

# Brian P. Riesenbergr, PhD | Postdoctoral Scholar

University of North Carolina at Chapel Hill

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## Executive Summary

- PhD research scientist with a focus in cancer immunotherapy drug development and commercialization.
- Developed and managed an externally sponsored research program aimed at generating preclinical efficacy and MOA data to support an IND filing for a potential clinical asset.
- Secured 3 competitive grant fellowships (SCTR TL1, NRSA NCI F31, T32 PIRE) in the past 6 years, worth approximately \$250,000 in support.

## Relevant Skills

- High dimensional (30+ antigen) spectral flow cytometry and data analysis, preclinical *in vivo* experimentation with a focus on translational immunotherapy, technology development & commercialization, and scientific writing.

## Research Experience

**2021- present**      **Postdoctoral Research Associate** | Lineberger Comprehensive Cancer Center | University of North Carolina at Chapel Hill | Chapel Hill, NC  
Mentor: Jessica Thaxton, PhD | Assistant Professor

Cancer Immunology and Drug Discovery

- *Identified and validated the proteasome as a major cellular checkpoint responsible for controlling effectiveness of immunotherapy*

**2021**                      **Postdoctoral Fellow** | Department of Microbiology and Immunology | Program for Immunology Research and Entrepreneurship | Medical University of South Carolina | Charleston, SC  
Mentor: Jessica Thaxton, PhD | Associate Professor

Drug Discovery and Technology Commercialization

- *Developed and validated multiple cell-based, high throughput, phenotypic assays for screening proprietary drug libraries at the Medical University of South Carolina.*
- *Established multiple in vivo experimental systems to confirm pharmacodynamics of lead candidates identified from drug screens using next generation, high-dimensional, spectral flow cytometry.*

**2019-2021**              **Postdoctoral Scholar** | Pelotonia Institute for Immuno-Oncology | The Ohio State University James Comprehensive Cancer Center | Columbus, OH  
Mentor: Zihai Li, MD, Ph.D. | Founding Director, Pelotonia Institute for Immuno-Oncology

Technology Commercialization and Consulting

- *Managed a team of six scientists (4 PhDs, 2 graduate students) in the validation and expansion of a preclinical pipeline for testing potential in-house developed clinical assets*
- *Primary liaison and scientific consultant for a biotechnology firm developing an in-house generated clinical asset – responsible for hitting milestones associated with a sponsored research agreement aimed at generating a robust preclinical efficacy package to support IND filing*
- *Senior scientific consultant for the Immune Monitoring and Discover Platform at the Pelotonia Institute for Immuno-Oncology – tasked with developing and validating standard operating procedures for several next generation technology platforms including spectral flow cytometry (Cytex), single cell proteomics (Isoplexis), and single cell RNA sequencing (10x Genomics)*

Translational Immunotherapy

- *Demonstrated the prognostic effect of platelet count on overall survival of late stage cancer patients treated with PD-1 blockade in collaboration with medical oncologists at Ohio State University (Abstract at ASCO 2020)*

#### Spectral Flow Cytometry and Informatics

- *Developed, optimized, and validated multiple high dimensional (30+ antigen) spectral flow cytometry panels for use on isolated tumor infiltrating lymphocytes (human and mouse) as well as PBMC from cancer and COVID-19+ patients*

**2014-2019**      **Graduate Research Associate** | Department of Microbiology and Immunology | Hollings Cancer Center | Medical University of South Carolina | Charleston, SC  
Mentor: Zihai Li, MD, Ph.D. | Microbiology & Immunology Department Chair

#### Tumor Immunology

- *Demonstrated platelets as a bona fide immunosuppressive entity in the tumor microenvironment via regulation of TGF $\beta$ 1 activation and paracrine signaling*

#### Biotechnology Commercialization

- *Developed, wrote, and pitched a commercialization/business plan for navigating an in-house developed clinical asset on to the market as part of a technology commercialization class – received a perfect score*

#### Clinical Oncology

- *Aided in the development of a clinical protocol testing the capacity of combination antiplatelet therapy with pembrolizumab to induce a more favorable immunologic response in patients with metastatic head and neck squamous cell carcinoma (NCT03245489)*
- *Primary liaison for sample collection, isolation, storage, and analysis for clinical trial NCT03245489*

**2013-2014**      **Graduate Rotation Student** | Department of Microbiology and Immunology | Hollings Cancer Center | Medical University of South Carolina | Charleston, SC  
Mentor: Mark Rubinstein | Associate Professor

#### Tumor Immunology

- *Assisted in uncovering the mechanism by which lymphodepletion improves engraftment of adoptively transferred, tumor specific T cells cultured with IL-12 prior to transfer*

**2010-2013**      **Research Associate** | Wood Hudson Cancer Research Laboratory | Newport, Kentucky | Mentor: Dr. Julia Carter

## Education

2013-2019      Ph.D. in Microbiology and Immunology | Focus: Cancer Immunotherapy  
Medical University of South Carolina (MUSC) | South Carolina, USA.  
Mentor: Zihai Li, MD, Ph.D. | Department Chair | Cancer Immunology Program Leader

2008-2011      B.S. in Biology. Barton College | Wilson, North Carolina  
Supervisor: Kevin Pennington, Ph.D.

## Competitive Funding/Awards

2021      Program in Immunology Research and Entrepreneurship | 5T32AI132164  
2018      Helios Mass Cytometry Exploratory Award, Medical University of South Carolina, Charleston, SC  
2018      AAI Trainee Abstract Award  
2017- 2019      Ruth L. Kirschstein NRSA NCI F31 predoctoral fellowship | 1F31CA217010  
*Mechanistic Understanding of Platelet Mediated Antitumor Immune Suppression*  
2015-2016      SCTR TL1 (T32) Predoctoral Clinical & Translational Research Training Program  
Medical University of South Carolina, Charleston, SC NIH/NCATS TL1 TR001451

## Publications (Primary Research)

Treatment with soluble CD24 attenuates COVID-19-associated systemic immunopathology. Song NJ\*, Allen C\*, Vilgelm AE\*, **Riesenberg BP\***, Weller KP, Reynolds K, Chakravarthy KB, Kumar A, Khatiwada A, Sun Z, Ma A, Chang Y, Yusuf M, Li A, Zeng C, Evans JP, Bucci D, Gunasena M, Xu M, Liyanage NPM, Bolyard C, Velegraki M, Liu SL, Ma Q, Devenport M, Liu Y, Zheng P, Malvestutto CD, Chung D, Li Z. *J Hematol Oncol.* 2022 Jan 10;15(1):5. doi: 10.1186/s13045-021-01222-y. PMID: 35012610

\*Equal authorship contribution

Immune checkpoint inhibitor-related thrombocytopenia: incidence, risk factors and effect on survival. Haddad TC, Zhao S, Li M, Patel SH, Johns A, Grogan M, Lopez G, Miah A, Wei L, Tinoco G, **Riesenberg B**, Li Z, Meara A, Bertino EM, Kendra K, Otterson G, Presley CJ, Owen DH. *Cancer Immunol Immunother.* 2021 Oct 7. doi: 10.1007/s00262-021-03068-2. PMID: 34618180

RNA binding protein PCBP1 is an intracellular immune checkpoint for shaping T cell responses in cancer immunity. Ansa-Addo EA, Huang HC, **Riesenberg B**, Iamsawat S, Borucki D, Nelson MH, Nam JH, Chung D, Paulos CM, Liu B, Yu XZ, Philpott C, Howe PH, Li Z. *Sci Adv.* 2020 May 29;6(22):eaa3865. doi: 10.1126/sciadv.aaz3865. eCollection 2020 May. PMID: 32523987

Thrombin contributes to cancer immune evasion via proteolysis of platelet-bound GARP to activate LTGF- $\beta$ . Metelli A, Wu BX, **Riesenberg B**, Guglietta S, Huck JD, Mills C, Li A, Rachidi S, Krieg C, Rubinstein MP, Gewirth DT, Sun S, Lilly MB, Wahlquist AH, Carbone DP, Yang Y, Liu B, Li Z. *Sci Transl Med.* 2020 Jan 8;12(525). pii: eaay4860. doi: 10.1126/scitranslmed.aay4860. PMID: 31915300

Cutting Edge: Targeting Thrombocytes to Rewire Anticancer Immunity in the Tumor Microenvironment and Potentiate Efficacy of PD-1 Blockade. **Riesenberg BP**, Ansa-Addo EA, Gutierrez J, Timmers CD, Liu B, Li Z. *J Immunol.* 2019 Sep 1;203(5):1105-1110. doi: 10.4049/jimmunol.1900594. Epub 2019 Jul 29. PMID: 31358658

GARP Dampens Cancer Immunity by Sustaining Function and Accumulation of Regulatory T Cells in the Colon. Salem M, Wallace C, Velegraki M, Li A, Ansa-Addo E, Metelli A, Kwon H, **Riesenberg B**, Wu B, Zhang Y, Guglietta S, Sun S, Liu B, Li Z. *Cancer Res.* 2019 Jan 23. pii: canres.2623.2018. doi: 10.1158/0008-5472.CAN-18-2623. [Epub ahead of print] PMID:30674536

Enhanced Lymphodepletion Is Insufficient to Replace Exogenous IL2 or IL15 Therapy in Augmenting the Efficacy of Adoptively Transferred Effector CD8<sub>+</sub> T Cells. Johnson CB, May BR, **Riesenberg BP**, Suriano S, Mehrotra S, Garrett-Mayer E, Salem ML, Jeng EK, Wong HC, Paulos CM, Wrangle JM, Cole DJ, Rubinstein MP. *Cancer Res.* 2018 Jun 1;78(11):3067-3074. doi: 10.1158/0008-5472.CAN-17-2153. Epub 2018 Apr 10.

Platelets subvert T cell immunity against cancer via GARP-TGF $\beta$  axis. Rachidi S\*, Metelli A\*, **Riesenberg B**, Wu BX, Nelson MH, Wallace C, Paulos CM, Rubinstein MP, Garrett-Mayer E, Hennig M, Bearden DW, Yang Y, Liu B, Li Z. *Sci Immunol.* 2017 May 5;2(11). pii: eaai7911. doi: 10.1126/sciimmunol.aai7911. \* Equal authorship contribution

Modulation of Endoplasmic Reticulum Stress Controls CD4<sub>+</sub> T-cell Activation and Antitumor Function. Thaxton JE, Wallace C, **Riesenberg B**, Zhang Y, Paulos CM, Beeson CC, Liu B, Li Z. *Cancer Immunol Res.* 2017 Aug;5(8):666-675. doi: 10.1158/2326-6066.CIR-17-0081. Epub 2017 Jun 22. PMID: 28642246

Membrane-organizing protein moesin controls Treg differentiation and antitumor immunity via TGF- $\beta$  signaling. Ansa-Addo EA, Zhang Y, Yang Y, Hussey GS, Howley BV, Salem M, **Riesenberg B**, Sun S, Rockey DC, Karvar

S, Howe PH, Liu B, Li Z. J Clin Invest. 2017 Apr 3;127(4):1321-1337. doi: 10.1172/JCI89281. Epub 2017 Mar 13.

Effector CD8+ T-cell Engraftment and Antitumor Immunity in Lymphodepleted Hosts Is IL7R $\alpha$  Dependent. Johnson CB, **Riesenberg BP**, May BR, Gilreath SC, Li G, Staveley-O'Carroll KF, Garrett-Mayer E, Mehrotra S, Cole DJ, Rubinstein MP. Cancer Immunol Res. 2015 Dec;3(12):1364-74. doi: 10.1158/2326-6066.CIR-15-0087-T. Epub 2015 Aug 21

## Publications (Reviews)

The Emerging Roles of Endoplasmic Reticulum Stress in Balancing Immunity and Tolerance in Health and Diseases: Mechanisms and Opportunities. Li A, Song NJ, **Riesenberg BP**, Li Z. Front Immunol. 2020 Feb 11;10:3154. doi: 10.3389/fimmu.2019.03154. eCollection 2019. Review. PMID: 32117210

Development of molecular and pharmacological switches for chimeric antigen receptor T cells. Wu BX, Song NJ, **Riesenberg BP**, Li Z. Exp Hematol Oncol. 2019 Nov 5;8:27. doi: 10.1186/s40164-019-0151-z. eCollection 2019. PMID: 31709128

***"The role of platelets in tumor growth, metastasis and immune evasion"***. Zihai Li, **Brian Riesenberg**, Alessandra Metelli, Anqi Li, Bill X Wu. Alan D. Michelson, Editor. Platelets 4<sup>th</sup> Edition, Elsevier/Academic Press. 2019.

Clients and Oncogenic Roles of Molecular Chaperone gp96/grp94. Ansa-Addo EA, Thaxton J, Hong F, Wu BX, Zhang Y, Fugle CW, Metelli A, **Riesenberg B**, Williams K, Gewirth DT, Chiosis G, Liu B, Li Z. Curr Top Med Chem. 2016;16(25):2765-78. Review.