

## **Kyle Derek Weaver, M.D.**

Assistant Professor of Neurological Surgery  
Vanderbilt University Medical Center  
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### **Professional Experience**

Assistant Professor of Neurological Surgery  
Vanderbilt University Medical Center  
Nashville, Tennessee  
July 2004 - Present

### **Education**

Fellowship in Neuro-Oncology  
Johns Hopkins University School of Medicine  
Baltimore, Maryland  
July, 2002-June, 2004

Residency in Neurosurgery  
Division of Neurosurgery  
University of North Carolina School of Medicine  
Chapel Hill, North Carolina  
June, 1997-June, 2002

Internship in General Surgery  
Department of Surgery  
University of North Carolina School of Medicine  
Chapel Hill, North Carolina  
June, 1996-June, 1997

University of North Carolina School of Medicine  
Chapel Hill, North Carolina  
M.D. with Highest Honors  
August, 1991-May, 1996

Continuing Education Program  
Wake Forest University  
Winston-Salem, North Carolina  
June, 1989-May, 1990

Graduate Program in Neurosciences  
Florida State University  
Tallahassee, Florida  
August, 1988-May, 1989

Duke University  
Durham, North Carolina  
B.S. in Psychology  
August, 1984-May, 1988

Diplomate, American Board of Neurological Surgery 2007

### **Honors and Awards**

Resident Teaching Award, Department of Neurological Surgery Vanderbilt University Medical Center, 2011

Congress of Neurological Surgeons/American Association of Neurological Surgeons Section on Tumors Young Investigator Award, 2011

American Society of Clinical Oncology Merit Award, 2004

Medical Alumni Endowment Grant, 1998, 2000

Herbert Jennings Proctor Award, 1998

University of North Carolina School of Medicine Merit Awards, 1993, 1994, 1996

Michiko Kuhino Award, 1996

John B. Graham Student Research Society, 1995

Scott Neil Schwirck Fellowship, 1995

Holderness Medical Fellowship, 1995

Distinguished Medical Scholars Program, 1994-

National Institutes of Health Summer Research Fellowship, 1994

Cancer Education Program Summer Fellowship, 1993

Alpha Omega Alpha, 1995

### **Activities**

Bullitt History of Medicine Club, 1993-6

Triangle Hospice, 1993-1996

UNC School of Medicine Honor Court, 1992-1996

Medical Orientation and Community Orientation (MECO) Project, 1992

American Medical Association Medical Student Section, UNC Chapter, 1991-1996, Vice-President 1992-1993

North Carolina Medical Society Medical Student Section, UNC Chapter, 1991-1996, Vice-President 1992-1993

Student Health Action Committee (SHAC) Clinic, 1991-1992

Volunteers for Youth, 1991-1992

Hospice of Forsyth County, 1989-1990

Forsyth County Adult Literacy Program, 1989-1990

Duke Tridevils Triathlon Club, 1986-1988, President, 1987-1988

### **Publications**

Xu BJ, An QA, Srinivasa GS, Yan W, Pierce LA, Abel TW, Rush SZ, Cooper MK, Ye F, Shyr Y, **Weaver KD**, Thompson RC. Identification of Blood Protein Biomarkers That Aid in the Clinical Assessment of Patients with Malignant Glioma. *International Journal of Oncology* 2012 February.

Forbes JA, Wilkerson J, Chambless L, Shay SD, Elswick CM, Abblitt PW, Adogwa O, Russell P, **Weaver KD**, Allen GS, Utz AL. Safety and Cost Effectiveness of Early Discharge Following Microscopic Trans-Sphenoidal Resectin of Pituitary Lesions. *Surg Neurol Int.* 2011 May; 2:66.

Chambless LB, Angel FB, Abel TW, Xia F. **Weaver KD**. Delayed Cerebral Radiation Necrosis Following Treatment for a Plasmacytoma of the Skull. *Surg Neurol Int.* 2010 October; 1:65.

Floyd, JR., Cmelak, A., Russell, P., **Weaver, KD**. Endoscopic, Image-Guided, Transnasal Instillation of (32)P for Recurrent Infrachiasmatic Cystic Craniopharyngioma. *Minim Invasive Neurosurg*. 2009 June; 52 (3):137-40.

Reddy N, Abel TW, Jagasia M, Morgan D, **Weaver K**, Greer J. Progressive Multifocal Leukencephalopathy in a Patient with Follicular Lymphoma Treated with Multiple Courses of Rituximab. *Leuk Lymphoma*. 2009 Mar;50(3):323-4.

Palka KT, Lebow RL, **Weaver KD**, Kressin MK. Intracranial collision metastases of small-cell lung cancer and malignant melanoma. *J Clin Oncol*. 2008 Apr 20;26(12):2042-6.

Russell PT, **Weaver KD**. Anterior endoscopic skull-base surgery getting started: an otolaryngologist's perspective. *Curr Opin Otolaryngology Head Neck Surg*. 2007 Feb; 15(1):1-5.

Becher MW, Abel TW, Thompson RC, **Weaver KD**, Davis LE. Immunohistochemical analysis of metastatic neoplasms of the central nervous system. *Journal of neuropathology and experimental neurology*. 2006 Oct; 65(10):935-44.

**Weaver, K.D.**, Grossman, S.A., Herman, J.G. Methylated Tumor-specific DNA as a Plasma Biomarker in Patients with Glioma. *Cancer Investigation*. 2006 Feb; 24 (1):35-40

Sinha, T.K., Dawant, B.M., Duay, V., Cash, D.M., Weil, R.J., Thompson, R.C., **Weaver, K.D.**, Miga, M.I. A Method to Track Cortical Surface Deformations Using a Laser Range Scanner. *IEEE Transactions on Medical Imaging* 2005 24 (6): 767-781.

**Weaver, K.D.**, Huang, J., Tamargo, R.J., Bernard, Jr., E.J. Preoperative Localization of the Carotid Bifurcation for Carotid Endarterectomy Using Magnetic Resonance Angiography Without Tomography. *Neurosurgery* 2004 55 (5):1227.

Ewend, M.G., **Weaver, K.D.**, Castillo, M. Meningeal Sarcomas in Winn R., ed. *Youman's Textbook of Neurological Surgery*, ed. 3, 2003.

**Weaver, K.D.**, Ewend, M.G., Solander, S. Successful Transarterial Guglielmi Detachable Coil Embolization of Post-Traumatic Posterior Communicating Artery-Cavernous Sinus Fistula. *Neurosurgery* 2003 52 (2):458-461.

**Weaver, K.D.**, Yeyeodu, S., Cusack, Jr., J.C., Baldwin, Jr., A.S., Ewend, M.G. Potentiation of Chemotherapeutic Agents Targeted Against Human Gliomas Following Antagonism of Nuclear Factor Kappa B. *Journal of Neurooncology* 2003; 61(3) 187-196.

**Weaver, K.D.**, Bullitt, E.B. Parasitic Infections of the Central Nervous System. In Batjer, H., and Loftus, C., eds. *Textbook of Neurological Surgery*. ed.1, 2002.

**Weaver, K.D.**, Wiseman, D.B., Farber, M., Ewend, M.G., William Marston, W., Keagy, B.A. Complications of Lumbar Drainage Following Thoracoabdominal Aortic Aneurysm Repair. *Journal of Vascular Surgery* 2001 Oct; 34 (4):623-7.

**Weaver, K.D.**, Branch, C.A., Hernandez, L., Miller, C.H., Sokolowski, K.A., Gudeman, S.K., and Quattrocchi, K.B. The Effect of Leukocyte-Endothelial Adhesion Antagonism on Neutrophil Migration and Neurological Outcome Following Cortical Trauma. *Journal of Trauma*. 2000 Jun; 48 (6) 1081-90.

**Weaver KD**, Ewend MG. Development of an arachnoid cyst after ventriculoperitoneal shunt placement. Case illustration. *Journal of Neurosurgery* 2000 Feb; 92 (2):363

**Weaver, K.D.**, Ewend, MG. Development of an Arachnoid Cyst Following Ventriculoperitoneal Shunting. *Journal of Neurosurgery*. 2000, 92:363.

**Weaver, K.D.**, Armao, D., Ewend, M.G. Histiocytic Lesion Mimicking Intrinsic Brainstem Neoplasm. Case Report. *Journal of Neurosurgery*. 1999;91 (6):1037-40.

**Weaver, K.D.**, Liles, E.A., Lowry T.E., Smith III, W.T., Cornwell L. Do Healthy Adults Need to Know Their Cholesterol Level? *North Carolina Medical Journal* 1996;57 (5):275-280.

## Comments

Brem, H., Weaver, K.D. in Nakamura M, Roser F, Michel J, Jacobs C, Samii M. The natural history of incidental meningiomas. *Neurosurgery*. 2003 53(1):62-70. comment p71.

Brem, H., Weaver, K.D. in Laws ER Jr, Morris AM, Maartens N. Gliadel for pituitary adenomas and craniopharyngiomas. *Neurosurgery*. 2003 53(2):255-69. comment p270.

## Presentations and Abstracts

Weaver, KD “Neurosurgical Management Tools for the Treatment of Brain Tumors” University of North Carolina Mountain Area Health Consortium Smith Memorial Conference, Platform presentation, Asheville, NC, May, 2009.

Weaver, KD. “ Implications of Neurosurgical Procedures on Speech and Language” Platform Presentation Tennessee Speech Pathology and Language Association Meeting, Nashville, TN, October, 2008.

Weaver, KD. “Head Injury” Vanderbilt University Department of Oral Maxillofacial Surgery Chief’s Lecture. Platform Presentation, September, 2008

Weaver , K.D. The Role of Epigenetics in the Development of Blood-Based Biomarkers for Malignant Glioma. Vanderbilt University Surgical Sciences Research Conference. Nashville, TN. April, 2008. Slide presentation.

Weaver, K.D. Minimally Invasive and Endoscopic Cranial Surgery. Tennessee Neurosurgical Society Meeting, Nashville, TN. August 2007. Platform presentation.

Weaver, K.D. Emerging Management Strategies for Low Grade Glioma. Meacham Society Meeting, Nashville, TN. October, 2007. Platform presentation.

Weaver, K.D., Pierce, L., Herman, J.G., Grossman, S. Real-Time Polymerase Chain Reaction Technique Determines Absolute Copy Number of Methylated MGMT Gene Promoter Copies in Plasma of Patients with Malignant Glioma. American Society of Clinical Oncology Meeting, April 2008. Abstract.

Weaver, K.D., Grossman, S.A., Herman, J.G, Identification of Hypermethylated Tumor-Specific DNA in Plasma of Patients with Glioma. Congress of Neurological Surgeons Meeting, San Francisco, CA. October, 2004. Platform presentation.

Weaver, K.D. Cancer Epigenetics: The Future of Diagnosis and Disease Surveillance in Malignant Glioma? Tennessee Neurosurgical Society Meeting, Nashville, Tn. September, 2004. Platform presentation.

Weaver, K.D., Grossman, S.A., Herman, J.G. Hypermethylated tumor-specific DNA as a serum biomarker in patients with glioma. American Society of Clinical Oncology Meeting, New Orleans, LA, June 2004. Poster presentation.

Weaver, K.D., Yohay, K., Haque, R., Johns, D., Tyler, B., Rothstein, J.D., Brem, H. Inducible Anti-Excitotoxic Adenoviral Gene Therapy Improves Survival in a Nude Mouse Intracranial Human Glioma Model. American Association of Neurological Surgeons Meeting, Orlando, Fl, May 2004. Platform presentation.  
Haque, R., Weaver, K.D., Yohay, K., Tyler, B., Zohar, Y., Rothstein, J.D., Brem, H. Antagonism of Brain-Tumor Mediated Excitotoxic Destruction and Invasion Using a Glutamate Release Inhibitor. American Association of Neurological Surgeons Meeting, Orlando, Fl, May 2004. Poster presentation.

Brem, H., Weaver, K. Targeting Brain Tumor Therapy. 7th US-Japan Symposium on Drug Delivery Systems. Maui, HI, December 2003. Plenary presentation.

Yohay, K., DeGroot, J., Eberhart, C., Weaver, K., Law, R., Rothstein, J. Aberrant EAAT2 Glutamate Transporter Expression in Human Gliomas. Society for Neuroscience Meeting, New Orleans, LA, November 2003. Poster presentation.

Weaver, K.D., Manning, J., Grossman, S.A., Herman, J.G. Promoter Hypermethylation Silencing of Tumor Suppressor Genes in Human Glioblastoma Multiforme. Society for Neuro-Oncology Meeting, Keystone, CO, November, 2003. Poster presentation.

Weaver, K.D., Yohay, K., Johns, D, Tyler, B., Rothstein, J.D., Brem H Reduction of Glutamate-Mediated Astrocyte Apoptosis Using Anti-Excitotoxic Adenoviral Gene Therapy. Society for Neuro-Oncology Meeting, Keystone, CO, November, 2003. Poster presentation.

Weaver, K.D., Yohay, K., Johns, D, Tyler, B., Rothstein, J.D., Brem H. Gene Therapy Utilizing an Inducible Potassium Channel Decreases *In Vitro* Glutamate-Mediated Human Glioma Migration. Congress of Neurological Surgeons, Denver, CO, October, 2003. Oral poster presentation.

Weaver, K.D., Yohay, K., Johns, D, Tyler, B., Rothstein, J.D., Brem, H. Viral Delivery of an Inducible Inward-Rectifying Potassium Channel Gene Protects Murine Astrocytes from Glutamate-Mediated Cell Death. Congress of Neurological Surgeons, Denver, CO, October, 2003. Oral poster presentation.

Weaver, K.D., Manning, J., Grossman, S.A., Herman, J.G. Tumor Suppressor Gene Silencing Secondary to Promoter Hypermethylation in Human Malignant Gliomas. Congress of Neurological Surgeons, Denver, CO, October, 2003. Poster presentation.

Haque, R., Weaver, K.D., Yohay, K., Tyler, B., Zohar, Y., Rothstein, J., Brem, H. Inhibition of Brain Tumor-Mediated Excitotoxic Destruction and Invasion Implementing a Glutamate Release Antagonist. American Neurological Association Meeting, San Francisco, CA, October 2003. Poster presentation.

Yohay, K., DeGroot, J., Weaver, K., Law, R., Eberhart, C., Rothstein, J. Glutamate Transporter Expression in Human Gliomas. American Neurological Association Meeting, San Francisco, CA, October 2003. Poster presentation.

Ewend, M.G., Yeyeodu, S., Huang, C-H., Weaver, K.D., McKinnon, K., Sills, A.K. Technical Hurdles to Developing Dendritic Cell Therapy for Gliomas. Society for Neuro-Oncology, San Diego, CA, November, 2002. Poster presentation.

de Groot, J.F., Yohay, K., Law, R., Weaver, K., Brem, H., Rothstein, J.D. Glutamate Transporters and Glioma Growth-Novel Approaches to CNS Chemotherapy. Society for Neurosciences, Orlando, FL, November, 2002, Poster presentation.

Weaver, K.D., Bernard, Jr., E.J. Preoperative Localization of the Carotid Bifurcation for Carotid Endarterectomy Using Magnetic Resonance Angiography Without Tomography. Southern Neurosurgical Society, Savannah, Georgia, March, 2002, Poster presentation.

Weaver, K.D., Fowler, III, W.C., Yeyeodu, S., Ewend, M.G. Nuclear Factor Kappa B Blockade by Mutant I $\kappa$ B $\alpha$  Potentiates Chemotherapeutic Efficacy in an *in vivo* Human Glioma Model. Congress of Neurological Surgeons, San Diego, CA, October, 2001. Platform presentation.

Weaver K.D., Fowler III, W.C., Yeyeodu, S., Ewend, M.G. Viral Delivery of a Mutant Inhibitor Gene Decreases Nuclear Factor Kappa B Activity in an *in vivo* Model of Human Gliomas. 14<sup>th</sup> International Conference on Brain Tumor Research and Therapeutics, Asheville, North Carolina, May, 2001, Platform presentation.

Long, J.D., Weaver K.D., Yeyeodu, S., Ewend, M.G. Increased Efficacy of Radiation Against *in vitro* Human Gliomas Following Antagonism of Nuclear Factor Kappa B. 14<sup>th</sup> International Conference on Brain Tumor Research and Therapeutics, Asheville, North Carolina, May, 2001, Poster presentation.

Weaver K.D., Fowler III, W.C., Yeyeodu, S., Ewend, M.G. Methylguanine Methyltransferase Inhibition by O<sup>6</sup>-Benzylguanine: The Role of p53 and Nuclear Factor Kappa B Status on BCNU-Induced Cell Death. American Association of Neurological Surgeons, Toronto, Ontario, April, 2001. Poster presentation.

Weaver, K.D., Yeyeodu, S., Cusack, J.C., Ewend, M.G. Potentiation of Chemotherapy Against U87 Glioblastoma by Gene Therapy Targeting Nuclear Factor Kappa B. American Association of Neurological Surgeons. San Francisco, CA, April, 2000. Platform presentation.

Weaver, K.D., Yeyeodu, S., Baldwin, Jr. A.S., Ewend, M.G. Increased Efficacy of Chemotherapy Against in Vitro Human Gliomas by Antagonism of Nuclear Factor Kappa B. Congress of Neurological Surgeons, Boston, MA. November, 1999. Oral poster presentation.

Weaver, K.D., Yeyeodu, S., Baldwin, Jr. A.S., Ewend, M.G. Potentiation of Chemotherapy Against Glioma Cell Lines by Inhibition of NF- $\kappa$ B. Society for Neuro-Oncology, Scottsdale, AZ. November, 1999. Platform presentation.

Weaver, K.D. Management of Severe Head Injury – Guideline Foundations. UNC Hospitals Neurology/Neurosurgery Grand Rounds, December, 1999. Slide presentation.

Weaver K.D. The Inflammatory Response to Head Injury. UNC Department of Surgery Trauma Training Grant Lecture, May, 1999. Slide presentation.

Weaver, K.D. Evaluation and Management of the Head Injury Patient. Carolina Air Care Grand Rounds, December, 1998. Slide presentation.

Weaver, K.D. Management of Intracranial Hypertension in the Multiply Injured Patient. UNC Critical Care Grand Rounds, November, 1998. Slide presentation.

Weaver, K.D. Head Injury. UNC-Chapel Hill School of Medicine 4th year class, 1998-99. Slide presentation.

Weaver, K. D., Quattrocchi, K.B., Branch, C.A., Hernandez, L., Miller, C.H., , Sokolowski, K., Gudeman, S.K. Blockade of the Leukocyte Adhesion Molecule CD11b Attenuates the Acute Inflammatory Response Following Experimental Cerebral Trauma. University of North Carolina School of Medicine Student Research Day, January, 1996. Platform presentation.

Weaver, K.D., Branch, C.A. , Hernandez, L., Miller, C.H., Bree, M., Gudeman, S.K., and Quattrocchi, K.B. Neutrophil Infiltration Following Cortical Trauma: The Effects Of Treatment With Anti-CD11b. *J. Neurotrauma*. 1995;12(3):375.

Weaver, K.D., Branch, C.A. , Hernandez, L., Miller, C.H., Sokolowski, K.A., Gudeman, S.K., Quattrocchi, K.B. Antagonism of Leukocyte Endothelial Interactions Reduces Neutrophil Influx Following Cortical Trauma. *J. Neurotrauma* 1995;12(5):993

Weaver, K.D., Secondary Neurological Injury: Mechanisms and Therapeutic Possibilities. North Carolina Head Injury Foundation, March, 1995.

Weaver, K. D., Quattrocchi, K.B., Branch, C.A., Hernandez, L., Miller, C.H., Bree, M., Gudeman, S.K., and Quattrocchi, K.B. The Leukocyte Response to Controlled Cortical Trauma. University of North Carolina School of Medicine Student Research Day, February 1995. Platform presentation.

## **Research Projects**

### **Current**

A Phase 2, Multicenter, Exploratory Study, Evaluating the Treatment Effect of Surgery Plus GLIADEL® Wafer in Patients with Metastatic Brain Cancer (GLIA-001)

The Vanderbilt Experience of Atypical Meningioma

Optimized Magnetic Resonance Imaging at 7 Tesla

The Sensitivity of Intrinsic Signal Imaging in Human Cortex

Brain Retraction Monitoring Sensor

Spinal Tumor Embolization

Intra-Operative Brain Tumor Demarcation using Special Imaging: A Pilot in-vivo Study

Plasma Tumor-Specific DNA as a Biomarker for High-Grade Glioma

Genetic Epidemiology of Adult Brain Tumors

Molecular Neurosurgical Tissue Bank

Analysis of Brain Tumors Using Matrix Assisted Laser Desorption/Ionization Mass Spectrometry (MALDI)  
Multimodal Registration of the Brain's Cortical Surface  
Detection of Cranial Tumor Margins Using Autofluorescence Spectroscopy: A Pilot In-Vivo Study

### **Past**

Promoter Hypermethylation and Epigenetic Silencing of Tumor Suppressor Genes in Malignant Gliomas – 2002 – 4  
The Oncology Center, Johns Hopkins University School of Medicine  
Preceptor: James G. Herman, M.D.

Pharmacologic and Gene Therapy Approaches Targeting Glutamate-Mediated Glioma Invasion and Peritumoral Astrocyte Excitotoxicity – 2002-present  
Department of Neurosurgery, Johns Hopkins University School of Medicine  
Preceptor: Henry Brem, M.D.

Bacteriolytic Therapy for Brain Tumors in a Rabbit VX2 Intracranial Model – 2003 – present  
The Oncology Center, Johns Hopkins University School of Medicine  
Preceptor: Bert Vogelstein, M.D.

Preoperative Localization of the Carotid Bifurcation for Carotid Endarterectomy Using Magnetic Resonance Angiography Without Tomography – 2002-present  
Department of Neurosurgery, Johns Hopkins University School of Medicine  
Preceptor: Rafael J. Tamargo, M.D.

Potentiation of Chemotherapy Efficacy Against Gliomas Following Suppression of Nuclear Factor Kappa B Using Gene Therapy – 1998 - 2002  
Division of Neurosurgery, University of North Carolina-Chapel Hill School of Medicine  
Funding: Medical Alumni Association Endowment Grant  
Preceptor: Matthew G. Ewend, M.D.

The Role of the Acute Inflammatory Response on Neurological Outcome Following Head Injury – 1994 -1995  
Division of Neurosurgery, University of North Carolina-Chapel Hill School of Medicine  
Funding: Distinguished Medical Scholars Program and National Institutes of Health Summer Research Fellowship  
Preceptor: Keith B. Quattrocchi, M.D., Ph.D.

The Coordination of Cancer Support Services at University of North Carolina Hospitals – 1993 - 1994  
Department of Medicine/Medical Oncology  
Funding: National Institutes of Health Cancer Education Program Summer Fellowship  
Preceptor: Stephen A. Bernard, M.D.

### **Professional Memberships**

American Association of Neurological Surgeons Resident Member, 1997-  
Congress of Neurological Surgeons Resident Member, 1997-  
American College of Surgeons Candidate Member, 1996-

### **Committees**

Vanderbilt Ingram Cancer Center Operations Committee 2008 -  
Neurosciences Intensive Care Unit Steering Committee 2005-2009  
Vanderbilt-Ingram Comprehensive Cancer Center Scientific Review Committee 2005-2008