
C. RYAN MILLER, MD, PhD

PERSONAL INFORMATION

Full Name Christopher Ryan Miller
Home Address 8327 Lochlaven Lane
Chapel Hill, North Carolina 27516
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EDUCATION

Washington University School of Medicine, St. Louis, Missouri
Barnes-Jewish & St. Louis Children's Hospitals
Neuropathology Fellowship, June 2006
Anatomic Pathology Residency, June 2004

University of Alabama School of Medicine, Birmingham, Alabama
Doctor of Medicine (MD), June 2002
Medical Scientist Training (MD/PhD) Program

University of Alabama at Birmingham (UAB), Birmingham, Alabama
Doctor of Philosophy (PhD), June 1999
Department of Pathology, Cellular and Molecular Pathology Graduate Program

Vanderbilt University, Nashville, Tennessee
Bachelor of Arts, *Summa Cum Laude*, May 1992
Phi Beta Kappa
Honors in the College of Arts & Science
Majors: Chemistry and Mathematics

CURRENT POSITION

Associate Professor University of North Carolina School of Medicine
Department of Pathology and Laboratory Medicine
Division of Neuropathology
Work Address 6109B Neurosciences Research Building
Campus Box 7250
Chapel Hill, NC 27599-7250
Phone: 919-966-4333
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PROFESSIONAL EXPERIENCE

July 27, 2017 – Present
Associate Professor with Tenure
Department of Pharmacology
University of North Carolina School of Medicine

C. RYAN MILLER, MD, PhD

- April 1, 2013 – Present
Associate Professor with Tenure
Division of Neuropathology, Department of Pathology and Laboratory Medicine
Department of Neurology
University of North Carolina School of Medicine
- July 1, 2008 – Present
Faculty Director
Translational Pathology Laboratory (TPL)
Department of Pathology and Laboratory Medicine
Lineberger Comprehensive Cancer Center
University of North Carolina School of Medicine
- March 1, 2011 – March 31, 2013
Assistant Professor
Department of Neurology
University of North Carolina School of Medicine
- April 1, 2007 – March 31, 2013
Assistant Professor
Division of Neuropathology, Department of Pathology and Laboratory Medicine
University of North Carolina School of Medicine
- December 1, 2006 – March 31, 2007
Visiting Assistant Professor
Division of Neuropathology, Department of Pathology and Laboratory Medicine
University of North Carolina School of Medicine
- July 1, 2005 – November 30, 2006
Clinical Research Fellow
Division of Neuropathology, Department of Pathology and Immunology
Washington University School of Medicine
Morphological and molecular classification of gliomas
Mentor: Arie Perry, MD
- July 1, 2005 – April 30, 2006
Postdoctoral Fellow
Division of Molecular Oncology, Department of Medicine
Washington University School of Medicine
Cancer pharmacogenomics
Mentor: Howard McLeod, PharmD
- July 1, 2004 – June 30, 2005
Clinical Fellow
Division of Neuropathology, Department of Pathology and Immunology
Washington University School of Medicine
Director: Robert E. Schmidt, MD, PhD
- July 1, 2002 – Jun 30, 2004
Resident
Division of Anatomic Pathology, Department of Pathology and Immunology
Washington University School of Medicine
Director: Jeffrey E. Saffitz, MD, PhD
- Jan 1, 2000 – June 30, 2002
Postdoctoral Fellow
UAB Brain Tumor Treatment and Research Program
Divisions of Radiation Biology and Neurosurgery
Cytosine deaminase gene therapy for gastrointestinal (GI) and non-GI malignancies
Mentors: Donald J. Buchsbaum, PhD and G. Yancey Gillespie, PhD

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June 1, 1999 -
December 31, 1999

Postdoctoral Fellow

UAB Gene Therapy Center

Targeted adenovirus vectors for molecular chemotherapy of cancer

Mentor: David T. Curiel, MD

AWARDS AND HONORS

- 2015 *Neuro-oncology* Top Reviewer Award
Society for Neuro-oncology
- 2015 Society for Neuro-oncology Best Oral Poster Presentation Award
20th Annual Scientific Meeting, November 20, 2015
Tumor Biology 1 Session
- 2012 American Association for Cancer Research Highly Rated Poster Award
- 2012 Society for Neuro-oncology Adult Basic Science Award
- 2012 American Association of Neuropathologists Lucien J. Rubenstein Award
Best Paper on Neuro-oncology
- 2012 UNC Weatherspoon Family Brain Tumor Research Award
- 2009 Damon Runyon-Genentech Clinical Investigator
Damon Runyon Cancer Research Foundation
- 2007 American Association of Neuropathologists Moore Award
Best Paper on Clinico-Pathological Correlation
- 2007 American Association of Neuropathologists Davis Travel Award
- 2006 American Society of Clinical Oncology Merit Award
- 2006 National Cancer Institute Postdoctoral Fellowship
Cancer Biology Training Program, T32CA009547
Washington University Department of Pathology and Immunology
- 2005 American Association of Neuropathologists Davis Travel Award
- 2001 Postdoctoral Career Enhancement Award
UAB Office of Postdoctoral Education
- 2000 American Brain Tumor Association Lucien J. Rubenstein Award
Outstanding brain tumor research as an ABTA Medical Student Summer Fellow

C. RYAN MILLER, MD, PHD

- 1999 American Brain Tumor Association Summer Medical Student Research Fellowship
- 1999 National Cancer Institute Postdoctoral Fellowship
Cancer Gene Therapy Training Program, T32CA075930
UAB Gene Therapy Center
- 1997 - 99 Zeneca Pharmaceuticals Predoctoral Fellowship
- 1993 National Cancer Institute Predoctoral Fellowship
Cancer Prevention and Control Training Program, R25CA047888
UAB Department of Nutrition Sciences
- 1992 - 02 Medical Scientist Training Program
University of Alabama School of Medicine, T32GM008361
- 1992 D. Stanley and Ann T. Tarbell Prize in Organic Chemistry
Vanderbilt University Department of Chemistry
- 1990 - 92 Teaching Assistant
Vanderbilt University Department of Mathematics
Statistics 127ab and 218-9

BIBLIOGRAPHY

BOOKS AND CHAPTERS

1. Kaiser-Rogers K, Trembath D, **Miller CR**. In situ hybridization. In: Reference Module in Neuroscience and Biobehavioral Psychology, Elsevier, 2017. Pages 1-7. ISBN [978-0-128-09324-5](#).
2. Kaiser-Rogers K, Trembath D, **Miller CR**. In situ hybridization. In: Aminoff MJ and Dardoff RB (eds), Encyclopedia of Neurological Sciences, 2nd Ed., Vol. 2, Oxford: Academic Press, 2014. Chapter 593. Pages 699-704. ISBN [978-0-123-85157-4](#).
3. **Miller CR**, McLeod HL. Solid Tumors II: the EGFR Example. In: Marsh S (ed), Cancer Pharmacogenetics, 1st Ed., Cambridge: Springer, 2010. Chapter 6. ISBN [978-0-387-69133-6](#).
4. **Miller CR**, Karpnich NO, Zhang Q, Bullitt E, Kozlov S, and Van Dyke T. Modeling astrocytomas in a family of inducible genetically engineered mice: implications for preclinical cancer drug development. In: Van Meir EG (ed), CNS Cancer, Models, Prognostic Factors, and Targets, 1st Ed., Cambridge: Springer, 2009. Chapter 7: Pages 119-145. ISBN [978-1-60327-552-1](#).

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5. Buchsbaum DJ, **Miller CR**, McNally LR, Kaliberov SA. Cancer gene therapy. In: Oldham RK and Dillman RO (eds), Principles of Cancer Biotherapy, 5th Ed., Dordrecht: Kluwer, 2009. Chapter 19: Pages 589-612. ISBN [978-90-481-2277-6](#).
6. Buchsbaum DJ, **Miller CR**, Mahasreshti P, Curiel DT. Cancer gene therapy. In: Oldham RK (ed), Principles of Cancer Biotherapy, 4th Ed., Dordrecht: Kluwer, 2003. Chapter 19: Pages 583-613. [ISBN 1-4020-0706-X](#).

BOOKS AND CHAPTERS: IN PRESS

NCBI BIBLIOGRAPHY

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/40201329/?sort=date&direction=descending>
92 of 96 peer-reviewed publications

REFEREED ARTICLES: ORIGINAL RESEARCH

1. Connolly NP, Shetty AC, Stokum JA, Hoeschele I, Siegel MB, **Miller CR**, Kim AJ, Ho CY, Davila E, Simard JM, Devine SE, Rossmeisl JH, Holland EC, Winkles JA, Woodworth GF. Differential gene expression and altered biological pathways reveal conserved and species-specific neoplastic processes in mammalian glioma. Scientific Reports. 8(1):1180 Jan 2018. PMID: [29352201](#)
2. Graham-Gurysh EG, Moore KM, Satterlee AB, Sheets KT, Lin FC, Bachelder EM, **Miller CR**, Hingtgen S, Ainslie KM. Sustained delivery of doxorubicin via acetalated dextran scaffold prevents glioblastoma recurrence after surgical resection. Molecular Pharmaceutics. DOI: 10.1021/acs.molpharmaceut.7b01114. Jan 2018. PMID: [29342360](#)
3. Wu J, Frady LN, Bash RE, Cohen SM, Schorzman AN, Su YT, Irvin DM, Zamboni WC, Wang X, Frye SV, Ewend MG, Sulman EP, Gilbert MR, Earp HS, **Miller CR**. MerTK as a therapeutic target in glioblastoma. Neuro-oncology. 20(1):92-102 Jan 2018. PMID: [28605477](#) PMCID: [PMC5761530](#)
4. Van Swearingen AED, Sambade MJ, Siegel MB, Sud S, McNeill RS, Bevill SM, Chen X, Bash RE, Mounsey L, Golitz BT, Santos C, Deal A, Parker JS, Rashid N, **Miller CR**, Johnson GL, Anders CK. Combined kinase inhibitors of MEK1/2 and either PI3K or PDGFR are efficacious in intracranial triple-negative breast cancer. Neuro-oncology. 19(11):1481-1493 Oct 2017. PMID: [28486691](#) PMCID: [PMC5737524](#)
5. McNeill RS, Canoutas DA, Stuhlmiller TJ, Dhruv HD, Irvin DM, Bash RE, Angus SP, Herring LE, Simon JM, Skinner KR, Limas JC, Chen X, Schmid RS, Siegel MB, Van Swearingen AED, Hadler MJ, Sulman EP, Sarkaria JN, Anders CK, Graves LM, Berens ME, Johnson GL, **Miller CR**. Combination therapy with potent PI3K and MAPK inhibitors overcomes adaptive kinome resistance to single agents in preclinical models of

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glioblastoma. Neuro-oncology. 19(11):1469-1480 Oct 2017. PMID: [28379424](#) PMCID: [PMC5737415](#)

Subject of an Editorial

Gutmann DH. Caddyshack therapeutics: overcoming glioblastoma adaptation. Neuro-oncology. 19(11):1429-1431 Oct 2017. PMID: [28637259](#) PMCID: [PMC5737573](#)

6. Madden AJ, Oberhardt B, Lockney D, Santos C, Vennam P, Arney D, Franzen S, Lommel SA, **Miller CR**, Gerhig P, Zamboni WC. Pharmacokinetics and efficacy of doxorubicin-loaded plant virus nanoparticles in preclinical models of cancer. Nanomedicine. 12(20):2519-2532 Oct 2017. PMID: [28952882](#)
7. Vitucci M*, Irvin DM*, McNeill RS, Schmid RS, Simon JM, Dhruv HD, Siegel MB, Werneke AM, Bash RE, Kim S, Berens ME, **Miller CR**. Genomic profiles of low-grade murine gliomas evolve during progression to glioblastoma. Neuro-oncology. 19(9):1237-1247 Sep 2017. *Co-first authors. PMID: [28398584](#) PMCID: [PMC5570221](#)
8. Galanis E, Anderson SK, **Miller CR**, Sarkaria JN, Jaeckle K, Buckner JC, Ligon KL, Ballman KV, Moore DF, Nebozhyn M, Loboda A, Schiff D, Ahluwalia MS, Lee EQ, Gerstner ER, Lesser GJ, Prados M, Grossman SA, Cerhan J, Giannini C, Wen PY, Alliance for Clinical Trials in Oncology, Adult Brain Tumor Consortium. Phase I/II trial of vorinostat combined with temozolomide and radiation therapy for newly diagnosed glioblastoma: Final results of Alliance N0874/ABTC 02. Neuro-oncology. DOI: [10.1093/neuonc/nox161](#) Aug 2017. PMID: [29016887](#)
9. Khoury T, Zirpoli G, Cohen SM, Geradts J, Omilian A, Davis W, Bshara W, **Miller R**, Mathews MM, Troester M, Palmer JR, Ambrosone CB. Ki-67 expression in breast cancer tissue microarrays: Assessing tumor heterogeneity, concordance with full section, and scoring methods. American Journal of Clinical Pathology. 148(2):108-118 Aug 2017. PMID: [28898983](#)
10. Kodack DP*, Askoxylakis V*, Ferraro GB*, Sheng Q, Badeaux M, Goel S, Qi X, Shankaraiah R, Cao ZA, Ramjiawan RR, Bezwada D, Patel B, Song Y, Costa C, Naxerova K, Wong CSF, Kloepper J, Das R, Tam A, Tanboon J, Duda DG, **Miller CR**, Siegel MB, Anders CK, Sanders M, Estrada MV, Schlegel R, Arteaga CL, Brachtel E, Huang A, Fukumura D, Engelman JA, Jain RK. The brain microenvironment mediates resistance in luminal breast cancer to PI3K inhibition through HER3 activation. Science Translational Medicine. 9(391):eaal4682 May 2017. PMID: [28539475](#)
11. Bago JR, Okolie O, Dumitru R, Ewend MG, Parker JS, Vander Werff R, Underhill TM, Schmid RS, **Miller CR**, Hingtgen SD. Tumor-homing cytotoxic human induced neural stem cells for cancer therapy. Science Translational Medicine. 9(375):eaah6510 Feb 2017. PMID: [28148846](#)

C. RYAN MILLER, MD, PHD

12. Irvin DM, McNeill RS, Bash RE, **Miller CR**. Intrinsic astrocyte heterogeneity influences tumor growth in glioma mouse models. *Brain Pathology*. 27(1):36-50 Jan 2017. PMID: [26762242](#) PMCID: [PMC5322824](#)
13. Okolie O, Bago JR, Schmid RS, Irvin DM, Bash RE, **Miller CR***, Hingtgen SD*. Reactive astrocytes potentiate tumor aggressiveness in murine glioma resection and recurrence model. *Neuro-oncology*. 18(12):1622-1633 Dec 2016. PMID: [27298311](#) *Co-senior authors.
14. Hu P, Li Y, Nikolaishvili-Feinberg N, Scesa G, Bi Y, Pan D, Moore D, Bongarzone ER, Sands MS, Miller R, Kafri T. Hematopoietic stem cell transplantation and lentiviral vector-based gene therapy for Krabbe's disease: Present convictions and future prospects. *Journal of Neuroscience Research*. 94(11):1152-1168 Nov 2016. PMID: [27638600](#) PMCID: [PMC5027985](#)
15. Schmid RS, Simon JM, Vitucci M, McNeill RS, Bash RE, Werneke AM, Huey L, White KK, Ewend MG, Wu J, **Miller CR**. Core pathway mutations induce de-differentiation of murine astrocytes into glioblastoma stem cells that are sensitive to radiation, but resistant to temozolomide. *Neuro-oncology*. 18(7):962-973 Jul 2016. PMID: [26826202](#) PMCID: [PMC4896545](#)
16. Allott EH, Cohen SM, Geradts J, Sun X, Khoury T, Bshara W, Zirpoli G, **Miller CR**, Hwang H, Thorne L, O'Connor S, Tse CK, Bell MB, Hu Z, Li Y, Kirk EL, Bethea T, Perou CM, Palmer JR, Ambrosone CB, Olshan AF, Troester MA. Performance of three biomarker immunohistochemistry for intrinsic breast cancer subtyping in the AMBER consortium. *Cancer Epidemiology, Biomarkers & Prevention*. 25(3):470-478 Mar 2016. PMID: [26711328](#) PMCID: [PMC4779705](#)
17. Bago JR, Alfonso-Pecchio A, Okolie O, Dumitru R, Rinkenbaugh A, Baldwin AS, **Miller CR**, Magness ST, Hingtgen SD. Therapeutically engineered induced neural stem cells are tumor-homing and inhibit progression of glioblastoma. *Nature Communications*. 7:10593 Feb 2016. PMID: [26830441](#) PMCID: [PMC4740908](#)
18. Ceccarelli M, Barthel FP, Malta TM, Sabedot TS, Salama SR, Murray BA, Morozova O, Newton Y, Radenbaugh A, Pagnotta SM, Anjum S, Wang J, Manyam G, Zoppoli P, Ling S, Rao A, Grifford M, Cherniack AD, Zhang H, Poisson L, Rao A, Mikkelsen T, Lau CC, Yung WKA, Rabadan R, Huse J, Brat DJ, Lehman N, Rao G, Meyerson M, Beroukhim R, Cooper L, Akbani R, Wrensch M, Haussler D, Aldape KD, Laird PW, Gutmann DH, **Cancer Genome Atlas Research Network**, Noushmehr H, Iavarone A, Verhaak RGW. Molecular profiling reveals biologically discrete subsets and pathways of progression in diffuse glioma. *Cell*. 164(3):550-563 Jan 2016. PMID: [26824661](#) PMCID: [PMC4754110](#)
19. Prabhu A, Sarcar B, **Miller CR**, Kim SH, Nakano I, Forsyth P, Chinnaiyan P. Ras-mediated modulation of pyruvate dehydrogenase activity regulates mitochondrial reserve capacity and contributes to glioblastoma tumorigenesis. *Neuro-oncology*. 17(9):1220-1230 Sep 2015. PMID: [25712957](#) PMCID: [PMC4588752](#)

C. RYAN MILLER, MD, PHD

20. Garcia I, Crowther AJ, Gama V, **Miller CR**, Deshmukh M, Gershon TR. Erratum: Bax-deficiency prolongs cerebellar neurogenesis, accelerates medulloblastoma formation and paradoxically increases both malignancy and differentiation. *Oncogene*. 34(29):3881 Jul 2015. PMID: [26179456](#)
21. **Cancer Genome Atlas Research Network**. Comprehensive, integrative genomic analysis of diffuse lower-grade gliomas. *New England Journal of Medicine*. 372(26):2481-2498. Jun 2015. PMID: [26061751](#) PMCID: [PMC4530011](#)
22. Carson CC, Moschos SJ, Edmiston SN, Darr DB, Nikoliashvili-Feinberg N, Groben PA, Zhou X, Kuan PF, Pandey S, Chan KT, Jordan JL, Hao H, Frank JS, Hopkinson DA, Gibbs DC, Alldredge VD, Parrish E, Hanna SC, Berkowitz P, Rubenstein DS, **Miller CR**, Bear JE, Ollila DW, Sharpless NE, Conway K, Thomas NE. IL-2 inducible T-cell kinase, a novel therapeutic target in melanoma. *Clinical Cancer Research*. 21(9):2167-2176 May 2015. PMID: [25934889](#) PMCID: [PMC4418029](#)
23. Karginova O, Siegel MB, Adamo B, Deal AM, Van Swearingen AED, Nikolaishvili-Feinberg N, Parker JS, Santos CM, Darr D, Bash R, Sandison K, Zamboni WC, **Miller CR**, Anders CK. Efficacy of carboplatin alone and in combination with ABT888 in intracranial murine models of BRCA-mutated and BRCA-wild-type triple negative breast cancer. *Molecular Cancer Therapeutics*. 14(4):920-930 Apr 2015. PMID: [25824335](#) PMCID: [PMC4394032](#)
24. Knight ER, Patel EY, Flowers CA, Crowther AJ, Ting JP, **Miller CR**, Gershon TR, Deshmukh M. ASC deficiency suppresses proliferation and prevents medulloblastoma incidence. *Oncogene*. 34(3):394-402 Jan 2015. PMID: [24469054](#) PMCID: [PMC4520702](#)
25. Song G, Darr D, Santos CM, Ross M, Valdivia A, Jordan J, Midkiff BR, Cohen SM, Feinberg NN, **Miller CR**, Tarrant TK, Rogers AB, Dudley AC, Perou CM, Zamboni WC. Effects of tumor microenvironment heterogeneity on nanoparticle disposition and efficacy in breast cancer tumor models. *Clinical Cancer Research*. 20(23):6083-6095 Dec 2014. PMID: [25231403](#) PMCID: [PMC4565518](#)
26. Galvao RP, Kasina A, McNeill RS, Harbin JE, Foreman O, Verhaak RGW, Nishiyama A, **Miller CR**, Zong H. Transformation of quiescent adult oligodendrocyte precursor cells into malignant glioma through a multi-step reactivation process. *Proceedings of the National Academy of Science USA*. 111(40):E4214-E4223 Oct 2014. PMID: [25246577](#) PMCID: [PMC4210043](#)
27. McNeill RS, Schmid RS, Bash RE, Vitucci M, White KK, Werneke AM, Constance BH, Huff B, **Miller CR**. Modeling astrocytoma pathogenesis in vitro and in vivo using cortical astrocytes or neural stem cells from conditional, genetically engineered mice. *Journal of Visualized Experiments*. 90:e51763 Aug 2014. PMID: [25146643](#) PMCID: [PMC4827968](#)

C. RYAN MILLER, MD, PHD

28. Brooks SA, Brannon AR, Parker JS, Fisher JC, Sen O, Kattan MW, Hakimi AA, Hsieh JJ, Choueiri TK, Tamboli P, Maranchie JK, Hinds P, **Miller CR**, Nielsen ME, Rathmell WK. ClearCode34: A prognostic risk predictor for localized clear cell renal cell carcinoma. *European Urology*. 66(1):77-84 Jul 2014. PMID: [24613583](#) PMCID: [PMC4058355](#)
29. Nikolaishvilli-Feinberg N, Cohen SM, Midkiff B, Zhou Y, Olorvida M, Ibrahim JG, Omolo B, Shields JM, Thomas NE, Groben PA, Kaufmann WK, **Miller CR**. Development of DNA damage response signaling biomarkers using automated, quantitative image analysis. *Journal of Histochemistry and Cytochemistry*. 62(3):185-196 Mar 2014. PMID: [24309508](#) PMCID: [PMC3935445](#)
30. Zhou B, Damrauer JS, Bailey ST, Hadzic T, Jeong Y, Clark K, Fan C, Murphy L, Lee CY, Troester MA, **Miller CR**, Jin J, Darr D, Perou CM, Levine RL, Diehn M, Kim WY. Erythropoietin promotes breast cancer tumorigenesis through tumor initiating cell self-renewal. *Journal of Clinical Investigation*. 124(2):553-563 Feb 2014. PMID: [24435044](#) PMCID: [PMC3904607](#)
31. Malin D, Strelakova E, Petrovic V, Deal AM, Ahmad AA, Adamo B, **Miller CR**, Ugolkov A, Livasy C, Fritchie K, Hamilton EP, Blackwell K, Geradts J, Ewend M, Carey LA, Shusta EV, Anders CK, Cryns VL. α B-crystallin: A novel regulator of breast cancer metastasis to the brain. *Clinical Cancer Research*. 20(1):56-67 Jan 2014. PMID: [24132917](#) PMCID: [PMC3973485](#)
32. Huff LP, DeCristo MJ, Trembath D, Kuan PF, Yim M, Liu J, Cook DR, **Miller CR**, Der CJ, Cox AD. The role of Ect2 nuclear RhoGEF activity in ovarian cancer cell transformation. *Genes & Cancer*. 4(11-12):460-475 Nov/Dec 2013. PMID: [24386507](#) PMCID: [PMC3877668](#)
33. Song Y, Zhang Q, Kutlu B, Difilippantonio S, Bash R, Gilbert D, Yin C, O'Sullivan TN, Yang C, Kozlov S, Bullitt E, McCarthy KD, Kafri T, Louis DN, **Miller CR**, Hood L, Van Dyke T. Evolutionary etiology of high-grade astrocytomas. *Proceedings of the National Academy of Science USA*. 110(44):17933-17938 Oct 2013. PMID: [24114272](#) PMCID: [PMC3816471](#)
34. Brennan CW, Verhaak RGW, McKenna A, Campos B, Noushmehr H, Salama SR, Zheng S, Chakravarty D, Sanborn JZ, Berman SH, Beroukhi R, Bernard B, Wu CJ, Genovese G, Shmulevich I, Barnholtz-Sloan J, Zou L, Vegesna R, Shukla SA, Ciriello G, Yung WK, Zhang W, Sougnez C, Mikkelsen T, Aldape K, Bigner DD, Van Meir EG, Prados M, Sloan A, Black KL, Eschbacher J, Finocchiaro, Friedman W, Andrews DW, Guha A, Iacocca M, O'Neill BP, Foltz G, Myers J, Weisenberger DJ, Penny R, Kucherlapati R, Perou CM, Hayes DN, Gibbs R, Marra M, Mills GB, Lander E, Spellman P, Wilson R, Sander C, Weinstein J, Meyerson M, Gabriel S, Laird PW, Haussler D, Getz G, Chin L, and **Cancer Genome Atlas Research Network**. The somatic genomic landscape of glioblastoma. *Cell*. 155(2):462-477 Oct 2013. PMID: [24120142](#) PMCID: [PMC3910500](#)

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35. Kimura M, Lee Y, **Miller R**, Castillo M. Glioblastoma multiforme: relationship to subventricular zone and recurrence. *Neuroradiology Journal*. 26(5):542-547 Oct 2013. PMID: [24199814](#) PMCID: [PMC4202832](#)
36. Vitucci M*, Karpinich NO*, Bash RE, Werneke AM, Schmid RS, White KK, McNeill RS, Huff B, Wang S, Van Dyke T, **Miller CR**. Cooperativity between MAPK and PI3K signaling activation is required for glioblastoma pathogenesis. *Co-first authors. *Neuro-oncology*. 15(10):1317-1329 Oct 2013. PMID: [23814263](#) PMCID: [PMC3779038](#)
37. Rutledge WC, Kong J, Gao J, Gutman DA, Cooper L, Appin C, Park Y, Scarpace L, Mikkelsen T, Cohen ML, Aldape KD, McLendon RE, Lehman NL, **Miller CR**, Schniederjan MJ, Brennan CW, Moreno CS, Staltz JH, Brat DJ. Tumor-infiltrating lymphocytes in glioblastoma are associated with specific genomic alterations and related to transcriptional class. *Clinical Cancer Research*. 19(18):4951-4960 Sep 2013. PMID: [23864165](#) PMCID: [PMC3865611](#)
38. Raghunathan A, Wani K, Armstrong TS, Ver-Bolanos E, Fouladi M, Gilbertson R, Gajjar A, Goldman S, Lehman NL, Metellus P, Mikkelsen T, Necesito-Reyes MJ, Omuro A, Packer RJ, Partap S, Pollack IF, Prados MD, Robins HI, Soffiatti R, Wu J, **Miller CR**, Gilbert MR, Aldape KD, Collaborative Ependymoma Research Network. Histological predictors of outcome in ependymoma are dependent on anatomic site within the central nervous system. *Brain Pathology*. 23(5):584-594 Sep 2013. PMID: [23452038](#)
39. Wilkerson MD*, Schallheim JM*, Hayes DN*, Roberts PJ, Bastein R, Mullins M, Yin X, **Miller CR**, Thorne LB, Funkhouser WK, Fan C, Hayward MC, Bayer S, Perou CM, Bernard PS. Prediction of lung cancer histological types by qRT-PCR gene expression in FFPE specimens. *Co-first authors. *Journal of Molecular Diagnostics*. 15(4):485-497 Jul 2013. PMID: [23701907](#) PMCID: [PMC3699698](#)
40. Gershon TR, Crowther AJ, Liu H, **Miller CR**, Deshmukh M. Cerebellar granule neuron progenitors are the source of Hk2 in the postnatal cerebellum. *Cancer and Metabolism*. 1(1):15 Jun 2013. PMID: [24280296](#) PMCID: [PMC4178205](#)
41. Garcia I, Crowther AJ, Gama V, **Miller CR**, Deshmukh M, Gershon TR. Bax-deficiency prolongs cerebellar neurogenesis, accelerates medulloblastoma formation and paradoxically increases both malignancy and differentiation. *Oncogene*. 32(18):2304-2314 May 2013. PMID: [22710714](#) PMCID: [PMC3449008](#)
42. Anders CK, Adamo B, Karginova O, Deal AM, Rawal S, Walsh M, Darr D, Schorzman A, Santos C, Bash R, Kafri T, Carey L, **Miller CR**, Perou CM, Sharpless N, Zamboni WC. Pharmacokinetics and efficacy of PEGylated liposomal doxorubicin in an intracranial model of breast cancer. *PLoS One*. 8(5): e61359 May 2013. PMID: [23650496](#) PMCID: [PMC3641071](#)
43. Schlegel J, Sambade MJ, Sather S, Moschos SJ, Tan AC, Wings A, DeRyckere D, Carson CC, Trembath DG, Tentler JJ, Eckhardt SG, Kuan PF, Hamilton RL, Duncan LM, **Miller**

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- CR**, Nikolaishvili-Feinberg N, Midkiff BR, Liu J, Zhang W, Yang C, Wang X, Frye SV, Earp HS, Shields JM, Graham DK. MERTK receptor tyrosine kinase is a therapeutic target in melanoma. *Journal of Clinical Investigation*. 123(5):2257-2267 Apr 2013. PMID: [23585477](#) PMCID: [PMC3639697](#)
44. Hanna SC, Krishnan B, Bailey ST, Moschos SJ, Kuan PF, Shimamura T, Osborne LD, Siegel MB, Duncan LM, O'Brien ET, Superfine R, **Miller CR**, Simon MC, Wong KK, Kim WY. HIF1 α and HIF2 α independently activate SRC to promote melanoma metastases. *Journal of Clinical Investigation*. 123(5):2078-2093 Apr 2013. PMID: [23563312](#) PMCID: [PMC3635738](#)
45. Di L, Byun JS, Wong MM, Wakano C, Taylor T, Bilke S, Baek S, Hunter K, Yang H, Lee M, Zvosec C, Khramtsova G, Cheng F, Perou CM, **Miller CR**, Raab R, Olopade OI, Gardner K. Genome-wide profiles of CtBP link metabolism with genome stability and epithelial reprogramming in breast cancer. *Nature Communications*. 4:1449 Mar 2013. PMID: [23385593](#) PMCID: [PMC3768144](#)
46. Gershon TR, Crowther AJ, Tikunov A, Garcia I, Annis R, Yuan H, **Miller CR**, Macdonald J, Olson J, Deshmukh M. Hexokinase-2 mediated aerobic glycolysis is integral to cerebellar neurogenesis and required for pathogenesis of medulloblastoma. *Cancer and Metabolism*. 1(1):2 Jan 2013. PMID: [24280485](#) PMCID: [PMC3782751](#)
47. Grilley-Olson JE, Hayes DN, Moore DT, Leslie KO, Wilkerson MD, Qaqish BF, Hayward MC, Cabanski CR, Yin X, Socinski MA, Stinchcombe TE, Thorne LB, Allen TC, Banks PM, Beasley MB, Borczuk AC, Cagle PT, Christensen R, Colby TV, Deblois GG, Elmberger G, Graziano P, Hart CF, Jones KD, Maia DM, **Miller CR**, Nance KV, Travis WD, Funkhouser WK. Validation of interobserver agreement in lung cancer assessment: hematoxylin and eosin diagnostic reproducibility for non-small cell lung cancer - The 2004 World Health Organization classification and therapeutically relevant subsets. *Archives of Pathology & Laboratory Medicine*. 137(1):32-40 Jan 2013. PMID: [22583114](#) NIHMS: NIHMS936073
48. Dellon ES, Chen X, **Miller CR**, Woosley JT, Shaheen NJ. Diagnostic utility of major basic protein, eotaxin-3, and leukotriene enzyme staining in eosinophilic esophagitis. *American Journal of Gastroenterology*. 107(10):1503-1511 Oct 2012. PMID: [22777338](#) PMCID: [PMC3744826](#)
49. Liu W, Monahan KB, Pfefferle AD, Shimamura T, Sorrentino J, Chan KT, Roadcap DW, Ollila DW, Thomas NE, Castrillon DH, **Miller CR**, Perou CM, Wong KK, Bear JE, Sharpless NE. LKB1/STK11 inactivation leads to expansion of a pro-metastatic tumor sub-population in melanoma. *Cancer Cell*. 21(2):751-764 Jun 2012. PMID: [22698401](#) PMCID: [PMC3660964](#)
50. Wilkerson MD, Yin X, Walter V, Zhao N, Cabanski CR, Hayward MC, **Miller CR**, Socinski MA, Parsons AM, Thorne LB, Haithcock BE, Veeramachaneni NK, Funkhouser WK, Randell SH, Bernard PS, Perou CM, Hayes DN. Differential pathogenesis of lung

C. RYAN MILLER, MD, PHD

- adenocarcinoma subtypes involving sequence mutations, copy number, chromosomal instability, and methylation. *PLoS One*. 7(5):e36530 May 2012. PMID: [22590557](#) PMCID: [PMC3349715](#)
51. Pei Y, Moore CE, Wang J, Tewari AK, Eroshkin A, Cho YJ, Witt H, Korshunov A, Read TA, Sun JL, Schmitt EM, **Miller CR**, Buckley AF, McLendon RE, Westbrook TF, Northcott PA, Taylor MD, Pfister SM, Febbo PG, Wechsler-Reya RJ. An animal model of MYC-driven medulloblastoma. *Cancer Cell*. 21(2):155-167 Feb 2012. PMID: [22340590](#) PMCID: [PMC3285431](#)
 52. Dellon ES, Bower JJ, Keku TO, Chen L, **Miller CR**, Woosley JT, Orlando RC, Shaheen NJ. Markers of tyrosine kinase activity in eosinophilic esophagitis: A pilot study of the FIP1L1-PDGFR α fusion gene, pERK 1/2, and pSTAT5. *Diseases of the Esophagus*. 25(2):166-174 Feb 2012. PMID: [21819482](#) PMCID: [PMC3213309](#)
 53. Adamo B, Deal AM, Burrows E, Geradts J, Hamilton E, Blackwell KL, Livasy C, Fritchie K, Prat A, Harrell JC, Ewend MG, Carey LA, **Miller CR***, Anders CK*. Phosphatidylinositol 3-kinase pathway activation in breast cancer brain metastases. *Breast Cancer Research*. 13(6):R125 Dec 2011. *Co-senior authors. PMID: [22132754](#) PMCID: [PMC3326567](#)
 54. Ang MK, Patel MR, Yin XY, Sundaram S, Fritchie K, Zhao N, Liu Y, Freemerman AJ, Wilkerson MD, Walter V, Weissler MC, Shockley WW, Couch ME, Zanation AM, Hackman T, Chera BS, Harris SL, **Miller CR**, Thorne LB, Hayward MC, Funkhouser WK, Olshan AF, Shores CG, Makowski L, Hayes DN. High XRCC1 expression is associated with poorer survival in patients with head and neck squamous cell carcinoma. *Clinical Cancer Research*. 17(20):6542-6552 Oct 2011. PMID: [21908577](#) PMCID: [PMC3725262](#)
 55. Stevens EV, Banet N, Onesto C, Plachco A, Alan JK, Nikolaishvili-Feinberg N, Midkiff BR, Kuan PF, Liu J, **Miller CR**, Vigil D, Graves LM, Der CJ. RhoGDI2 antagonizes ovarian carcinoma growth, invasion and metastasis. *Small GTPases*. 2(4):202-210 Jul 2011. PMID: [22145092](#) PMCID: [PMC3225909](#)
 56. Anders CK, Deal AM, **Miller CR**, Khorram C, Meng H, Burrows E, Livasy C, Fritchie K, Ewend MG, Perou CM, Carey LA. The prognostic contribution of clinical breast cancer subtype, age, and race among patients with breast cancer brain metastases. *Cancer*. 117(8):1602-1611 Apr 2011. PMID: [21472708](#) PMCID: [PMC4265570](#)
 57. Dellon ES, Chen X, **Miller CR**, Fritchie KJ, Rubinas TC, Woosley JT, Shaheen NJ. Tryptase staining of mast cells may differentiate eosinophilic esophagitis from gastroesophageal reflux disease. *American Journal of Gastroenterology*. 106(2):264-271 Feb 2011. PMID: [20978486](#) PMCID: [PMC4372242](#)
 58. Wilkerson MD, Yin X, Hoadley KA, Liu Y, Hayward MC, Cabanski CR, Muldrew K, **Miller CR**, Randell SH, Socinski MA, Parsons AM, Funkhouser WF, Lee CB, Roberts PJ, Thorne L, Bernard PS, Perou CM, Hayes DN. Lung squamous cell carcinoma mRNA

C. RYAN MILLER, MD, PHD

- expression subtypes are reproducible, clinically important, and correspond to normal cell types. *Clinical Cancer Research*. 16(19):4864-4875 Oct 2010. PMID [20643781](#) PMCID: [PMC2953768](#)
59. Verhaak RGW, Hoadley KA, Purdom E, Wang V, Qi Y, Wilkerson MD, **Miller CR**, Ding L, Golub T, Mesirov JP, Alexe G, Lawrence M, O'Kelly M, Tamayo P, Weir BA, Gabriel S, Winckler W, Gupta S, Jakkula L, Feiler HS, Hodgson JG, James CD, Sarkaria JN, Brennan C, Kahn A, Spellman PT, Wilson RK, Speed TP, Gray JW, Meyerson M, Getz G, Perou CM, Hayes DN and Cancer Genome Atlas Research Network. Integrated genomic analysis identifies clinically relevant subtypes of glioblastoma characterized by abnormalities in PDGFRA, IDH1, EGFR, and NF1. *Cancer Cell*. 17(1):98-110 Jan 2010. PMID: [20129251](#) PMCID: [PMC2818769](#)
 60. Goodgame B, Viswanathan A, Zoole J, Gao F, **Miller CR**, Subramanian J, Meyers BF, Patterson GA, Govindan R. Risk of recurrence of resected stage I non-small cell lung cancer in elderly patients as compared with younger patients. *Journal of Thoracic Oncology*. 4(11):1370-1374 Nov 2009. PMID: [19692932](#)
 61. Perry A, **Miller CR**, Gujrati M, Scheithauer BW, Jost SC, Raghavan R, Qian J, Cochran EJ, Huse JT, Holland EC, Burger PC, Rosenblum MK. Malignant gliomas with primitive neuroectodermal tumor-like components: A clinicopathologic and genetic study of 53 cases. *Brain Pathology*. 19(1):81-90 Jan 2009. PMID: [18452568](#)
 62. Yu J, **Miller R**, Zhang W, Sharma M, Holtschlag V, Watson MA, McLeod HL. Copy-number analysis of topoisomerase and thymidylate synthase genes in frozen and FFPE DNAs of colorectal cancers. *Pharmacogenomics*. 9(10):1459-1466 Oct 2008. PMID: [18855534](#) PMCID: [PMC2575840](#)
 63. Goodgame B, Viswanathan A, **Miller CR**, Gao F, Meyers B, Battafarano RJ, Patterson A, Cooper J, Guthrie TJ, Bradley J, Pillot G, Govindan R. A clinical model to estimate recurrence risk in resected stage I non-small cell lung cancer. *American Journal of Clinical Oncology*. 31(1):22-28 Feb 2008. PMID: [18376223](#)
 64. Lim WT, Zhang WH, **Miller CR**, Watters JW, Gao F, Viswanathan A, Govindan R, McLeod HL. PTEN and phosphorylated AKT expression and prognosis in early- and late-stage non-small cell lung cancer. *Oncology Reports*. 17(4):853-857 Apr 2007. PMID: [17342327](#)
 65. Yuan L, Siegel M, Choi K, Khosla C, **Miller CR**, Jackson EN, Piwnica-Worms D, Rich KM. Tissue transglutaminase 2 inhibitor, KCC009, disrupts fibronectin assembly in the extracellular matrix and sensitizes orthotopic glioblastomas to chemotherapy. *Oncogene* 26(18):2563-2573 Apr 2007. PMID: [17099729](#)
 66. **Miller CR**, Dunham C, Scheithauer B, Perry A. Significance of necrosis in grading of oligodendroglial neoplasms: A clinicopathological and genetic study of newly diagnosed

C. RYAN MILLER, MD, PHD

- high-grade gliomas. *Journal of Clinical Oncology*. 24(34):5419-5426 Dec 2006. PMID: [17135643](#)
67. Conrad C, **Miller CR**, Ji Y, Gomez-Manzano C, Bharara S, McMurray JS, Lang FF, Wong F, Sawaya R, Yung WK, Fueyo J. Δ 24-hyCD adenovirus suppresses glioma growth in vivo by combining oncolysis and chemosensitization. *Cancer Gene Therapy* 12(3):284-294 Mar 2005. PMID: [15650766](#)
68. Blanquicett C, Gillespie GY, Nabors LB, **Miller CR**, Bharara S, Buchsbaum DJ, Diasio RB, Johnson MR. Induction of thymidine phosphorylase in both irradiated and shielded, contralateral human U87MG glioma xenografts: Implications for a dual modality treatment using capecitabine and irradiation. *Molecular Cancer Therapeutics* 1(12):1139-1145 Oct 2002. PMID: [12481438](#)
69. **Miller CR**, Williams CR, Buchsbaum DJ, Gillespie GY. Intratumoral 5-fluorouracil produced by cytosine deaminase/5-fluorocytosine gene therapy is effective for experimental human glioblastomas. *Cancer Research* 62(3):773-780 Feb 2002. PMID: [11830532](#)
70. **Miller CR**, Gustin AN, Buchsbaum DJ, Vickers SM, Manne U, Grizzle WE, Cloud GA, Diasio RB, Johnson MR. Quantitation of cytosine deaminase mRNA by real-time reverse transcription polymerase chain reaction: A sensitive method for assessing 5-fluorocytosine toxicity *in vitro*. *Analytical Biochemistry* 301(2):189-199 Feb 2002. PMID: [11814289](#)
71. Kelly FJ, **Miller CR**, Buchsbaum DJ, Gomez-Navarro J, Barnes MN, Alvarez RD, Curiel DT. Selectivity of TAG-72 targeted adenovirus gene transfer to primary ovarian carcinoma cells versus autologous mesothelial cells in vitro. *Clinical Cancer Research* 6(11):4323-4233 Nov 2000. PMID: [11106250](#)
72. Blackwell JL, **Miller CR**, Douglas JT, Li H, Reynolds PN, Carroll WR, Peters GE, Strong TV, Curiel DT. Retargeting to EGFR enhances adenovirus infection efficiency of squamous cell carcinoma. *Archives of Otolaryngology, Head & Neck Surgery* 125(8):856-863 Aug 1999. PMID: [10448731](#)
73. Douglas JT, **Miller CR**, Kim M, Dmitriev I, Mikheeva G, Krasnykh V, Curiel DT. A system for the propagation of adenoviral vectors with genetically modified receptor specificities. *Nature Biotechnology* 17(5):470-475 May 1999. PMID: [10331807](#)
74. **Miller CR**, Buchsbaum DJ, Reynolds PN, Douglas JT, Gillespie GY, Mayo MS, Raben D, Curiel DT. Differential susceptibility of primary and established human glioma cells to adenovirus infection: Targeting via the epidermal growth factor receptor achieves fiber receptor-independent gene transfer. *Cancer Research* 58(24):5738-5748 Dec 1998. PMID: [9865732](#)
75. Reynolds PN, **Miller CR**, Goldman CK, Doukas J, Sosnowski BA, Rogers BE, Gomez-Navarro J, Pierce GF, Curiel DT, Douglas JT. Targeting adenoviral infection with basic

C. RYAN MILLER, MD, PHD

fibroblast growth factor enhances gene delivery to vascular endothelial and smooth muscle cells. *Tumor Targeting* 3(3):156-164 Dec 1998.

76. Dmitriev I, Krasnykh V, **Miller CR**, Wang M, Kashentseva E, Mikheeva G, Belousova N, Curiel DT. An adenovirus vector with genetically modified fibers demonstrates expanded tropism via utilization of a coxsackievirus and adenovirus receptor-independent cell entry mechanism. *Journal of Virology* 72(12):9706-9713 Dec 1998. PMID: [9811704](#) PMCID: [PMC110480](#)
77. Krasnykh V, Dmitriev I, Mikheeva G, **Miller CR**, Belousova N, Curiel DT. Characterization of an adenovirus vector containing a heterologous peptide epitope in the HI loop of the fiber knob. *Journal of Virology* 72(3):1844-1852 Mar 1998. PMID: [9499035](#) PMCID: [PMC109474](#)
78. Ebbinghaus SW, Vigneswaran N, **Miller CR**, Chee-Awai RA, Mayfield CA, Curiel DT, Miller DM. Efficient delivery of triplex forming oligonucleotides to tumor cells by adenovirus-polylysine complexes. *Gene Therapy* 3(4):287-297 Apr 1996. PMID: [8732160](#)

REFEREED ARTICLES: REVIEW ARTICLES

1. LeBlanc AK, Mazcko C, Brown DB, Koehler JW, Miller AD, **Miller CR**, Bentley RT, Packer RA, Breen M, Boudreau B, Levine JM, Simpson MR, Halsey C, Kisseberth W, Rossmeisl JH, Dickinson PJ, Fan T, Corps K, Aldape K, Puduvalli V, Gilbert MR. Creation of an NCI Comparative Brain Tumor Consortium: Informing the translation of new knowledge from canine to human brain tumor patients. *Neuro-oncology*. 18(9):1209-1218 Sep 2016. PMID: [27179361](#) PMCID: [PMC4999002](#)
2. McNeill RS, Vitucci M, Wu J, **Miller CR**. Contemporary murine models in preclinical astrocytoma drug development. *Neuro-oncology*. 17(1):12-28 Jan 2015. PMID: [25246428](#) PMCID: [PMC4483055](#)
3. Huse JT, Wallace M, Aldape KD, Berger MS, Bettegowda C, Brat DJ, Cahill DP, Cloughesy T, Haas-Kogan DA, Marra M, **Miller CR**, Nelson SJ, Salama SR, Soffiatti R, Wen PY, Yip S, Yen K, Costello JF, Chang S. Where are we now? And where are we going? A report from the Accelerate Brain Cancer Cure (ABC²) low-grade glioma workshop. *Neuro-oncology*. 16(2):173-178 Jan 2014. PMID: [24305708](#) PMCID: [PMC3895389](#)
4. Schmid RS, Vitucci M, **Miller CR**. Genetically engineered mouse models of diffuse gliomas. *Brain Research Bulletin*. 88(1):72-79 May 2012. PMID: [21684324](#)
5. Horbinski C, **Miller CR**, Perry A. Gone FISHing: Clinical lessons learned in brain tumor molecular diagnostics over the last decade. *Brain Pathology*. 21(1):57-73 Jan 2011. PMID: [21129060](#)

C. RYAN MILLER, MD, PHD

6. Vitucci M, Hayes DN, **Miller CR**. Gene expression profiling of gliomas: Merging genomic and histopathological classification for personalised therapy. *British Journal of Cancer*. 104(4):545-553 Feb 2011. PMID: [21119666](#) PMCID: [PMC3049580](#)
7. Trembath D, **Miller CR**, Perry A. Grey zones in brain tumor classification: Evolving concepts. *Advances in Anatomic Pathology* 15(5):287-297 Sep 2008. PMID: [18724102](#)
8. **Miller CR** and Perry A. Glioblastoma: Morphological and molecular genetic diversity. *Archives of Pathology and Laboratory Medicine* 131(3):397-406 Mar 2007. PMID: [17516742](#)
9. **Miller CR** and McLeod HL. Pharmacogenomics of cancer chemotherapy-induced toxicity. *Journal of Supportive Oncology* 5(1):9-14 Jan 2007. PMID: [17265780](#)
10. Gustin A, Pederson L, **Miller R**, Chan C, Vickers SM. Application of molecular biology studies to gene therapy treatment strategies. *World Journal of Surgery* 26(7):854-860 Apr 2002. PMID: [11960211](#)

REFEREED ARTICLES: EDITORIALS, LETTERS, AND CASE REPORTS

1. Khagi S, **Miller CR**. Putting “multiforme” back into glioblastoma: intratumoral transcriptome heterogeneity is a consequence of its complex morphology. *Neuro-oncology*. *Neuro-oncology*. 19(12):1570-1571 Nov 2017. PMID: [29016836](#) PMCID: [PMC5716077](#)
2. Stowe HB, **Miller CR**, Wu J, Randazzo DM, Ju AW. Pineal region glioblastoma: A case report and literature review. *Frontiers in Oncology*. 7:123 Jun 2017. PMID: [28660172](#) PMCID: [PMC5466962](#)
3. McNeill RS, Irvin DM, **Miller CR**. BRAF mutations open doors to ENU-induced gliomagenesis. *American Journal of Pathology*. 186(10):2551-2554 Oct 2016. PMID: [27543966](#) PMCID: [PMC5222976](#)
4. Vadivelu S, Mangano FT, **Miller CR**, Leonard JR. Multifocal Langerhans cell histiocytosis of the pediatric spine: a case report and literature review. *Child's nervous system*. 23(1):127-131 Jan 2007. PMID: [17021733](#)
5. **Miller CR** and Perry A. Immunohistochemical differentiation of hemangioblastoma from metastatic clear cell renal carcinoma: An update. *Advances in Anatomic Pathology* 11(6):325 Nov 2004.
6. **Miller CR** and Perry A. CD34 and MAP-2 immunohistochemistry in the differential diagnosis of epilepsy-associated glioneuronal tumors. *Advances in Anatomic Pathology* 11(6):326 Nov 2004.
7. **Miller CR**. Targeted adenovirus vectors. *Science & Medicine* 6(5):18-19 Sep/Oct 1999.

C. RYAN MILLER, MD, PHD

8. **Miller R**, Curiel DT. Towards the use of replicative adenoviral vectors for cancer gene therapy. *Gene Therapy* 3(7):557-559 Jul 1996. PMID: [8818641](#)

REFEREED ARTICLES: IN PRESS

REFEREED ARTICLES: SUBMITTED

1. Kesarwani P, Prabhu A, Kant S, Kumar P, Graham SF, Buelow K, Wilson G, **Miller CR**, Chinnaiyan P. Tryptophan metabolism contributes to radiation-induced immune checkpoint reactivation in glioblastoma. *Clinical Cancer Research*. Submitted January 5, 2018. 42 pages.
2. Van Swearingen AED, Siegel MB, Deal AM, Sambade MJ, Hoyle A, Hayes DN, Jo H, Little P, Dees EC, Muss H, Jolly T, Zagar TM, Patel N, **Miller CR**, Parker JS, Smith JK, Fisher J, Shah N, Nabell L, Nanda R, Dillon P, Puhalla S, Abramson V, Carey LA, Anders CK. LCCC 1025: A phase II study of everolimus, trastuzumab and vinorelbine to treat progressive HER2-positive breast cancer brain metastases. *Journal of Clinical Oncology*. Submitted December 28, 2017. 30 pages.
3. Allott EH, Geradts J, Cohen SM, Khoury T, Zirpoli GR, Bshara W, Davis W, Omilian A, Nair P, Ondracek RP, Cheng TYD, **Miller CR**, Hwang H, Thorne LB, O'Connor S, Bethea TN, Bell ME, Hu Z, Li Y, Kirk EL, Sun X, Ruiz-Narvaez EA, Perou CM, Palmer JR, Olshan AF, Ambrosone CB, Troester MA. Frequency of breast cancer subtypes among African American women in the AMBER consortium. *Breast Cancer Research*. Submitted August 22, 2017. 24 pages.
4. McNeill RS, Stroobant EE, Smithberger E, Canoutas DA, Butler MK, Patel SD, Shelton AK, Limas JC, Skinner KR, Bash RE, Schmid RS, **Miller CR**. PIK3CA missense mutations promote glioblastoma pathogenesis, but do not enhance targeted PI3K inhibition. *Neuro-oncology*. Submitted August 30, 2017.
5. Danussi C, Bose P, Parthasarathy PT, Silberman P, Van Arnam JS, Vitucci M, Tang O, Heguy A, Chan TA, Sulman EP, Lang F, Creighton CJ, Deneen B, **Miller CR**, Picketts DJ, Kannan K, Huse JT. Atrx deficiency drives motility and dysregulates differentiation in glioma cells of origin through global epigenomic remodeling. *Nature Communications*. Submitted July 12, 2017.
6. Okolie O, Irvin DM, Bago JR, Sheets K, Satterlee A, Dimitru R, Elton S, Ewend M, **Miller CR**, Hingtgen SD. Intra-cavity stem cell therapy inhibits tumor progression in a novel murine model of medulloblastoma surgical resection. *Plos One*. Submitted June 20, 2017. 28 pages.
7. Pudukodu HS, Su BW, Alexander WD, Nonneman RJ, Ryan AK, Giusti-Rodriguez P, Sakamoto K, Nikolaishvili-Feinberg N, Midkiff BR, Xia Y, **Miller CR**, Crowley JJ.

C. RYAN MILLER, MD, PHD

Whole-brain neuronal and glial migration from neurogenic niches of the adult mouse brain. *Journal of Neuroscience*. Submitted September 7, 2016. 37 pages.

8. Barr KJ, Pillinger DA, Feinberg NN, Wan Y, **Miller CR**, Sharpless JL. Quantitative ACTH staining and recurrence of silent corticotroph adenomas and Cushing's disease. *Journal of Clinical Endocrinology & Metabolism*. Submitted June 22, 2016. 13 pages.
9. Yuan H, Frank JE, Bash R, **Miller CR**, Anders C, Dewhirst MW. ⁶⁴Cu-ATSM PET imaging for brain tumor hypoxia on glioblastoma mouse models. *Nuclear Medicine & Biology*. Submitted February 16, 2016. 21 pages.
10. Commander LA, Carson CC, Pandey S, Nikoliashvili-Feinberg N, Groben PA, Kuan PF, Wheless A, Livasy C, Edmiston SN, Gibbs DC, **Miller CR**, Carey LA, Moschos SJ, Ollila DW, Conway K, Thomas NE. Interleukin-2-inducible T cell kinase tumor protein levels associated with ER and PR negative breast cancer. *Breast Cancer Research*. Submitted March 4, 2015. 9 pages.

REFEREED ARTICLES: PUBLISHED ABSTRACTS

1. Danussi C, Bose P, Parthasarathy P, Silberman P, Van Arnam JS, Vitucci M, Tang O, Heguy A, Chan T, Sulman E, Lang F, Creighton CJ, Deneen B, **Miller CR**, Picketts D, Kannan K, Huse J. Atrx deficiency in glioma cells of origin promotes disease-defining phenotypes by way of global epigenomic remodeling. *Neuro-oncology*. 19(S6):vi97 GENE-24 Nov 2017.
2. Smithberger E, Flores AR, Dhruv HD, Johnson GL, Berens ME, Furnari FB, **Miller CR**, McNeill RS, Stuhlmiller TJ, Bash RE, Khagi S, Johnson GL, Miller CR. Impact of EGFRvIII and Pten deletion mutations on response of Ink4a/Arf-null murine astrocytes to EGFR tyrosine kinase inhibitors. *Neuro-oncology*. 19(S6):vi84 EXTH-53 Nov 2017.
3. Van Swearingen AED, Sambade MJ, Siegel MB, Sud S, Bevill SM, Golitz BT, Bash RE, Santos CM, Darr DB, Parker JS, **Miller CR**, Johnson GL, Anders CK. Several rational combination kinase inhibitor treatments identified by synthetic lethality screens are efficacious in intracranial triple negative breast cancer models. *Molecular Cancer Therapeutics*. 16(S10):A03 Oct 2017.
4. McNeill RS, Stuhlmiller TJ, Bash RE, Khagi S, Johnson GL, **Miller CR**. Functional kinome characterization of a diverse panel of glioblastoma models. *Neuro-oncology*. 18(S6):vi207-vi208 TMOD-01 Nov 2016.
5. Irvin DM, Vitucci M, McNeill RS, Bash RE, **Miller CR**. Regional astrocyte heterogeneity influences evolution of low-grade glioma during malignant progression. *Neuro-oncology*. 18(S6):vi207-vi208 TMOD-05 Nov 2016.

C. RYAN MILLER, MD, PHD

6. Okolie O, Bago JR, Schmid RS, Irvin DM, Bash RE, **Miller CR***, **Hingtgen SD***. Reactive astrocytes potentiate tumor aggressiveness in a murine glioma resection and recurrence model. *Neuro-oncology*. 18:vi214 TMOD-34 Nov 2016. *Co-senior authors.
7. Irvin DM, McNeill RS, Bash RE, **Miller CR**. Cell of origin and initiating mutations influence glioma pathogenesis. *Journal of Neuropathology and Experimental Neurology*. 75(6):571 Jun 2016.
8. Anderson SK, **Miller CR**, Sarkaria JN, Jaeckle KA, Buckner JC, Ligon KL, Ballman KV, Moore DF, Ahluwalia MS, Lee EQ, Hovarth E, Gerstner ER, Lesser GJ, Prados M, Grossman SA, Giannini C, Wen PY, Galanis E. Validating RNAseq-signatures of vorinostat (VOR) sensitivity and resistance in patients with newly diagnosed glioblastoma (GBM) treated with VOR, temozolomide and radiation therapy from Alliance N0874/ABTC-0902. *Proceedings of the American Society of Clinical Oncology*. 34:2029 Jun 2016.
9. McNeill RS, Canoutas DA, Bash RE, Schmid RS, Constance BH, Johnson GL, **Miller CR**. Influence of PI3K and MAPK pathway mutations on response to mono and dual treatment with targeted kinase inhibitors. *FASEB Journal*. 30(1):S515.1 Apr 2016.
10. Markovic-Plese S, Zhang X, Khan T, Zelasky C, Kurtoglu B, Cohen S, **Miller CR**, Sobel R. IL-11 induces Th17-cell responses in relapsing remitting multiple sclerosis (RRMS). *Neurology*. 86(16S):P5.339. Apr 2016.
11. Schmid RS, Vitucci M, McNeill RS, Bash RE, Werneke AM, Huey L, White KK, Ewend MG, Wu J, **Miller CR**. De-differentiation of astrocytes into glioblastoma stem cells through core pathway mutations. *Neuro-oncology*. 17(S5):v68 CSIG-14 Nov 2015.
12. McNeill RS, Canoutas DA, Schmid RS, Bash RE, Constance BH, Azam SH, Reuther RA, Johnson GL, **Miller CR**. Influence of MAPK and PI3K pathway mutations on response to targeted inhibitors. *Neuro-oncology*. 17(S5):v30 ATPS-55 Nov 2015.
13. Giannini C, Ligon KL, **Miller CR**, Tollefson H, Korinek M, Holmes D, Jenkins S, Galanis E, Buckner J. Central pathology review by whole slide imaging in glioblastoma clinical trials. *Journal of Neuropathology and Experimental Neurology*. 74(6):595 Jun 2015.
14. Van Swearingen AED, Siegel MB, Sambade MJ, Sud S, Miller SM, Bash RE, Santos CM, Darr DB, Golitz B, Parker JS, **Miller CR**, Johnson GL, Anders CK. Combination therapy with MEK inhibition is efficacious in intracranial triple negative breast cancer models. *Proceedings of the American Association for Cancer Research*. 55:2579 Apr 2015.
15. Irvin DM, Schmid RS, Bash RE, **Miller CR**. Influence of regional microenvironment and astrocyte heterogeneity on astrocytoma development. *Neuro-oncology*. 16(S5):v121 ME07 Nov 2014.

C. RYAN MILLER, MD, PHD

16. Wu J, Huey L, Bash RE, Cohen SM, Ewend MG, Wang X, Graham DK, Frye SV, Earp HS, **Miller CR**. MerTK as a target in glioblastoma. *Neuro-oncology*. 16(S5):v166-167 NT38 Nov 2014.
17. McNeill RS, Van Swearingen AED, Bash RE, Azam SH, Canoutas DA, Constance BH, Schmid RS, Anders CA, **Miller CR**. Efficacy of mono and dual PI3K and MAPK inhibition in glioblastoma and triple-negative breast cancer brain metastasis models. *Journal of Neuropathology and Experimental Neurology*. 73(6):587 Jun 2014.
18. Galanis E, Anderson SK, **Miller CR**, Sarkaria JN, Jaeckle KA, Buckner JC, Ligon KL, Ballman KV, Moore DF, Ahluwalia MS, Lee EQ, Gerstner ER, Lesser GJ, Prados M, Grossman SA, Giannini C, Wen PY, Alliance for Clinical Trials in Oncology, Adult Brain Tumor Consortium. Phase II trial of vorinostat combined with temozolomide and radiation therapy for newly diagnosed glioblastoma (Alliance N0874/ABTC-0902). *Proceedings of the American Society of Clinical Oncology*. 32(5S):2030 Jun 2014.
19. Van Swearingen AED, Siegel MB, Bash R, Golitz B, Santos CM, Darr DB, Parker J, Johnson GL, **Miller CR**, Anders CK. PI3K and MEK inhibition in intracranial triple negative breast cancer: Efficacy of BKM120 and AZD6244 in preclinical mouse models. *Proceedings of the American Association for Cancer Research*. 54:5449A Apr 2014.
20. Schmid RS, Irvin DM, Vitucci M, Bash RE, Werneke AM, **Miller CR**. The role of regional astrocyte identity in astrocytoma genomic heterogeneity. *Neuro-oncology*. 15(S3):iii213 Nov 2013.
21. Song G, Darr DB, Santos CM, White TF, Jordan JL, Kim M, Midkiff BR, Feinberg NN, **Miller CR**, Rogers AB, Dudley AC, Perou CM, Zamboni WC. Relationship between tumor-associated macrophages, tumor delivery, and efficacy of PEGylated liposomal doxorubicin and non-liposomal doxorubicin in genetically engineered mouse models of breast cancer. *Proceedings of the American Association for Cancer Research*. 53:3354 Apr 2013.
22. Schlegel J, Sambade M, Sather S, Moschos S, Tan AC, Wings A, DeRyckere D, Carson CC, Trembath DG, Tentler JJ, Eckhardt G, Kuan PF, Hamilton RL, Duncan LM, **Miller CR**, Nikolaishvili-Feinberg N, Midkiff BR, Wang X, Liu J, Zhang W, Yang C, Frye SV, Earp HS, Shields J, Graham DK. Mer receptor tyrosine kinase is a novel therapeutic target in melanoma. *Proceedings of the American Association for Cancer Research*. 53:3037 Apr 2013.
23. Schmid RS, Bash RE, Werneke AM, White KK, **Miller CR**. Cortical GFAP+ astrocytes as a potential cellular origin of GBM. *Neuro-oncology*. 14(S6):vi150 Nov 2012.
24. Gershon T, Crowther A, Garcia I, Gama V, Allard D, **Miller CR**, Deshmukh M. Medulloblastoma is primed for rapid apoptosis by constitutively active Bax: A unique vulnerability which may be exploited for therapeutic benefit. *European Journal of Cancer*. 48:30 Nov 2012.

C. RYAN MILLER, MD, PHD

25. **Miller CR**, Vitucci M, Bash R, White KK, Schmid RS. Genomic abnormalities acquired during glioblastoma progression alter driver-specific signatures identifiable in low-grade astrocytomas. *Neuro-oncology*. 14(S6):vi163 Nov 2012.
26. Garcia I, Crowther AJ, Gama V, **Miller CR**, Deshmukh M, Gershon TR. Bax-resistance plays an essential role in medulloblastoma formation. *Neuro-oncology*. 14(S1):MB50 Jun 2012.
27. **Miller CR**, Vitucci M, Bash R, Schmid RS. Genomic gains acquired during glioblastoma progression obscure driver-specific signatures present in low-grade astrocytomas. *Journal of Neuropathology and Experimental Neurology*. 71(6):578 Jun 2012.
28. Vitucci M, Huff B, Bash RE, Karpinich NO, Schmid RS, **Miller CR**. Dissecting the requirements for astrocytoma initiation and invasion using genetically-engineered mouse models. *Proceedings of the American Association for Cancer Research*. 52:4305 Apr 2012.
29. Schmid RS, Bash RE, Werneke AM, **Miller CR**. Roles of cortical and subventricular GFAP+ astrocytes in initiation of astrocytomas. *Proceedings of the American Association for Cancer Research*. 52:3302 Apr 2012.
30. DeCristo MJ, Parker LE, Trembath D, Kuan PF, Yim M, Liu J, **Miller CR**, Der CJ, Cox AD. A functional analysis of the nuclear RhoGEF Ect2 in ovarian cancer. *Proceedings of the American Association for Cancer Research*. 52:LB30 Apr 2012.
31. Schmid RS, Bash R, Vitucci M, Werneke AM, **Miller CR**. Diffuse astrocytomas can arise from GFAP+ astrocytes with stem cell-like properties originating from the subventricular zone (SVZ) or other areas of the neuroaxis. *Neuro-oncology*. 13(S3):ii152 Nov 2011.
32. Rosenberg LA, Shields J, **Miller CR**. Radiosensitization with the PARP inhibitor ABT-888 is independent of Pten or Tp53 status in cultured murine high-grade astrocytes. *International Journal of Radiation Oncology, Biology, & Physics*. 81(2):S734-S735 Oct 2011.
33. **Miller CR**, Bash R, Vitucci M, Werneke AM, Schmid RS. Diffuse astrocytomas can arise from either GFAP+ astrocytes or subventricular zone (SVZ) neural stem/progenitor cells. *Journal of Neuropathology and Experimental Neurology*. 70(6):499 Jun 2011.
34. Huff B, Bash R, Karpinich NO, Schmid RS, **Miller CR**. Dissecting the role of PTEN in astrocytoma invasion using genetically-engineered mouse models. *Journal of Neuropathology and Experimental Neurology*. 70(6):526 Jun 2011.
35. Adamo B, Deal A, Livasy C, Burrows E, Fritchie K, Blackwell K, Hamilton E, Geradts J, Thorne L, Ugolkov A, **Miller CR**, Ewend MG, Carey L, Perou CM, Cryns V, Anders C. Alpha-basic-crystallin (aBC) expression in breast cancer brain metastases (BCBM) and

C. RYAN MILLER, MD, PHD

- primary breast cancers (pBC) with eventual BM. *Journal of Clinical Oncology*. 29(15S):2041 Jun 2011. PMID: [28023795](#)
36. Dellon ES, Bower JJ, Sui W, Keku TO, Chen X, **Miller CR**, Livasy CA, Woosley JT, Orlando RC, Shaheen NJ. Markers of tyrosine kinase activity for diagnosis and treatment response in eosinophilic esophagitis: A pilot study of pERK 1/2 and pSTAT5. *Gastroenterology*. 140(5):S187 May 2011.
 37. Dellon ES, Bower JJ, Keku TO, Chen X, **Miller CR**, Livasy CA, Woosley JT, Orlando RC, Shaheen NJ. Constitutively active tyrosine kinase due to the FIP1L1-PDGFR α fusion protein: A potential non-allergic pathogenic mechanism in eosinophilic esophagitis? *Gastroenterology*. 140(5):S236-S237 May 2011.
 38. Wilkerson MD, Yin X, Hayward MC, Veeramachaneni NK, Haithcock BE, Funkhouser WK, Thorne L, **Miller CR**, Randell SH, Perou CM, Hayes DN. Lung cancer patients exhibit a genome-wide chromosomal instability and DNA methylation positive correlation which varies by expression subtype. *Proceedings of the American Association for Cancer Research*. 52:4839 Apr 2011.
 39. Brennan C, Brat DJ, Aldape KD, Cohen ML, Lehman NL, McLendon RE, Schniederjan M, **Miller CR**, Vandenberg SR. Addition of GBM histological features and EGFRvIII expression to The Cancer Genome Atlas: phenotypic correlates of molecular subclasses. *Neuro-oncology*. 12(S4):OM31 Nov 2010.
 40. Adamo B, Darr DB, Usary JE, Harrell JC, Meng H, Kafri T, Deal AM, Zamboni W, **Miller CR**, Anders CK. Preclinical development of an intracranial triple negative breast cancer (TNBC) tumor model: A pilot study. *Annals of Oncology*. 21(S8):59 Jun 2010.
 41. Wilkerson MD, Yin X, Hayward MC, Funkhouser WK, Thorne L, Parsons AM, **Miller CR**, Socinski MA, Bernard PS, Perou CM, Hayes DN. Lung adenocarcinoma subtypes have unique gene mutations (EGFR, TP53), DNA copy number alterations (3q26, 16p13), and patient smoking histories. *Proceedings of the American Association for Cancer Research*. 51:2164 Apr 2010.
 42. Vitucci M, Bash RE, White KK, **Miller CR**. Pharmacological manipulation of the PI3 kinase pathway in a genetically-defined, PTEN-deficient model of glioblastoma. *Journal of Neuropathology and Experimental Neurology*. 69(5):522 May 2010.
 43. **Miller CR**, Bash RE, Vitucci M, White KK. A genetically-defined, orthotopic allograft model system of glioblastoma: Pathological features and experimental therapeutics. *Journal of Neuropathology and Experimental Neurology*. 69(5):522 May 2010.
 44. Song Y, Zhang Q, **Miller CR**, Threadgill D, McCarthy DK, Van Dyke T. Role of EGFR signaling in an inducible mouse model of astrocytomas. *Proceedings of the American Association for Cancer Research*. 51:LB150 Apr 2010.

C. RYAN MILLER, MD, PHD

45. Bash R, Karpinich NO, Vitucci M, Guzman OY, White KK, Snider JL, Van Dyke T, **Miller R**. Concurrent temozolomide-external-beam radiation therapy is effective for experimental glioblastomas in an orthotopic, genetically engineered syngeneic mouse allograft model system. *Neuro-Oncology*. 11(5):638 Oct 2009.
46. Verhaak RG, Hoadley KA, Purdom E, Wang V, Qi Y, Wilkerson MD, **Miller CR**, Ding L, Golub TR, Mesirov J, Gupta S, Lawrence M, O'Kelly M, Gabriel S, Winckler W, Alexa G, Kahn A, Spellman PT, Wilson RK, Speed T, Gray JW, Meyerson M, Getz G, Perou CM, Hayes DN. Reproducible gene expression subtypes of glioblastoma show associations with chromosomal aberrations, gene mutations, and clinical phenotypes. *Proceedings of the American Association for Cancer Research*. 50:345 Apr 2009.
47. **Miller CR**, Guzman OY, Karpinich NO, Adams DP, Bash R, Van Dyke T. A genetically engineered mouse model of glioblastoma for RAS and PI3K pathway-targeted drug-biomarker co-development. *Neuro-Oncology*. 10(5):798 Oct 2008.
48. Guzman OY, Karpinich NO, Adams DPC, Bash R, Van Dyke T, **Miller CR**. A genetically-engineered mouse model of glioblastoma for targeted drug-biomarker co-development. *Proceedings of the American Association for Cancer Research*. 49:2920 Apr 2008.
49. **Miller CR**, Haddix T, Dunham CP, Perry A. Clinical significance of prospective molecular genetic analysis of glial neoplasms: The Washington University FISH Laboratory experience. *Journal of Neuropathology and Experimental Neurology*. 66(5):426 May 2007.
50. **Miller CR**, Haddix T, Dunham CP, Perry A. Clinical significance of prospective molecular genetic analysis of glial neoplasms: The Washington University FISH Laboratory experience. *FASEB Journal*. 21(5):A26 May 2007.
51. **Miller CR**, Dunham C, Scheithauer BW, Perry A. Significance of necrosis in grading of anaplastic oligodendroglial tumors: A clinicopathological and genetic study of 916 high-grade gliomas. *American Society of Clinical Oncology 2006 Annual Meeting Summaries*.
52. **Miller CR**, Dunham C, Scheithauer BW, Perry A. Significance of necrosis in grading of anaplastic oligodendroglial tumors: A clinicopathological and genetic study of 916 high-grade gliomas. *Proceedings of the American Society of Clinical Oncology*. 24(18S):58S Jun 2006.
53. Viswanathan AK, Goodgame B, Lim WT, Gao F, Hennenfent K, Subramanian J, **Miller CR**, Battafarano R, Govindan R. Outcomes of resected stage I non-small cell lung cancer (NSCLC) in patients aged 70 years and above. *Proceedings of the American Society of Clinical Oncology*. 23(16):735S Jun 2005.

C. RYAN MILLER, MD, PHD

54. **Miller CR** and Perry A. Oligodendroglial neoplasms with pseudopalisading necrosis: A clinicopathologic and FISH study of 44 cases. *Journal of Neuropathology and Experimental Neurology*. 64(5):438 May 2005.
55. Blanquicett C, Gillespie GY, Nabors LB, **Miller CR**, Diasio RB, Johnson MR. Single dose irradiation of U87MG gliomas in nude mice modulates expression of thymidine phosphorylase (TP), interleukin-8 (IL-8), vascular endothelial growth factor (VEGF) and cyclooxygenase-2 (COX-2). *Proceedings of the American Association for Cancer Research*. 43:1523 Apr 2002
56. **Miller CR**, Blanquicett C, Buchsbaum DJ, Gillespie GY, Diasio RB, Johnson MR. Radiation modulates fluoropyrimidine metabolism in human glioblastoma cells through cytokine-mediated induction of thymidine phosphorylase expression. *Proceedings of the American Association for Cancer Research*. 43:1451 Apr 2002.
57. **Miller CR**, Buchsbaum DJ, Johnson MR, Diasio RB, Gillespie GY. 5-fluorocytosine pro-drug therapy in immunocompromised mice bearing intracranial human gliomas treated intratumorally with adenoviruses expressing cytosine deaminase (CD) or CD/uracil phosphoribosyltransferase. *Neuro-Oncology*. 3(S1):S27 Oct 2001.
58. **Miller CR**, Bharara S, Chiz S, Buchsbaum DJ, Gillespie GY. Cytosine deaminase/5-fluorocytosine gene-directed enzyme/prodrug therapy for malignant gliomas. *Neuro-Oncology*. 3(4):292 Oct 2001.
59. **Miller CR**, Kelly FJ, Williams CR, Curiel DT, Buchsbaum DJ, Gillespie GY. A quantitative method for determining adenovirus gene transfer efficiency with established and primary human tumor cell cultures. *Molecular Therapy*. 3(5S):A460 May 2001.
60. Williams CR, **Miller CR**, Buchsbaum DJ. Uracil phosphoribosyltransferase potentiates 5-fluorouracil and cytosine deaminase/5-fluorocytosine cytotoxicity in prostate cancer. *Proceedings of the American Association for Cancer Research*. 42:2445 Apr 2001.
61. **Miller CR**, Buchsbaum DJ, Williams CR, Kiss P, Elgavish G, Grizzle WE, Diasio RB, Johnson MR, Gillespie GY. Cytosine deaminase/5-fluorocytosine therapy for gastrointestinal (GI) and non-GI malignancies. *Proceedings of the American Association for Cancer Research*. 42:150 Apr 2001.
62. **Miller CR**, Buchsbaum DJ, Johnson MR, Diasio RB, Gillespie GY. Replication-competent and -incompetent adenovirus CD/5-FC therapy in three intracranial SCID mouse glioma models. *Neuro-Oncology*. 2(4):146 Oct 2000.
63. Grill J, van Beusechem VW, Haisma HJ, **Miller CR**, Krasnykh V, Curiel DT, Gerritsen WR. A combination of genetic and immunological targeting of adenoviruses to enhance gene transfer into glioma cells. *Proceedings of the American Association for Cancer Research*. 41:2887 Apr 2000.

C. RYAN MILLER, MD, PHD

64. Gustin AN, Johnson MR, **Miller CR**, Diasio RB, Grizzle W, Vickers S, Buchsbaum DJ. Quantitation of cytosine deaminase and adenovirus by real time RT-PCR: A novel method for assessing expression levels in gene therapy. Proceedings of the American Association for Cancer Research. 41:4254 Apr 2000.
65. **Miller CR**, Buchsbaum DJ, Johnson MR, Diasio RB, Gillespie GY. An adenovirus vector encoding cytosine deaminase sensitizes human gliomas to 5-fluorocytosine in an intracranial SCID mouse model. Proceedings of the American Association for Cancer Research. 41:4257 Apr 2000.
66. Kelly J, **Miller CR**, Buchsbaum DJ, Navarro JG, Siegal G, Barnes MN, Alvarez RD, Curiel DT. Specificity of target receptor determines selectivity of targeted adenovirus gene transfer to primary ovarian carcinoma cells. Gynecologic Oncology 76(2):230 Feb 2000.
67. Douglas JT, **Miller CR**, Kim M, Curiel DT. Genetic engineering of novel artificial primary cellular receptors for human adenovirus serotype 5. Journal of Gene Medicine 1(S1):74 Jan 1999.
68. **Miller CR**, Rogers BE, Douglas JT, Gillespie GY, Raben D, Buchsbaum DJ, Curiel DT. EGFR targeted adenoviral mediated gene delivery to human glioblastoma tumors. Proceedings of the American Association for Cancer Research 39:3775 Apr 1998.
69. Reynolds PN, **Miller CR**, Douglas JT, Sosnowski B, Curiel DT. Enhanced gene transfer to vascular endothelium using retargeted adenoviral vectors. Cancer Gene Therapy 4(6):S39 Nov 1997.
70. Tillman B, **Miller R**, Douglas JT, Curiel DT. Targeted adenovirus entry into B-cells via the Epstein-Barr virus pathway. Cancer Gene Therapy 4(6):S35 Nov 1997.
71. **Miller R**, Rogers BE, Carpenter T, Douglas JT, Gillespie GY, Buchsbaum DJ, Curiel DT and Raben D. Improved radiolabeled peptide localization to gliomas through the use of targeted adenoviral vectors. Cancer Gene Therapy 4(6):S30 Nov 1997.
72. **Miller R**, Reynolds PN, Tillman B, Raben D, Douglas JT, Curiel DT. Targeting adenoviral gene delivery to the epidermal growth factor receptor. Cancer Gene Therapy 4(6):S39 Nov 1997.
73. Michael SI, Douglas JT, **Miller CR**, Krasnykh V, Hong JS, Engler JA, Curiel DT. Strategies to accomplish targeted gene delivery employing tropism-modified recombinant adenoviral vectors. Cancer Gene Therapy 2(4):321 Nov 1995.
74. Ebbinghaus SW, **Miller R**, Chee-Awai RC, Curiel DT, Miller DM. Therapeutic oligonucleotide delivery to cultured breast cancer cells by adenovirus-polylysine-oligonucleotide complexes. Proceedings of the American Association for Cancer Research. 36:420 Apr 1995.

C. RYAN MILLER, MD, PHD

75. Ebbinghaus SW, **Miller R**, Rayyis S, Hubbard W, Curiel DT, Miller DM. Adenovirus-polylysine delivery of a triplex forming oligonucleotide to breast cancer cells in culture. *Cancer Gene Therapy* 1(S1):12 Nov 1994.

REFEREED ARTICLES: ORAL PRESENTATIONS AT NATIONAL/INTERNATIONAL MEETINGS

1. Irvin DM, Vitucci M, McNeill RS, Bash RE, **Miller CR**. Regional astrocyte heterogeneity influences evolution of low-grade glioma during malignant progression. Society for Neuro-Oncology. Scottsdale, AZ. November 17-20, 2016.
2. Irvin DM, McNeill RS, Bash RE, **Miller CR**. Cell of origin and initiating mutations influence glioma pathogenesis. American Association of Neuropathologists. Baltimore, MD. June 16-19, 2016.
3. McNeill RS, Canoutas DA, Bash RE, Schmid RS, Constance BH, Johnson GL, **Miller CR**. Influence of PI3K and MAPK pathway mutations on response to mono and dual treatment with targeted kinase inhibitors. American Society for Investigative Pathology. San Diego, CA. April 2-6, 2016.
4. McNeill RS, Canoutas DA, Schmid RS, Bash RE, Constance BH, Azam SH, Reuther RA, Johnson GL, **Miller CR**. Influence of MAPK and PI3K pathway mutations on response to targeted inhibitors. Society for Neuro-Oncology. San Antonio, TX. November 19-22, 2015. Best Oral Poster Presentation Award, Tumor Biology 1 Session.
5. Schmid RS, Vitucci M, McNeill RS, Bash RE, Werneke AM, Huey L, White KK, Ewend MG, Wu J, Miller CR. De-differentiation of astrocytes into glioblastoma stem cells through core pathway mutations. Society for Neuro-Oncology. San Antonio, TX. November 19-22, 2015.
6. Giannini C, Ligon KL, **Miller CR**, Tollefson H, Korinek M, Holmes D, Jenkins S, Galanis E, Buckner J. Central pathology review by whole slide imaging in glioblastoma clinical trials. American Association of Neuropathologists. Denver, CO. June 11-14, 2015.
7. Wu J, Huey L, Bash RE, Cohen SM, Ewend MG, Wang X, Graham DK, Frye SV, Earp HS, **Miller CR**. MerTK as a target in glioblastoma. Society for Neuro-Oncology. Miami, FL. November 13-16, 2014.
8. Irvin DM, Schmid RS, Bash RE, **Miller CR**. Influence of regional microenvironment and astrocyte heterogeneity on astrocytoma development. Society for Neuro-Oncology. Miami, FL. November 13-16, 2014.
9. McNeill RS, Van Swearingen AED, Bash RE, Azam SH, Canoutas DA, Constance BH, Schmid RS, Anders CA, **Miller CR**. Efficacy of mono and dual PI3K and MAPK inhibition in glioblastoma and triple-negative breast cancer brain metastasis models. American Association of Neuropathologists. Portland, OR. June 12-15, 2014.

C. RYAN MILLER, MD, PHD

10. Schmid RS, Irvin DM, Vitucci M, Bash RE, Werneke AM, **Miller CR**. The role of regional astrocyte identity in astrocytoma genomic heterogeneity. Fourth Quadrennial Meeting of the World Federation of Neuro-Oncology, Society for Neuro-Oncology. San Francisco, CA. November 21-24, 2013.
11. **TCGA Lower Grade Glioma Working Group**, Brat DJ. Integrative genomic characterization of lower grade gliomas. 8th International Cancer Genome Consortium Scientific Workshop. Toronto, ON, Canada. September 30 – October 2, 2013.
12. Schmid RS, Bash RE, Werneke AM, White KK, **Miller CR**. Cortical GFAP⁺ astrocytes as a potential cellular origin of GBM. Society for Neuro-Oncology. Washington, DC. November 15-18, 2012. Adult Basic Science Award.
13. **Miller CR**, Vitucci M, Bash R, Schmid RS. Genomic gains acquired during glioblastoma progression obscure driver-specific signatures present in low-grade astrocytomas. American Association of Neuropathologists. Chicago, IL. June 21-24, 2012. Lucien J. Rubenstein Award (Honorable Mention) for Best Paper in Neuro-oncology.
14. **Miller CR**, Bash R, Vitucci M, Werneke AM, Schmid RS. Diffuse astrocytomas can arise from either GFAP⁺ astrocytes or subventricular zone (SVZ) neural stem/progenitor cells. American Association of Neuropathologists. Seattle, WA. June 23-26, 2011.
15. Huff B, Bash R, Karpinich NO, Schmid RS, **Miller CR**. Dissecting the role of PTEN in astrocytoma invasion using genetically-engineered mouse models. American Association of Neuropathologists. Seattle, WA. June 23-26, 2011.
16. Vitucci M, Bash RE, White KK, **Miller CR**. Pharmacological manipulation of the PI3 kinase pathway in a genetically-defined, PTEN-deficient model of glioblastoma. American Association of Neuropathologists. Philadelphia, PA. June 10-13, 2010.
17. **Miller CR**, Bash RE, Vitucci M, White KK. A genetically-defined, orthotopic allograft model system of glioblastoma: Pathological features and experimental therapeutics. American Association of Neuropathologists. Philadelphia, PA. June 10-13, 2010.
18. Dellon ES, Chen X, **Miller CR**, Fritchie KF, Rubinas TC, Woosley JT, Shaheen NJ. Presence of tryptase positive mast cells in the esophageal epithelium differentiates eosinophilic esophagitis from gastroesophageal reflux disease. Digestive Disease Week. New Orleans, LA. May 1-5, 2010.
19. **Miller CR**, Guzman OY, Karpinich NO, Adams DP, Bash R, Van Dyke T. A genetically engineered mouse model of glioblastoma for RAS and PI3K pathway-targeted drug-biomarker co-development. Society for Neuro-Oncology. Las Vegas, NV. November 20-23, 2008.
20. Guzman OY, Karpinich NO, Bash R, Calkins-Adams DP, Van Dyke T, **Miller CR**. In situ profiling of astrocytoma signaling pathways. Society for Advancement of Chicanos and Native Americans in Science. Kansas City, MO. October 9-12, 2008.

C. RYAN MILLER, MD, PHD

21. **Miller CR**, Haddix T, Dunham CP, Perry A. Clinical significance of prospective molecular genetic analysis of glial neoplasms: The Washington University FISH Laboratory experience. American Association of Neuropathologists. Washington, DC. April 27-30, 2007. Moore Award for Best Paper on Clinicopathological Correlation.
22. **Miller CR**, Dunham C, Scheithauer, Perry A. Significance of necrosis in grading of anaplastic oligodendroglial tumors: A clinicopathologic and genetic study of 916 cases. American Society for Clinical Oncology. Atlanta, GA. June 2-6, 2006. ASCO Merit Award.
23. **Miller CR** and Perry A. Oligodendroglial neoplasms with pseudopalisading necrosis: A clinicopathologic and FISH study of 44 cases. American Association of Neuropathologists. Alexandria, VA. June 9-12, 2005.
24. **Miller CR**, Buchsbaum DJ, Carpenter T, Douglas JT, Gillespie GY, Curiel DT, Raben D. Retargeting of adenovirus to the epidermal growth factor receptor results in efficient gene delivery to cultured and primary human glioma cells. American Society of Gene Therapy. Seattle, WA. May 21, 1998.
25. **Miller CR**, Rogers BE, Douglas JT, Gillespie GY, Raben D, Buchsbaum DJ, Curiel DT. EGFR targeted adenoviral mediated gene delivery to human glioblastoma tumors. American Association for Cancer Research. New Orleans, LA. April 1, 1998.
26. **Miller CR**, Reynolds PN, Tillman B, Raben D, Douglas JT, Curiel DT. Targeting adenoviral gene delivery to the epidermal growth factor receptor. Sixth International Conference on Gene Therapy of Cancer. San Diego, CA. November 19, 1997.
27. **Miller CR**, Douglas JT, Tillman B, Rogers BE, Curiel DT. Mechanism of adenovirus entry upon retargeted binding. Imperial Cancer Research Fund DNA Tumour Virus Meeting on Papovaviruses, Papillomaviruses, and Adenoviruses. Cambridge, England. June 18, 1997.
28. **Miller CR**, Douglas JT, Michael SI, Dubel S, Hong SS, Karayan L, Curiel DT. Generation of tropism modified adenoviral vectors using anti-knob single chain antibody-core streptavidin fusion proteins. GBF Symposium on Antibody Technology and Applications in Health and Environment. Braunschweig, Germany. September 9, 1996.

REFEREED ARTICLES: POSTER PRESENTATIONS AT NATIONAL/INTERNATIONAL MEETINGS

1. Danussi C, Bose P, Parthasarathy P, Silberman P, Van Arnam JS, Vitucci M, Tang O, Heguy A, Chan T, Sulman E, Lang F, Creighton CJ, Deneen B, **Miller CR**, Picketts D, Kannan K, Huse J. Atrx deficiency in glioma cells of origin promotes disease-defining phenotypes by way of global epigenomic remodeling. Society for Neuro-Oncology. San Francisco, CA. November 16-19, 2017.
2. Smithberger E, Flores AR, Dhruv HD, Johnson GL, Berens ME, Furnari FB, **Miller CR**. Impact of EGFRvIII and Pten deletion mutations on response of Ink4a/Arf-null murine astrocytes to EGFR tyrosine kinase inhibitors. Society for Neuro-Oncology. San Francisco, CA. November 16-19, 2017.

C. RYAN MILLER, MD, PHD

3. McNeill RS, Stuhlmiller TJ, Bash RE, Khagi S, Johnson GL, **Miller CR**. Functional kinome characterization of a diverse panel of glioblastoma models. Society for Neuro-Oncology. Scottsdale, AZ. November 17-20, 2016.
4. Okolie O, Bago JR, Schmid RS, Irvin DM, Bash RE, **Miller CR***, **Hingtgen SD***. Reactive astrocytes potentiate tumor aggressiveness in a murine glioma resection and recurrence model. Society for Neuro-Oncology. Scottsdale, AZ. November 17-20, 2016.
5. Irvin DM, McNeill RS, Vitucci M, Bash RE, Schmid R, **Miller CR**. Cellular origin influences glioma pathogenesis and treatment. Society for Neuroscience. San Diego, CA. November 12-16, 2016.
6. Anderson SK, **Miller CR**, Sarkaria JN, Jaeckle KA, Buckner JC, Ligon KL, Ballman KV, Moore DF, Ahluwalia MS, Lee EQ, Hovarth E, Gerstner ER, Lesser GJ, Prados M, Grossman SA, Giannini C, Wen PY, Galanis E. Validating RNAseq-signatures of vorinostat (VOR) sensitivity and resistance in patients with newly diagnosed glioblastoma (GBM) treated with VOR, temozolomide and radiation therapy from Alliance N0874/ABTC-0902. American Society of Clinical Oncology. Chicago, IL. June 3-7, 2016.
7. Markovic-Plese S, Zhang X, Khan T, Zelasky C, Kurtoglu B, Cohen S, **Miller CR**, Sobel R. IL-11 induces Th17-cell responses in relapsing remitting multiple sclerosis (RRMS). American Academy of Neurology. Vancouver, BC. April 15-21, 2016.
8. McNeill RS, Canoutas DA, Bash RE, Schmid RS, Constance BH, Johnson GL, **Miller CR**. Influence of PI3K and MAPK pathway mutations on response to mono and dual treatment with targeted kinase inhibitors. American Society for Investigative Pathology. San Diego, CA. April 2-6, 2016.
9. Barr K, Pillinger DA, **Miller CR**, Wan Y, Sharpless JL. ACTH Staining as a Predictor for Retreatment in Silent Corticotroph Adenomas (ASPiReS-CA). Endocrine Society. Boston, MA. April 1-4, 2016.
10. McNeill RS, Canoutas DA, Schmid RS, Bash RE, Constance BH, Azam SH, Reuther RA, Johnson GL, **Miller CR**. Influence of MAPK and PI3K pathway mutations on response to targeted inhibitors. Society for Neuro-Oncology. San Antonio, TX. November 19-22, 2015.
11. McNeill RS, Schmid RS, Vitucci M, Bash RE, Canoutas DA, **Miller CR**. Preclinical drug development using non-germline genetically engineered mouse (nGEM) models of astrocytomas. CNS Anticancer Drug Discovery and Development Conference and Society for Neuro-Oncology. Miami, FL. November 13-16, 2014.
12. Galanis E, Anderson SK, **Miller CR**, Sarkaria JN, Jaeckle KA, Buckner JC, Ligon KL, Ballman KV, Moore DF, Ahluwalia MS, Lee EQ, Gerstner ER, Lesser GJ, Prados M, Grossman SA, Giannini C, Wen PY, Alliance for Clinical Trials in Oncology, Adult Brain Tumor Consortium. Phase II trial of vorinostat combined with temozolomide and radiation therapy for newly diagnosed glioblastoma (Alliance N0874/ABTC-0902). American Society of Clinical Oncology. Chicago, IL. May 30-June 3, 2014.

C. RYAN MILLER, MD, PHD

13. Van Swearingen AED, Siegel MB, Bash R, Golitz B, Santos CM, Darr DB, Parker J, Johnson GL, **Miller CR**, Anders CK. PI3K and MEK inhibition in intracranial triple negative breast cancer: Efficacy of BKM120 and AZD6244 in preclinical mouse models. American Association for Cancer Research. San Diego, CA. April 5-April 9, 2014.
14. Karginova O, Adamo B, Deal AM, Santos C, Darr D, Bash R, Walsh MD, Zamboni W, **Miller CR**, Anders CK. Efficacy of carboplatin alone and in combination with ABT888 in intracranial murine models of triple negative breast cancer (TNBC) characterized by BRCA status and intrinsic molecular subtype. CTRC-AACR San Antonio Breast Cancer Symposium. San Antonio, TX. December 10-14, 2013.
15. Carson CC, Pandey S, Edmiston SN, Groben PA, Zhou X, Kuan PF, Nikolaishvili-Feinberg N, Darr DB, Jordan IL, Chan KC, Sambade M, Hopkinson DA, Hao H, Gibbs DC, **Miller R**, Ollila DW, Moschos S, Bear JE, Sharpless NE, Conway K, Thomas NE. ITK, A new therapeutic target for melanoma. Society for Melanoma Research. Philadelphia, PA. November 17-20, 2013.
16. Song G, Darr DB, Santos CM, White TF, Jordan JL, Kim M, Midkiff BR, Feinberg NN, **Miller CR**, Rogers AB, Dudley AC, Perou CM, Zamboni WC. Relationship between tumor-associated macrophages, tumor delivery, and efficacy of PEGylated liposomal doxorubicin and non-liposomal doxorubicin in genetically engineered mouse models of breast cancer. American Association for Cancer Research. Washington, DC. April 6-April 10, 2013.
17. Schlegel J, Sambade M, Sather S, Moschos S, Tan AC, Wings A, DeRyckere D, Carson CC, Trembath DG, Tentler JJ, Eckhardt G, Kuan PF, Hamilton RL, Duncan LM, **Miller CR**, Nikolaishvili-Feinberg N, Midkiff BR, Wang X, Liu J, Zhang W, Yang C, Frye SV, Earp HS, Shields J, Graham DK. Mer receptor tyrosine kinase is a novel therapeutic target in melanoma. American Association for Cancer Research. Washington, DC. April 6-April 10, 2013.
18. **Miller CR**, Vitucci M, Bash R, White KK, Schmid RS. Genomic abnormalities acquired during glioblastoma progression alter driver-specific signatures identifiable in low-grade astrocytomas. Society for Neuro-Oncology. Washington, DC. November 15-18, 2012.
19. Vitucci M, Bash R, Werneke AM, Schmid RS, **Miller CR**. Malignant progression obscures driver-specific expression signatures present in murine low-grade astrocytomas to produce glioblastomas that mimic all human TCGA subtypes. The Cancer Genome Atlas Second Annual Scientific Symposium: Enabling Cancer Research through TCGA. Crystal City, Virginia. November 27-28, 2012.
20. Kimura MCG, Lee RY, **Miller CR**, Castillo M. Glioblastoma multiforme: Relationship to subventricular zone and recurrence. American Society of Neuroradiology. New York, NY. April 21-26, 2012.
21. Kimura MCG, Lee RY, **Miller CR**, Castillo M. Glioblastoma multiforme: Perfusion and its relation to the subventricular zone. American Society of Neuroradiology. New York, NY. April 21-26, 2012.

C. RYAN MILLER, MD, PHD

22. Garcia I, Crowther AJ, Gama V, **Miller CR**, Deshmukh M, Gershon TR. Bax-resistance plays an essential role in medulloblastoma formation. 15th International Symposium on Pediatric Neuro-Oncology. Toronto, Ontario, Canada. June 24-27, 2012.
23. Vitucci M, Huff B, Bash RE, Karpnich NO, Schmid RS, **Miller CR**. Dissecting the requirements for astrocytoma initiation and invasion using genetically-engineered mouse models. American Association for Cancer Research. Chicago, IL. March 31-April 4, 2012.
24. Schmid RS, Bash RE, Werneke AM, **Miller CR**. Roles of cortical and subventricular GFAP+ astrocytes in initiation of astrocytomas. American Association for Cancer Research. Chicago, IL. March 31-April 4, 2012. Highly-rated Poster Award.
25. DeCristo MJ, Parker LE, Trembath D, Kuan PF, Yim M, Liu J, **Miller CR**, Der CJ, Cox AD. A functional analysis of the nuclear RhoGEF Ect2 in ovarian cancer. American Association for Cancer Research. Chicago, IL. March 31-April 4, 2012. Highly-rated Poster Award.
26. Anders CK, Adamo B, Walsh MD, Karginova O, Darr D, Deal AM, Santos C, Bash R, Hanna SK, Rawal S, Carey LA, **Miller CR**, Sharpless NE, Zamboni WC. Pharmacokinetic disposition of PEGylated liposomal doxorubicin compared with non-liposomal doxorubicin in an intracranial breast cancer murine model. CTRC-AACR San Antonio Breast Cancer Symposium. San Antonio, TX. December 6-10, 2011.
27. Schmid RS, Bash R, Vitucci M, Werneke AM, **Miller CR**. Diffuse astrocytomas can arise from GFAP+ astrocytes with stem cell-like properties originating from the subventricular zone (SVZ) or other areas of the neuroaxis. Society for Neuro-oncology. Orange County, CA. November 17-20, 2011.
28. Schmid RS, Bash R, White KK, **Miller CR**. Are adult neural stem cells susceptible to genetically-induced gliomagenesis? Society for Neuroscience. Washington, DC. November 12-16, 2011.
29. Hacker KE, Simon J, Brannon AR, Sen O, Davis I, **Miller CR**, Rathmell WK. Exploring underlying epigenetic changes in clear cell renal cell carcinoma. American Association for Cancer Research Special Conference on Translation of the Cancer Genome. San Francisco, CA, October 16, 2011.
30. Rosenberg LA, Shields J, **Miller CR**. Radiosensitization with the PARP inhibitor ABT-888 is independent of Pten or Tp53 status in cultured murine high-grade astrocytes. American Society for Therapeutic Radiation Oncology. Miami Beach, FL. October 2-6, 2011.
31. Yuan H, Nie J, Eldeniz C, Bash R, **Miller R**, Anders C, Lin W. Imaging brain tumor hypoxia using [64]Cu-ATSM PET imaging combined with perfusion MRI on animal models. World Molecular Imaging Conference. San Diego, CA. September 7-10, 2011.

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32. Parker LE, DeCristo MJ, Trembath D, Yim M, Liu J, **Miller CR**, Der CJ, Cox AD. Localization and function of the RhoGEF Ect2 in ovarian cancer. FASEB Summer Research Conference on Regulation and Function of Small GTPases. Saxtons River, VT, June 5-10, 2011.
33. Adamo B, Deal A, Livasy C, Burrows E, Fritchie K, Blackwell K, Hamilton E, Geradts J, Thorne L, Ugolkov A, **Miller CR**, Ewend MG, Carey L, Perou CM, Cryns V, Anders C. Alpha-basic-crystallin (aBC) expression in breast cancer brain metastases (BCBM) and primary breast cancers (pBC) with eventual BM. American Society of Clinical Oncology. Chicago, IL. June 3-7, 2011.
34. Dellon ES, Bower JJ, Sui W, Keku TO, Chen X, **Miller CR**, Livasy CA, Woosley JT, Orlando RC, Shaheen NJ. Markers of tyrosine kinase activity for diagnosis and treatment response in eosinophilic esophagitis: A pilot study of pERK 1/2 and pSTAT5. Digestive Disease Week. Chicago, IL. May 7-11, 2011.
35. Dellon ES, Bower JJ, Keku TO, Chen X, **Miller CR**, Livasy CA, Woosley JT, Orlando RC, Shaheen NJ. Constitutively active tyrosine kinase due to the FIP1L1-PDGFR α fusion protein: A potential non-allergic pathogenic mechanism in eosinophilic esophagitis? Digestive Disease Week. Chicago, IL. May 7-11, 2011.
36. Wilkerson MD, Yin X, Hayward MC, Veeramachaneni NK, Haithcock BE, Funkhouser WK, Thorne L, **Miller CR**, Randell SH, Perou CM, Hayes DN. Lung cancer patients exhibit a genome-wide chromosomal instability and DNA methylation positive correlation which varies by expression subtype. American Association for Cancer Research. Orlando, FL. April 2-6, 2011.
37. Anders CK, Adamo B, Deal AM, Livasy CA, Meng H, Burrows E, Fritchie K, Blackwell KL, Geradts J, Ewend MG, Carey LA, **Miller CR**. Phosphatidylinositol-3-kinase (PI3K) pathway activation in breast cancer brain metastases. CTRC-AACR San Antonio Breast Cancer Symposium. San Antonio, TX. December 9, 2010.
38. Brennan C, Brat DJ, Aldape KD, Cohen ML, Lehman NL, McLendon RE, Schniederjan M, **Miller CR**, Vandenberg SR. Addition of GBM histological features and EGFRvIII expression to The Cancer Genome Atlas: phenotypic correlates of molecular subclasses. Society for Neuro-oncology. Montreal, Quebec. November 18-21, 2010.
39. Adamo B, Darr DB, Usary JE, Harrell JC, Meng H, Kafri T, Deal AM, Zamboni W, **Miller CR**, Anders CK. Preclinical development of an intracranial triple negative breast cancer (TNBC) tumor model: A pilot study. European Society of Medical Oncology (EMSO) Congress. Milan, Italy. October 8-12, 2010.
40. Wilkerson MD, Yin X, Hayward MC, Funkhouser WK, Thorne L, Parsons AM, **Miller CR**, Socinski MA, Bernard PS, Perou CM, Hayes DN. Lung adenocarcinoma subtypes have unique gene mutations (EGFR, TP53), DNA copy number alterations (3q26, 16p13), and patient smoking histories. American Association for Cancer Research. Washington, DC. April 17-20, 2010.

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41. Song Y, Zhang Q, **Miller CR**, Threadgill D, McCarthy DK, Van Dyke T. Role of EGFR signaling in an inducible mouse model of astrocytomas. American Association for Cancer Research. Washington, DC. April 17-20, 2010.
42. Guzman OY, Bash R, Karpinich NO, Vitucci M, White KK, Snider JL, Van Dyke T, **Miller CR**. Standard-of-care chemoradiation of experimental glioblastomas in an orthotopic, genetically-engineered syngeneic mouse allograft model system. AACR Special Conference on Genetics and Biology of Brain Cancers. San Diego, CA. December 13-15, 2009.
43. Bash R, Karpinich NO, Vitucci M, Guzman OY, White KK, Snider JL, Van Dyke T, **Miller CR**. Concurrent temozolomide-external-beam radiation therapy is effective for experimental glioblastomas in an orthotopic, genetically engineered syngeneic mouse allograft model system. Society for Neuro-Oncology. New Orleans, LA. October 22-24, 2009.
44. Besnehard T, Van Horn M, An H, Liu Q, Van Dyke T, **Miller R**, Bash R, Lin W, Bullitt E. Quantitative permeability measurements in developing mouse glioblastoma. International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). London, England. September 20-24, 2009.
45. Zhang Q, **Miller CR**, Yin C, Threadgill D, McCarthy KD, Jacks T, Van Dyke TA. Compensatory receptor tyrosine kinase (RTK)-mediated signaling upon genetic inactivation of EGFR in an inducible mouse model of glioblastoma. Mouse Models of Human Cancer Consortium (MMHCC). Bethesda, MD. January 7-9, 2008.
46. Guzman OY, Karpinich NO, Calkins-Adams DP, Van Dyke T, **Miller CR**. In situ profiling of astrocytoma signaling pathways. Society for Advancement of Chicanos and Native Americans in Science. Kansas City, MO. October 11-14, 2007.
47. Zhang Q, **Miller CR**, Song Y, Hill R, Louis DN, Cardiff RD, Van Dyke TA. Deciphering the complexities of cancer in mouse models. Mechanisms and Models of Cancer. Salk Institute, La Jolla, CA. August 8-12, 2007.
48. **Miller CR**, Dunham C, Scheithauer BW, Perry A. Significance of necrosis in grading of anaplastic oligodendroglial tumors: A clinicopathological and genetic study of 916 high-grade gliomas. International Conference on Brain Tumor Research and Therapy (Asilomar Conference). Napa, CA. April 27-29, 2006.
49. Blanquicett C, Nabors LB, Buchsbaum DJ, **Miller CR**, Diasio RB, Johnson MR. Radiation (XRT) may improve the tumor-selective activation of capecitabine (CAP) by cytokine mediated induction and/or stabilization of thymidine phosphorylase (TP) mRNA: Implications for evaluating CAP and XRT for glioblastoma multiforme (GBM). International Brain Research Organization. Prague, Czech Republic. July 10-15, 2003.
50. **Miller CR**, Blanquicett C, Buchsbaum DJ, Johnson MR, Diasio RB, Nabors LB, Markert JM, Gillespie GY. Radiation enhancement of viral molecular chemotherapy of malignant gliomas. National Cancer Institute Specialized Program in Research Excellence (SPORE) Meeting. Bethesda, MD. July 13-16, 2002.

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51. Williams CR, **Miller CR**, Buchsbaum DJ. Molecular chemotherapy/radiation therapy for prostate cancer. National Medical Association. Nashville, TN. August 4-9, 2001.
52. Rogers BE, Della Manna D, **Miller CR**, Buchsbaum DJ, Curiel DT. Targeting gene therapy to breast cancer. Department of Defense Breast Cancer Research Program: Second Era of Hope. Atlanta, GA. June 8-11, 2000.
53. **Miller CR**, Kelly FJ, Navarro JG, Buchsbaum DJ, Rogers BE, Siegal G, Barnes MN, Alvarez RD, Curiel DT. Selectively targeted adenovirus-mediated gene transfer to primary ovarian carcinoma cells in ascites. American Society of Gene Therapy. Washington, DC. June 9-13, 1999.
54. Rogers BE, Della Manna D, **Miller CR**, Saleh M, Buchsbaum DJ, Curiel DT. Immunological targeting of adenovirus to the Her2/neu receptor overexpressed on breast cancer cells. American Society of Gene Therapy. Washington, DC. June 9-13, 1999.
55. Douglas JT, **Miller CR**, Kim M, Dmitriev I, Mikheeva G, Krasnykh V, Curiel DT. Development of a novel system for the propagation of adenoviral vectors with genetically modified receptor specificities. Vector Targeting Strategies for Therapeutic Gene Delivery. Cold Spring Harbor, NY. March 14-16, 1999.
56. Krasnykh V, Dmitriev I, Mikheeva G, **Miller CR**, Belousova N, Kashentseva E, Wang MH, Curiel DT. Genetic modification of adenovirus fiber protein as a means to achieve vector targeting. American Society of Gene Therapy. Seattle, WA. May 28-31, 1998.
57. Blackwell JL, **Miller CR**, Douglas JT, Carroll WR, Peters GE, Strong TV, Curiel DT. Enhanced transduction of squamous carcinoma cells of the head and neck using an immunologically retargeted adenovirus. American Society of Gene Therapy. Seattle, WA. May 28-31, 1998.
58. Reynolds PN, **Miller R**, Sosnowski BA, Douglas JT, Curiel DT. Enhanced gene transfer to vascular endothelium using fibroblast growth factor (FGF) retargeted adenoviral vectors. Keystone Symposia on the Molecular and Cellular Biology of Gene Therapy. Keystone, CO. January 19-25, 1998.
59. **Miller R**, Rogers BE, Carpenter T, Douglas JT, Gillespie GY, Raben D, Wells A, Buchsbaum DJ, Curiel DT. EGFR targeted adenovirus gene delivery. Keystone Symposia on the Molecular and Cellular Biology of Gene Therapy. Keystone, CO. January 19-25, 1998.
60. Douglas JT, **Miller CR**, Goldman CK, Sosnowski BA, Frincke JM, Rogers BE, Curiel DT. Targeted gene delivery by immunologically modified recombinant adenoviral vectors. Vector Targeting Strategies for Therapeutic Gene Delivery. Cold Spring Harbor, NY. March 14-16, 1997.
61. Douglas JT, Krasnykh V, Michael SI, Mikheeva G, **Miller CR**, Rogers BE, Curiel DT. Strategies to accomplish targeted gene delivery employing tropism-modified adenoviral vectors. Gene Therapy. Cold Spring Harbor, NY. September 25-29, 1996.

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INVITED LECTURES

1. Glioma mouse models. University of North Carolina Cancer Model Systems Workshop: Part 2. Vertebrate Models. Chapel Hill, NC. December 8, 2017.
2. Preclinical experimental therapeutics of gliomas: Mouse models, genomics, and kinome proteomics. University of North Carolina Curriculum in Bioinformatics and Computational Biology. Chapel Hill, NC. December 4, 2017.
3. Credentialing murine models for glioblastoma preclinical drug development. National Cancer Institute Oncology Models Forum (OMF). Rockville, MD. November 17, 2017.
4. Working Group I – Pathology and molecular markers of canine gliomas. National Cancer Institute Comparative Brain Tumor Consortium (CBTC) Symposium. Bethesda, MD. September 18, 2017.
5. Targeting the glioma kinome for personalized therapy: Mouse models and experimental therapeutics. University of North Carolina Department of Pharmacology. Chapel Hill, NC. October 18, 2016.
6. Correlative clinical trials in oncology: The role of UNC Surgical Pathology and the Translational Pathology Laboratory. Protocol Office Executive Committee, UNC Lineberger Comprehensive Cancer Center. Chapel Hill, NC. September 1, 2016.
7. Genomic and cellular complexity of gliomas: Mapping their origin in mouse models to achieve precision medicine. The Ohio State University Comprehensive Cancer Center. Columbus, OH. February 26, 2016.
8. Genomic and cellular complexity of gliomas: Mapping their origin in mouse models to achieve precision medicine. National Cancer Institute. Bethesda, MD. February 12, 2016.
9. Use of mouse glioma models to achieve precision medicine. Comparative Brain Tumor Consortium. National Cancer Institute. Bethesda, MD. September 14-15, 2015.
10. Precision neuro-oncology: Genomics, proteomics, and preclinical drug development in mouse models of gliomas. University of Maryland, Department of Pathology. College Park, MD. July 21, 2015.
11. Genomic complexity of gliomas: Mapping its origins in mouse models to achieve precision medicine. Department of Pathology. St. Jude's Children's Research Hospital. Memphis, TN. February 21, 2014.
12. Genomic complexity of gliomas: Mapping its origins in mouse models to achieve precision medicine. University of Washington, Department of Neurological Surgery. Seattle, WA. February 19, 2014.

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13. Preclinical models in brain tumor drug development: Value and limitations of cell lines and mouse models. World Federation of Neuro-oncology Educational Session. San Francisco, CA. November 21, 2013.
14. TCGA low grade glioma expression profiling. TCGA Low Grade Glioma Workshop. Houston, TX. October 10, 2013.
15. Genetically-engineered mouse models of low grade gliomas. Accelerate Brain Cancer Cure Low Grade Glioma Conference. San Francisco, CA. January 24, 2013.
16. Dissecting the cellular and molecular requirements for astrocytoma initiation and progression using genetically-engineered mouse models. Brain Tumor Immunotherapy Program. Duke University, Department of Neurosurgery. Durham, NC. August 27, 2012.
17. Dissecting the cellular and molecular requirements for astrocytoma initiation and progression using genetically-engineered mouse models. Preston Robert Tisch Brain Tumor Center. Duke University. Durham, NC. May 16, 2012.
18. Genomic classification of glioblastoma. Alliance for Clinical Trials in Oncology. Chicago, IL. March 17, 2012.
19. Genomic subtype-specific mouse models for glioblastoma drug development. Damon Runyon – Accelerating Cancer Cures Research Symposium. New York, NY. March 5, 2012.
20. Dissecting the cellular and molecular requirements for astrocytoma initiation and progression using genetically-engineered mouse models. University of Virginia Cancer Center. Charlottesville, VA. September 23, 2011.
21. Genomics-driven drug-biomarker co-development using genetically-engineered mouse models of glioblastoma. East Carolina University, Division of Hematology-Oncology. Greenville, NC. May 5, 2010.
22. Genomics-driven drug-biomarker co-development using genetically-engineered mouse models of glioblastoma. National Institute of Environmental Health Sciences. January 7, 2010.
23. Genomics-driven drug-biomarker co-development using genetically-engineered mouse models of glioblastoma. University of North Carolina Neurosciences Center. Chapel Hill, NC. December 17, 2009.
24. Genomics-driven drug-biomarker co-development using genetically-engineered mouse models of glioblastoma. 7th Annual National Functional Genomics Center (NFGC) Meeting. Clearwater, FL. September 30, 2009.
25. Genomics-driven drug-biomarker co-development for glioblastoma. Neurosurgery Grand Rounds. University of California, San Francisco, Brain Tumor Research Center. San Francisco, CA. August 18, 2009.

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26. Genomics-driven drug-biomarker co-development for glioblastoma. Pathology Grand Rounds. University of Alabama at Birmingham, Department of Pathology, Division of Neuropathology. Birmingham, AL. July 28, 2009.
27. Genomics-driven drug-biomarker co-development for glioblastoma. Molecular Mechanisms of Human Disease - Solid Tumors: Transcripts, Tyrosine Kinases, and Therapeutics. American Society for Investigative Pathology. Arlington, VA. June 8, 2009.
28. An integrated approach for quantitative biomarker development in cancer. Hamner Institutes for Health Sciences. Research Triangle Park, NC. March 13, 2009.
29. Mouse modeling of astrocytomas. International Neuro-oncology Updates. Baltimore, MD. September 19, 2008.
30. Genetically-engineered mouse (GEM) models of astrocytoma: Bridging the drug development – personalized medicine gap. University of North Carolina, Medical Scientist Training Program. Chapel Hill, NC. September 17, 2007.
31. Genetically-engineered mouse (GEM) models of astrocytoma: Bridging the drug development – personalized medicine gap. University of North Carolina, Department of Genetics. Annual Retreat in the Mountains. Asheville, NC. September 8, 2007.
32. Protein-level pathway profiling for cancer pharmacogenomics. University of North Carolina, Gene Therapy Center. Chapel Hill, NC. May 3, 2007.
33. Protein-level pathway profiling for cancer pharmacogenomics. University of North Carolina, Department of Pathology. Chapel Hill, NC. October 25, 2006.
34. Glioblastoma multiforme: Personalized therapy through pharmacopathology. University of Alabama at Birmingham, Department of Pathology, Division of Neuropathology. Birmingham, AL. July 24, 2006.
35. Glioblastoma multiforme: Personalized therapy through pharmacopathology. University of North Carolina, Department of Pathology. Chapel Hill, NC. July 17, 2006.
36. Gene-directed enzyme/prodrug therapy for glioblastomas. University of Alabama at Birmingham, Department of Pathology, Division of Neuropathology. Birmingham, AL. May 21, 2002.
37. Gene-directed enzyme/prodrug therapy for cancer. National Cancer Institute, Laboratory of Pathology. Bethesda, MD. November 15, 2001.
38. Cytosine deaminase/5-fluorocytosine gene-directed enzyme/prodrug therapy. University of Texas MD Anderson Cancer Center, Department of Neuro-oncology. Houston, TX. August 16, 2001.
39. Targeted adenovirus vectors for gene therapy. Vrije Universiteit, Department of Medical Oncology. Amsterdam, The Netherlands. November 20, 1999.
40. Tropism-modified adenoviral vectors for cancer gene therapy. IntroGene. Leiden, The Netherlands. November 18, 1999.

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41. Development of tropism modified adenovirus vectors for gene therapy applications. Zeneca Pharmaceuticals. Manchester, England. June 21, 1997.
42. Tropism-modified adenoviral vectors for cancer gene therapy. DKFZ German Cancer Research Center. Heidelberg, Germany. September 11, 1996.

LAY PRESS ARTICLES

1. Rizk C. [Molecular Subtyping of Gliomas Could Inform Future Targeted Treatments](#). Genome Technology Magazine. April 2011.

PATENTS

1. Buchsbaum DJ, **Miller CR**, Gillespie GY, Garver RI. Molecular chemotherapy enhancement of radiotherapy. United States Patent 6,703,375. Granted March 9, 2004.
2. Buchsbaum DJ, **Miller CR**, Gillespie GY, Garver RI. Molecular chemotherapy enhancement of radiotherapy. United States Patent 6,552,005. Granted April 22, 2003.

SOFTWARE

Translational Pathology Laboratory (TPL)

Plone-based web application using Python, ZopeDB, and MySQL
Project, personnel, workflow, and account management for core laboratories
<https://tpl.med.unc.edu>

TPL Spectrum

Digital slide repository and image analysis application based on Aperio eSlideManager
<https://tpl-spectrum.med.unc.edu>

TEACHING

LEADERSHIP OF MEDICAL STUDENT COURSES

1. 2014 – 2015 UNC MS2: Brain and Behavior
2. 2014 – Present UNC Medical Science Foundation Phase 2: Neurological System
Translational Education at Carolina (TEC) Curriculum

TEACHING: MEDICAL AND DENTAL STUDENTS

1. MS2: Tools for Diagnosis and Therapy (UNC MEDI230)
Lecture: Mechanisms of cell injury
 August 13, 2009; August 13, 2010; August 12, 2011; August 10, 2012; August 9, 2013
Laboratory: Mechanisms of cell injury
 August 16, 2010; August 15, 2011; August 10, 2012; August 9, 2013; August 8, 2014

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Laboratory: Inflammation
August 12, 2013; August 11, 2014
Laboratory: Vascular
August 14, 2013

2. **MS2: Brain and Behavior (UNC MEDI242)**

Lecture: Tumors of the nervous system
January 24, 2007; January 28, 2008; January 21, 2009; February 2, 2010; January 20, 2011;
January 19, 2012; January 17, 2013; January 9, 2015

Laboratory: Basic neuropathology & stroke
January 22, 2007; January 23, 2008; January 22, 2009; February 1, 2010; January 13, 2011;
January 12, 2012; January 10, 2013

Laboratory: Infectious & demyelinating diseases
January 25, 2007; January 25, 2008; January 26, 2009; February 2, 2010; January 20, 2011;
January 19, 2012; January 17, 2013

Laboratory: CNS tumors & trauma
January 30, 2007; January 29, 2008; January 28, 2009; February 3, 2010; January 21, 2011;
January 20, 2012; January 18, 2013

3. **MS2: Brain and Behavior (UNC MEDI242)**

Laboratory: General & developmental pathology - January 8, 2014
Laboratory: Vascular & trauma pathology - January 10, 2014
Laboratory: Demyelinating & infectious pathology - January 15, 2014
Laboratory: Neoplastic & metabolic pathology - January 16, 2014

4. **MS2: Brain and Behavior (UNC MEDI242)**

Laboratory: General, vascular, & trauma pathology - January 7, 2015
Laboratory: Developmental, metabolic, & infectious pathology - January 9, 2015
Laboratory: Demyelinating & neoplastic pathology - January 12, 2015

5. **Translational Education at Carolina (UNC TEC): Medical Science Foundation Phase 2**

Lecture: Tumors of the nervous system - April 30, 2015; April 28, 2016; May 4, 2017
Laboratory: General, vascular, & trauma pathology – April 28, 2015; April 26, 2016; May 2, 2017
Laboratory: Developmental, metabolic, & infectious pathology – April 30, 2015; April 28, 2016; May 4, 2017
Laboratory: Demyelinating & neoplastic pathology – May 1, 2015; April 29, 2016; May 5, 2017

6. **Dental School: Pathology**

Laboratory: Neuropathology – June 19, 2017

TEACHING AWARDS: MEDICAL STUDENTS

1. **2011 UNC Whitehead Award**
Best MS2 Basic Science Course: Brain and Behavior
2. **2010 UNC Whitehead Award**
Best MS2 Basic Science Course: Brain and Behavior

TEACHING: GRADUATE STUDENTS

C. RYAN MILLER, MD, PhD

1. **Molecular and Cellular Pathology: Mechanisms of Disease (UNC PATH713)**
Lecture: Mechanisms of cell injury and death (Parts 1-3)
September 19 & 24, 2007; September 15 & 22, 2008; September 23, 25 & 28, 2009; September 20, 22, & 24, 2010
2. **Molecular and Cellular Pathology: Systemic Pathology (UNC PATH715)**
Lecture: CNS neoplasms
April 23, 2007; April 18, 2008; April 20, 2009; April 26, 2010; April 20, 2011; April 18, 2012; April 22, 2013, April 21, 2014; April 20, 2015; April 22, 2016; April 19, 2017; April 18, 2018
3. **Molecular and Cellular Pathology: Systemic Pathology Laboratory (UNC PATH716)**
Laboratory: Neuropathology
April 23, 2008
4. **Pathobiology and Translational Science: Practical Considerations for Translational Research (UNC PATH723)**
Lecture: Glioma biomarkers
April 10, 2018
5. **Pathobiology and Translational Science: Cancer Pathobiology (UNC PATH725)**
Lecture: Glioma pathobiology
March 8, 2016; April 4, 2017; March 6, 2018
6. **Cell biology and physiology: Career and Research Enhancement Seminar (CaRES) (UNC CBPH856)**
Mentorship: Kshitij Sharma (PhD candidate, Antonio Amelio's laboratory)
February 7, 2018; February 14, 2018; February 28, 2018; March 7, 2018

TEACHING: CLINICAL TRAINEES

Anatomic Pathology Seminar Series: UNC Anatomic Pathology Residents

Lecture: Brain tumors
June 18, 2007; September 3, 2008; September 21, 2010, September 30, 2011, October 23, 2012, August 22, 2013, April 13, 2015

Lecture: Neurodegeneration
August 13, 2007; September 5, 2008, September 24, 2010, October 21, 2011

Lecture: Regional and non-neoplastic surgical neuropathology
September 10, 2008, September 22, 2010, November 22, 2011

Diagnostic unknown conference
June 5, 2015

Neurology Board Review: UNC Neurology Residents

Lecture: Brain tumors
February 6, 2008

Lecture: Non-neoplastic surgical neuropathology
February 20, 2008

Clinical Neurosciences Conference: UNC Radiology Residents and Neuroradiology Fellows

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August 4, 2014; October 27, 2014; February 2, 2015; June 22, 2015; October 26, 2015; February 17, 2016; April 18, 2016; September 12, 2016; December 5, 2016; February 13, 2017; May 8, 2017; September 25, 2017; December 11, 2017

GRAND ROUNDS

1. Genomic and cellular complexity of gliomas: Mapping their origin in mouse models to achieve precision medicine.
The Ohio State University Comprehensive Cancer Center. Columbus, OH. February 26, 2016.
2. The glioma odyssey: From empirical management to precision medicine
UNC, Department of Pathology and Laboratory Medicine. Chapel Hill, NC. October 25, 2014.
3. Genomic complexity of gliomas: Mapping its origins in mouse models to achieve precision medicine
University of Washington, Department of Neurological Surgery. Seattle, WA. February 19, 2014.
4. Dissecting the cellular and molecular requirements for astrocytoma initiation and progression using genetically-engineered mouse models
UNC, Department of Pathology and Laboratory Medicine. Chapel Hill, NC. June 14, 2012.
5. Genomics-driven drug-biomarker co-development using genetically-engineered mouse models of glioblastoma
East Carolina University, Division of Hematology-Oncology. Greenville, NC. May 5, 2010.
6. The Translational Pathology Laboratory (TPL) – A LCCC/DPLM core for translational research at UNC
UNC, Department of Pathology and Laboratory Medicine. Chapel Hill, NC. February 25, 2010.
7. Genomics-driven drug-biomarker co-development using genetically-engineered mouse models of glioblastoma
UNC, Department of Pathology and Laboratory Medicine. Chapel Hill, NC. October 15, 2009.
8. Genomics-driven drug-biomarker co-development for glioblastoma.
University of California, San Francisco, Department of Neurological Surgery. San Francisco, CA. August 18, 2009.
9. Genomics-driven drug-biomarker co-development for glioblastoma.
University of Alabama at Birmingham, Department of Pathology. Birmingham, AL. July 28, 2009.
10. Brain tumors: Epidemiology, classification, diagnosis, and molecular biology
Washington University, Department of Neurological Surgery. St. Louis, MO. September 22, 2004.

MENTORSHIP OF JUNIOR FACULTY

1. Wesley Legant, PhD, (Sep 2017 – present)
Assistant Professor, UNC Departments of Biomedical Engineering and Pharmacology
2. Yevgeny Brudno, PhD, (Sep 2017 – present)

C. RYAN MILLER, MD, PhD

Assistant Professor, UNC Department of Biomedical Engineering

3. **Keriayn Smith, PhD**, (Sep 2017 – present)
Research Assistant Professor, UNC Department of Genetics, Terry Magnuson Lab
4. **Chuan-Wei Jang, PhD**, Research Assistant Professor, UNC (Feb 2017 – present)
Research Assistant Professor, UNC Department of Genetics, Terry Magnuson Lab
5. **Yang Yang, PhD**, Research Assistant Professor, UNC (Feb 2017 – present)
Research Assistant Professor, UNC Department of Pathology and Laboratory Medicine, Cyrus Vaziri Lab
6. **Simon Khagi, MD**, Assistant Professor, UNC (Sep 2016 – present)
7. **Jing Wu, MD, PhD**, Assistant Professor, UNC (Mar 2013 – Aug 2015)

MENTORSHIP OF STAFF SCIENTISTS AND POST-DOCTORAL FELLOWS

1. **Mark Vitucci, PhD**, Post-doctoral Fellow, UNC (Dec 2013 – August 2014)
Associate Manager, Array-based Services, Expression Analysis, A Quintiles Company, Durham, NC
2. **Stephanie Cohen, PhD**, TPL, Research Associate, UNC (Oct 2011 - Present)
3. **Nana Nikolaishvili-Feinberg, PhD**, TPL, Research Associate, UNC (Apr 2010 - Present)
4. **Ralf Schmid, PhD, MSCR**, Research Associate, UNC (Apr 2010 – Apr 2016)

MENTORSHIP OF RESIDENTS AND FELLOWS

1. **Dimitri (Yuri) Trembath, MD, PhD**, Fellow, UNC Molecular Pathology (Jul 2008 – Jun 2009)
Associate Professor, UNC Divisions of Surgical Pathology, Neuropathology, and Molecular Pathology 2009
2. **Gregory Ray, MD**, Fellow, UNC Molecular Pathology (Jul 2007 – Jun 2008)
3. **Christopher R. Williams, MD**, Resident, UAB Division of Urology (Jun - Dec 2000)
American Association for Cancer Research (AACR) Minority Scholar Award in Cancer Research 2001
National Medical Association (NMA) R. Frank Jones Urology Residents' Forum Research Award 2001
Urologic Oncology Fellowship, National Cancer Institute, 2003-2005
Academic urology, University of Florida, Jacksonville, FL
4. **F. Joseph Kelly, MD**, Fellow, UAB Division of Gynecologic Oncology (Jul 1998 - May 1999)
American College of Surgeons William A. Maddox Award in Cancer Research 2001
Private practice, Tennessee Valley Gynecologic Oncology, Hunstville Hospital, Hunstville, AL

MENTORSHIP OF MEDICAL STUDENTS

1. **Alex R. Flores**, Carolina Medical Student Summer Research Program (CMSRP) (Summer 2017)
UNC School of Medicine, Class of 2020
2. **Michael J. Hadler**, American Brain Tumor Association Fellow (Summer 2015)
Campbell University School of Osteopathic Medicine, Class of 2018
3. **Byron Huff**, Howard Holderness Distinguished Medical Scholar (Jul 2010 – Jun 2011)
UNC School of Medicine, Class of 2012
American Association of Neuropathologists Davis Award 2011
Radiation Oncology Resident, Emory University, Atlanta, GA (2012 – present)
4. **Ethan Munzinger**, Doris Duke Clinical Research Fellow (Jul 2007 – Jun 2008)
University of Missouri School of Medicine, Class of 2010

C. RYAN MILLER, MD, PhD

MENTORSHIP OF GRADUATE STUDENTS

1. **Abigail Shelton**
UNC Pathobiology and Translational Sciences Graduate Program (May 2017 – present)
Bill Sykes Scholarship in Pathobiology and Translational Science, 2017-2018
2. **Kasey Skinner**
UNC Neuroscience Curriculum (May 2017 – present)
Neuroscience Training Grant (T32NS007431), 2017-2018
3. **Erin Smithberger**
UNC Pathobiology and Translational Sciences Graduate Program (May 2017 – present)
4. **Robert McNeill**
UNC Pathobiology and Translational Sciences Graduate Program (May 2012 – Jun 2017)
Robert H. Wagner Scholar in Molecular and Cellular Pathology, 2012-2017
Howard Hughes Scholar, UNC/HHMI Graduate Training Program in Translational Medicine, 2012-2017
Lineberger Comprehensive Cancer Center 2013 Retreat, Best Translational Research Poster, 1st place
American Association of Neuropathologists Davis Award, 2014
Society for Neuro-oncology Best Oral Poster Presentation Award, 2015
UNC Department of Pathology Research Presentation Award, 2016
Fellow, Cato Research, Durham, NC (2017 - present)
5. **David Irvin, PhD**
UNC Curriculum in Genetics and Molecular Biology (May 2012 – Dec 2016)
Howard Hughes Scholar, UNC/HHMI Graduate Training Program in Translational Medicine, 2012-2016
UNC Genetics and Molecular Biology Training Grant (T32GM007092), 2012-2013
UNC Cancer Cell Biology Training Program (T32CA071341), 2014-2016
Lineberger Comprehensive Cancer Center 2013 Annual Retreat, Best Translational Research Poster, 3rd place
American Association of Neuropathologists Davis Award 2016
Post-doctoral Fellow, Jason Huse Lab, MD Anderson Cancer Center, Houston, TX (2017 - present)
6. **Ralf Schmid, PhD, MSCR**
UNC Masters of Science in Clinical Research Program (Jun 2011 – Dec 2013)
Department of Epidemiology, UNC Gillings School of Global Public Health
Research Associate, Mark Zylka Lab, UNC, Chapel Hill, NC (2016 - present)
7. **Mark Vitucci, PhD**
UNC Curriculum in Genetics and Molecular Biology (May 2008 – Dec 2013)
American Association of Neuropathologists Davis Award 2010
American Association of Neuropathologists Lucien J. Rubenstein Award 2012
Associate Manager, Array-based Services, Expression Analysis/Quintiles, Durham, NC (2014 - present)
8. **Olguitzza Guzman**
UNC Molecular and Cellular Pathology Graduate Program (Jul 2007 – Apr 2010)
UNC Initiative for Maximizing Student Diversity Training Grant (R25GM055336), 2006-2008
UNC Environmental Pathology Training Grant (T32ES007017), 2008-2010
American Association for Cancer Research (AACR) Minority Scholar in Cancer Research Award 2008
AACR Minority Scholar in Cancer Research Award 2009
AACR Special Conference on Genetics and Biology of Brain Cancers Minority Scholar Award 2009

MENTORSHIP OF GRADUATE STUDENT ROTATIONS

UNC Biological & Biomedical Sciences Program (BBSP)

1. **Kasey Skinner**, Nov 2016 – Feb 2017
2. **Erin Smithberger**, Nov 2016 – Feb 2017

C. RYAN MILLER, MD, PhD

3. Juanita Limas, Aug 2016 – Nov 2016
4. Abigail Shelton, Aug 2016 – Nov 2016
5. Anthony Arceci, Mar 2014 – May 2014
6. Salma Azam, Jan 2014 – Mar 2014
7. Brian Constance, Sep 2013 – Dec 2013
8. Robert McNeill, Jan 2012 – Mar 2012
9. David Irvin, Sep 2011 – Dec 2011
10. Samira Brooks, Mar 2011 – May 2011
11. Adam Pfefferle, Sep 2009 – Dec 2009

UNC Medical Scientist Training Program (MSTP)

1. Sarah Glier, Jul 2017

UNC Curriculum in Genetics and Molecular Biology

1. Gabi Cameron, Mar 2008 – May 2008
2. Mark Vitucci, Sep 2007 – Dec 2007

UNC Molecular and Cellular Pathology Graduate Program

1. Adam Maxwell, Jan 2008 – Mar 2008
2. Olguitza Guzman, Apr 2007 – May 2007

GRADUATE STUDENT THESIS COMMITTEE MEMBERSHIPS

1. Kathryn Moore, UNC/NCSU Biomedical Engineering Curriculum (Kristy Ainslie), 2017-present
2. Shaye Hagler, UNC Eshelman School of Pharmacy, Division of Pharmacoengineering and Molecular Pharmaceutics Graduate Program (Shawn Hingtgen), 2016-present
3. Becky Bigler, UNC Graduate Curriculum in Genetics and Molecular Biology (Anne Taylor), 2016-2017
4. Marni B. Siegel, UNC Graduate Curriculum in Genetics and Molecular Biology, Medical Scientist Training Program and Howard Hughes Scholar, UNC/HHMI Graduate Training Program in Translational Medicine (Carey Anders and Chuck Perou), 2013-2017 (Committee Chairman)
5. Amanda Rinkenbaugh, Robert H. Wagner Scholar in Molecular and Cellular Pathology, UNC Graduate Program in Molecular and Cellular Pathology and Howard Hughes Scholar, UNC/HHMI Graduate Training Program in Translational Medicine (Al Baldwin), 2009-2016
6. Sarah Sinnett, UNC Neurobiology Curriculum (Jay Brenman), 2011-2014
7. Troy McEachron, UNC Graduate Program in Molecular and Cellular Pathology (Nigel Mackman), 2009-2011
8. Roshawn Watson, UNC Eshelman School of Pharmacy, Division of Pharmacotherapy and Experimental Therapeutics Graduate Program (Howard McLeod), 2008-2010
9. Wenqi Pan, UNC Graduate Curriculum in Genetics and Molecular Biology (Terry Van Dyke), 2008-2009
10. Jeannie Padowski, UNC Graduate Program in Toxicology (Gary Pollack), 2007-2008

MENTORSHIP OF UNDERGRADUATE STUDENTS

C. RYAN MILLER, MD, PhD

1. **Anna Lin**, UNC (2017 – present)
2. **Alyssa Steller**, UNC (2017 – present)
3. **Madisyn Hill**, UNC (2017 – present)
Chemistry 395 – Undergraduate Research in Chemistry – 2017 – present
UNC Department of Chemistry
4. **Shrey Patel**, UNC (2016 – present)
Chemistry 395 – Undergraduate Research in Chemistry – 2016 – present
UNC Department of Chemistry
5. **Madison Butler**, UNC (2015 – present)
Biology 395 – Undergraduate Research in Biology– 2016 – 2017
Biology 495 – Undergraduate Research in Biology– 2017 – present
UNC Department of Biology
6. **Emily Stallings**, Campbell University
UNC Summer Undergraduate Research Experience (SURE) Program – 2017
7. **Peter Cheng**, UNC (2016 – 2017)
8. **Tamille Rhynes**, UNC (2016 – 2017)
9. **Maychoua Yang**, UNC (2015 – 2017)
10. **Annie Whitacre**, UNC (2013 – 2016)
Biology 395 – Undergraduate Research in Biology– 2014 – 2015
Biology 495 – Undergraduate Research in Biology– 2016
UNC Department of Biology
11. **Marissa Rice**, UNC (2014 – 2015)
12. **Jessica Lam**, UNC (2014 – 2015)
13. **Carolyn Liu**, UNC (2014 – 2015)
14. **Muhammad Rahim**, UNC (2014 – 2015)
15. **Gabrielle Williams**, UNC (2014 – 2015)
16. **Emily Stroobant**, UNC (2013 – 2015)
UNC Summer Undergraduate Research Fellowship (SURF) Program – 2014
Chemistry 395 – Undergraduate Research in Chemistry – 2014 – 2015
Chemistry 692H – Senior Honors Thesis in Chemistry – 2015
UNC Department of Chemistry
NIH Postbaccalaureate Intramural Research Training Award - 2015 – 2017
Thomas Jefferson University School of Medicine – 2017 – present
17. **Demitra Canoutas**, UNC (2011 – 2015)
Biology 395 – Undergraduate Research in Biology– 2013 – 2014
Biology 495 – Undergraduate Research in Biology– 2014 – 2015
UNC Department of Biology
NC State University Graduate School – 2015 - 2017
University of North Carolina School of Medicine – 2018 - present
18. **Carter McCormick**, UNC (2011 – 2015)
19. **Kaitlyn Lohrei**, UNC (2011 – 2015)
20. **Anna Sirbu**, UNC (2010 – 2014)
Biology 295 – Undergraduate Research in Biology– 2013 – 2014
UNC Department of Biology
21. **Stephanie Gillette**, UNC (2012 – 2013)
22. **Susannah Krom**, UNC (2012 – 2013)
23. **Hannah Min Yoo**, UNC (2012 – 2013)
24. **James Zhu**, UNC (2012 – 2013)
25. **Saachi Patel**, UNC (2011 – 2012)
26. **Emily Bailey**, UNC (2010 – 2013)
27. **Hannah Chae**, UNC (2010 – 2013)
28. **Zuhaib Mahmood**, UNC (2010 – 2013)

C. RYAN MILLER, MD, PhD

29. **Andrea S. Werneke, UNC (2010 – 2011)**
Biology 395 – Undergraduate Research in Biology– 2010 – 2011
UNC Department of Biology
30. **Greximar Mercado, Fayetteville State University**
UNC Summer of Learning and Research (SOLAR) Program – 2010
31. **Lauren Huey, UNC (2009 – 2012)**
UNC Master’s Program in Clinical Laboratory Science – 2015-2017
32. **Alexia Hobbs, UNC (2009 – 2012)**
33. **Juntao (Jenna) Yu, UNC (2009 – 2011)**
34. **Yolanda Shaw, UNC (2008 – 2009)**
35. **Heather Thompsen, UNC (2007 – 2010)**
36. **Avinash Viswanathan, MD**
University of Missouri, St. Louis (2004 – 2006)
Ross School of Medicine 2006-2010
Internal Medicine Resident, West Penn Allegheny Health System 2010 – 2013
37. **Mudassar Asghar, MD**
Honors, UAB Biology (2000 – 2001)
University of South Alabama School of Medicine - 2001 – 2005
Neurology Resident, South Alabama School of Medicine - 2005 – 2009
Neurologist, Bon Secours Medical Group, Chester, VA
38. **Jennifer Trevor, MD**
Honors, UAB Biology (1999 – 2002)
University of South Alabama School of Medicine - 2002 – 2006
Internal Medicine Resident, Wake Forest School of Medicine - 2006 – 2010
Pulmonary & Critical Care Fellow, UAB - 2010 – 2013
Assistant Professor, Division of Pulmonary, Allergy & Critical Care, UAB
39. **Barbara Krum, DVM**
Honors, UAB Biology (1997 – 2001)
Auburn University School of Veterinary Medicine - 2001 – 2005
40. **Keith Gipson, MD, PhD**
Honors, UAB Biology (1995)
Yale School of Medicine, Medical Scientist Training Program - 2000 – 2008
Private practice, Hartford Anesthesiology Associates, Hartford Hospital, Hartford, CT

SUPERVISION OF RESEARCH ASSISTANTS

1. **Gabriela de la Cruz, TPL, UNC LCCC (2015-present)**
2. **Albert Wielgus, TPL, UNC LCCC (2013-present)**
3. **Yongjuan Xia, TPL, UNC LCCC (2012-present)**
4. **Bentley Midkiff, TPL, UNC LCCC (2009-present)**
5. **Ryan Bash, MS, UNC Pathology & Lab Medicine (2008-present)**
6. **Ying Li, TPL, UNC LCCC (2012-2015)**
7. **Lauren Huey, UNC LCCC (2012-2015)**
8. **Andrea S. Werneke, UNC Pathology & Lab Medicine (2011-2013)**
9. **Jackie Kylander, TPL, UNC LCCC (2011-2012)**
10. **Sheila Rao-Dayton, PhD, UNC PMBB (2011-2012)**
11. **Michelle Matthews, TPL, UNC LCCC (2010-2017)**
12. **Mark Olorvida, TPL, UNC LCCC (2010-2013)**
13. **Darby Shelton, TPL, UNC LCCC (2010-2011)**
14. **Daniel Roth, UNC LCCC (2009-2013)**
15. **Mervi Eeva, TPL, UNC LCCC (2008-2017)**

C. RYAN MILLER, MD, PhD

16. Kristen White, MS, UNC LCCC (2008-2013)
17. Debbie Little, TPL, UNC LCCC (2008-2012)
18. Courtney Boyd, TPL, UNC LCCC (2008-2010)
19. Nana Nikolaishvili-Feinberg, PhD, TPL, UNC LCCC (2008-2010)
20. David Cowan, TPL, UNC LCCC (2008-2009)
21. Dennise P. Calkins-Adams, TPL, UNC Pathology & Lab Medicine (2007-2010)
22. Laura Luecking, WUSM Division of Molecular Oncology (2005-2006)
23. Jennifer Trevor, UAB Division of Radiation Biology (2002)
24. Meena Sthanam, UAB Division of Radiation Biology (2001-2002)
25. Scott Chiz, UAB Division of Radiation Biology (2000-2001)

SUPERVISION OF COMPUTER PROGRAMMERS

1. David Ray, UNC Lineberger Comprehensive Cancer Center (2010-2011)
2. Joshua Johnson, UNC Lineberger Comprehensive Cancer Center (2008-2011)

ATTENDING ON CLINICAL SERVICE

April 1, 2007 – Surgical Neuropathology
April 1, 2015 Autopsy Neuropathology

GRANTS

CURRENT RESEARCH GRANTS

September 26, 2017 – **National Institute of Neurological Disorders and Stroke**
June 30, 2022 [R01 NS099368](#)
Role: Co-Investigator, 5% effort, 5 years, \$1.9M (Annual Direct \$229K)
Principal Investigator: Shawn Hingtgen, PhD
Engineering stem cell therapies to understand and overcome glioblastoma adaptation

The aims are 1) to determine if induced neural stem cell (iNSC) loss, inadequate penetration into distant tumor sites, and intrinsic tumor resistance/rebound from single-drug therapy work in concert to allow glioblastoma (GBM) escape; 2) to determine if repeated intra-cerebral ventricular delivery of multi-drug iNSCs can overcome iNSC loss and payload resistance of grafted GBM; and 3) to investigate if re-dosing of multi-drug iNSC therapy could be a durable treatment for GBMs in immune-competent mice.

December 13, 2016 – **National Cancer Institute**
November 30, 2019 [R01 CA204136](#)
Role: Lead Principal Investigator, 25% effort, 3 years, \$2.1M (Annual Direct \$450K)
Co-Principal Investigators: Gary Johnson, PhD (UNC); Michael Berens, PhD (TGen)
Credentialing murine models for glioblastoma preclinical drug development

The aims of this multi-PI proposal are 1) to credential patient-derived xenograft (PDX) models against human glioblastoma (GBM) by kinome proteomics using multiplex inhibitor bead-mass spectrometry; 2)

C. RYAN MILLER, MD, PhD

to develop non-germline genetically engineered mouse (nGEM) models from distinct cells of origin that genetically match PDX; and 3) to credential PDX and nGEM models by dynamic kinome profiling.

September 2, 2016 – **National Cancer Institute**
July 31, 2021 [R01 CA202053](#)

Role: Co-Investigator, 2% effort, 5 years, \$2.25M (Annual Direct \$292K)
Principal Investigator: William Kim, MD
Kinase inhibition in kidney cancer

The aims are to 1) determine the efficacy of TYK2/SRC inhibition alone or in combination with everolimus in renal cell carcinoma (RCC) patient-derived xenograft (PDX) models; 2) determine whether there is a correlation between TYK and SRC activation in tissue microarrays (TMA) of primary human RCC and PDX and whether these markers of activation can serve as predictive biomarkers of response to targeting the TYK2/SRC axis; and 3) define the kinomic landscape of clear cell RCC (ccRCC), its kinomic heterogeneity, and the dynamic reprogramming of RCC in response to mTOR inhibition by multiplex inhibitor bead – mass spectrometry (MIB-MS).

June 1, 2016 – **National Institute of Neurological Disorders and Stroke**
May 31, 2021 [R01 NS097507](#)

Role: Co-Investigator, 5% effort, 5 years, \$1.6M (Annual Direct \$219K)
Principal Investigator: Shawn Hingtgen, PhD
Nanofiber matrices to improve neural stem cell-mediated cancer therapy

The aims are 1) to develop and characterize a panel of polymeric scaffolds with differing topographic, mechanical, and biochemical properties; 2) to determine the scaffold design parameters that regulate therapeutic NSC therapy for post-operative GBM; and 3) to investigate the efficacy and safety of tumoricidal NSC therapy in immune-competent models of GBM resection/recurrence.

January 1, 2016 – **National Heart, Lung, and Blood Institute**
December 31, 2019 [R01 HL130367](#)

Role: Co-Investigator, 2% effort, 4 years, \$3.0M (Annual Direct \$500K)
Principal Investigator: Joan Taylor, PhD
Role of the Rho-GAP GRAF3 in the pathogenesis of human hypertension

The aims of this multi-PI, multi-disciplinary proposal are 1) to further examine the role of GRAF3, RhoA, and vessel compliance in the development of hypertension and hypertension-induced organ damage; 2) to identify the mechanisms that regulate the smooth muscle cell-specific expression of GRAF3 and the mechanisms by which genetic variations within the newly identified blood pressure locus alter GRAF3 expression; and 3) to test our hypothesis that polymorphisms in the GRAF3 gene that affect GRAF3 expression contribute to the development of hypertension and hypertension-associated cardiovascular disease in humans.

October 1, 2010 – **National Cancer Institute**
September 30, 2020 [U54 CA156733](#)

Role: Principal Investigator – Diagnostic and Molecular Histopathology Core
5% effort, 5 years, \$589K (Annual Direct)
Principal Investigator: H. Shelton Earp, MD
NCCU-LCCC Partnership in Cancer Research – Resource/Infrastructure Development Core

The aims are 1) to expand research collaborations among NC Central University and UNC Lineberger Comprehensive Cancer Center; 2) to use research activities in and outside the U54 mechanism to train students and junior/midlevel faculty in multidisciplinary research aimed at reducing cancer disparities; and 3) to expand and consolidate programs of community outreach and education. The aim of this core facility

C. RYAN MILLER, MD, PhD

is to increase training of minority scientists in translational pathology research at an NCI-funded Comprehensive Cancer Center.

August 5, 1997 –
August 31, 2018

National Cancer Institute

[P50 CA058223](#)

Role: Co-Investigator, 5% effort, 5 years, \$12.6M (Annual Direct \$1.192M)

Principal Investigator: Charles M. Perou, PhD

SPORE in Breast Cancer

June 1, 1997 –
November 30, 2020

National Cancer Institute

[P30 CA016086](#)

Role: Principal Investigator – Translational Pathology

10% effort, 5 years, \$30.6M (Annual Direct \$4.136M)

Principal Investigator: Norman E. Sharpless, MD

Cancer Center Core Support Grant (CCSG) – CORE – Translational Pathology Laboratory

The aims of these two awards are to support a research core facility that 1) provides UNC investigators access to annotated formalin-fixed, paraffin-embedded (FFPE) human tissues from the UNC Hospitals surgical pathology archive; 2) provides histopathology, tissue microarray (TMA) design and construction, slide staining and morphological evaluation services; 3) provides morphological assay development and training services; 4) provides samples for subsequent purification of molecular analytes; 5) develops digital image analysis technologies for spatial quantification of molecular analytes in intact tissue sections; and 6) develops pathology informatics infrastructure.

PENDING RESEARCH GRANTS

September 1, 2018 –
August 30, 2022

National Cancer Institute

[P50 CA058223](#)

Role: Co-Investigator, 5% effort, 5 years, \$12.5M (Annual Direct \$1.61M)

Principal Investigator: Charles M. Perou, PhD (UNC)

SPORE in Breast Cancer

The aims of this project are to support a research core facility that 1) provides UNC investigators access to annotated formalin-fixed, paraffin-embedded (FFPE) human tissues from the UNC Hospitals surgical pathology archive; 2) provides histopathology, tissue microarray (TMA) design and construction, slide staining and morphological evaluation services; 3) provides morphological assay development and training services; 4) provides samples for subsequent purification of molecular analytes; 5) develops digital image analysis technologies for spatial quantification of molecular analytes in intact tissue sections; and 6) develops pathology informatics infrastructure.

April 1, 2018 –
March 31, 2023

National Cancer Institute

[R01 CA227491](#)

Role: Lead Principal Investigator, 20% effort, 5 years, \$4.2M (Annual Direct \$499K)

Co-Principal Investigators: Fernando Pardo-Manuel de Villena, PhD (UNC);
Michael Berens, PhD (TGen)

(PQ3) Dissecting the role of host genetics on glioblastoma evolution and treatment response using genetically-engineered mouse models and the Collaborative Cross

C. RYAN MILLER, MD, PHD

The aims of this multi-PI proposal are 1) to examine the genomic and pathological evolution of non-germline genetically engineered mouse (nGEM) models of GBM in a genetically diverse panel of inbred murine hosts from the Collaborative Cross; 2) to examine the impact of host genetics on GBM response to cytotoxic and targeted therapies; and 3) to validate that networks and pathways driven by candidate host alleles affecting tumor evolution and treatment response in mice do so similarly in human GBM patients.

January 1, 2018 – **American Cancer Society**
December 31, 2021 Not assigned
Role: Co-Investigator, 5% effort, 3 years, \$791K (Annual Direct \$175K)
Principal Investigator: Shawn Hingtgen, PhD (UNC)
Stem cell-based therapies to combat glioblastoma recurrence

The aims are 1) to determine if induced neural stem cell (iNSC) loss, inadequate penetration into distant tumor sites, and intrinsic tumor resistance/rebound from single-drug therapy work in concert to promote escape of glioblastoma (GBM); 2) to determine if repeated intra-cerebral ventricular delivery of multi-drug iNSCs overcomes iNSC loss and payload resistance of grafted GBM; and 3) to investigate if re-dosed multi-drug iNSC therapy is a durable treatment for GBMs in immune-competent mice.

December 1, 2017 – **National Cancer Institute**
November 30, 2019 R21 CA216476
Role: Principal Investigator, 5% effort, 2 years, \$428K (Annual Direct \$150K)
Lead Principal Investigator: Gianpietro Dotti, MD (UNC)
Targeting tumor cells and microenvironment in glioblastoma

The aims of this multi-PI proposal are 1) to investigate whether CAR-T cells targeted to NG2 (CSPG4) armed to release an anti-PD-L1 single chain antibody (scFv) at the tumor site have enhanced antitumor effects; and 2) to investigate whether CSPG4.CAR-Ts armed to target CCR2^{high} inflammatory monocytes at the tumor site through the expression of a chimeric CCL2 protein eradicate glioblastoma (GBM).

November 1, 2017 – **National Institute of General Medical Sciences**
October 31, 2022 R01 GM057391
Role: Principal Investigator, 2% effort, 5 years, \$2.95M (Annual Direct \$455K)
Lead Principal Investigator: John Sondek, PhD (UNC)
Principal Investigator: James Bear, PhD (UNC)
Regulation of phospholipase C

The aims of this multi-PI proposal are 1) to define the activation process of PLC- γ isozymes at atomic-resolution; 2) to define the allosteric regulation of the PLC- γ isozymes through quantification of their dynamic properties; 3) to control the activation of PLC- γ 1 in cells to define its central role in mesenchymal chemotaxis; and 4) to define the contributions of active PLC- γ isozymes in lymphoma and glioblastoma.

COMPLETED RESEARCH GRANTS

September 1, 2017 – **UNC School of Medicine, Office of Research**
December 31, 2017 **Systems Genetics Core Facility Collaborative Cross (CC) Pilot Program**
Role: Lead Principal Investigator, 0% effort, access to CC mice
Co-Principal Investigator: Martin Ferris, PhD
Dissecting the contribution of host genetics to glioblastoma evolution in vivo

The aim of this pilot project is to utilize a genetically-diverse panel of mouse strains from the Collaborative Cross and an orthotopic, C57Bl/6-based, non-germline genetically engineered mouse model of glioblastoma (GBM) to test the hypothesis that genetic polymorphisms affecting expression of ligand-receptor(s) that mediate paracrine effects within the tumor microenvironment impact GBM growth.

C. RYAN MILLER, MD, PhD

June 1, 2017 –
August 30, 2017

American Brain Tumor Association

Not assigned

Summer Medical Student Research Fellowship

Role: Primary Mentor, 0% effort, 0.25 year, \$3K

Co-Mentor: Gary L. Johnson, Ph.D.

Principal Investigator: Alex Flores

Glioblastoma classification using whole kinome profiling

The aims are to understand how the baseline activity of the kinome responds to single agent kinase inhibitors, such as EGFR tyrosine kinase inhibitors in EGFR-mutant, genetically engineered mouse astrocyte models of glioblastoma using a novel chemical proteomics method, Multiplexed Inhibitor Beads coupled with quantitative Mass Spectrometry (MIB/MS).

January 1, 2017 –
December 31, 2017

UNC Translational and Clinical Sciences (TraCS) Institute

550KR151616

National Center for Advancing Translational Sciences (NCATS)

National Institutes of Health

1UL1TR001111

Role: Lead Principal Investigator, 0% effort, 1 year, \$50K direct

Co-Principal Investigator: Chuan-Wei Jang, PhD

Co-Investigator: Terry Magnuson, PhD

The role of histone H3.3 mutations in pediatric gliomagenesis

The aims of this multi-PI proposal are to define the role of histone H3.3 mutations (K27M and G34R/V) in pediatric gliomagenesis through development of novel genetically-engineered neonatal mouse models of Diffuse Intrinsic Pontine Gliomas (DIPG).

October 1, 2016 –
September 30, 2017

UNC Translational and Clinical Sciences (TraCS) Institute

550KR141633

National Center for Advancing Translational Sciences (NCATS)

National Institutes of Health

1UL1TR001111

Role: Co-Principal Investigator, 0% effort, 1 year, \$50K direct

Lead Principal Investigator: Yang Yang, PhD

Co-Investigator: Cyrus Vaziri, PhD

Validating Trans-Lesion Synthesis as a Novel Therapeutic Target in Glioblastoma

The aims are to 1) evaluate trans-lesion synthesis (TLS) in a panel of glioblastoma (GBM) cell lines; 2) elucidate the molecular mechanism of temozolomide (TMZ) tolerance via TLS; and 3) test novel TLS inhibitors as chemosensitizers of TMZ treatment in GBM.

May 1, 2015 –
April 30, 2016

North Carolina Biotechnology Center

2015-IDG-1007

Institutional Development Grant

Role: Principal Investigator, 0% effort, \$150,363

High-throughput next-generation whole slide scanner for the digital capture of fluorescence in situ hybridization and immunohistochemistry images

The aim is to purchase a Leica Ariol DM6000B brightfield and fluorescence slide scanner for digital imaging of slides stained by fluorescence in-situ hybridization, mRNA in-situ hybridization, and chromogenic and fluorescence immunohistochemistry. This instrument will be made available for use by all UNC investigators through the UNC Translational Pathology Laboratory (TPL) core facility.

C. RYAN MILLER, MD, PhD

June 1, 2015 –
August 30, 2015

American Brain Tumor Association

Not assigned

Summer Medical Student Research Fellowship

Role: Primary Mentor, 0% effort, 0.25 year, \$3K

Co-Mentor: Gary L. Johnson, Ph.D.

Principal Investigator: Michael J. Hadler

Glioblastoma classification using whole kinome profiling

The aims are to examine kinome heterogeneity in human glioblastomas using a novel chemical proteomics method, Multiplexed Inhibitor Beads coupled with quantitative Mass Spectrometry (MIB/MS), and determine the extent to which tumor kinome profiles correlate with transcriptome subtype, mutation profiles, and clinical outcomes.

August 1, 2014 –
July 31, 2017

UNC University Cancer Research Fund

Innovation Award

Role: Principal Investigator, 0% effort, 2 years, \$175K direct

Primum non nocere: Questioning the role of temozolomide in adjuvant therapy of low grade astrocytomas

The aims are 1) to define the influence of *Mgmt* or *Trp53* loss on the genomics of malignant progression in a *Cdkn2a;Nf1* genetically-engineered mouse model of low-grade astrocytoma; and 2) to define the influence of temozolomide on induction of an *Mgmt*- and/or *Trp53*-dependent hypermutation phenotype and its effect on malignant progression in *Cdkn2a;Nf1* low-grade astrocytomas.

May 1, 2014 –
April 30, 2015

UNC Translational and Clinical Sciences (TraCS) Institute

550KR71404

National Center for Advancing Translational Sciences (NCATS)

National Institutes of Health

1UL1TR001111

Role: Co-Investigator, 0% effort, 1 year, \$50K direct

Principal Investigator: Todd Cohen, PhD

The role of tau acetylation in Alzheimer's disease pathogenesis

The aims are to 1) define the profile of tau acetylation in post-mortem brains from patients with Alzheimer's disease using immuno-affinity purification and mass spectrometry and 2) generate acetylated tau antibodies for use in immunohistochemistry to examine the correlation between acetylated tau and cognitive decline.

April 1, 2014 –
March 31, 2015

UNC Translational and Clinical Sciences (TraCS) Institute

550KR61332

National Center for Advancing Translational Sciences (NCATS)

National Institutes of Health

1UL1TR001111

Role: Principal Investigator, 0% effort, 1 year, \$50K direct

The role of PIK3CA mutations in gliomagenesis and PI3K inhibitor sensitivity

The aims are 1) to define the role of novel kinase, helicase, and adaptor binding (ABD) domain mutations in *PIK3CA* in astrocytoma tumorigenesis using a non-germline GEM model system; and 2) to determine if response to a clinically-relevant PI3K inhibitor (BKM120) is *PIK3CA* mutation-specific.

August 1, 2013 –
April 30, 2015

National Cancer Institute

Merck

ClinicalTrials.gov: [NCT00238303](https://clinicaltrials.gov/ct2/show/study/NCT00238303)

C. RYAN MILLER, MD, PHD

Role: Co-Investigator, 3% effort, 1 year, \$120K direct

Principal Investigator: Eva Galanis, MD

Subcontract with Mayo Clinic

Vorinostat in treating patients with progressive or recurrent glioblastoma multiforme

The aims are to define a gene expression signature predictive of response to vorinostat using RNAseq analysis from formalin-fixed, paraffin-embedded GBM tissues.

August 1, 2012 –

July 31, 2017

National Institute of General Medical Sciences

[R01 GM068820](#)

Role: Co-Investigator, 3% effort, 5 years, \$3.6M (Annual Direct \$313,842)

Principal Investigator: Gary L. Johnson, PhD

Function of cerebral cavernous malformation (CCM) proteins

The aims are to 1) define the function of CCM1, -2 and -3 proteins in control of RhoA and Rap1 activity and protein degradation in endothelial cells; 2) define changes in RhoA and Rap1 regulated signaling pathways in CCM lesions from human patients; and 3) use familial CCM patient-specific human induced-pluripotent stem cells (hiPSCs) to generate endothelial cells harboring CCM mutations.

August 1, 2012 –

July 31, 2013

UNC Translational and Clinical Sciences (TraCS) Institute

550KR21202

National Center for Advancing Translational Sciences (NCATS)

National Institutes of Health

1UL1TR001111

Role: Co-Principal Investigator, 0% effort, 1 year, \$50K

Co-Principal Investigator: Carey Anders, MD

PI3K/MEK inhibitors in the treatment of primary and metastatic central nervous system malignancies

The aims are 1) to show the efficacy of dual PI3K/MEK inhibition with BKM120 and AZD6244, respectively, as measured by tumor burden (luciferase-based imaging) and overall survival in an intracranial model of GBM and triple negative breast cancer (TNBC); and 2) to identify gene expression changes in intracranial tumors in response to dual PI3K/MEK inhibition with BKM120 and AZD6244, respectively, to elucidate possible mechanisms of resistance in both models.

May 1, 2012 –

April 30, 2013

Department of Defense

W81XWH-12-15479-01-16

Role: Co-Principal Investigator, 0% effort, 1 year, \$100K

Co-Principal Investigator: Prakash Chinniayan, MD

Defining metabolomic underpinnings of malignant transformation using genetically engineered mouse glioma models

The aim is to determine the potential of a glioma GEM model to serve as an appropriate preclinical model to study metabolomic alterations in glioma.

August 1, 2011 –

July 31, 2016

National Cancer Institute

[P01 CA151135](#)

Role: Principal Investigator, Biospecimens Core: Genomics and Pathology

5% effort, 5 years, \$18.3M (Annual Direct \$3.1M)

Principal Investigator: Christine Ambrosone, PhD

UNC Principal Investigator: Andrew Olshan, PhD

Epidemiology of breast cancer subtypes in African-American women: A consortium

C. RYAN MILLER, MD, PhD

The aims are to examine associations between age at diagnosis and breast cancer subtypes and 1) potential causal genetic loci identified in recent GWAS findings; 2) pregnancy and lactation history and potential modification by genetic variants; 3) body size, early life and adult physical activity, and gene/environment interactions; and 4) risk factors that may have been adaptive in Africa to endemic infectious disease and intense sunlight, but that in later life and western society may result in hyper-inflammatory milieu and vitamin D deficiency.

July 1, 2011 –
June 30, 2013

American Brain Tumor Association

Fellowship

Role: Co-Mentor, 0% effort, 2 years, \$100K

Co-Mentor: Janiel Shields, PhD

Fellow: Maria Sambade, PhD

New Therapeutic combinations in brain metastases

The aims are to 1) determine if loss of specific DNA-repair genes upregulated in radioresistant melanoma cells can increase sensitivity of melanoma brain metastases to radiation and to 2) determine if inhibition of PARP or HDAC, either alone or in combination, can sensitize melanoma brain metastases to radiation in an orthotopic xenograft mouse model system.

October 1, 2010 –
September 30, 2012

American Association for Cancer Research

Breast Cancer Research Foundation

Role: Co-Investigator, 0% effort, 2 years, \$181K

Principal Investigator: Carey Anders, MD

PARP inhibition and nanoparticles to treat breast cancer brain metastases

The aims are to examine the pharmacokinetics and pharmacodynamics of combination nanoparticle chemotherapeutics and PARP inhibitors in an intracranial xenograft model of triple negative breast cancer.

September 1, 2010 –
August 30, 2015

National Cancer Institute

[U54 CA151652](#)

Role: Co-Investigator, 5% effort, 5 years, \$9.6M

Principal Investigator: Joseph M. Desimone, PhD (Annual Direct \$2.591M)

Project 4 Principal Investigator: Otto Z. Zhou, PhD (Annual Direct \$145,310)

Carolina Center of Cancer Nanotechnology Excellence: Project 4 - Carbon nanotube-based microbeam radiation therapy for human brain cancer

The aims are to 1) design the first non-synchrotron facility-based microbeam radiation therapy (MRT) system using carbon nanotubes (CNT); 2) to validate that CNT-based MRT produces similar radiobiological effects to external beam radiation (XRT); and 3) to examine the comparative efficacy and safety profiles of CNT MRT and whole brain XRT using a novel genetically-engineered mouse orthotopic allograft model of glioblastoma.

April 1, 2010 –
March 30, 2011

National Heart, Lung, and Blood Institute

[R41 HL103002](#)

Small Business Technology Transfer (STTR) Grant, Phase I

Xin8 Biologicals

Role: Co-Investigator, 2% effort, 2 years, \$163K

Principal Investigator: Lori Ann Holle

UNC Principal Investigator: Thomas Egan, MD

The effect of TLR4 inhibition on lung transplant ischemia-reperfusion injury

The purpose of this Phase I STTR is to determine if CRX-526, a TLR4 inhibitor that prevents edema due to ischemia-reperfusion injury, can ameliorate ischemia-reperfusion injury during lung transplantation.

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March 1, 2010 –
February 28, 2015

National Cancer Institute

[R01 CA142794](#)

Role: Co-Investigator, 5% effort, 5 years, \$1.4M (Annual Direct \$181,148)

Principal Investigator: William Y. Kim, MD

Characterization and therapeutic targeting of HIF in LKB1-deficient lung cancer

The aims are 1) to determine whether HIF2 activation correlates with LKB1 mutation in a large dataset of human lung tumors, 2) to determine whether the phenotype induced by LKB1 loss is dependent upon HIF2 in vitro, and 3) to determine whether the phenotypes induced by LKB1 loss are dependent upon HIF2 in vivo.

September 1, 2009 –
April 30, 2011

Department of Defense

W81XWH-09-2-0042

Role: Principal Investigator, 45% effort, 2 years, \$2.4M

Advanced preclinical strategies for cancer therapeutic and diagnostic discovery

The aims are to 1) develop the infrastructure and methodology for quantifying active signal transduction pathways in mouse and human neoplastic tissues; 2) to develop and genomically analyze genetically engineered mouse (GEM) models of high-grade astrocytoma (HGA); 3) to use comparative genomic studies to identify predictive biomarkers of HGA for use in diagnostic and therapeutic discovery; and 4) to evaluate standard of care and specific targeted therapeutics in a GEM models of HGA.

July 1, 2009 –
December 31, 2012

Damon Runyon Cancer Research Foundation

Damon Runyon-Genentech Clinical Investigator Award

CI-45-09

Role: Principal Investigator, 50% effort, 3 years, \$450K

Genomics-driven drug development for glioblastoma

The aims are 1) to identify subtype-specific protein biomarkers that define human GBM with distinct responses temozolomide (TMZ) ± radiation (XRT); 2) to define the impact of engineered genetic alterations and secondary genetic events on genetically-engineered mouse (GEM) model astrocytoma expression subtype-specification; and 3) to compare post-TMZ-XRT molecular changes in a proneural GBM allograft GEM with recurrent human GBM.

April 1, 2009 –
March 30, 2011

UNC University Cancer Research Fund

Innovation Award

Role: Co-Investigator, 0% effort, 2 years, \$175K

Principal Investigator: David Ollila, MD

'Epithelioid' Melanoma: Frequency, risk, and outcome

The aims are 1) to prospectively determine the frequency of epithelioid markers present in primary melanomas presenting to a tertiary care multidisciplinary melanoma center and examine the association of epithelioid markers with melanoma risk factors and outcome; and 2) to retrospectively determine the frequency of epithelioid markers present in nodal and visceral metastases of melanoma patients and whether these markers were predictive of outcome.

March 1, 2009 –
February 28, 2010

UNC University Cancer Research Fund

Clinical Innovation Award

Role: Co-Principal Investigator, 0% effort, 1 year, \$75K

Principal Investigator: Matthew G. Ewend, MD

North Carolina Brain Tumor Bank

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The aims are 1) to establish a neuropathology consult service for the state of North Carolina and offer advanced molecular diagnostic testing of MGMT promoter methylation and 1p/19q chromosome abnormalities; 2) to establish a brain tumor bank for the state of North Carolina to facilitate retrospective molecular clinicopathological correlation studies.

September 1, 2008 – **UNC University Cancer Research Fund**
August 30, 2010 Innovation Award
Role: Principal Investigator, 0% effort, 2 years, \$175K
Molecular classification of glioblastoma

The aims are 1) to identify molecular abnormalities that define molecular subtypes of human GBM with distinct responses to alkylating-agent-based chemoradiation; 2) to define molecular abnormalities in genetically-engineered mouse (GEM) models of GBM and compare them to those in human GBM; and 3) to determine the efficacy of temozolomide and/or radiation and identify therapy-related radiographic and molecular changes in GEM models of GBM.

December 1, 2007 – **UNC University Research Council**
November 30, 2009 Role: Principal Investigator, 0% effort, 2 years, \$5K
In-situ proteomics in astrocytoma targeted drug development

The aims are to profile PI3K-PTEN pathway proteins expression in cultured human astrocytoma cells 1) at steady state and 2) after exposure to the mTOR inhibitor temsirolimus.

July 1, 2007 – **UNC Lineberger Comprehensive Cancer Center**
June 30, 2008 Role: Principal Investigator, 0% effort, 1 year, \$35K
Cross-species, in-situ protein pathway profiling of astrocytomas

The aims are to 1) examine the receptor tyrosine kinase (RTK) signaling pathway abnormalities in genetically-engineered mouse models and human astrocytomas; and 2) to examine the biological and clinical significance of RTK pathway biomarkers in astrocytoma patients.

February 1, 2000 – **National Institute of Environmental Health Sciences**
March 31, 2015 [P30 ES010126](#)
Role: Co-Investigator, 0% effort, 5 years, \$5.7M (Annual Direct \$767,918)
Principal Investigator: James A. Swenberg, PhD
UNC-CH Center for Environmental Health & Susceptibility – Biomarkers Core

The aims are to establish a research core facility that 1) provides UNC investigators access to annotated formalin-fixed, paraffin-embedded (FFPE) human tissues from the UNC Hospitals surgical pathology archive; 2) provides histopathology, tissue microarray (TMA) design and construction, slide staining and morphological evaluation services; 3) provides morphological assay development and training services; 4) provides samples for subsequent purification of molecular analytes; 5) develops digital image analysis technologies for spatial quantification of molecular analytes in intact tissue sections; and 6) develops pathology informatics infrastructure.

October 1, 2000 - **Pediatric Brain Tumor Foundation of the United States**
September 30, 2002 Role: Co-Principal Investigator, 100% effort, 2 years, \$70K
Principal Investigator: G. Yancey Gillespie, PhD
UAB Division of Neurosurgery
Cytosine deaminase-expressing adenovirus for treatment of gliomas

The aims are to 1) examine the efficacy of enzyme-prodrug gene therapy using local delivery of replication deficient adenoviral vectors encoding bacterial and yeast cytosine deaminase and systemic 5-fluorocytosine

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in orthotopic xenograft models of human glioblastomas; and 2) to examine the role of tumor coxsackie-adenovirus receptor (CAR) expression as a predictive biomarker for treatment efficacy.

PROFESSIONAL SERVICE

STATE, NATIONAL, AND INTERNATIONAL OFFICES AND COMMITTEES

2017 – Present	Constitution Committee American Association of Neuropathologists
2016 – Present	Abstract Review Committee Society for Neuro-oncology
2015 – Present	Steering Committee Comparative Brain Tumor Consortium National Cancer Institute
2011 – Present	Neuropathology, Co-Chair Neuro-oncology Committee Alliance for Clinical Trials in Oncology National Cancer Institute
2014 – 2016	Glioblastoma versus Lower Grade Glioma Analysis Working Group The Cancer Genome Atlas (TCGA) Project National Cancer Institute and National Human Genome Research Institute
2011 – 2015	Lower Grade Glioma Analysis Working Group The Cancer Genome Atlas (TCGA) Project National Cancer Institute and National Human Genome Research Institute
2012 – 2014	Awards Committee American Association of Neuropathologists
2009 – 2013	Scientific Advisory Committee National Functional Genomics Center Moffitt Cancer Center, Tampa, FL
2007 – 2013	Glioblastoma Analysis Working Group Glioblastoma Disease Working Group The Cancer Genome Atlas (TCGA) Project National Cancer Institute and National Human Genome Research Institute

EDITORIAL BOARD APPOINTMENTS

2016 - Present	<i>Neuro-oncology Practice</i>
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2008 - Present *Brain Pathology*
 2010 - 2012 *Brain Research Bulletin*

AD HOC REVIEWER

Journal	Initial Year	Reviews (N)
<i>Acta Neuropathologica</i>	2008	2
<i>Acta Neuropathologica Communications</i>	2014	2
<i>American Journal of Pathology</i>	2010	18
<i>Annals of Oncology</i>	2012	1
<i>Apoptosis</i>	2012	1
<i>BMC Bioinformatics</i>	2012	2
<i>Brain</i>	2011	1
<i>Brain Pathology</i>	2007	14
<i>Brain Research Bulletin</i>	2010	4
<i>British Journal of Neurosurgery</i>	2015	1
<i>British Journal of Pharmacology</i>	2015	1
<i>Cancer Epidemiology, Biomarkers and Prevention</i>	2014	1
<i>Cancer Research</i>	2001	4
<i>Cancer Research Frontiers</i>	2014	1
<i>Clinical Cancer Research</i>	2013	2
<i>Clinical Genetics</i>	2013	3
<i>Computational and Structural Biotechnology Journal</i>	2016	1
<i>Current Cancer Drug Targets</i>	2017	1
<i>eBiomedicine</i>	2017	1
<i>European Journal of Pharmacology</i>	2015	1
<i>Expert Opinion on Drug Discovery</i>	2011	3
<i>Expert Opinion on Medical Diagnostics</i>	2013	1
<i>Future Oncology</i>	2017	1
<i>Future Science OA</i>	2016	1
<i>Gene Therapy</i>	2007	2
<i>Genes Chromosomes & Cancer</i>	2012	1
<i>Histopathology</i>	2011	1
<i>Human Pathology</i>	2010	1
<i>International Journal of Cancer</i>	2002	4
<i>International Journal of Molecular Sciences</i>	2012	4
<i>International Journal of Neuroscience</i>	2016	1
<i>Journal of Clinical Investigation</i>	2012	10
<i>Journal of Clinical Oncology – Precision Oncology</i>	2017	2
<i>Journal of Gene Medicine</i>	2002	1
<i>Journal of Hematology & Oncology</i>	2016	2
<i>Journal of Molecular Diagnostics</i>	2010	4
<i>Journal of Neuro-oncology</i>	2011	6
<i>Journal of Neuropathology & Experimental Neurology</i>	2014	6
<i>Journal of Urology</i>	2012	1
<i>Journal of Visualized Experiments</i>	2014	2

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<i>Molecular Cancer Therapeutics</i>	2012	1
<i>Molecular Carcinogenesis</i>	2016	1
<i>Molecular Neurobiology</i>	2012	7
<i>Nanoscale</i>	2015	1
<i>Neuro-Oncology</i>	2008	30
<i>Neuro-Oncology Practice</i>	2015	2
<i>New England Journal of Medicine</i>	2015	1
<i>Oncogene</i>	2009	8
<i>Oncotarget</i>	2016	2
<i>OncoTargets and Therapy</i>	2017	3
<i>Pharmaceuticals</i>	2014	1
<i>PLoS One</i>	2012	15
<i>Radiation Oncology</i>	2014	1
<i>Scientific Reports</i>	2012	4
<i>Signal Transduction & Targeted Therapy</i>	2017	1
<i>Stem Cells International</i>	2017	1
<i>World Neurosurgery</i>	2015	16

SESSION CHAIR AT NATIONAL/INTERNATIONAL MEETINGS

Society for Neuro-oncology/World Federation of Neuro-oncology
Session 9A: Preclinical therapeutics. November 24, 2013. San Francisco, CA.

American Association of Neuropathologists
Platform Session 7: Tumors 2. June 23, 2012. Chicago, IL.

INSTITUTIONAL COMMITTEE MEMBERSHIPS

2017 – 2018	Weekend Coordinator UNC Biological and Biomedical Sciences Program (BBSP)
2017 – Present	First year IMSD graduate student mentor Initiative for Maximizing Student Diversity (IMSD)
2017 – Present	Advisory Committee Initiative for Maximizing Student Diversity (IMSD)
2016 – Present	Advisory Committee Internal Medicine Residency Physician Scientist Training Program UNC Department of Medicine
2016 – Present	Preliminary Examination Committee UNC Neuroscience Curriculum
2015 – Present	Advisory Committee

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- [Animal Histopathology Core Facility](#)
UNC Lineberger Comprehensive Cancer Center
- 2015 – Present Senior Oversight Committee
[Bioinformatics Core Facility](#)
UNC Lineberger Comprehensive Cancer Center
- 2014 – Present Weatherspoon Brain Tumor Research Award Committee
UNC Department of Neurosurgery
- 2013 – Present Advisory Committee
[UNC Medical Scientist Training Program \(MSTP\)](#)
- 2013 – Present Admissions Offer Committee
[UNC Biological and Biomedical Sciences Program \(BBSP\)](#)
- 2013 – Present Admissions Committee
Neurobiology, Cancer, Genetics, & Cell Biology (NCGC)
[UNC Biological and Biomedical Sciences Program \(BBSP\)](#)
- 2012 – Present Joe Grisham Distinguished Professorship Search Committee
[UNC Department of Pathology and Laboratory Medicine](#)
- 2011 – Present UNCseqTM Steering Committee
[UNC Lineberger Comprehensive Cancer Center](#)
- 2011 – Present [UNC Health Registry](#) Steering Committee
- 2009 – Present Leadership Core
[UNC Graduate Program in Translational Medicine](#)
- 2007 – Present Clinical Genomics Committee
[UNC Lineberger Comprehensive Cancer Center](#)
- 2007 – Present Preliminary Examination Committee
[UNC Pathobiology and Translational Science Graduate Program](#)
- 2016 Brain Research Foundation Program Review Committee
UNC Office of Research Development
- 2014 Rita Allen Scholars Program Review Committee
UNC Office of Research Development
- 2007 – 2015 Preliminary Examination Committee
UNC Molecular and Cellular Pathology Graduate Program

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- 2015 Co-Chair, Preliminary Examination Committee
[UNC Graduate Curriculum in Genetics and Molecular Biology](#)
- 2014 – 2015 Preliminary Examination Committee
2009 – 2011 [UNC Graduate Curriculum in Genetics and Molecular Biology](#)

INSTITUTIONAL CENTER AND RESEARCH PROGRAM MEMBERSHIPS

- 2007 – Present [UNC Neurosciences Center](#)
- 2006 – Present Neuro-oncology & Clinical Research Programs
[UNC Lineberger Comprehensive Cancer Center](#)
- 2011 – 2013 Program for Molecular Biology and Biotechnology
UNC School of Medicine and College of Arts & Sciences
- 2007 – 2013 Institute for Pharmacogenomics and Individualized Therapy
UNC Eshelman School of Pharmacy

INSTITUTIONAL TRAINING PROGRAM MEMBERSHIPS

- 2017 – Present [Pharmacology Graduate Program](#)
UNC Department of Pharmacology
- 2015 – Present [Pathobiology and Translational Science Graduate Program](#)
UNC Department of Pathology and Laboratory Medicine
- 2010 – Present [Neuroscience Curriculum](#)
UNC Neurosciences Center
- 2009 – Present Postdoctoral Fellowship in Basic Research
[Cancer Cell Biology Graduate Training Program](#)
UNC Lineberger Comprehensive Cancer Center
- 2009 – Present [UNC Graduate Program in Translational Medicine](#)
- 2007 – Present [Graduate Curriculum in Genetics and Molecular Biology](#)
UNC Department of Genetics
- 2006 – Present [Medical Scientist Training Program \(MSTP\)](#)
UNC School of Medicine
- 2008 – 2011 Environmental Pathology Graduate Program
UNC Department of Pathology and Laboratory Medicine
- 2006 – 2015 Molecular and Cellular Pathology Graduate Program

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NATIONAL PROFESSIONAL SOCIETY MEMBERSHIPS

- 2016 – Present [American Society for Investigative Pathology](#) (ASIP)
- 2014 – Present [Histochemical Society](#) (HCS)
- 2005 – Present [American Association of Neuropathologists](#) (AANP)
- 2005 – Present [American Society of Clinical Oncology](#) (ASCO)
- 2002 – Present [United States and Canadian Academy of Pathology](#) (USCAP)
- 2002 – Present [College of American Pathologists](#) (CAP)
- 2000 – Present [Society for Neuro-Oncology](#) (SNO)
- 1997 – Present [American Association for Cancer Research](#) (AACR)

EXTRAMURAL GRANT REVIEW PANELS

- 2018 Vidi Program
Netherlands Organisation for Scientific Research
- 2017 – Present National Cancer Institute
[Basic Mechanisms of Cancer Therapeutics Study Section](#) [BMCT]
- 2017 Dutch Cancer Society
KWF Kankerbestrijding
- 2016 Quest for Cures
The Brain Tumour Charity
- 2016 Health Research Program
Pennsylvania Department of Health
- 2016 Pilot Project Program
Stichting Kinderen Kankervrij (KiKa)
Cancer-free Children Foundation
Amstelveen, Netherlands
- 2015 External Reviewer
Cancer Center Support Grant
Winship Cancer Institute of Emory University

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- 2013 Sir Henry Dale (Post-doctoral) Fellowship Program
Wellcome Trust/The Royal Society
- 2009 – Present James & Esther King Biomedical Research Program
Bankhead-Coley Cancer Research Program
Florida Department of Health
- 2009 Pilot Grant Program
Jim Ayers Institute for Precancer Detection and Diagnosis
Vanderbilt University School of Medicine
- 2009 Maryland Industrial Partnerships (MIPS)

INTRAMURAL GRANT REVIEW PANELS

- 2017 – Present [The North Carolina Translational & Clinical Sciences Institute](#) (NC TraCS)
[National Center for Advancing Translational Sciences](#) (NCATS)
National Institutes of Health
UL1TR001111
[Pilot Program](#)
Permanent Study Section Member
- 2017 – Present [Carolina Medical Student Research Program](#)
Basic Science Study Section
- 2014 – 2016 University Cancer Research Fund Innovation Award Program
UNC Lineberger Comprehensive Cancer Center
- 2011 – 2015 Clinical/Translational Cancer Developmental Research Program
UNC Lineberger Comprehensive Cancer Center
- 2008 – 2010 University Cancer Research Fund Innovation Award Program
UNC Lineberger Comprehensive Cancer Center

STUDY PATHOLOGIST FOR CLINICAL TRIALS

- 2017 – Present TBCRC038: Diversity in the tumor genome and microenvironment as
drivers of DCIS progression
PI: Kandace McGuire, MD
[Translational Breast Cancer Research Consortium \(TBCRC\)](#)
- 2016 – Present LCCC 1125: Multimodality risk adapted therapy including induction
chemotherapy for squamous cell carcinoma of the head and neck (SCCHN)
amenable to transoral surgery
PI: Jared Weiss, MD
ClinicalTrials.gov Identifier: [NCT01612351](#)

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- 2013 – Present BTTC09-01: A Phase I-II trial of everolimus and sorafenib in patients with recurrent high-grade gliomas
PI: Jing Wu, MD, PhD
ClinicalTrials.gov Identifier: [NCT01434602](#)
- 2012 – Present BTTC11-02: Phase I/II adaptive randomized trial of bevacizumab versus bevacizumab plus vorinostat in adults with recurrent glioblastoma
PI: Jing Wu, MD, PhD
ClinicalTrials.gov Identifier: [NCT01266031](#)
- 2012 – Present Study of a drug [DCVax®-L] to treat newly diagnosed GBM brain cancer
PI: Matthew G. Ewend, MD
ClinicalTrials.gov Identifier: [NCT00045968](#)
- 2013 – 2015 CERN09-02: Phase II trial of carboplatin and bevacizumab for the treatment of recurrent low-grade and anaplastic supratentorial, infratentorial and spinal cord ependymoma in adults
PI: Jing Wu, MD, PhD
ClinicalTrials.gov Identifier: [NCT01295944](#)
- 2013 – 2015 CERN08-02: A Phase II study of dose-dense temozolomide and lapatinib for recurrent low-grade and anaplastic supratentorial, infratentorial and spinal cord ependymoma
PI: Jing Wu, MD, PhD
ClinicalTrials.gov Identifier: [NCT00826241](#)
- 2011 – 2015 Collaborative Ependymoma Research Network (CERN): Tissue correlates of clinical course and response to therapy
PI: Jing Wu, MD, PhD
- 2008 – 2011 GLIA001: A Phase 2, multicenter, exploratory study, evaluating the treatment effect of surgery plus GLIADEL wafer in patients with metastatic brain cancer
PI: Matthew G. Ewend, MD
ClinicalTrials.gov Identifier: [NCT00525590](#)

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RESEARCH STATEMENT

My laboratory research focuses on diffuse gliomas, a diverse group of primary brain tumors. The most malignant of these, glioblastoma (GBM), is currently diagnosed by microscopic morphology and treated empirically with concurrent fractionated external beam radiation (XRT) and the DNA alkylating agent temozolomide (TMZ) to yield a median overall survival of 12-14 months. Neither diagnosis nor therapy is based upon the underlying molecular alterations responsible for gliomagenesis, the roles of which are becoming increasingly defined using genetically-engineered mouse (GEM) models. The main goal of our work is to establish a direct link between preclinical drug development in glioma GEM and the rational design of human clinical trials involving patients with molecular subtypes of tumor via comparative molecular analyses. To facilitate this work, we have established collaborations with a number of UNC and non-UNC investigators, including Gary Johnson and Fernando Pardo-Manuel de Villena at UNC, as well as Mike Berens and Jason Huse at TGen and MD Anderson.

GEM are valuable resources for investigation of the genetic basis of neoplasia. However, these models are not ideal for preclinical drug development. We have developed a series of GEM orthotopic allograft model of gliomas that not only recapitulates the growth pattern of human tumors *in vivo*, but represents a genetically-tractable model system for drug development. Because clinical trials involve patients with recurrent tumors that have failed standard treatments, identification of molecular correlates of therapy resistance in glioma GEMM will facilitate preclinical drug development with these models and inform future molecular marker-based clinical trial design. We hypothesize that therapy-induced molecular changes in allograft GEM models are similar to recurrent human GBM. To investigate this hypothesis, we are harvesting tumors terminally and systematically during experimental therapies and analyzing them for genomic and proteomic (kinome profiling) techniques to define therapy-specific molecular effects. Genomics data from untreated allografts will be compared with those from its conditional, inducible counterpart to validate the biological fidelity of this model system. Therapy-induced changes in allografts will be compared to those in recurrent human GBM to identify potential markers of therapy resistance.

The relationship between neuroglial ontogeny and gliomagenesis remains unclear. We have shown that GFAP⁺ astrocytes are susceptible to genetically-induced gliomagenesis in over ten inducible GEM models using CreER and conditional oncogenic alleles to mutate the core intracellular signaling pathways altered in human gliomas: the G1/S cell cycle, receptor tyrosine kinase/mitogen-activated protein kinase/phosphatidylinositol-3-kinase (RTK/MAPK/PI3K) pathways. Three of these models develop low-grade astrocytomas that rapidly progress to large, lethal GBM, suggesting that secondary genetic events develop stochastically. Similar GEM models of GBM targeting Nestin⁺ neural stem cells (NSC) have recently been described. However, comparative GEM modeling and genomic studies targeting different brain cells with identical genetic lesions are lacking. We hypothesize that cell-of-origin dictates human subtype-specificity of GBM in GEM. To address this question, we are currently examining the genotype-specific effects on tumor signatures of GEM GBM. We utilize genomics techniques to identify secondary mutations that occur during tumor development and to define their effects on molecular tumor subtypes at the mRNA, DNA, epigenetic, and kinome levels. Finally, although conditional,

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inducible GEMM are designed based on the molecular abnormalities present in human GBM, the extent to which they recapitulate human GBM molecular biology has yet to be established. Therefore, we are performing comparative genomics between mouse and human GBM to define the effects of cell-of-origin and genetics on human GBM subtypes. Such data will permit future drug/biomarker development studies for specific subtypes of human GBM.

Precision medicine promises to revolutionize oncology by tailoring treatments to specific somatic mutations within a patient's tumor. Yet this approach fails to account for the effect of host genetics (germline variations) on tumor evolution and treatment response. It also fails to account for possible genetic interactions between host and tumor. GBM is a genomically diverse disease with fatal outcomes and few effective treatments. Despite the fact that GBM was the first tumor to be characterized by The Cancer Genome Atlas (TCGA), and several genome-wide association studies have linked specific polymorphisms to disease susceptibility, little is known about the impact of host genetics on its biology or treatment response. We have established collaborations with Fernando Pardo-Manuel de Villena (UNC) and Mike Berens (TGen) with expertise in population genetics of inbred and outbred mouse strains, specifically the Collaborative Cross (CC), and human GBM biology and preclinical models, respectively, to complement our experience with GEM models of GBM, to address whether germline variations contribute to differences in GBM evolution or response to therapy.

We are doing so using a unique experimental approach that utilizes non-germline GEM (nGEM) models. Germline GEM tumors are driven by predefined mutation(s) in specific cell types in their native environment. GEM are essential tools for functional validation of GBM genes, such as NF1 and TP53, but their use has been limited by variable tumor penetrance/latency and lack of cell culture counterparts. To overcome these limitations, the Miller lab developed nGEM models that target specific mutations to predefined brain cells implicated in the origin of GBM, including Nf1;Trp53 deletion mutations in oligodendrocyte progenitor cells (OPC). Transplanting cultured nGEM cells into the brains of syngeneic mice mimics the human disease. Using this nGEM model in the context of the CC will permit us to experimentally define host genes that influence GBM evolution and treatment response. We will use this system to test the hypothesis that genetic polymorphisms affecting expression of ligand-receptor(s) that mediate paracrine effects within the tumor microenvironment impact GBM evolution and response to therapy.

Precision medicine also fails to account for the dynamic state of tumor kinomes – the repertoire of expressed kinases. Indeed, researchers still view kinome circuits as static and remain focused on the small subset of kinases that are mutated in cancer. “Driver mutations” in kinases such as BRAF (melanoma), ERBB2 (breast cancer), and BCR-ABL (leukemia) have justified this narrow focus, but the problem is that many potentially important kinases for drug discovery remain understudied. This continues, in part, because of a lack of understanding of the entire kinome and appropriate methods to study its dynamics. Our collaborator, Gary Johnson (UNC), developed a novel, unbiased proteomics technique - multiplex inhibitor beads-mass spectrometry (MIB-MS) - to examine dynamic, drug-induced changes in the activation state of the kinome *en masse*. This includes “understudied kinases” that lack selective inhibitors, antibody reagents, characterized networks & cellular functions, and defined disease relevance. Thus, a major question in cancer biology remains which understudied kinases in the kinome “dark matter” are critical signaling nodes where targeted drug modulation would elicit clinical responses.

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Through our collaborations with Mike Berens (TGen) and Jason Huse (MD Anderson), we have combined our expertise in glioma GEM models to incorporate patient-derived xenograft (PDX) models into our experimental armamentarium. PDX accurately recapitulate the genomic heterogeneity and pathological features of GBM and thus represent the most biologically faithful models of human GBM to date. Through the Ivy Clinical Trial Consortium, Dr. Berens developed and genetically characterized PDX from a “basket” Feasibility Trial where recurrent GBM patients are prospectively recommended targeted therapies based on genome profiling. These PDX harbor 2 groups of mutations:

Group 1: Validated mutations in the G1/S checkpoint (*CDKN2A*) and RTK/MAPK/PI3K (*EGFR*, *NF1*, *PTEN*) core GBM pathways.

Group 2: More recently described mutations in *ATRX* and *IDH1*, in combination with *TP53*.

Whereas PDX are limited by requirement for immunodeficient hosts, GEM model tumors are driven by predefined mutation(s) in specific cell types in their native environment. GEM are essential for functional validation of GBM target genes, but their use in preclinical drug development has been limited by variable penetrance/latency and lack of cell culture counterparts. Moreover, the typical gene-centric modelling approach has largely ignored the impact of cellular origin on disease pathogenesis. To overcome these limitations, we developed non-germline GEM (nGEM) models that target specific mutations to predefined cells implicated in the origin of GBM subtypes, including neural stem cells (NSC), astrocytes (AC), and oligodendrocyte progenitors (OPC). Transplanting these cultured cells into syngeneic hosts mimics the human disease. We are thus developing nGEM models with the same Gr1/Gr2 driver mutations as our PDX models to:

1. credential PDX models against human GBM by MIB-MS kinome proteomics
2. develop nGEM models from distinct cells of origin that are genetically-matched to specific PDX
3. credential PDX and nGEM models by high-throughput drug screening and monitoring of the dynamic transcriptome and kinome response.

Our work will help realize the promise of precision medicine in neuro-oncology. Combining PDX and nGEM models and credentialing both with comprehensive molecular analyses will help elucidate the role of mutations and cellular origin in gliomas and the response of their mutated or aberrant signaling circuits to unique combinations of targeted kinase inhibitors. Genomically annotated, syngeneic nGEM models will be useful for future preclinical development of drugs targeting the tumor microenvironment and intact immune system.

TEACHING STATEMENT

Trainees in my laboratory gain valuable experience in translational neuro-oncology, mouse models, genetics/genomics, proteomics, developmental neurobiology, molecular biology and pathology. I provide one-on-one mentorship of research personnel and trainees in my own research laboratory as well as the UNC Translational Pathology Laboratory, including undergraduates, graduate students, research staff, staff scientists, research track assistant professors, residents, and fellows. I give lectures and lead small group discussions (laboratories) in several didactic courses in the UNC School of Medicine and Graduate Schools. I lead the second-year medical school curriculum in neuropathology and lecture in multiple classes offered by the Graduate Program in Pathobiology and Translational Science. I have also served on many graduate student thesis committees and Preliminary examination committees. I am on the

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admissions committee of the Medical Scientist Training Program (MSTP, MD-PhD) and Biological and Biomedical Sciences Program (BBSP, PhD) and the leadership team of the Graduate Program in Translational Medicine. My overall teaching philosophy is based upon the belief that each individual student is ultimately responsible for his/her own education. I therefore encourage trainees, as well as technical staff, to develop a personalized program of continuous, self-directed learning tailored to their own specific interests and I provide them with organization, focus, and direction to achieve their personal goals. I maintain an “open-door” policy to foster candid discussion and camaraderie and ensure that trainees have guidance so that they may refine their individualized learning approach over time.

SERVICE STATEMENT

My clinical service in diagnostic surgical neuropathology focused on CNS neoplasms. I worked to enhance the clinical care of UNC brain tumor patients and to establish a primary and metastatic brain tumor translational research program at UNC. On the patient care front, I developed several molecular diagnostic tests that are currently employed for routine clinical management of primary brain tumor patients at UNC, including 1p19q FISH and *MGMT* promoter methylation testing for prognostic stratification of glioma patients and assignment of patients to temozolomide chemotherapy, and *IDH1/IDH2* mutation testing for prognostic stratification of low- and high-grade gliomas and their differential diagnosis from reactive, non-neoplastic conditions. In collaboration with Matt Ewend (Chair of UNC Department of Neurosurgery), I created the North Carolina Brain Tumor Bank, a centralized, web-based database of clinicopathological data and a repository of tissue samples from primary brain tumor patients across the state of North Carolina. As a companion to the Brain Tumor Bank and in service to the non-neuropathology trained surgical pathologists in North Carolina, Yuri Trembath and I established a neuropathology consult service to facilitate expert diagnostic review of primary brain tumors.

On the local front, I am a mentor for the graduate training programs in Pathology, Genetics, Pharmacology, and Neurobiology, the Lineberger Pre- and Postdoctoral Fellowships in Basic Research, and the Medical Scientist Training Program (MSTP, MD-PhD). I currently serve on the Leadership Core of the UNC Graduate Training Program in Translational Medicine and on the Admissions Committee for the UNC Biological and Biomedical Sciences Program (BBSP). I am partially funded as a permanent member of the Pilot Program study section for the North Carolina Translational & Clinical Sciences Institute (NC TraCS), a National Center for Advancing Translational Sciences (NCATS) program supported by an award from National Institutes of Health (NIH UL1TR001111).

On the national front, I serve as the Co-Chair of Neuropathology and Neuro-oncology Committee member for the Alliance for Clinical Trials in Oncology, one of two NCI-funded cooperative groups that focus on neuro-oncology. I help lead the centralized neuropathology review for brain tumor patients enrolled in Alliance clinical trials, coordinate their genomic and molecular testing, and utilize the extensive tissue archives to enhance translational research at the national level. I have served or currently serve on several committees for the American Association for Neuropathologists, the NCI Comparative Brain Tumor Consortium, the National Functional Genomics Center, and The Cancer Genome Atlas.