer Assisted Neurosurgery, Singapore, December, 1994.
57. Bucholz RD: Surgical Management of Pituitary Tumors. Endocrinology Grand Rounds, Saint Louis University Health Sciences Center, St. Louis, Missouri, February 7, 1995.
58. Bucholz RD, Robinson E, and McDurmont LL: A Head Mounted Display for Use During Image Guided Surgery. International Society for Optical Engineering, San Diego, California, February 26, 1995.
59. Bucholz RD, Henderson JM, and Smith KR: Decreased Length and Cost of Hospital Stay for Patients Undergoing Craniotomy with an Optical Surgical Localization Device. American Society for Stereotactic and Functional Neurosurgery, Marina del Rey, California, March 10, 1995.
60. Bucholz RD: Computer Guided Surgery. Missouri State Medical Association Convention, St. Louis, Missouri, March 25, 1995.
61. Bucholz RD: Course on Interactive image guided neurosurgery (faculty). American Association of Neurological Surgeons. Orlando, Florida, April 22, 1995.

62. Bucholz RD: Practical Course: Stereotactic surgery instrumentation (faculty). Instrumentation. American Association of Neurological Surgeons. Orlando, Florida, April 23, 1995.
63. Bucholz RD: Breakfast Seminar: Intracranial frameless stereotaxis: Principles and applications (moderator). American Association of Neurological Surgeons. Orlando, Florida, April 24, 1995.
64. Foley KT, Bucholz RD, Smith KR, Robertson J: Spinal Stereotactic Surgery. American Association of Neurological Surgeons. Orlando, Florida, April 24, 1995.
65. Heilbrun MP, Bucholz R: Frameless Cranio-Stereotactic Surgery. American Association of Neurological Surgeons. Orlando, Florida, April 27, 1995.
66. Bucholz RD: Special Course: Frameless Cranial Stereotactic Surgery (faculty). American Association of Neurological Surgeons. Orlando, Florida, April 27, 1995.
67. Bucholz RD: Decreased Length and Cost of Hospital Stay for Patients Undergoing Craniotomy with an Optical Surgical Localization Device. European Congress of Neurosurgery, Berlin, May 8, 1995.
68. Smith KR, Bucholz RD, and Foley KT: Free-Hand Stereotactic Computer-Assisted Surgery. Computer Assisted Radiology, Berlin, Germany, June 21-24, 1995.
69. Bucholz RD: Techniques of Epilepsy Surgery. New Horizons in the Treatment of Epilepsy, St. Louis, Missouri, September 16, 1995.
70. Bucholz RD: Application of Image Fusion Techniques in Neurosurgery. Society of Nuclear Medicine, St. Louis, Missouri, September 24, 1995.
71. Bucholz RD: A review of the *Journal of Image Guided Surgery*. Electronic Publishing and Virtual Library, St. Louis, Missouri, September 29, 1995.
72. Bucholz R: Practical Course in Graphic Interactive Surgery (faculty). Congress of Neurological Surgeons, San Francisco, California, October 15, 1995.
73. Bucholz R: Practical Course: Computing in a Neurosurgery Practice (course director). Congress of Neurological Surgeons, San Francisco, California, October 15, 1995.

74. Bucholz R: Luncheon Seminar: Intraoperative Guidance Systems in Neurosurgery (moderator). Congress of Neurological Surgeons, San Francisco, California, October 18, 1995.
75. Sturm CD, Bucholz RD, Henderson JH: Image Guided Endoscopy: An Application for Pallidotomy. St. Louis Surgical Society Meeting, January 16, 1996.
76. Bucholz RD: Techniques of Epilepsy Surgery. New Horizons in the Treatment of Epilepsy, Springfield, Missouri. March 9, 1996.
77. Bucholz RD, Sturm CD, Henderson JM: Clinical Application of Image Fusion Combined with Stereotactic Surgical Navigation. Southern Neurological Society. Miami, Florida, March 28, 1996.
78. Sturm CD, Bucholz RD, Henderson JM, Kessman P, Trobaugh J: Assessment of Intraoperative Brain Shift Using a Stereotactically Guided Ultrasound Device. Southern Neurosurgical Society, Miami, Florida, March 28, 1996.
79. Bucholz RD: Practical Course: Image Guided Surgery. American Association of Neurological Surgeons, Memphis, Tennessee, March 29-30, 1996.
80. Bucholz RD: Practical Course: Interactive Image Guided Neurosurgery (faculty). American Association of Neurological Surgeons. Minneapolis, Minnesota, April 27, 1996.
81. Bucholz RD: Practical Course: Stereotactic Surgery: Principles, Techniques and Instrumentation (faculty). American Association of Neurological Surgeons. Minneapolis, Minnesota, April 28, 1996.
82. Bucholz RD: Special Symposium: Stereotactic Surgical Microscope Imaging Systems (panelist). American Association of Neurological Surgeons, Minneapolis, Minnesota, April 30, 1996.
83. Bucholz RD: Breakfast Seminar: Technical Progress in Stereotaxy and Operative Imaging (panelist). American Association of Neurological Surgeons, Minneapolis, Minnesota, April 30, 1996.
84. Bucholz RD: Breakfast Seminar: Intracranial Frameless Stereotaxis: Principles and Applications (moderator). American Association of Neurological Surgeons, Minneapolis, Minnesota, May 1, 1996.

85. Bucholz RD: Breakfast Seminar: Stereotactic Applications in Spine Surgery (panelist). American Association of Neurological Surgeons, Minneapolis, Minnesota, May 1, 1996.
86. Bucholz RD: Special Symposium: Virtual Reality Meets Neurosurgery: The Impact of Advanced Three-Dimensional Imaging and Robotics in the Future Practice of Surgery (co-moderator). American Association of Neurological Surgeons, Minneapolis, Minnesota, May 1, 1996.
87. Bucholz RD: Techniques of Epilepsy Surgery. New Horizons in the Treatment of Epilepsy. Columbia, Missouri, May 11, 1996.
88. Bucholz R, Sturm C, Henderson J, Hammoud A: The Living Atlas: A Deformable Patient Specific On-Line Atlas for Surgical Navigation. European Society for Stereotactic and Functional Neurosurgery, Milan, Italy, June 12-15, 1996.
89. Bucholz R, Sturm C, Henderson J: Detection of Brain Shift with an Image Guided Ultrasound Device. European Society for Stereotactic and Functional Neurosurgery, Milan, Italy, June 12-15, 1996.
90. Bucholz RD: Image Directed Surgery (panelist). Second International Skull Base Congress and 7th North American Skull Base Society, San Diego, California, June 29-July 4, 1996.
91. Bucholz RD: Neuronavigation and 3D Surgery (panelist). Second International Skull Base Congress and 7th North American Skull Base Society, San Diego, California, June 29-July 4, 1996.
92. Bucholz RD: Intracranial Frameless Surgical Navigator Systems (speaker). 46th Annual Congress of Neurological Surgeons, Montreal, Quebec, September 28 - October 3, 1996.
93. Bucholz RD: Innovations in Technology and Techniques in Neurosurgery: A Look Toward the Future (moderator). 46th Annual Congress of Neurological Surgeons, Montreal, Quebec, September 28 - October 3, 1996.
94. Bucholz RD: Functional Neurosurgery: New Perspectives for Nurses (speaker). 46th Annual Congress of Neurological Surgeons, Montreal, Quebec, September 28 - October 3, 1996.
95. Bucholz RD: Developments in Image Guided Surgery (speaker). St. Anthony's Medical Center Surgical Grand Rounds, St. Louis, Missouri, January 11, 1997.

96. Bucholz RD: Glioblastoma Multiforme: Perspectives in Treatment. Seventh Annual Neuroscience Symposium: Head and Spinal Cord, Saint Louis University Health Sciences Center, St. Louis, Missouri, March 10, 1997.
97. Bucholz RD: Image Interactive Neurosurgery (Frameless Stereotaxy) — Hands-On (faculty). AANS Professional Development Course, Memphis, Tennessee, March 14-15, 1997.
98. Bucholz RD, Yeh DD, Trobaugh J, McDurmont LL, Sturm CD, Baumann C, Henderson JM, Levy A, Kessman P: Correction of Stereotactic Inaccuracy Caused by Brain Shift Using an Intraoperative Ultrasound Device. First Joint Conference of CVRMed II and MRCAS II, Grenoble, France, March 19-22, 1997.
99. Bucholz RD: Technological Solutions for Problems in Skull Base Surgery (speaker). Eighth Annual North American Skull Base Society, Little Rock, Arkansas, March 21-25, 1997.
100. Bucholz RD: Stereotactic Surgery: Principles, Techniques and Instrumentation (faculty). American Association of Neurological Surgeons, Denver, Colorado, April 12-17, 1997.
101. Bucholz RD: Interactive Image Guided Neurosurgery (faculty). American Association of Neurological Surgeons, Denver, Colorado, April 12-17, 1997.
102. Bucholz RD: Intracranial Frameless Stereotaxis: Principles and Techniques (panelist). American Association of Neurological Surgeons, Denver, Colorado, April 12-17, 1997.
103. Bucholz RD: Stereotactic Spinal Techniques (moderator). American Association of Neurological Surgeons, Denver, Colorado, April 12-17, 1997.
104. Bucholz RD: Special Course 2: Frameless Stereotactic Neurosurgery: Advanced Applications of Surgical Navigation Systems (speaker). American Association of Neurological Surgeons, Denver, Colorado, April 12-17, 1997.
105. Henderson JM, Eichholz KM, Bucholz RD: Decreased Length of Stay and Hospital Costs in Patients Undergoing Image Guided Craniotomies. Platform Presentation, American Association of Neurological Surgeons, Denver, Colorado, April 12-17, 1997.

106. Bucholz RD: Anatomical Surface Contour Matching for Efficient Registration in Image Guided Neurosurgery. 11<sup>th</sup> International Symposium and Exhibition-Computer Assisted Radiology/Surgery, Berlin, Germany, June 25-28, 1997.
107. Bucholz RD: Workshop on Neuronavigation in Functional Neurosurgery. World Society for Stereotactic and Functional Neurosurgery, Lyon, France, July 1-4, 1997.
108. Bucholz RD: Advances in Image Guided Surgery. Guest Speaker, Neurosurgical Society of Australasia, Darwin, Australia, September 17-20, 1997.
109. Bucholz RD: Practical Clinic: Cranial Navigation (faculty). Congress of Neurological Surgeons, New Orleans, Louisiana, September 27-October 2, 1997.
110. Bucholz RD: Luncheon Seminar: New Concepts in Cranial Stereotaxis (moderator). Congress of Neurological Surgeons, New Orleans, Louisiana, September 27-October 2, 1997.
111. Bucholz RD, Yeh D, Sturm C, Kessman P, Trobaugh J: Estimation of Inaccuracy caused by Tissue Shift Using an Optically Tracked Intraoperative Ultrasound Device. Rapid Prototyping in Medicine & Computer Assisted Surgery, Erlangen, Germany, October 16-18, 1997.
112. Bucholz RD: Computer Aided Surgery: Current Status (invited paper). Rapid Prototyping in Medicine and Computer Assisted Surgery, Erlangen, Germany, October 16-18, 1997.
113. Bucholz RD: The Future Computer Aided Surgery. Computer Assisted Orthopedic Surgery, University of Bern, Switzerland, November 6-8, 1997.
114. Bucholz RD: Computers in the Operating Room: The Future of Surgery. Annual Memorial Lecture, St. Anthony's Medical Center, St. Louis, Missouri, November 18, 1997.
115. Bucholz RD, Levy A, Marzouk S, Miller MI, Henderson JM, Smith K: Patient Specific Deformable Internet Brain Atlas. International Society for Optical Engineering, San Jose, California, January 24-30, 1998.
116. Bucholz RD: Short Course: Navigation Systems. International Society for Optical Engineering, San Jose, California, January 24-30, 1998.

117. Bucholz RD: Robotics: Art, Science, Technology: Neurosurgery. Medicine Meets Virtual Reality: 6, San Diego, California, January 28-31, 1998.
118. Bucholz, RD: Stereotaxis and Neuronavigation (moderator). North American Skull Base Society, Kamuela, Hawaii, February 13-17, 1998.
119. Bucholz, RD: Advances in Image Guided Treatment. Greater St. Louis Radiological Society, St. Louis, Missouri, February 17, 1998.
120. Bucholz, RD: Advanced Techniques for Stereotactic Resection of Intracranial Lesions. The American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 25-30, 1998.
121. Bucholz, RD: Advances in Computer Aided Surgery. Computer Assisted Radiology and Surgery, Tokyo, Japan, June 24-27, 1998.
122. Bucholz, RD: Advances in Computer Aided Surgery. Computer Assisted Radiology and Surgery Proceedings, invited paper, Tokyo, Japan, June 24-27, 1998.
123. Bucholz RD, Laycock KA: Gene Therapy for Brain Tumors, Metro. Medicine, St. Louis, MO, pg. 17-19, August 1998.
124. Bucholz, RD: Neurosurgical Robotics: Congress of Neurological Surgeons. Seattle, Washington, October 3-8, 1998.
125. Bucholz, RD: Computer Internet and Office Application, Congress of Neurological Surgeons, Seattle, Washington, October 3-8, 1998.
126. Bucholz, RD: Advanced Techniques for Stereotactic Resection of Intracranial Lesions. The American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 25-30, 1998.
127. Bucholz, RD: Computers, Physicians, and the Internet: an Infrastructure for Surgery in the New Millennium. The German Society of Neurosurgery, Hannover, Germany, June 12-16, 1998.
128. Trobaugh JW, Kessman PJ, Dietz DR, Bucholz RD: Ultrasound in Image Fusion: A Framework and Applications, Proceedings of the IEEE Ultrasonics, Ferroelectrics and Frequency Control Symposium, 1997.
129. Bucholz RD, Levy A, Marzouk S, Miller MI, Henderson JM, Smith K: Patient specific deformable internet brain atlas. Image-Guided

Surgery and Real-Time Diagnostic Feedback Systems: OR of the 21st Century, January 28, 1998.

130. Cox III AJ, Citardi MJ, Bucholz RD: Acellular dermal allograft for sellar reconstruction after transsphenoidal hypophysectomy. American Rhinologic Society Fall Meeting, San Antonio, TX, September 12, 1998.
131. Bucholz RD: The state of the art in computer assisted neurosurgery. '98 Workshop on Computer Assisted Surgery, Seoul, Korea, October 1998.
132. Bucholz RD: Clinical applications of computer assisted neurosurgery. '98 Workshop on Computer Assisted Surgery, Seoul, Korea, October 1998.
133. Bucholz RD: Beyond image guided surgery: an infrastructure for operating room of the new millennium. XXVI International Society for Paediatric Neurosurgery, Melbourne, Australia, September 13-19, 1998.
134. Bucholz RD: Computer aided surgery. World Academy of Biomedical Technologies' Day, 1st International Forum on Medical Progress, Monte Carlo, October 15-17, 1998.
135. Bucholz RD: Techniques in Image Guided Surgery (faculty), Frenchay Hospital, Bristol, England, October 13-15, 1998.
136. Bucholz RD: Advances in neurological surgery. New Developments in Least-Invasive Surgery, Orlando, Florida, October 27, 1998.
137. Bucholz RD: Techniques in epilepsy surgery. Merritt-Putnam Lectures on Epilepsy, St. Louis, Missouri, October 31, 1998.
138. Bucholz RD: The internet: a surgical tool for the new millennium. 8th Annual Meeting of the Japanese Society for Computer in Neurosurgery, Nagoya, Japan, January 9, 1999.
139. Bucholz, RD: Advances in Image Guided Neurosurgical Techniques. Japanese Society for Computers in Neurosurgery, Nagoya, Japan, January 9, 1999.
140. Bucholz RD: Minimally Invasive Neurosurgery. Invitation Clinic Day, Department of Surgery, Saint Louis University School of Medicine, March 4, 1999.

141. Bucholz RD: New Areas in Computer Assisted Spinal Surgery (chairman). Computer Assisted Orthopaedic Surgery, Davos, Switzerland, March 17-19, 1999.
142. Bucholz RD: Image-guided intervention in neurosurgery. Joint Working Group on Image-Guided Diagnosis and Treatment, Washington, DC, April 12-14, 1999.
143. Bucholz RD: Breakfast Seminar: Intracranial Frameless Stereotaxis: Principles and Techniques (moderator). American Association of Neurological Surgeons Annual Meeting, New Orleans, Louisiana, April 24-29, 1999.
144. Bucholz RD: Use of Intraoperative Ultrasound to Control the Extent of Tumor Resection in Supratentorial Gliomas (discussant). American Association of Neurological Surgeons Annual Meeting, New Orleans, Louisiana, April 24-29, 1999.
145. Bucholz RD: Intraoperative Ultrasound. American Association of Neurological Surgeons Annual Meeting, New Orleans, Louisiana, April 24-29, 1999.
146. Bucholz RD: Image-guided Spine Procedures Workshop (participant). Georgetown University Medical Center, April 17-20, 1999.
147. Bucholz RD, Plenary Scientific Session III: Image Guidance, Radiosurgery and Spinal Endoscopy (co-moderator and panelist). 1999 Congress of the International Society for Neurosurgical Instrument Inventors, Las Vegas, Nevada, April 29-May 2, 1999.
148. Bucholz RD: Image-guided Neurosurgery. Second Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging, Jerusalem, Israel, May 6, 1999.
149. Bucholz RD: Techniques in Image Guided Surgery (faculty), Frenchay Hospital, Bristol, England, May 10-11, 1999.
150. Bucholz RD: Computer Assisted Surgery-Today and Tomorrow (panelist), Southern Neurosurgical Society Annual Meeting, Memphis, Tennessee, May 19-22, 1999.
151. Bucholz RD: The Future of Image Guided Surgery (invited speaker), Department of Neurosurgery, Mayo Clinic, Rochester, Minnesota, May 29, 1999.

152. Bucholz RD: Stereotactic, Functional and Restorative Neurosurgery (faculty), New York University School of Medicine, New York, New York, June 10-12, 1999.
153. Bucholz RD: Image Guidance in Neurosurgery: Current State of the Art. Computer Assisted Orthopaedic Surgery (CAOS/USA), Pittsburgh, Pennsylvania, June 17-19, 1999.
154. Bucholz RD: The Role of Image Registration in Image Guided Surgery (invited speaker). Workshop on Biomedical Image Registration (WBIR'99), Bled, Slovenia, August 30-31, 1999.
155. Bucholz RD: Tutorial: Image Guided Interventions (invited speaker). Medical Image Computing & Computer-Assisted Intervention '99 (MICCAI '99), Cambridge, England, September 19-22, 1999.
156. Bucholz RD: SDG Stealth Workshop at the EANS meeting (invited speaker). Copenhagen, Denmark, September 22-23, 2000.
157. Bucholz RD: New Frontiers in Computer-assisted Surgery (invited speaker). MDI New Developments in Least-Invasive Surgery (in conjunction with ACS annual meeting), San Francisco, California, October 12, 1999.
158. Bucholz RD: Computer Assisted Surgery: Current Status and Future Developments (invited speaker). CAS '99: Computer Assisted Surgery & Rapid Prototyping in Medicine, Erlangen, Germany, October 14-16, 1999.
159. Bucholz RD: Image-Guided Cranial Surgical Navigation (Faculty). Congress of Neurological Surgeons 49<sup>th</sup> Annual Meeting, Boston, Massachusetts, October 30 - November 4, 1999.
160. Bucholz RD: Image-Guided Spinal Navigation (Faculty). Congress of Neurological Surgeons 49<sup>th</sup> Annual Meeting, Boston, Massachusetts, October 30 - November 4, 1999.
161. Bucholz RD: Internet Computer Applications (Faculty). Congress of Neurological Surgeons 49<sup>th</sup> Annual Meeting, Boston, Massachusetts, October 30 - November 4, 1999.
162. Bucholz RD: Intracranial Navigation Systems: Principles, Techniques, and Practical Applications (Faculty). Congress of Neurological Surgeons 49<sup>th</sup> Annual Meeting, Boston, Massachusetts, October 30 - November 4, 1999.

163. Bucholz RD: Information Guided Therapy: the next step in Computer Aided Surgery (invited speaker). EMBEC '99: European Medical & Biological Engineering Conference, Vienna, Austria, November 4-7, 1999.
164. Bucholz RD: Image Guided Neurosurgery: Clinical Evaluation of the Stealth Station (invited speaker and session moderator). 8<sup>th</sup> International Meeting of Laparoendoscopic Surgeons, SLS Annual Meeting, New York City, December 4-7, 1999.
165. Bucholz RD: The History and Future of Image Guided Surgery (invited speaker, course faculty). Advanced Techniques in Image Guided Neurosurgery: An intensive review and prospects for the millennium, New York Academy of Medicine, New York City, December 9-10, 1999.
166. Bucholz RD: From Computer Aided Surgery to Information Guided Therapy: The Next Step (invited speaker). Washington DC Computer Aided Surgery Society meeting, Washington, DC, January 18, 2000.
167. Bucholz RD, Macneil W, Fewings P, Ravindra A, McDurmont L, Baumann C: Automated Rejection of Contaminated Surface Measurements of Improved Surface Registration in Image Guided Neurosurgery. Medicine Meets Virtual Reality (MMVR 2000), Newport Beach, California, January 27-30, 2000.
168. Bucholz RD, Laycock KA: Coupling Information to Surgery Through Imaging (keynote speaker). Medical Imaging 2000: Image Display and Visualization, San Diego, CA, February 13-15, 2000.
169. Bucholz RD, Laycock, KA: Computer Aided Surgery: Historical Review of Computer Trends (guest lecturer). Computer Assisted Orthopaedic Surgery, Davos, Switzerland, February 17-19, 2000.
170. Bucholz RD: Advanced Applications in Image Guided Surgery (Program Chairman and speaker), Naples, Florida, March 10-12, 2000.
171. Bucholz RD: Surgical Approach to the Treatment of Epilepsy. Merritt-Putnam Lectures on Epilepsy, St. Louis, Missouri, April 1, 2000.
172. Bucholz RD: Breakfast Seminar: Frameless Stereotaxis: (panelist). American Association of Neurological Surgeons Annual Meeting, San Francisco, CA, April 8-13, 2000.

173. Bucholz RD: Practical Course: Interactive Image Guided Neurosurgery: (faculty). American Association of Neurological Surgeons Annual Meeting, San Francisco, CA, April 8-13, 2000.
174. Bucholz, RD: Image-Guided Surgery (invited speaker). Tech Fair 2000, St. Louis, MO, May 4, 2000.
175. Bucholz, RD: New Technology (invited speaker). Royal Australian College of Surgeons, Melbourne, Australia, May 8-13, 2000.
176. Hogan RE, Bucholz RD, Joshi S, Choudhuri I, Mark KE, Butler CS: Shape-Analysis of Hippocampal Surface Structure in Patients with Unilateral Mesial Temporal Sclerosis. The 17th Symposium for Computer Applications in Radiology (SCAR 2000), Philadelphia, PA, June 3-6, 2000.
177. Bucholz RD: Information Guided Therapy: the Future of Computers in the Operating Room (keynote speaker). Computer Assisted Orthopaedic Surgery, Pittsburgh, Pennsylvania, June 17-18, 2000.
178. Bucholz RD: Intraoperative Tracking and Instrumentation (invited speaker). CARS 2000, San Francisco, California, June 28-July 1, 2000.
179. Bucholz RD: Advanced Techniques in Image Guided Surgery (faculty), Cologne, Germany, July 20-21, 2000.
180. Bucholz RD: Information Guided Therapy: The Future of Neurosurgery. Medicine Meets Millennium, Hannover, Germany, July 23-24, 2000.
181. Bucholz, RD: Image-Guided Surgery: a Review (faculty). Practical Anatomy Workshop, St. Louis, MO, September 9, 2000.
182. Bucholz RD: Image Guided Cranial Surgery (Faculty). Congress of Neurological Surgeons Practical Course, San Antonio, TX, September 23, 2000.
183. Bucholz, RD: Intraoperative Information Delivery: the Future of Computer Assisted Surgery (plenary speaker). BMT 2000, Lubeck, Germany, September 28-30, 2000.
184. Bucholz, RD: Computer Assisted Medicine and Robotics (session chairman). BMT 2000, Lubeck, Germany, September 28-30, 2000.

185. Bucholz, RD: SurgON: Surgical Operative Network (keynote speaker). Medical Image Computing and Computer Assisted Intervention (MICCAI) 2000, Pittsburgh, PA, October 11-14, 2000.
186. Bucholz, RD: Mechanically Assisted Surgery in the Operating Room: Present Status and Future Predictions of Surgical Robotics (panelist). American College of Surgeons 2000 Clinical Congress, Chicago, IL, October 26, 2000.
187. Bucholz, RD: Surgical Interventions for Parkinson's Disease (faculty). Update in Neuro-Psychiatric Disorders, St. Louis, Missouri, November 11, 2000.
188. Bucholz, RD: Advanced Techniques in Image-Guided Brain and Spine Surgery (course director and speaker). New York City, December 15-16, 2000.
189. Bucholz, RD: Symposium on Advanced Techniques in Image Guided Surgery (faculty and speaker). Seefeld-Innsbruck, Austria, January 12-13, 2001.
190. Bucholz, RD: Advanced Techniques for Stereotactic Resection of Intracranial Lesions. American Association of Neurological Surgeons, Toronto, Canada, April 23, 2001.
191. Bucholz, RD: CIMIT Forum Speaker. Harvard Medical School, Cambridge, MA, May 28, 2001.
192. Bucholz, RD: Advances in Cranial Navigation. Neuromodulation: Defining the Future: Cleveland Clinic Foundation Educational Symposium, Cleveland, OH, June 8, 2001.
193. Bucholz, RD: Virtual Reality-Telesurgery. Austrian Society of Surgeons, Graz, Austria, June 14, 2001.
194. Bucholz, RD: History and technology overview of IGS. Image Guided Surgery Symposium, Mallorca, Spain, June 29, 2001.
195. Bucholz, RD: Intraoperative imaging using ultrasound. Image Guided Surgery Symposium, Mallorca, Spain, June 29, 2001.
196. Bucholz, RD: Image modalities and functional applications. Image Guided Surgery Symposium, Mallorca, Spain, June 29, 2001.
197. Bucholz, RD: Remote planning and the internet as a surgical tool. Image Guided Surgery Symposium, Mallorca, Spain, June 29, 2001.

198. Bucholz, RD: Neuronavigation: The next generation. Congress of Neurological Surgeons, San Diego, CA, October 1, 2001.
199. Bucholz, RD: Intracranial Navigation: Innovations and Techniques. Congress of Neurological Surgeons, San Diego, CA, October 2, 2001.
200. Bucholz, RD: Computer Assisted Surgery: Current status and future Developments. Computer Aided Surgery Conference (CAS 2001), Nuremberg, Germany, October 11, 2001.
201. Bucholz, RD: History and Evolution of Image Guided Surgery. Image Guided Course, Mt. Sinai Medical School, New, York, NY, Dec 15, 2001.
202. Bucholz, RD: Movement Disorders: Atlases and Segmentations. Image Guided Course, Mt. Sinai Medical School, New, York, NY, Dec 15, 2001.
203. Bucholz, RD: History and Technology Overview of IGS. Image Guided Course, Seefeld, Austria. January 10, 2002.
204. Bucholz, RD: Intraoperative Imaging using Ultrasound. Image Guided Course, Seefeld, Austria. January 10, 2002.
205. Bucholz, RD: Remote Planning and the Internet as a Surgical Tool. Image Guided Course, Seefeld, Austria. January 10, 2002.
206. Bucholz, RD: The Future in Image-Guided Cranial Surgery. Image Guided Course, Seefeld, Austria. January 10, 2002.
207. Bucholz, RD: Image Guided Surgery – From Discovery to Design (invited speaker), Congress of Neurological Surgeons 52<sup>nd</sup> Annual Meeting, Philadelphia, PA, September 21-26, 2002.
208. History and Technology Overview of IGS, Image Guided Symposium, Seefeld Austria, January 11, 2002.
209. Intraoperative Imaging Using Ultrasound, Image Guided Symposium, Seefeld Austria, January 11, 2002.
210. The Future in Image Guided Cranial Surgery, Image Guided Symposium, Seefeld Austria, January 11, 2002.
211. 3D Volume Rendering and Intraoperative Imaging Using Ultrasound, Image Guided Symposium, Seefeld Austria, January 11, 2002.

212. Interactive Image Guided Spinal and Cranial Surgery, American Association of Neurological Surgeons conference, Chicago, IL, April 7, 2002.
213. Advanced Techniques for Stereotactic Resection of Intracranial Lesions, American Association of Neurological Surgeons conference, Chicago, IL, April 8, 2002.
214. Imaging Before the O.R. and in the O.R.: What Provides Value, American Association of Neurological Surgeons conference, Chicago, IL, April 9, 2002.
215. Current Technologies and Applications for Frameless Cranial Stereotaxis, American Association of Neurological Surgeons conference, Chicago, IL, April 11, 2002.
216. History and Technology Overview of IGS, Image Guided Symposium, Lausanne, Switzerland, June 24, 2002.
217. Intraoperative Imaging Using Ultrasound, Image Guided Symposium, Lausanne, Switzerland, June 24, 2002.
218. Remote Planning and the internet as a surgical tool, Image Guided Symposium, Lausanne, Switzerland, June 24, 2002.
219. Ultrasound Imaging and 3D Volume Rendering, Image Guided Symposium, Lausanne, Switzerland, June 24, 2002.
220. IGS to IGT: from image guidance to information guided therapy, Session Chair, Congress of Computer Assisted Radiology and Surgery, June 27, 2002.
221. Bucholz R, Image Guided Cranial Navigation, Faculty, Congress of Neurological Surgeons Meeting, Philadelphia, Pennsylvania, September 22, 2002.
222. Bucholz R, Intraoperative Correction of Brain Shift Using Ultrasonography, Lecture, Japan Neurosurgical Society, Matsumoto, Japan, October 3, 2002.
223. Bucholz R, Intraoperative Networking and Surgical Device Control, Lecture, Japan Neurosurgical Society, Matsumoto, Japan, October 3, 2002.
224. Bucholz R, 3D Computer Assisted 3D Guidance for Neuroradiological Applications, Lecture, Cardiovascular and Interventional

Radiological Society of Europe Meeting, Lucerne, Switzerland, October 6, 2002.

225. Bucholz R, Use of Intraoperative MRI, Presentation, American College of Surgeons, San Francisco, CA, October 7, 2002.
226. Bucholz R, Image-Guided Surgery: From Technology to Patient Care, Panelist, American College of Surgeons, San Francisco, CA, October 7, 2002.
227. Bucholz R, History and Evolution, Advances in Image-Guided Neurosurgery, Advanced Techniques in Image-Guided Brain and Spine Surgery, An Intensive Review and Hands-On Practical Course, New York, New York, December 7, 2002.
228. Bucholz R, Cranial Navigation, Case Discussions with the Experts, Advanced Techniques in Image-Guided Brain and Spine Surgery, An Intensive Review and Hands-On Practical Course, New York, New York, December 7, 2002.
229. Bucholz R, Cranial and Spinal Image-Guided, Faculty, Advances in Image-Guided Neurosurgery, Advanced Techniques in Image-Guided Brain and Spine Surgery, An Intensive Review and Hands-On Practical Course, New York, New York, December 7, 2002.
230. Bucholz R, Historical review and current state of computer assisted surgery around the head, Key-Note Speaker, CAS-H Symposium, Interlaaken, Switzerland, February 28, 2003.
231. Bucholz R, L.P. Nolte, Computer Aided surgery around the head – Today and Tomorrow, Panel Discussion, Computer Aided Surgery Around the Head, Interlaaken, Switzerland, March 1, 2003.
232. Bucholz R, Creating Dynamic PowerPoint Presentations Using Video, Co-Director, American Association of Neurological Surgeons, San Diego, California, April 27, 2003.
233. Bucholz R, Image Guided Cranial and Intraoperative MRI, Faculty, American Association of Neurological Surgeons, San Diego, California, April 27, 2003.
234. Bucholz R, Advanced Techniques and Complications for Stereotactic Resection of Intracranial Lesions, Moderator, American Association of Neurological Surgeons, San Diego, California, April 28, 2003.

235. Bucholz R, Current Technologies and Applications for Frameless Cranial Stereotaxis, Panelist, American Association of Neurological Surgeons, San Diego, California, May 1, 2003.
236. Bucholz R, Past, Present and Future of Neuronavigation, BEKS-Lecture, Amsterdam, The Netherlands, April 25, 2003.
237. Bucholz R, Utilizing MEG in Neurosurgery, Clinical Indications and Uses for Magnetoencephalography, Dallas, Texas, May 9, 2003.
238. Bucholz R, Image Guided Surgery, Workshop Chair, American Society for Stereotactic and Functional Neurosurgery, New York City, NY, May 18, 2003.
239. Bucholz R, Where is Image Guidance Taking Us?, Keynote Lecture, American Society for Stereotactic and Functional Neurosurgery, New York City, NY, May 20, 2003.
240. Bucholz R, Update on Cranial Image Guided Surgery, Honored Guest Speaker, Georgia Neurological Society Spring Meeting, Sea Island, Georgia, May 24, 2003.
241. Bucholz R, Options for Intraoperative Imaging, Honored Guest Speaker, Georgia Neurological Society Spring Meeting, Sea Island, Georgia, May 25, 2003.
242. Bucholz R, Computer Assisted Neurosurgery, Chairperson, Computer Assisted Radiology and Surgery 2003, London, UK, June 27, 2003.
241. Bucholz R, The Operating Room of the Future, Congress of Neurological Surgeons Annual Meeting, Denver, CO, October 18-23, 2003.
242. Bucholz R, Magnetoencephalography, Guest Speaker, Riley Hospital for Children, Indianapolis, IN, October 30, 2003.
243. Bucholz R, Definition of Clinical Objectives for Validation and Corresponding Quantitative Criteria, MICCAI 2003, Montreal, Canada, November 15-18, 2003.
244. Bucholz R, Device Index for the OR, OR2020 Workshop, Washington, DC, March 18-20, 2004.
245. Bucholz R, Seminar Moderator, Wireless Medical Record Imaging, American Association of Neurological Surgeons, Orlando, Florida, May 1-6, 2004.

246. Bucholz R, Session Chair, Computer Assisted Neurosurgery, Computer Assisted Radiology and Surgery, Chicago, Illinois, June 26, 2004.
247. Bucholz R, Guest Speaker, Advances in the Diagnosis and Treatment of Epilepsy, Hackensack University Medical Center, Hackensack, New Jersey, May 15, 2005.
248. Bucholz R, Session Chair, Computer Assisted Neurosurgery, Computer Assisted Radiology and Surgery, Berlin, Germany, June 25, 2005.
249. Bucholz R, Plenary Session Presentation, Choosing Among the Options for Intraoperative Imaging in Cranial Surgery, 4<sup>th</sup> Congress of the Croatian Neurosurgical Society Meeting, Zagreb, Croatia, November 11, 2005.
250. Bucholz R, Session Chair, Intraaxial and Extraaxial Lesions Affecting the Functions of the Brain Stem, 4<sup>th</sup> Congress of the Croatian Neurosurgical Society Meeting, Zagreb, Croatia, November 11, 2005.
251. Bucholz R, Invited Speaker, Choosing Among the Options for Intraoperative Imaging in Cranial Surgery, 4<sup>th</sup> Congress of the Croatian Neurosurgical Society Meeting, Zagreb, Croatia, November 11, 2005.
252. Bucholz R, Invited Speaker, Past, present and Future in Neuronavigation, Theoretical Practical Navigation Course, Monterrey, Mexico, April 4, 2006.
253. Bucholz R, Invited speaker, Experience clinical applications in cranial Stealth Navigation System, Theoretical Practical Navigation Course, Monterrey, Mexico, April 4, 2006.
254. Bucholz R, Session Chair, History of Radiosurgery and Efficacy Within the Cranium, American College of Surgeons Meeting, Chicago, Illinois, October 9, 2006.
255. Bucholz R, Invited Speaker, Sharing Hope: A Meeting for Patients/Survivors, Families, American Brain Tumor Association, October 13-14, 2006.
256. Bucholz R, Invited Speaker, Use of the PoleStar iMRI in the Management of Malignant Glioma, PoleStar Users' Meeting, Boulder, CO, March 8, 2007.
257. Bucholz, R, Invited Speaker, CyberKnife Protocol Development, Robotic Radiosurgery Course, Chicago, IL, March 17, 2007.

258. Bucholz, R, Invited Speaker, New Dimensions in Neurosurgery: The Role of Volumetric Interactive 3D in Education, Planning and Navigation, American Association of Neurological Surgeons, Washington, DC, April 14-19, 2007.
259. Bucholz, R, Invited Speaker, CyberKnife Treatment of Metastatic Brain Tumors, American Association of Neurological Surgeons, Washington, DC, April 14-19, 2007.
260. Bucholz, R, Invited Speaker, Emerging Technology for CARS, Computer Assisted Radiology and Surgery, Berlin, Germany, June 29, 2007.
261. Bucholz, R, Invited Speaker, Experience with DexVue: A Hybrid Surgical Planning, Simulation and Navigation System, International Brain Mapping and Intraoperative Imaging Society, Washington, DC, September 6-8, 2007.
262. Bucholz, R, Invited Speaker, CyberKnife Treatment of Metastatic Brain Tumors, West Coast Robotic Radiosurgery Course, Las Vegas, NV, October 5, 2007.
263. Bucholz, R, Invited Speaker, Past, Present and Future of Image Guided Neurosurgery, Latin American Neurosurgery Conference, Guadalajara, Mexico, October 24, 2007.
264. Bucholz, R, Invited Speaker, Problem Patients and the Polestar N20: Lateral Solutions, Polestar Users' Meeting, Lake Tahoe, NV, February 20-21, 2008.
265. Bucholz, R, Invited Speaker, CyberKnife Treatment of Metastatic Brain Tumors, East Coast Robotic Radiosurgery Course, Boston, MA, April 11-12, 2008.
266. Bucholz, R, Chair, Neurosurgical Session, Computer Assisted Radiology and Surgery, Barcelona, Spain, June 26, 2008.
267. Bucholz, R, Session Chair and Invited Speaker, PSFM Roundtable, 4-D Neuroimaging 3<sup>rd</sup> Annual International Users Group Meeting, Barcelona, Spain, July 14, 2008.
268. Bucholz, R, Invited Speaker, Introduction to the CyberKnife, Cape Girardeau, MO, September 3, 2008.
269. Bucholz, R, Invited Speaker, Intra-Operative Networking: A Solution for Managing the Chaos, Advanced Surgical Suites and operating Room Technology, Chicago, IL, September 17-19, 2008.

270. Bucholz, R, Invited Speaker, Innovative Cancer Treatment: Wholebody Radiosurgery with the CyberKnife, St. Elizabeth Regional Medical Center, Lincoln, NE, March 11, 2009.
271. Bucholz, R., Invited Speaker, CyberKnife Treatment for Metastatic Disease, Spring Robotic Radiosurgery Course, Chicago, IL May 2, 2009.
272. Bucholz, R., Invited Speaker, CyberKnife Treatment for Acoustic Neuromas, St. Mary's Hospital, Saginaw, MI, May 13, 2009.
273. Bucholz, R., Invited Speaker, Intraoperative Networking and System Control, 2<sup>nd</sup> Annual Meeting of the IntraOperative Imaging Society, Istanbul, Turkey, June 12-18, 2009.
274. Bucholz, R., Plenary Speaker, Frontiers in Image Guided Surgery, MEXCAS 2009, National Institute for Neurology and Neurosurgery, Mexico City, Mexico, September 18-19, 2009.
275. Bucholz, R., Plenary Speaker, Discovery and Innovation in Health IT, National Science Foundation, San Francisco, CA, October 29-30, 2009.
276. Bucholz, R., Invited Speaker, Intra-Operative Networking: A Solution for Managing the Chaos, Advanced Surgical Suites & Operating Room Technology, San Diego, CA, November 10-11, 2009.
277. Bucholz, R, Bailey, J, McDurmont L: Invited Speaker, Standards and Optimization of Health Delivery, AFMS Medical Research Symposium, Arlington, VA, August 24, 2010.
278. Bucholz, R: Invited Speaker, O Arm for DBS Lead Placement, 3<sup>rd</sup> Meeting of the Intraoperative Imaging Society, Zurich, Switzerland, January 16-19, 2011.
279. Bucholz, R: Invited Speaker, The Human Connectome Project, 3<sup>rd</sup> Meeting of the Intraoperative Imaging Society, Zurich, Switzerland, January 16-19, 2011.
280. Bucholz, R: Invited Speaker, CyberKnife Stereotactic Radiosurgery for Intracranial Neoplasm, The Sarah Cannon Cancer Center, Nashville, TN, January 31, 2011.
281. Bucholz, R: Invited Speaker, Bringing a New Device to Market: Stealthy Lessons Learned, American Association of Neurological Surgeons Annual Meeting, Denver, CO, April 11, 2011.

282. Bucholz, R: Invited Speaker, Intraoperative Imaging for DBS Lead Placement, IMRIS Neurosurgery Users Meeting, St. Louis, MO, June 28, 2011.

## II. Poster Presentations

1. Bucholz R, Yoon K, Shively R: Separation of Craniopagus Twins With Shared Brain. American Association of Neurological Surgeons, Atlanta, Georgia, April 21-25, 1985.
2. Bucholz R, Stewart W: The Effect of Decadron, Indomethacin, Hypercarbia and Metabolic Acidosis on Spinal Cord Blood Flow Following Spinal Cord Injury. American Association of Neurological Surgeons, Denver, Colorado, April 13-17, 1986.
3. Bucholz R, and Sheehan P: Absorbance of Cerebrospinal Fluid in Long Term Infusion. American Association of Neurological Surgeons, Denver, Colorado, April 13-17, 1986.
4. Bucholz R, Cheung K: A Comparative Study of Cervical Spine Injuries Treated with Halo Vest or Spinal Fusion. American Association of Neurological Surgeons, Dallas, Texas, May 3-7, 1987.
5. Bucholz R, Backer R, and Akbarnia B: Transthoracic Decompression and Short Fusion for Spinal Cord Injuries: Long Term Outcome Study. Joint Section on Disorder of the Spine and Peripheral Nerves of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons, Cancun, Mexico, February 11-15, 1989.
6. Backer R, Bucholz R: Transcranial Doppler Ultrasound Recording After Closed Head Injury: Diagnosis and Evaluation of Post-Traumatic Vasospasm. American Association of Neurological Surgeons, Washington, D.C., April 2-3, 1989.
7. Bucholz R: Modified Transsigmoid Subtemporal Retrolabyrinthine Approach to Lesions of the Lateral Mesencephalon. Congress of Neurological Surgeons, Atlanta, Georgia, October 28-November 2, 1989.
8. Kraus G, Bucholz R: Spinal Cord Arteriovenous Malformation with an Associated Lymphatic Anomaly. Joint Section on Disorders of the Spine and Peripheral Nerves of the American Association of Neurological Surgeons and Congress of Neurological Surgeons, Captiva Island, Florida, February 7-11, 1990.

9. Bucholz R, Pittman T: Endoscopic Coagulation of the Choroid Plexus with YAG Laser. American Association of Neurological Surgeons, Nashville, Tennessee, April 27-May 3, 1990.
10. Kraus G, Bucholz R, Yoon P, Knuepfer M, Smith K: Endothelin: Its Potential Role in Cerebral Vasospasm (A Clinical Study and Literature Review). American Association of Neurological Surgeons, Nashville, Tennessee, April 28-May 3, 1990.
11. Bucholz R, Benecke J, Kraus G: Transsigmoid Retrolabyrinthine Approach to Aneurysms of the Posterior Fossa. North American Skull Base Society, Orlando, Florida, February 27-March 3, 1991.
12. Bucholz R, Benecke J, Kraus G: Transsigmoid Retrolabyrinthine Approach to Aneurysms of the Posterior Fossa. American Association of Neurological Surgeons, New Orleans, Louisiana, April 19-26, 1991.
13. Bucholz R, Ho H: The Effect of Computed Tomographic Scan Thickness and Spacing on Stereotactic Accuracy. American Association of Neurological Surgeons, New Orleans, Louisiana, April 19-26, 1991.
14. Bucholz R, Kraus G, Bucholz K: A Retrospective Epidemiological Study of Infections of Ventriculostomies and Fiberoptic Intracranial Pressure Monitors. American Association of Neurological Surgeons, New Orleans, Louisiana, April 19-26, 1991.
15. Ahuja SD, Bucholz RD, Roy TS, Raju PI, Dawson JE: Verification of Target Localization on a Modified BRW Floor Stand for Radiosurgery. American Association of Physicists in Medicine, San Francisco, California, July 21-25, 1991.
16. Bucholz R, Ahuja SD, Roy TS, Raju PI, Dawson JE: Localization Accuracy of a Modified BRW Floor Stand for Using Radiosurgery with a Medical Accelerator. Congress of Neurological Surgeons Meeting, Orlando, Florida, October 26-31, 1991.
17. Bucholz R, Heilbrun P, McDurmont L: Use of an Intraoperative Optical Digitizer in a System for Free-Hand Stereotactic Surgery. American Association of Neurological Surgeons Meeting, San Francisco, California, April 11-16, 1992.
18. Henderson J, Bucholz RD: A Method for Frameless Stereotactic Surgery Utilizing Forehead Contour Matching. European Society for Stereotactic and Functional Neurosurgery 10th Congress, Stockholm, Sweden, September 2-5, 1992.

19. Henderson J, Bucholz RD: A Method for Frameless Stereotactic Surgery Utilizing Forehead Contour Matching. Congress of Neurological Surgeons, Washington, D.C., October 31 - November 5, 1992.
20. Bucholz RD, McDurmont L, Smith K, Heilbrun P: Use of an Intraoperative Optical Digitizer in a System for Free-Hand Stereotactic Surgery. Congress of Neurological Surgeons, Washington, D.C., October 31 - November 5, 1992.
21. Fletcher JW, Bera RK, Wittry MD, McDurmont L, Yost P, Hendershott LR, Gentilcore R, Phegley D, Bucholz R, Littlefield JL: Saint Louis University/St. Louis VA PET Imaging Center. Fourth Annual Meeting of the Institute for Clinical PET, Washington, D.C., October 5-8, 1992.
22. Bucholz RD, Gallen CC, Orrison Jr. WW, Hirschkoff EC, McDurmont L: Correlation of Magnetoencephalography and Intraoperative Somatosensory Evoked Responses Using a Three-Dimensional Optical Digitizer. American Association of Neurological Surgeons, Boston, Massachusetts, April 24-29, 1993.
23. Gallen CC, Bucholz R, Sobel DF, Schwartz BJ, Hirschkoff EC: Use of Functional Imaging to Guide Tumor Resections Near Eloquent Cortex. ASNR, May 16-20, 1993.
24. Bucholz RD, Baumann CK, Murphy J, and Smith KR: Frameless Image Guided Surgery Utilizing Position Emission Tomography. Congress of Neurological Surgeons, Vancouver, British Columbia, October 2-7, 1993.
25. Bucholz RD, McDurmont L, Baumann CK, and Smith KR: Frameless Image Guided Surgery Utilizing an Optical Digitizer. Congress of Neurological Surgeons, Vancouver, British Columbia, October 2-7, 1993, Awarded First Place.
26. Henderson J, and Bucholz RD: An Accurate and Ergonomic Method of Registration for Image-Guided Neurosurgery. Congress of Neurological Surgeons, Vancouver, British Columbia, October 2-7, 1993.
27. Gallen CC, Bucholz RD, Assam S, Bruno L, Yamada S, Copeland B, Tung H, Sobel DF, Schwartz BJ, Hirschkoff EC, Fick J, and Wilson CB: Pre-Surgical Mapping of Motor and Somatosensory Cortex Via Magnetoencephalographic/MRI/MRA Source Imaging. Congress of Neurological Surgeons, Vancouver, British Columbia, October 2-7, 1993.

28. Bucholz RD, Smith KR, Baumann CK, McDurmont L, and Schulz D: Intraoperative Localization with an Optical Digitizer. The World Society for Stereotactic and Functional Neurosurgery, Ixtapa, Mexico, October 11-15, 1993.
29. Gomez CR, Malkoff MD, Bucholz RD: Life Threatening Cerebral Edema Following Biopsy for Idiopathic Hypertrophic Cranial Pachymeningitis. American Society of Neuroimaging, Beverly Hills, California, February 22-26, 1994.
30. Malkoff MD, Bucholz RD, Gomez CR, Myles GL: Barbiturate Coma as Salvage Therapy in Aneurysmal Subarachnoid Hemorrhage. American Association of Neurological Surgeons, San Diego, California, April 11-13, 1994.
31. Bucholz RD, McDurmont LL Jr, Baumann CK: Use of Image-Guided Frameless Stereotaxis During Epilepsy Surgery. American Association of Neurological Surgeons, San Diego, California, April 11-13, 1994.
32. Bucholz, RD, McDurmont LL Jr, Baumann CK, Smith KR and Frank KJ: A System for the Application of Scalp Markers for Image-Guided Surgery. American Association of Neurological Surgeons, San Diego, California, April 11-13, 1994.
33. Lewine JH, Orrison WW, Baldwin NG, Bucholz RD, Davis JT, and Astur RS: Event-Related Magnetic Fields and Neurosurgical Practice. American Society of Neuroradiology, Nashville, Tennessee, May 1, 1994.
34. Bucholz RD, Baumann CK, Smith KR, McDurmont LL: An Optically Tracked Operative Microscope and Heads-Up Display Utilized in Image-Guided Surgery. Congress of Neurological Surgeons, Chicago, Illinois, October 3-5, 1994.
35. Bucholz RD, Murphy JD, Henderson JM, Perman W: Improvement of Localization Accuracy by Alternation of Phase and Frequency Encoding in MR Imaging-Directed Radiosurgery. Congress of Neurological Surgeons Meeting, Chicago, Illinois, October 3-5, 1994.
36. Bucholz RD, Greco D, Frank K, Smith KR: Factors Affecting the Accuracy of Image Guided Surgery Using Scalp Mounted Fiducials. Congress of Neurological Surgeons, Chicago, Illinois, October 3-5, 1994.

37. Baldwin NG, Lewine JD, Bucholz RD, Sanders JA, Shin J, Orrison WW Jr: Accuracy of sensorimotor cortex mapping by magnetic source imaging: Validation by comparison with intraoperative electrocorticography. Congress of Neurological Surgeons, Chicago, Illinois, October 3-5, 1994.
38. Henderson JM, Bernardi RJ, Foley KT, Bucholz RD: Image Guided Placement of Lateral Mass Screws for Cervical Spine Instrumentation. American Association of Neurosurgeons, Orlando, Florida, April 24-26, 1995.
39. Bucholz RD, Henderson JM, McDurmont LL, Baumann CK: A System for Remote Intraoperative Surgical Consultation Using an Image Guided Surgical Workstation. American Association of Neurological Surgeons, Orlando, Florida, April 24-26, 1995.
40. Bucholz RD, Henderson JM, Smith KR, McDurmont LL, Baumann CK: Decrease Length and Cost of Hospital Stay for Patients Undergoing Craniotomy with an Optical Surgical Localization Device. American Association of Neurological Surgeons, Orlando, Florida, April 24-26, 1995.
41. Bucholz RD, Henderson JM, McDurmont LL, Frank KJ, Smith KR: A system for remote intraoperative surgical consultation using an image-guided surgical workstation. The American Association of Neurological Surgeons, Orlando, Florida, April 22-27, 1995.
42. Foley KM, Bucholz RD, Smith Robertson JH: Spinal Stereotactic Surgery. American Association of Neurological Surgeons, Orlando, Florida, April 24, 1995.
43. Bucholz RD, Sturm CD, Henderson JH: Image guided ventriculoscopic third ventriculography for functional neurosurgical procedures. American Association of Neurological Surgeons, Minneapolis, Minnesota, April 30, 1996.
44. Bucholz RD, Sturm CD, Henderson JH: The living atlas: Integration of intraoperative position and neuroscience. American Association of Neurological Surgeons, Minneapolis, Minnesota, April 30, 1996.
45. Sturm CD, Bucholz RD, Henderson JM, McDurmont LL: Improvement in the safety of ventro-lateral pallidotomy using image guided endoscopy. European Society for Stereotactic and Functional Neurosurgery, Milan, Italy, June 12, 1996.
46. Bucholz RD, Yeh DD, Sturm CD, McDurmont LL, Baumann C, Henderson JM: Correcting Stereotactic Inaccuracy Caused by

- Brain Shift. Poster presentation at the 1997 American Association of Neurological Surgeons Annual Meeting, Denver, Colorado, April 12-17, 1997.
47. Bucholz RD, Henderson JM, Macneil WR: Anatomical Surface Contour Utilization for Improving Efficiency of Point Registration in Stereotactic Neurosurgery. Poster presentation at the 1997 American Association of Neurological Surgeons Annual Meeting, Denver, Colorado, April 12-17, 1997.
  48. Bucholz RD, Christensen G, Joshi S, Miller MI, Levy A, Smith KR: A Patient-Specific Deformable Atlas with Integration into a Surgical Navigation System. American Association of Neurological Surgeons, Denver, Colorado, April 12-17, 1997.
  49. Bucholz RD, Levy AL, Hammoud AM, Mark KE, Joshi S, Miller MI, Smith KR: An Internet-Connected, Patient-Specific, Deformable Brain Atlas Integrated into a Surgical Navigation System. Computer Assisted Radiology/Surgery 1997, Berlin, Germany, June 25-28, 1997.
  50. Bucholz RD, Sturm CS, Smith KR, Smith KR, McDurmont LL: An Online Deformable Atlas of Microsurgery for Use in Image-Guided Skull-Base Surgery. Poster presentation at the 1998 American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 25-30, 1998.
  51. Bucholz RD, Levy AL, Marzouk S, Hammoud A, Bucholz RD, Levy AL, Marzouk S, Henderson JM: A Patient Specific Deformable Brain Atlas Accounting for Structural Variability Between Individual Patients. Poster presentation at the 1998 American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 25-30, 1998.
  52. Bucholz RD, Levy AL, Mark K, Baumann, C: An Internet-Based World Wide Web Server of the Three Dimensional Imaging. Poster presentation at the 1998 American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 25-30, 1998.
  53. Bucholz RD, Levy AL, Marzouk S, Schaewe, T, Miller M: The Determination of an Ideal Pallidotomy Target by the Incorporation of Intraoperative Physiological Recordings Deformed Into a Patient-Specific Brain Atlas. Poster presentation at the 1998 American Association of Neurological Surgeons, Philadelphia, Pennsylvania, April 25-30, 1998.

54. Levy AL, Bucholz RD, Schaewe TJ, Miller MI, Smith KR: An Internet-Connected, Patient-Specific, Deformable Brain Atlas Integrated into a Surgical Navigation System. Poster presentation at SCAR 97, the 14th Symposium for Computer Applications in Radiology, Rochester, Minnesota, June 21-24, 1997.
55. Fewings PE, Henderson JM, Bucholz RD, Mark KE: A Deformable, Patient-Specific, Physiologically Based Brain Atlas for Functional Neurosurgery. Oral Poster presentation at CNS 99, Congress of Neurological Surgeons 49<sup>th</sup> Annual Meeting, Boston, Massachusetts, October 30 - November 4, 1999.
56. Kao CC, Youkilis A, Masel D, Boyce H, Alexander M, Bucholz R, Konrad P: The Quantification of Disease Progression Using the RMS Ratio of STN/SN Neuronal Activities in Advanced Parkinson's Patients. Poster presentation at ASSFN 2010 Biennial Meeting, New York, NY, June 13-16, 2010.
57. Bailey JA, O'Connell V, McDurmont L, Macneil WR, Laycock KA, Cuff L, Bucholz RD: SurgON: A Proposal to Enable Expeditionary Medicine, Trauma, and Enroute Care (EMTEC). Poster presentation at Advanced Technology Applications for Combat Casualty Care (ATACCC), St. Pete Beach, FL, August 17-18, 2010.
58. Bucholz RD: An Integrated Surgical Communication Network – SurgON. Poster presentation at Medicine Meets Virtual Reality 18, Newport Beach, CA, February 8-12, 2011.

**Patents:**

"System for Indicating the Position of a Surgical Probe within a Head on an Image of the Head."  
U.S. patent #5,383,454, January 1995.

"Ventriculostomy Probe." U.S. patent #387,429, December 1997.

"System for Indicating the Position of a Surgical Probe within a Head on an Image of the Head."  
U.S. patent #5,851,183, December 1998.

"System for Indicating the Position of a Surgical Probe within a Head on an Image of the Head."  
U.S. patent #5,871,445, February 1999.

"System for Indicating the Position of a Surgical Probe within a Head on an Image of the Head."  
U.S. patent #5,891,034, April 1999.

“Method and Apparatus for Producing and Accessing Composite Data.” U.S. Patent #5,970,499, October 1999.

“Indicating the Position of a Surgical Probe.” European patent #99124254.6-2310, February 2000.

“Drill Guide.” U.S. patent #420,132, February 2000.

“Biopsy Guide Tube.” U.S. Patent #422,706, April 2000.

“System for Indicating the Position of a Surgical Probe Within a Head on an Image of the Head.” U.S. Patent #6,076,008, June 2000.

“Instrument Guidance for Stereotactic Surgery.” U.S. Patent #6,298,262, October 2, 2001.

“System and Method for Use in Displaying Images of a Body Part.” U.S. Patent #6,347,240, February 12, 2002.

“System for Indicating the Position of a Surgical Probe Within a Head on an Image of the Head.” U.S. Patent #6,374,135, April 16, 2002.

“Surgical Navigation Systems Including Reference and Localization Frames.” U.S. Patent #6,236,875, May 22, 2001.

"Surgical Probe Locating System for Head Use." Pending in Canada, Sweden, European patent Office (EPO).

“System for Use in Displaying Images of a Body Part.” U.S. Patent #6,434,415B1, August 13, 2002.

“System for Indicating the Position of a Surgical Probe Within a Head on an Image of the Head.” U.S. Patent #6,463,319B1, October 8, 2002.

“Surgical Navigation Systems Including Reference and Localization Frames.” U.S. Patent #6,490,467B1, December 3, 2002.

“Instrument Guidance Method and System for Image Guided Surgery.” U.S. Patent #6,491,699B1, December 10, 2002.

“Method and Apparatus for Producing and Accessing Composite Date.” U.S. Patent #6,526,415B2, February 25, 2003.

“System for Determining the Position in a Scan Image Corresponding to the Position of an Imaging Probe.” U.S. Patent #6,678,545, January 13, 2004.

“System Combining Proton Beam Irradiation and Magnetic Resonance Imaging.” U.S. Patent #6,725,078, April 20, 2004.

“Method for Combining Proton Beam Irradiation and Magnetic Resonance Imaging.” U.S. Patent #6,862,469, March 1, 2005.

“Networking Infrastructure for an Operating Room.” U.S. Patent #6,928,490, August 9, 2005.

“System for Use in Displaying Images of a Body Part.” U.S. Patent #6,978,166, December 20, 2005.

“System for Indicating the Position of a Surgical Probe Within a Head on an Image of the Head.” U.S. Patent #7,072,704, July 4, 2006.

“Surgical Navigation Systems Including Reference and Localization Frames.” U.S. Patent #7,139,601, November 21, 2006.

“Instrument Guidance Method and System for Image Guided Surgery.” U.S. Patent #7,217,276, May 15, 2007.

“Instrument Guide System.” U.S. Patent #7,776,056, August 17, 2010.

**SPECIAL INTERESTS:**

1. Application of intraoperative ultrasonography to correct distortions in preoperative data sets.
2. Application of computer technology in neurosurgical procedures and postoperative patient monitoring.
3. In-line skating.
4. Personal computers.