

# Curriculum Vitae of Michael Lim

## Stanford University School of Medicine

### DEMOGRAPHIC INFORMATION

#### Current Appointment

Professor and Chair of Neurosurgery, and by courtesy Oncology, Otolaryngology, Radiation Oncology, Stanford University School of Medicine

#### 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 – 2001 Intern, General Surgery, Stanford University Medical Center, Stanford, CA

2001 – 2007 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 - 2017 Associate Professor of Neurosurgery, Oncology, and Radiation Oncology and Radiation Molecular Sciences, The Johns Hopkins University School of Medicine

2017 - 2020 Professor of Neurosurgery, Oncology, Otolaryngology, and Radiation Oncology and Radiation Molecular Sciences, The Johns Hopkins University School of Medicine

2020 - Present Adjunct Professor of Neurosurgery, The Johns Hopkins University School of Medicine

2020 - Present Professor and Chair of Neurosurgery, and by courtesy, Oncology, Otolaryngology Radiation Oncology and Neurology, Stanford University School of Medicine

#### PUBLICATIONS:

##### 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;59(20):5160-68.

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;59(22):5830-35.
4. **Lim M** Simons JW. Emerging concepts in GM-CSF Gene-Transduced Tumor Vaccines for Human Prostate Cancer. *Curr Opin in Mol Ther.* 1999;(1):64-71.
5. 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. *Neurosurg.* 2001;49(5):1237-39.
6. **Lim M**, Gibbs I, Adler JR, Martin D, Chang S. The Efficacy of Linear Accelerator Radiosurgery In Treating Glomus Jugulare Tumors. *Technol Cancer Res Treat.* 2003;2(3):261-266.
7. **Lim M**, Gibbs I, Adler JR, Chang S. Efficacy and Safety of Stereotactic Radiosurgery for Glomus Jugulare Tumors. *Neurosurg Focus.* 2004;17(2):E11.
8. Sims L, **Lim M**, Harsh GH. Review of Brain Abscesses. *Operative Techniques in Neurosurgery* 2004;7(4):176-181.
9. Ryu S, **Lim M**, Harsh GH. Management of Epidural Abscesses and Subdural Empyemas. *Operative Techniques in Neurosurgery* 2004;7(4):182-187.
10. **Lim M**, Haddix T, Harsh GR, Vogel H, Steinberg G, Guccione S. Characterization of the Integrin  $\alpha\beta 3$  in Arteriovenous Malformations and Cavernous Malformations. *Cerebrovasc Dis.* 2005;20(1):23-27.
11. **Lim M**, Villavicencio A, Burneikiene S, Chang SD, Romanelli P, McNeely L, McIntyre M, Thramann JJ, Adler JR. Cyberknife Radiosurgery for Idiopathic Trigeminal Neuralgia. *Neurosurg Focus.* 2005;18(5):E9.
12. **Lim M**, Guccione S, Haddix T, Sims L, Cheshier SH, Chu P, Vogel H, Harsh GH.  $\alpha\beta 3$  Integrin in Central Nervous System Tumors. *Hum Pathol.* 2005;36(6):665-9.
13. Sinclair J, Marks MP, Levy RP, Adler JR, Chang SD, Lopez JR, Do HM, Bell-Stephens TE, **Lim M**, Steinberg GK. Visual Field Preservation After Curative Multi-modality Treatment of Occipital Lobe Arteriovenous Malformations. *Neurosurg.* 2005;57(4):655-67.
14. **Lim M** and Adler JR. Cyberknife Radiosurgery for Extremity Schwannomas: Technical Note and Case Report. *Stereotact. Funct. Neurosurg.* 2006;84(2-3):60-63. Cover Article.
15. **Lim M**, Cotruz C, Romanelli P, Schaal D, Gibbs I, Chang SD, Adler JR. Stereotactic Radiosurgery Using CT Cisternography and Non-Isocentric Planning for the Treatment of Trigeminal Neuralgia. *Comput Aided Surg.* 2006;11(1):11-20.
16. Simons JW, Carducci MA, Mikhak B, **Lim M**, Biedrzycki B, Borrellini F, Clift SM, Hege KM, Ando DG, Piantadosi S, Mulligan R, Nelson WG. Phase I/II Trial of an Allogeneic Cellular Immunotherapy in Hormone-Naïve Prostate Cancer. *Clin Cancer Res.* 2006;12(11 Pt 1):3394-401.
17. **Lim M\***, Cheshier SH\*, Steinberg GK. New Vessel Formation in the Central Nervous System During Tumor Growth, Vascular Malformations, and MoyaMoya. *Neurovasc Research.* 2006;3(3):237-245.

18. Lad SP, Guzman R, Kelly ME, Li G, **Lim M**, Lovbald K, Steinberg GK. Cerebral Perfusion Imaging in Vasospasm. *Neurosurgical Focus*. 2006;21(3):E7.
19. Bower R, **Lim M**, Harsh GR. Current State of Immunotherapy for Gliomas – Part I: Tumor-Induced Immunosuppression and Cytokine Therapy. *Contemporary Neurosurgery*. 2007;29(14):1-6.
20. Bower R, **Lim M**, Harsh GR. Current State of Immunotherapy for Gliomas – Part II: Passive Immunotherapy and Active Immunotherapy. *Contemporary Neurosurgery*. 2007;29(15):1-6.
21. **Lim M**, Bower R, Nangiana JS, Chang SD. Radiosurgery for Glomus Jugulare Tumors. *Technol Cancer Res Treat*. 2007;6(5):419-23.
22. Li G, Chang SD, Adler JR, **Lim M**. Irradiation of Glomus Jugulare Tumors: a Historical Perspective. *Neurosurg Focus*. 2007;23(6):E13.
23. Patil CG, Veeravagu A, Bower R, Li G, Chang SD, **Lim M**, Adler JR. Cyberknife Radiosurgery for the Treatment of Atypical Trigeminal Pain. *Neurosurg Focus*. 2007;23(6):E9.
24. Villavicencio A\*, **Lim M\***, Burneikiene S, Romanelli P, Chang SD, McNeely L, Fariselli L, McIntyre M, Bower R, Broggi G, Thramann JJ, Adler JR. CyberKnife Radiosurgery for Trigeminal Neuralgia: A Preliminary Multicenter Experience. *Neurosurg*. 2008;62(3):647-55.
25. Sangoi A\*, **Lim M\***, Dulai M, Vogel H, Chang SD. Supraellar Giant Cell Ependymoma: a Rare Neoplasm in a unique location.. *Human Pathology*. 2008;39(9):1396-401.
26. Ford E, Purger D, Tryggestad E, McNutt T, Christodouleas J, Rigamonti D, Shokek O, Won S, Zhou J, **Lim M**, Wong J, Kleinberg L. A Virtual Frame System for Stereotactic Radiosurgery Planning. *Int J Radiat Oncol Biol Phys*. 2008;72(4):1244-49.
27. Nangiana JS, **Lim M**, Silva R, Guzman R, Chang SD. Vein of Galen Malformations Part I. *Contemporary Neurosurgery*. 2008;30(4):1-8.
28. Nangiana JS, **Lim M**, Silva R, Guzman R, Chang SD. Vein of Galen Malformations Part II. *Contemporary Neurosurgery*. 2008;30(5):1-8.
29. 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. *Neurosurg*. 2009;65(2):237-49.
30. 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;27(6):E5.
31. Adler JR, Bower R, Gupta G, **Lim M**, Efron A, Gibbs IC, Chang SD, Soltys SG. Nonisocentric Radiosurgical Rhizotomy for Trigeminal Neuralgia. *Neurosurg*. 2009;64(2 suppl): A84-90.
32. Albesiano E, Han J, **Lim M**. Mechanisms of Local Immuno-resistance in Gliomas. *Neurosurg Clin N Am*. 2010;21(1):17-29.
33. Han SJ, Kaur G, Yang I, **Lim M**. Biologic Principles of Immunotherapy for Malignant Gliomas. *Neurosurg Clin N Am*. 2010;21(1):1-16.

34. Frazier J, **Lim M**, Olivi A. Immunotherapy Combined with Chemotherapy in the Treatment of Tumors. *Neurosurg Clin N Am*. 2010;21(1):187-94.
35. Raza SM, Garzon-Muvdi T, Boahene K, Olivi A, **Lim M**, Subramanian P, Quinones-Hinojosa A. The Supraorbital Craniotomy for Access to the Skull Base and Intraaxial Lesions: A Technique in Evolution. *Minim Invasive Neurosurg*. 2010;53(1):1-8.
36. Frazier JL, Batra S, Kapor S, Gandhi R, Carson K, Shokek O, **Lim M**, Kleinberg L, and Rigamonti D. Stereotactic Radiosurgery in the Management of Brain Metastases: an institutional retrospective analysis of survival. *Int J Radiat Oncol Biol Phys*. 2010;76(5):1486-92.
37. Sun DQ, Cheng J, Frazier JL, Batra S, Wand G, Kleinberg LR, Rigamonti D, Quinones- Hinojosa A, Salvatori R, **Lim M**. Treatment of pituitary adenomas using radiosurgery and radiotherapy: A single center experience and review of literature. *Neurosurg Review*. 2011;34(2):181-9.
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40. Hsu W, Nguyen T, Kleinberg L, Ford E, Rigamonti D, Gokaslan Z, **Lim M**. Stereotactic Radiosurgery for Spine Tumors: Review of Current Literature. *Stereotact Funct Neurosurg*. 2010;88(5):315-21.
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42. See AP\*, Zeng J\*, Tran P, **Lim M**. Acute Toxicity of Second Generation HIV Protease-Inhibitors in Combination With Radiotherapy: a Retrospective Case Series. *Radiat Oncol*. 2011;6:25.
43. Sun DQ, Carson KA, Raza SM, Batra S, Kleinberg LR, **Lim M**, Huang J, Rigamonti D. The radiosurgical treatment of arteriovenous malformations: obliteration, morbidities, and performance status. *Int J Radiat Oncol Biol Phys*. 2011;80(2):354-61.
44. See AP, Pradilla G, Yang I, Han S, Parsa AT, **Lim M**. Heat Shock Protein-Peptide Complex (HSPPC-96, Oncophage) in the Treatment of Glioblastoma. *Expert Rev Vaccines*. 2011;10(6):721-731.
45. Jackson C, Jallo G, **Lim M**. Clinical Outcomes After Treatment of Germ Cell Tumors. *Neurosurg Clin N Am*. 2011;22(3):385-94.
46. Chan JYK, Li RJ, **Lim M**, Quinones-Hinojosa A, Boahene K. Endoscopic Transvestibular Paramandibular Exploration of the Infratemporal Fossa and Parapharyngeal Space: A Minimally Invasive Approach to the Middle Cranial Base. *Laryngoscope*. 2011;121(10):2075-80.
47. Nguyen T, Hsu W, **Lim M**, Naff N. Stereotactic Radiosurgery: A Cross-Platform Comparison. *Neurol Res*. 2011;33(8):787-91.

48. Zeng J\*, See AP\*, Aziz K, Thiyagarajan S, Salih T, Gajula RP, Armour M, Phallen J, Terezakis S, Kleinberg L, Redmond K, Hales RK, Salvatori R, Quinones-Hinojosa, Tran PT\*, **Lim M\***. Nelfinavir Induces Radiation Sensitization in Pituitary Adenoma Cells. *Cancer Bio Ther.* 2011;12(7):657-63.
49. Guss ZG, Batra S, Limb CJ, Li G, Sughrue ME, Redmond K, Rigamonti DR, Parsa AT, Chang SD, Kleinberg L, **Lim M**. Radiosurgery of Glomus Jugulare Tumors: A Meta- Analysis. *Int J Radiat Oncol Biol Phys.* 2011;81(4):e497-502.
50. Bender MT, Pradilla G, James C, Raza S, **Lim M**, Carson BS. Surgical Treatment of Pediatric Trigeminal Neuralgia: Case Series and Review of the Literature. *Childs Nerv Syst.* 2011;27(12):2123-29.
51. Jackson C, Ruzevick J, Phallen J, Belcaid Z, **Lim M**. Challenges in Immunotherapy Presented by the Glioblastoma Multiforme Microenvironment. *Clin and Dev Immunol.* 2011:732413.
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53. Bender MT, Pradilla G, Batra S, See AP, Bhutiani, James C, Carson BS, **Lim M**. Effectiveness of Repeat Glycerol Rhizotomy in Treating Recurrent Trigeminal Neuralgia. *Neurosurg.* 2012;70(5):1125-33.
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55. Ruzevick J, **Lim M**. Clinical Trials with Immunotherapy for High-Grade Glioma. *Neurosurg Clin of N Am.* 2012;23(3):459-70.
56. **Lim M\***, Bower R\*, Wang Y, Sims L, Cheshier S, Harsh GR, Steinberg GK, Guccione S. The Predictive Value of Serum Myeloperoxidase in Vasospasm in Patients with Aneurysmal Subarachnoid Hemorrhage. *Neurosurg Rev.* 2012;35(3):413-9.
57. Han SJ, Zygourakis C, **Lim M**, Parsa AT. Immunotherapy for glioma: promises and challenges. *Neurosurg Clin N Am.* 2012;23(3):357-70.
58. Raza S, See AP, **Lim M**. Real-Time Imaging with the O-Arm for Skull Base Applications: A Cadaveric Feasibility Study. *J Neurol Surg B Skull Base.* 2012; 73(05): 293-301.
59. Jain A, Amin A, Jain P, Burger P, Jallo G, **Lim M**, Bettegowda C. Subependymoma: Clinical Features and Surgical Outcomes. *Neurol Res.* 2012;34(7):677-84.
60. Chaichana KL, Jackson C, Patel A, Miller NR, Subramanian P, **Lim M**, Gallia G, Olivi A, Weingart J, Brem H, Quinones-Hinojosa A. Predictors of Visual Outcome Following Surgical Resection of Medial Sphenoid Wing Meningiomas. *J Neurol Surg B Skull Base.* 2012;73(5):321-6.
61. 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 Rep Oncol Med.* 2013:946392.
62. Jackson C, Ruzevick J, Brem H, **Lim M**. . Vaccine strategies for Glioblastoma: Progress and Future Directions. *Immunotherapy.* 2013;5(2):155-67.

63. Nicholas S, Mathios D, Jackson C, Lim M. Metastatic Melanoma to the Brain: Surgery and Radiation is Still the Standard of Care. *Curr Treat Options Oncol.* 2013;14(2):264-279.
64. Chaichana KL, Pendleton C, Xaidi H, Olivi A, Weingart JD, Gallia GL, Lim M, Brem H, Quinones-Hinojosa A. Seizure Control for Patients Undergoing Meningioma Surgery. *World Neurosurg.* 2013;79(3-4):515-24.
65. Nicholas S, Mathios D, Ruzevick J, Jackson C, Yang I, Lim M. Current Trends in Glioblastoma Multiforme Treatment: Radiation Therapy and Immune Checkpoint Inhibitors. *Brain Tumor Res Treat.* 2013;1(1):2-8
66. Zeng J, Harris TJ, Lim M, Drake CG, Tran PT. Immune Modulation and Stereotactic Radiation: Improving Local and Abscopal Responses. *BioMed Res Intl.* 2013:658126
67. Amin AG, Ng J, Hsu W, Pradilla G, Raza S, Quinones-Hinojosa A, Lim M. Postoperative Anticoagulation in Patients with Mechanical Heart Valves Following Surgical Treatment of Subdural Hematomas. *Neurocrit Care.* 2013;19(1):90-4.
68. Raza SM, Quinones-Hinojosa A, Lim M, Boahene KD. The Transconjunctival Transorbital Approach: A Keyhole Approach to the Midline Anterior Skull Base. *World Neurosurg.* 2013;80(6):864-71.
69. See AP, Han J, Phallen J, Binder Z, Gallia G, Pan F, Jinasena D, Jackson C, Belcaid Z, Jeong SJ, Gottschalk C, Zeng J, Ruzevick J, Nicholas S, Kim Y, Albesiano E, Pardoll DM, Lim M. The Role of STAT3 Activation in Modulating the Immune Microenvironment of GBM. *J Neurooncol.* 2012;110:359-68
70. Bender M, Pradilla G, Batra S, See AP, James C, Pardo C, Carson BS, Lim M. Glycerol Rhizotomy and Radiofrequency Thermocoagulation for Trigeminal Neuralgia in Multiple Sclerosis. *J Neurosurg.* 2013;118(2):329-36.
71. Chaichana KL, Pendleton C, Jackson C, Martinez-Gutierrez JC, Diaz-Stransky A, Aguayo J, Olivi A, Weingart J, Gallia G, Lim M, Brem H, Quinones-Hinojosa A. Deep Venous Thrombosis and Pulmonary Embolisms in Adult Patients Undergoing Craniotomy for Brain Tumors. *Neurol Res.* 2013;35(2):206-11.
72. Chaichana KL, Zadnik P, Weingart JD, Olivi A, Gallia GL, Blakeley J, Lim M, Brem H, Quinones-Hinojosa A. Multiple Surgical Resections for Patients with Glioblastoma: Prolonging Survival. *J Neurosurg.* 2013;118(4):812-20.
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74. Chaichana KL, Martinez-Gutierrez JC, De la Garza-Ramos R, Weingart JD, Olivi A, Gallia GL, Lim M, Brem H, Quinones-Hinojosa A. Factors associated with survival for patients with glioblastoma with poor pre-operative functional status. *J Clin Neurosci.* 2013;20(6):818-23.
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78. Zhou J, Zhu H, **Lim M**, Blair L, Quinones-Hinojosa A, Messina SA, Eberhart CG, Pomper MG, Laterra J, Barker PB, van Zijl PC, Blakeley JO. Three-dimensional amide proton transfer MR imaging of gliomas: Initial experience and comparison with gadolinium enhancement. *J Magn Reson Imaging*. 2013;38(5):1119-28.
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80. Goodwin CR, Yang JX, Bettgowda C, Hwang B, James C, Biser A, Raza S, Bender M, Carson B, Lee JY, **Lim M**. Glycerol Rhizotomy via a Retrosigmoid Approach as an Alternative Treatment for Trigeminal Neuralgia. *Clin Neurol Neurosurg*. 2013;115(12):2454-56.
81. Ooi YC, Tran P, Ung N, Thill K, Trang A, Fong BM, Nagasawa DT, **Lim M**, Yang I. The Role of Regulatory T-cells in Glioma Immunology. *Clin Neurol Neurosurg*. 2014;119:125-32.
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92. Jusue-Torres I, Recinos PF, Quinones-Hinojosa, **Lim M**. Technical Nuances of Microvascular Decompression of the Posterior Fossa Cranial Nerves: 3-D Operative Video. *Oper Neurosurg.* 2014;10(3):487
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\* co-first or co-senior

Underlined authors are people I mentored

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\*co-first or co-senior

### Editor/Guest Editor

1. Isaac Yang, **Michael Lim**. Neurosurgery Clinics of North America: Immunotherapy Vol 21:1. Philadelphia, PA:W.B Saunders Co. 2010.
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4. John Lee, **Michael Lim**. Neurosurgery Clinics of North America: Trigeminal Neuralgia. Philadelphia, PA:W.B Saunders Co. 2016
5. Christopher Jackson, **Michael Lim**. Glioma. Special Issue: Glioma Immunotherapy. Vol 2:1. 2019
6. Alfredo Conti, Pantaleo Romanelli, Evangelos Pantelis, Scott Soltys, Young Hyun Cho, **Michael Lim**. Cyberknife NeuroRadiosurgery. Cham, Switzerland: Springer Nature. 2020.

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## Other Media

- 2010 Wired Magazine. Toolkit: A Neurosurgeon's Must-Have
- 2011 Webinar – Trigeminal Neuralgia: Leave No One in Pain
- 2013 Readers Digest Article featuring my TN Patient Treated by a MVD
- 2016 Washington Post – Health and Science – March 14, 2016 – Article featuring my TN Patient Treated by MVD
- 2016 ABTA Webinar – Metastatic Brain Tumors: What Patients Need to Know
- 2017 Medscape-SITC – Online Video – Current State of Immunotherapy for GBM: Checkpoint Inhibitors
- 2017 Medscape – Online Interview – Immunotherapy for GBM- Checkpoint Inhibitors
- 2017 Medscape – Online Roundtable Discussion – Advanced in GBM – Checkpoint Inhibitors
- 2017 AERO Webinar – “Rationale Approaches to Immunotherapy”
- 2018 ABTA Webinar – Immunotherapy for Brain Tumors

## Extramural Sponsorship

### Current

- 12/01/2018 - 11/30/2022 R01 CA228188 (Zhou)  
Amide Proton Transfer (APT) MRI of Brain Tumors at 3T  
\$238,899  
Role: Co-I (0.3 mos). The major goal of this project is to develop highly sensitive, fast, and quantitative APT-MRI methodologies on 3T clinical MRI scanners and to evaluate the potential of these methodologies in brain cancer diagnosis in the molecular era.
- 02/04/2021 - 02/21/2023 BHV3000-202 (Lim)  
BHV3000-202: Phase 2: A double-blind, placebo controlled, crossover trial of BHV-3000 (Rimegepant) for treatment of refractory trigeminal neuralgia  
\$141,271  
Role: PI (0.018 mos). The goal of this proposal is to evaluate the efficacy of BHV3000 compared to placebo for subjects with treatment refractory Trigeminal Neuralgia as measured by a 2-point or greater reduction in the average Numeric Pain Rating Scale between the two-week treatment phases
- 05/01/2021 - 02/28/2026 1R01NS119609 (Suk/Lim)  
Nanocage-based systemic delivery of TGF $\beta$  trap for immunomodulation of brain neoplasms  
\$622,133  
Role: Multi PI (0.96 mos). The goal of this proposal is to use a self-assembly human ferritin nanocages that bind to transferrin receptor 1 (TfR1) and TGF $\beta$  to inhibit TGF $\beta$  signaling

06/01/2021 - 05/31/2025	<p>R01 CA230285 NCI (Lim)  Generating a Systemic Immune Response Using Localized Delivery of Chemotherapy in Brain Tumors  \$1,467,069  Role: PI (1.8 mos). The goal is to improve therapeutic synergy between current standard of care immunotherapy for GBM and to elucidate the mechanisms by which LC enhances local antitumor immunity.</p>
09/01/2021 - 12/31/2024	<p>CMBG453A1US01CT (Lim)  A Phase I Trial of anti-Tim-3 in combination with anti-PD-1 and SRS in Recurrent GBM  \$109,849  Role: PI (0.72 mos). The goal of this proposal is to study anti-Tim-3 in combination with anti-PD1 and STA in Recurrent GMB patients.</p>
09/21/2021 - 08/31/2026	<p>1U54CA261717 (Gephart)  Stanford Brain Consortium: Deconvolution and Interruption of the cancer-neuro-immune axis facilitating brain metastases  \$7,542,484  Role: PI, Project 3 (1.8 mos). The Stanford Brain Metastasis Consortium has unified brain and cancer experts in the singular goal of improving our understanding the treatment of brain metastases, a currently increasing yet underserved subset of cancer patients.</p>
09/21/2021 - 08/31/2026	<p>U19CA264504 (Batchelor/Monje-Deisseroth)  Novel Therapeutics for Adult Glioblastoma (Project 3)  \$138,857  Role: Co-I (0.90 mos). The goal is targeting the neuronal microenvironment</p>
12/17/2021 - 12/31/2023	<p>CIP-2  Randomized, two-arm, multicenter study to evaluate the safety and efficacy of Dura Sealant Patch in reducing CSF leakage following elective cranial surgery  \$169,832  Role: PI (0.0012 mos). The goal of this project is to study evaluate the safety and efficacy of Dura Sealant Patch to reduce CSF Leakage following elective cranial surgery</p>
03/01/2022 - 02/28/2023	<p>2022-23-SCI-Lim (Lim)  Bioengineering antibodies with phage display to overcome T cell exhaustion in tumors  \$46,296  Role: PI (0.12 mos). The goal of this project is to To analyze genes that are upregulated in patients with high inhibitory receptor expression on CD8 T cell surface, and identify novel genes associated with T cell exhaustion.</p>
04/01/2022 - 0/31/2027	<p>1R01NS121404-01A1 (Lim)  Targeting Lag-3 and PD-1 in Myeloid Cells of GBM</p>

\$1,986,423

Role: PI (0.0012 mos). The goal of this project is to study novel immunotherapy-based combination therapies for primary brain tumors, specifically Glioblastoma by harnessing Lag-3/PD-1 checkpoint blockade

05/01/2022 - 01/31/2026

R01EB031199 (Boada)

Anatomically Guided Sodium MRI: Accurately Monitoring Chronic Ion Pump Dysfunction in the Human Brain

\$2,312,151

Role: Co-I (0.60 mos). The goal of this project is to develop new methodology for improving the resolution of sodium images from the human brain.

09/27/2022 - 12/31/2024

CA209-7GR (Lim)

A Phase Ib Clinical Trial to Evaluate Early Immunologic Pharmacodynamic Parameters Following Neoadjuvant Anti-PD-1 (Nivolumab), or the Combination of Anti-PD-1 Plus Anti-CTLA-4 (Nivolumab Plus Ipilimumab) in Patients With Surgically Accessible Glioblastoma

\$114,282

Role: PI (0.60 mos). The goal of this project is targeting the neuronal microenvironment

## OVERLAP

There is no scientific, budgetary or effort overlap. Should all pending applications become active, effort will be reduced by all awards in accordance with sponsors' policies.

## Previous

3/01/2009 - 02/28/2011

Characterization of STAT3 in GBM: A Potential Mediator of Immune Evasion  
Academy of Academic Surgeons

\$70,000

Role: PI, 3% effort. The goal of this project was to assess for 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.

07/1/2009 - 06/30/2010

Immune Characterization of STAT3 in GBM with a Novel Transgenic Model  
Neurosurgery Research Education Foundation

\$40,000

Role: PI, 10% effort. The goal of this project was 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.

07/1/2009 - 07/31/2017

Amide Proton Transfer (APT) MRI of Brain Tumors at 3T and 7T

R01EB009731

NIH

\$368,210

PI: Jinyuan Zhou, 32% effort



Role: Co-I, 2% effort. The goal of this project was to use APT to distinguish treatment effects as well as higher grade tumors with imaging.

- 01/01/2010 - 12/31/2011      Characterization of STAT3's role in the Immune Microenvironment of GBMs  
Clinician Scientist Award  
\$80,000  
Role: PI, 75% effort. The goal of this project was to assess for assess the effects of STAT3 activation on immune cells in GBM cells lines, GBM samples from patients, and GBM stem cell lines.
- 01/01/2011 - 10/31/2012      A Novel Immunotherapy Approach Against GBM  
WW Smith Charitable Foundation  
\$100,000  
Role: PI, 5% effort. The goal of this project was to understand the mechanism of anti-PD-1 therapy combined with stereotactic radiation's antitumor immune response.
- 11/01/2011 - 10/31/2012      Immunotherapy for Chordomas  
Chordoma Foundation  
\$25,000  
Role: PI, 5% effort. The goal of this project was to use the checkpoint inhibitor anti-PD-1 in efforts to design an immunotherapy approach against Chordomas
- 11/14/2011 - 11/13/2012      Spine Metastases and Pain  
Johns Hopkins Neurosurgery Pain Institute  
\$62,105  
Role: PI, 2% effort. The goal of this project was to develop an immune based approach to targeting spine metastases to improve tumor control and decrease pain.
- 12/01/2011 - 11/30/2020      Subependymoma/Ependymoma Center Grant  
Role: PI (2.4 mos), 20%, Co-PI: Henry Brem, (0.6 mos)  
The goal of this project is to develop a complete center for research that encompasses basic, translational, and clinical science around subependymomas and ependymomas
- 02/01/2014 - 01/31/2015      Augmenting Immunotherapy with Chemotherapy  
Arbor Pharmaceuticals  
\$60,197  
Role: PI, 5% effort. The goal of this project was to try and augment vaccine strategies with using Carmustine Wafers
- 11/01/2014 - 10/30/2015      Creating a Humanized Immune Model for Chordomas  
Chordoma Foundation  
\$200,000  
Role: PI, 5% effort. The goal of this project was to create a humanized immune model in mice to design future immunotherapy approach against Chordomas

11/03/2014 - 11/02/2020	<p>Genetic Determinants of Response to Nivolumab or Nivolumab in Combination with Ipilimumab in Individuals with Glioblastoma</p> <p>\$709,440</p> <p>Role PI. The goal of this project was to assess patient samples from a randomized Phase II/III clinical trial assessing the efficacy of anti-PD-1 and anti-CTLA-4 in patients with recurrent GBM.</p>
11/19/2014 - 08/1/2015	<p>Cranioplasty Outcomes</p> <p>Stryker Corp</p> <p>\$60,300</p> <p>Role: PI. The goal of this project was to assess CSF leak rates with different cranioplasty techniques.</p>
03/10/2015 - 07/31/2017	<p>Anti PD-1 and HSPCC-96 Combination Therapy in Murine Glioblastoma</p> <p>Agenus Inc</p> <p>\$118,766</p> <p>Role: PI, 3% effort. The goal of this project was to assess survival and immunophenotype mice treated with the combination of heat shock proteins and checkpoint inhibitors.</p>
02/01/2016 - 06/31/2017	<p>Checkpoint Inhibitors in GBM</p> <p>BMS</p> <p>\$100,000</p> <p>Role: PI, 5% effort. The goal of this project was to assess the efficacy of novel checkpoint inhibitors in preclinical models for GBM</p>
04/01/2016 - 03/31/2017	<p>Adoptive transfer of genetically polarized myeloid cells to favorably alter tumor associated macrophages in glioblastoma multiforme</p> <p>Role: Co-I. Goal Statement: I was a co-investigator on this project that assessed the role of myeloid cells in producing an antitumor immune response.</p>
09/15/2016 - 04/30/2018	<p>Administrative supplement to support biomarker studies associated with NCI supported clinical trials of immunotherapy</p> <p>Adult Brain Tumor Consortium – NCI - 3UM1CA137443-07S1</p> <p>\$250,000</p> <p>Role: Project Manager; The goal of this project was to immunophenotype the blood and tumor specimens (particularly IHC and RNAscope) obtained from patients on the anti-Lag-3, anti-CD137, anti-PD-1 trial (ABTC 1501)</p>
06/15/2016 - 05/01/2020	<p>Bristol Myers Squibb (BMS) CA209-596 (Lim)</p> <p>Correlative Studies for ABTC 1501: A Phase I Trial of Anti-LAG-3 or Anti-CD137 Alone and in Combination with Anti-PD-1 in Patients with Recurrent GBM</p> <p>\$61,265</p> <p>Role: PI (.22 mos). The goal is to correlative studies on samples (namely sequencing) of patients from a clinical trial in recurrent GBM patients were treated with anti-LAG-3 and anti-CD137 alone and in Combination with anti-PD-1 in patients with recurrent GBM</p>
07/01/2018 - 06/30/2020	<p>R21 CA227783 (Heo)</p>

Highly Accelerated Chemical Exchange Saturation Transfer MRI Using Compressed Sensing

\$125,000

Role: Co-I (0.24 mos). The goal is to develop a highly accelerated molecular imaging method called amide proton transfer-weighted (APT<sub>w</sub>) MRI, using a data acquisition technique with less sampling and an analysis based on a developed dictionary for such sparse sampling, and then, to integrate this into a clinical MRI protocol to detect brain tumors and assess tumor response to therapy.

04/01/2019 - 01/01/2020

R01 CA230341 (Wang)

X-ray/optical tomographic guidance and assessment for pre-clinical radiation research

\$314,480

Role: Co-I (0.36 mos). The goal of this project is to advance the in vivo cancer imaging capability of SARRP to include quantitative bioluminescence and fluorescence tomography.

07/01/2019 - 01/01/2020

R01 CA240811 (Wang)

Quantitative bioluminescence tomography for pre-clinical radiotherapy research

\$280,140

Role: Co-I (0.36 mos). The goal of this project is to construct and validate a quantitative bioluminescence tomography (QBLT) to significantly advance in vivo image-guided capability for pre-clinical radiotherapy research.

09/01/2020 - 08/31/2021

Stanford Cancer Institute

Expanding the Reach of the Stanford Brain Metastases Consortium: Deep Profiling of Brain Metastases through Multiplexed Analysis and Multi-PI Collaborations

\$46,300

Role: Investigator (0.12 mos)

**Clinical Extramural Funding**

Current

07/01/2013 - 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

Role: PI; 5% effort

02/14/2014 - 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

\$778,111.94

Role: Site PI; 2% effort

2015 - Present	<p>A Phase 2 Study to Evaluate the Clinical Efficacy and Safety of MEDI4736 in Patients with GBM  Ludwig Institute for Cancer Research  \$393,931  Role: Site PI; 3% effort</p>
2016 - Present	<p>A Phase I Trial of Anti-LAG-3 or Anti-CD137 Alone and in Combination with Anti-PD-1 in Patients with Recurrent GBM  NCI – Adult Brain Tumor Consortium protocol 1501  ~2,500,000.00  Role: PI</p>
2016 - Present	<p>A Randomized Phase 3 Open Label Study of Nivolumab vs Temozolomide each in Combination with Radiation Therapy in Newly Diagnosed Adult Subjects with Unmethylated MGMT (tumor O-6-methylguanine DNA methyltransferase)  Glioblastoma CA209-498-0016  Bristol Meyers Squibb  Role: Site PI</p>
2016 - Present	<p>A Randomized Phase 3 Single Blind Study of Temozolomide plus Radiation Therapy combined with Nivolumab or Placebo in Newly Diagnosed Adult Subjects with MGMT-Methylated (tumor O6-methylguanine DNA)  CA209548  Bristol Meyers Squibb  Role: Site PI</p>
2017 - Present	<p>Phase I Safety study of Stereotactic Radiosurgery with Concurrent and Adjuvant PD-1 Antibody Nivolumab (CA209-003) in Patients with Recurrent or Advanced Chordoma.  Chordoma Foundation  \$300,000  Role: PI</p>
2019 - Present	<p>Phase I Check-point Positive-Driven/Biomarker Master Protocol for Safety of Individual Immune Checkpoint Inhibitor in Combination with Anti-PD-1 (nivolumab) in Patients with Recurrent GBM  Bristol Meyers Squibb  \$3,000,000.00  Role: PI</p>
2020 – Present	<p>A Phase I Trial of anti-Tim-3 combination with anti-PD-1 and SRS in Recurrent GBM  Novartis  Role: Co-PI</p>
02/04/2021 - 02/01/2023	<p>BHV3000-202: Phase 2: A Double-Blind, Placebo Controlled, Crossover Trial of BHV-3000 (Rimegepant) for Treatment Refractory Trigeminal Neuralgia  Biohaven Pharmaceuticals, Inc.  \$141,271 (.036 mos)  Role: PI</p>

### Previous

03/01/2008 - 10/31/2009	Phase II/III EGFRvIII Vaccine Clinical Trial CellDex \$141,679.10 PI – Amy Heimberger, MD Anderson Role: Site PI; 10% effort
04/01/2012 - 2015	Phase II/III Heat Shock Protein Trial Agenus \$59,253.39 PI – Andrew Parsa, UCSF Role: Site PI; 2% effort
2012 - 06/01/2016	An International, Randomized, Double-blind, Controlled Study of Rindopepimut/Gm Celldex Therapeutics Inc \$436,250.79 Role: Site PI; 4% effort
06/01/2012 - 07/01/2016	Phase II/III Dendritic Cell Vaccine Trial Immunocellular \$325,116.74 PI – John Yu, Cedars Sinai Role: Site PI – Michael Lim, 15% effort
02/14/2014 - 2015	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

## **CLINICAL ACTIVITIES**

### **Clinical Focus**

1. Brain Tumors – One of my clinical focuses is on the treatment of brain tumors. A large part of my practice is dedicated to treating patients surgically with brain tumors. I offer patients the latest technologies (such as endoscopic, laser, stereotactic radiosurgery, and brachytherapy) for the surgical treatment of their brain tumors.
2. Trigeminal Neuralgia – My other clinical focus is on the treatment of trigeminal neuralgia. I offer patients all of the surgical options for the treatment of TN.

### **Certification**

#### *Medical, other state/government licensure*

2001 - Present California License #A76130

2007 - Present Maryland Medical License #D65890

2022 - Present Alaska Medical License #180248

2022 - Present Hawaii Medical License #MD-22341-0

2022 - Present Nevada Medical License #22052  
 2022 - Present Oregon Medical License #MD206905  
 2022 - Present Texas Medical License #T9438

*Boards, other specialty certification*

2001 - Present DEA License  
 2012 - Present Board Certified by the American Board of Neurological Surgeons

**Clinical Draw**

Nationally and Internationally

**Clinical Program Building / Leadership**

2007 - 2020 Brain Tumor Immunotherapy Program, Director at Johns Hopkins  
 2009 - 2020 Metastatic Brain Tumor Center, Director at Johns Hopkins  
 2011 - 2020 Ependymoma/Subependymoma Center, Director at Johns Hopkins  
 2013 - 2020 Trigeminal Neuralgia Center, Director at Johns Hopkins  
 2015 - 2020 Stereotactic Radiosurgery, Division Director at Johns Hopkins

**Clinical Demonstration Activities to external audience, on or off campus**

2014 Observership of Dr. Chih-Wei Chen from Taiwan for Surgery  
 2015 - 2016 Postdoctoral Fellowship of Dr. Chul-Kee Park from Seoul National University, South Korea  
 2014 Observership of Dr. Xu Wu from China for Surgery  
 2017 Observership of Dr. Tao Zhang from China for Surgery  
 2018 Observership of Dr. Yun-Sik Dho from Seoul National University, South Korea  
 2018 Observership of Dr. Jung Won Park from Assan Medical Center, South Korea  
 2018 - 2019 Postdoctoral Fellowship of Dr. Young-Hoon Kim from Assan Medical Center, South Korea  
 2020 Observership – Dr. Yu Zhu from China for Surgery  
 2020 Observership – Dr. Ying Tong from China for Surgery

**EDUCATIONAL ACTIVITIES**

**Teaching**

*Classroom Instruction*

None

*Clinical Instruction*

2007 - 2020 Faculty for Resident Teaching in clinics, operating rooms, and wards; Johns Hopkins Hospital  
 2007 -2020 Faculty for Medical Student Teaching in clinics, operating rooms, and wards; Johns Hopkins Hospital

- 2020 - Present Faculty for Resident Teaching in clinics, operating rooms, and wards; Stanford University School of Medicine
- 2020 - Present Faculty for Medical Student Teaching in clinics, operating rooms, and wards; Stanford University School of Medicine

#### *CME Instruction*

- 09/208 Faculty for International Neuro-Oncology Updates, Speaker, Baltimore, MD; Immunotherapy for Brain Tumors
- 10/2008 Faculty for CNS Tumor Course, Speaker, Orlando, FL; Immunotherapy for Brain Tumors
- 10/2009 Faculty for CNS Tumor Course, Speaker, New Orleans, LA; Immunotherapy for Brain Tumors
- 04/2010 Hopkins CME, Speaker, Rockville, MD; Metastatic Brain Tumors
- 05/2010 Johns Hopkins Spine CME: Speaker, Baltimore, MD; Stereotactic Radiosurgery for Spine Tumors
- 10/2010 Faculty for CNS Tumor Course, Speaker, San Francisco, CA; Immunotherapy for Brain Tumors
- 10/2011 Faculty for CNS Tumor Course, Speaker, Washington, DC; Immunotherapy for Brain Tumors
- 10/2012 Faculty for CNS Tumor Course, Speaker, Chicago, IL; Immunotherapy for Brain Tumors
- 10/2013 Faculty for CNS Tumor Course, Speaker, San Francisco, CA; Immunotherapy for Brain Tumors
- 10/2014 Faculty for CNS Tumor Course, Speaker, Boston, MA; Immunotherapy for Brain Tumors
- 05/2015 Faculty for AANS Tumor Course, Speaker, Washington, DC; Management of Brain Metastases
- 10/2015 Faculty for CNS Tumor Course, Speaker, New Orleans, LA; Immunotherapy for Brain Tumors
- 10/2017 Faculty for CNS Tumor Course, Speaker, Boston, MA; Checkpoint Inhibitors for Brain Tumors
- 10/2018 Faculty for CNS Tumor Course, Speaker, Houston, TX; Checkpoint Inhibitors for Brain Tumors
- 09/2023 Faculty for CNS Tumor Course, Speaker, Washington D.C.: Immunotherapy for Brain Tumors: New Concepts

#### *Workshops/Seminars*

- 06/2009 Faculty for Hopkins Sinus and Skull Base Course: Speaker; Endoscopic Approaches to the Sella, Baltimore, MD
- 09/2009 Faculty for Hopkins: Combined Approach for Skull Base Tumors: Speaker; Radiosurgery for Skull Base Tumors: Faculty, Baltimore, MD
- 06/2010 Faculty for Hopkins Sinus and Skull Base Course: Speaker; Approaches to the Sella Baltimore, MD
- 07/2010 Faculty for Senior Society – Boot Camp for Neurosurgery Interns: Speaker; Neurotrauma, Philadelphia, PA
- 12/2010 Faculty for Hopkins: Combined Approach for Skull Base Tumors: Speaker; Radiosurgery for Skull Base Tumors, Baltimore, MD
- 03/2011 Webinar: Speaker; Treatment of Trigeminal Neuralgia
- 11/2011 Faculty for Skull Base Session at Society for Neuro-Oncology: Speaker; Acoustic Neuromas, Orange County, CA

06/2012	Webinar: Speaker; Management of Cerebral Brain Metastases
12/2018	Course Director, Approaches to Skull Base, Stryker Resident Skull Base Course, Chapel Hill, NC
01/2020	Course Director, Approaches to Skull Base, Stryker Resident Skull Base Course, Atlanta, GA
05/2021	Scientific Committee, Focused Ultrasound for GBM Workshop, Virtual
09/2023	Course Director, Brain Tumor Update – Management of Malignant Brain Tumors, Congress of Neurological Surgeons, Washington D.C.

## **Mentoring**

### *Advisees*

2007 - 2013	Pablo Recinos, MD, Neurosurgery Resident – Director of Skull base surgery and Associate Professor at Cleveland Clinic
2007 - 2013	Shaan Raza, MD, Neurosurgery Resident – Director of Skull Base Surgery and Associate professor at MD Anderson
2008	Jennifer Cheng, MD, Research Elective as a medical student - currently an Assistant Professor of Neurosurgery at Kansas University Medical Center
2008 - 2009	Trang Nguyen, MD, Doris Duke Fellowship– currently a Surgical Oncology Fellow at the John Wayne Cancer Institute
2008 - 2010	James Frazier, MD, NREF Fellowship recipient – currently a Neurosurgeon at Sinai Hospital
2008 - 2011	Alfred See, MD, Dean’s Medical Student Fellowship and Summer Research Fellowship recipient, currently an Assistant Professor of Neurosurgery at Boston Children’s Hospital.
2008 - 2012	Matthew Bender, Summer Research Fellowship - currently an Assistant Professor of Neurosurgery at the University of Rochester
2009 - 2012	Jacob Ruzevick, MD, Doris Duke Fellowship and Summer Research Fellowship – Assistant Professor in Neurosurgery at University of Washington
2009 - 2012	Christopher Jackson, Howard Hughes Medical Student Fellowship and Summer Research Fellowship – Assistant Professor of Neurosurgery at Johns Hopkins
2009 - 2012	Zachary Guss, Summer Research Fellowship – currently a Radiation Oncologist at Providence Sacred Heart Medical Center
2010	Julie Ng, Summer Research Fellowship – currently a Pulmonary and Critical Care Faculty at Harvard-BWH
2010-2012	Jillian Phallen – research technician – currently an Assistant Professor of Oncology at Johns Hopkins University
2010 - 2012	Jing Zeng, MD, Postdoctoral Fellow – currently a Professor in Radiation Oncology at University of Washington



2010 - 2011	Gustavo Pradilla, M.D., Postdoctoral Fellow - currently an Associate Professor in Neurosurgery at Emory University
2011 - 2012	Anu Amin, Dean's Medical Student Fellowship and Summer Research – currently an Assistant Professor of Neurosurgery at the University of Washington
2012 - 2015	Dimitrios Mathios, Postdoctoral Fellow – Assistant Professor of Neurosurgery at Washington University
2012 - 2013	Sarah Nicholas, Doris Duke Fellowship – currently a Radiation Oncologist at Banner Health
2011 - Present	Allison Martin, T32 NIH Fellowship – Assistant Professor of Pediatric Oncology at Albert Einstein Medical Center
2014 - 2015	Jennifer Kim, Howard Hughes Medical Student Fellowship – currently a Vascular Fellow at the Barrow Neurological Institute
2014 - 2015	Mira Patel, Howard Hughes Medical Student Fellowship – Assistant Professor of Radiation Oncology at Memorial Sloan Kettering
2015 - 2016	Debebe Theodros, Dean's Medical Student Fellowship – currently a Neurosurgery Resident at Stanford Hospital
2015 - 2017	Tomas Garzon-Muvdi, Postdoctoral Fellowship – Assistant Professor of Neurosurgery at Emory University
2015 - 2016	Alice Hung, Medical Student Research Year – currently a Neurosurgery Resident at the Johns Hopkins University School of Medicine
2015 - Present	Adela Wu, Medical Student Research Year – currently a Neurosurgery Resident at Stanford University School of Medicine
2015 - Present	Russell Maxwell, Medical Student Research Year – currently a Radiation Oncology Resident at the University of Pennsylvania School of Medicine
2015 - Present	Andrew Luksik, Medical Student Research Year –Neurosurgery Resident at the Johns Hopkins University School of Medicine
2016 - 2021	Christina Jackson, M.D., Resident and Postdoctoral Fellowship – Assistant Professor of Neurosurgery at the University of Pennsylvania School of Medicine
2016 - 2022	Risheng Xu, Neurosurgery Resident at the Johns Hopkins University School of Medicine – Assistant Professor of Neurosurgery at Johns Hopkins
2016 - Present	Yuan Xia, Howard Hughes Medical Student Fellowship – Neurosurgery Resident at the Johns Hopkins University School of Medicine
2018 - Present	John Choi, Deans Medical Student Fellowship – currently a Neurosurgery Resident at Stanford University School of Medicine

2018 - Present Ayush Pant, M.D./Ph.D. Candidate – currently in lab

2019 - Present Ravi Medikonda, Dean’s Medical Student Fellowship – currently a Neurosurgery Resident at Stanford University School of Medicine

2019 - 2020 Luqing Tong, Postdoctoral Fellowship – now Assistant Professor of Neurosurgery at the First Affiliated Hospital of Zhejiang University

2019 - 2020 Peidong Lu, M.D./Ph.D. – Postdoctoral Fellowship from Tianjin University, China

2019 - 2020 Liang Zhang, M.D. – Postdoctoral Fellow – now Assistant Professor

2020 - 2021 Timothy Kim, Medical Student Research Year – now a neurosurgery resident at the University of California, San Diego.

2020 - 2021 Siddhartha Srivastava, Medical Student Research Year – now a neurosurgery resident at Barrow Neurological Institute

2021 - 2022 Leila Mashouf, Medical Student Research Year – now at a startup

2021 - 2022 Pavan Shah, Medical Student Research Year –

2021 - 2022 Nivedha Kaanapadi, Medical Student Research Year – now a neurosurgery resident at New York University

2022 - Present Rohit Verma, Post-Doc

2022 - Present Kwang-Bog Cho, Post Doc

2022 – Present Janet Wu, Medical Student; Med Scholar Research Fellowship

2022 – Present Alexander Ren, Medical Student; Med Scholar Research Fellowship

### **Educational Program Building Leadership**

3/2011 International Lecture Series for South Korea, Co-Director of Course

3/2012 International Lecture Series for China, Co-Director of Course

### **Educational Extramural Funding**

2010-2011 Stryker Unrestricted Educational Grant

## **RESEARCH ACTIVITIES**

### **Research Focus:**

### **Research Program Building/ Leadership**

2007 - 2020 Director, Brain Tumor Immunotherapy Program at Johns Hopkins  
Laboratory Efforts – studying the immune microenvironment of Gliomas

Clinical –PI for several clinical trials

- 2009 - 2020     Director, Metastatic Brain Tumor Center at Johns Hopkins  
Laboratory – studying the effect of metastatic tumors of the brain on systemic Immunity  
Clinical – Outcomes center
- 2013 - 2020     Director, Trigeminal Neuralgia Center at Johns Hopkins  
Clinical Director
- 2011 - 2020     Director, Ependymoma/Subependymoma Center at Johns Hopkins  
Laboratory – studying epigenetics and immune microenvironment of Ependymomas and  
Subependymomas
- 2015 - 2020     Director, Stereotactic Radiosurgery Program at Johns Hopkins  
Clinical Director

### **Inventions, Patents, Copyrights**

- 09/15/2015     Patent #: 9132281  
14/127,597; C11601-04 issued; Inventors Jing Zeng, Charles Drake, Drew Pardoll, and **Michael Lim**. Patent for Technique: Using Focused Radiation to Augment Immune Based Strategies Against Cancer.
- 01/08/2019     Patent #: 10174384  
15/071,800; C13155-02; Inventors Dimitrios Mathios, Chetan Bettegowda, Patrick Ha, Taeyoung Hwang, and **Michael Lim**. Use of the ZMIZ1 Marker in Directing Treatment and Predicting Survival in Cancer.
- 12/15/2020     Patent #: 10864180  
15/136,149; C13490 Inventors Dimitrios Mathios, Drew Pardoll, Betty Tyler, Henry Brem, and **Michael Lim**. Combination of Immunotherapy with Local Chemotherapy for the Treatment of Malignancies.
- 12/07/2021     Patent#: 1119183  
15/503,887; C13093; Inventors: **Michael Lim**, Henry Brem, Betty Tyler, Jason Liauw, Sheng-Fu Lo. Post-surgical imaging marker: A marker for imaging includes a bio-dissolvable material and a contrast agent configured to provide contrast during an imaging procedure.

### **Provisional Patents**

- C13320     Inventors Christopher Jackson, Drew Pardoll, Charles Drake, and **Michael Lim**. Polyfunctional lymphocytes as a biomarker of antitumor activity
- C13547     Inventors Juvenal Reyes and **Michael Lim**. Universal Microport
- C15146     Inventors Michael Lim, . Novel Immunotherapeutic Targets Identified in Patients with Glioblastoma using RNA Sequencing to Compare Gene Expression Patterns in Tumor Infiltrating (TIL) and Peripheral Blood Lymphocytes

C15683	Inventors Michael Lim, . Program Death 1 (PD-1) Agonists for the Treatment of Cerebral Vasospasm
C16043	Inventors Michael Lim, . Meteorin-like (METRNL) as an Immuno-oncology Target
C16393	Inventors Michael Lim, . Sustained and Localized Antibody and Immunotherapeutic Delivery to Lymph Nodes
C16438	Inventors Michael Lim, . Modulation of Oxidative Stress as a Therapeutic Pathway in Trigeminal Neuralgia
C16798	Inventors Michael Lim, . Use of Anti-PD-1 Delivery with the Urogen® Polymer to Tumor Draining Lymph Nodes for Treatment of Cancers
C16960	Inventors Michael Lim, . CXCR6 as an Immuno-oncology Target to Improve T cell Metabolic Response

## **SYSTEM INNOVATION and QUALITY IMPROVEMENT ACTIVITIES**

None

## **ORGANIZATIONAL ACTIVITIES**

### **Institutional Administrative Appointments**

2010 - 2014	Department Liaison for Compliance at Johns Hopkins
2010 - 2018	Physician Advisor for Credentialing at Johns Hopkins

### **Institutional Committees**

2019 - 2020	Plastic Surgery Search Committee at Johns Hopkins
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### **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 <i>PLOS One</i>
2010 - 2012	Board Member, Society of Brain Mapping and Therapeutics (SBMT)
2011 - Present	Editorial board – Current Surgery Reports
2016 - 2018	Editorial board – Annals of Surgical Oncology
2018 - Present	Editorial board – Journal of Neuro-Oncology

2022 - Present Editorial board – Journal of Neurosurgery

*Journal Reviewer*

Cancer Research

Clinical Cancer Research

JAMA

Journal of Clinical Investigation

Journal of Neuro-Oncology

Nature

Nature Medicine

Nature Biotechnology

Nature Communication

NEJM

Neuro-Oncology

Neurosurgery

Science Translation Medicine

Surgical Neurology International

### **Advisory Committees, Review Groups/Study Sections**

2007 - 2009 Scientific Committee of the American Society for Clinical Oncology (ASCO)

2007 - 2010 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 Joint Tumor Section of American Association of Neurological Surgeons (AANS) and Congress of Neurological Surgeons (CNS)

2018 R01 Study Section – CII – Ad Hoc Reviewer

2018 - Present Bylaws Committee Chair for the Society for Neuro-Oncology

2018 - Present Program Chair for the Society for Neuro-Oncology

2019 - Present R01 Study Section – CII – Ad Hoc Reviewer

2018 - Present Medical Advisory Board – Facial Pain Association

2020 - Present R03/R21 Study Section – Special Topic – Ad Hoc Reviewer

2021 - Present R03/R21 Study Section – Special Topic – Ad Hoc Reviewer

2021 - Present Brain Malignancy Steering Committee (BMSC)

### **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 - Present American Society for Clinical Oncology (ASCO)  
 2021 - Present American Academy of Neurological Surgery  
 2021 - Present Society for Neurological Surgery

### **Conference Organizer, Session Chair**

04/2008 Platform Chairman, American Society for Clinical Oncology (ASCO), CNS Session  
 04/2009 Platform Chairman, American Society for Clinical Oncology (ASCO), CNS Session  
 05/2009 Moderator and Discussant, American Association of Neurological Surgeons, Tumor Session  
 06/2012 Co-Moderator, Brain Tumor Biotech Summit, Immunotherapy Session  
 09/2012 Co-Moderator, International Updates in Neuro-Oncology, Immunotherapy and Other Novel Therapies Session  
 02/2013 Co-Moderator, Intraoperative Imaging Society, Abstract Presentations  
 06/2013 Co-Moderator, Brain Tumor Biotech Summit, Immunotherapy Session  
 09/2013 Co-Moderator, Glioma Clinical Research I, 15<sup>th</sup> World Congress of Neurosurgery, Seoul, Korea  
 09/2013 Co-Moderator, Glioma Clinical Research III, 15<sup>th</sup> World Congress of Neurosurgery, Seoul, Korea  
 06/2014 Tumor Section Organizer for Congress of Neurological Surgeons (CNS) 2015 meeting  
 06/2014 Co-Moderator, Brain Tumor Biotech Summit, Scientific Barriers Session, New York, NY  
 09/2015 Co-Moderator, Congress of Neurological Surgeons Meeting, Tumor Session, New Orleans, LA  
 11/2015 Organizing co-Chair for Education Day on Immunotherapy for Society for Neuro-Oncology (SNO) Meeting, San Antonio, TX  
 11/2015 Co-Moderator, Education Day for Society for Neuro-Oncology (SNO) Meeting, San Antonio, TX  
 09/2016 Co-Moderator, Immunotherapy Session, Christopher Davidson Foundation Meeting, St. Louis, MO  
 11/2016 Co-Moderator, Clinical Trials Session II, Rapid Reports, Society for Neuro-Oncology (SNO) Meeting, Scottsdale, AZ  
 11/2016 Chair and Organizer, “Future Directions for Immunotherapy,” New Considerations for the Management of Glioblastoma, SNO meeting, Scottsdale, AZ  
 02/2017 Co-Moderator, “Immunotherapy in GBM,” International Immuno-Oncology Network (II-ON) BMS Meeting, London, England  
 05/2017 Co-Moderator, “Meet the Expert Session 1 – Immuno-Oncology,” Zurich, Switzerland  
 06/2017 Organizing Committee, SITC-ASTRO Immunotherapy Workshop, Bethesda, MD  
 07/2018 Meeting Organizer, Hanbery Society Meeting, Maui, HI  
 10/2018 Co-Moderator, Abstract Section, Tumor Section Satellite Symposium, Houston, TX  
 10/2018 Co-Moderator, Section on Tumors, Congress of Neurological Surgeons Meeting, Houston, TX  
 11/2019 Program Co-Chair for Society for Neuro-Oncology (SNO) Meeting

11/2019	Program Co-Chair for SNO Sunrise Session on Role of Surgeons for Clinical Trials
11/2020	Program Co-Chair for Society for Neuro-Oncology (SNO) Meeting
11/2020	Moderator, 7 <sup>th</sup> International Symposium on Focused Ultrasound, Focused Ultrasound and Immunotherapy for Brain Tumor Session, Virtual
05/2021	Steering Committee, Focused Ultrasound for Glioblastoma Workshop, Virtual
07/2021	Session Co-Chair for Immunotherapy, Society for Brain Mapping and Therapeutics, Virtual
10/2021	Co-Moderator for Congress of Neurological Surgeon (CNS), Practical Applications for Immunotherapy
11/2021	Moderator, Society of NeuroOncology 2021 Annual Meeting, Basic Science II Abstract Session, Boston MA
05/2022	Moderator, Society of Neurological Surgeons Meeting, “Disruptive Collaborations”. Detroit, MI.
06/2022	Organizing Co-Chair with Dr. Michelle Monje and Dr. Paul Mischel, Stanford - National Brain Tumor Society (NBTS) Brain Tumor Symposium, Stanford, CA.
10/2022	Co-Chair, Congress of Neurological Surgeon (CNS) 2022 Annual Meeting, AANS/CNS Tumor Section, San Francisco, CA.
04/2023	Co-Chair, American Academy of Neurological Surgeons (AANS) 2023 Annual Meeting, Adult and Pediatric Brain Tumor Concepts for the Community, Los Angeles, CA.
10/2023	Co-Moderator, American Academy of Neurological Surgery 85 <sup>th</sup> Annual Meeting, Peer Reviewed Abstract Session VII: Tumor Basic Science, Sea Island, GA.

### **Consultantships/Speaker**

2010 - Present	Stryker Corporation – Consultant
2013 - 2014	Accuray Corporation – Consultant
2014 - 2015	Izi Medical - Consultant
2014 - 2016	BMS – Consultant
2015 - 2016	Scientific Advisory Board - BMS
2016	Scientific Advisory Board – Oncorus
2016 - 2020	Scientific Advisory Board – Merck
2016	Scientific Advisory Board – Agenus
2016	Scientific Advisory Board – Boston Biomedical
2017	Scientific Advisory Board – Baxter
2017 - 2019	Scientific Advisory Board – Tocagen
2018 - 2019	Scientific Advisory Board – SQZ
2020	Scientific Advisory Board – Pyramid Biosciences
2020	Scientific Advisory Board – Insightec

**Industry**

2021 Chief of Scientific Board – Egret Therapeutics

**RECOGNITION****Awards and Honors**

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 - 1995 Presidential Scholar, University of New Hampshire  
1991 - 1995 Governor's Success Grant Scholar – 4 year Scholarship, University of New Hampshire  
1991 - 1995 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 - 1999 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 - 2011 Department of Surgery Outstanding Faculty Teacher Award for the Basic Surgery Clerkship, Johns Hopkins University School of Medicine  
2016 Service Excellence Award, Health Network Foundation  
2018 Alpha Omega Alpha (AOA)  
2018 Chairman's Award for Excellence in Teaching, Johns Hopkins University School of Medicine  
2020 Chairman's Award for Excellence in Teaching, Johns Hopkins University School of Medicine  
2023 Abhijit Guha Award and Lecture, Section on Tumors of the AANS/CNS and the Society of NeuroOncology

**Invited Talks, Panels**

10/2006 Speaker, University of Utah Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Salt Lake City, UT  
11/2006 Speaker, Dartmouth College Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Hanover, NH  
11/2006 Speaker, Mayo Clinic Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Rochester, MN  
11/2006 Speaker, JHU Neurosurgery Grand Rounds, "Blood Vessel Pathologies in CNS Diseases," Baltimore, MD



10/2007 Speaker, JHU Neurosurgery Grand Rounds, “1p19q Deletion in Oligodendrogliomas,” Baltimore, MD

12/2007 Speaker, JHU Neurosurgery Grand Rounds, “Radiosurgery for Trigeminal Neuralgia,” Baltimore, MD

03/2008 Speaker, JHU Neurosurgery Grand Rounds, “Radiosurgery for Glomus Jugulare Tumors,” Baltimore, MD

05/2008 Speaker, Blaustein Pain Conference, “Radiosurgery for Trigeminal Neuralgia,” Baltimore, MD

06/2008 Speaker, JHU Oncology Grand Rounds, “Radiosurgery for Metastatic Brain Tumors,” Baltimore, MD

07/2008 Speaker, JHU Neurosurgery Grand Rounds, “Stereotactic Spinal Radiosurgery,” Baltimore, MD

07/2008 Speaker, JHU Neurosurgery Grand Rounds, “Management of Cerebral Brain Metastases,” Baltimore, MD

09/2008 Speaker, 3<sup>rd</sup> Annual International Updates in Neuro-Oncology, “Immunotherapy for Brain Tumors,” Baltimore, MD

10/2008 Speaker, Southern Maryland Hospital Grand Rounds, “Pituitary Tumors,” Clinton, MD

10/2008 Speaker, Thomas Jefferson Hospital Grand Rounds, “Management of Cerebral Brain Metastases,” Philadelphia, PA

12/2008 Speaker, York Wellspan Hospital Grand Rounds, “Head Trauma,” York PA

01/2009 Speaker, Wilmington VA Medical Center Grand Rounds, “Management of Brain Metastases,” Wilmington, DE

01/2009 Honored Guest Speaker, Caribbean Neurosciences Symposium, “Image Guided Surgery,” Montego Bay, Jamaica

03/2009 Speaker, JHU Medicine Grand Rounds, “Management of Cerebral Brain Metastases,” Baltimore, MD

03/2009 Speaker, JHU Radiation Oncology Resident Teaching Rounds, “Management of Cerebral Brain Metastases,” Baltimore, MD

04/2009 Speaker, Johns Hopkins Undergraduate Research Conference, “Technology in Neurosurgery,” Baltimore, MD

06/2009 Speaker, the Johns Hopkins Hospital Otolaryngology Grand Rounds, “Radiosurgery for Skull Based Tumors,” Baltimore, MD

07/2009 Speaker, St. Matthews School of Medicine, “Technology in Neurosurgery,” Grand Cayman Islands

07/2009 Speaker, Korean American Spine Society (KASS), “Stereotactic Spinal Radiosurgery,” San Diego, CA

07/2009 Speaker, JHU Neurosurgery Grand Rounds, “Evaluation of Head Trauma,” Baltimore, MD

07/2009 Speaker, JHU Neurosurgery Grand Rounds, “Integration of Functional Imaging with Image Guidance,” Baltimore, MD

09/2009 Speaker, Neuro-Oncology Congress, “Open versus Endoscopic Resection of Pituitary Tumors,” Santiago, Chile

09/2009 Speaker, Neuro-Oncology Congress, “Management of Cerebral Brain Metastases,”

Santiago, Chile

- 09/2009 Speaker, Neuro-Oncology Congress, “Cerebral Brain Mapping,” Santiago, Chile
- 09/2009 Speaker, Neuro-Oncology Congress, “Immunotherapy for Gliomas,” Santiago, Chile
- 09/2009 Speaker, Baltimore Life Sciences Association, “Immunotherapy for GBMs,” Baltimore, MD
- 10/2009 Speaker, MedTronics Annual Meeting, “Skull Base Surgery Techniques,” Denver, CO
- 11/2009 Speaker, Suburban Hospital, “Management of Cerebral Brain Metastases,” Bethesda, MD
- 12/2009 Speaker, University of California at San Francisco, “Immunotherapy for Gliomas,” San Francisco, CA
- 12/2009 Speaker, Sinai Hospital, “Management of Cerebral Brain Metastases,” Baltimore, MD
- 05/2010 Speaker, 3<sup>rd</sup> Annual European Workshop on Whole Body Radiosurgery and Stereotactic Radiation Therapy, “Radiosurgery for Glomus Jugulare Tumors,” Universite Catholique de Louvain, Brussels, Belgium
- 05/2010 Speaker, JHU Oncology Grand Rounds, “Stereotactic Radiosurgery for the Spine,” Baltimore, MD
- 06/2010 Speaker, JHU Oncology Fellows Lecture, “Management of Cerebral Brain Metastases,” Baltimore, MD
- 07/2010 Speaker, JHU Neurosurgery Grand Rounds, “Postoperative Management of GBMs,” Baltimore, MD
- 07/2010 Speaker, Korean American Spine Society (KASS), “Local Delivery Vehicles for Spine Tumors,” Washington, DC
- 09/ 2010 Speaker, Inha University, “Management of Cerebral and Spine Metastases,” Seoul, South Korea
- 09/2010 Speaker, Seoul National University, “Management of Cerebral and Spine Metastases,” Seoul, South Korea
- 09/2010 Speaker, ASIA Spine Meeting, “Stereotactic Radiosurgery for Spinal Tumors,” Incheon, South Korea
- 10/2010 Speaker, JHU Neurosurgery Grand Rounds, “Immunotherapy for GBMs,” Baltimore, MD
- 11/2010 Speaker, JHU Neurosurgery Grand Rounds, “Management of Brain Metastases,” Baltimore, MD
- 11/2010 Speaker, University of New Hampshire, “Surgical and Molecular Therapies against GBM,” Durham, NH
- 03/2011 Speaker, 1<sup>st</sup> Annual Joint Symposium on the Progress of Neurosurgery, “Stereotactic Radiosurgery for Spinal Tumors,” Seoul, South Korea
- 03/2011 Speaker, 1<sup>st</sup> Annual Joint Symposium on the Progress of Neurosurgery, “Stereotactic Radiosurgery for Skull Base Tumors,” Seoul, South Korea
- 03/2011 Speaker, 1<sup>st</sup> Annual Joint Symposium on the Progress of Neurosurgery, “Immunotherapy for Brain Tumors,” Seoul, South Korea
- 05/2011 Speaker, St. Matthews School of Medicine, “Low Back Pain,” Grand Cayman Islands
- 05/2011 Speaker, Neuro Nursing Workshop, “Immunotherapy for Brain Tumors,” Baltimore, MD
- 05/2011 Speaker, Neurology Grand Rounds, “Immunotherapy for Brain Tumors,” Baltimore, MD

06/2011 Speaker, International Brain Mapping and Intraoperative Surgical Planning Society (IBMISPS), “Immunotherapy for Brain Tumors,” San Francisco, CA

06/2011 Speaker, Stanford University Grand Rounds, “Immunotherapy for Brain Tumors,” Palo Alto, CA

08/2011 Speaker, JHU Neurosurgery Grand Rounds, “Radiosurgery for Skull Base Tumors,” Baltimore,

08/2011 Speaker, JHU Neurosurgery Grand Rounds, “Radiosurgery for Meningiomas,” Baltimore, MD

12/2011 Speaker, JHU Neurosurgery Grand Rounds, “Immunotherapy for GBMs,” Baltimore, MD

12/2011 Speaker, JHU Neurosurgery Grand Rounds, “Radiosurgery for Pituitary Adenomas,” Baltimore, MD

03/2012 Speaker, Top of America Meets the Top of China Conference, “Immunotherapy for Brain Tumors,” Xi’An, China

04/2012 Speaker, JHU Neurosurgery Grand Rounds, “Trigeminal Neuralgia,” Baltimore, MD

05/2012 Speaker, Brain Mapping Day – United States Congress, “Augmenting Immunotherapy Strategies with Focused Radiation,” Washington, DC

06/2012 Speaker, Society for Brain Mapping and Therapeutics Annual Meeting (SBMT), “Immunotherapy for Brain Tumors,” Toronto, Canada

10/2012 Speaker, FasterCures Foundation, “Immunotherapy for Brain Tumors,” Los Angeles, CA

10/2012 Speaker, Multidisciplinary Meeting for “Impact of MRI Imaging for Neurosurgical Planning and Treatment of Patients with Brain Metastases: Neurosurgeon’s Perspective,” Vienna, Austria.

12/2012 Speaker, Molecular Image-Guided Interventions Symposium, “Nanomedicine for Neurosurgery,” Baltimore, MD

01/2013 Speaker, Trigeminal Neuralgia/Facial Pain Support Group Meeting, “Surgical Treatments for Trigeminal Neuralgia,” Columbia, MD

02/2013 Speaker, Radiation Oncology Resident Conference, “Management of Cerebral Brain Metastases,” Baltimore, MD

05/2013 Speaker, AANS Tumor Satellite Meeting, “Heat Shock Protein: Technology,” New Orleans, LA

05/2013 Speaker, Society for Brain Mapping and Therapeutics Annual Meeting (SBMT), “Combining Anti-PD-1 Therapy with SRS for the Treatment of GBM,” Baltimore, MD

06/2013 Speaker, ISRS (International Stereotactic Radiosurgery Society) Annual Meeting, “Linac Based Stereotactic Radiosurgery for the Treatment of Trigeminal Neuralgia,” Toronto, Canada

06/2013 Speaker, Harbor Hospital Medicine Grand Rounds, “Surgical Treatments of Trigeminal Neuralgia,” Baltimore, MD

09/2013 Speaker, Neuroradiology Fellows Conference, “Trigeminal Neuralgia,” Baltimore, MD

09/2013 Speaker, World Federation of Neurological Societies. 15<sup>th</sup> World Congress of Neurosurgery, “Role of Anti-PD-1 Therapy for Immunotherapy in the Treatment of Glioblastoma,” Seoul, Korea

09/2013 Speaker, World Federation of Neurological Societies. 15<sup>th</sup> World Congress of Neurosurgery, “Role Immunotherapy for the Treatment of High Grade Gliomas,” Seoul, Korea

09/2013 Speaker, World Federation of Neurological Societies. 15<sup>th</sup> World Congress of Neurosurgery, “Treating Metastatic Spine Tumors with Stereotactic Radiosurgery,” Seoul, Korea

09/2013 Speaker, World Federation of Neurological Societies. 15<sup>th</sup> World Congress of Neurosurgery,

- “Role of Radiation in the Treatment of Brain Metastases,” Seoul, Korea
- 10/2013 Speaker, Radiation Oncology Resident Conference, “Surgical Considerations for the Management Brain Metastases,” Baltimore, MD
- 10/2013 Speaker, Neurosurgery Grand Rounds, “Immunology of Metastatic Melanoma Brain Metastases,” Baltimore, MD
- 11/2013 Speaker, EANS (European Association of Neurosurgical Societies) Annual Meeting, “Combining Anti-PD-1 with SRS as a Novel Therapy against Glioblastoma,” Tel Aviv, Israel
- 12/2013 Speaker, The Future of Neuroscience: Novel Research Avenues for the Treatment of Epilepsy, Pain, and Brain Tumors, Milan, Italy.
- 01/2014 Speaker, Investigators Meeting for BMS Cohort I, “Preclinical Results of anti-CTLA-4 and anti-PD-1 therapy against GBM,” New York, NY
- 03/2014 Speaker, Neurosurgery Grand Rounds, “Flavors of Radiation for the Brain,” Baltimore, MD
- 03/2014 Speaker, Updates in Stereotactic Radiosurgery, “Using Local Therapy to Treat Systemic Melanoma,” Spokane, WA
- 04/2014 Speaker, American Society of Neuroradiology (ASNR), “Value of Presurgical Functional Mapping in Neurosurgery,” Montreal, Canada
- 06/2014 Speaker, Invited Lecture at the National Hospital, “Immunotherapy for Brain Tumors, and Surgical Management of Trigeminal Neuralgia” Oslo, Norway
- 07/2014 Speaker, Radiation Oncology Grand Rounds, “Immunotherapy for Brain Tumors,” Baltimore, MD
- 08/2014 Speaker, Invited Lecture, “Management of Recurrent GBM,” Current Trends in the Management of Malignant Glioma Meeting, Tokyo, Japan
- 08/2014 Speaker, Invited Lecture, “Vaccines Treatments for Brain Tumors,” Current Trends in the Management of Malignant Glioma Meeting, Tokyo, Japan
- 09/2014 Speaker, Invited Lecture, “Immunotherapy,” 13<sup>th</sup> Annual International Neuro-Oncology Updates, Boston, MA
- 09/2014 Speaker, Radiology Fellows Conference, “Trigeminal Neuralgia,” Baltimore, MD
- 09/2014 Speaker, Invited Lecture, BMS Investigator Meeting, “Rationale for Checkpoint Inhibitors Against GBM, Preclinical Studies,” Philadelphia, PA
- 10/2014 Speaker, Invited Lecture, BMS Investigator Meeting, “Rationale for Checkpoint Inhibitors Against GBM, Preclinical Studies,” Turin, Italy
- 10/2014 Speaker, Invited Lecture, Japan Neurosurgical Society, “Management of Brain Metastases and Implications Towards Immunotherapy,” Tokyo, Japan
- 11/2014 Speaker, Neurosurgery Grand Rounds, “Immunotherapy for CNS Tumors,” Baltimore, MD
- 11/2014 Invited Panel Speaker, Society for Neuro-Oncology Immunotherapy Symposium, “Preclinical Data for the Use of Checkpoint Molecules in GBM,” Miami, FL
- 12/2014 Invited Speaker for Translational Research Conference, “Immunotherapy for Brain Tumors,” Baltimore, MD
- 02/2015 Speaker, Invited Lecture, Neurosurgery Grand Rounds, “Immunotherapy for Brain Tumors,” Hong Kong, China

03/2015 Speaker, Society for Brain Mapping and Therapeutics Annual Meeting (SBMT), "Immunotherapy for Brain Tumors," Los Angeles, CA

05/2015 Invited Speaker, Neuro-Oncology Clinical Trials Symposium, "Immunotherapy for Brain Tumors," Greenvale, NY

05/2015 Keynote Speaker, Biotech Summit, "PD-1 and CTLA-4 for GBM," New York, NY

07/2015 Invited Speaker, BMS Advisory Board Meeting, "Preclinical Data for Checkpoint Inhibitors in GBM," Vienna, Austria

07/2015 Invited Speaker, 14<sup>th</sup> International Updates in Neuro-Oncology, "Checkpoint Inhibitors for Glioblastoma," Cortona, Italy

07/2015 Invited Speaker, Center for Bioengineering, Innovation, and Design (CBID), "Opportunities for Innovation in Neurosurgery," Baltimore, MD

08/2015 Invited Speaker, 41<sup>st</sup> Annual Hanbery Meeting, "Checkpoint Inhibitors for Glioblastoma," Cape Cod, MA

08/2015 Speaker, Neurosurgery Grand Rounds, "Checkpoint Inhibitors for Glioblastoma," Baltimore, MD

09/2015 Invited Speaker, Selected Topics in Craniomaxillofacial Surgery Conference, "Singe Stage Cranioplasty Skull Tumors," Boston, MA

10/2015 Invited Speaker, Neuroradiology Fellows Conference, "Management of Brain Metastases," Baltimore, MD

10/2015 Invited Speaker, University of Maryland Grand Rounds, "Management of Trigeminal Neuralgia," Baltimore, MD

11/2015 Invited Speaker, Immune Checkpoint Inhibitors Conference (ICI), "Combining Radiation with Checkpoint Inhibitors for the Treatment of GBM," Frankfurt, Germany

11/2015 Invited Speaker, Society for Neuro-Oncology Education Day, "Checkpoint Inhibitors for Gliomas," San Antonio, TX

12/2015 Invited Speaker, Blaustein Pain Conference, "Management of Trigeminal Neuralgia," Baltimore, MD

02/2016 Invited Speaker, NCCU Conference, "Brain Tumor Immunotherapy in an Inpatient Setting," Baltimore, MD

02/2016 Invited Speaker, Regeneron Speaker Series, "Checkpoint Inhibitors for Gliomas," Tarrytown, NY

03/2016 Speaker, Neurosurgery Grand Rounds, "Basics of Radiation for Brain Tumors," Baltimore, MD

03/2016 Invited Speaker, BMS Investigators Meeting, "Preclinical Data on Checkpoint Inhibitors for Radiation and Immunotherapy Leadership Summit, "Effective Combinations of Gliomas," Atlanta, GA

03/2016 Invited Speaker, 22<sup>nd</sup> Annual Blood-Brain Barrier Consortium Meeting, "Pseudopgression After Immunotherapy," Stevenson, OR

03/2016 Invited Speaker, Radiation and Immunotherapy Leadership Summit, "Effective Combinations of Radiation and Immunotherapy," Bethesda MD

04/2016 Invited Speaker, American Academy of Neurology (AAN), "Initial Treatment, Including Scenarios Requiring Urgent and Multidisciplinary Management for Primary Brain Tumors," Vancouver, Canada

04/2016 Invited Speaker, American Academy of Neurology, “Modern Surgical Approaches, Including Efficacy, Toxicity, and Emerging Roles from the Perspective of Meningiomas and Gliomas,” Vancouver, Canada

05/2016 Invited Speaker, Stryker Innovation Dinner, “Single Stage Skull Reconstruction for Skull Tumors,” Chicago, IL

05/2016 Invited Speaker, Neuroradiology Fellows Conference, “Immunotherapy for Brain Tumors,” Baltimore, MD

06/2016 Invited Speaker, American Society for Clinical Oncology (ASCO), “Vaccines and Checkpoint Inhibitors for GBM,” Chicago, IL

06/2016 Invited Speaker, First International Summit on Biomarkers and Therapeutic Advances in Radiation Oncology and International Summit in Radiation Oncology (ISRO), “Combining Focused Radiation with Checkpoint Inhibitors in GBM,” Montreal, Canada

07/2016 Invited Speaker, Fifth Annual Chordoma Research Workshop, “Checkpoint Inhibitors for Chordomas,” Boston, MA

07/2016 Invited Speaker, Fifth Annual Chordoma Research Workshop, “A Phase I Combination SRS plus Nivolumab Clinical Trial for Recurrent Chordomas,” Boston MA

08/2016 Invited Speaker, Current Trends in Malignant Gliomas, “Advances in Surgery for Gliomas,” Tokyo, Japan

08/2016 Invited Speaker, Current Trends in Malignant Gliomas, “Understanding Immunotherapy in Gliomas,” Tokyo Japan

09/2016 Invited Speaker, 4<sup>th</sup> Annual Immuno-Oncology Summit, “Checkpoint Inhibitors for Gliomas,” Boston, MA

09/2016 Invited Speaker, Neurology Grand Rounds, “Immunotherapy for Brain Tumors,” Baltimore, MD

09/2016 Invited Speaker, Oncology Grand Rounds, “Checkpoint Inhibitors for Brain Tumors,” Baltimore, MD

09/2016 Invited Speaker, Asia Spine, “Immunotherapy for Spinal Tumors,” Seoul, Korea

09/2016 Invited Speaker, American Association of Neurological Surgeon/Congress of Neurological Surgeons Tumor Satellite Section, “Clinical Trials for Neurological Surgeons,” San Diego, CA

09/2016 Invited Speaker, Congress of Neurological Surgeons, “Checkpoint Inhibitors for Gliomas,” San Diego, CA

10/2016 Distinguished Speaker, Samuel C. Smith Visiting Professor, “Immunotherapy for Brain Tumors,” University of New Hampshire, Durham, NH

10/2016 Distinguished Speaker, Research Seminar, “Trigeminal Neuralgia,” University of New Hampshire, Durham, NH

11/2016 Invited Speaker, Selected Topics in Craniomaxillofacial Surgery/ An International Cranioplasty Symposium, “Single Stage Cranioplasty for Skull Tumors,” Baltimore, MD

11/2016 Invited Speaker, 34<sup>th</sup> Annual Chemotherapy Foundation Symposium, “Targeting the Tumor Microenvironment and Immune Pathways for GBM,” New York, NY

11/2016 Invited Speaker, Neurosurgery Updates CME, “Trigeminal Neuralgia,” Suburban Hospital, Baltimore, MD

11/2016	Invited Speaker, SNO: Neuro-Oncology Review Course, “Neurosurgical Management of Brain Tumors,” Scottsdale, AZ
11/2016	Chair and Invited Speaker, New Considerations for the Management of Glioblastoma, “Future Directions for Immunotherapy,” SNO meeting, Scottsdale, AZ
02/2017	Invited Roundtable Speaker, American Society of Clinical Oncology, Society for Immunotherapy of Cancer (ASCO-SITC) Meeting “Immunotherapy in Clinical Practice – GBM,” Orlando, FL
03/2017	Invited Speaker, American College of Radiation Oncology Meeting “Radiation to Kickstart an Immune Response to Metastases,” Orlando, FL
03/2017	Invited Speaker, Seoul National University Grand Rounds, “Management of Brain Metastases,” Seoul, Korea
03/2017	Invited Plenary Speaker, Korean Society for Neuro-Oncology “Immunotherapy for Brain Tumors,” Seoul, Korea
04/2017	Speaker, JHU Neurosurgery Grand Rounds, “State of Immunotherapy in Brain Tumors,” Baltimore, MD
04/2017	Invited Speaker, Advanced Clinical Topics in Neuroscience Nursing, “Practical Aspects of Immunotherapy for Brain Tumors,” Baltimore, MD
05/2017	Invited Speaker, World Federation of Neuro-Oncology Societies, “Preclinical Rationale for I-O Based Treatment Strategies,” Zurich, Switzerland
05/2017	Invited Speaker, 3 <sup>rd</sup> Annual Neurospine Summit, “Immunotherapy for Brain Tumors,” Beirut, Lebanon
05/2017	Invited Speaker, 3 <sup>rd</sup> Annual Neurospine Summit, “Radiosurgery for Brain Metastases,” Beirut, Lebanon
05/2017	Invited Speaker, 3 <sup>rd</sup> Annual Neurospine Summit, “Nuances of Vestibular Schwannoma Resection,” Beirut, Lebanon
05/2017	Invited Speaker, Molecular and Clinical Radiobiology Workshop 3 <sup>rd</sup> Edition, “Creating a Systemic Immune Response with Local Therapies,” Montreal, Canada
05/2017	Invited Speaker, Nursing Inservice, “Trigeminal Neuralgia,” Baltimore, MD
06/2017	Invited Speaker, Brain Tumor Biotech Summit, “Kindling an Immune Response for Brain Tumors,” New York, NY
06/2017	Invited Speaker, Neurology Resident Lecturer, “Trigeminal Neuralgia,” Baltimore, MD
06/2017	Invited Speaker, SITC-ASTRO Immunotherapy Workshop, “Kindling a Systemic Immune Response with Local Therapies,” Bethesda, MD
06/2017	Invited Speaker, International Gamma Knife Radiosurgery Foundation, “Immune Checkpoints and Radiosurgery,” Philadelphia, PA
07/2017	Speaker, JHU Neurosurgery Grand Rounds, “Trigeminal Neuralgia,” Baltimore, MD
07/2017	Speaker, Hanbery Society Meeting, “Immunotherapy for Brain Tumors,” Park City, UT
09/2017	Invited Speaker, Stanford Neurosurgery Grand Rounds, “Trigeminal Neuralgia,” Stanford, CA
09/2017	Invited Speaker, LINK Symposium, “Surgical Management of Brain Tumors,” Beijing, China
10/2017	Invited Speaker, BMS II-ON Symposium, “Combination Immunotherapy Approaches for GBM,” Redwood City, CA

10/2017 Speaker, Neurosurgery Grand Rounds, “Low Grade Gliomas,” Baltimore, MD

10/2017 Invited Speaker, National Brain Tumor Society (NBTS) Scientific Meeting, “Novel Immunotherapy Combination Approaches for GBM,” Boston, MA

10/2017 Invited Speaker, American Society for Plastic Surgery (ASPS), “Single Stage Cranioplasty for Skull Tumors,” Orlando, FL

10/2017 Invited Speaker, Christopher Davidson Forum, “Removing the Handcuffs for Brain Tumor Immunotherapy,” St. Louis, MO

11/2017 Invited Speaker, Selected Topics in Craniomaxillofacial Surgery/ An International Cranioplasty Symposium, “Kindling a Systemic Immune Response Against GBM,” Boston, MA

11/2017 Invited Speaker, Memorial Sloan Kettering Brain Tumor Series, “Kindling a Systemic Antitumor Immune Response for Brain Tumors,” New York, NY

11/2017 Invited Speaker, Korean Association of Immunologists, “Reassessing the Role of Chemotherapy for Brain Tumor Immunotherapy,” Seoul, Korea

11/2017 Invited Speaker, SNO: Neuro-Oncology Review Course, “Neurosurgical Management of Brain Tumors,” San Francisco, CA

11/2017 Invited Speaker, SNO Sunrise Session, “Checkpoint Inhibitors for GBM,” San Francisco, CA

11/2017 Invited Speaker, Novalis Circle Symposium, “Combining Focused Radiation with Immunotherapy,” San Francisco, CA

12/2017 Invited Speaker, Translational Research Conference, “Immunotherapy for Brain Tumors,” Baltimore, MD

12/2017 Invited Speaker, Brigham & Women’s Hospital Neurosurgery Grand Rounds, “Rationale Immunotherapy Strategies for GBM,” Boston, MA

03/2018 Invited Speaker, International Leksell Gamma Knife Society Meeting, “Background on Immunotherapy,” Dubai, UAE

03/2018 Invited Speaker, Chinese Society for Neuro-Oncology Meeting, “Immunotherapy for Brain Tumors,” Guangzhou, China

03/2018 Invited Speaker, Chinese Society for Neuro-Oncology Meeting, “Tailoring Immunotherapy for GBM,” Guangzhou, China

03/2018 Invited Speaker, Sixth Annual Chordoma Research Workshop, “Checkpoint Inhibitors for Chordomas,” Boston, MA

03/2018 Invited Speaker, San Francisco Neurological Society Meeting, “Immunotherapy for Brain Tumors,” Napa, CA

04/2018 Invited Speaker, JHI Neurosurgery Breakfast Seminar, “Novel Surgical Approaches for Brain Tumors,” Mexico City, Mexico

04/2018 Invited Speaker, JHI Joint Symposium with Punta Pacifica, “Novel Techniques for Brain Tumor Surgery,” Panama City, Panama

05/2018 Invited Speaker, 4<sup>th</sup> Annual Neurospine Summit, “Novel Techniques for Brain Tumor Resection,” Beirut, Lebanon

05/2018 Invited Speaker, 4<sup>th</sup> Annual Neurospine Summit, “Immunotherapy for Brain Tumors,” Beirut, Lebanon



05/2018	Invited Speaker, 4 <sup>th</sup> Annual Neurospine Summit, “Management of Brain Metastases,” Beirut, Lebanon
05/2018	Invited Speaker, 4 <sup>th</sup> Annual Neurospine Summit, “Trigeminal Neuralgia,” Beirut, Lebanon
05/2018	Invited Speaker, Chesapeake Bay Society of Perianesthesia Nursing (CBSPAN) Meeting, “Trigeminal Neuralgia,” Baltimore, MD
05/2018	Speaker, Neurosurgery Grand Rounds, “Advances in Immunotherapy for Brain Tumors,” Baltimore, MD
06/2018	Invited Speaker, XXVII Congreso Internacional De Neurologia Y Neurocirugia Meeting, “Novel Surgical Approaches to Brain Tumors,” Punta Cana, Dominican Republic
06/2018	Invited Speaker, Neurology and Neurosurgery Research Retreat, “Immunotherapy for Gliomas,” Baltimore, MD
06/2018	Invited Speaker, International Symposium on Pediatric Neuro-Oncology, “Strategies to Overcome Pediatric Brain Tumor Induced Systemic and Local Immunosuppression,” Denver, CO
07/2018	Speaker, Hanbery Society Meeting, “New Techniques for Removing Brain Tumors,” Maui, HI
08/2018	Invited Speaker, National Patient and Family Conference (ABTA), “Immunotherapy for Brain Tumors,” Chicago, IL
08/2018	Invited Speaker, National Patient and Family Conference (ABTA), “Tumor Board Panel,” Chicago, IL
09/2018	Invited Speaker, Trigeminal Neuralgia and Facial Pain Support Group Meeting, “Trigeminal Neuralgia,” Columbia, MD
09/2018	Invited Speaker, Western Neurosurgical Society Meeting, “Recent Relevant Clinical Trials for Brain Tumors,” Big Island, HI
09/2018	Invited Speaker, 8 <sup>th</sup> Annual Taiwan Society for Neuro-Oncology (TSNO) Meeting, “Recent Clinical Trials for Brain Tumors,” Taichung, Taiwan
09/2018	Invited Speaker, 8 <sup>th</sup> Annual Taiwan Society for Neuro-Oncology (TSNO) Meeting, “State of Immunotherapy for Brain Tumors,” Taichung, Taiwan
09/2018	Invited Speaker, 8 <sup>th</sup> Annual Taiwan Society for Neuro-Oncology (TSNO) Meeting, “Personalized Immunotherapy for Brain Tumors,” Taichung, Taiwan
10/2018	Invited Speaker, Tumor Section Satellite Symposium, “Taking a Closer Look at the Effector Immune Cell Population for GBM Immunotherapy,” Houston, TX
10/2018	Invited Speaker, Beirut Cancer Care Forum, “Assessing the Effector Immune Cells for GBM,” Beirut, Lebanon
10/2018	Invited Speaker, Beirut Cancer Care Forum, “Treating Relapsing Meningiomas,” Beirut, Lebanon
10/2018	Invited Plenary Speaker for 6 <sup>th</sup> Annual Steve Sabol Lecture for Surgical Neuro-Oncology, “Identifying Effector Immune Cell Populations for GBM,” Jefferson University, Philadelphia, PA
10/2018	Invited Plenary Speaker for Foro Internacional De Liderazgo En Salud (FILS), “Building a Brain Tumor Immunotherapy Program,” Guadalajara, Mexico
11/2018	Invited Speaker, 4 <sup>th</sup> Annual International Cranioplasty Symposium, “Single Stage Cranioplasty,” Baltimore, MD
11/2018	Invited Speaker, SNO: Neuro-Oncology Review Course, “Neurosurgical Management of Brain

	Tumors,” New Orleans, LA
12/2018	Invited Speaker, Neuroscience Grand Rounds, “Immunotherapy for GBM,” Tianjin, China
12/2018	Invited Plenary Speaker, International Brain Tumor Conference, “State of Immunotherapy for GBM,” Nanjing China
12/2018	Invited Plenary Speaker, 3 <sup>rd</sup> Annual Immunotherapy for Brain Tumors, “Advances in Immunotherapy for GBM,” Shanghai, China
02/2019	Invited Plenary Speaker, 1 <sup>st</sup> Annual International Meeting for Gliomas, “State of GBM Immunotherapy,” Mexico City, Mexico
03/2019	Invited Plenary Speaker, 2 <sup>nd</sup> Annual Korean Immuno-Oncology Symposium, “GBM Immunotherapy,” Seoul, Korea
03/2019	Invited Speaker, Bristol Meyers Squibb Research Conference, “GBM Immunotherapy,” Redwood City, CA
04/2019	Invited Speaker, Precision Medicine in Cancer Therapeutics Conference, “Local and Global Immunosuppression in GBM,” Seoul, Korea
05/2019	Invited Speaker, American Health Care Journalists Conference, “Immunotherapy for GBM,” Baltimore, MD
05/2019	Invited Speaker, University of Saskatchewan Neurosciences Grand Rounds, “Immunotherapy for GBM,” Saskatoon, Canada
06/2019	Invited Speaker, International Stereotactic Radiosurgery Society Meeting, “Immunotherapy for Brain Tumors in the Setting of Radiation,” Rio de Janeiro, Brazil
06/2019	Invited Speaker, CNIMC Symposium, “Precision Medicine for GBM Immunotherapy,” Xi’An, China
06/2019	Invited Speaker, 13 <sup>th</sup> Annual National Cancer Center Symposium, “Identifying Tumor Antigens for GBM,” Seoul, Korea
06/2019	Invited Speaker, 29 <sup>th</sup> Annual Korean Brain Tumor Society Meeting, “Personalizing GBM Immunotherapy,” Seoul, Korea
07/2019	Speaker, Hanbery Society Meeting, “Trigeminal Neuralgia,” Park City, UT
09/2019	Invited Speaker, International Society of Craniofacial Surgery Meeting, “Single Stage Cranioplasty for Skull Tumors,” Paris, France
09/2019	Invited Speaker, European Association of Neuro-Oncology (EANO), “Immunotherapy for GBM,” Lyon, France
09/2019	Invited Speaker, American Society of Plastic Surgeons (ASPS), “Single Stage Cranioplasty for Skull Tumors,” San Diego, CA
09/2019	Invited Speaker, Chang-Gung Neuro-oncology Forum, “Immunotherapy for Brain Tumors,” Taipei, Taiwan
09/2019	Keynote Speaker, Asian Society of Neuro-Oncology (ASNO), “Personalized Immunotherapy for GBM,” Taipei, Taiwan
09/2019	Plenary Speaker, Asian Society of Neuro-Oncology (ASNO), “Current State of Immunotherapy for GBM,” Taipei, Taiwan
10/2019	Invited Speaker, Congress of Neurological Surgeons (CNS), “State of Checkpoint Inhibitors for

	Brain Tumors,” San Francisco, CA
10/2019	Invited Speaker, McGill Brain Tumor Symposium, “Overcoming a Cold Tumor,” Montreal, Canada
10/2019	Invited Speaker, McGill Brain Tumor Public Awareness Day, “State of Immunotherapy for GBM,” Montreal Canada
11/2019	Invited Speaker, Korean Association of Immunologists (KAI), “Overcoming Myeloid Cells in GBM,” Seoul, Korea
11/2019	Invited Speaker, 21 <sup>st</sup> Annual Brain Tumor Update and 10 <sup>th</sup> Annual Symposium on Brain and Spine Metastases, “Immunotherapy for Brain Tumors,” Las Vegas, NV
11/2019	Invited Speaker, SNO: Neuro-Oncology Review Course, “Neurosurgical Management of Brain Tumors,” Phoenix, AZ
11/2019	Invited Speaker, SNO: Immunotherapy Think Tank, “Location Specific Immunosuppression of Brain Tumors in the Setting of Metastases and Gliomas,” Phoenix, AZ
11/2019	Invited Speaker, SNO Elekta Luncheon, “Push and Pull of Radiation for Immunotherapy,” Phoenix, AZ
11/2019	Invited Speaker, SNO Sunrise Session, “Phase 0 Immunotherapy Clinical Trials,” Phoenix, AZ
12/2019	Invited Speaker, Radiological Society of North America, “Immunotherapy for Brain Tumors,” Chicago, IL
12/2019	Invited Speaker, Glioblastoma Drug Development Summit, “Immunotherapy for Brain Tumors,” Boston, MA
12/2019	Grand Rounds Speaker, “Management of Cerebral Brain Mets,” Baltimore, MD
12/2019	Invited Speaker, Johnston-Willis Hospital, “Immunotherapy for Brain Tumors,” Richmond, VA
12/2019	Invited Speaker, Trigeminal Neuralgia Association Local Chapter Meeting, “Trigeminal Neuralgia,” Ellicott City, MD
01/2020	Invited Grand Rounds Speaker, “Immunotherapy for Brain Tumors,” Massachusetts General Hospital, Boston, MA
02/2020	Invited Speaker, Brain Tumor Center Seminar Speaker Series, “Immunotherapy for Brain Tumors,” Duke University Hospital, Durham, NC
02/2020	Invited Speaker, “Immunotherapy for Brain Tumors,” Focused Ultrasound Society, Charlottesville, VA
04/2020	Invited Plenary Speaker, China Society for Neuro-Oncology Meeting (CSNO) “Immunotherapy for Brain Tumors,” China (Zoom)
05/2020	Invited Speaker, Surgical Oncology Working Group, “Immunotherapy for Brain Tumors,” Boston, MA (Zoom)
05/2020	Invited Speaker, Miami Global Brain Tumor Symposium, “Immunotherapy for Brain Tumors,” Miami, FL (Zoom)
07/2020	Invited Speaker, GBM Discovery Roundtable, “Exhausted T-Cells in GBM,” (Zoom)
07/2020	Invited Speaker, International Chordoma Research Workshop, “Considerations for the Phase I Safety Study of Stereotactic Radiosurgery with Concurrent and Adjuvant PD-1 Antibody Nivolumab (CA209-003) in Patients with Recurrent or Advanced Chordoma,” Boston, MA

07/2020	Invited Speaker, Ivy Foundation Speaker Series, “Immunotherapy for Brain Tumors,” Phoenix, AZ (Zoom)
08/2020	Invited Speaker, ZAP Surgical SRS Webinar Series, “Using Radiation to Augment Immunotherapy,” Palo Alto, CA
09/2020	Invited Speaker, Frontiers in Clinical Oncology Series, “Immunotherapy for Brain Tumors,” Palo Alto, CA
10/2020	Invited Speaker, Tigit Therapies Digital Summit, “TIGIT and Checkpoints for GBM,” London, England (Zoom)
11/2020	Invited Speaker, Society for Neuro-Oncology Think Tank on Clinical Trials, “Strategies for Combination Immunotherapies,” Houston, TX (Zoom)
11/2020	Invited Speaker, Facial Pain Association Education Day, “Diagnosis and Overview for Trigeminal Neuralgia,” Zoom
11/2020	Invited Speaker, 2 <sup>nd</sup> Annual Neuro-Oncology Fellow and Early Clinician/Investigator Career Retreat, “How Much Am I Worth/Negotiations,” Houston, TX (Zoom)
11/2020	Invited Panelist and Speaker, 7 <sup>th</sup> International Symposium on Focused Ultrasound, “Combining Immunotherapy with Focused Ultrasound for Brain Tumors,” Virtual (Zoom)
12/2020	Invited Speaker, 9 <sup>th</sup> Annual Huashan Course on the Diagnosis and Treatment of GBM,” Shanghai, China (Zoom)
12/2020	Invited Speaker, 2 <sup>nd</sup> Annual Glioblastoma Drug Development Summit, “Exhaustion in GBM,” Boston, MA (Zoom)
12/2020	Invited Plenary Speaker, INC Glioblastoma Symposium, “Overcoming Exhaustion in GBM,” Curitiba, Brazil (Zoom)
02/2021	Invited Speaker, California Neurology Society Connections Meeting, “Overview of Trigeminal Neuralgia,” San Francisco, CA
03/2021	Invited Speaker, Loma Linda University Health Care Neurosurgery Symposium, “Immunotherapy for Brain Tumors,” Loma Linda, CA
03/2021	Invited Speaker, UCSF Neuro-Oncology Seminar, “Overcoming T-Cell Exhaustion in GBM,” San Francisco, CA
04/2021	Invited Speaker, Stanford Immunology Symposium, “Overcoming Exhaustion of Immune Cells in GBM,” Stanford, CA
04/2021	Invited Speaker, UMP Lunchtime Series, “Trigeminal Neuralgia,” Stanford CA
05/2021	Invited Speaker, Front Row Series (AANS), “Current State of Immunotherapies for Brain Tumors,” Webinar
05/2021	Invited Speaker, Stony Brook Cancer Center Oncology Grand Rounds, “Overcoming Exhausted T-cells in GBM,” Stony Brook, NY – Virtual
05/2021	Invited Discussant, Focused Ultrasound for GBM Workshop, “Clinical Unmet Needs,” Virtual
06/2021	Invited Speaker, National Institutes of Health Surgical Branch, “Overcoming Exhausted T-cells in GBM,” Virtual
07/2021	Invited Speaker, Society for Brain Mapping and Therapeutics (SBMT), “Advances in Immunotherapy for Brain Tumors,” Virtual

09/2021	Invited Speaker, Kaweah Health Resident Teaching Session, “Trigeminal Neuralgia,” Visalia, CA
09/2021	Invited Speaker, K12 Webinar, “Road to Becoming a Physician Scientist,” Webinar
09/2021	Invited Speaker, Swiss Society of Neurosurgery, “Overcoming Immune Cell Exhaustion in GBM,” Virtual, Basel Switzerland
10/2021	Invited Speaker, Tumor Satellite Symposium, “Tumor Microenvironment and Heterogeneity for Immunotherapy,” Austin, TX
10/2021	Invited Speaker, Congress of Neurological Surgeons (CNS) Education Day, “Immune Cell Exhaustion in GBM,” Austin, TX
11/2021	Invited Speaker, 5 <sup>th</sup> Annual Chinese Forum on Immunotherapy and Targeted Therapy in Neuro Oncology, “Tumor Immune Microenvironment and Immunotherapy for GBM,” Shanghai, China
11/2021	Invited Speaker, UC Davis Grand Rounds, “Overcoming Exhaustion in GBM with Multimodal Approaches,” Davis, CA
11/2021	Invited Speaker, Facial Pain Association webinar, “Surgical Treatment of TN: What to Choose and When,” Virtual webinar
11/2021	Invited Speaker, Society of NeuroOncology 2021 Annual Meeting, “How much am I worth?/Start up packages,” Boston, MA
12/2021	Invited Speaker, 1 <sup>st</sup> Annual South Florida Neuroplastic and Reconstructive Surgery Course, “Overcoming Immune Cell Exhaustion in GBM,” Miami FL
01/2022	Invited Speaker, 3 <sup>rd</sup> Annual Glioblastoma Drug Development Summit, “Obstacles to Generating an Effective Anti Tumor Immune Response,” Boston, MA
01/2022	Invited Speaker, Facial Pain Association Conference, “Choosing the Right Procedure for Your Trigeminal Neuralgia,” Virtual webinar
02/2022	Invited Speaker, 7 <sup>th</sup> Annual Innovative Approaches to Brain Tumor Management. Seattle Science Foundation, “Immunotherapy for Brain Tumors,” Seattle, WA
02/2022	Invited Panelist, North American Skull Base Society Annual Meeting. “Controversies in the Management of Meningiomas”, Phoenix, AZ.
03/2022	Invited Speaker, Radiosurgery Society Scientific Meeting. “CAR T-Cells for Brain Tumors”, Carlsbad, CA.
03/2022	Invited Speaker, Radiosurgery Society Scientific Meeting. “Radiosurgery for Benign Lesions”, Carlsbad, CA.
03/2022	Invited Speaker, Society for Brain Mapping and Therapeutics (SBMT) 19 <sup>th</sup> Annual Congress Scientific Meeting. “Overcoming Exhausted Immune Cells in GBM”, Los Angeles, CA.
03/2022	Invited Speaker, Society for Brain Mapping and Therapeutics (SBMT) 19 <sup>th</sup> Annual Congress Scientific Meeting. “Combining Focused Ultrasound with Immunotherapy”, Los Angeles, CA.
03/2022	Invited Speaker, San Francisco Neurological Society 2022 Annual Meeting. “Immunotherapy for GBM”, Monterey, CA.

03/2022	Invited Speaker, World Federation of Neuro-Oncology Societies (WFNOS). “Overcoming Immune Cell Exhaustion in GBM”, Seoul, Korea.
03/2022	Invited Speaker, World Federation of Neuro-Oncology Societies (WFNOS). “Focal Therapy and Immunotherapy for GBM”, Seoul, Korea.
03/2022	Moderator, World Federation of Neuro-Oncology Societies (WFNOS). “BBB Modulation for the Treatment of Brain Tumors”, Seoul, Korea.
04/2022	Invited Speaker, American Academy of Neurology (AAN). “mRNA Vaccines and Immunotherapy for Brain Tumors”. Seattle, WA.
05/2022	Invited Speaker, American Association of Neurological Surgeons (AANS) Annual Meeting, “Immune Microenvironment of Brain Metastases”. Philadelphia, PA.
05/2022	Invited Speaker, Society of Neurological Surgeons Meeting, “The Match Rank List: What are the Characteristics of the Ideal Neurosurgery Applicant?”. Detroit, MI.
05/2022	Invited Speaker, University of California Irvine School of Medicine MSTP 37 <sup>th</sup> Annual Distinguished Lecture Series 2021-2022, “Overcoming Immune Cell Exhaustion in Glioblastoma”. Irvine, CA.
06/2022	Invited Speaker, American Society of Clinical Oncology (ASCO) Annual Meeting, “Optimizing Immunotherapy in Central Nervous System Malignancies”. Chicago, IL.
06/2022	Speaker, Stanford – National Brain Tumor Society (NBTS) Brain Tumor Symposium, “Translational Immunotherapy”, Stanford, CA.
07/2022	Speaker, Hanbery Society Meeting, “Microvascular Decompression,” North Shore, HI.
08/2022	Invited Speaker, Stanford University School of Medicine Neurology Grand Rounds, “Immunotherapy in Brain Tumors,” Stanford, CA.
08/2022	Invited Speaker, National Cancer Institute, “Immunotherapy – Bench to Bedside”, Washington DC, virtual.
08/2022	Invited Speaker, Society for Image-Guided Neurointerventions, “Immunotherapy for Brain Tumors”, Warwick, UK.
08/2022	Invited Speaker, Surgical Techniques in Neurosurgery Course, “Challenges for the Future Physician-Scientists”, Salt Lake City, Utah.
09/2022	Invited Speaker, 68 <sup>th</sup> Western Neurosurgical Society Meeting, “Is Immunotherapy LAGging?” Big Island, HI.
09/2022	Keynote Speaker, Taiwan Society of Neuro-Oncology Annual Meeting, “Immunotherapy Update in Malignant Glioma”, Taiwan, virtual.
09/2022	Invited Speaker, Stanford Cancer Institute Annual Retreat, “Checkpoints in Gliomas”, Stanford, CA.

10/2022	Keynote Speaker, The University of Oklahoma Health Sciences Center Neuroscience Symposium 2022, “Immunotherapy for Brain Tumors: A Journey from the Bench to the Clinics and Back to the Bench”, Oklahoma City, OK.
10/2022	Plenary Speaker, HKNS Scientific Meeting on Tumour-Treating Fields in Glioblastoma, “Future Direction of TTFields in GBM: Combination with Immunotherapy”, Hong Kong (virtual).
10/2022	Invited Speaker, Taichung Veterans General Hospital - International Medical Conference in 2022, “Immunotherapy for GBM”, Taichung, Taiwan (virtual).
10/2022	Invited Speaker, The Glioma Update, “Immunotherapy for GBM, Challenges from a Phase III Trial”, Singapore.
11/2022	Invited Speaker, 10 <sup>th</sup> Annual 2022 Glasgow Neuro “Immunotherapy for Brain Tumours”, Glasgow, Scotland.
12/2022	Invited Panelist, Korean American Medical Association (KAMA) 47 <sup>th</sup> Annual Scientific Convention, “Session 4: Leadership in Medicine Panel”, Los Angeles, CA.
12/2022	Invited Speaker, 7 <sup>th</sup> Annual Selected Topics in Neuroplastic and Reconstructive Surgery: An International Symposium on Head/Spine Trauma, Cranioplasty and Implantable Neurotechnologies with Cadaver Lab, “Is Immunotherapy Lagging?” Miami, FL.
01/2023	Invited Speaker, Providence Brain & Spine Institute Neurosciences Conference, “Immunotherapy for Brain Tumors”, Portland, OR
01/2023	Invited Speaker, Providence Research Conference, “Mechanisms of Immune Cell Exhaustion in GBM”, Portland, OR.
01/2023	Invited Speaker, GBM TRUST (Third Rock Ultimate Science Team), “Clinical Landscape and Markers for Response in GBM”, Boston, MA.
01/2023	Invited Speaker, The University of Pennsylvania, 27 <sup>th</sup> Annual Sandra Altman Visiting Professor, “Immunology for GBM”, Philadelphia, PA.
01/2023	Invited Speaker, Arab Health, “Translating Immunotherapy for Brain Tumors from the Bench to Bedside and back to the Bench”, Dubai, UAE.
02/2023	Invited Speaker, Stanford Club of Saudi Arabia, “New Frontiers in Neuroscience Innovation and Restoration”, Riyadh, Saudi Arabia.
03/2023	Invited Speaker, Edinburgh University Neurological Society. “Immunotherapy for Brain Tumors”, Edinburgh, Scotland (virtual).
03/2023	Invited Speaker, Yale School of Medicine Neurology Grand Rounds. “Immunotherapy for Brain Tumors”, New Haven, CT.
03/2023	Invited Speaker, International Conference on Brain Tumor Research and Therapy (ICBTRT). “Checkpoints for GBM”, Kiawah Island, GA.

- 04/2023 Invited Speaker, American Association of Neurological Surgeons (AANS) Annual Meeting, “Immunotherapy for Brain Tumors”. Los Angeles, CA.
- 06/2023 Invited Speaker, Santa Clara Valley Medical Center (SCVMC) Neurosurgery Symposium, “Translating Findings Back and Forth from the Clinics to the Bedside”, Santa Clara, CA.
- 06/2023 Invited Speaker, Memorial Sloan Kettering Cancer Center, Department of Neurosurgery Grand Rounds, “Immunotherapy for Brain Tumors”, New York, NY.
- 06/2023 Invited Graduation Speaker, Northwell Health, “Translating Findings from the Bench to the Clinics”, Manhasset, NY.
- 07/2023 Invited Speaker, 2023 International Chordoma Research Workshop, “Preliminary Results of Anti-PD-1 with Stereotactic Radiosurgery in Patients with Widely Metastatic Chordoma”, Boston, MA.
- 08/2023 Invited Speaker, Brain Tumor Think Tank, “T-Cell Exhaustion in GBM”, Maui, HI (virtual).
- 08/2023 Invited Speaker, North American Skull Base Society (NASBS), “Contribution of a Neurosurgeon to the Health System”, webinar (virtual).
- 09/2023 Invited Speaker, Congress of Neurological Surgeons (CNS), “Predictors of Response to Immunotherapy”, Washington, D.C.
- 09/2023 Abhijit Guha Awardee and Lecturer, Section on Tumors of the AANS/CNS and the Society of NeuroOncology, Congress of Neurological Surgeons (CNS), “Journey from the Bench to the Clinics and Back to the Bench”, Washington, D.C.
- 09/2023 Invited Speaker, Novel Therapies in the Treatment of Neurological Disorders Symposium, “Immunotherapy for Brain Tumors”, Hong Kong, China.
- 09/2023 Invited Speaker, Korean American Medical Association (KAMA) 48<sup>th</sup> Annual Scientific Convention, “Immunotherapy for Brain Tumors”, Chicago, IL.

## OTHER PROFESSIONAL ACCOMPLISHMENTS

### Oral Presentations

- 05/1999 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.
- 08/2004 Hanbery Society, Palo Alto, CA; **Lim M**, Guccione S, Sims L, Azok J, King L, Bednarski M, Harsh G. Serum Markers for Glioblastoma Multiforme.
- 08/2006 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.



- 09/2007 Western Neurosurgical Society – 53<sup>rd</sup> 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.
- 06/2009 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.
- 10/2011 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.
- 10/2011 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.
- 10/2011 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.
- 10/2011 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.
- 10/2011 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.
- 11/2011 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.
- 03/2012 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.
- 10/2012 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.
- 10/2012 American Neurological Association, Boston MA. Soma S, 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  $\gamma$ 5-GABA-A receptor subunit (GABRA5) expression in clinically aggressive medulloblastomas as a novel therapeutic approach.

- 09/2013 Jusue-Torres I, Recinos PF, Quinones-Hinojosa, **Lim M**, World Federation of Neurological Societies. 15<sup>th</sup> World Congress of Neurosurgery, “Technical Nuances of Microvascular Decompression of the Posterior Fossa Cranial Nerves,” Seoul, Korea
- 09/2014 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.
- 05/2015 American Association of Neurological Surgeons (AANS), Washington, DC; Mathios D, Phallen JA, Tyler B, Jackson C, Brem H, Pardoll DM, **Lim M**. Local and Not Systemic Chemotherapy Synergizes with PD-1 Blockade Enhancing Antigen Specific Tumor Immune Response, Survival and Long-term Memory in a Murine Glioblastoma Model.
- 09/2015 Congress of Neurological Surgeons, New Orleans, LA; Kim JE, Patel MA, Mangraviti A, Velarde E, Theodros D, Mathios D, Jackson CM, Tyler B, Ye X, Brem H, Pardoll D, **Lim M**. The Combination of anti-TIM-3 and anti-PD-1 Checkpoint Inhibitors with Focused Radiation Resulted in a Synergistic Anti-Tumor Immune Response in a Preclinical Glioma Model.
- 10/2015 American Society for Therapeutic Radiology and Oncology (ASTRO), San Antonio, TX; Maxwell R, Ye X, Bettegowda C, Sharfman W, Redmond K, Kleinberg L, **Lim M**. *BRAF*-V600 Mutational Status is a Significant Associate of Brain Metastases Recurrence in Patients with Melanoma: A Retrospective Study
- 09/2017 European Society for Medical Oncology (ESMO), Madrid Spain; **Lim M\***, Omuro A\*, Vlahovic G, Reardon DA, Sahebjam S, Cloughsey T, Baehring J, Butowski NA, Potter V, Zwiertes R, Paliwal P, Carleton M, Sampson J, Brandes AA. Nivolumab in Combination with Radiotherapy ± Temozolomide: Updated Safety Results from CheckMate 143 in Patients with Methylated or Unmethylated Newly Diagnosed Glioblastoma
- 09/2017 American Academy of Neurological Surgeons, Santa Barbara CA, **Lim M**, Mathios D, Kim J, Kim E, Tyler B, Brem H, Pardoll D. Kindling a Systemic Immune Response.
- 10/2023 69<sup>th</sup> Western Neurological Society Meeting, Monterey, CA, **Lim M**, Jackson C, Choi J, Routkevitch D, Pant A, Saleh L, Ye X, Caplan J, Huang J, McDougall C, Pardoll D, Brem H, Tamargo R. Agonizing PD-1 to Reverse Subarachnoid Induced Vasospasm.