BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
David W. Roberts, M.D.	Professor of Surgery (Neurosurgery) and of Neurology
eRA COMMONS USER NAME (credential, e.g., agency login)	
davidwroberts	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Princeton University, Princeton, NJ	A.B.	06/72	English
Dartmouth Medical School, Hanover, NH	M.D.	06/75	Medicine
Univ. of Utah Medical Center, Salt Lake City, UT		07/75-06/76	General Surg. Internship
Oxford University, Oxford, England	M.A.	06/78	English
Mary Hitchcock Memorial Hosp., Hanover, NH		07/78-06/82	Neurosurgery Residency

A. Personal Statement

Dr Roberts holds the Alma Hass Milham Distinguished Chair in Clinical Medicine and is Chief of Neurosurgery at Dartmouth Hitchcock Medical Center. He has a long-standing clinical and investigative interest in intracranial brain tumor. This has included work in intraoperative image-guidance systems, computational modeling, and neuroimaging. He is currently the principal investigator of this NIH-sponsored investigational study involving fluorescence-guided surgical resection, including the development of new technologies to advance this approach. He will act as the lead neurosurgeon on the proposed ALA-induced PpIX fluorescence clinical studies and liaison for neurosurgeons at the other institutions (UCSF, Hopkins) participating in the surgical data collection. Dr Roberts has worked closely with Dr Paulsen for almost 15 years on image-guided neurosurgery and has developed a very productive research relationship with Dr Wilson, PI of the Toronto subcontract, during the first funding period of the project. He will also interact with Dr Brent Harris who will continue to serve as the neuro-pathologist for the proposed clinical activities and specimen studies.

B. Positions and Honors

Positions and Employment

1980 Honorary House Physician, National Hospital for Nervous Diseases, Queen Square, London
1982-present Attending Physician, Mary Hitchcock Memorial Hospital, Lebanon NH
1982-1988 Asst. Professor of Clinical Surgery (Neurosurgery), Dartmouth Medical School, Hanover NH
1988-1994 Associate Professor of Surgery (Neurosurgery), Dartmouth Medical School
1994-present Professor of Surgery (Neurosurgery), Dartmouth Medical School
1997-present Chief, Section of Neurosurgery, Dartmouth-Hitchcock Medical Center
1997-present Prog. Director, Neurosurgery Residency Program, Dartmouth-Hitchcock Medical Center
2000-2002 Senior Associate Dean for Clinical Affairs, Dartmouth Medical School
2001-present Alma Hass Milham Distinguished Chair in Clinical Medicine, Geisel School of Medicine
2011-present Professor of Neurology, Geisel School of Medicine School

Other Experience and Professional Memberships *(Officer/Committee information maintained on Dr. Roberts' C.V.)*

2008- Elected Member, Board of Directors, American Board of Neurological Surgery
2008- Data Monitoring Committee, Medtronic Inc, Medtronic Reclaim Clinical Study
1999- Stereotactic and Functional Neurosurgery (Associate Editor, 1999-2002, Editor, 2002-),
1992- Editorial Board (1992-2009), Advisory Board (2009-), Neurosurgery
1999- Editorial Board (1999-2006, Chairman, 2005-2006), Advisory Board (2006-), Journal of Neurosurgery
2007- Editorial Board, Neurosurgical Focus
2009- Editorial Board, World Neurosurgery
1996- Member, American Academy of Neurological Surgery
1986- Member, American Association of Neurological Surgeons
2008- Member, AANS/CNS Joint Section on Tumors

1983- American Society for Stereotactic and Functional Neurosurgery (President, 1997-1999)
1987- Society of University Neurosurgeons (President, 1996-1998)
1997- Society of Neurological Surgeons (Executive Committee, Vice President, 2011-)
1983- World Society for Stereotactic and Functional Neurosurgery (Vice President for North America, 2011-2007)

C. Selected peer-reviewed publications (chronological order, no more than 15)**:** (selected from 152 peer-reviewed publications)

1. Valdes PA, Fan X, Ji S, Harris BT, Paulsen KD, Roberts DW: Estimation of Brain Deformation for Volumetric Image Updating in Protoporphyrin IX Fluorescence-Guided Resection. Stereotact Funct Neurosurg 88:1-10, 2010 [PMCID: PMC2813794].
2. Pogue BW, Gibbs-Strauss SL, Valdes PA, Samkoe KS, Roberts DW, Paulsen KD: Review of neurosurgical fluorescence imaging methodologies. IEEE Journal of Selected Topics in Quantum Electronics 16(3):493-505, May/June 2010 [PMCID: PMC2910912].
3. Roberts DW, Valdes PA, Harris BT, Fontaine KM, Hartov A, Fan X, Ji S, Lollis SS, Pogue BW, Leblond F, Tosteson TD, Wilson BC, Paulsen KD: Co-registered fluorescence-enhanced tumor resection of malignant glioma: Relationships between ALA-induced PpIX Fluorescence, MRI enhancement and neuropathological parameters. J Neurosurg 114(3):595-603, 2011 [PMCID: PMC2921008].
4. Valdes PA, Leblond F, Kim A, Harris BT, Wilson BC, Fan X, Tosteson TD, Hartov A, Ji S, Erkmen K, Simmons NE, Paulsen KD, Roberts DW: Quantitative fluorescence in intracranial tumor: implications for ALA-induced PpIX as an intraoperative biomarker. J Neurosurg 115:11-17, 2011.
5. Whitson W, Valdés PA, Harris BT, Paulsen KD, Roberts DW. Confocal microscopy for the histologic fluorescence pattern of a recurrent atypical meningioma. Neurosurgery, 2011 Mar 8. [Epub ahead of print])). [PMID: 2138989]
6. Bekelis K, Valdes PA, Erkmen K, Leblond F, Kim A, Wilson BC, Harris BT, Paulsen KD, Roberts DW. Quantitative and qualitative ALA-induced PpIX fluorescence in skull base meningiomas. Neurosurgical Focus, 2011 May; 30(5): E8) [PMID: 21529179]
7. Valdes PA, Kim A, Bratsch M, Niu C, Moses Z, Tosteson TD, Wilson BC, Paulsen KD, Roberts DW, Harris BT. δ-aminolevulinic acid-induced protoporphyrin IX concentration correlates with histopathological markers of malignancy in human gliomas: the need for quantitative fluorescence guided resection to identify regions of increasing malignancy. Neuro-Oncology, 2011 Aug; 13(8): 846-556, [PMID: 21798847]
8. Leblond F, Ovanesyan Z, Davis SC, Valdés PA, Kim A, Wilson BC, Hartov A, Pogue BW, Paulsen KD, Roberts DW. Analytic expression of fluorescence ratio detection correlates with depth in multi-spectral sub surface imaging. Phys Med Biol, 2011 Oct 5; 56(21): 6823-6837. [PMID: 21971201]
9. Valdes PA, Kim A, Leblond F, Conde OM, Harris BT, Paulsen KD, Wilson BC, Roberts DW. Combined fluorescence and reflectance spectroscopy for in vivo quantification of cancer biomarkers in low- and high-grade glioma surgery. (J Biomedical Optics. 2011 Oct; 16(116007)).
10. Valdés PA, Moses ZM, Kim A, Paulsen KD, Wilson BC, Roberts DW, Harris BT. Relationship between ex vivo gadolinium concentrations and 5-aminolevulinic acid-induced protoporphyrin IX levels in gliomas: a quantitative study on a relationship between protoporphyrin IX levels and blood-brain barrier breakdown. (J Neuropathol Exp Neurol. 2012 Sep;71(9):806-813). PMID: 22878664
11. Konecky SD, Owen CM, Rice T, Valdes PA, Kolste K, Wilson BC, Leblond F, Roberts DW, Paulsen KD, Tromberg BJ. Spatial frequency domain tomography of protoporphyrin IX fluorescence in preclinical glioma models. (J Biomed Opt. 2012 May;17(5):0506008). PMID: 22612131
12. Valdes PA, Leblond F, Kim A, Paulsen KD, Wilson BC, Roberts DW. A spectrally-constrained dual-band normalization technique for protoporphyrin IX quantification in fluorescence guided surgery. (Opt Lett. 2012 Jun 1;37(11):1817-9). PMID: 22660039

13. Roberts DW, Valdés PA, Harris BT, Hartov A, Fan X, Ji S, Pogue BW, Leblond F, Tosteson TD, Wilson BC, Paulsen KD. Adjuncts for Maximizing Resection: 5-ALA. (Clin Neurosurg. 2012;59:75-8).
14. Roberts DW, Valdés PA, Harris BT, Hartov A, Fan X, Songbai J, Pogue BW, Leblond F, Tosteson TD, Wilson BC, Paulsen KD. Glioblastoma Multiforme Treatment with Clinical Trials for Surgical Resection (Aminolevulinic Acid). (Neurosurg Clin N Am, 2012 Jul;23(3):371-7). PMID: 22758650
15. Valdes PA, Leblond F, Jacobs VL, Wilson BC, Paulsen KD, Roberts DW. Quantitative, spectrally-resolved intraoperative fluorescence imaging. (Sci Rep. 2012;2:798. doi: 10.1038/srep00798. Epub 2012 Nov 1).

D. Research Support (ongoing & completed, past three years, begin with projects most relevant to proposed research)

Ongoing Research Support

1R01NS052274-01A2, NIH/NINDS Roberts (PI) 09/01/2007 - 08/31/2013
Coregistered Fluorescence-Enhanced Resection of Malignant Glioma
The long-term goal of this project is to improve patient survival by providing the neurosurgeon with the advanced image-guidance technology necessary for optimal intraoperative decision making during removal of malignant gliomas by exploring coregistered intraoperative fluorescence imaging as an augmentation of preoperative MR guided resection in the late stages of surgery.
Role: PI

1R01CA159324-01, NIH/NCI Paulsen (PI) 04/04/2011 - 03/31/2016
Preoperative Image Updating for Guidance During Brain Tumor Resection
Goal: This academic-industrial partnership will develop and evaluate a system for updating preoperative images in the operating room during brain tumor resection.
Role: Co-Investigator

1 R21 EB011568-01, NIBIB Halter (PI) 06/01/2010 – 05/31/2013
Electrical Impedance-based Imaging of Brain Compliance in an Animal Model.
Goal: NIH Exploratory/Developmental Research Grant Program; the aim of this study is to construct a continuous real-time brain imaging modality based on the significantly different electrical properties of the various cranial tissues and evaluate the clinical potential of this technology through a series of animal studies.
Role: Co-Investigator

1R01NS073083-01A1, NIH/NINDS Holmes (PI) 02/01/2011-01/31/2016
Mechanisms of Cognitive Impairment Following Early-Life Seizures
Goal: Further investigate early-life seizures and the mechanisms leading to cognitive impairments by determining the extent and relevance of brain oscillation dysfunction.
Role: Co-Investigator

NeuroPace, Inc Jobst (PI) 05/07/2008-
RNS System Long Term Treatment Clinical Investigation
Goal: An open-label multi-center prospective clinical investigation to assess the ongoing safety and to evaluate the long-term efficacy of the Responsive Neurostimulator System as in adjunctive therapy in reducing the frequency of seizures in individuals 18 years of age or older with partial onset seizures that are refractory to two or more antiepileptic medications.
Role: Local Co-Investigator

1C06RR030432-01, NIH Colacchio (PI) 03/18/2010 – 03/17/2015
Advanced Surgical Center for Translational Research at Dartmouth

Goal: Further support clinical translational research at Dartmouth via the creation of a dedicated research facility that will offer advanced imaging and image-guidance and data collection tools. Create immediate economic stimulus in the State of New Hampshire and the region.
Role: Co-Investigator

Completed Research Support

5 R01 EB002082-13, NIH/NIBIB Paulsen (PI) 08/25/2005 - 06/30/2010
Modeling of Brain Deformation during Surgery
Goal: This is the competing continuation of a project which is developing modeling methods for compensation of brain deformation during image-guided neurosurgery.
Role: Co-Investigator

3 R01 EB004632-04, NIH/NIBIB Roberts (PI) 09/22/2005 - 07/31/2010
Magnetic Resonance Elastography in Hydrocephalus
Goal: Clinical Resident Research supplement with Dr. Lollis to develop, validate and evaluate MRE methods in the treatment of hydrocephalus.
Role: Principal Investigator