

Michael Lim

Michael Lim, MD, is an assistant professor of Neurosurgery and Oncology at Johns Hopkins University.

Education and Training

Undergraduate 1995 B.S., Biochemistry, University of New Hampshire, Durham, NH Doctoral/Graduate

2000 M.D., The Johns Hopkins University School of Medicine, Baltimore, MD Postdoctoral

2000-01 Intern, General Surgery, Stanford University Medical Center, Stanford, CA

2001-07 Resident, Neurosurgery, Stanford University Medical Center, Stanford, CA

Professional Experience

2007-2013 Assistant Professor of Neurosurgery, Oncology, and Radiation Oncology and Radiation Molecular Sciences, The Johns Hopkins University School of Medicine

2013-Present Associate Professor of Neurosurgery, Oncology, and Radiation Oncology and Radiation Molecular Sciences, The Johns Hopkins University School of Medicine

RESEARCH ACTIVITIES

Peer Reviewed Original Science Publications: *Co-Authors 1. Khimani AH, Lim M, Graf TG, Smith TF, Ruprecht RM. Complete Genome of Rauscher Murine Leukemia Virus and its Phylogenetic Relationship with Other Murine Leukemia Viruses. *Virology* 1997; (238): 64-67. 2. Simons JW, Mikhak B, Chang JF, DeMarzo AD, Carducci MA, Lim M, Weber CE, Baccala AA, Goemann MA, Clift SM, Ando DG, Levitsky HI, Cohen LK, Sanda MG, Mulligan RC, Partin AW, Carter HB, Piantadosi S, Marshall FF, Nelson WG. Induction of Immunity to Prostate Cancer Antigens: Results of a Clinical Trial of Vaccination with Irradiated Autologous Prostate Tumor Cells Engineered to Secrete GM-CSF using Ex Vivo Gene Transfer. *Cancer Res.* 1999; Oct 15;59(20):5160-8. 3. Zhong H, DeMarzo AM, Laughner E, Lim M, Hilton DA, Zagzag D, Puechler P, Isaacs WB, Semenza GL, Simons JW. Overexpression of Hypoxia-Inducible Factor 1 Alpha in Common Human Cancers and Their Metastases. *Cancer Res.* 1999; Nov 15;59(22):5830-5. 4. Lim M, Gibbs I, Adler JR, Martin D, Chang S. The Efficacy of Stereotactic Radiosurgery In Treating Glomus Jugulare Tumors. *Technol Cancer Res Treat.* 2003; Jun;2(3):261-266. 5. Lim M, Gibbs I, Adler JR, Chang S. The Efficacy and Safety of Stereotactic Radiosurgery for Glomus Jugulare Tumors. *Neurosurgical Focus.* 2004; Aug;17(2): 68-72. 6. Lim M, Haddix T, Harsh GR, Vogel H, Steinberg G, Guccione S. Characterization of the Integrin $\alpha\beta3$ in Arteriovenous Malformations and Cavernous Malformations. *Cerebrovasc Dis.* 2005 May 30;20(1):23-27. 7. Lim M, Villavicencio A, Burneikienė S, Chang SD, Romanelli P, McNeely L, McIntyre M, Thramann JJ, Adler JR. Cyberknife Radiosurgery for Idiopathic Trigeminal Neuralgia. *Neurosurgical Focus.* 2005; May;18(5):E9. 8. Lim M, Guccione S, Haddix T, Sims L, Cheshier SH, Chu P, Vogel H, Harsh GH. $\alpha\beta3$ Integrin in Central Nervous System Tumors. *Hum Pathol.* 2005; Jun;36(6):665-9.

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- Belcaid Z, Phallen JA, Zeng J, See AP, Mathios D, Gottschalk C, Nicholas S, Kellett M, Ruzevick J, Jackson C, Albesiano E, Durham NM, Ye X, Tran PT, Tyler B, Wong JW, Brem H, Pardoll DM, Drake CG, Lim M. Focal radiation therapy combined with 4-1BB activation and CTLA-4 blockade yields long-term survival and protective antigen-specific memory response in a murine glioma model. *PLOS One.* 2014. July;9(7):e101764. 58.
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59. Chaichana KL, Acharya S, Flores M, Wijesekera O, Rigamonti D, Weingart JD, Olivi A, Bettegowda C, Gallia GL, Brem H, Lim M, Quinones-Hinojosa A. Identifying better surgical candidates among recursive partitioning analysis class 2 patients who underwent surgery for intracranial metastases. *World Neurosurg.* 2014 Jul-Aug;82(1-2):e267-75.
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61. Chen CW, Puvanesarajah V, Lo SF, Cheng TJ, Cheng CY, Lim M, Lin HJ. Selective cerebral hypothermia induced via hypothermic retrograde jugular vein saline flush in a porcine model. *Neurol Res.* 2014 Oct;36(10):897-902. 62.
- Kang J, Huang J, Gailloud P, Rigamonti D, Lim M, Bernard V, Ehtiaty T, Ford EC. Planning evaluation of Carm cone beam CT angiography for target delineation in

stereotactic radiation surgery of brain arteriovenous malformations. *Int J Radiat Oncol Biol Phys*. 2014 Oct 1;90(2):430-7.

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Review Articles

1. Lim M Simons JW. Emerging concepts in GM-CSF gene transduced tumor vaccines for human prostate cancer. *Current Opinion in Molecular Therapeutics* 1999; (1):64-71. 2. Sims L, Lim M, Harsh GH. Management of Brain Abscesses. *Operative Techniques in Neurosurgery* 2004; Dec;7(4):176-181. 3. Ryu S, Lim M, Harsh GH. Management of Epidural Abscesses and Subdural Empyemas. *Operative Techniques in Neurosurgery* 2004; Dec;7(4):182-187. 4. Lim M*, Cheshier SH*, Steinberg GK. Angiogenesis in the CNS. *Neurovascular Research*. 2006; Aug (3):237-245. 5. Lad SP, Guzman R, Kelly ME, Li G, Lim M, Lovbald K, Steinberg GK. Cerebral Perfusion Imaging in Vasospasm: an Overview. *Neurosurgical Focus*. 2006; Sep 21 (3):E7. 6. Bower R, Lim M, Harsh GR. Current State of Immunotherapy for Gliomas – Part I. *Contemporary Neurosurgery*. 2007; Jul(1):1-6. 7. Bower R, Lim M, Harsh GR. Current State of Immunotherapy for Gliomas – Part II. *Contemporary Neurosurgery*. 2007; Jul(2):1-8. 8. Li G, Chang SD, Adler JR, Lim M. Irradiation of Glomus Jugulare Tumors: a Historical Perspective. *Neurosurgical Focus*. 2007;23(6):E13. 9. Nangiana JS, Lim M, Silva R, Guzman R, Chang SD. Vein of Galen Malformations Part I. *Contemporary Neurosurgery*. 2008;30(4):1-8. 10. Nangiana JS, Lim M, Silva R, Guzman R, Chang SD. Vein of Galen Malformations Part II. *Contemporary Neurosurgery*. 2008;30(5):1-8. 11. Cheshier SH, Kalani MYS, Lim M, Ailles L, Huhn SL, Weissman IL. A neurosurgeon's guide to stem cells, cancer stem cells, and brain tumor stem cells. *Neurosurgery*. 2009;Aug;65(2):237-49. 12. Guss ZD, Batra S, Li G, Chang SD, Parsa AT, Rigamonti D, Kleinberg L, Lim M. Radiosurgery of Glomus Jugulare: History and Recent Progress. *Neurosurg Focus*. 2009; Dec;27(6):E5. 13. Albesiano E, Han J, Lim M. Mechanisms of Local Immuno-resistance in Gliomas. *Neurosurg Clin N Am*. 2010; Jan;21(1):17-29. 14. Han SJ, Kaur G, Yang I, Lim M. Biologic Principles of Immunotherapy for Glioma Immunotherapy. *Neurosurg Clin N Am*. 2010; Jan;21(1):1-16. 15. Frazier J, Lim M, Olivi A. Immunotherapy Combined with Chemotherapy in the Treatment of Tumors. *Neurosurg Clin N Am*. 2010; Jan;21(1):187-94. 16. Hsu W, Nguyen T, Kretzer R, Kleinberg L, Ford E, Rigamonti D, Gokasalan Z, Lim M. Stereotactic Radiosurgery for Spine Tumors: Review of Current Literature. *Stereotactic and Functional Neurosurgery*. 2010;88(5):315-21.
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Inventions, Patents, Copyrights

6/15/11 Inventors Jing Zeng, Charles Drake, Drew Pardoll, and Michael Lim, Provisional Patent for Technique: Using Focused Radiation to Augment Immune Based Strategies Against Cancer. JHU Ref P11601-03 Extramural Sponsorship Current 7/1/09-6/30/15 Amide Proton Transfer (APT) MRI of Brain Tumors at 3T and 7T R01EB009731 NIH PI: Jinyuan Zhou, 32% effort Role: Co-investigator, 2%; The goal of this project is to use APT to distinguish treatment effects as well as higher grade tumors with imaging.

12/1/11-11/30/17 Subependymoma/Ependymoma Center Subependymoma/Ependymoma Center Grant PI: Michael Lim, 20% effort Co-PI: Henry Brem, 5% effort Role: PI, 20%; The goal of this project is to develop a complete center for research that encompasses basic, translational, and clinical science. 2/1/14-1/31/15 Augmenting Immunotherapy with Chemotherapy Arbor Pharmaceuticals PI: Michael Lim, 5% effort The goal of this project is to try and augment vaccine strategies with using Carmustine Wafers 11/1/14-present Creating a Humanized Immune Model for Chordomas Chordoma Foundation Role: PI, 5%; The goal of this project is to create a humanized immune model in mice to design future immunotherapy approach against Chordomas Pending

10/1/14-9/30/19 Augmenting Immunotherapy for Glioblastoma with Radiation Therapy NIH/NCI PI: Michael Lim 15% effort The major goal of this project is to further the understanding of mechanisms of how radiation enhances and at the same time attenuates an anti-tumor immune response against Glioblastoma. Previous 1/1/11-10/31/12 A Novel Immunotherapy Approach Against GBM WW Smith Charitable Foundation Role: PI, 5% ; The goal of this project is to understand the mechanism of anti-PD-1 therapy combined with stereotactic radiation's antitumor immune response. 11/1/11-10/31/12 Immunotherapy for Chordomas Chordoma Foundation Role: PI, 5%; The goal of this project is to use the checkpoint inhibitor anti-PD-1 in efforts to design an immunotherapy approach against Chordomas

11/14/11-11/13/12 Spine Metastases and Pain Johns Hopkins Neurosurgery Pain Institute Role: PI, 2%; The goal of this project is to develop an immune based approach to targeting spine metastases to improve tumor control and decrease pain. 3/1/09-2/28/11 Characterization of STAT3 in GBM: A Potential Mediator of Immune Evasion Academy of Academic Surgeons Role: PI, 3%; The goal of this project is to assess the effects of STAT3 activation on immune cells in GBM. We will then locally deliver a STAT3 inhibitor STATTIC in the GL261 model with biodegradable polymers to assess for immune responses and survival. 1/1/10-12/31/11 Characterization of STAT3's role in the Immune Microenvironment of GBMs Clinician Scientist Award

7/1/09-6/30/10 Immune Characterization of STAT3 in GBM with a Novel Transgenic Model Neurosurgery Research Education Foundation Role: PI, 10%; The goal of this project is to study the role of STAT3 in the immune microenvironment of GL261 tumors. We will characterize STAT3's effect on immune cells in the GL261 cell lines and then use STAT3 transgenic animals to test dendritic cell vaccination strategies.

Research Program Building/ Leadership 2007-present Director, Brain Tumor Immunotherapy Program Laboratory Efforts – studying the immune microenvironment of Gliomas Clinical – site PI for several clinical trials 2009-present Director, Metastatic Brain Tumor Center Laboratory – studying the effect of metastatic tumors of the brain on systemic Immunity Clinical – Outcomes center 2011-present Director, Ependymoma/Subependymoma Center Laboratory – studying epigenetics and immune microenvironment of Ependymomas and Subependymomas

EDUCATIONAL ACTIVITIES

Educational Publications

Editorials 1. Lim M, Steinberg GK. Integrins in Arteriovenous and Cavernous Malformations: Comment. Neurosurgery. 2006;Jan; 58(1): 167. 2. Lim M, Chang SD. Recurrent Craniofacial Meningiomas: Comment. Neurosurgery. 2006; May; 58(5):880. 3. Lim M, Chang SD: Chained Lightning – Part III: Emerging technology, novel therapeutic strategies and new energy modalities for radiosurgery. Neurosurgery, 2007;61(6): 1129 4. Yang I, Cho JM, Colen CB, Li G, Lim M, Sherman JH, Wang VY. Neurosurgery Concepts. Surg Neurol Int. 2011;2:173. Epub 2011 Nov 30. 5. Lim M, Sherman JH, Wang VY, Smith ZA, Cho JM, Colen CB, Kim CY, Zada G, Li G, Yang I. Perspectives on Key Articles in Neurosurgery. Accepted Surg Neurol Int. 6. Lim M. Immunotherapy for glioblastoma: are we finally getting closer? Neuro Oncol. 2015 May 10. Book Chapters, Monographs 1. Lim M, Sinclair J, Jayaraman MV, Chang SD. Neurobase. Vein of Galen Malformations. Gilman S, Goldstein GW, Waxman SG. Medlink.com. 2004. 2. Lim M, Harsh GH. Neuro-Oncology: Overview. Rengachary SS, Wilkins RH. Principles of Neurosurgery. 2nd ed. 2004; 25.2-2.22. 3. Lim M, Gibbs IC, Chang SD: Cyberknife Radiosurgery for Glomus Jugulare Tumors. Mould RF, Schulz RA, Bucholz RD, Gagnon GJ, Gerszten PC, Kresl JJ, Levendag PC (eds): Pioneering Techniques in Robotic Radiosurgery, vol 1, The Cyberknife Society, Sunnyvale, 2005;213-222 4. Lim M, Sinclair J, Jayaraman MV, Chang SD. Neurobase. Vein of Galen Malformations. Gilman S, Goldstein GW, Waxman SG. Medlink.com. 2005. 5. Lim M, Sinclair J, Jayaraman MV, Chang SD. Neurobase. Vein of Galen Malformations. Gilman S, Goldstein GW, Waxman SG. Medlink.com. 2006. 6. Lim M, Sinclair J, Jayaraman MV, Chang SD. Neurobase. Vein of Galen Malformations. Gilman S, Goldstein GW, Waxman SG. Medlink.com. 2007. MICHAEL LIM, M.D. Curriculum Vitae 9 7. Lim M, Guzman R, Kelly M, Steinberg GK. Arteriovenous Malformations in the Basal Ganglia and Thalamus. MacDonald RL, AANS Operative Atlas, 2nd ed: Vascular Neurosurgery. New York: Thieme 2007:142-155. 8. Frazier JL, Lim M, Weingart JD. Surgical Management of Intracranial Metastases. Intracranial Metastases. Kleinberg L. New York. Demos Medical. 2009:77-105. 9. Lim M. Stereotactic Biopsies: Superficial. Fundamentals of Operative Techniques in Neurosurgery.

Connolly ES, McKhann II GM, Huang J, Choudhri TF. New York. Thieme. 2010: 253-254. 10. Pradilla G, Lim M. Stereotactic Biopsies: Deep. Fundamentals of Operative Techniques in Neurosurgery. Connolly ES, McKhann II GM, Huang J, Choudhri TF. New York. Thieme. 2010: 255-257. 11. Lim M. Parasagittal and Convexity Meningiomas. Fundamentals of Operative Techniques in Neurosurgery. Connolly ES, McKhann II GM, Huang J, Choudhri TF. New York. Thieme. 2010:183-185. 12. Lim M, Frazier J. Foramen Magnum Meningiomas. Fundamentals of Operative Techniques in Neurosurgery. Connolly ES, McKhann II GM, Huang J, Choudhri TF. New York. Thieme. 2010:186-188. 13. Bruce JN, Lim M. Tentorial Meningiomas. Fundamentals of Operative Techniques in Neurosurgery. Connolly ES, McKhann II GM, Huang J, Choudhri TF. New York. Thieme. 2010:201-204. 14. Lim M. Stereotactic Biopsies: Superficial. Fundamentals of Operative Techniques in Neurosurgery. Connolly ES, McKhann II GM, Huang J, Choudhri TF. New York. Thieme. 2010:253-254. 15. Pradilla G, Lim M. Stereotactic Biopsies: Deep. Fundamentals of Operative Techniques in Neurosurgery. Connolly ES, McKhann II GM, Huang J, Choudhri TF. New York. Thieme. 2010:255-257. 16. Li G, Lim M, Khan N, Steinberg GK. Cerebral Revascularization for Moya Moya Disease. Cerebral Revascularization: Techniques in Extracranial-to-Intracranial Bypass Surgery. Abdulrauf SI. Philadelphia. Elsevier. 2011:185-191. 13. Recinos P, Lim M. Parasagittal approach to midline deep tumors and arterio-venous malformations. Core Techniques in Operative Neurosurgery. Jandial R, McCormick PC, Black PM. Philadelphia. Elsevier. 2011:75-81. 14. Recinos PF, Nguyen T, Lim M. Stereotactic radiosurgery for trigeminal neuralgia. Quiñones-Hinojosa A (ed): Schmidek and Sweet Operative Neurosurgical Techniques, 6th ed. Philadelphia: Elsevier: 2012: 1167- 1172. 15. Nguyen T, Recinos PF, Lim M. Trigeminal neuralgia and atypical facial pain. In Simpson D, McArthur J, Dworkin D (eds): Neuropathic Pain: Mechanisms, Diagnosis, and Treatment. New York: Oxford University Press. 2012:398-413. 16. Amin AG, Raza SM, Lim M. Posterior and Far-Lateral Approaches to the Craniovertebral Junction (Lateral Transcondylar Approach). Surgical Anatomy and Techniques to the Spine. Philadelphia: Elsevier/Saunders. 2013:54-59. 17. Jackson C, Liu JKC, Recinos PF, Lim M. Surgery Followed by Radiosurgery Boost for Metastases. Controversies in Neuro-Oncology. New York:Thieme Medical Publishers. 2013:225-232. 18. Sunshine J, Guss ZD, Pillai JJ, Lim M. Application of Nanotechnology in the Diagnosis and Treatment of Brain Metastases. Nanoneurosurgery. Boca Raton:CRC Press. 2014:395-401.

Case Reports

1. Moriarti J, Lim M, Beauchamp, NJ Jr, Olivi A. Reversible Posterior Leukoencephalopathy Occurring During Resection of a Posterior Fossa Tumor: Case Report and Review of the Literature. Neurosurgery. 2001; Nov;49(5):1237-9. 2. Lim M and Adler JR. Cyberknife Radiosurgery for Extremity Schwannomas: Technical Report and Case Report. Stereotactic and Functional Neurosurgery. 2006;84:60-63. Cover Article. 3. Sangoi A*, Lim M*, Vogel H, Chang SD. Giant Cell Ependymoma Presenting in the Suprasellar Cistern: Case Report. Human Pathology. 2008;Sept 39(9):1396-401. 4. Ruzevick J, Nicholas S, Redmond K, Kleinberg L, Lipson EJ, Lim M. A Patient with HIV Treated with Ipilimumab and Stereotactic Radiosurgery for Melanoma Metastases to the Brain. Case Reports in Oncological Medicine. 2013;2013:946392. 5. Theodros D, Goodwin CR, Crane GM, Liauw J, Kleinberg L, Lim M. Metastatic extrapulmonary small cell carcinoma to the cerebellopontine angle: a case report and review of the literature. Case Rep Oncol Med. 2015;2015:847058.

Teaching

Classroom Instruction None Clinical Instruction 2007-Present Faculty for Resident Teaching in clinics, operating rooms, and wards Johns Hopkins Hospital 2007-Present Faculty for Medical Student Teaching in clinics, operating rooms, and wards Johns Hopkins Hospital CME Instruction 9/08 Faculty

for International Neuro-Oncology Updates, Speaker, Baltimore, MD Topic: Immunotherapy for Brain Tumors 10/08 Faculty for CNS Tumor Course, Speaker, Orlando, FL Topic: Immunotherapy for Brain Tumors 10/09 Faculty for CNS Tumor Course, Speaker, New Orleans, LA Topic: Immunotherapy for Brain Tumors 4/10 Hopkins CME, Speaker, Rockville, MD Topic: Metastatic Brain Tumors 5/10 Johns Hopkins Spine CME: Speaker, Baltimore, MD Topic: Stereotactic Radiosurgery for Spine Tumors 10/10 Faculty for CNS Tumor Course, Speaker, San Francisco, CA Topic: Immunotherapy for Brain Tumors 10/11 Faculty for CNS Tumor Course, Speaker, Washington, DC Topic: Immunotherapy for Brain Tumors 10/12 Faculty for CNS Tumor Course, Speaker, Chicago, IL Topic: Immunotherapy for Brain Tumors 10/13 Faculty for CNS Tumor Course, Speaker, San Francisco, CA Topic: Immunotherapy for Brain Tumors 10/14 Faculty for CNS Tumor Course, Speaker, Boston, MA Topic: Immunotherapy for Brain Tumors 5/15 Faculty for AANS Tumor Course, Speaker, Washington, DC Topic: Management of Brain Metastases Workshops/Seminars 6/09 Faculty for Hopkins Sinus and Skull Base Course: Speaker Topic: Endoscopic Approaches to the Sella, Baltimore, MD 9/09 Faculty for Hopkins: Combined Approach for Skull Base Tumors: Speaker Topic: Radiosurgery for Skull Base Tumors: Faculty, Baltimore, MD 6/10 Faculty for Hopkins Sinus and Skull Base Course: Speaker Topic: Approaches to the Sella, Baltimore, MD 7/10 Faculty for Senior Society – Boot Camp for Neurosurgery Interns: Speaker Topic: Neurotrauma, Philadelphia, PA 12/10 Faculty for Hopkins: Combined Approach for Skull Base Tumors: Speaker Topic: Radiosurgery for Skull Base Tumors, Baltimore, MD 3/11 Webinar: Speaker Topic: Treatment of Trigeminal Neuralgia 11/11 Faculty for Skull Base Session at Society for Neuro-Oncology: Speaker Topic: Acoustic Neuromas, Orange County, CA 6/12 Webinar: Speaker Topic: Management of Cerebral Brain Metastases

Mentoring

2008 Jennifer Cheng, MD, Research Elective as a medical student - currently a Neurosurgery Resident at the Johns Hopkins Hospital 2008-09 Trang Nguyen, MD, Doris Duke Fellowship- currently a General Surgery Resident at Cleveland Clinic, 2008-10 James Frazier, MD, NREF Fellowship recipient - currently a Neurosurgeon in Private Practice, 2008-11 Alfred See, MD, Dean's Medical Student Fellowship and Summer Research Fellowship recipient - currently - a Neurosurgery Resident at Brigham and Women's Hospital, 2008-12 Matthew Bender, Summer Research Fellowship - currently a Neurosurgery Resident at the Johns Hopkins Hospital, 2009-12 Jake Ruzevik, Doris Duke Fellowship and Summer Research Fellowship - currently a Neurosurgery Resident at the University of Washington Hospital 2009-12 Christopher Jackson, Howard Hughes Medical Student Fellowship and Summer Research Fellowship - currently a Neurosurgery Resident at Johns Hopkins Hospital 2009-12 Zachary Guss, Summer Research Fellowship - currently a Radiation Oncology Resident at Johns Hopkins Hospital 2010 Julie Ng, Summer Research Fellowship - currently a Medicine Resident at Johns Hopkins Hospital 2010-12 Jing Zeng, MD, Post-Doctoral Fellow - currently an Assistant Professor in Radiation Oncology at the University of Washington 2011-12 Anu Amin, Dean's Medical Student Fellowship and Summer Research - currently a Neurosurgery Resident at New York Medical College 2012-15 Dimitrios Mathios, Post Doctoral Fellow - currently a Neurosurgery Resident at Johns Hopkins Hospital. 2012-13 Sarah Nicholas - Doris Duke Fellowship - currently a Radiation Oncology Resident at Johns Hopkins Hospital 2011-Present Allison Martin, T32 NIH Fellowship - currently a Pediatric Hematology and Oncology Fellow at Johns Hopkins Hospital 2014-Present Jennifer Kim - Howard Hughes Medical Student Fellowship - currently a Medical Student at Johns Hopkins University School of Medicine 2014-Present Mira Patel - Howard Hughes Medical Student Fellowship - currently a Medical Student at Johns Hopkins University School of Medicine Educational Program Building Leadership 3/11 International Lecture Series for South Korea, Co-Director of Course 3/12 International Lecture Series for China, Co-Director of Course Educational Extramural Funding 2010-2011 Stryker Unrestricted Educational Grant

CLINICAL ACTIVITIES

Certification Medical, other state/government licensure 2001-Present California License #A76130 2007-Present Maryland Medical License #D65890 Boards, other specialty certification 2001-Present DEA License 2012-Present Board Certified by the American Board of Neurological Surgeons Clinical (Service) Responsibilities 2007-present Neurosurgery Outpatient Clinic, attending, 1 day /week 2007-present Neurosurgery HAL, attending, 3 weeks/year 2007-present Radiosurgery Outpatient Clinic, attending, 1 day/week Clinical Program Building / Leadership 2007-Present Brain Tumor Immunotherapy Program, Director MICHAEL LIM, M.D. Curriculum Vitae 12 2008-2009 Celldex Brain Tumor Vaccine (Phase II), Site PI 2009-Present Metastatic Brain Tumor Center, Director 2011-Present Ependymoma/Subependymoma Center, Director 2012-Present Antigenics Heat Shock Protein Vaccine Clinical Trial, Site PI 2012-Present Immunocellular Vaccine Clinical Trial, Site PI 2012-Present Celldex Vaccine Clinical Trial (Phase III), Site PI 2014-Present SRS + Ipilimumab for Melanoma Metastases to the Brain and Spine - Investigator Initiated PI Clinical Extramural Funding Current 2/14/14-present A Randomized Phase IIB Open Label Study of Nivolumab or Nivolumab in Combination with Ipilimumab vs Bevacizumab in Adult Subjects with Recurrent Glioblastoma Bristol-Myers Squibb \$600,116.00 Role: Site PI - Michael Lim 2% effort 1/14/14-present A Pilot Study of Stereotactic Radiosurgery combined with Ipilimumab in Patients with Newly Diagnosed Melanoma Metastases in the Brain and Spine Investigator Initiated Accuray \$200,000.00 PI - Michael Lim, Johns Hopkins 5% effort Previous 2/14/14-15 ReACT: A Phase 2 Study of Rindopepimut (CDX-110) plus Bevacizumab in Relapsed Glioblastoma Celldex \$787,773.00 Role: Site PI - Michael Lim 11% effort 4/1/12-15 Phase II/III Heat Shock Protein Trial Aegenus \$59,253.39 PI - Andrew Parsa, UCSF Role: Site PI - Michael Lim 2% effort 6/1/12-present Phase II/III Dendritic Cell Vaccine Trial Immunocellular \$325,116.74 PI - John Yu, Cedars Sinai Role: Site PI - Michael Lim - 15% effort

7/1/12-Present Phase III EGFRvIII vaccine Trial CellDex \$200,727.72 PI - Amy Heimberger, MD Anderson Role: Site PI - Michael Lim - 10% effort 3/1/08-10/31/09 Phase II/III EGFRvIII Vaccine Clinical Trial CellDex \$141, 679.10 PI - Amy Heimberger, MD Anderson Role: Site PI - Michael Lim - 10% effort

SYSTEM INNOVATION and QUALITY IMPROVEMENT ACTIVITIES

None

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments 2010-2014 Department Liason for Compliance 2010-Present Physician Advisor for Credentialing Editorial Activities Editorial Board Appointments 2009 Co-Editor for Neurosurgery Clinics of North America edition on Immunotherapy for Brain Tumors 2011-Present Academic Editor for PLOS One 2010-Present Board Member, Society of Brain Mapping and Therapeutics (SBMT) 2011-Present Editorial board - Current Surgery Reports Journal Reviewer 2010-Present Journal of Neuro-Oncology 2011-Present Surgical Neurology International Advisory Committees, Review Groups/Study Sections 2007-09 Scientific Committee of the American Society for Clinical Oncology (ASCO) 2007-10 Young Neurosurgeons Committee 2013-Present Tumor Section (AANS-CNS) Executive Committee member 2013-Present Immunotherapy Working Group for Brain Malignancy Steering Committee (NCI) 2013-Present Executive Committee for the Tumor Section of American Association of Neurological Surgeons (AANS) and Congress of Neurological Surgeons (CNS) 2014 Tumor Section Organizer for Congress of Neurological Surgeons (CNS) 2015 meeting Professional Societies 2007-Present Congress of Neurological Surgeons (CNS) 2007-Present American

Association of Neurological Surgeons (AANS) 2007-Present Society for Neuro-Oncology (SNO) 2008-2009 American Society for Clinical Oncology (ASCO) Conference Organizer, Session Chair 4/08 Platform Chairman, American Society for Clinical Oncology (ASCO), CNS Session 4/09 Platform Chairman, American Society for Clinical Oncology (ASCO), CNS Session 5/09 Moderator and Discussant, American Association of Neurological Surgeons, Tumor Session 6/12 Moderator, Brain Tumor Biotech Summit, Immunotherapy Session 9/12 Moderator, International Updates in Neuro-Oncology, Immunotherapy and Other Novel Therapies Session 2/13 Moderator, Intraoperative Imaging Society, Abstract Presentations 6/13 Moderator, Brain Tumor Biotech Summit, Immunotherapy Session 9/13 Moderator, Glioma Clinical Research I, 15th World Congress of Neurosurgery, Seoul, Korea 9/13 Moderator, Glioma Clinical Research III, 15th World Congress of Neurosurgery, Seoul, Korea 6/14 Moderator, Brain Tumor Biotech Summit, Scientific Barriers Session

Consultantships/Speaker 2010-Present Stryker Corporation – 2 days/year. Part of a Neurotechnical Committee who provides input on companies cranial products to improve patient care 2013-Present Accuray Corporation – 2 days/year. Consultant 2014-Present Izi Medical – 1 day/year. Consultant 2014-Present BMS – 2 days for year. Consultant.

RECOGNITION

1991 Harry Evans Honors Program Scholarship, University of New Hampshire 1992 Phi Beta Kappa Honor Society, University of New Hampshire 1993 Alpha Zeta Honors Fraternity for Biological Sciences, University of New Hampshire 1993 Mortar Board Honor Society, University of New Hampshire, 1994 Premedical Committee Scholarship, University of New Hampshire 1991-95 Presidential Scholar, University of New Hampshire 1991-95 Governor's Success Grant Scholar – 4 year Scholarship, University of New Hampshire 1991-95 Granite State Scholar, University of New Hampshire A full tuition 4 year merit scholarship given to 12 students 1995 John McConnell Scholarship, University of New Hampshire 1995 Valedictorian, University of New Hampshire 1996 Dean's Grant Award for Research, The Johns Hopkins University School of Medicine 1998-99 Howard Hughes Medical Student Fellowship, Johns Hopkins University School of Medicine 2008 Richard Otenasek Jr. Faculty Teaching Award, Johns Hopkins University School of Medicine 2010-11 Department of Surgery Outstanding Faculty Teacher Award for the Basic Surgery Clerkship, Johns Hopkins University School of Medicine Invited Talks, Panels 10/06 Speaker, University of Utah Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Salt Lake City, UT 11/06 Speaker, Dartmouth College Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Hanover, NH 11/06 Speaker, Mayo Clinic Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Rochester, MN 11/06 Speaker, JHU Neurosurgery Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Baltimore, MD 10/07 Speaker, JHU Neurosurgery Grand Rounds, "1p19q Deletion in Oligodendrogliomas," Baltimore, 12/07 Speaker, JHU Neurosurgery Grand Rounds, "Radiosurgery for Trigeminal Neuralgia," Baltimore, 3/08 Speaker, JHU Neurosurgery Grand Rounds, "Radiosurgery for Glomus Jugulare Tumors," Baltimore, MD 5/08 Speaker, Blaustein Pain Conference, "Radiosurgery for Trigeminal Neuralgia," Baltimore, MD 6/08 Speaker, JHU Oncology Grand Rounds, "Radiosurgery for Metastatic Brain Tumors," Baltimore, 7/08 Speaker, JHU Neurosurgery Grand Rounds, "Stereotactic Spinal Radiosurgery," Baltimore, MD 7/08 Speaker, JHU Neurosurgery Grand Rounds, "Management of Cerebral Brain Metastases," Baltimore, MD 9/08 Speaker, 3rd Annual International Updates in Neuro-Oncology, "Immunotherapy for Brain Tumors," Baltimore, MD 10/08 Speaker, Southern Maryland Hospital Grand Rounds, "Pituitary Tumors," Clinton, MD 10/08 Speaker, Thomas Jefferson Hospital Grand Rounds, "Management of Cerebral Brain Metastases," Philadelphia, PA 12/08 Speaker, York Wellspan Hospital Grand Rounds, "Head Trauma," York PA 1/09 Speaker, Wilmington VA Medical Center Grand Rounds, "Management of Brain Metastases," Wilmington, DE 1/09 Honored Guest Speaker, Caribbean Neurosciences Symposium, "Image Guided Surgery," Montego Bay, Jamaica 3/09 Speaker, JHU Medicine Grand Rounds, "Management of Cerebral Brain Metastases," Baltimore, 3/09

Speaker, JHU Radiation Oncology Resident Teaching Rounds, "Management of Cerebral Brain Metastases," Baltimore, MD 4/09 Speaker, Johns Hopkins Undergraduate Research Conference, "Technology in Neurosurgery," Baltimore, MD 6/09 Speaker, The Johns Hopkins Hospital Otolaryngology Grand Rounds, "Radiosurgery for Skull Based Tumors," Baltimore, MD 7/09 Speaker, St. Matthews School of Medicine, "Technology in Neurosurgery," Grand Cayman Islands 7/09 Speaker, Korean American Spine Society (KASS), "Stereotactic Spinal Radiosurgery," San Diego, CA 7/09 Speaker, JHU Neurosurgery Grand Rounds, "Evaluation of Head Trauma," Baltimore, MD 7/09 Speaker, JHU Neurosurgery Grand Rounds, "Integration of Functional Imaging with Image Guidance," Baltimore, MD 9/09 Speaker, Neuro-Oncology Congress, "Open versus Endoscopic Resection of Pituitary Tumors," Santiago, Chile 9/09 Speaker, Neuro-Oncology Congress, "Management of Cerebral Brain Metastases," Santiago, Chile 9/09 Speaker, Neuro-Oncology Congress, "Cerebral Brain Mapping," Santiago, Chile 9/09 Speaker, Neuro-Oncology Congress, "Immunotherapy for Gliomas," Santiago, Chile 9/09 Speaker, Baltimore Life Sciences Association, "Immunotherapy for GBMs," Baltimore, MD

10/09 Speaker, MedTronics Annual Meeting, "Skull Base Surgery Techniques," Denver, CO 11/09 Speaker, Suburban Hospital, "Management of Cerebral Brain Metastases," Bethesda, MD 12/09 Speaker, University of California at San Francisco, "Immunotherapy for Gliomas," San Francisco, 12/09 Speaker, Sinai Hospital, "Management of Cerebral Brain Metastases," Baltimore, MD 5/10 Speaker, 3rd Annual European Workshop on Whole Body Radiosurgery and Stereotactic Radiation Therapy, "Radiosurgery for Glomus Jugulare Tumors," Universite Catholique de Louvain, Brussels, Belgium 5/10 Speaker, JHU Oncology Grand Rounds, "Stereotactic Radiosurgery for the Spine," Baltimore, 6/10 Speaker, JHU Oncology Fellows Lecture, "Management of Cerebral Brain Metastases," Baltimore, 7/10 Speaker, JHU Neurosurgery Grand Rounds, "Postoperative Management of GBMs," Baltimore, 7/10 Speaker, Korean American Spine Society (KASS), "Local Delivery Vehicles for Spine Tumors," Washington, DC 9/10 Speaker, Inha University, "Management of Cerebral and Spine Metastases," Seoul, South Korea 9/10 Speaker, Seoul National University, "Management of Cerebral and Spine Metastases," Seoul, South Korea 9/10 Speaker, ASIA Spine Meeting, "Stereotactic Radiosurgery for Spinal Tumors," Incheon, South Korea 10/10 Speaker, JHU Neurosurgery Grand Rounds, "Immunotherapy for GBMs," Baltimore, MD 11/10 Speaker, JHU Neurosurgery Grand Rounds, "Management of Brain Metastases," Baltimore, 11/10 Speaker, University of New Hampshire, "Surgical and Molecular Therapies against GBM," Durham, NH 3/11 Speaker, 1st Annual Joint Symposium on the Progress of Neurosurgery, "Stereotactic Radiosurgery for spinal Tumors," Seoul, South Korea 3/11 Speaker, 1st Annual Joint Symposium on the Progress of Neurosurgery, "Stereotactic Radiosurgery for Skull Base Tumors," Seoul, South Korea 3/11 Speaker, 1st Annual Joint Symposium on the Progress of Neurosurgery, "Immunotherapy for Brain Tumors," Seoul, South Korea 5/11 Speaker, St. Matthews School of Medicine, "Low Back Pain," Grand Cayman Islands 5/11 Speaker, Neuro Nursing Workshop, "Immunotherapy for Brain Tumors," Baltimore, MD 5/11 Speaker, Neurology Grand Rounds, "Immunotherapy for Brain Tumors," Baltimore, MD 6/11 Speaker, International Brain Mapping and Intraoperative Surgical Planning Society (IBMISPS), "Immunotherapy for Brain Tumors," San Francisco, CA 6/11 Speaker, Stanford University Grand Rounds, "Immunotherapy for Brain Tumors," [Palo Alto](#), CA 8/11 Speaker, JHU Neurosurgery Grand Rounds, "Radiosurgery for Skull Base Tumors," Baltimore, 8/11 Speaker, JHU Neurosurgery Grand Rounds, "Radiosurgery for Meningiomas," Baltimore, MD 12/11 Speaker, JHU Neurosurgery Grand Rounds, "Immunotherapy for GBMs," Baltimore, MD 12/11 Speaker, JHU Neurosurgery Grand Rounds, "Radiosurgery for pituitary neuroendocrine tumors," Baltimore, 3/12 Speaker, Top of America Meets the Top of China Conference, "Immunotherapy for Brain Tumors," Xi'An, China 4/12 Speaker, JHU Neurosurgery Grand Rounds, "Trigeminal Neuralgia," Baltimore, MD 5/12 Speaker, Brain Mapping Day - United States Congress, "Augmenting Immunotherapy Strategies with Focused Radiation," Washington, DC 6/12 Speaker, Society for Brain Mapping and Therapeutics Annual Meeting (SBMT), "Immunotherapy for Brain Tumors," Toronto, Canada 10/12 Speaker, FasterCures Foundation, "Immunotherapy for Brain Tumors," Los Angeles, CA 10/12 Speaker, Multidisciplinary Meeting for

"Impact of MRI Imaging for Neurosurgical Planning and Treatment of Patients with Brain Metastases: Neurosurgeon's Perspective," Vienna, Austria. 12/12 Speaker, Molecular Image-Guided Interventions Symposium, "Nanomedicine for Neurosurgery," Baltimore, MD 1/13 Speaker, Trigeminal Neuralgia/Facial Pain Support Group Meeting, "Surgical Treatments for Trigeminal Neuralgia," Columbia, MD 2/13 Speaker, Radiation Oncology Resident Conference, "Management of Cerebral Brain Metastases," Baltimore, MD 5/13 Speaker, AANS Tumor Satellite Meeting, "Heat Shock Protein: Technology," New Orleans, LA 5/13 Speaker, Society for Brain Mapping and Therapeutics Annual Meeting (SBMT), "Combining Anti-PD-1 Therapy with SRS for the Treatment of GBM," Baltimore, MD 6/13 Speaker, ISRS (International Stereotactic Radiosurgery Society) Annual Meeting, "Linac Based Stereotactic Radiosurgery for the Treatment of Trigeminal Neuralgia," Toronto, Canada

6/13 Speaker, Harbor Hospital Medicine Grand Rounds, "Surgical Treatments of Trigeminal Neuralgia," Baltimore, MD 9/13 Speaker, Neuroradiology Fellows Conference, "Trigeminal Neuralgia," Baltimore, MD 9/13 Speaker, World Federation of Neurological Societies. 15th World Congress of Neurosurgery, "Role of AntiPD-1 Therapy for Immunotherapy in the Treatment of Glioblastoma," Seoul, Korea 9/13 Speaker, World Federation of Neurological Societies. 15th World Congress of Neurosurgery, "Role of Immunotherapy for the Treatment of High Grade Gliomas," Seoul, Korea 9/13 Speaker, World Federation of Neurological Societies. 15th World Congress of Neurosurgery, "Treating Metastatic Spine Tumors with Stereotactic Radiosurgery," Seoul, Korea 9/13 Speaker, World Federation of Neurological Societies. 15th World Congress of Neurosurgery, "Role of Radiation in the Treatment of Brain Metastases," Seoul, Korea 10/13 Speaker, Radiation Oncology Resident Conference, "Surgical Considerations for the Management Brain Metastases," Baltimore, MD 10/13 Speaker, Neurosurgery Grand Rounds, "Immunology of Metastatic Melanoma Brain Metastases," Baltimore, MD 11/13 Speaker, EANS (European Association of Neurosurgical Societies) Annual Meeting, "Combining Anti-PD-1 with SRS as a Novel Therapy Against Glioblastoma," Tel Aviv, Israel 12/13 Speaker, The Future of Neuroscience: Novel Research Avenues for the Treatment of Epilepsy, Pain, and Brain Tumors, Milan, Italy. 1/14 Speaker, Investigators Meeting for BMS Cohort I, "Preclinical Results of anti-CTLA-4 and anti-PD-1 therapy against GBM," New York, New York. 3/14 Speaker, Neurosurgery Grand Rounds, "Flavors of Radiation for the Brain," Baltimore, MD 3/14 Speaker, Updates in Stereotactic Radiosurgery, "Using Local Therapy to Treat Systemic Melanoma," Spokane, WA 4/14 Speaker, American Society of Neuroradiology (ASNR), "Value of Presurgical Functional Mapping in Neurosurgery," Montreal, Canada 6/14 Speaker, Invited Lecture at the National Hospital, "Immunotherapy for Brain Tumors, and Surgical Management of Trigeminal Neuralgia" Oslo, Norway 7/14 Speaker, Radiation Oncology Grand Rounds, "Immunotherapy for Brain Tumors," Baltimore, MD 8/14 Speaker, Invited Lecture, "Management of Recurrent GBM," Current Trends in the Management of Malignant Glioma Meeting, Tokyo, Japan 8/14 Speaker, Invited Lecture, "Vaccines Treatments for Brain Tumors," Current Trends in the Management of Malignant Glioma Meeting, Tokyo, Japan 9/14 Speaker, Invited Lecture, "Immunotherapy," 13th Annual International Neuro-Oncology Updates, Boston, MA 9/14 Speaker, Radiology Fellows Conference, "Trigeminal Neuralgia," Baltimore, MD 9/14 Speaker, Invited Lecture, BMS Investigator Meeting, "Rationale for Checkpoint Inhibitors Against GBM, Preclinical Studies," Philadelphia, PA 10/14 Speaker, Invited Lecture, BMS Investigator Meeting, "Rationale for Checkpoint Inhibitors Against GBM, Preclinical Studies," Turin, Italy 10/14 Speaker, Invited Lecture, Japan Neurosurgical Society, "Management of Brain Metastases and Implications Towards Immunotherapy," Tokyo, Japan 11/14 Speaker, Neurosurgery Grand Rounds, "Immunotherapy for CNS Tumors," Baltimore, MD 11/14 Invited Panel Speaker, Society for Neuro-Oncology Immunotherapy Symposium, "Preclinical Data for the Use of Checkpoint Molecules in GBM," Miami, FL 12/14 Invited Speaker for Translational Research Conference, "Immunotherapy for Brain Tumors," Baltimore, MD 2/15 Speaker, Invited Lecture, Neurosurgery Grand Rounds, "Immunotherapy for Brain Tumors," Hong Kong, China 3/15 Speaker, Society for Brain Mapping and Therapeutics Annual Meeting (SBMT), "Immunotherapy for Brain Tumors," Los Angeles, CA 5/15 Invited Speaker, Neuro-Oncology Clinical Trials Symposium, "Immunotherapy for Brain Tumors," Greenvale, NY

OTHER PROFESSIONAL ACCOMPLISHMENTS

Oral Presentations 5/99 Howard Hughes Medical Institute, Washington DC Lim M, Carducci MA, Mikhak B, Biedrzycki B, Borrellini F, Clift SM, Hege KM, Ando DG, Piantadosi S, Mulligan R, Nelson WG, Simons JW,. Characterization of the Human Th-2 Effector Response with ex vivo GM-CSF Gene Transduced Prostate Cancer Vaccines. 8/04 Hanbery Society, Palo Alto, CA Lim M, Guccione S, Sims L, Azok J, King L, Bednarski M, Harsh G. Serum Markers for Glioblastoma Multiforme. 8/06 Hanbery Society, Whistler, Canada Lim M, Bower R, Choi S, Sims L, Wang Y, Yang Y, Cheshier S, Haddix T, Vogel H, Tse V, Harsh G, Guccione S. An Antiangiogenic Approach to Treating Glioblastoma Multiforme. 9/07 Western Neurosurgical Society – 53rd Annual Meeting, Kohala Coast, HI Lim M, Villavicencio A, Burneikiene S, Romanelli P, Chang SD, McNeely L, Fariselli L, McIntyre M, Bower R, Broggi G, Thramann JJ, Adler JR. Multicenter Experience of Treating Trigeminal Neuralgia with the CyberKnife. 6/09 Neurosurgical Society of America (NSA), Homestead, VA Albesiano E, Han J, See A, Frazier J, Parker S, Cheng J, Pardoll D, Lim M. Role of STAT3 activation in the GBM Microenvironment. 10/11 Congress of Neurological Surgeons, Washington, DC Bender M, Pradilla G, Batra S, See A, James C, Carson B, Lim M. Effectiveness of Repeat Glycerol Rhizotomy in Treating Trigeminal Neuralgia. 10/11 Congress of Neurological Surgeons, Washington, DC Bender M, Pradilla G, Batra S, See A, Bhutani N, James C, Carson B, Lim M. Effectiveness of Repeat Radiofrequency Thermocoagulation in the Treatment of Recurrent Trigeminal Neuralgia. 10/11 Congress of Neurological Surgeons, Washington, DC Pradilla G, Bhutani N, Batra S, Bender M, See A, Garzon-Muvdi T, James C, Carson B, Lim M. Safety and Efficacy of Secondary Microvascular Decompression as Treatment for Recurrent Trigeminal Neuralgia. 10/11 Congress of Neurological Surgeons, Washington, DC Bender M, Pradilla G, Batra S, See A, Bhutani N, James C, Lim M, Carson B. Surgical treatment of Trigeminal Neuralgia in Patients with Multiple Sclerosis. 10/11 American Society for Therapeutic Radiology and Oncology (ASTRO), Miami, FL Zeng J, See A, Phallen J, Jackson C, Belcaid Z, Hammers H, Meyer C, Tyler B, Ford E, Wong J, Brem H, Pardoll DM, Drake C, Lim M. Combining Anti-PD-1 (B7-H1) Immunotherapy with Stereotactic Radiosurgery in a Mouse Orthotopic Glioblastoma Model. 11/11 Society for Neuro-Oncology (SNO), Orange County, CA Zeng J, See A, Phallen J, Jackson C, Belcaid Z, Hammers H, Meyer C, Tyler B, Ford E, Wong J, Brem H, Pardoll DM, Drake C, Lim M. Combining Anti-PD-1 (B7-H1) Immunotherapy with Stereotactic Radiosurgery in a Mouse Orthotopic Glioblastoma Model. 3/12 International Conference on Translational Research in Radiation Oncology-Physics for Health in Europe (ICTR-PHE), Geneva, Switzerland Zeng J, See A, Phallen J, Jackson C, Belcaid Z, Hammers H, Meyer C, Tyler B, Ford E, Wong J, Brem H, Pardoll DM, Drake C, Lim M. Combining Anti-PD-1 (B7-H1) Immunotherapy with Stereotactic Radiosurgery in a Mouse Orthotopic Glioblastoma Model. 10/12 Congress of Neurological Surgeons, Chicago, IL. Chaichana K, Weingart JD, Olivi A, Gallia GL, Lim M, Brem H, Quinones-Hinojosa A. Multiple Surgical Resections for Patients with Glioblastoma: Prolonging Survival. 10/12 American Neurological Association, Boston MA. S Soma, Weeraratne SD, Sun H, Phallen J, Kosaras B, Mathios D, Lechpammer M, Amani V, Cook JM, Rallapalli S, Teider N, Francois JP, Archer T, Lim M, Pomeroy SL, Jensen F, Cho YJ. Leveraging γ 5- GABA-A receptor subunit (GABRA5) expression in clinically aggressive medulloblastomas as a novel therapeutic approach. 9/13 Jusue-Torres, Recinos PF, Quinones-Hinojosa, Lim M, World Federation of Neurological Societies. 15th World Congress of Neurosurgery, “Technical Nuances of Microvascular Decompression of the Posterior Fossa Cranial Nerves,” Seoul, Korea MICHAEL LIM, M.D. Curriculum Vitae 18 9/14 American Society for Therapeutic Radiology and Oncology (ASTRO), San Francisco, CA Belcaid Z, Phallen JA, Zeng J, See AP, Mathios D, Gottschalk C, Nicholas S, Kellet M, Ruzevick J, Jackson C, Albesiano E, Durham NM, Tyler B, Wong J, Brem H, Pardoll DM, Drake CG, Lim M. Stereotactic Radiation Combined with 4-1BB Activation and CTLA-4 Blockade Yields Long-Term Survival and a Protective Antigen-Specific Memory Response in a Murine Glioma Model.

Video

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