

**Harvard Medical School/Harvard School of Dental Medicine
Format for the Curriculum Vitae**

Date Prepared: May 7, 2016
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Place of Birth: Memphis, Tennessee

Education

1986	BA	Chemistry (<i>Magna Cum Laude</i>)	Amherst College
1995	MD	Harvard Medical School	Harvard Medical School
1995	PhD	Neurobiology (David Potter, PhD, advisor)	Harvard University Graduate School of Arts and Sciences

Postdoctoral Training

1995-1996	Intern	General Surgery	University of Washington
1996-2003	Resident	Neurological Surgery	University of Washington
1997	Postdoctoral Research Fellow	Neurological Surgery	University of Washington
2000	Registrar	Neurological Surgery	Atkinson Morley's Hospital, Wimbledon, UK
2001	NIH NRSA Postdoctoral Research Fellow	Neurological Surgery/Neuronal Apoptosis (Richard S. Morrison, Ph.D.)	University of Washington
2002	Chief Resident	Neurological Surgery	University of Washington
2003	Resident Fellow	Neurosurgical Management of Pain and Movement Disorders (Kim Burchiel, M.D.)	Oregon Health and Science University

Faculty Academic Appointments

2003	Acting Instructor	Neurosurgery	University of Washington
2003-2012	Assistant Professor	Surgery/Neurosurgery	Harvard Medical School
2013-Pres	Associate Professor	Surgery/Neurosurgery	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions

2003-Pres	Associate Surgeon	Neurosurgery	Brigham and Women's Hospital
2003-Pres	Active Staff	Neurosurgery	Children's Hospital Boston

2004-2011	Consulting Staff	Neurosurgery	Dana Farber Cancer Institute
2011-Pres	Active Staff	Neurosurgery	Dana Farber Cancer institute
2014-Pres	Covering Staff	Neurosurgery	St. Elizabeth's Medical Center

Other Professional Positions

1983	Research Assistant, Environmental Chemistry Department	Dow Corning Corporation
1984	Research Assistant, Surgical Research Branch	Naval Medical Research Institute
1985	Research Assistant, Fluids, Resins and Processes Division	Dow Corning Corporation
1985-1986	Honors Thesis candidate	Amherst College Chemistry Department
1986	Research Assistant, Surgical Research Branch	Naval Medical Research Institute
1987	Research Assistant, Department of Neurobiology	Harvard Medical School

Major Administrative Leadership Positions

Local

1983-1985	“A Better Chance” Committee 1983-1985	Town of Amherst, MA Board of Directors
2003-Pres	Director, Neurosurgical Pain Management Program	Brigham and Women's Hospital Department of Neurosurgery
2007	Course Director, International Conference on Glioma Research & Therapy	Harvard Medical School/Brigham and Women's Hospital
2012-Pres	Director, Adult Hydrocephalus Program	Brigham and Women's Hospital

Regional

1987-1988	Assistant Regional Director	Student National Medical Association
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National and International

2007	Scientific Program Chair	AANS/CNS Section on Tumors, American Association of Neurosurgeons
2008	Scientific Program Chair	6 th International Congress on Meningiomas and Cerebral Venous System, World Federation of Neurosurgical Societies

Committee Service

Local

1982-1984	Amherst College Student Assembly 1982-1984	Amherst College, MA Freshman and Sophomore Class Representative
	1983-1984	Secretary

1984	Black Student Union Constitution Committee 1984	Amherst College Chairman
1989-1992	Hinton-Wright Biomedical Research Society Steering Committee 1989-1992	Harvard Medical School Member
2007, 2008, 2012	Meningioma Awareness Day Planning Committee 2007, 2008, 2012	Brain Science Foundation Member
2009-Pres	Council of Mentors and Mentoring Award Selection Committee 2009-Present	Harvard Medical School Member
2010-Pres	Advisory Committee, Office of Multicultural Careers 2010-Present	Brigham and Women's Hospital Member
2011-Pres	Brigham and Women's Physician's Organization Board of Trustees 2011-Present	Brigham and Women's Hospital Member
2012-2014	Academic Activities Committee, BWH Centennial Celebration	Brigham and Women's Hospital
2013-Pres	Admissions Committee, Harvard Bioinformatics and Genetics Program, Harvard Medical School Division Of Medical Sciences 2013-Present	Harvard Medical School Member
2015-Pres	Ongoing Professional Practice Evaluation (OPPE) and Focused Professional Practice Evaluation (FPPE) Committee 2015-Present	Brigham and Women's Hospital Member

National and International

2007-2009	Executive Committee	American Association of Neurological Surgeons/Congress of Neurological Surgeons Joint Section on Tumors Member
2009-Pres	Neuro-Oncology Committee	World Federation of Neurosurgical Societies Vice-Chairman
2011	Eunice Kennedy Shriver National Institute of Child Health and Human Development: Bringing the Vision Together 2011	National Institutes of Health Consultant Member
2012	Scientific Program Committee 2012	Society for Neuro-Oncology Annual Meeting Member

2014	Blue Ribbon Panel 2014	National Institute for Neurological Diseases and Stroke Member
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Professional Societies

2000-2003	Congress of Neurological Surgeons 2000-2003	Member
2000-Pres	American Association of Neurological Surgeons 2000-Present	Member
2005-Pres	AANS/CNS Joint Section on Tumors 2005-2007	Executive Committee
2006-Pres	Massachusetts Medical Society 2006-Present	Member
2009-Pres	World Federation of Neurosurgical Societies 2009 -Present	Member
2010-Pres	Harvey Cushing Society (AANS) 2010-Present	Member
2010-Pres	American Medical Association 2010-Present	Member
2012-Pres	Society for Neuro-Oncology 2012-Present	Member
2015-Pres	American Academy of Neurological Surgery 2015-Present	Member

Grant Review Activities

2008-Pres	Tumor Progression and Metastasis Study Section 2008 -2010 2010-Present	National Institutes of Health Ad hoc Reviewer Permanent Member
2010	Cancer and Molecular Pathobiology Study Section 2010	National Institutes of Health Ad hoc Reviewer
2010	Recovery Act Limited Competition, NIH Director's Opportunity for Research in Five Thematic Areas (RC4) 2010	National Institutes of Health Reviewer
2011	NIH Cancer Biology and Signaling Meeting (ZRG1 OBT-J 02 S) 2011	National Institutes of Health Alternate Chair, Reviewer
2011	Association for International Cancer Research 2011	Reviewer Association for International Cancer Research

2013-Pres 2013-Present	NINDS Board of Scientific Counselors	Permanent Member National Institute for Neurological Diseases and Stroke
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Editorial Activities

Journal of Neuro-Oncology
 BMC Cancer
 Oncogene
 EMBO
 Neuro-Oncology

Honors and Prizes

1985	Samuel Walley Brown Scholarship	Amherst College	Academic Achievement
1986	Everett H. Pryde Research Award	Amherst College	Research
1986	Amherst “R” Committee Award	Amherst College	Community Service
1986	<i>Magna Cum Laude</i>	Amherst College	Academic Achievement
1986-1987	John Woodruff Simpson Fellowship in Academic Medicine	Amherst College	Academic Achievement
1986-1988	National Medical Fellowship	Harvard Medical School	Academic Achievement
1989	National Medical Association Slack Award in Medical Journalism	Harvard Medical School	Research
1989	Best Instructor Award, Harvard Health Professions Program	Harvard Medical School	Academic
1993	Commonwealth Fund /Bristol Myers-Squibb Fellowship in Academic Medicine	Commonwealth Fund /Bristol Myers-Squibb	Research
1993	Harvard Ryan Fellowship	Harvard Medical School	Research
1997	Outstanding Role Model/Mentor Award	University of Washington	Mentorship
2001	First Place Poster Award	Congress of	Research/Academic

	Tumor Section	Neurological Surgeons	
2004	Sontag Distinguished Scientist Award	Sontag Foundation	Research
2006	Hagerty Fund Research Award	Brigham and Women's Hospital	Research
2007	Ronald Bittner Award	American Association of Neurological Surgeons	Neurosurgical Research
2007	NIH Director's New Innovator Award	National Institutes of Health	Research
2008	Young Mentor of the Year Award	Harvard Medical School	Mentorship
2008	YMCA Black Achiever's Award	Greater Boston YMCA	Leadership
2009	Brigham Leadership Program	Brigham and Women's Hospital/Harvard Business School	Leadership
2010	Keynote Speaker, Ruth L. Kirschstein NRSA Symposium	National Institutes of Health	Research
2011	Keynote Speaker, NIH Director's Pioneer Award Symposium	National Institutes of Health	Research
2013	Boston Super Doctors Award	SuperDoctors.com	Clinical Expertise
2015	Harvard Visiting Clerkship Program Mentorship Award	Harvard Medical School	Mentorship
2015	Induction into the American Academy of Neurological Surgery	American Academy of Neurological Surgery	Research in Neurosurgery

Report of Funded and Unfunded Projects

Funding Information

Past

- 1988-1995 Transmitter Plasticity of Cultured Neurons
NIH Medical Scientist Training Program Fellowship
Principal Investigator
This fellowship supported medical training and a PhD thesis project aimed at characterizing the transmitter repertoire of single serotonergic neurons of the brainstem.
- 1991-1993 Transmitter Plasticity of Cultured Neurons

Harvard Minority Graduate Student Fellowship
Principal Investigator
This fellowship supported a PhD thesis project aimed at characterizing the transmitter repertoire of single serotonergic neurons of the mammalian brainstem.

1992-1994 Electrophysiology of Serotonergic Neurons
NIMH/American Psychological Association Minority Fellowship
Principal Investigator
This fellowship supported research aimed at characterizing the electrophysiology of single serotonergic neurons.

1993-1994 Transmitter Repertoire of Serotonergic Neurons
Commonwealth Fund/Bristol Myers-Squibb Fellowship in Academic Medicine
Principal Investigator
This fellowship supported a PhD thesis project aimed at characterizing the transmitter repertoire of single serotonergic neurons of the mammalian brainstem.

2001-2002 Characterization of p53-mediated cell death in neurons
NIH Postdoctoral National Research Service Award (1F32NS041714-01)
Principal Investigator
The goal of this project was to characterize mechanisms of neuronal cell death occurring after genotoxic injury.

2003 Molecular Analysis of Brain Tumors
Brigham and Women's Hospital Institute for the Neurosciences Faculty Research Award
Principal Investigator
The goal of this project was to characterize human gliomas at a molecular level.

2003-2004 Molecular Analysis of Brain Tumors
Harvard Medical School Dean's Award
Principal Investigator
The goal of this project was to characterize human gliomas at a molecular level.

2003-2006 Molecular Analysis of Brain Tumors
Dana Farber/Harvard Cancer Center New Faculty Award
Principal Investigator
The goal of the project was to characterize human gliomas at a molecular level.

2003-2007 Genomics/Proteomics of p53-mediated Neuronal Death
NIH K08 Mentored Clinical Scientist Research Award (K08NS043482)
Principal Investigator
The goal of this project was to combine genomics and mass spectrometry to perform a high throughput global analysis of neuronal cell death occurring after DNA damage.

2004-2007 *PEG3* as a Glioma Susceptibility Gene
Sontag Distinguished Scientist Award
Principal Investigator
The goal of this project was to determine the role of Peg3 in malignant gliomas.

2006-2007 Genomics of Ganglioglioma
Hagerty Fund Research Award
Principal Investigator
The goal of this project was to compare gene expression and genomic alterations in ganglioglioma and other gliomas.

2007-2009 Meningioma Stem Cells

- Brain Science Foundation
Principal Investigator
The goal of this project was to identify and characterize cancer stem-like cells in meningiomas.
- 2007-2010 Genome in Meningioma
Brain Science Foundation
Co-Principal Investigator
The goal of this project was to characterize DNA alterations in meningiomas.
- 2009-2011 Meningioma Stem Cells
Harvard Stem Cell Institute
Principal Investigator
The goal of this project was to identify and characterize cancer stem-like cells in meningiomas.
- 2007-2012 MicroRNA Biogenesis and the Cancer Proteome
NIH Directors New Innovator Award (1DP2OD002319-01)
Principal Investigator
The goal of this project is to examine the role of microRNAs in human brain cancer.
- 2011-2013 Elucidation and Small Molecule Inhibition of Slug-Induced Invasion and Metastasis in Glioblastoma and Other Cancers
Brain Science Foundation
Principal Investigator
The goal of this project is to develop small molecule inhibitors of Slug-induced invasion.
- 2013-2014 Biomarkers in Normal Pressure Hydrocephalus
Brigham Research Institute
Co-Principal Investigator (Multi-PI Grant, Bruce Kristal, Ph.D.)
- 2010-2015 Preventing Glioma Cancer Stem Cell Dispersal Using Cdc2 Kinase Inhibitors
National Institute of Neurological Diseases and Stroke (1R01NS062219)
Principal Investigator
The goal of this project is to determine the mechanisms by which Cdc2 inhibition decreases glioma cell invasion.

Current

- 2013-2016 Origins of Normal Pressure Hydrocephalus
Sontag Family Foundation
Principal Investigator
The goal of this project is to elucidate the mechanisms that contribute to NPH
- 2013-2016 Meso-plex miRNA and protein profiling for cancer diagnostics using chip-integrated
National Cancer Institute. (5R33CA177462-02).
Co-Principal Investigator (Multi-PI Grant, Ryan Bailey Co-PI)

Current Unfunded Projects

- 2009-Pres Principal Investigator/ Identification of UTP18 as a Putative Oncogene in Human Cancer
The purpose of this project is to demonstrate a growth-promoting role for the UTP18 protein in human cancer.
- 2010-Pres Principal Investigator/ Survival Rate of Brain Tumor Patients (Human subjects protocol #2007P000471)

- 2010-Pres This project aims to identify factors related to the survival of brain tumor patients.
Principal Investigator/ Outcome Study for Shunted Patients With Idiopathic Normal Pressure Hydrocephalus (Human subjects protocol #2006P001830)
This project aims to identify factors related to the outcome of normal pressure hydrocephalus patients.
- 2010-Pres Principal Investigator/ Neural Stem Cells Target Gene Therapy to Brain Tumors (Human subjects protocol #2003P001809)
This project examines the utility of neural stem cells and mesenchymal stem-like cells as a therapeutic delivery vehicle in treating human brain tumors.
- 2010-Pres Principal Investigator/ Brain Tissue Bank and Cell Repository (Human subjects protocol #2003P000655)
This project establishes a departmental brain tumor tissue bank for use in clinical, cellular and molecular brain tumor studies.
- 2010-Pres Principal Investigator/ Neurosurgery Service Patient Database (Human subjects protocol #1999P002046)
This project establishes a departmental clinical database for identifying factors related to the outcome of brain tumor and other patients.
- 2010-Pres Co-Investigator (PI: Ligon, Keith)/ Molecular Biomarkers as Prognostic and Predictive Factors in Glioma (Human subjects protocol #2010P000453)
The purpose of this project is to identify prognostic biomarkers in human glioma patients.

Report of Local Teaching and Training

Teaching of Students in Courses

1989	Harvard Health Professions Program Pharmacology Course Approximately 20 undergraduate students	Harvard University Taught course, served as pre-med advisor, 2 hours/week for 8 weeks (summer)
1989, 1990	Harvard Pre-matriculation Summer Research Program, Student Organizer Approximately 10 Harvard medical students	Harvard Medical School 2-4 hours/week for 10 weeks
1991	Pharmacology 10-15 medical students	Harvard Medical School 2-4 hours/week
1992	Developmental Neurobiology 10-15 graduate students	Harvard Medical School 4-6 hours/week for 10 weeks
2004-2008	Harvard Native American High School Summer Program Approximately 20 high school students	Harvard Medical School 1 hour
2004-2006, 2008, 2010	Harvard Summer Honors Undergraduate Research Program (SHURP) Approximately 20 undergraduate students	Harvard Medical School 1 hour
2006	Harvard University Undergraduate Thesis	Harvard Medical School/Brigham and Women's Hospital

2009	Undergraduate student (Amanda Brosius) Harvard Medical School URM Summer Research Program Harvard medical student (Brenton Pennicooke)	10 hours/week for 1 year Harvard Medical School/Brigham and Women's Hospital 4-6 hours/week for 8 weeks
2010	Harvard Medical School URM Summer Research Program Harvard medical student (Gibran Minero)	Harvard Medical School/Brigham and Women's Hospital 4-6 hours/week for 8 weeks
2011	DFCI CURE Summer Research Program	Harvard Medical School/Brigham and Women's Hospital 4-6 hours/week for 8 weeks
2013-2014	Undergraduate student (Daniel McManus) The First Affiliated Hospital of Zhengzhou University, Zhengzhou, China Graduate Student Thesis	The First Affiliated Hospital of Zhengzhou University, Zhengzhou, China /Brigham and Women's Hospital
2014	Graduate student (Hongwei Li) Harvard University Undergraduate Thesis	10 hours/week for 1.5 years Harvard Medical School/Brigham and Women's Hospital
2014	Undergraduate student (Esther Chung) Boston University Undergraduate Thesis	10 hours/week for 1.5 years Boston University/Brigham and Women's Hospital
	Undergraduate student (Melissa Chua)	10 hours/week for 1.5 years
2015- Present	Harvard University Undergraduate Thesis Undergraduate student (Kelsey Clayman)	Harvard University/Brigham and Women's Hospital 10 hours/week for 1.5 years

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)

2003	CNS Lymphoma Medical students and neurosurgery residents	Brigham and Women's Hospital Resident Education Conference 1 hour
2004-2005	Neurosurgical Management of Pain Medical students and neurosurgery residents	Brigham and Women's Hospital Resident Education Conference 1 hour
2005	CNS Lymphoma Medical students and neurosurgery residents	Brigham and Women's Hospital Resident Education Conference 1 hour
2005	Brain Metastases Medical students and neurosurgery residents	Brigham and Women's Hospital Resident Education Conference 1 hour

2005	Glioblastoma	Brigham and Women's Hospital Resident Education Conference
	Medical students and neurosurgery residents	1 hour
2006	Molecular Genetics of Brain Tumors	Brigham and Women's Hospital Resident Education Conference
	Medical students and neurosurgery residents	1 hour
2007-2010	Head Trauma	Brigham and Women's Hospital Neurosurgery Summer Grand Rounds Resident Lecture
	Medical students and neurosurgery residents	1 hour
2011	Glioblastoma: A resident's guide.	Brigham and Women's Hospital Neurosurgery Summer Grand Rounds Resident Lecture
	Medical students and neurosurgery residents	1 hour

Clinical Supervisory and Training Responsibilities

2003-Pres	Clinical Training and Supervision of Neurosurgery Residents and medical students	30 hours/week, year round
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Laboratory and Other Research Supervisory and Training Responsibilities

2004-Pres	Supervision and training of laboratory trainees and postdoctoral fellows	30 hours/week, year round
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Formally Supervised Trainees

2003-2004	P. Roc Chen, M.D./ Assistant Professor, University of Texas, Houston I supervised and taught Dr. Chen in clinical and didactic settings at Brigham and Women's Hospital.
2003-2004	Kadir Erkmen, M.D./Assistant Professor, Dartmouth University I supervised and taught Dr. Erkmen in clinical and didactic settings at Brigham and Women's Hospital.
2003-2004	Stephanie Greene, M.D./Assistant Professor, University of Pittsburgh I supervised and taught Dr. Greene in clinical and didactic settings at Brigham and Women's Hospital.
2003-2005	Chima Ohaegbulam, M.D./Staff Neurosurgeon, New England Baptist Hospital I supervised and taught Dr. Ohaegbulam in clinical and didactic settings at Brigham and

- Women's Hospital.
- 2003-2006 Deepa Soni, M.D./ Neurosurgeon, Cambridge, MA
I supervised and taught and taught Dr. Soni in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2006 Ian Johnson, M.D./Assistant Professor, University of South Carolina
I supervised, mentored and taught Dr. Johnson in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2007 Jonathan Slotkin, M.D./Staff Neurosurgeon, Washington Brain and Spine Institute, Washington, D.C.
I supervised and taught Dr. Slotkin in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2007 Bryan Figueroa, M.D./ Staff Neurosurgeon, Spectrum Health, Grand Rapids, MI
I supervised Dr. Figueroa in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2008 Sathish Subaiah, M.D./Assistant Professor, Mount Sinai School of Medicine
I supervised and taught Dr. Subaiah in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2009 Ian Dunn, M.D./ Instructor in Neurosurgery, Brigham and Women's Hospital/Harvard
I supervised and taught Dr. Dunn in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2009 Alex Papanastassiou, M.D./Assistant Professor, University of Texas, San Antonio
I supervised and taught Dr. Papanastassiou in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2010 Albert Kim, M.D.,Ph.D./Assistant Professor, Washington University in St. Louis
I supervised and taught Dr. Kim in clinical and didactic settings at Brigham and Women's Hospital.
- 2003-2010 Lance Governale, M.D./Assistant Professor, Ohio State University
I supervised and taught Dr. Governale in clinical and didactic settings at Brigham and Women's Hospital.
- 2004-2006 Fenghua Liu, M.D., Ph.D./Research Scientist, Genzyme
I supervised and mentored Dr. Liu while she was a postdoctoral fellow in the research laboratory, and helped her to publish a first author Cancer Research paper that helped her to find employment in industry.
- 2004-2007 Yi Yu, Ph.D./Senior Investigator, ArQule Inc., Woburn, MA
I supervised and mentored Dr. Yu in the laboratory as he progressed from postdoctoral fellow to Instructor at Harvard, and helped him to publish a first author Cancer Research paper that helped him to find employment in industry.
- 2004-2011 Xiuli Jiang, Ph.D./Research Scientist, University of Wisconsin in Milwaukee
I supervised and mentored Dr. Jiang in the laboratory as she progressed from postdoctoral fellow to Instructor at Harvard, helped her to co-author several manuscripts and served as mentor for a 2007 American Brain Tumor Association Postdoctoral Fellowship .Provided recommendation for her position at University of Wisconsin
- 2005 Bradley Schoch, M.D./Resident in Orthopedic Surgery, Mayo Clinic, Rochester, MN
I supervised and mentored Bradley as an undergraduate during a summer research project that lead to a publication, and assisted with personal statement and a letter of support that helped him to gain entrance to the University of Iowa Medical School.

- 2005 Meredith Thomas, B.A./medical student, Tufts Medical School, Boston, MA
I supervised and mentored Meredith as an undergraduate student during a summer research project, and provided advice that eventually lead to her admission to medical school.
- 2005-2006 Weil Lai, M.D./Resident in Urology, University of Florida, Gainesville, Fla.
I supervised and mentored Dr Lai as a post-baccalaureate student on several research projects that lead to publications, provided a clinic shadowing experience for him, assisted with his personal statement and wrote a letter of support that helped him to gain entrance to the Tufts Medical School.
- 2005-2006 Amanda Brosius Lutz/MSTP Student, Stanford Medical School.
I served as research mentor for Amanda's undergraduate thesis at Harvard University, and I wrote a letter of recommendation that helped her to gain admission to the M.D./Ph.D. program at Stanford.
- 2004-2011 Kevin Cahill, M.D., Ph.D./Fellow in Neurosurgery, University of Miami
I supervised and taught Dr. Cahill in clinical and didactic settings at Brigham and Women's Hospital.
- 2004-2011 Suzanne Tharin, M.D., Ph.D./Assistant Professor in Neurosurgery, Stanford University
I supervised and taught Dr. Tharin in clinical and didactic settings at Brigham and Women's Hospital.
- 2006-2013 Ning Lin, M.D./ Assistant Professor in Neurosurgery, Weill Cornell University
I supervised and taught Dr. Lin in clinical and didactic settings at Brigham and Women's Hospital
- 2006-2013 Urvasi Uphadaya, M.D./ Assistant Professor in Neurosurgery, UMass Medical School
I supervised and taught Dr. Uphadaya in clinical and didactic settings at Brigham and Women's Hospital
- 2006 Jessica Carroll/Regis College Accelerated Nurse Practitioner Program, Weston, MA
I supervised and mentored Jessica as a high school student in the laboratory, and provided advice to assist her to gain admission to Hamilton College in New York.
- 2007 Laura Frado, M.D./Resident in the Generalist Primary Care Program, Columbia University
I supervised and mentored Dr. Frado as a post-baccalureate student on a research project that lead to a publication, provided a clinic shadowing experience for her, assisted with her applications/personal statement and wrote a letter of support that helped her to gain entrance to SUNY Downstate Medical School.
- 2007-2008 Serdar Baki Albayrak, M.D./Assistant Professor, Suleyman Demirel University, Turkey
I supervised and mentored Dr. Albayrak as a postdoctoral fellow in the laboratory and helped him to co-author a manuscript on meningioma stem-like cells (under review, Cancer Research).
- 2007-2010 Wei Huang, M.D., Ph.D./Research Scientist, Belfer Institute for Applied Cancer Science, Boston, MA
I supervised and mentored Dr. Huang as a postdoctoral fellow in the laboratory and helped her to co-author several manuscripts on microRNAs in glioblastoma that were instrumental in helping her to obtain a position at the Belfer Institute.
- 2007-2014 Judith Wong, M.D./ Pediatric Neurosurgery Fellowship, University of Southern California
I supervised and taught Dr. Wong in clinical and didactic settings at Brigham and Women's Hospital
- 2007-2014 Steven Nalbach, M.D./ Private Practice in Neurosurgery, Tyler, Texas
I supervised and taught Dr. Nalbach in clinical and didactic settings at Brigham and

- Women's Hospital
- 2007-Pres Hong Wei Yang, M.D., Ph.D./Instructor, Harvard Medical School, Department of Neurosurgery, Brigham and Women's Hospital, Boston, MA.
I supervised and mentored Dr. Yang in the laboratory as he progressed from postdoctoral fellow to Instructor at Harvard, and helped him to co-author several manuscripts.
- 2008 Shenja Patterson, B.A./M.D-Ph.D. student, Boston University Medical School, Boston, MA.
Served as research mentor for Shenja during the summer and wrote a letter of recommendation that helped her to gain admission to the M.D./Ph.D. program at Boston University.
- 2008-2010 Takafumi Wataya, M.D., Ph.D./Clinical Fellow in Pediatric Neurosurgery, Toronto Hospital for Sick Children, Toronto, Canada
I supervised and mentored Dr. Wataya as a postdoctoral fellow in the laboratory, helped him to prepare a manuscript on cancer stem cells (under review, Cancer Research) and wrote a letter of support that helped him to obtain a neurosurgery fellowship in Toronto.
- 2009 Nihal Shrinath/ Student, Amherst College, Amherst, MA
I supervised and mentored Nihal as an undergraduate student during a summer research project, and helped him to co-author a manuscript on meningioma progression.
- 2009-2014 Alexander Ropper, M.D./ Spine Fellowship in Neurosurgery, Barrow Neurological Inst.
I supervised and taught Dr. Ropper in clinical and didactic settings at Brigham and Women's Hospital
- 2009 Joel Feske/Student, Bowdoin College, Bowdoin, Maine
I supervised and mentored Joel as an undergraduate student during a summer research project, and helped him to co-author a manuscript on meningioma cancer stem cells (under review, Cancer Research).
- 2009 Brenton Pennicooke/Medical Student, Harvard Medical School, Boston, MA
I supervised and mentored Brenton as a Harvard Medical School student during a summer research project, helped him to co-author a manuscript on microRNAs in GBM, and wrote a letter that assisted him in gaining admission to a neurosurgical residency at Cornell.
- 2009-2011 Shengye Song, B.A./Division of Thoracic Surgery, Brigham and Women's Hospital, Boston, MA. Accepted to Case Western M.D./Ph.D. program.
I supervised and mentored Shengye as a post-baccalureate student on a research project that lead to several publications, provided a clinic shadowing experience for her, assisted with her applications/personal statement and wrote a letter for her application to medical school.
- 2010 Gibran Minero/Medical Student, Harvard Medical and Business Schools, Boston, MA
I supervised and mentored Gibran as a Harvard Medical School student during a summer laboratory research project.
- 2010-2013 Yuchae Jung, Ph.D./Postdoctoral Fellow, Harvard Medical School, Department of Neurosurgery, Brigham and Women's Hospital, Boston, MA.
I supervised and mentored Yuchae during her postdoctoral fellowship. She is currently a postdoctoral fellow at Sookmyung Women's University in Seoul, Korea.
- 2011 Daniel McManus/University of Massachusetts, Boston, MA
I supervised and mentored Daniel as an undergraduate student participating in the DFCI CURE program, and I provided career advice that helped him choose to enter the UMass Boston pre-med program as a transfer student from Lasell College.

2011-2013	Yun Zhao, M.D./Postdoctoral Fellow and Master's Degree candidate, Harvard Medical School, Department of Neurosurgery, Brigham and Women's Hospital, Boston, MA.
2011-Pres	Hongyan Xing, Ph.D./Postdoctoral Fellow, Harvard Medical School, Department of Neurosurgery, Brigham and Women's Hospital, Boston, MA.
2012-2013	Hongwei Li, M.D./Ph.D. Candidate, Zhengzhou University, Department of Neurosurgery, Zhengzhou, China and Department of Neurosurgery, Brigham and Women's Hospital, Boston, MA/ Neurosurgery Resident, Zhengzhou University, China
2013-2014	Melissa Chua, B.S./M.S. Candidate, Boston University Boston University student working on Neuroscience thesis involving glioblastoma. Accepted to Boston University Medical School
2013-2014	Esther Chung, B.S. Candidate, Harvard University, Cambridge, MA Harvard University undergraduate working on Neuroscience thesis involving glioblastoma. Accepted to Harvard Medical School
2015- Present	Kelsey Clayman, B.S. Candidate, Harvard University, Cambridge, MA Harvard University undergraduate working on Neuroscience thesis involving glioblastoma.
2015- Present	Lei Han, M.D./PhD Candidate, China MD/PhD Candidate working on glioblastoma and hydrocephalus.

Formal Teaching of Peers (e.g., CME and other continuing education courses)

2006	Molecular Biology of Meningiomas and Gliomas Mandarin Hotel, Boston, MA. 14 th Annual Tumors of the Central Nervous System; Harvard Medical School Department of Continuing Education)	1 Boston, MA
2007	Molecular Biology of Meningiomas and Gliomas Mandarin Hotel, Boston, MA. 15 th Annual Tumors of the Central Nervous System, Harvard Medical School Department of Continuing Education	1 Boston, MA
2007	International Conference on Glioma Research & Therapy (Course Director) Marriott Hotel, Boston, MA; Harvard Medical School Department of Continuing Education	2 Boston, MA
2008	Molecular Characteristics of Malignant Gliomas/Invited Speaker Hynes Convention Center, Boston, MA. International Meeting of the World Federation of Neurosurgical Societies, (Harvard Medical School Department of Continuing Education)	1 Boston, MA
2008	Meningioma Stem Cells/Oral Abstract Platform Presentation Hynes Convention Center. Boston, MA. International Meeting of the World Federation of Neurosurgical Societies (Harvard Medical School Department of Continuing Education)	1 Boston, MA

2008	Biology of Malignant Gliomas: New Discoveries Workshop/Moderator, Lecturer Hynes Convention Center, Boston, MA. International Meeting of the World Federation of Neurosurgical Societies (Harvard Medical School Department of Continuing Education)	1 Boston, MA
2009	Science of Meningiomas Dana Farber/Brigham and Women's Cancer Center Neuro-oncology Seminar	1 Boston, MA
2009	Molecular Biology of Meningiomas and Gliomas Mandarin Hotel, Boston, MA. 17 th Annual Tumors of the Central Nervous System (Harvard Medical School Department of Continuing Education)	1 Boston, MA
2010	Molecular Genetics of Brain Tumors Mandarin Hotel, Boston, MA. 18 th Annual Tumors of the Central Nervous System (Harvard Medical School Department of Continuing Education)	1 Boston, MA
2011	Molecular Genetics of Brain Tumors, Moderator and Speaker Mandarin Hotel, Boston, MA. 19 th Annual Tumors of the Central Nervous System (Harvard Medical School Department of Continuing Education)	1 Boston, MA
2012	Effect of Extent of Resection on Survival in Glioma Patients Dana Farber/Brigham and Women's Cancer Center Neuro-Oncology Grand Rounds	Boston, MA
2013	Adult Hydrocephalus Symposium Brigham and Women's Hospital	Boston, MA
2014	MicroRNAs and Glioblastoma Subclass Dana Farber/Brigham and Women's Cancer Center Neuro-Oncology Grand Rounds	Boston, MA
2015	Normal Pressure Hydrocephalus South Shore Hospital Neuroscience Grand Rounds	Weymouth, MA

Local Invited Presentations

2003	Peripheral Stimulation for Trigeminal Pain Brigham and Women's Neurosurgery Grand Rounds
2005	Genomics/Proteomics of Human Glioblastoma/Lecture Brigham and Women's Institute for the Neurosciences
2005	Molecular Analysis of Human Brain Tumors: Ganglioglioma and Other Glial Tumors/Lecture Brigham and Women's Hospital Development Office

2005 Molecular Analysis of Human Brain Tumors: Ganglioglioma and Other Glial Tumors/Lecture
Amos Society, Harvard Medical School

2006 The Integrated Meningioma Project/Invited Speaker
Brigham and Women's Hospital, Brain Science Foundation Board Meeting

2007, 2008 Head Trauma
BWH Neurosurgery Department Grand Rounds

2008 High Resolution DNA Analysis of Meningioma and Meningioma Progression/Invited Speaker
Brigham and Women's Hospital, Brain Science Foundation Board Meeting

2008 Meningioma Science: From Molecules to Meningioma Cells/Invited Speaker
Brigham and Women's Hospital, Brain Science Foundation

2008 Head Trauma
BWH Neurosurgery Department Grand Rounds

2009 Head Trauma
BWH Neurosurgery Department Grand Rounds

2009 Cancer Stem Cells: Targeting the Origins of Brain Cancer/Invited Speaker
Brigham and Women's Hospital Cancer Forum: Collaborations for a Cure Department of Surgery, Brigham and Women's Hospital

2010 Molecular and Cellular Biology of Brain Tumors
Brigham and Women's Hospital, Neurosurgery Department Research Retreat

2010 Career Development in Academic Medicine/Invited Speaker
Brigham and Women's Hospital STARS Summer Research Program

2010 Meningioma Cancer Stem Cells: A Progress Report
Cambridge, MA, Harvard Stem Cell Institute

2010 Head Trauma
BWH Neurosurgery Department Grand Rounds

2011 Inhibition of glioma invasion using Cdk inhibitors/Invited Speaker
Brigham and Women's Hospital, Brain Science Foundation Board Meeting

2011 Neurosurgery Research at the Brigham/Invited Speaker
Dana Farber Cancer Institute DF/BWCC Neuro-Oncology Retreat

2011 Cancer Stem Cells in Meningiomas and Gliomas: Identification, Characterization and Specification/Invited Speaker
Cambridge, MA, Harvard Stem Cell Institute

2011 Malignant Gliomas
Brigham and Women's Hospital Neurosurgery Department Grand Rounds

2011 When Less Is More: MicroRNAs in Glioblastoma:
Brigham and Women's Hospital Neurosurgery Department Grand Rounds

2012 Molecular Mechanisms of Meningioma Progression
Brigham and Women's Hospital Neurosurgery Department Grand Rounds

2013 Glioblastoma/Invited Speaker
Brigham and Women's Hospital Weiner Preoperative Center

2013 Obtaining an M.D./Ph.D./Invited Speaker.
Brigham Four Directions Summer Research Program

2013 A Search for Biomarkers in Normal Pressure Hydrocephalus/Invited Speaker
Brigham Research Institute Shark Tank.

- 2014 The Adult Hydrocephalus Program/Invited Speaker
Brigham and Women's Hospital Department of Neurosurgery Research Retreat
- 2014 Obtaining an M.D./Ph.D./Invited Speaker.
Brigham and Women's Four Directions Summer Research Program
- 2014 Neurosurgery as a Career/Invited Speaker.
Brigham and Women's STARS Summer Research Program
- 2015 Obtaining an M.D./Ph.D./Invited Speaker.
Brigham and Women's Four Directions Summer Research Program
- 2015 Neurosurgery as a Career/Invited Speaker.
Brigham and Women's STARS Summer Research Program

Report of Regional, National and International Invited Teaching and Presentations

No presentations below were sponsored by outside entities

Invited Presentations and Courses

Regional

- 2009 Molecular and Cellular Neurosurgical Oncology Laboratory/Invited Speaker
University of Massachusetts, Boston, MA
- 2011 Glioblastoma: A Neurosurgeon's Perspective/Neuroscience Grand Rounds Lecture
Weymouth, MA; South Shore Hospital
- 2013 Meningioma Immunotherapy/Panel Moderator
Boston, MA; Haley Family Foundation
- 2015 Normal Pressure Hydrocephalus/Neuroscience Grand Rounds Lecture
Weymouth, MA; South Shore Hospital

National

- 2003 Peripheral Stimulation for Treatment of Trigeminal Postherpetic Neuralgia and Post-traumatic Trigeminal Neuropathic Pain: A Pilot Study (Oral Abstract)
Kahlua Kona, Hawaii; Western Neurosurgical Society
- 2004-2006, Neuroscience in Neurosurgery/Guest Lecturer
2009-2010
Atlanta, Georgia; Morehouse School of Medicine Neuroscience Course
- 2005 Finding What Matters in Glioblastoma/Guest Lecturer
Rochester, MN; Mayo Clinic Neuro-Oncology Program
- 2005 A Putative Role for Peg3 In Malignant Glioma/Invited Speaker
Ponte Vedre, Florida; Sontag Foundation
- 2006 Finding What Matters In Human Gliomas/Invited Speaker
Bethesda, MD; National Institute of Neurological Diseases and Stroke K Award Symposium
- 2006 Intraoperative Magnetic Resonance Imaging Experience in 700 Patients/Panel Discussant
Washington, D.C; AANS/CNS Section on Tumors
- 2006 Peg3, β -catenin and Glioma Diversity/ Invited Speaker

- 2006 Ponte Vedre, Florida; Sontag Foundation
Giants: Myth or Reality?/ Invited Speaker
2006, CNS Honored Guest Dinner, Congress of Neurological Surgeons.
- 2007 A Hippocampal Precursor-like Cell of Origin For Cerebral Gangliogliomas/Ronald Bittner
Award Platform Lecture (Award Abstract)
Washington, D.C; American Association of Neurological Surgeons Annual Meeting
- 2009 A hippocampal cell of origin for ganglioglioma/Invited Speaker
St. Augustine, Florida; Sontag Foundation
- 2010 M.D., Ph.D.: Career, Calling or Crazy??/Keynote Speaker
Bethesda, MD; National Institute of Neurological Diseases and Stroke Summer Internship
Symposium
- 2010 Cyclin-Dependent Kinase-Associated Phosphatase (KAP)/Invited Speaker
Orlando, Florida; Sontag Foundation
- 2011 A developmental taxonomy of glioblastoma defined and maintained by
microRNAs/Invited Speaker
Ponte Vedre, Florida; Sontag Foundation
- 2012 Co-deletion of *CHEK2* with *NF2* and Meningioma Progression/Invited Speaker
Jacksonville, Florida; Sontag Foundation
- 2012 MicroRNAs in Glioblastoma/Invited Speaker
Washington, D.C.; Society for Neuro-Oncology
- 2013 Men in Medicine/Invited Speaker
Louisville, Kentucky.; Student National Medical Association
- 2013 MicroRNA-29a in Glioblastoma/Invited Speaker
Newport Beach, California; American Academy of Neurological Surgeons
- 2013 MicroRNAs and Glioblastoma Subclass/Visiting Professor
Chicago, Illinois. Northwestern University Brain Tumor Institute
- 2014 Normal Pressure Hydrocephalus/Invited Speaker
Palm Springs, California; Sontag Foundation
- 2014 Meningioma: From Bad To Worse/Invited Speaker
Seattle, WA. University of Washington
- 2014 Technology in Medicine/Invited Speaker
Boston, MA.; Student National Medical Association
- 2015 Regulation of Glioblastoma Cancer Stem-like Cell Fate/ Distinguished Visiting Professor
Houston, TX. MD Amderson Cancer Institute
- 2016 Quantitative Analysis of Gait and Language in Normal Pressure Hydrocephalus/Invited
Speaker
Chicago, IL.; American Association of Neurological Surgeons

International

- 2008 Molecular Characteristics of Malignant Gliomas/Invited Speaker
6th International Congress on Meningiomas and Cerebral Venous System, Hynes
Convention Center, Boston, MA; World Federation of Neurosurgical Societies, AANS,

- 2008 Harvard Medical School Department of Continuing Education
Meningioma Stem Cells/ Platform Presentation (Oral Abstract)
6th International Congress on Meningiomas and Cerebral Venous System, Hynes
Convention Center. Boston, MA; World Federation of Neurosurgical Societies, AANS,
Harvard Medical School Department of Continuing Education
- 2008 Biology of Malignant Gliomas: New Discoveries Workshop/Moderator, Lecturer
6th International Congress on Meningiomas and Cerebral Venous System, Hynes
Convention Center, Boston, MA; World Federation of Neurosurgical Societies, AANS,
Harvard Medical School Department of Continuing Education
- 2013 A Cooperative MicroRNA Network in Glioblastoma/Invited Speaker
St. John, USVI.; Sontag Foundation
- 2013 Resection of Insular Tumors: Maximizing Benefits and Minimizing Risks/Invited Speaker.
Seoul, Korea 15th World Congress of Neurosurgery, World Federation of Neurosurgical
Societies.
- 2013 A Cooperative MicroRNA Network in Glioblastoma/Platform Speaker. Seoul, Korea 15th
World Congress of Neurosurgery, World Federation of Neurosurgical Societies.
- 2013 Glioma, Basic Research I/Moderator. Seoul, Korea 15th World Congress of Neurosurgery,
World Federation of Neurosurgical Societies.
- 2013 The Role of MicroRNAs and Cancer Stem Cells in Glioblastoma/Invited Speaker. Seoul,
Korea. Sookmyung Women's University.

Report of Clinical Activities and Innovations
Current Licensure and Certification

- 2003-Pres Massachusetts State Full Medical License
2009-Pres Diplomate, American Board of Neurological Surgery

Practice Activities

- | | | | |
|---------------|---|---|---|
| 2004-
2006 | Full neurosurgical practice
with a focus on brain tumors
and pain management.
Included among the most
common procedures were
craniotomy for tumor, awake
craniotomy with functional
mapping, radiosurgery, head
trauma, VP shunt, Chiari
decompression, and placement
of intrathecal pumps or
electrical stimulators for
treatment of spasticity or pain. | Department of Neurosurgery
Brigham and Women's
Hospital, Boston, MA | Performed approximately 150
neurosurgical operative
procedures and 500 outpatient
visits annually. |
| 2007-
2014 | Full neurosurgical practice
with a focus on brain tumors | Department of Neurosurgery
Brigham and Women's | Performed an average of
approximately 200 |

and pain management. Included among the most common procedures were craniotomy for tumor, awake craniotomy with functional mapping, radiosurgery, head trauma, VP shunt, Chiari decompression, and placement of intrathecal pumps or electrical stimulators for treatment of spasticity or pain.

Hospital, Boston, MA

neurosurgical procedures and 900 outpatient visits annually.

Clinical Innovations

Peripheral trigeminal nerve stimulation for traumatic facial pain/BWH and OHSU, 2004

I published an article in 2004 detailing the method and efficacy of subcutaneous placement of stimulating electrodes for relief of atypical facial pain occurring after facial trauma. I have performed this procedure on several patients at Brigham and Women's Hospital. The article has been widely cited, and the technique is currently in use at other institutions around the country.

Identification of small molecule inhibitors of glioma invasion/BWH, 2007

I published an article in 2007 identifying a novel Cdc2-dependent invasion pathway in glioblastoma cells, and reported that glioblastoma cell invasion could be inhibited by Cdc2 inhibitors. Additional research since that time has identified additional orally bioavailable cyclin-dependent kinase inhibitors that have the potential of decreasing glioma cell invasion in humans.

Development of a new molecular classification system for glioblastoma and identification of a novel glioblastoma subclass/BWH, 2011

In 2011, I published an article that used microRNA expression data from The Cancer Genome Atlas for glioblastoma to identify 5 clinically and genetically distinct subclasses of glioblastoma. Previous studies had identified only four subclasses. This classification scheme is clinically useful for prognosis in glioblastoma patients.

A device that allows for both CSF diversion and administration of intrathecal chemotherapy/BWH, 2011

In 2011, I and my colleagues at Brigham and Women's Hospital described a therapy for patients who have both carcinomatous meningitis and hydrocephalus that involves placement of a subcutaneous reservoir connected in series to an on/off valve and a ventriculoperitoneal shunt. This allows for both diversion of CSF and injection of intrathecal chemotherapy. Patients receiving this device displayed improved survival when compared to those who did not receive the device. I performed this procedure on several of the patients who were included in the study, and this approach continues to be used at the Brigham and elsewhere.

Adult Hydrocephalus Program/BWH,

I have recently worked with the Departments of Neurosurgery, Neurology and Psychiatry to establish a multidisciplinary Adult Hydrocephalus Program that is focused on normal pressure hydrocephalus. The Program not only focuses on the

2012 delivery of high quality care, but it also includes an emphasis on public education and on advancing research through the development of a robust research program in this understudied area. We have implemented an economical, wearable, wireless, computerized gait analysis system that enables the most thorough analysis of changes in the gait of NPH patients after CSF drainage to date.

Report of Education of Patients and Service to the Community

Activities

No activities below were sponsored by outside entities.

- 1986 Harvard Adolescent Health and Sexuality Program, Harvard Medical School and English High School, Boston Public Schools/Volunteer Instructor
Served as a volunteer instructor on health and sexuality issues for approximately 30 high school students.
- 1990-1991 Massachusetts Pre-engineering Program/Course Organizer and Instructor
Served as course organizer and volunteer instructor in neurobiology for 10-15 elementary school students from the Brookline public schools.
- 1990-1991 Biology Tutor and Pre-med Student Advisor, Mather House, Harvard University
2007, 2008, Meningioma Awareness Day Planning Committee, Brain Science Foundation
2012
- 2007 Meningioma Awareness Day/ Invited Speaker, Brain Science Foundation
Title: Meningioma: What Do Genes Have To Do With It?/Invited Lecture
- 2008 Meningioma Awareness Day/ Invited Speaker, Brain Science Foundation
Title: Maximizing Your Partnership With Your Physician
- 2008 Breakfast at the Brigham/Keynote Speaker, Brain Science Foundation
Title: In Search of Meningioma Cancer Stem Cells
- 2009 Boston College Club/Keynote Speaker, Brain Science Foundation
Title: Brain Cancer Stem Cells: The Battle Is Joined
- 2009 American Brain Tumor Association Biennial Meeting/Invited Speaker
Title: Treatment of Benign Brain Tumors
- 2010 Meningioma Awareness Day/Invited Speaker, Brain Science Foundation
Title: Cancer Genomics and Meningioma
- 2011 Haverhill, MA/Invited Speaker, Greater Haverhill Essex Club
Title: Crossroads of Life: A Neurosurgeon's Journey
- 2011 WBZ Radio *Nightside with Dan Rea*/Guest Expert
One hour national radio talk show discussing possible relationship between cell phones and brain cancer.
- 2012 American Brain Tumor Association Biennial Meeting/Invited Speaker
Title: Treatment of Benign Brain Tumors
- 2012 Meningioma Awareness Day/ Panel Moderator, Brain Science Foundation
Mock Brain Tumor Board Panel
- 2013 American Brain Tumor Association Webcast/ Presenter, American Brain Tumor Association
Title: Understanding Meningioma Tumors: Updates in Treatments and Trends
- 2013 National Public Radio, *Here and Now with Robin Young*, Guest Expert

- 2013 Title: Normal Pressure Hydrocephalus
Boston Globe, *Misdiagnosed: Symptoms mistaken for Alzheimer's or Parkinson's could be a reversible illness.*(author, Kay Lazar), Guest Expert on Normal Pressure Hydrocephalus.
- 2014 Spina Bifida Association of Greater New England,
Title: *Hydrocephalus in Spina Bifida Patients.*
- 2015 Northeast Florida Brain Tumor Support Group
Title: Inside the Mind of Your Doctor: Getting the Most From the Doctor Patient Relationship
- 2015 American Brain Tumor Association Patient and Family Conference/Invited Speaker
Title: Surgery for Brain Tumors: The Latest Advances

Report of Scholarship

Publications

Peer reviewed publications in print or other media

Research Investigations

1. Chu HK, **Johnson MD**, Frye CL. Tertiary alcoholysis of chlorosilanes via tetracoordinate silylated quarternary ammonium intermediates. *J Organometallic Chem* 1984; 271:327-36.
2. Simpkins CO, Ives N, Tate EA, **Johnson MD**. Naloxone inhibits superoxide release from human neutrophils. *Life Sci* 1985; 37:1381-6. PMID: 2995744
3. Simpkins CO, Alailima ST, Tate EA, **Johnson MD**. The effect of enkephalins and prostaglandins on O₂- release by neutrophils. *J Surgical Res* 1986; 41:645-52. PMID: 3023754
4. **Johnson MD**, Potter DD. Co-culture of dissociated hippocampal and sympathetic cells from the neonatal rat. *Quarterly J Exp Physiol* 1989; 74:1043-50. PMID: 2626532
5. Simpkins CO, Mazarow DL, Alailima ST, Tate EA, Sweatt W, **Johnson MD**, Shariff K, Millar D. Prostaglandin D₂ modulates human neutrophil intracellular calcium flux and inhibits superoxide release via its ring carbonyl. *Life Sci* 1990; 46:793-01. PMID: 2319907
6. **Johnson MD**, Ma PM. Localization of NADPH diaphorase activity in monoaminergic neurons of the rat brain. *J Comp Neurol* 1993; 332:391-06. PMID: 8102384
7. **Johnson MD**. Synaptic glutamate release by postnatal rat serotonergic neurons in microculture. *Neuron* 1994; 12:433-42. (Cover Feature) PMID:7906530
8. **Johnson MD**. Electrophysiological and histochemical properties of postnatal rat serotonergic neurons in culture. *Neuroscience* 1994; 63:775-87. PMID:7898677

9. **Johnson MD**, Yee AG. Ultrastructure of electrophysiologically-characterized synapses formed by serotonergic raphe neurons in culture. *Neuroscience* 1995; 67:609-23. PMID: 7675190
10. **Johnson MD**, Kinoshita Y, London S, Xiang H, Mayberg M, Morrison RS. Evidence for involvement of Bax and p53, but not caspases, in radiation-induced cell death of cultured postnatal hippocampal neurons. *J Neurosci Res* 1998; 54:721-33. PMID:9856857
11. **Johnson MD**, Kinoshita Y, London S, Xiang H, Ghatan S, Morrison RS. Contribution of p53 dependent caspase activation to neuronal cell death declines with neuronal maturation. *J Neurosci* 1999; 19:2996-06. PMID:10191317
12. Gadjusek C, Onoda K, London S, **Johnson M**, Morrison R, Mayberg M. Early molecular changes in irradiated aortic endothelium. *J Cell Physiol* 2001; 188:8-23. PMID: 11382918
13. **Johnson MD**, Wu X, Aithmitti N, Morrison RS. Peg3/Pw1 is a mediator between p53 and bax in DNA damage-induced neuronal death. *J Biol Chem* 2002; 277:23000-07. PMID:11943780
14. Yu L-R, **Johnson MD**, Conrads TP, Smith RD, Morrison RS, Veenstra TD. Proteome analysis of camptothecin-treated cortical neurons using isotope-coded affinity tags. *Electrophoresis* 2002; 23:1591-8. PMID: 12179976
15. **Johnson MD**, Yu LR, Conrads TP, Kinoshita Y, Uo T, Matthews JD, Lee SW, Smith RD, Veenstra TD, Morrison RS. Proteome analysis of DNA damage-induced neuronal death using high throughput mass spectrometry. *J Biol Chem* 2004; 279:26685-97. PMID:15060066
16. **Johnson MD** and Burchiel KJ. Peripheral stimulation for treatment of trigeminal postherpetic neuralgia and trigeminal posttraumatic neuropathic pain: a pilot study. *Neurosurgery* 2004; 55:135-142. PMID: 15214982
17. Lai WR, **Johnson MD**, Kucherlapati R, Park PJ. Comparative analysis of algorithms for identifying amplifications and deletions in array CGH data. *Bioinformatics* 2005; 21:3763-70. PMID:16081473
18. Liu F, Park PJ, Lai W, Maher E, Chakravarti A, Durso L, Jiang X, Yu Y, Brosius A, Thomas M, DePinho R, Kohane I, Carroll RS, Black PM, **Johnson MD**. A genome-wide screen reveals functional gene clusters in the cancer genome and identifies EphA2 as a mitogen in glioblastoma. *Cancer Res* 2006; 66:10815-23. (Cover Feature) PMID:17090523
19. Yu Y, Jiang X, Schoch BS, Carroll RS, Black PM, **Johnson MD**. Aberrant splicing of cyclin-dependent kinase-associated protein phosphatase KAP increases proliferation and migration in glioblastoma. *Cancer Res* 2007; 67:130-138. PMID:17210692
20. Dreyfuss JM, **Johnson MD**, Park PJ. Meta-analysis of glioblastoma multiforme versus anaplastic astrocytoma identifies robust gene markers. *Mol Cancer* 2009; 8:71. PMID:19732454
21. Kim H, Huang W, Jiang X, Pennicooke B, Park PJ, **Johnson MD**. Integrative genome analysis reveals an oncomir/oncogene cluster regulating glioblastoma survivorship. *Proc Natl Acad Sci* 2010;

107:2183-2188. PMID:20080666

22. Jiang X, Yu Y, Yang HW, Agar N, Frado L, **Johnson MD**. The imprinted gene *PEG3* inhibits Wnt signaling to regulate glioma growth. *J Biol Chem* 2010; 285:8472-8480. PMID:20064927
23. Agar NY, Malcolm JG, Mohan V, Yang HW, **Johnson MD**, Tannenbaum A, Agar JN, Black PM. Imaging of Meningioma Progression by Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry. *Anal Chem* 2010; 82:2621-2625. PMID: 20196536
24. Yang HW, Menon L, Black PM, Carroll RS and **Johnson MD**. *SNAI2*/Slug promotes growth and invasion in human gliomas. *BMC Cancer* 2010; 10:301. PMID:20565806
25. Kim T, Huang W, Park R, Park PJ and **Johnson MD**. A developmental taxonomy of glioblastoma defined and maintained by microRNAs. *Cancer Res* 2011; 71(9):3387-99. PMID:20064927
26. Xi R, Hadjipanayis AG, Luquette LJ, Kim TM, Lee E, Zhang J, **Johnson MD**, Muzny DM, Wheeler DA, Gibbs RA, Kucherlapati R, Park PJ. Copy number variation detection in whole-genome sequencing data using the Bayesian information criterion. *Proc Natl Acad Sci USA* 2011; 108:E1128-1136. PMID: 22065754
27. Lin N, Dunn IF, Glantz M, Allison DL, Jensen R, **Johnson MD**, Friedlander RM, Kesari S. Benefit of ventriculoperitoneal cerebrospinal fluid shunting and intrathecal chemotherapy in neoplastic meningitis: a retrospective, case-controlled study. *J Neurosurg* 2011; 115:730-736. PMID: 21721878
28. Yang HW, Kim T-M, Song S, Shrinath N, Park R, Kalamarides M, Park PJ, Black PM, Carroll RS and **Johnson MD**. Alternative splicing of *CHEK2* and co-deletion with *NF2* promote chromosomal instability in meningioma. *Neoplasia* 2012; 14:20-28. (Cover Feature) PMID: 22355270
29. Jiang X, Xing H, Kim T-M, Jung Y, Huang W, Yang HW, Song S, Park PJ, Carroll RS and **Johnson MD**. Numb regulates glioma stem cell fate and growth by altering epidermal growth factor receptor and SCF ubiquitin ligase activity. *Stem Cells* 2012; 30:1313-26. PMID: 22553175
30. Kim TM, Xi R, Luquette LJ, Park RW, **Johnson MD** and Park PJ. Functional genomic analysis of chromosomal aberrations in a compendium of 8000 cancer genomes. *Genome Res* 2013; 23:217-227. PMID:23132910
31. Li H, Jiang X, Yu Y, Huang W, Xing H, Agar NY, Yang HW, Yang B, Carroll RS and **Johnson MD**. KAP regulates ROCK2 and Cdk2 in an RNA-activated glioblastoma invasion pathway. *Oncogene* 2014; doi:10.1038/onc.2014.49. PMID: 24704824
32. Rajakesari S, Arvold ND, Jimenez RB, Christianson LW, Horvath MC, Claus EB, Golby AJ, **Johnson MD**, Dunn IF, Lee EQ, Lin NU, Friesen S, Mannarino EG, Wagar M, Hacker FL, Weiss SE, Alexander BM. Local control after fractionated stereotactic radiation therapy for brain metastases. *J Neuro Oncol*. 2014. PMID: 25059451
33. Aizer AA, Arvold ND, Catalano P, Claus EB, Golby AJ, **Johnson MD**, Al-Mefty O, Wen PY,

- Reardon DA, Lee EQ, Nayak L, Rinne ML, Beroukhir R, Weiss SE, Ramkissoon SH, Abedalthagafi M, Santagata S, Dunn IF, Alexander BM. Adjuvant radiation therapy, local recurrence, and the need for salvage therapy in atypical meningioma. *Neuro Oncol*. 2014. pii: nou098. PMID: 24891451
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35. Ansari KI, Ogawa D, Roj AK, Lawler SE, Krichevsky AM, **Johnson MD**, Chiocca EA, Bronisz A, Godlewski J. Glucose-based regulation of miR-451/AMPK signaling depends on the OCT1 transcription factor. *Cell Rep*. 2015; 11:902-9. PMID: 25937278
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37. Liu Y, Alexander BM, Chen YH, Horvath MC, Aizer AA, Claus EB, Dunn IF, Golby AJ, **Johnson MD**, Friesen S, Mannarino EG, Wagar M, Hacker FL, Arvold ND. Salvage whole brain radiotherapy or stereotactic radiosurgery after initial stereotactic radiosurgery for 1-4 brain metastases. *J Neurooncol*. 2015 Jun 25. PMID: 26108659
38. Rahman R, Catalano PJ, Reardon DA, Norden AD, Wen PY, Lee EQ, Nayak L, Beroukhir R, Dunn IF, Golby AJ, **Johnson MD**, Chiocca EA, Claus EB, Alexander BM, Arvold ND. Incidence, risk factors, and reasons for hospitalization among glioblastoma patients receiving chemoradiation. *J Neurooncol*. 2015; 124:137-46. PMID: 26033544
39. Ramkissoon SH, Bi WL, Schumacher SE, Ramkissoon LA, Haidar S, Knoff D, Dubuc A, Brown L, Burns M, Cryan JB, Abedalthagafi M, Kang YJ, Schultz N, Reardon DA, Lee EQ, Rinne ML, Norden AD, Nayak L, Ruland S, Doherty LM, LaFrankie DC, Horvath M, Aizer AA, Russo A, Arvold ND, Claus EB, Al-Mefty O, **Johnson MD**, Golby AJ, Dunn IF, Chiocca EA, Trippa L, Santagata S, Folkerth RD, Kantoff P, Rollins BJ, Lindeman NI, Wen PY, Ligon AH, Beroukhir R, Alexander BM, Ligon KL. Clinical implementation of integrated whole-genome copy number and mutation profiling for glioblastoma. *Neuro Oncol*. 2015 Mar 9. pii: nov015. PMID: 25754088
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41. Wade JH, Alsop AT, Vertin NR, Yang H, **Johnson MD**, Bailey RC. Rapid, Multiplexed Phosphoprotein Profiling Using Silicon Photonic Sensor Arrays. *ACS Cent Sci* 2015; 1:374-382. PMID: 26539563
42. Kim J, Lee IH, Cho HJ, Park CK, Jung YS, Kim Y, Nam SH, Kim BS, **Johnson MD**, Kong DS, Seol HJ, Lee JI, Joo KM, Yoon Y, Park WY, Lee J, Park PJ, Nam DH. Spatiotemporal Evolution of the Primary Glioblastoma Genome. *Cancer Cell* 2015; 28:318-28. PMID: 26373279

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Other peer-reviewed publications

46. Morrison RS, Kinoshita Y, Xiang H, **Johnson MD**, Kuntz C, Ghatan S, Ho JT, Schwartzkroin PA. Mechanisms of neuronal cell death. *Mental Retardation and Dev Disabilities* 1998; 4:157-70.
47. Morrison RS, Kinoshita Y, **Johnson MD**, Uo T, Ho JT, McBee JK, Conrads T, Veenstra TD. Proteomic analysis in the neurosciences. *Mol Cell Proteomics* 2002; 1:553-60. PMID: 12376570
48. Morrison RS, Kinoshita Y, **Johnson MD**, Guo W, Garden G. p53-dependent cell death signaling in neurons. *Neurochem Res* 2003; 28:15-27. PMID: 12587660
49. **Johnson MD**, Yu LR, Conrads TP, Kinoshita Y, Uo T, McBee JK, Veenstra TD and Morrison RS. The proteomics of neurodegeneration. *Am J Pharmacogenomics* 2005; 5:259-270. PMID: 16078862

Reviews, chapters, monographs and editorials

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51. **Johnson MD**, Ojemann GA. The role of the human thalamus in language and memory: Evidence from electrophysiological studies. *Brain Cogn* 2000; 42:218-230. PMID: 10744921
52. Morrison RS, Kinoshita Y, **Johnson MD**, Ghatan S, Ho JT, Garden G. Neuronal survival and cell death signaling pathways. In: Alzheimer C, ed. *Molecular and Cellular Biology of Neuroprotection in the CNS*. Georgetown, TX: Landes Bioscience, 2002. PMID: 12575817
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54. Morrison RS, Kinoshita Y, **Johnson MD**, Conrads TP. Proteomics in the postgenomic age. In: Veenstra T and Smith RD eds. *Advances in Protein Chemistry: Proteome Characterization and Proteomics*, 2003; 65:1-23. PMID: 12964364
55. Black PM and **Johnson MD**. Surgical resection for patients with solid brain metastases: Current status. *J Neurooncol* 2004; 69:119-24. PMID: 15527084
56. Black P, Golby A and **Johnson M**. The emerging field of neurosurgical oncology: novel techniques to optimize outcomes and minimize mishaps. *Clin Neurosurg*, 2007; 54:36-46. PMID: 18504895
57. Godlewski J, Krichevsky AM, **Johnson MD**, Chiocca EA, Bronisz A. Belonging to a network--microRNAs, extracellular vesicles, and the glioblastoma microenvironment. *Neuro Oncol* 2015; 17:652-62. PMID: 2530181
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Selected Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings

1. **Johnson MD**, Shear S, Spence A, Stelzer K, Shaw C-M, Silbergeld DL. Second malignancies after cranial irradiation: age at irradiation and latency to onset are related to tumor type. *CNS Abstr* 2001. (*First Place Poster Award, Tumor Section, CNS Annual Meeting*)
2. **Johnson MD**, Yu Y, Jiang X, Lai W, Chenn A, Ligon K, Walsh C, Black P, Park P. A Hippocampal Precursor-like Cell of Origin For Cerebral Gangliogliomas. 2007, American Association of Neurological Surgeons Abstr, Article ID: 40803. (*Ronald Bittner Award, Tumor Section, AANS Annual Meeting*)
3. Kim H, Huang W, Jiang X, Park P and **Johnson MD**. An integrated method for tissue-specific identification of microRNA targets. 2009, NIH Director's Pioneer Award Symposium, Bethesda, MD.
4. Jung Y, Kim T-M, Park PJ and **Johnson MD**. A cooperative microRNA network in glioblastoma. 2011, NIH Director's Pioneer Award Symposium, Bethesda, MD. (*Selected for Keynote Address*)
5. MicroRNA-29a activates a growth and invasion program in glioblastoma by targeting Sox4 and PTEN. Zhao Y, Huang W, Kim TM, Jung Y, Yang HW, Carroll RS, Park PJ and Johnson MD. 2012, NIH Director's Pioneer Award Symposium, Bethesda, MD.

6. Yang HW, Kim TM, Song SS, Menon L, Jiang X, Huang W, Black PM, Carroll RS and Johnson MD. A Small Subunit Processome Protein Promotes Cancer by Altering Translation and Metabolism. 2013, *Best Poster Award*, Institute for the Neurosciences at Brigham and Women's Hospital Research Symposium.

Narrative Report (limit to 500 words)

I am a neurosurgeon with expertise in the management of brain tumors. I am also Director of the Adult Hydrocephalus Program and serve as Director of Neurosurgical Pain Management. As a significant supporting activity, I maintain a research laboratory that is focused on the genomics, cell biology and treatment of brain tumors. I devote approximately 60% of my time to clinical practice, 30% to laboratory research, and 10% to teaching and administrative tasks.

My primary clinical focus is the neurosurgical management of brain tumors. I have a robust clinical practice, averaging approximately 200 neurosurgical procedures and 900 outpatient visits annually since 2007. I have developed a national reputation in neurosurgical oncology, as evidenced by the publication of several invited reviews and by invitations to speak at national meetings for the NIH, the American Brain Tumor Association, the Brain Science Foundation, the Congress of Neurological Surgeons, the American Association of Neurological Surgeons, and the World Federation of Neurosurgical Societies. In 2013, I was recognized by *Boston Super Doctors* for neurosurgical oncology.

I also maintain a large practice in normal pressure hydrocephalus and functional neurosurgery. I am the primary point of referral in the department for patients with hydrocephalus, and have established the first dedicated Adult Hydrocephalus Program in New England. Additionally, I perform most of the baclofen pump implantations for spasticity for BWH and for Spaulding Rehabilitation Hospital. As Director of Neurosurgical Pain Management, I published an influential article on peripheral stimulation for facial pain in 2004.

In addition to my clinical activities, I have established a translational brain tumor research laboratory that has resulted in several discoveries, including the identification of a novel glioblastoma subclass, the first report of a cooperative oncogene/oncomiR amplicon regulating glioblastoma survivorship, and the identification of a novel glioblastoma invasion pathway that can be targeted using Cdk inhibitors. I have published nearly 60 peer-reviewed articles and educational reviews, and have obtained multiple NIH and foundation grants including an NIH R01, an NIH Director's New Innovator Award and a Sontag Foundation Distinguished Scientist Award. My research has been recognized nationally by several scientific awards, invitations to chair the scientific program committees for several national neurosurgical meetings, appointments to multiple NIH study sections, and invitations to be a keynote speaker at several NIH, national and international brain tumor conferences. In addition, I was recently inducted into the honorary neurosurgical research organization, the American Academy of Neurological Surgery.

Teaching has been an integral part of my activities. I have lectured extensively to peers and the lay community both locally and nationally, and have organized numerous professional and community-based educational events. In addition, I have regularly taught Harvard medical students and residents in clinical and didactic settings. Since 2003, I have trained and mentored over 24 neurosurgical residents and 27 postdoctoral fellows and students in the research laboratory. My efforts have been recognized with the University of Washington's Outstanding Role Model/Mentor Award, Harvard's Young Mentor of the Year Award, the Boston YMCA's Black Achievers Award and, most recently, the Harvard Visiting Clerkship Mentorship Award.