BIOGRAPHICAL SKETCH

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NAME: Riggins, Rebecca

eRA COMMONS USER NAME (credential, e.g., agency login): rbriggins

POSITION TITLE: Professor of Oncology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Hood College, Frederick, MD USA	BA	05/1998	Biochemistry (*cum laude*)
University of Virginia, Charlottesville, VA USA	PhD	05/2003	Microbiology
Georgetown University, Washington, DC USA	postdoc	09/2006	Tumor Biology

A. Personal Statement

I am a tenured Professor in the Department of Oncology at the Georgetown University Medical Center (GUMC) and Lombardi Comprehensive Cancer Center (LCCC). My laboratory studies the role of orphan and ligand-regulated nuclear receptors – notably the estrogen and estrogen-related receptors – in GBM and breast cancer, with the goal of translating our knowledge of the cellular and molecular functions of these proteins into actionable therapeutic approaches. I am an expert in the study of cancer therapy efficacy and resistance using diverse cellular and molecular assays complemented by innovative genomic and transcriptomic sequencing approaches (C. Contributions to Science, subsection 1). I also serve on intramural and extramural committees and working groups that are responsible for prioritizing cutting-edge clinical/translational studies, further enhancing the impact of my investigator-initiated laboratory research.

I have extensive expertise in training, mentoring, and career development activities. These include co-directorship of the Georgetown University Tumor Biology Training Program (TBTP) course “Survival Skills and Ethics for Scientists,” lectures on nuclear receptor signaling, biomolecular interactions, cancer metabolism, and breast cancer health disparities in other courses, development of the Rigor and Reproducibility component of the TBTP weekly Data Presentation, and serving as a trained facilitator for the Center for the Improvement of Mentored Experiences in Research (CIMER) mentor training curriculum. I regularly integrate these topics into my laboratory mentoring, through my onboarding process, laboratory manual, weekly group lab meetings and 1:1 mentoring meetings, and review of my trainees’ Individual Development Plans (IDPs). At the leadership level, I am the Associate Director of Education and Training for Georgetown Lombardi Comprehensive Cancer Center, Principal Investigator (PI) of our American Cancer Society-funded Institutional Research Grant that provides pilot funding to early career faculty, and PI of our Cancer Undergraduate Research Experience and Mentorship (CURE-M) summer program for college students.

Outside these formal roles, I mentor eight (8) Assistant Professors, three of whom have received an NIGMS R35 Maximizing Investigators’ Research Award (MIRA) for early stage investigators (ESIs). Within my research group, I have trained 5 postdoctoral or clinical fellows, 7 PhD students, 11 MS students, and 10 undergraduate students in the past 15 years as an independent faculty member at Georgetown. Many of my trainees have received competitive awards and nominations, and most have continued in academic or other research-intensive careers. For example, recent undergraduate trainee Dua Mobin was a 2024-2025 Goldwater Scholar

and is now in medical school. Among my prior graduate trainees, Cara Schafer is now a Prostate Cancer Foundation Young Investigator Award-funded Assistant Professor at USUHS, Deanna Tiek is now an NCI R00-funded Assistant Professor at the Cleveland Clinic, and Yanira Guerra is now a NIGMS T32-funded PhD student at Weill Cornell.

Recent Citations: **# trainee author from my research group**

1. Fok S, Shreesha A, #Appiah-Kubi A, **Riggins RB**, Harley BAC. The size of glioblastoma spheroids influences patterns of invasion and temozolomide efficacy. *Tissue Engineering Part C: Methods*. 2026 Mar 16, https://doi.org/10.1177/19373384261432672. PubMed PMID: 41837459.

2. #Bahnassy S, #Young TA, #Abalum TC, #Pope EA, #Torres Rivera A, #Fernandez AI, #Olukoya AO, #Mobin D, Ranjit S, Libbey NE, #Persaud S, Rozeboom AM, Chaldekas K, Harris BT, Madak-Erdogan Z, Sottnik JL, Sikora MJ, **Riggins RB**. Glutamate-Handling Proteins Associate with Adverse Clinicopathologic Features and Comorbidities in Invasive Lobular Carcinoma. [preprint] *bioRxiv*. 2026 Jan 30. DOI: 10.1101/2024.09.29.615681

3. #Bahnassy S, #Stires H, Jin L, #Tam S, #Mobin D, Balachandran M, Podar M, McCoy MD, Beckman RA, **Riggins RB**. Unraveling vulnerabilities in endocrine therapy-resistant HER2+/ER+ breast cancer. *Endocrinology*. 2023 Nov 2;164(12):bqad159. PubMed PMID: 37897495; PubMed Central PMCID: PMC10651073.

4. #Tiek DM, Erdogdu B, Razaghi R, Jin L, Sadowski N, Alamillo-Ferrer C, Hogg JR, Haddad BR, Drewry DH, Wells CI, Pickett JE, Song X, Goenka A, Hu B, Goldlust SA, Zuercher WJ, Pertea M, Timp W, Cheng S-Y, and **Riggins RB**. Temozolomide-induced guanine mutations create exploitable vulnerabilities of guanine-rich DNA and RNA regions in drug resistant gliomas. *Science Advances*. 2022 June 24;8(35):eabn3471. PubMed PMID: 35731869; PubMed Central PMCID: PMC9216507.

Relevant ongoing grant support:

Research
R01 CA279195
NIH/NCI
Riggins (PI)
02/08/2024-01/31/2029
Novel functions of ESRRB in glioblastoma

DBG-24-1258845-01-CDP
American Cancer Society
Riggins (PI)
01/01/25-12/31/26
Dynamic precision medicine for drug-resistant HER2+/ER+ breast cancer

R01 CA256481
NIH/NCI
Harley (PI), Riggins (CoI, subaward PI)
12/01/2020-11/30/2026 (no-cost extension)
Perivascular tissue models to overcome MGMT-mediated temozolomide resistance in glioblastoma

SPEC-25-032
Breast Cancer Research Foundation (BCRF)
Swain (PI), Riggins (CoI)
10/01/2025-09/30/2026
HER2-ER nuclear crosstalk in triple positive breast cancer

P30 CA051008-31S1
NIH/NCI
Weiner (Overall PI), Adams-Campbell & Mandelblat (Supplement PIs), Riggins (Project Leader)
07/01/2025-06/30/2027 (no-cost extension)
Transdisciplinary Research Targeting Metabolic Dysregulation to Improve Cancer and Aging Outcomes

Mentoring/Career Development
P30 CA051008
Weiner (PI), Riggins (Project Leader, Cancer Research Training and Education Coordination, CRTEC)
08/97-04/29
Georgetown University Lombardi Comprehensive Cancer Center Support Grant

P50 MD019487
Graves, Roett, McKinney (MPIs), Riggins (CoI, Investigator Development Core)
08/24-02/29
Development of Investigators Supporting Community Outreach and Value of Engagement in health disparities Research (DISCOVER)

R33 AG075008
Mandelblatt, Adams-Campbell, Carroll, Dorgan, Lichtenberg, Magaziner, Ryan Schwartz (MPIs), Riggins (CoI, Career and Education Cores)
09/22-04/27
I-REACH: Infrastructure for Research in Equity, Aging, Cancer and Health

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2025 – present	Professor with Tenure, Georgetown University, Department of Oncology, Lombardi Comprehensive Cancer Center
2024 – present	Board of Directors, Cancer Biology Training Consortium (CABTRAC)
2022 – 2024	Associate Editor, *Journal of the Endocrine Society*
2021 – present	Scientific Advisory Board, Lobular Breast Cancer Alliance
2020 – present	Associate Director of Education and Training, Lombardi Comprehensive Cancer Center, Washington, DC
2019 – 2021	Editorial Board, *Endocrine and Metabolic Science*
2019 – present	Affiliate, *bioRxiv*
2018 – 2025	Associate Professor with Tenure, Georgetown University, Department of Oncology, Lombardi Comprehensive Cancer Center
2011 – 2018	Assistant Professor (tenure track), Georgetown University, Department of Oncology, Lombardi Comprehensive Cancer Center
2006 – 2011	Assistant Professor (research track), Georgetown University, Department of Oncology, Lombardi Comprehensive Cancer Center
2003 – 2006	Postdoctoral Fellow, Georgetown University, Department of Oncology, Lombardi Comprehensive Cancer Center
1998 – 2003	Graduate Research Assistant, University of Virginia, Department of Microbiology

Honors

2016, 2017, 2012	Finalist, Gerald R. Mara Faculty Mentorship Award, Georgetown University
2014	Tumor Biology Training Program Excellence in Teaching Award, Georgetown University
2014	Early Career Women Faculty Professional Development Seminar, AAMC
2014	John Eisenberg Career Development Award, Georgetown University Medical Center
2012	Executive Advisory Board, U.K. Breast Cancer Campaign Gap Analysis
2009	Delegate, U.K. Controversies in Breast Cancer Meeting
2005	Breast Cancer Career Mentoring Program for Postdoctoral Fellows, Susan G. Komen

2003 – 2005 Postdoctoral Fellow, T32 CA09686, Tumor Biology Training Grant, Georgetown University
2001 Edward A. Smuckler Pathobiology of Cancer Workshop, AACR
2000 – 2003 Predoctoral Fellow, T32 CA09109, Molecular Biology of Cancer Training Grant, University of Virginia
1998 Hon. Mention, National Science Foundation Grad. Research Fellowship Prog.

C. Contributions to Science

1. Molecular Mechanisms of Drug Resistance in Breast and Other Cancers

I have led or collaborated on seminal work that unraveled targetable components of cellular and molecular mechanisms of endocrine resistance in breast cancer. I have also expanded my research focus to include the study of drug resistance beyond endocrine therapies and breast cancer, including glioblastoma.

a. Zuo Q, Yoo JY, Nelson ER, Sikora MJ, **Riggins RB**, Madak-Erdogan Z. Co-targeting of metabolism using dietary and pharmacologic approaches reduces breast cancer metastatic burden. *NPJ Breast Cancer*. 2025, 11(1):3. PubMed PMID: 39809806. PubMed Central PMCID: PMC11733225.
b. Sottnik JL, Shackleford MT, Bahnassy S, Villagomez FR, Oesterreich S, Hu J, Madak-Erdogan Z, **Riggins RB**, Corr BR, Cook LS, Treviño LS, Bitler BG, Sikora MJ. WNT4 executes estrogen regulation of cellular metabolism via intracellular activity at the mitochondria in breast and gynecologic cancers. Cancer Research Communications. 2024, 4:134. PubMed PMID: 38112643; PubMed Central PMCID: PMC10793200.
c. Bahnassy S, Stires H, Jin L, Tam S, Mobin D, Balachandran M, Podar M, McCoy MD, Beckman RA, **Riggins RB**. Unraveling vulnerabilities in endocrine therapy-resistant HER2+/ER+ breast cancer. *Endocrinology*. 2023 Nov 2;164(12):bqad159. PubMed PMID: 37897495; PubMed Central PMCID: PMC10651073.
d. Tiek DM, Erdogdu B, Razaghi R, Jin L, Sadowski N, Alamillo-Ferrer C, Hogg JR, Haddad BR, Drewry DH, Wells CI, Pickett JE, Song X, Goenka A, Hu B, Goldlust SA, Zuercher WJ, Pertea M, Timp W, Cheng S-Y, and **Riggins RB**. Temozolomide-induced guanine mutations create exploitable vulnerabilities of guanine-rich DNA and RNA regions in drug resistant gliomas. *Science Advances.* 2022 June 24;8(35):eabn3471. PubMed PMID: 35731869; PubMed Central PMCID: PMC9216507.

2. ERRbeta Alternative Splicing and Cell Cycle Control

An orphan member of the nuclear receptor superfamily, estrogen-related receptor beta (ERRbeta) has been implicated in autosomal recessive hearing disorder DFNB35 and has tumor suppressor activities in cellular models of prostate, breast, and brain cancer. While alternatively spliced forms of this receptor were first identified in 2006, in 2015 my laboratory was the first to report distinct functional roles for endogenous ERRbeta splice variants beta2 (β2) and short form (βsf) in cell cycle regulation.

a. Tiek DM, Khatib SA, Trepicchio CJ, Heckler MM, Divekar SD, Sarkaria JN, Glasgow E, **Riggins RB**. Estrogen-related receptor β activation and isoform shifting by cdc2-like kinase inhibition restricts migration and intracranial tumor growth in glioblastoma. *FASEB J*. 2019 Sep 28;33(12):13476-13491. PubMed PMID: 31570001; PubMed Central PMCID: PMC6894094.
b. Heckler MM, Zeleke TZ, Divekar SD, Fernandez AI, Tiek DM, Woodrick J, Farzanegan A, Roy R, Üren A, Mueller SC, **Riggins RB**. Antimitotic activity of DY131 and the estrogen-related receptor beta 2 (ERRβ2) splice variant in breast cancer. *Oncotarget*. 2016 Jul 26;7(30):47201-47220. PubMed PMID: 27363015; PubMed Central PMCID: PMC5216935.
c. Divekar SD, Tiek DM, Fernandez A, **Riggins RB**. Estrogen-related receptor β (ERRβ) - renaissance receptor or receptor renaissance?. *Nuclear Receptor Signaling*. 2016;14:e002. PubMed PMID: 27507929; PubMed Central PMCID: PMC4978380.
d. Heckler MM, **Riggins RB**. ERRβ splice variants differentially regulate cell cycle progression. *Cell Cycle*. 2015;14(1):31-45. PubMed PMID: 25496115; PubMed Central PMCID: PMC4614362.

3. Cancer-Focused Collaborations with Engineers, Mathematicians, and Data Scientists

Effective strategies to combat the evolution of drug resistance in breast and other cancers require multidisciplinary partnerships between wet- and dry-laboratory scientists. My training and expertise in the cell and molecular biology of drug resistance has been instrumental to several cancer-focused collaborations with engineers, mathematicians, and data scientists, either as lead or co-investigator.

a. McCoy M, Yeang C-H, Bahnassy S, Tam S, **Riggins RB**, Parashar D, Beckman RA. A Generalized Evolutionary Classifier (EC) for Evolutionary Guided Precision Medicine (EGPM). *JCO Precision Oncology*. 2025, 9e2300714. PubMed PMID: 40080755; PubMed Central PMCID: PMC11922188.
b. He W, McCoy MD, **Riggins RB**, Beckman RA, Yeang C-H. Personalized cancer treatment strategies incorporating irreversible and reversible drug resistance mechanisms. *NPJ Systems Biology and Applications*. 2025, 11(1):70. PubMed PMID: 40610469; PubMed Central PMCID: PMC12226727.
c. Kriuchkovskaia VA, Eames EK, **Riggins RB**, Harley BAC. Acquired temozolomide resistance instructs patterns of glioblastoma behavior in gelatin hydrogels. *Advanced Healthcare Materials*. 2024 Oct; 13(27):e2400779. PubMed PMID: 39030879; PubMed Central PMCID: PMC11518645.
d. Stires H, Heckler MM, Fu X, Li Z, Grasso CS, Quist MJ, Lewis JA, Klimach U, Zwart A, Mahajan A, Győrffy B, Cavalli LR, **Riggins RB**. Integrated molecular analysis of Tamoxifen-resistant invasive lobular breast cancer cells identifies MAPK and GRM/mGluR signaling as therapeutic vulnerabilities. *Molecular & Cellular Endocrinology*. 2018 Aug 15;471:105-117. PubMed PMID: 28935545; PubMed Central PMCID: PMC5858970.

4. Invasive Lobular Breast Cancer

As a postdoctoral fellow, I led the first study to develop and characterize a model of endocrine-resistant invasive lobular carcinoma (ILC) of the breast and identify estrogen-related receptor gamma (ERRgamma) as a key mediator of the resistance phenotype. I have continued to characterize the regulation and functional role(s) of ERRgamma and other mediators of endocrine resistance in ER+ ILC throughout my independent career and am a member of the Scientific Advisory Board for the Lobular Breast Cancer Alliance (LBCA).

a. Bahnassy S, Young TA, Abalum TC, Pope EA, Torres Rivera A, Fernandez AI, Olukoya AO, Mobin D, Ranjit S, Libbey NE, Persaud S, Rozeboom AM, Chaldekas K, Harris BT, Madak-Erdogan Z, Sottnik JL, Sikora MJ, **Riggins RB**. Glutamate-Handling Proteins Associate with Adverse Clinicopathologic Features and Comorbidities in Invasive Lobular Carcinoma. [preprint] *bioRxiv*. 2026 Jan 30. DOI: 10.1101/2024.09.29.615681
b. Sottnik JL, Shackleford MT, Bahnassy S, Villagomez FR, Oesterreich S, Hu J, Madak-Erdogan Z, **Riggins RB**, Corr BR, Cook LS, Treviño LS, Bitler BG, Sikora MJ. WNT4 executes estrogen regulation of cellular metabolism via intracellular activity at the mitochondria in breast and gynecologic cancers. *Cancer Research Communications*. 2024, 4:134. PubMed PMID: 38112643; PubMed Central PMCID: PMC10793200.
c. Olukoya AO, Stires H, Bahnassy S, Persaud S, Guerra Y, Ranjit S, Ma S, Cruz MI, Benitez C, Rozeboom AM, Ceuleers H, Berry DL, Jacobsen BM, Raj GV, **Riggins RB**. Riluzole suppresses growth and enhances response to endocrine therapy in ER+ breast cancer. *Journal of the Endocrine Society*. 2023 Sep 15;7(10):bvad117. PubMed PMID: 37766843; PubMed Central PMCID: PMC10521904.
d. Du T, Sikora MJ, Levine KM, Tasdemir N, **Riggins RB**, Wendell SG, Van Houten B, Oesterreich S. Key regulators of lipid metabolism drive endocrine resistance in invasive lobular breast cancer. *Breast Cancer Research*. 2018 Sep 4;20(1):106. PubMed PMID: 30180878; PubMed Central PMCID: PMC6124012.

Complete List of Published Work in My Bibliography:
https://www.ncbi.nlm.nih.gov/myncbi/rebecca.riggins.1/bibliography/public/