

## Sean Edward Lawler

4018631110, [sean\\_lawler@brown.edu](mailto:sean_lawler@brown.edu)

### Nationality

US citizen

### Education

1992 Ph.D, Dept. of Crystallography, Birkbeck College, University of London, UK.

1987 B.Sc. (hons) in Biochemistry, University of Edinburgh, UK.

### Positions held

- Brown University, Providence, RI 2021 –  
**Associate Professor, Department of Pathology and Laboratory  
 Medicine, Brown Cancer Center  
 Co-Director, Therapeutic Sciences Graduate Program  
 Co-Director, CNS Translational Research Disease Group  
 Co-Leader, Brain Cancer Research Program**
- Brigham and Women's Hospital, Harvard Medical School, Boston 2020 – 2021  
**Associate Professor, Department of Neurosurgery**
- Brigham and Women's Hospital, Harvard Medical School, Boston 2016 – 2021  
**Managing Director, Harvey Cushing Neurooncology Laboratory,  
 Department of Neurosurgery**
- Brigham and Women's Hospital, Harvard Medical School, Boston 2013 – 2020  
**Assistant Professor, Department of Neurosurgery**
- Leeds Institute of Molecular Medicine, University of Leeds, UK. 2011 – 2013  
**Senior Scientist/Group Leader *Translational Neurooncology Lab***
- The Ohio State University Medical School, Columbus OH 2004 – 2010  
**Assistant Professor (*tenure track commenced June 1<sup>st</sup> 2009*)**
- Massachusetts General Hospital/Harvard Medical School, Charlestown MA 2000 – 2004  
**Instructor in Neurosurgery**
- University College London Medical School, London UK 1998 – 1999  
**Senior Post-Doctoral Fellow/Group Leader**
- University of Dundee, MRC Protein Phosphorylation Unit, Dundee, UK 1996 – 1998  
**Post-doctoral Fellow (Professor Sir Philip Cohen)**
- INSERM U440, Paris, France 1994 – 1996  
**Post-doctoral Fellow (Professor André Sobel)**
- UCSF, San Francisco CA 1992 – 1994  
**Post-doctoral Fellow (Professor Rik Derynck)**
- Birkbeck College, University of London, London UK 1987 – 1992  
**Ph.D Studentship (Professors Jim Pitts and Tom Blundell)**

### Major current research interests

- Translational studies in brain tumors
- Understanding and harnessing the brain tumor immune microenvironment
- Glioblastoma invasion
- Drug delivery to the brain

### Honors and Awards

- BWH innovator award winner 2017
- *Neurooncology* (IF 10.1) - Top reviewer 2015.

### Formal Teaching Experience

- Short Course in Protein Engineering, Birkbeck College, University of London, 1991-1992
- Course presenter in Molecular Neuro-oncology, for the American Association of Neurological Surgeons Annual Meeting, San Diego, April 2006
- OSU IBGP Neuroscience 797 graduate student teaching faculty, 2008-2010
- OSU IBGP graduate studies program member, 2008-2010
- OSU MCDB graduate studies program member, 2009-2010
- OSU NEURSGY785 tumor microenvironment graduate teaching faculty, 2009-2010
- Course Tutor, Leeds University Medical School 1st Year MBChB in Medicine. 2011-2013
- Brown University Graduate Responsible Conduct of Research Lecture (Scientific communication)
- Survey of Modern Therapeutics Brown Seminar Course – Delivered a guest seminar on Gene Therapy.

### Thesis Committees

- Thesis committee membership; Hosung Sim, 2008-2010 (The Ohio State University), Shante Williams, 2006-2010 (The Ohio State University), Eldo Verghese 2011-2013, (University of Leeds), Priyank Sinha (University of Leeds 2011-2013), Antony Tabet 2019-present (Massachusetts Institute of Technology). Mark Harrison 2020 – present (Tulane University) Ash Uruchurtu 2022 – present, Brown University Pathobiology Graduate Program Thesis Committee member, John Zepecki Brown University Graduate Program Thesis Committee Member

### Laboratory Supervision

- Ph.D Student, Shanté P. Williams, graduated December 2010. The Ohio State University
- Ph.D Student, Josie Hayes, graduated September 2015, Leeds University
- Ph.D Student, Antony Tabet, 2019-present. Massachusetts Institute of Technology
- Ph.D Students, 2022-present, Noe Mercado, Andrea Schmidt, Jasmine Clark, Brown University.
- Priyank Sinha, University of Leeds, 2011-2013.
- NHS Academic Clinical Fellow. Vinton Cheng, University of Leeds, April 2012-2013.
- M.S. Students, Jessica Tyler, graduated with distinction, Boston University 2010. Meghan Handley, graduated with distinction, Boston University, 2015. Hillary Rolfs graduated with distinction, Boston University, 2016. Shreyas Mahapatra (graduated with distinction, Boston University, 2017); Tomer Finkelberg (graduated with distinction Boston University, 2020). Megan Forrest (Brown University Masters in Biotechnology Program, 2022). Zheyun Xu, Jacqueline Real (Brown University Masters In biotechnology Program, 2023)
- Neurosurgery Residents; Pier Paolo Peruzzi (2010), Kaveh Asadi (2009-2010, **obtained 2 year NREF fellowship**) (Both Ohio State), Priyank Sinha (University of Leeds, 2011-2013, **obtained Master's degree**).
- Medical Students; Andy Ditchfield (Leeds University, Summer Intern, 2011), Shawn Hervey-Jumper (Ohio State, 2005/2006, **obtained fellowship**), Wesley Whitson (Ohio State 2006/2007, **obtained fellowship**), Aaron Thatcher (Ohio State 2008, **obtained fellowship**), Obeid Malik (Ohio State 2009, **obtained fellowship**), Manish Karamchandani (Tufts University Medical School (2016, **ACS Summer fellow**), Abdul Kareem Ahmed (Brown

- University Medical School) (2016, **ABTA Summer fellow**). Alexandra Giantini-Larsen (2018-2019; **HHMI Medical Student fellowship**). John Pham, Sam McKinnon (Brown University)
- Undergraduate Students; Ravi Gupta (Ohio State 2007/2008), Amenze Osa (Ohio State 2008/2009), Rachel Kantosky (Ohio Northern University, Summer Intern 2005), Rachael Press (Ohio State 2009), David Klink (New Albany High School and Case Western Reserve University, 2006-2009), Emily Avery (Princeton University, 2014), Prisca Obi (Harvard College, 2015-16), Kalvis Hornburg (Harvard College, 2015-16), Rachel Zane (Harvard Extension School, 2015), Yarah Ghotmi (2016), Neil Sathi (2017-2018, Cornell University). Isa De Laura (2017-2018, Harvard University), Griffin Seidel (2019), Saima Iqbal (Harvard College, 2020). Sam Latzman, Madeline Villa, Jason Hong (Brown University)
  - Post-doctoral Fellows; Jennifer Cutter (Ohio State, 2005-2007), Nina Dmitrieva (Ohio State 2005-2008), Jakub Godlewski (Ohio State, 2006-2010; I), Michal Nowicki (Ohio State, 2004-2010, **ABTA post-doctoral fellowship**), Yan Wang (Ohio State 2010, **obtained funding from DoD**), Daisuke Ogawa (Ohio State, 2010, won **OSUCCC Pelotonia post-doctoral fellowship**), Jane Levesley (University of Leeds, 2011-2013), Marjorie Boissinot (University of Leeds 2012-2013, **Yorkshire Cancer Research Fellow**), Anke Bruning-Richardson (University of Leeds, 2012-2013, **PPR Foundation Fellow**); Maria-Carmella Speranza (Brigham and Women's Hospital, 2013-2016); Choi-Fong Cho (Brigham and Women's Hospital, 2013-present; awarded **Canadian Institutes of Health Research post-doctoral fellowship 2015, ranked #1 from over 1000 applicants**, now Faculty at Harvard Medical School), Harald Krenzlin (2016-2018), Mikolaj Zdioruk (2016-2021). Ahmad Mahmoud (2016-2018), Almohanad Alkayal (2016-2018), Marilyn Koch (2018-2020), Gilles Berger (2019-2020), Jorge Jimenez-Macias (2019-present).
  - Technical Staff; Lynette Steele (University of Leeds, 2011-2013), Oskar Nowicki BWH, 2013-2021 (**obtained NCI F50 Research Specialist award**), Kazue Kasai (BWH, 2013-2016), Prajna Behera (BWH, 2015-2016), Hong Zhang (BWH, 2016-2017). Rachel Zane (BWH, 2016-2019), Tomer Finkelberg (BWH, 2020-2021). William Hawkins 2022- present)
  - Visiting Scholars; Maria Fazal-ul-Haq, University of Islamabad, 2022, Daniel Moreno, Hopital Amor, Barretos, Brasil, Mattia Pantalone Karolinska Institute 2022, Pippa Vaughn-Beaucaire, University of Huddersfield, 2022.

#### Additional activities

- Science news writer for *Trends in Cell Biology*, 2000-2002
- Science news writer for *The Scientist*, 2003-2004
- Executive Committee Member. IVY foundation glioma consortium (2008-2010)
- Co-founder Ohio State University Brain Tumor Study Group (2009)
- Member of the national Brain Tumour Translational Subcommittee (NCRI, UK) (2011-2013)
- Scientific Advisory Board, Ethical Tissue bank at University of Bradford, UK (2012-2015)
- Scientific Advisory Board; Fighting Ependymoma. (UK based brain tumor charity) (2013-present)
- Editorial Board Member; *Neurooncology* (2015-present)
- Scientific Advisory Board; Brain Tumor Research. (UK-based brain tumor charity) (2016-present)
- NCI panel participant on next generation of oncology trials with Amgen's immunostimulatory virus T-VEC (Imlygic) (2016)
- Committee member, Mass General Brigham Institutional Biosafety Committee (2017-present)
- Committee member, BWH Neurotech Studio steering committee (2017-present)
- Committee member, BWH Women in Brain Program steering committee (2018-present)
- Ad hoc referee for various peer-reviewed science journals, (including, *JNCI, J. Neurosci, Neurooncology, Clin. Cancer Res, Cancer Res, Molecular Therapy*)
- Grant Review (*Cancer Research UK, Medical Research Council UK, American Cancer Society, Wellcome Trust, Brain Tumour Research (UK), AIRC (Italy), The Brain Tumour Charity (UK), FNRS (Belgium), Israel Science Foundation) Canadian Cancer Society.*

- National Institutes of Health grant review – BNVT study section (March 2021), R15 Special Emphasis panel (ZRG-OTC-V) (September 2021, March 2022, September 2022). NCI Program Projects
- Co-leader CNS TRDG @ Legorreta Cancer Center
- Co-leader Brain Cancer Research Program, Legorreta Cancer Center
- Member - Brown University Oncology Group, Scientific Review Advisory Board
- Working Groups – CRTEC, Education and Biobanking LCC
- Michelson Prize Review committee member 2020, 2021, 2022

#### **Society Memberships (Last three years)**

- The Society for Neuro-oncology (SNO)
- American Association of Cancer Research (AACR)

#### **Patents**

US/2010/02753258, “Low-cost, high-volume multi-well electrospun substrates”

WO/2018/058123. “Methods for treating TIM3 elevation”

Provisional patent MGH23563, August 2015. “Brevican binding peptides for malignant glioma”

#### **Research Funding (Over \$4 million direct costs awarded as PI since 2010)**

##### **Awarded - current**

- NCI R01CA237063 (PI: Lawler/Pentelute)  
2019-2024. \$1,244,000  
*Fluorinated macrocyclic peptides as BBB penetrating agents for the treatment of GBM*  
The goal of this study, a collaboration with Brad Pentelute at MIT, is to develop peptide-based therapeutics with improved brain penetration for GBM.
- NCI R01CA263324 (PI: Lawler/Cook)  
2023-2027 \$1,200,000  
*The role of cytomegalovirus in glioblastoma therapy*  
The goal of this study is to use our established mouse model of cytomegalovirus mediated glioblastoma progression is to understand the mechanisms underlying clinical responses to cytomegalovirus targeting therapies in glioblastoma patients
- NCI R21CA259734 (PI: Lawler)  
2023-2025  
*Preclinical assessment of efficacy and tumor microenvironment alterations by PPRX-1701 in glioblastoma.*  
This study will characterize the effects of a drug formulation PPRX-1701 in glioblastoma preclinical models with a view to further development of a novel therapeutic approach
- Symbio Inc. Industry Sponsored study (PI: Lawler)  
2022 (\$100,000)  
*Examination of efficacy of brincidofovir in a mouse model of CMV driven glioblastoma progression*

##### **Completed**

- NCI R01CA195532 (PI:Chiocca) (co-investigator)  
2015-2020  
*Investigating the CMV link to glioblastoma using a novel mouse model*
- NCI P01CA069246 (PI: Breakefield/Chiocca) (co-investigator)

2017-2022

*Experimental therapeutics and biomonitoring for brain tumors*

- NCI R01CA184283 (PI: Cobbs, Site PI: Lawler)  
2014-2020; \$475,000  
*The Role of cidofovir and structural analogs as adjuvant therapy for glioblastoma*  
This study in collaboration with Charles Cobbs (Swedish Medical Center, Seattle), investigates the anti-viral drug cidofovir in a novel murine model of GBM.
- Chimerix Inc. (PI: Lawler)  
2019; \$80,000  
*Antiviral drugs for glioblastoma treatment*
- BWH Innovator Award (PI: Lawler)  
2017-2018; \$50,000  
*Creating the Dream drug for glioblastoma*
- Amgen Inc. (PI: Lawler)  
2017; \$40,000  
*Investigation of T-VEC for the treatment of glioblastoma*
- B\*CURED Foundation research grant (PI: Lawler)  
2016; \$50,000  
*Development of peptides targeting glioblastoma*
- Yorkshire Cancer Research Project Grant (PI: Lawler)  
2012-2015; £204,000  
*MicroRNA functions in glioblastoma*
- PPR Foundation Project Grant (PI: Lawler)  
2012-2014; £240,000  
*Development of a new therapeutic strategy for the treatment of glioblastoma multiforme*
- Medical Research Council/Astra Zeneca Project Grant (PI: Lawler)  
2013-2015; £403,000  
*Assessment of AZD1080 in preclinical models of glioblastoma*
- Yorkshire Cancer Research Clinical Research Fellowship (PI: Lawler)  
2013-2015; £188,000  
*Developing an anti-invasive strategy for pediatric glioblastoma*
- European Union – Marie Curie Career Reintegration Award (PI: Lawler)  
2012–2015; €100,000  
*3D nanofiber scaffolds as a model for glioma Cell migration*
- Yorkshire Cancer Research PhD Studentship (PI: Lawler)  
2012-2015; £48,000  
*MicroRNAs in Brain Tumors*

- Leeds University CRUK Centre Development Award (Co-PI)  
2011; £15,220  
*MicroRNA alterations in aggressive glioblastoma stem cell growth*
- Andrea's Gift/Candlelighters Grant (PI; Lawler)  
2011-2015; £750,000  
*Establishment of Brain Tumour Research Centre at Leeds*
- NIH SBIR Award 1R43CA150763-01 (Academic PI)  
2010-2011; \$199,365  
*High Throughput Ex Vivo Tumor Cell Motility Assay*
- OSUCCC Seed Grant (PI: Lawler)  
2010-2010; \$15,000  
*Identification of CMV microRNAs in glioblastoma*
- OSUCCC Seed Grant (PI: Lawler)  
2008; \$10,000  
*Validation of a novel nanofiber based migration assay in glioma invasion*
- Translational Genomics Research Institute (co-PI)  
2008-2009; \$100,000  
*The Ivy Genomics-based Medicine Project*
- American Cancer Society Seed Grant (PI: Lawler)  
2008; \$30,000  
*Characterization of camptothecin analogs with enhanced anti-glioma selectivity*
- CCTS, OSU collaborative translational grant (PI: Lawler)  
2009; \$20,000  
*Characterization of gene expression alterations in a novel nanofiber based glioma migration assay*
- Department of Defense (PI: Chiocca) (co-investigator)  
2010-2012  
*Herpes virus amplicons for treat diabetic neuropathy*
- NIH (U01) (PI: Chiocca) (co-investigator)  
2008-2013  
*Preclinical Toxicity Evaluation of a Potent Oncolytic Virus*
- NCI (RO1) (PI: Basillion) (co-investigator)  
2006-2011  
*Imaging of gene expression in glioblastoma*
- NCI (RO1) (PI: Purow) (co-investigator)  
2009-2010  
*Regulation of microRNAs in glioma by Notch signalling*
- National Brain Tumor Foundation (PI: Chiocca) (co-investigator)

2007-2008

*Validation of GSK-3 as an anti-invasive target in glioblastoma***List of Research Publications (131 total)****H index 52** <https://scholar.google.com/citations?user=GaLp9W8AAAAJ&hl=en>

- Ebner R, Chen RH, Shum L, **Lawler S**, Zionchek T, Lee A, Lopez AR, Derynck R. Cloning of a Type I TGF- receptor and its effect on TGF- Binding to the Type II Receptor. *Science* 1993;260:1344–48
- Ebner R, Chen RH, **Lawler S**, Zionchek T, Derynck R. Determination of Type I receptor Specificity by Type II Receptors for TGF- and Activin. *Science* 1993;262:900–2
- Lawler S**, Candia AF, Ebner R, Shum L, Lopez AR, Moses HK, Wright CV, Derynck R. The Murine TGF- Receptor Has Coincident Embryonic Expression and Binding Preference for TGF- 1. *Development* 1994;120:165–75
- Derynck R, Chen RH, Ebner R, Filvaroff EH, **Lawler S**. (1994) An Emerging Complexity of Receptors for TGF- . *Proc. Princess Takamatsu Symp.* 264–75
- Lawler S**, Feng XH, Chen RH, Maruoka EM, Turck CW, Griswold-Prenner I, Derynck R. The Type II TGF- Receptor is Phosphorylated Not Only on Serine and Threonine but also on Tyrosine Residues. *J. Biol. Chem.* 1997;272:14850–62
- Goedert M, Hasegawa M, Jakes R, **Lawler S**, Cuenda A, Cohen P. Phosphorylation of the Microtubule-associated Protein Tau by Stress-activated Protein Kinases. *FEBS Lett.* 1997;409:57–62
- Rich T, **Lawler S**, Lord JM, Blancheteau VM, Charron DJ, Mooney NA. HLA Class-II Induced Translocation of PKC- and PKC- II Isoforms is Abrogated Following Truncation of DR- Cytoplasmic Domains. *J. Immunol.* 1997;159:3792–98
- Maucuer A, Ozon S, Manceau V, Gavet O, **Lawler S**, Curmi P, Sobel, A. KIS is a Protein Kinase with an RNA Recognition Motif. *J. Biol. Chem.* 1997;272:23151–56
- Lawler S**, Cuenda A, Goedert M, Cohen, P. SKK4, a Novel Activator of Stress-Activated Protein Kinase 1 (SAPK1/JNK). *FEBS Lett.* 1997;414:153–8
- Lawler S**, Gavet O, Rich T, Sobel, A. The Effects of Stathmin on Signal Transduction and the Cell Cycle in 293 Cells. *FEBS Lett.* 1998;421:55–60
- Gavet O, Ozon S, Manceau V, **Lawler S**, Curmi P, Sobel A. The Stathmin Phosphoprotein Family: Intracellular Localisation and Effects on the Microtubule Network. *J. Cell Sci.* 1998;111:3333–46
- Lawler S**, Fleming Y, Goedert M, Cohen P. Synergistic Activation of SAPK1/JNK1 by two MAP Kinase Kinases in vitro. *Current Biology* 1998;8:1387–90
- Lawler S**. If you Need a Shrink try Stathmin/Op18. *Current Biology* 1998;8:R212–R214
- Lawler S**. The LIM Kinase Connection. *Current Biology* 1999;9:R800–R802
- Lawler SE**, Peruzzi PP, Chiocca EA. Genetic Strategies for Brain Tumor Therapy. *Cancer Gene Ther.* 2005;13:225-33
- Lawler SE**, Saeki Y, Chiocca EA, Wade-Martins R. iBAC technologies for neurological disease. In: *Gene therapy for neurological disorders*. (Lowenstein PR, Castro MG, eds.) New York: Taylor & Francis, pp 59-73 (2006).
- Stein A, Nowicki M, **Lawler S**, Chiocca EA, Demuth T, Berens M, Sander L. Estimating the cell density and invasive radius of 3d glioblastoma tumor spheroids grown in vitro. *Applied Optics* 2007;46: 5110-8.
- Fulci G, Dmitrieva N, Gianni D, Fontana E, Pan X, Lu Y, Kaufman CS, Kaur B, **Lawler SE**, et al. Depletion of peripheral macrophages and brain microglia increases the titer of brain tumor oncolytic viruses. *Cancer Res.* 2007;67:9398-406.
- Kefas B, Godlewski J, Comeau L, Li Y, Abounader R, Lee J, Fine H, Chiocca EA, **Lawler SE**, Purow BJ. microRNA-7 inhibits the epidermal growth factor receptor and the Akt pathway and is down-regulated in glioblastoma. *Cancer Res.* 2008;68:3566-72.
- Nowicki M, Dmitrieva N, Stein AM, Cutter JL, Godlewski J, Saeki Y, Nita M, Berens ME, Sander LM, Newton HB, Chiocca EA, **Lawler, S**. Lithium inhibits invasion of glioma cells: possible involvement of glycogen synthase kinase-3. *Neuro-oncology* 2008;10:690-99.

- Godlewski J, Nowicki MO, Bronisz A, Williams S, Otsuki A, Nuovo G, RayChaudhury A, Newton HB, Chiocca EA, **Lawler S**. Targeting of the Bmi-1 oncogene/stem cell renewal factor by MicroRNA-128 inhibits glioma proliferation and self-renewal. *Cancer Res* 2008;68:9125-30.
- Lawler, S.E.** & Chiocca E.A. Genomic medicine, gliomas and brain tumors (Book Chapter) In: *Genomic and Personalized Medicine*. (Ginsburg GS, Willard HF, eds.) Amsterdam, The Netherlands: Elsevier. (2008).
- Nuovo G, Lee E, **Lawler S**, Godlewski J, Schmittgen T. In situ detection of mature microRNAs by ultramer-based extension. *Biotechniques*. 2009;46:115-25.
- Peruzzi P, **Lawler S\***, Senior SL, Dmitrieva N, Edser PA, Gianni D, Chiocca EA, Wade-Martins R. Physiological Transgene Regulation and Functional Complementation of a Neurological Disease Gene Deficiency in Neurons. *Molecular Therapy* 2009;17:1517-26 (**Joint first authorship**).
- Johnson J, Nowicki MO, Chiocca EA, Viapiano MS, **Lawler SE**, Lannutti JJ. Quantitative analysis of glioma cell migration on electrospun polycaprolactone using time-lapse microscopy. *Tissue Engineering Part C Methods*. 2009;15:531-40.
- Lawler SE**, Viapiano MS. Mechanisms of glioma invasion (Book Chapter) In: *Brain Tumors* (Van Meir E. ed). Springer-Verlag (2009).
- Lawler SE**, Chiocca EA. Emerging functions of microRNAs in glioblastoma. *J. Neurooncology* 2009;92:297-306.
- Kim YJ, **Lawler S**, Nowicki MO, Chiocca EA, Friedman A. Mathematical model for pattern formation of glioma cells outside the spheroid core. *J.Theor. Biol.* 2009;260:359-71.
- Kefas B, Godlewski J, Comeau L, Li Y, Abounader R, Lee J, Fine H, Chiocca EA, **Lawler SE**, Purow BJ. MicroRNA regulatory circuitry in Notch signaling. *J. Neuroscience* 2009;29:15161-68.
- Khain E, Schneider-Mizell CM, Nowicki MO, Chiocca EA, **Lawler SE**, Sander LM. Pattern formation of glioma cells: Effects of adhesion. *Europhys. Lett.* 2009;88:28006.
- Godlewski J, Chiocca EA, **Lawler SE**. MicroRNAs in brain tumors; the stem cell connection. *Cell Death and Differentiation* 2010;17:221-228.
- Schwartzbaum J, **Lawler S**, Bo H, Huang K, Chiocca EA. Allergy and inflammatory transcriptome is predominantly negatively correlated with CD133 expression in glioblastoma. *Neuro-oncology* 2010;12:320-27.
- Godlewski, J., Nowicki MO, Bronisz A, Nuovo G, Palatini J, De Lay M, Van Brocklyn J, Ostrowski MC, Chiocca EA, **Lawler SE**. MicroRNA-451 regulates LKB1/AMPK signaling and allows adaptation to metabolic stress in glioma cells. *Mol. Cell* 2010;67:621-32.
- Godlewski J, Bronisz A, Nowicki MO, Chiocca EA, **Lawler SE**. microRNA-451; a conditional switch controlling glioma cell proliferation and migration. *Cell Cycle* 2010;9:2742-48.
- Lawler SE**, Chiocca EA. The many functions of microRNAs in glioblastoma. *World Neurosurgery* 2010;73:598-601.
- Estrada-Bernal A, **Lawler SE**, Nowicki MO, Ray Chaudhury A, Van Brocklyn JR. The role of sphingosine kinase-1 in EGFRvIII-regulated growth and survival of glioblastoma cells. *J. Neurooncol.* 2010;102:353-66.
- Asadi K, Chiocca EA, **Lawler SE**. Potential role of miRNAs and their inhibitors in glioma treatment. *Exp. Rev. Anticancer Ther.* 2010;10:1753-62.
- Williams SP, Nowicki MO, Liu F, Press R, Godlewski J, Abdel-Rasoul M, Kaur B, Fernandez SA, Chiocca EA, **Lawler SE**. Indirubins decrease glioma invasion by blocking migratory phenotypes in both the tumor and stromal endothelial cell compartments. *Cancer Res.* 2011;71:5374-5380.
- Agudelo-Garcia P, De Jesus JK., Williams SP, Nowicki MO, Chiocca EA, Liyanarachchi S, Li PK, Lannutti JJ, Johnson JK. **Lawler SE**, Viapiano MS. Glioma cell migration on 3D nanofiber scaffolds is regulated by substrate topography and abolished by inhibition of STAT3 signaling *Neoplasia* 2011;13:831-40.
- Guerau-de-Arellano M, Smith K, Godlewski J, Liu Y, Winger R, **Lawler SE**, Whitacre C, Racke M, Lovett-Racke A. miRNA dysregulation in multiple sclerosis favors pro-inflammatory autoimmunity. *Brain* 2011;134:3578-89.
- Bronisz A, Godlewski J, Wallace JA, Mathsyaraja H, Srinivasan R, Li F, Fernandez SA, Yee L, Nuovo G., Piper, MG, **Lawler SE**, Chiocca EA, Leone G, Ostrowski MC. The role of tumor



- suppressor microRNA-320 in PTEN-null mouse mammary fibroblasts. *Nat. Cell Biol.* 2011;14:159-67.
- Kim Y, Roh S, **Lawler S**, Friedman A. miR-451 and AMPK mutual antagonism in glioma cell migration and proliferation: A mathematical model. *PlosONE* 2011;6:e28293.
- Lawler SE**, Chiocca EA. Genomic medicine and brain tumors. In: *Genomic and Personalized Medicine 2<sup>nd</sup> Edition*. (Ginsburg GS, Willard HF, eds.) Amsterdam, The Netherlands: Elsevier (2012).
- Alvarez-Breckenridge CA, Yu J, Price R, Wojton J, Pradarelli J, Mao H, Wei M, Wang Y, He S, Hardcastle J, Fernandez SA, Kaur B, **Lawler SE**, Vivier E, Mandelboim O, Moretta A, Caligiuri MA, Chiocca EA. NK cells impede glioblastoma virotherapy through NKp30 and NKp46 natural cytotoxicity receptors. *Nat.Med.* 2012;18:1827-1834.
- Wang Y, Nowicki MO, Wang X, Arnold WD, Fernandez SA, Mo X, Wechuk J, Kriskey D, Goss J, Wolfe D, Popovich PG, **Lawler S**, Chiocca EA. Comparative effectiveness of antinociceptive gene therapies in animal models of neuropathic pain. *Gene Therapy* 2012 2013;20:742-50.
- Levesley J, Steele L, Taylor C, Sinha P, **Lawler SE**. ABT-263 Enhances Sensitivity to Metformin and 2-Deoxyglucose in Pediatric Glioma by Promoting Apoptotic Cell Death. *PLoS One.* 2013;8:e64051
- Peruzzi PP, Bronisz A, Nowicki MO, Wang Y, Ogawa D, Price R, Nakano I, Kwon C-H, Hayes J, **Lawler SE**, Ostrowski MC, Chiocca EA, Godlewski J. MicroRNA-128 coordinately targets Polycomb Repressor Complexes in glioma stem cells. *Neurooncology* 2013;15:1212-24.
- Kim Y, Lee S, Kim Y-S, **Lawler S**, Gho YS, Kim Y-K, Hwang HJ. Regulation of TH1/TH2 cells in Asthma Development: A mathematical model. *Mathematical Biosciences and Engineering*, 2013;10:1095-133.
- Lawler SE**. MicroRNA Functions and Potential Clinical Utility in Glioblastoma. *Current Signal Transduction Therapy* 2013;8:36-44
- Subramani A, Alsidawi S, Jagannathan S, Sumita K, Sasaki AT, Aronow B, Warnick RE, **Lawler S**, Driscoll JJ. The brain microenvironment negatively regulates miRNA-768-3p to promote KRAS expression and lung cancer metastasis *Sci. Rep.* 2013;3:2392.
- Long PM, Moffett JR, Namboodiri AM, Viapiano MS, **Lawler SE**, Jaworski DM. N-acetylaspartate (NAA) and N-acetylaspartylglutamate (NAAG) promote growth and inhibit differentiation of glioma stem-like cells. *J Biol Chem.* 2013;288:31916-7
- Long PM, Tighe SW, Moffett JR, Namboodiri AM, **Lawler SE**, Viapiano MS, Jaworski DM. Growth arrest of glioma stem-like cells induced by Triacetin-based acetate supplementation is not due to the promotion of differentiation. *PLoS One* 2013 20;8:e80714.
- Tsen AR, Long PM, Driscoll HE, Davies MT, Teasdale BA, Penar PL, Pendlebury WW, Spees JL, **Lawler SE**, Viapiano MS, Jaworski DM. Triacetin-based acetate supplementation as a chemotherapeutic adjuvant therapy in glioma. *Int J Cancer*, 2014 15;134:1300-10.
- Wu H-C, Lin Y-C, Chung H-C, Lin Y-W, Ma H-I, Tu P-H, **Lawler SE**, Chen R-H. USP11 regulates PML stability to control Notch-induced brain tumor initiation and progression. *Nature Communications* 2014;5:3214.
- Bronisz A, Wang Y, Nowicki MO, Peruzzi P, Ansari K, Ogawa D, Balaj L, DeRienzo G, Mineo M, Nakano I, Ostrowski MC, Hochberg F, Weissleder R, **Lawler SE**, Chiocca EA, Godlewski J. A microRNA-1 tumor suppressive signaling network modulates the glioblastoma microenvironment via extracellular vesicles. *Cancer Res.* 2014;74:738-50..
- Rankeillor KL, Cairns DA, Loughrey C, Short SC, Chumas P, Ismail A, Chakrabarty A, **Lawler SE**, Roberts P. Methylation-specific multiplex ligation-dependent probe amplification identifies promoter methylation events associated with survival in glioblastoma. *J. Neuroonc.* 2014;117:243-51. **(corresponding author)**.
- Yan F, Alinari L, Lustberg ME, Martin LK, Cordero-Nieves HM, Banasavadi-Siddegowda Y, Virk S, Barnholtz-Sloan J, Bell E, Wojton J, Jacob NK, Chakravarti A, Nowicki MO, Wu X, Lapalombella R, Datta J, Yu B, Gordon K, Haseley A, Patton JT, Smith PL, Ryu J, Zhang X, Mo X, Marcucci G, Nuovo G, Kwon C-H, Byrd JC, Chiocca EA, Li C, Sif S, Jacob S, **Lawler S**, Kaur B, Baiocchi RA. Targeting protein arginine methyltransferase 5 enzyme over-expression in glioblastoma multiforme. *Cancer Res.* 2014;74(6):1752-65.
- Kim J, Zhang Y, Skalski M, Hayes J, Kefas B, Schiff D, Purow BW, Parsons S, **Lawler SE**, Abounader R. MicroRNA-148a is a prognostic oncomiR that targets MIG6 and BIM to regulate EGFR

- signaling and apoptosis in glioblastoma. *Cancer Res.* 2014;74:1541-53 (**co-corresponding author**).
- Hayes J, Peruzzi PP, **Lawler S**. MicroRNAs in cancer: biomarkers, functions and therapy. *Trends Mol Med.* 2014;20:460-9.
- Hayes JL, Boissinot M, Hughes T, Westhead D, Thygesen H, **Lawler SE** Short SC, Wurdak H. Prognostic microRNAs point to key regulatory networks in glioblastoma. *Oncoscience* 2014;2:252-62.
- Hayes J, Thygesen H, Bellamy C, Droop A, Boissinot M, Hughes TA, Westhead D, Alder JE, Shaw L, Short SC, **Lawler SE**. Prediction of clinical outcome in glioblastoma using a biologically relevant nine microRNA signature. *Mol Oncol* 2015;9:704-14.
- Kim YJ, Powathil G, Kang H, Trucu D, Kim H, **Lawler S**, Chaplain M. Strategies of eradicating glioma cells: A multi-scale mathematical model with miR-451-AMPK-mTOR control. *PLoS One* 2015;10:e0114370.
- Cockle J, Picton S, Levesley J, Ilett E, Short SC, Melcher AA, **Lawler SE**, Brüning-Richardson A. Cell migration in paediatric glioma; characterisation and potential therapeutic targeting. *British J Cancer* 2015;112:693-703.
- Lawler SE**. Cytomegalovirus and glioblastoma; controversies and opportunities. *J Neurooncol* 2015;123:465-71.
- Ansari KI, Ogawa D, Rooj AK, **Lawler SE**, Krichevsky AM, Johnson MD, Chiocca EA, Bronisz A, Godlewski J. Glucose-based regulation of miR-451/AMPK signaling depends on the OCT1 Transcription Factor. *Cell Reports* 2015;11:902-9.
- Berghauer Pont L, Balvers R, Kloezeman J, Nowicki M, van den Bossche W, Kremer A, Wakimoto H, van den Hoogen B, Leenstra S, Chiocca EA, Dirven C, **Lawler S**, Lamfers, M. In vitro screening of clinical drugs identifies sensitizers of oncolytic viral therapy in glioblastoma stem-like cells. *Gene Therapy* 2015;22:947-59.
- Lawler SE**, Chiocca EA. Oncolytic virus-mediated immunotherapy: A combinatorial approach for cancer treatment. *J Clin Oncol.* 2015;33:2812-4.
- Nakashima H, Kaufmann JK, Wang PY, Nguyen T, Speranza MC, Kasai K, Okemoto K, Otsuki A, Nakano I, Fernandez S, Goins WF, Grandi P, Glorioso JC, **Lawler S**, Cripe TP, Chiocca EA. Histone deacetylase 6 inhibition enhances oncolytic viral replication in glioma. *J Clin Invest* 2015;125:4269-80.
- Speranza M-C, Nowicki MO, Behera P, Cho C-F, Chiocca EA, **Lawler SE**. BKM-120 (Buparlisib): A Phosphatidylinositol-3 Kinase Inhibitor with Anti-Invasive Properties in Glioblastoma *Scientific Reports* 2016;6:20189.
- Speranza M-C, Kasai K, **Lawler SE**. Preclinical mouse models for analysis of the therapeutic potential of engineered oncolytic herpes viruses. *ILAR Journal* 2016;57:63-72.
- Cho CF, Lee K, Speranza MC, Bononi FC, Viapiano MS, Luyt LG, Weissleder R, Chiocca EA, Lee H, **Lawler SE**. Design of a Microfluidic Chip for Magnetic-Activated Sorting of One-Bead-One-Compound Libraries. *ACS Comb Sci.* 2016;13;18:271-8.
- Hayes-J, Thygesen H, Gregory W, Westhead DR, French PJ, Van Den Bent MJ, **Lawler SE**, Short SC. A validated microRNA profile with predictive potential in glioblastoma patients treated with bevacizumab. *Mol Oncol.* 2016;10:1296-304.
- Lawler SE**, Cho CF, Speranza, MC, Chiocca EA. Oncolytic Viruses: a review. *JAMA Onc.* 2017;3:841-849.
- Lawler SE**. Shifting the balance of power? The combination of oncolytic virotherapy and immune checkpoint blockade for glioblastoma treatment. *Neurooncology.* 2017;19:463-465. Invited Editorial.
- Cho C-F, Wolfe JM, Fadzen CM, Calligaris D, Hornburg K, E Chiocca EA, Agar NYR, Pentelute BL, **Lawler SE**. “Blood-brain-barrier spheroids” maintain key barrier characteristics in vitro: A screening platform for brain-penetrating agents. *Nature Communications* 2017;8:15623.
- Zhu Y, Bassoff N, Reinshagen C, Bhere D, Nowicki MO, **Lawler SE**, Roux J, Shah K. Bi-specific molecule against EGFR and death receptors simultaneously targets proliferation and death pathways in tumor cells. *Scientific Reports* 2017;7:2602.

- Fadzen CM, Wolfe JM, Cho C-F, Chiocca EA, **Lawler SE**, Pentelute BL: Perfluoroarene-Based Peptide Macrocycles to Enhance Crossing the Blood-Brain Barrier *JACS* 2017;139:15628-15631 (**co-corresponding author**).
- Schregel K, Nazari N, Nowicki MO, Palotai M, **Lawler SE**, Sinkus R, Barbone PE, Patz S. Characterization of glioblastoma in an orthotopic mouse model with magnetic resonance elastography. *NMR Biomed.* 2017 [Epub ahead of print]
- Speranza MC, Kasai K, Ricklefs F, Klein S, Passaro C, Nakashima H, Kaufmann J, Bronisz A, Aguilar-Cordova E, Guzik BW, Freeman GJ, Reardon D, Wen PY, Chiocca EA, **Lawler SE**. Preclinical analysis of combinatorial glioblastoma therapy with the prodrug-mediated gene therapy vector AdV-tk and immune checkpoint inhibition. *Neurooncology* 2018;20:225-235
- Levesley J, Steele L, Brüning-Richardson A, Davison A, Zhou J, **Lawler S**, Short S. Selective inhibition of BCL-XL increases sensitivity of paediatric brain tumour cells to the anti-mitotic agent MLN8237. *Neurooncology* 2018;20:203-214
- Berger G, Grauwet K, Zhang H, Hussey AM, Nowicki MO, Wang DI, Chiocca EA, **Lawler SE**, Lippard SJ. Anticancer activity of osmium(VI) nitrido complexes in patient-derived glioblastoma initiating cells and in vivo mouse models. *Cancer Lett.* 2018;416:138-148
- Ricklefs F, Speranza MC, Hayes JL, Lee K, Balaj L, Passaro C, Rooj A, Kim R, Breakefield X, Carter B, Rodig S, Freeman G, Weissleder R, Bronisz A, **Lawler SE**, Chiocca EA. Immune evasion mediated by PD-L1 on glioblastoma-derived extracellular vesicles. *Science Advances* 2018;7;4: eaar2766 (**co-corresponding author**).
- Passaro C, Alayo Q, De Laura I, McNulty J, Grauwet K, Ito H, Bhaskaran V, Mineo M, **Lawler SE**, Shah K, Speranza MC, Goins W, McLaughlin E, Fernandez S, Reardon DA, Freeman GJ, Chiocca EA, Nakashima H. Arming an Oncolytic Herpes Simplex Virus Type 1 with a Single-chain Fragment Variable Antibody against PD-1 for Experimental Glioblastoma Therapy. *Clin Cancer Res.* 2019;25:290-299
- Kim Y, Kang H, Powathil G, Kim H, Trucu D, Lee W, **Lawler S**, Chaplain M. Role of extracellular matrix and microenvironment in regulation of tumor growth and LAR-mediated invasion in glioblastoma. *PLoS One.* 2018;13:e0204865
- Bergmann S, **Lawler SE**, Qu Y, Fadzen CM, Wolfe JM, Regan MS, Pentelute BL, Agar NYR, Cho CF. Blood-brain-barrier organoids for investigating the permeability of CNS therapeutics. *Nat Protoc.* 2018;13:2827-2843
- Berger G, Lawler SE. Novel non-nucleotidic STING agonists for cancer immunotherapy. *Future Med Chem.* 2018;10:2767-2769
- Luo C, Yang Q, Liu Y, Zhou S, Jiang J, Reiter RJ, Bhattacharya P, Cui Y, Yang H, Ma H, Yao J, **Lawler SE**, Zhang X, Fu J, Rozental R, Aly H, Johnson MD, Chiocca EA, Wang X. The multiple protective roles and molecular mechanisms of melatonin and its precursor N-acetylserotonin, in targeting brain injury and liver damage and in maintaining bone health. *Free Radical Biology and Medicine* 2019;130:215-33.
- Bhaskaran V, Nowicki MO, Idriss M, Jimenez MA, Lugli G, Hayes JL, Mahmoud AB, Zane RE, Passaro C, Ligon KL, Haas-Kogan D, Bronisz A, Godlewski J, **Lawler SE**, Chiocca EA, Peruzzi P. The functional synergism of microRNA clustering provides therapeutically relevant epigenetic interference in glioblastoma. *Nat Commun.* 2019;10:442
- Kim Y, Lee D, Lee J, Lee S, **Lawler S**. Role of tumor-associated neutrophils in regulation of tumor growth in lung cancer development: A mathematical model. *PLoS One.* 2019;14: e0211041.
- Krenzlin H, Behera P, Lorenz V, Passaro C, Zdioruk M, Nowicki MO, Grauwet K, Zhang H, Skubal M, Ito H, Gutknecht M, Griessl MB, Ricklefs F, Ding L, Peled S, James CD, Cobbs CS, Cook CH, Chiocca EA, **Lawler SE**. Cytomegalovirus promotes murine glioblastoma growth via pericyte recruitment and angiogenesis. *J Clin Invest.* 2019;130:1671-1683.
- Abdelmoula WM, Regan MS, Lopez BGC, Randall EC, **Lawler S**, Mladek AC, Nowicki MO, Marin BM, Agar JN, Swanson KR, Kapur T, Sarkaria JN, Wells W, Agar NYR. Automatic 3D Nonlinear Registration of Mass Spectrometry Imaging and Magnetic Resonance Imaging Data. *Anal Chem.* 2019.
- Ricklefs FL, Maire CL, Reimer R, Dühsen L, Kolbe K, Holz M, Schneider E, Rissiek A, Babayan A, Hille C, Pantel K, Krasemann S, Glatzel M, Heiland DH, Flitsch J, Martens T, Schmidt NO, Peine S, Breakefield XO, **Lawler S**, Chiocca EA, Fehse B, Giebel B, Görgens A, Westphal M, Lamszus

- K. Imaging flow cytometry facilitates multiparametric characterization of extracellular vesicles in malignant brain tumours. *J Extracell Vesicles*. 2019;8:1588555.
- Nowicki MO, Hayes JL, Chiocca EA, **Lawler SE**. Proteomic Analysis Implicates Vimentin in Glioblastoma Cell Migration. *Cancers (Basel)*. 2019;11 E466.
- Berger G, **Lawler SE**. Novel non-nucleotidic STING agonists for cancer immunotherapy. *Future Med Chem*. 2018;10:2767-2769.
- Berger G, Marloye M, **Lawler SE**. Pharmacological modulation of the STING pathway for cancer immunotherapy. *Trends Mol. Med*. 2019;25:412-427.
- Marloye M, **Lawler SE**, Berger G. Current patent and clinical status of stimulator of interferon genes (STING) agonists for cancer immunotherapy. *Pharm Pat Anal*. 2019;8:87-90.
- Goldman A, Smalley JL, Mistry M, Krenzlin H, Zhang H, Dhawan A, Caldarone B, Moss SJ, Silbersweig DA, **Lawler SE**, Braun IM. In Vivo, Computational Anxiety Model Identifies Amygdalar Transcriptional Heterogeneity and Distinct Social Behavior in 'Anxious' Mice. *Trans. Psychiatry* 2019;9:336.
- Ricklefs FL, Maire CL, Matschke J, Dührsen L, Sauvigny T, Holz M, Kolbe K, Peine S, Herold-Mende C, Carter B, Chiocca EA, **Lawler SE**, Westphal M, Lamszus K. FASN Is a Biomarker Enriched in Malignant Glioma-Derived Extracellular Vesicles. *Int J Mol Sci* 2020;21:1931.
- Storey KM, **Lawler SE**, Jackson TL. Modeling Oncolytic Viral Therapy, Immune Checkpoint Inhibition, and the Complex Dynamics of Innate and Adaptive Immunity in Glioblastoma Treatment. *Front Physiol*. 2020;11:151.
- Alayo QA, Ito H, Passaro C, Zdioruk M, Mahmoud AB, Grauwet K, Zhang X, **Lawler SE**, Reardon DA, Goins WF, Fernandez S, Chiocca EA, Nakashima H. Glioblastoma infiltration of both tumor- and virus-antigen specific cytotoxic T cells correlates with experimental virotherapy responses. *Sci Rep*. 2020;10:5095.
- Schregel K, Nowicki MO, Palotai M, Nazari N, Zane R, Sinkus R, **Lawler SE\***, Patz S. Magnetic Resonance Elastography reveals effects of anti-angiogenic glioblastoma treatment on tumor stiffness and captures progression in an orthotopic mouse model. *Cancer Imaging* 2020;20:35 (**\*co-corresponding author**)
- Fadzen CM, Wolfe JM, Zhou W, Cho CF, von Spreckelsen N, Hutchinson KT, Lee YC, Chiocca EA, **Lawler SE**, Yilmaz OH, Lippard SJ, Pentelute BL. A Platinum(IV) Prodrug-Perfluoroaryl Macrocyclic Peptide Conjugate Enhances Platinum Uptake in the Brain. *J Med Chem* 2020;63:6741-6747.
- Lawler SE**, Chiocca EA, Cook CH. Cytomegalovirus Encephalopathy during Brain Tumor Irradiation. *Clin Cancer Res*. 2020;26:3077-3078.
- Lawler SE**, Nowicki MO, Ricklefs FL, Chiocca EA. Immune Escape Mediated by Exosomal PD-L1 in Cancer. *Adv Biosyst*. 2020:e2000017.
- Mineo M, Lyons SM, Zdioruk M, von Spreckelsen N, Ferrer-Luna R, Ito H, Alayo QA, Kharel P, Giantini Larsen A, Fan WY, Auduong S, Grauwet K, Passaro C, Khalsa JK, Shah K, Reardon DA, Ligon KL, Beroukhim R, Nakashima H, Ivanov P, Anderson PJ, **Lawler SE**, Chiocca EA. Tumor Interferon Signaling Is Regulated by a lncRNA INCR1 Transcribed from the PD-L1 Locus. *Mol Cell* 2020;78:1207-1223.
- Boissinot M, King H, Adams M, Higgins J, Shaw G, Ward TA, Steele LP, Tams D, Morton R, Polson E, da Silva B, Droop A, Hayes JL, Martin H, Laslo P, Morrison E, Tomlinson DC, Wurdak H, Bond J, **Lawler SE\***, Short SC. Profiling cytotoxic microRNAs in pediatric and adult glioblastoma cells by high-content screening, identification, and validation of miR-1300. *Oncogene* 2020;39:5292-5306. (**\*co-corresponding author**)
- Kim Y, Lee D, **Lawler S**. Collective invasion of glioma cells through OCT1 signalling and interaction with reactive astrocytes after surgery. *Philos Trans R Soc Lond B Biol Sci* 2020;375:20190390.
- Koch MS, **Lawler SE**, Chiocca EA. HSV-1 Oncolytic Viruses from Bench to Bedside: An Overview of Current Clinical Trials. *Cancers (Basel)* 2020;12:3514.
- Adams Y, Olsen R, Bengtsson A, Dalgaard N, Zdioruk M, Satpathi S, Behera P, Sahu P, **Lawler S**, Qvortrup K, Wassmer S, Jensen A. P. falciparum erythrocyte membrane protein 1 variants induce cell swelling and disrupt the blood-brain-barrier in cerebral malaria. *J. Exp. Med*. 2021;218:e20201266.

- Oatman N, Dasgupta N, Arora P, Choi K, Gawali MV, Gupta N, Parameswaran S, Salomone J, Reisz JA, **Lawler S**, Furnari F, Brennan C, Wu J, Sallans L, Gudelsky G, Desai P, Gebelein B, Weirauch MT, D'Alessandro A, Komurov K, Dasgupta B. Mechanisms of Stearoyl Co-A Desaturase inhibitor sensitivity and acquired resistance in cancer. *Science Advances* 2021;7:eabd7459.
- Lee J, Lee D, **Lawler S**, Kim Y. Role of neutrophil extracellular traps in regulation of lung cancer invasion and metastasis: Structural insights from a computational model. *PLoS Comput Biol*. 2021;17:e1008257.
- von Spreckelsen N, Fadzen CM, Hartrampf N, Ghotmi Y, Wolfe JM, Dubey S, Yang BY, Kijewski MF, Wang S, Farquhar C, Bergmann S, Zdioruk M, Wasserburg JR, Scott B, Murrell E, Bononi FC, Luyt LG, DiCarli M, Lamfers MLM, Ligon KL, Chiocca EA, Viapiano MS, Pentelute BL, **Lawler SE\***, Cho CF. Targeting glioblastoma using a novel peptide specific to a deglycosylated isoform of brevican, *Adv Ther (Weinh)* 2021;4(4):2000244. (\*co-corresponding author)
- Krenzlin H, Zdioruk M, Nowicki MO, Finkelberg T, Keric N, Lemmermann N, Skubal M, Chiocca EA, Cook CH, **Lawler SE**. Cytomegalovirus infection of glioblastoma cells leads to NF- $\kappa$ B dependent upregulation of the c-MET oncogenic tyrosine kinase. *Cancer Lett* 2021;513:26-35.
- Hofman L, **Lawler SE**, Lamfers MLM. The Multifaceted Role of Macrophages in Oncolytic Virotherapy. *Viruses*. 2021;13:1570.
- Saha T, van Vliet AA, Cui C, Macias JJ, Kulkarni A, Pham LN, **Lawler S**, Spanholtz J, Georgoudaki AM, Duru AD, Goldman A. Boosting Natural Killer Cell Therapies in Glioblastoma Multiforme Using Supramolecular Cationic Inhibitors of Heat Shock Protein 90. *Front Mol Biosci*. 2021;8:754443.
- Ketchen SE, Gamboa-Estevés FO, **Lawler SE**, Nowicki MO, Rohwedder A, Knipp S, Prior S, Short SC, Ladbury JE, Brüning-Richardson A. Drug Resistance in Glioma Cells Induced by a Mesenchymal-Amoeboid Migratory Switch. *Biomedicines*. 2021;10:9.
- Brüning-Richardson A, Shaw G, Tams D, Brend T, Sanganee H, Barry ST, Hamm G, Goodwin R, Swales J, King H, Steele L, Morton R, Widyadari A, Ward T, Esteves F, Boissinot M, Droop A, **Lawler SE**, Short SC. GSK-3 inhibition is cytotoxic in glioma stem cells through centrosome destabilization and enhances the effect of radiotherapy in orthotopic models. *Cancers (Basel)* 2022;10:e003368.
- Otani Y, Yoo JY, Lewis CT, Chao S, Swanner J, Shimizu T, Kang JM, Murphy SA, Rivera-Caraballo K, Hong B, Glorioso JC, Nakashima H, **Lawler SE**, Banasavadi-Siddegowda Y, Heiss JD, Yan Y, Pei G, Caligiuri MA, Zhao Z, Chiocca EA, Yu J, Kaur B. NOTCH-Induced MDSC Recruitment after oHSV Virotherapy in CNS Cancer Models Modulates Antitumor Immunotherapy. *Clin Cancer Res*. 2022;28:1460-1473.
- Koch MS, Zdioruk M, Nowicki MO, Griffith AM, Aguilar-Cordova E, Aguilar LK, Guzik BW, Barone F, Tak PP, Tabatabai G, Lederer JA, Chiocca EA, **Lawler SE**. Systemic high-dose dexamethasone treatment may modulate the efficacy of intratumoral viral oncolytic immunotherapy in glioblastoma models. *J Immunother. Cancer*. 2022;10:e003368.
- Harrison MAA, Hochreiner EM, Benjamin BP, **Lawler SE**, Zvezdaryk KJ. Metabolic Reprogramming of Glioblastoma Cells during HCMV Infection Induces Secretome-Mediated Paracrine Effects in the Microenvironment. *Viruses*. 2022;14:103
- Cho CF, Farquhar CE, Fadzen CM, Scott B, Zhuang P, von Spreckelsen N, Loas A, Hartrampf N, Pentelute BL, **Lawler SE**. A Tumor-Homing Peptide Platform Enhances Drug Solubility, Improves Blood-Brain Barrier Permeability and Targets Glioblastoma. *Cancers (Basel)*. 2022;14:2207
- Jenner AL, Smalley M, Goldman D, Goins WF, Cobbs CS, Puchalski RB, Chiocca EA, **Lawler S**, Macklin P, Goldman A, Craig M. Agent-based computational modeling of glioblastoma predicts that stromal density is central to oncolytic virus efficacy. *iScience*. 2022;25:104395.
- Berger G, Knelson EH, Nowicki MO, Han S, Jimenez-Macias J-L, Lizotte PH, Adu-Berchie K, Stafford A, Dimitrakakis N, Chiocca EA, Mooney DJ, Barbie DA, **Lawler SE**. STING activation promotes robust immune response and NKL-mediated tumor regression in glioblastoma models. *Proc. Natl. Acad. Sci*. 2022;119:e2111003119. .
- Lara-Reyna S, Caseley EA, Topping J, Rodrigues F, Jimenez Macias J, **Lawler SE**, McDermott MF. Inflammasome activation: from molecular mechanisms to autoinflammation. *Clin Transl Immunology*. 2022;11:e1404.

- Koch MS, Zdioruk M, Nowicki MO, Griffith AM, Aguilar-Cordova E, Aguilar LK, Guzik BW, Barone F, Tak PP, Schregel K, Hoetker MS, Lederer JA, ChioCCA EA, Tabatabai G, **Lawler SE**. Perturbing DDR signaling enhances cytotoxic effects of local oncolytic virotherapy and modulates the immune environment in glioma. *Mol Ther Oncolytics*. 2022 Jul 31;26:275-288.
- Yao Y, Wang J, Liu Y, Qu Y, Wang K, Zhang Y, Chang Y, Yang Z, Wan J, Liu J, Nakashima H, **Lawler SE**, ChioCCA EA, Cho CF, Bei F. Variants of the adeno-associated virus serotype 9 with enhanced penetration of the blood-brain barrier in rodents and primates *Nat Biomed Eng*. 2022. doi: 10.1038/s41551-022-00938-7. Online ahead of print.
- Marloye M, Inam H, Moore CJ, Mertens TR, Ingels A, Koch M, Nowicki MO, Mathieu V, Pritchard JR, Awuah SG, **Lawler SE**, Meyer F, Dufresne F, Berger G. Self-assembled ruthenium and osmium nanosystems display a potent anticancer profile by interfering with metabolic activity. *Inorg Chem Front*. 2022;9:2594-2607.
- Jimenez-Macias JL, Lee YC, Miller E, Finkelberg T, Zdioruk M, Berger G, Farquhar CE, Nowicki MO, Cho CF, Fedeles BI, Loas A, Pentelute BL, **Lawler SE**. A Pt(IV)-conjugated brain penetrant macrocyclic peptide shows pre-clinical efficacy in glioblastoma. *J Control Release*. 2022;352:623-636.
- Kim Y, Lee J, Lee C, **Lawler S**. Role of senescent tumor cells in building a cytokine shield in the tumor microenvironment: mathematical modeling. *J Math Biol*. 2022;86:14.
- Lawler S**. Digging deeper for new targets in bevacizumab resistance. *Neuro Oncol*. 2022 Dec 14
- Moreno DA, da Silva LS, Gomes I, Leal LF, Berardinelli GN, Gonçalves GM, Pereira CA, Santana IVV, Matsushita MM, Bhat K, **Lawler S**, Reis RM. Cancer immune profiling unveils biomarkers, immunological pathways, and cell type score associated with glioblastoma patients' survival. *Ther Adv Med Oncol*. 2022;14:17588359221127678

#### Selected Invited Talks

- *The iBAC; A novel High Capacity Herpes Virus Based Gene Delivery System*. The Ohio State University Viral Oncogenesis Program monthly seminar series, March 2005
- *A Novel Inhibitor of Glioma Invasion*. Avalon Pharmaceuticals, Rockland MD, Jan 2006
- *Lithium Chloride; A Novel Inhibitor of Glioma Invasion*. Research in Progress Seminar Series, The Ohio State University Department of Molecular Virology, Immunology and Genetics, April 2006
- *Molecular Features of High Grade Glioma*. 1<sup>st</sup> Annual Ohio State University Neuro-oncology Symposium. Columbus OH, Sept 2006
- *Identification of GSK-3 as a Molecular Target in Glioma Invasion*. AACR annual meeting, Los Angeles CA, April 2007
- *Novel Therapies for Diseases of the Central Nervous System*. St. Georges Hospital Medical School. London UK, September 11<sup>th</sup> 2007.
- *Novel Pathways for the Treatment of Gliomas*. OSUCCC Pediatric Program Retreat. Ohio September 2008.
- *MicroRNAs in glioma invasion and growth* 7<sup>th</sup> Annual Neuro-oncology Updates. Baltimore September 2008
- *Brain Tumors, MicroRNAs and Stem Cells*. MVIMG staff seminar series. OSU, November 2008.
- *Discovery of novel pathways in glioblastoma growth and migration*. University of Virginia, Charlottesville VA. March 2009.
- *MicroRNAs in brain tumors*. MicroRNAs in human health and disease conference. Boston, March 2009
- *Discovery of novel pathways in glioblastoma growth and migration*. Dept of Neurosurgery, Leeds General Infirmary, UK April 2009.
- *Novel Pathways in glioma growth and invasion*. Center for Molecular Neurobiology Seminar Series, Ohio State University. June 2009.
- *MicroRNAs in glioblastoma*. 8<sup>th</sup> Annual Neuro-oncology Updates. Columbus OH, September 2009.

- *MicroRNA functions in glioma growth and invasion*. MVMIG staff seminar series. OSU, April 2010.
- *MicroRNAs in brain tumors*. 4<sup>th</sup> World Congress on siRNAs and miRNAs. Boston, May 2010.
- *MicroRNA-451; A regulator of glioma growth invasion and response to metabolic stress*. 14<sup>th</sup> Biannual Meeting of the Canadian Neuro-oncology Society. Niagara-on-the-lake, Canada, May 2010.
- *MicroRNA functions in glioblastoma*. American Society for Gene and Cell Therapy 13<sup>th</sup> Annual Meeting, Washington DC, May 2010.
- *What can microRNAs teach us about brain tumors?* Society for Neuro-oncology 15<sup>th</sup> Annual Meeting, Montreal, Canada, November 2010.
- Lawler S. (2011). Targeting cell migration as a strategy for brain tumour treatment. *Biomedical Health Research Centre awayday*. University of Leeds, January 2011.
- *New Targets in Glioblastoma; from Lithium to microRNAs*. Institute of Cancer Therapeutics, University of Bradford, March 2011.
- *New pathways in glioma invasion*. University of Portsmouth, UK, April 2011
- *Glioma invasion; new pathways, new targets*. NORLUX research laboratory, Luxembourg, June 2011.
- *MicroRNAs in Brain Tumours*. Brain Tumour Northwest Annual Retreat. Preston, UK, December 2011.
- *Glioma invasion; new pathways, new targets*. University of Sheffield CRUK Centre, Sheffield UK, February 2012.
- *Glioma invasion; new pathways, new targets*. St George's Medical School, London, UK, March 2012.
- *Glioma invasion; new pathways, new targets*. Beatson Institute of Cancer Research, Glasgow, March 2012
- *Glioblastoma; a moving target*. DF/BWH Neuro-Oncology Multidisciplinary Conference, August 2013
- *Glioblastoma; a moving target*. RUNN conference. November 2013
- *GSK-3 inhibitors and glioblastoma invasion*. 14<sup>th</sup> Annual Neurooncology Updates. Boston. September 2014.
- *Preclinical Models of Glioblastoma*. ABTC Annual meeting. Baltimore. December 2015
- *Glioblastoma; a moving target*. Massachusetts General Hospital. January 2017
- *Pre-clinical approaches for Brain Tumor Treatment*. Brigham and Women's Hospital, Department of Neurosurgery, Grand Rounds, March 2017.
- *Cytomegalovirus and glioblastoma*. Boston Angiogenesis Meeting Massachusetts General Hospital. October 2017
- *Cytomegalovirus and glioblastoma*. New England Regional Neurooncology Meeting, Massachusetts General Hospital. October 2017
- *Extracellular vesicles as mediators of immune suppression and as biomarkers in glioblastoma*. Society for Neurooncology Annual Meeting 2017. San Francisco.
- *Investigating the role of cytomegalovirus in glioblastoma*. U Mass Med School, Worcester MA. February 2018.
- *Cytomegalovirus and glioblastoma*. Dana-Farber Cancer Center, BWH Multidisciplinary conference March 2018.
- *Blood-Brain Barrier spheroids as an in vitro screening platform for brain-penetrating agents*. World Pre-clinical Congress, Boston, MA, June 21 2018,
- *Gene-mediated cytotoxic immunotherapy and immune checkpoint blockade for glioblastoma treatment*. Immuno-Oncology Summit, Boston MA August 28 2018.

- *Overcoming barriers to glioblastoma therapy* Feinstein Institute of Biomedical Research, New York, NY March 2019.
- *CMV Promotes Brain Tumor Growth via Pericyte Recruitment and Angiogenesis* CMV2019, Birmingham AL, April 2019.
- *Developing pharmacological approaches for drug delivery across the blood-brain barrier* BWH/Dana-Farber Neurooncology Retreat, Boston, MA April 2019.
- *Exploring Virotherapy/Immunotherapy Combinations for the Treatment of Glioblastoma* PEGS Boston MA April 2019.
- *CMV promotes brain tumor growth via pericyte recruitment and angiogenesis.* Herpes virus: Pathogenesis & Cancer Symposium, Perelman School of Medicine, University of Pennsylvania, PA. June 2019.
- *Translating virotherapies for the treatment of glioblastoma.* 4th Annual CHI Oncolytic Virus Immunotherapy Meeting, Boston, MA. August 2019.
- *Exploiting viruses for the treatment of brain tumors.* VII International Symposium on Translational Oncology, Barretos, Brasil. September 2019.
- *Latent CMV promotes tumor growth in murine GBM models.* CMV & Cancer Meeting. Cambridge, MA. October 2019.
- *Overcoming barriers in glioblastoma therapy.* University of Manchester Cancer Research Center Director's Lecture, Manchester, UK. (via Zoom, 128 attendees) April 2020.
- *Enhancers and repressors of immunotherapy: translational perspectives on gene-mediated cytotoxic immunotherapy.* 29<sup>th</sup> Annual Short Course on Experimental Models of Human Cancer. Jackson Laboratory Bar Harbor, ME (via Zoom). August 2020.
- *Overcoming barriers to glioblastoma therapy.* Brown University Joint Program in Cancer Biology (via Zoom) March 2021.
- *Understanding the role of cytomegalovirus in glioblastoma.* University of Tulane Brain Institute, (via Zoom) March 2021
- *Local immunostimulatory therapies in glioblastoma.* BWH/DFCI Neurooncology Symposium (via Zoom) April 2021.
- *Investigating STING in glioblastoma.* STING & TLR-Targeting Therapies Summit, (via Zoom) May 2021.
- *Overcoming the barriers to glioblastoma therapy.* Department of Microbiology and Molecular Immunology Seminar Series, Brown University, October 2021.
- *Investigating the role of cytomegalovirus in glioblastoma.* Department of Surgery Grand Rounds. Beth Israel Deaconess Medical Center, Boston MA (via Zoom). November 2021.
- *Breaking the barriers to improve glioblastoma therapy.* Department of Neurosurgery, Rhode Island Hospital Providence MA (via Zoom). January 2022.
- *CMV-associated glioblastoma progression is independent of tumor mutations and age of infection, but requires viral replication.* CMV 2022 International Meeting (via Zoom). March 2022.
- *Overcoming the barriers to glioblastoma therapy.* Department of Pathology, Rhode Island Hospital, April 2022.
- *Improving drug delivery for brain cancer therapy.* NIGMS P41 QE-MAP Annual Symposium & Workshop, Michigan State University, August 2022. (in person)
- *Glioblastoma; Can we tame the beast?* Veterans' Hospital, Providence, Vascular COBRE. September 2022. (in person)
- *Drug delivery for glioblastoma therapy.* Legorreta Cancer Center Therapeutics Talk. October 2023. (in person)



- *The role of cytomegalovirus in glioblastoma growth and therapy.* Molecular Basis of Pathology and Therapy in Neurological Disorders Conference, Massakowski Institute, Warsaw, Poland (virtual). October 2022.
- *The role of cytomegalovirus in glioblastoma growth and therapy.* Upstate Medical University, Dept of Microbiology and Immunology, Dept of Neuroscience and Physiology. November 2022 (in person).
- *Overcoming the barriers for glioblastoma therapy.* Department of Biomedical Engineering Seminar Series, Brown University. December 2022 (in person).

### Selected Abstracts (last 3 years)

1. Cho-Fong Cho, Bradley Pentelute, E. Antonio Chiocca, Sean E Lawler. A facile, robust and predictive *in vitro* blood-brain-barrier model for high-throughput screening and discovery of brain-penetrating agents. Presented at Society for Neurooncology Annual Meeting 2016. Scottsdale, AZ **(selected for talk)**.
2. Franz Ricklefs, Marica Speranza, Kyunghoon Lee, Carmela Passaro, E. Antonio Chiocca, Agnieszka Bronisz, Sean Lawler. Glioblastoma-derived extracellular vesicles dynamically carry PDL1 and specifically inhibit CD4+ and CD8+ T-cell activation and proliferation. Poster presented at Society for Neurooncology Annual meeting 2016. Scottsdale, AZ. **(selected for Best Poster Prize)**.
3. Maria-Carmela Speranza, Kazue Kasai, Ricklefs Franz, Sarah R. Klein, Carmela Passaro, Nakashima, Hiroshi, Johanna Kaufmann, Agnieszka Bronisz, Estuardo Aguilar-Cordova, Brian W. Guzik, Gordon J. Freeman, David Reardon, Patrick Wen, E. Antonio Chiocca, and Sean E. Lawler. Preclinical analysis of combinatorial glioblastoma therapy with the prodrug-mediated gene therapy vector AdV-tk and immune checkpoint inhibition. Society for Neurooncology Annual Meeting 2016. Scottsdale, AZ. **(selected for talk)**.
4. Franz L. Ricklefs, Josie Hayes, Maria C. Speranza, Harald Krenzlin, Joseph Costello, Gordon J. Freeman, Manfred Westphal, Katrin Lamszus, E. Antonio Chiocca and Sean. E. Lawler. Expression of PD-L2, in glioblastoma; implications as a biomarker for immunotherapy. Presented at Society for Neurooncology Annual Meeting 2017. San Francisco, CA.
5. Anke Brüning-Richardson, Michel Mittelbronn, Matthew Humphries, Filomena Esteves, Marjorie Boissinot, Daniel Tams, Alistair Droop, Julia Cockle, Sophie Taylor, Ruth Morton, Azzam Ismail, Sean Lawler, Georgia Mavria and Susan Short. A GSK-3/ -catenin/ARHGAP axis regulates glioblastoma invasion. Presented at the Society for Neurooncology Annual Meeting 2017. San Francisco, CA.
6. Martha R Neagu, Maria Carmela Speranza, Robert T Manguso, Sean E Lawler, Gordon J Freeman, John Doench, Arlene H Sharpe, W Nicholas Haining. Defining Molecular Mechanisms Of Resistance To Glioblastoma (gbm) Immunity Using A Novel Crispr/cas9 In Vivo Loss-of-function Screening Platform. Presented at the Society for Neurooncology Annual Meeting 2017. San Francisco, CA.
7. Choi-Fong Cho, Yarah Ghotmi, Colin Fadzhan, Justin Wolfe, Sonja Bergmann, Yuan Qu, Emily Murrell, Fernanda Bononi, Leonard Luyt, E Antonio Chiocca, Mariano Viapiano, Bradley Pentelute, Sean Lawler. BTP-7, a novel peptide for the therapeutic targeting of brain tumors. Presented at the Society of Neurooncology Annual Meeting 2018, New Orleans, LA.
8. Anke Bruning-Richardson, Hitesh Sanganee, Simon Barry, Daniel Tams, Tim Brend, H King, Ruth Morton, Thomas Ward, Lynette Steele, Gary Shaw, Filomena Esteves, Alastair Droop, Sean Lawler, Susan Short. Targeting GSK-3 activity promotes mitotic catastrophe via centrosome. destabilisation and enhances the effect of radiotherapy in glioma models. Presented at the European Association of Neurooncology Annual Meeting, 2019. Lyon, France.
9. Samuel Peat, Anke Bruning-Richardson, Laurent Meijer, Sean Lawler, Valerie Thiery, Ruth Morton. Characterisation of the anti-migratory activity of the 6-bromoindirubin-3'oxime (BIO) derivative VTIND42 in patient-derived GBM subpopulations. Presented at the British Neurooncology Society Annual Meeting 2019. London, UK.

10. Munisha Smalley, Vidushi Kapoor, Douglas Best, Carmela Passaro, Michal O Nowicki, Suniti K Saha, Komal Prasad, E Antonio Chiocca, Sean E Lawler, Aaron Goldman. Translational efficacy of oncolytic HSV-1 in glioblastoma using a human autologous ex vivo platform, CANscript™ Presented at American Association of Cancer Research Annual Meeting 2019. Atlanta, GA.
11. Isaac Solomon, Hirotaka Ito, Hiroshi Nakashima, Yu Zeng, Kristine Pelton, Fiona Watkinson, Kin-Hoe Chow, Nathan Matthewson, Geoffrey Young, David Reardon, Scott Rodig, Sandro Santagata, Mario Suva, Kai Wucherpennig, Sean Lawler, E Chiocca, Keith Ligon. Histopathology Evaluation of Recurrent Glioma Patients Enrolled to Phase I Clinical Trial of Oncolytic Virus rQNestin34.5v.2. Presented at American Association of Neuropathologists Annual Meeting, 2019.
12. Sean Lawler, Munisha Smalley, Misti Jain, Saravanan Thiyagarajan, Douglas Best, Hans Gertje, Basavaraja U Shanthappa, Ralph Puchalski, Charles Cobbs, E. Antonio Chiocca, Aaron Goldman An ex vivo platform for analysis of oncolytic Type I Herpes Simplex Virus in glioblastoma. Presented at the International Oncolytic Virus Meeting 2019, Rochester, MN.
13. Mikael Marloye, M. Oskar Nowicki, Sean Lawler, Gilles P. Berger Self-assembling neurosphere-potent RuII and OsII complexes with enhanced cellular uptake. Presented at Discover Brigham, 2019. Boston, MA.
14. Marilyn Koch, Mikola Zdioruk, M. Oskar Nowicki, Estuardo Aguilar-Cordova, Laura K. Aguilar, Brian W. Guzik, E. Antonio Chiocca, Sean E. Lawler Examination of the effects of Dexamethasone on the efficacy of immunotherapy in glioma using Gene-Mediated Cytotoxic Immunotherapy. Society of Neurooncology Annual Meeting 2019. Phoenix, AZ, and Discover Brigham 2019. Boston, MA
15. Mykola Zdioruk, Harald Krenzlin, M. Oskar Nowicki, Charles H. Cook, E Antonio Chiocca, Sean E. Lawler. Cytomegalovirus infection leads to NF- B dependent upregulation of c-MET and MGMT in glioblastoma and resistance to temozolomide in vivo. Society of Neurooncology Annual Meeting 2019. Phoenix, AZ, and Discover Brigham 2019. Boston, MA.
16. Niklas von Spreckelsen, Yarah Ghotmi, Colin Fadzen, Justin Wolfe, Nina Hartrampf, Sonja Bergmann, Yuan Qu, Emily Murrell, Fernanda Bononi, Leonard Luyt, Martine Lamfers, Keith Ligon, Ennio Chiocca, Mariano Viapiano, Bradley L Pentelute, Sean Lawler, Choi-Fong Cho. BTP-7, a novel peptide for therapeutic targeting of malignant brain tumors. Society of Neurooncology Annual Meeting 2019.
17. Marilyn Koch, Mikolaj Zdioruk, Michal Oskar Nowicki, Estuardo Aguilar-Cordova, Laura K. Aguilar, Brian Guzik, E. Antonio Chiocca, Ghezaleh Tabatabatai, Sean Lawler. Enhancers and repressors of immunotherapy: translational perspectives on gene-mediated cytotoxic immunotherapy. Presented at the American Society for Cell and Gene Therapy Meeting (ASCGT), Boston May 2020 and 29<sup>th</sup> Annual short course on experimental models of human cancer, Bar Harbor, ME (**selected for talk**).
18. Berger G, Knelson EH, Nowicki MO, Han S, Jimenez-Macias J-L, Lizotte PH, Adu-Berchie K, Stafford A, Dimitrakakis N, Chiocca EA, Mooney DJ, Barbie DA, Lawler SE. STING activation promotes robust immune response and tumor regression in glioblastoma models. Society for Neurooncology Annual Meeting 2021, Boston, MA. (**selected for talk, and winner Young Investigator Award – Berger**).
19. Mykola Zdioruk, Eleni Panagioti, Michal O. Nowicki, E. Antonio Chiocca, Charles H. Cook, Sean E. Lawler. CMV-associated glioblastoma progression is independent of tumor mutations and age of infection, but requires viral replication. CMV 2022 International meeting, Cambridge UK, (held virtually) (**selected for talk**).
20. Jorge L. Jimenez-Macias, Yen-Chun Lee, Tomer Finkelberg, Mykola Zdioruk, Gilles Berger, Michal O. Nowicki, Choi-Fong Cho, Bogdan Fedeles, PhD Andrei Loas, Bradley L. Pentelute, Sean E. Lawler. Assessment of brain penetrance, biodistribution, and efficacy of platinum (IV)-conjugated fluorinated macrocyclic cell-penetrating peptides in a murine glioblastoma model. AACR Annual Meeting 2022 New Orleans.
21. Mykola Zdioruk, Michal Nowicki, Bin Wu, E. Antonio Chiocca, Sean E. Lawler. PPRX-1701, a deliverable nanoparticle formulation of 6-bromo-acetoxime, blocks tumoral IDO1

expression and shows efficacy in immunocompetent murine glioblastoma models. AACR Annual Meeting 2022 New Orleans.