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Education

1992-1997 B.S. Southwestern University
Georgetown, Texas
Majors: Chemistry and Biology with Honors
Minor: Computer Science
Magna Cum Laude
Overall G.P.A.: 3.93
Science G.P.A.: 4.00

1997-2006 M.D. Baylor College of Medicine
Houston, Texas

1999-2004 Ph.D. Baylor College of Medicine
Houston, Texas
Tumor Immunology

Post-Doctoral / Clinical Training

2006-2007 Internship, Internal Medicine, ABIM Research Pathway
Duke University Medical Center
Durham, North Carolina

2007-2008	Residency, Internal Medicine, ABIM Research Pathway Duke University Medical Center Durham, North Carolina
2008-2012	Fellowship, Medical Oncology/Hematology, ABIM Research Pathway Duke University Medical Center Durham, North Carolina

Academic Appointments

2012-2020	Assistant Professor, Tenure Track Duke Cancer Institute Department of Internal Medicine Division of Medical Oncology Duke University Medical Center
2018-2025	Assistant Professor Department of Pharmacology and Cancer Biology Duke University
2019-2020	William Dalton Family Assistant Professor of Medical Oncology
2019-2025	Associate Director, Basic and Translational Research Duke Center for Cancer Immunotherapy
2020-2025	Associate Professor, Tenure Track Duke Cancer Institute Department of Internal Medicine Division of Medical Oncology Duke University Medical Center
2022-2025	Member of the Duke Medical Scientist Training Program (MSTP) Admissions Committee
2025 – present	Associate Professor with Tenure University of North Carolina Lineberger Comprehensive Cancer Center Department of Medicine Division of Medical Oncology

Honors and Awards

1992-1996	James A. “Bill” and Doris Williams Academic Scholarship
1992-1997	Southwestern University Dean’s List
1994	Alpha Chi National College Honors Scholarship Society
1996	Southwestern University Pre-Med Scholarship

1997	Southwestern University Biology Award
1997	Phi Beta Kappa
1998	MD/PhD Medical School Basic Science Award
1998	Robert C. and Janice McNair MD/PhD Training Fellowship
2003	BCM Department of Immunology, 1 st Place Oral Presentation
2003	Baylor College of Medicine Cancer Center Retreat and Symposium, 2 nd Place Honors in Basic Science Research
2003	Baylor College of Medicine Graduate Student Symposium, 1 st Place Poster Presentation and Outstanding Poster Award
2004	Mavis P. Kelsey Award for Immunology Research
2004	Baylor College of Medicine Cancer Center Retreat and Symposium, 2 nd Place Honors in Basic Science Research
2006	MD/PhD Best Overall Performance in Medical School
2007	Duke University Barton Haynes Resident Research Award
2008	Duke University Robert Califf Resident Research Award
2010	Alpha Omega Alpha, nominated and elected
2011	Duke University Hematology/Oncology Fellow Silber Memorial Research Award
2011	American Society of Clinical Oncology Merit Award
2011	North Carolina Oncology Association Fellows Award
2012	American Society of Clinical Oncology Merit Award
2013	Melanoma Research Alliance Young Investigator Award
2016	Alliance for Cancer Gene Therapy Young Investigator Award
2016	National Finalist for SU2C-Merck Catalyst Award
2016	Duke Health Scholars Award
2016	Selected for an oral platform presentation at the 2016 Annual SITC Conference. <i>'The Wnt5a-β-catenin Pathway Triggers a Metabolic Switch That Drives Indoleamine 2,3-dioxygenase Activity and Dendritic Cell Tolerization in the Melanoma Microenvironment'</i> Washington, DC. November 11, 2016.
2018	Selected for an oral platform presentation at the 2018 Annual SITC Conference. <i>'Inflammasome-Wnt Ligand Signaling Axis Promotes Immune Escape During Anti-PD-1 Antibody Immunotherapy'</i> Washington, DC. November 7, 2016.
2019	Duke Strong Start Award
2019	American Society for Clinical Investigation Young Physician Scientist Award, 2019 ASCI Meeting Best YPSA Poster Award
2020	Duke Medicine Basic/Translational Science Mentoring Award
2020	NIH R37 Merit Award
2021	ASCO/CCF Advanced Clinical Research Award in Tumor Immunotherapy
2021	Selected for an oral platform presentation at the 8th European Immunotherapy of Cancer Conference (iTOC8) Annual Meeting. <i>'Role of the Tumor-intrinsic PD-L1-NLRP3 Inflammasome Signaling Axis in Adaptive Resistance to Immunotherapy'</i> . Munich, Germany. October 8, 2021.
2022	Cancer Research Institute Clinical Laboratory Integration Program Award

2023	Duke Research and Innovation SPARK Award
2023	Selected for an oral platform presentation at the 2023 Annual SITC Conference. <i>Tumor-mediated Education of Bone Marrow Neutrophil Progenitors Facilitates the Development of Checkpoint Inhibitor-associated Toxicity</i> . San Diego, CA. November 4, 2023.
2024	Elected Member, American Society for Clinical Investigation (ASCI)
2024	V Foundation 30 th Anniversary Gala Therapy Resistance Research Award
2024	AACR Grantee Summit Oral Presentation Award
2024	Duke Department of Medicine Distinguished Research Publication Award

Research Training

1994–1997	Honors Thesis Departments of Chemistry, Computer Science, and Biology Mentors: Walt Potter, Ph.D., Kerry Bruns, Ph.D., and Vicente Villa, Ph.D. Title: <i>Design of the acetylcholinesterase enzyme using brownian dynamic simulation</i>
1994	Baylor College of Medicine, SMART Program Department of Structural and Computational Biology, J.A. McCammon, Ph.D. Title: <i>Investigation of the role of cation-π interactions in biomolecular recognition</i>
1995	Texas A&M University, NSF-REU Biochemistry Program Department of Biochemistry, Frank Raushel, Ph.D. Title: <i>Investigation of the structure/function relationship of the carbamoyl phosphate synthetase active site</i>
1996 - 1997	Baylor College of Medicine Department of Biochemistry, Joel Morrisett, Ph.D. Title: <i>FKBP Inhibition by the Prolactin Receptor Proline-rich Motif</i>
1999 - 2004	Graduate Thesis Baylor College of Medicine Department of Immunology Mentor: David M. Spencer, Ph.D. Title: <i>Redesigning the CD40 receptor to enable potent in vivo pharmacological activation of dendritic cell-based cancer vaccines</i>
2007 - 2008	Duke University Medical Center Department of Internal Medicine Division of Hematology & Oncology Mentor: Michael Morse, M.D., M.P.H. Title: <i>The efficacy and tolerability of transarterial chemo-embolization compared with transarterial embolization for patients with unresectable hepatocellular carcinoma</i>
2009 - 2012	Duke University Medical Center Department of Internal Medicine Division of Hematology & Oncology Primary Mentor: Gerard Blobe, M.D., Ph.D.

Collaborators: Michael Morse, M.D., M.P.H., Timothy Clay, Ph.D., H.K. Lyerly, M.D., Leona Ling, Ph.D., Douglas Tyler, M.D., Andrew Nixon, Ph.D., Ursula Grohmann, Ph.D.

Title: *Loss of the Type III TGF- β Receptor Generates an Immunotolerant Tumor Microenvironment by Promoting Dendritic Cell-mediated Immune Suppression*

Peer-Reviewed Publications

*First or Senior Author Publications

1. Milhem, M., Wise-Draper, T., Chandra, S., Hanna, G., Laux, D., Medina, T., Ansstas, G., Daud, A., Kelly, C., O'Day, S., Perez, C., Wong, M., Friedlander, P., Kristedja, T., Burgess, M., Cowey, L., **Hanks, B.A.**, Weight, R., Weston, D., Feltner, D., Mix, S., Sindelar, L., Bexon, A., Bexon, M., Michel, R., Bhatia, S. A Phase 1b/2 Study Evaluating Safety, Efficacy, and Immune Effects of TLR9 Agonist Cavrotolimod with Anti-PD-1 Antibodies Among Patients with Advanced Solid Tumors. (2025) *Journal for Immunotherapy of Cancer*. Submitted.
2. *DeVito, N.C., Nguyen, Y., Sturdivant, M., Plebanek, Howell, K., Yarla, N., Jain, V., Aksu, M., Beasley, G., Thievanthiran, B., **Hanks, B.A.**, GLI2 Facilitates Tumor Immune Evasion and Immunotherapeutic Resistance by Coordinating WNT and Prostaglandin Synthesis. bioRxiv doi: 10.1101/2024.03.31.587500. PMID: 38617347. (2025) *Cancer Research*. Accepted - In Press.
3. *Plebanek, M., Xue, Y., Wang, M., Nguyen, Y., DeVito, N.C., Holtzhausen, A., Thievanthiran, B., Beasley, G.M., **Hanks, B.A.** A SREBF2-dependent gene program drives an immunotolerant dendritic cell population during cancer progression. bioRxiv doi: 10.1101/2023.04.26.538456. PMID: 37162965. (2024) *Science Immunology*. May 10. 9(95):eadi4191. doi: 10.1126/sciimmunol.adi4191. PMID: 38728412.
 - Accelerating Cancer Immunotherapy Research (ACIR) May 29, 2024: Plebanek *et al.* identified a cDC-derived, CD63⁺ mature regulatory DC (mregDC) population in mouse TDLNs that potently inhibited cDC cross-presentation and induced Treg formation. mregDCs exhibited unique transcriptional and metabolic signatures associated with the mevalonate (MVA) pathway, including elevated FAO and cellular lipids. Inhibition/KO of the MVA regulator SREBP2 promoted tumor control, improved the TDLN cDC1/mregDC ratio, and increased MHC-I expression by DCs. The presence of lactate in the TME enhanced mregDC abundance in a SREBP2-dependent manner, leading to diminished tumor control.
4. Jacobs, J., Liu, W., Lebar, J., Jiang, Y., **Hanks, B.A.**, Mosca, P.J. Utilization of Complete Lymph Node Dissection for Clinically Node-Positive Merkel Cell Carcinoma in the Modern Era. *Under Review*.
5. Karimi, S., Salama, A., **Hanks, B.A.**, Liu, B., Erkanli, A., Brown, T. The effect of dosing schedule on the incidence of immune-related adverse events and infusion reactions in patients receiving immunotherapy. (2024) *J Hem Onc Pharm*. April. 14(2).

6. Zhou, K., **Hanks, B.A.**, Strickler, J. Management of Microsatellite Instability High (MSI-H) Gastroesophageal Adenocarcinoma. (2023) *J Gastrointestinal Cancer*. Dec 22. doi: 10.1007/s12029-023-01003-5. PMID: 38133871.
7. Moore, E., Blobe, G., DeVito, N., **Hanks, B.A.**, Harrison, M., Hoimes, C., Jia, J., Morse, M., Jayaprakasan, P., MacKelfresh, A., Mulder, H., Hockenberry, A., Zander, A., Stumpe, M., Michuda, J., Beauchamp, K., Perakslis, E., Taxter, T., George, D. Assessing the utility of molecular diagnostic classification for cancers of unknown primary. (2023) *Cancer Medicine*. doi: 10.1002/cam4.6532. PMID: 37712677.
8. Broom, A., Veazey, L., Kenny, K., Harper, I., Peterie, M., Page, A., Cort, N., Durling, J., Lipp, E., Tan, A., Walsh, K., **Hanks, B.A.**, Johnson, M., Van Swearingen, A., Anders, C., Ashley, D., and Khasraw, M., The Enduring Effects of COVID-19 for Cancer Care: Learning from Real-Life Clinical Practice. (2023) *Clin Cancer Res*. May 1; 29(9):1670-1677. Doi:10.1158/1078-0432.CCR-23-0151. PMID: 36920243.
9. *Martin-Orozco, E., Wang, L., Chatterjee, S., **Hanks, B.A.** Editorial: Signaling Pathways Behind Immune Evasion and Therapy Resistance. (2022) *Front Immunol*. Dec 9; 13:1104167. doi: 10.3389/fimmu.2022.1104167.
10. *Theivanthiran, B., Liu, F., DeVito, N., Plebanek, M., Dantzler, M., Beasley, G., Salama, A.K.S., **Hanks, B.A.** The Tumor-Intrinsic NLRP3 Inflammasome Promotes Melanoma Metastases via HSP70-TLR4 Activation and Facilitates Disease Hyperprogression following Anti-PD-1 Immunotherapy. (2022) *Science Translational Medicine*. Nov 23. 14(672):eabq7019. doi: 10.1126/scitranslmed.abq7019. Epub 2022 Nov 23. PMID: 36417489.
 - EurekaAlert. Biomarker predicts resistance to immunotherapies in melanoma. The mechanism driving hyper-progression of cancer treated with checkpoint inhibitors could be a therapeutic target. <https://www.eurekaalert.org/news-releases/972168>
 - Medical Express. Biomarker predicts resistance to immunotherapies in melanoma. <https://medicalxpress.com/news/2022-11-biomarker-resistance-immunotherapies-melanoma.html>
11. ***Hanks, B.A.** The 'Inside' Story on Tumor-expressed PD-L1. (2022) *Cancer Research*. June 82(11): 2069-2071. doi: 10.1158/0008-5472.CAN-22-1060. PMID: 35661198.
12. Rhodin, K.E., Gaughan, E.M., Raman, V., Salama, A.K.S., **Hanks, B.A.**, Shah, R., Tyler, D.S., Slingsluff, C.L., Beasley, G.M. Multicenter Experience with Neoadjuvant Therapy in Melanoma Highlights Heterogeneity in Contemporary Practice. (2022) *Ann Surg Oncol*. July 7. doi: 10.1097/SLA.0000000000005459. PMID: 35797609.
13. *Oswalt, C.J., Al-Rohil, R., DeVito, N.C., Haykal, T., Salama, A.K.S., Holtzhausen, A., Ko, D., **Hanks, B.A.** Identification of a Germline Pyrin Variant in a Metastatic Melanoma Patient with Multiple Spontaneous Regressions and Immune-related Adverse Events. (2022) *J Immunotherapy*. July-August 45(6):284-290. doi: 10.1097/CJI.0000000000000425. PMID: 35621992.

14. DiMarco, A.V., Qin, X., McKinney, B., Garcia, N.M.G., Van Alsten, S.C., Mendes, E.A., Force, J., **Hanks, B.A.**, Troester, M.A., Owzar, K., Xie, J., Alvarez, J. APOBEC mutagenesis inhibits breast cancer growth through induction of a T cell-mediated anti-tumor immune response. (2022) *Cancer Immunol Res.* Jan 10(1):70-86. doi: 10.1158/2326-6066.CIR-21-0146. PMID: 34795033.
15. *Theivanthiran, B., Haykal, T., Cao, L., Holtzhausen, A., Plebanek, M., DeVito, N., **Hanks, B.A.** Overcoming Immunotherapy Resistance by Targeting the Tumor-Intrinsic NLRP3-HSP70 Signaling Axis. (2021) *Cancers.* 13: 4753. Oct 12. doi: 10.3390/cancers13194753. PMID: 34638239.
16. Chakraborty, B., Byemerwa, J., Shepherd, J., Haines, C., Baldi, R., Gong, W., Liu, W., Mukherjee, D., Artham, S., Lim, F., Bae, Y., Brueckner, O., Tavares, K., Wardell, S., **Hanks, B.A.**, Perou, C., Chang, C-Y., and McDonnell, D.P. Inhibition of estrogen signaling in myeloid cells increases tumor immunity in melanoma. (2021) *J Clinical Investigation.* Oct 12:e151347. doi: 10.1172/JCI151347. PMID: 34637400.
17. Isaacs, J., Tan, A., **Hanks, B.A.**, Wang, X., Owzar, K., Herndon, J.E., Antonia, S.J., Piantadosi, S., Khasraw, M. Clinical Trials with Biological Endpoints in Immuno-Oncology: Concepts and Usage. (2021) *Clin Cancer Res.* Jul 26. doi: 10.1158/1078-0432.CCR-21-1593. PMID: 34312214.
18. *DeVito, N., Sturdivant, M., Xiao, C., Thievanthiran, B., Plebanek, M., Salama, A.K.S., Beasley, G.M., Holtzhausen, A., Novotny-Diermayr, V., Strickler, J.M., **Hanks, B.A.** Pharmacological Wnt Ligand Inhibition Overcomes Key Tumor-mediated Resistance Pathways to Anti-PD-1 Checkpoint Inhibitor Immunotherapy. (2021) *Cell Reports.* 35(5): 109071. doi: 10.1016/j.celrep.2021.109071. PMID: 33951424.
19. DeVito, N.C., Kelleher, C., Strickland, K.C., Abbruzzese, J., Anders, C., **Hanks, B.A.**, Jia, J., Mettu, N.B., Morse, M.A., O'Neill, M., Uronis, H., Zafar, Y., Strickler, J.H. A case report of microsatellite instability (MSI)-high, HER2 amplified pancreatic adenocarcinoma with central nervous system metastasis. (2021) *AME Case Rep.* 5:14. April 25. doi: 10.21037/acr-20-154. eCollection 2021. PMID: 33912803.
20. Nghiem, P., Bhatia, S., Lipson, E., Sharfman, W., Kudchadkar, R., Brohl, A., Friedlander, P., Daud, A., Kluger, H., Reddy, S., Boulmay, B., Riker, A., Burgess, M., **Hanks, B.A.**, Olencki, T., Kendra, K., Church, C., Akaike, T., Ramchurren, N., Shinohara, M., Salim, B., Taube, J., Jensen, E., Kalabis, M., Fling, S., Moreno, B., Sharon, E., Cheever, M., Topalian, S. Long-term survival and correlates in patients with advanced Merkel cell carcinoma receiving first-line pembrolizumab therapy. (2021) *J Immunotherapy of Cancer.* 9(4): e002478. April. doi: 10.1136/jit-2021-002478. PMID: 33879601.
21. Dr. Michael B. Atkins , Dr. David E. Fisher , Dr. Hensin Tsao , Dr. Jeffrey E Gerhswald , Dr. Douglas Grossman , Clara Curiel-Lewandrowski , Dr. Sancy A. Leachman , Dr. Laura K Ferris , Kelly C Nelson , Dr. Joanne M. Jeter , Dr. Susan M. Swetter , Dr. Julio A Aguirre-Ghiso , Dr. Ashani T Weeraratna , Dr. Maria S Soengas , Dr. Eva Hernando , Dr. Ryan J.

Sullivan , Dr. Meenhard Herlyn , Dr. Keith Flaherty , Dr. Hussein A. Tawbi , Dr. Jeffrey A. Sosman , Dr. Bernard A. Fox , **Dr. Brent A. Hanks** , Dr. Samir N. Khleif , Dr. Adil I. Daud , Dr. Paul B. Chapman , Dr. Vernon K. Sondak , Dr. Sunandana Chandra , Dr. John M. Kirkwood , Dr. Douglas B. Johnson , Dr. Zeynep Eroglu , Anna C Pavlick , Dr. Geoffrey T Gibney , Dr. Darren Mays , Dr. Pamela B Cassidy , Dr. Douglas Hanniford, Merlino, G. The State of Melanoma: Challenges and Opportunities. (2021) *Clin Cancer Res.* Jan 7. doi: 10.1158/1078-0432.CCR-20-4092. PMID: 33414132.

22. Bhardwaj, N., Friedlander, P., Pavlick, A., Ernstoff, M., Gastman, B., **Hanks, B.A.**, Curti, B., Albertini, M.R., Luke, J., Blazquez, A., Balan, S., Bedognetti, D., Beechem, J., Crocker, A., D'Amico, L., Danaher, P., Davis, T., Hawthorne, T., Hess, B., Keler, T., Lundgren, L., Morishima, C., Ramchurren, N., Rinchai, D., Salazar, A., Salim, B., Sharon, E., Wang, E., Warren, S., Yellin, M., Disis, M., Cheever, M., Fling, S. Flt3 Ligand Significantly Augments Immune Responses to a Dendritic Cell Targeting anti-DEC-205-NY-ESO-1 Vaccine through Expansion of Dendritic Cell Subsets. (2020) *Nature Cancer.* 1: 1204-1217. November 16, 2020.
23. Hu-Lieskovan, S., Bhaumik, S., Dhodapkar, K., Grivel, J.C., Gupta, S., **Hanks, B.A.**, Janetski, S., Kleen, T.O., Koguchi, Y., Lund, A., Maccalli, C., Mahnke, Y., Novosaidly, R., Selvan, S., Sims, T., Zhao, Y., Maeker, H.T. SITC Cancer Immunotherapy Biomarkers Resource Document: Resources and Useful Tools - A Compass in the Land of Biomarker Discovery. (2020) *J ImmunoTherapy of Cancer.* 8(2):e000705. doi: 10.1136/jitc-2020-000705. PMID: 33268350.
24. Strickler, J.H., **Hanks, B.A.**, Khasraw, M. Tumor Mutational Burden as a Predictor of Immunotherapy Response: Is More Always Better. (2020) *Clin Cancer Res.* Nov 16:clincanres.3054.2020. doi:10.1158/1078-0432.CCR-20-3054. Online ahead of print. PMID: 33199494.
25. Salama, A.K.S., Palta, M., Rushing, C.N., Selim, M.A., Lineey, K.N., Czito, B.G., Yoo, D.S., **Hanks, B.A.**, Beasley, G.M., Mosca, P., Dumbauld, C., Steadman, K.N., Yi, J.S., Weinhold, K.J., Tyler, D.S., Lee, W.T., Brizel, D.M. Ipilimumab and Radiation in Patients with High Risk Resected or Regionally Advanced Melanoma. (2020) *Clin Cancer Res.* Nov 10:clincanres.2452.2020. doi: 10.1158/1078-0432.CCR-20-2452. Online ahead of print. PMID: 33172894.
26. Hu, J.B., Ravichandran, S., Rushing, C., Beasley, G.M., **Hanks, B.A.**, Jung, S.H., Salama, A.K.S., Ho, L., and Mosca, P.J. Higher BMI, but not sarcopenia, is associated with pembrolizumab-related toxicity in patients with advanced melanoma. (2020) *Anticancer Res.* 40(9): 5245-5254. doi: 10.21873/anticanres.14528. PMID: 32878813.
27. Beasley, G.M., Therien, A.D., Holl, E.K., Al-Rohil, R., Selim, M.A., Farrow, N.E., Pan, L., Haynes, P., Tyler, D.S., **Hanks, B.A.**, Nair, S.K. Dissecting the immune landscape of tumor draining lymph nodes in melanoma with high-plex spatially resolved protein detection. (2020) *Cancer Immunol Immunother.* Aug 19. doi: 10.1007/s00262-020-02698-2. PMID: 32814992.

28. *Plebanek, M., Sturdivant, M., DeVito, N., and **Hanks, B.A.** Role of Dendritic Cell Metabolic Reprogramming in Tumor Immune Evasion. (2020) *International Journal Immunology*. May 25. doi: 10.1093/intimm/dxaa036. Online ahead of print. PMID: 32449776
29. *Thievanthiran, B., Evans, K., DeVito, N., Plebanek, M., Sturdivant, M., Holtzhausen, A., Wachsmuth, L.P., Salama, A.K.S., Kang, Y., Hsu, D., Balko, J.M., Johnson, D.B., Star, M., Nixon, A., **Hanks, B.A.** A Tumor-intrinsic PD-L1-NLRP3 Inflammasome Signaling Pathway Drives Resistance to Anti-PD-1 Immunotherapy. (2020) *Journal of Clinical Investigation*. May 1. 130(5): 2570-2586. doi: 10.1172/JCI133055. PMID: 32017708.
30. *DeVito, N., Plebanek, M., Thievanthiran, B., **Hanks, B.A.** Role of Tumor-mediated Dendritic Cell Tolerization in Immune Evasion. (2019) *Frontiers Immunology*. 10: 2876. Dec 10. doi: 10.3389/fimmu.2019.02876. eCollection 2019. Review. PMID: 31921140
31. Mowery, Y., Patel, K., Chowdhary, M., Rushing, C., Choudhury, R., Lowe, J., Olson, A., Wisdom, A., Salama, J., **Hanks, B.A.**, Khan, M., and Salama, A. Retrospective analysis of safety and efficacy of anti-PD-1 therapy and radiation therapy in advanced melanoma: A bi-institutional study. (2019). *Radiother Oncol*. 138: 114-120. doi: 10.1016/j.radonc.2019.06.013. Epub 2019 Jun 25. PMID: 31252292.
32. Gibney, G., Hamid, O., Lutzky, J., Olszanski, A., Gandadhar, T., Gajewski, T., Chmielowski, B., **Hanks, B.A.**, Zhao, Y., Newton, R., Maleski, J., Leopold, L., and Weber, J. Phase 1/2 Study of Epcadostat in Combination with Ipilimumab in Patients with Unresectable or Metastatic Melanoma. (2019) *J ImmunoTherapy of Cancer*. 7(1): 80. doi: 10.1186/s40425-019-0562-8. PMID: 30894212.
33. Nghiem, P., Bhatia, S., Lipson, E., Sharfman, W., Kudchadkar, R., Brohl, A., Friedlander, P., Daud, A., Kluger, H., Reddy, S., Boumay, B., Riker, A., Burgess, A., **Hanks, B.A.**, Olencki, T., Margolin, K., Lundgren, L., Soni, A., Ramchurren, N., Church, C., Park, S., Shinohara, M., Salim, B., Taube, J., Bird, S., Ibrahim, N., Fling, S., Moreno, B., Sharon, E., Cheever, M. and Topalian, S. Durable Tumor Regression and Overall Survival in Patients with Advanced Merkel Cell Carcinoma Receiving Pembrolizumab as First-Line Therapy. (2019) *Journal of Clinical Oncology*. Feb doi: 10.1200/JCO.18.01896. [Epub ahead of print] PMID: 30726175
34. Puza, C.J., Bressler, E.S., Terando, A.M., Howard, J.H., Brown, M.C., **Hanks, B.A.**, Salama, A., and Beasley, G.M. The Emerging Role of Surgery for Patients with Advanced Melanoma Treated with Immunotherapy. (2018) *J Surg Res*. Dec 20. doi: 10.1016/j.jss.2018.11.045. [Epub ahead of print] PMID: 30694757
35. Kwak, M., Farrow, N., Salama, A.K.S., Mosca, P.J., **Hanks, B.A.**, Slingluff, C.L., and Beasley, G.M. Updates in Adjuvant Therapy for Melanoma. (2018) *J Surg Oncol*. Nov 27. doi: 10.1002/jso.25298. [Epub ahead of print] Review PMID: 30481375.

36. *Zhao, F., Xiao, C., Evans, K., DeVito, N., Theivanthiran, B., Holtzhausen, A., Siska, P. J., Blobe, G.C. and **Hanks, B.A.**. Stromal Fibroblasts Mediate Anti-PD-1 Antibody Resistance via MMP-9 and Dictate TGF- β Inhibitor Therapy Sequencing in Melanoma. (2018) *Cancer Immunology Research*. 6(12): 1459-1471. Sept doi: 10.1158/2326-6066.CIR-18-0086. [Epub ahead of print] PMID: 30209062.
Editorial: *Cancer Immunology Research*. SpotLight. December 2018.
Commentary: <https://acir.org/journal-articles/experimental-immunotherapy/immune-suppression?entryId=18790>
Editorial: *Science Signaling*. Editor's Choice. January 2019. *Sci. Signal*. 08 Jan 2019: Vol. 12, Issue 563, eaaw5563. DOI: 10.1126/scisignal.aaw5563
Commentary: <http://stke.sciencemag.org/content/12/563/eaaw5563>
37. *Zhao, F., Xiao, C., Evans, K., Theivanthiran, T., DeVito, N., Holtzhausen, A., Liu, J., Liu, X., Boczkowski, D., Nair, S., Locasale, J.W., and **Hanks, B.A.** Paracrine Wnt5a- β -catenin Signaling Triggers a Metabolic Switch that Drives Dendritic Cell Tolerization and Indoleamine 2,3-dioxygenase Enzymatic Activity in the Melanoma Microenvironment. (2018) *Immunity*. 48(1): 147-160. PMID: 29343435.
Commentary: <https://www.sciencedaily.com/releases/2018/01/180116131312.htm>
38. Gnjatic, S., Bronte, V., Brunet, L.R.; Butler, M.O., Disis, M., Galon, J., Hakansson, L.G., **Hanks, B.A.**, Karanikas, V., Khleif, S., Kirkwood, J.M., Miller, L.D., Schendel, D.J., Tanneau, I., Wigginton, J.M., and Butterfield, L. Identifying baseline immune-related biomarkers to predict clinical outcome of immunotherapy (2017) *J ImmunoTherapy of Cancer*. 5:44. PMID: 28515944.
39. *Lowe, J.R., Perry, D.J., Salama, A.K., Mathews, C.E., Moss, L.G. and **Hanks, B.A.** Genetic Risk Analysis of a Patient with Fulminant Autoimmune Type I Diabetes Mellitus Secondary to Combination Ipilimumab/Nivolumab Immunotherapy. (2016) *J ImmunoTherapy of Cancer*. 4:89. PMID: 28031819.
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41. ***Hanks, B.A.** Immune Evasion Pathways and the Design of Dendritic Cell-based Cancer Vaccines. (2016) *Discovery Medicine*. 21(114):135-142. PMID: 27011049.
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43. *Holtzhausen, A., Evans, K., Zhao, F., Tsutsui, M., Orabona, C., Tyler, D.S. and **Hanks, B.A.** Melanoma-derived Wnt5a Generates an Immunotolerant Microenvironment by Promoting Local Dendritic Cell Expression of Indoleamine 2,3-dioxygenase-1:

Opportunities for Pharmacologic Enhancement of Immunotherapy Efficacy. (2015) *Cancer Immunol Research*. 3(9):1082. doi: 10.1158/2326-6066.CIR-14-0167. Epub 2015 Jun 3. PMID: 26041736.

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45. *Holtzhausen, A., Zhao, F., Evans, K. and Hanks, B.A. Early carcinogenesis involves the establishment of immune privilege via intrinsic and extrinsic regulation of indoleamine 2,3-dioxygenase-1: Translational implications in cancer immunotherapy. (2014) *Frontiers Immunology*, 5:438. PMID: 25339948.
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47. *Hanks, B.A., Holtzhausen, Alisha, Jamieson, Rebekah, Gimpel, Petra, Campbell, Olivia M., Sun, Lihong, Tewari, Alok, George, Amanda, Augustine, Christi, Tyler, Douglas S., Osada, Takayu, Morse, Michael A., Ling, Leona, Lyerly, H.K., and Blobe, Gerard C. Type III TGF- β Receptor Downregulation Generates an Immunotolerant Tumor Microenvironment. (2013) *J Clin Invest*. 123(9):3925-3940. doi: 10.1172/JCI65745. PMID: 23925295.
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50. Lapteva, N., Seethammagari, M., Hanks, B.A., Jiang, J., Levitt, J., Slawin, K., and Spencer, D. Enhanced activation of human dendritic cells by inducible CD40 and Toll-like receptor-4 ligation (2007) *Cancer Res*. 67: 10528-10537.
51. *Hanks, B.A., Jiang, J., Singh, R., Song, W., Barry, M.A., Slawin, K.M., and Spencer, D.M. Reengineered CD40 Receptor Enables Potent Pharmacological *in vivo* Activation of Dendritic Cell Cancer Vaccines (2005) *Nature Medicine* 11 (2), 130-137. PMID: 15665830.
52. *Hanks, B.A., Slawin, K.M., and Spencer, D.M. Inducible Activation of Dendritic Cells (2003) U.S. Patent Application Serial No.: 60/448,046. U.S. Patent Approved in 2006.

53. Soman, K.V., **Hanks, B.A.**, Tien, H., Chari, M.V., O'Neal, K.D., and Morrisett, J.D. Template-based docking of a prolactin receptor proline-rich motif octapeptide to FKBP12: Implications for cytokine receptor signaling (1997) *Protein Science* 6: 999-1008.
54. Javid-Majd, F., Stapleton, M.A., Harmon, M.F., **Hanks, B.A.**, Mullins, L.S., and Raushel, F.M. Comparison of the functional differences for the homologous residues within the carboxy phosphate and carbamate domains of carbamoyl phosphate synthetase (1996) *Biochemistry* 35: 14362-14369.
55. Stapleton, M.A., Javid-Majd, F., Harmon, M.F., **Hanks, B.A.**, Grahmann, J.L., Mullins, L.S., and Raushel, F.M. Role of conserved residues within the carboxy phosphate domain of carbamoyl phosphate synthetase. (1996) *Biochemistry* 35: 14352-14361.
56. Kirchoff, P.D., Bass, M.B., **Hanks, B.A.**, Briggs, J.M., Collet, A., and McCammon, J.A. Structural fluctuations of a cryptophane host: A molecular dynamics simulation. (1996) *J. Am. Chem. Soc.* 118: 3237-3246.

Editorials

1. **Hanks, B.A.** Towards an Integrated Understanding of Immunotherapy Resistance. *Immuno-Oncology Insights*. Forward. January 2021.
2. Martin-Orozco, E., Wang, L., Chatterjee, S., and **Hanks, B.A.** Signaling Pathways Behind Immune Evasion and Therapy Resistance. *Frontiers Immunology*. Forward. November 2022.

Peer-Reviewed Abstracts (Recent)

1. Wang, M., Plebanek, M., Villarreal, K., Theivanthiran, B., DeVito, N.C., **Hanks, B.A.** Tumor extracellular vesicles trigger a dendritic cell stress response to promote immune evasion and immunotherapy resistance. 2025 AACR Annual Meeting. Chicago, IL.
2. Plebanek, M., Rezazadebazaz, M., Nguen, Y., Howell, K., Wang, M., Theivanthiran, B., DeVito, N., **Hanks, B.A.** Role of NR4A1 in mregDC Pro-tolerogenic Function and Immunotherapy Response. 2024 SITC Annual Meeting. Houston, TX.
3. Theivanthiran, B., Nguyen, Y., Howell, K., Chakraborty, S., Plebanek, M., DeVito, N.C., **Hanks, B.A.** Tumor NLRP3 Amplification Suppresses NLRC5 Expression and MHC Class I Antigen Processing and Presentation while Driving Anti-PD-1 Immunotherapy Resistance. 2024 SITC Annual Meeting. Houston, TX.
4. Yarla, N., Howell, K., Nguyen, Y., Niedwiecki, D., Uronis, H., Strickler, J.M., DeVito, N.C., Theivanthiran, B., **Hanks, B.A.** Tumor NLRP3 Inflammasome Activity Mediates Resistance to Anti-PD-1 Immunotherapy in Advanced Gastroesophageal Cancer. 2024 AACR Annual Meeting. San Diego, CA.

5. Ferreira, M., Guo, J., Jones, T., Wolf, S., Arrowood, C., Niedzwiecki, D., **Hanks, B.A.** Characterizing Steroid-refractory Immunotherapy Toxicities and Effect of Second-line Immunosuppression on Survival. 2023 SITC Annual Meeting. San Diego, CA.
6. Theivanthiran, B., Yarla, N., Plebanek, M., Ferreira, M., Nguyen, Y., Howell, K., DeVito, N., **Hanks, B.A.** Tumor-mediated Education of Bone Marrow Neutrophil Progenitors Facilitates the Development of Checkpoint Inhibitor-associated Toxicity. 2023 SITC Annual Meeting. Abstract #1254. San Diego, CA.
7. Samhouri, Y., Beane, J., Weiss, S., Hecht, J., Hyngstrom, J., **Hanks, B.A.**, Ganguly, B., Gong, L., Hiraragi, H., Kim, Y., Nikoo, N., Gillenwater, H. Phase I trial of LYL845, an autologous tumor-infiltrating lymphocyte (TIL) therapy enhanced with epigenetic reprogramming, for the treatment of advanced solid tumors. 2023 SITC Annual Meeting. San Diego, CA.
8. Plebanek, M., DeVito, N., Liu, F., Theivanthiran, B., Beasley, G.M., and **Hanks, B.A.** A SREBF2-dependent Genetic Program Drives a Novel Immunotolerant Dendritic Cell Population that Supports Cancer Progression. 2023 AACR Annual Meeting. Abstract #2892. Orlando, Florida. April 17, 2023.
9. Plebanek, M., DeVito, N., Liu, F., Theivanthiran, B., Beasley, G.M., and **Hanks, B.A.** A SREBF2-dependent Genetic Program Drives a Novel Immunotolerant Dendritic Cell Population that Supports Cancer Progression. Keystone Symposium. Cancer Immunotherapy: Mechanisms of Response versus Resistance. Banff, Canada. March 6, 2023.
10. Theivanthiran, B., Yarla, N., Haykal, T., DeVito, N., Plebanek, M., Cao, L., Nguyen, Y., and **Hanks, B.A.** A Tumor-Lung NLRP3-TLR4 Distant Signaling Axis Drives Immunotherapy Resistance via G-CSF-dependent Expansion of Circulating PD-1+ PMN-MDSCs. 2022 SITC Annual Meeting. Abstract #533.
11. DeVito, N.C., Sturdivant, M., Nguyen, Y., Plebanek, M., Aksu, M., Jain, V., Theivanthiran, B., Francica, B., Dubensky, T., **Hanks, B.A.** Overcoming Hedgehog-mediated Anti-PD-1 Resistance in Melanoma through Prostaglandin Inhibition. 2022 SITC Annual Meeting. Abstract #513.
12. Haykal, T., Yarla, N., DeVito, N., Beasley, G., Salama, A.K.S., Theivanthiran, B., **Hanks, B.A.** Activity of the Tumor-intrinsic NLRP3 Inflammasome Pathway Predicts for Response to Checkpoint Inhibitor Immunotherapy in Melanoma Patients. 2022 SITC Annual Meeting. Abstract #22.
13. Haykal, T., Beasley, G., Salama, A.K.S., **Hanks, B.A.** The Role of Combination Immune Checkpoint Inhibitors as Salvage Therapy for PD-1/PD-L1-resistant Merkel Cell Carcinoma. 2022 SITC Annual Meeting. Abstract #827.

14. D.J. George, E. Moore, G.C. Blobe, N. DeVito, **B.A. Hanks**, M.R. Harrison, C.J. Hoimes, J. Jia, M. Morse, P. Jayaprakasan, A. MacKelfresh, H. Mulder, K. Beauchamp, J. Michuda, M.C. Stumpe, E. Perakslis, T. Taxter. Molecular Classification of Cancers of Unknown or Uncertain Primary Expands and Refines Treatment Options. 2022 ESMO Annual Meeting.
15. Theivanthiran, B., Liu, F., DeVito, N.C., Plebanek, M.P., and **Hanks, B.A.** The Tumor-intrinsic NLRP3 Inflammasome Establishes a Pulmonary Metastatic Niche via Type II Epithelial HSP70/TLR4 Signaling and Facilitates Disease Hyperprogression in Response to Immunotherapy. 2021 SITC Annual Meeting. Abstract #15872.
16. Plebanek, M., DeVito, N., Liu, F., Theivanthiran, B., Beasley, G.M., and **Hanks, B.A.** Characterization and Therapeutic Targeting of a Tumor-associated Tolerogenic DC Subpopulation Driven by SREBP2 and the Mevalonate Metabolic Pathway. 2021 SITC Annual Meeting. Abstract #15469.
17. DeVito, N.C., Sturdivant, M., Nguyen, Y., Plebanek, M., Theivanthiran, B., Liu, F., and **Hanks, B.A.** Hedgehog Signaling Drives Epithelial-to-Mesenchymal Transition, Immune Evasion, and Anti-PD-1 Resistance through Upregulation of Wnt Ligand and PGE2 Synthesis. 2021 SITC Annual Meeting. Abstract #15280.
18. DeVito, N.C., Sturdivant, M., Wachsmuth, L.P., Strickler, J.H., Beasley, G., Al-Rohil, R., Salama, A.K.S., **Hanks, B.A.** Investigation of Wnt Ligand Signaling Regulators as a Predictor of Anti-PD-1 Response in Metastatic Melanoma. 2020 SITC Annual Virtual Meeting. Abstract #P425.
19. Theivanthiran, B., Evans, K.S., DeVito, N.C., Plebanek, M., Sturdivant, M., Holtzhausen, A., Wachsmuth, L., Salama, A.K.S., Kang, Y., Hsu, D., Balko, D., Johnson, D.B., Starr, M., Nixon, A., **Hanks, B.A.** A Tumor PD-L1-NLRP3-TLR4 Signaling Pathway Drives Adaptive Resistance to Anti-PD-1 Immunotherapy. 2019 SITC Annual Meeting. Washington, DC. Abstract #P541. Poster Presentation.
20. Whiting, C., Stock, N., Messmer, D., Chen, A., Rahbaek, L., Metzger, D., Enstrom, A., Sturdivant, M., DeVito, N., Spaner, D., Prasit, P., **Hanks, B.A.**, Panigrahy, D., Laport, G. Blockade of the PPAR α metabolic checkpoint with TPST-1120 suppresses tumor growth and stimulates anti-tumor immunity. 2019 AACR Annual Meeting, Atlanta, GA.
21. Theivanthiran, B., DeVito, N., Evans, K., Sturdivant, M., Plebanek, M., Holtzhausen, A., Hsu, D., Lewicki, J., and **Hanks, B.A.** Inflammasome-Wnt Ligand Signaling Axis Promotes Immune Escape During Anti-PD-1 Antibody Immunotherapy. 2018 SITC Annual Meeting. Abstract #10539. Oral Presentation.
22. Nghiem, P., Bhatia, S., Lipson, E., Sharfman, W.H., Kudchadkar, R.R., Friedlander, P.A., Brohl, A.S., Daud, A., Kluger, H., Reddy, S., Burgess, M., **Hanks, B.A.**, Olencki, T., Boulmay, B.C., Lundgren, L.M., Ramchurren, N., Moreno, B.H., Sharon, E.,

- Cheever, M.A., and Topalian, S.L. Durable tumor regression and overall survival (OS) in patients with advanced Merkel cell carcinoma (aMCC) receiving pembrolizumab as first-line therapy. 2018 ASCO Annual Meeting. Abstract #9506. Oral Presentation.
23. Slingluff Jr. C., Fling, S., Mauldin, I. Ernstoff, M.S., Hanks, B.A., Delman, K.A., Lawson, D.A., Gastman, B., Kaiser, J.C., Cheever, M.A. Pilot trial of an Indoleamine 2,3-dioxygenase-1 (IDO1) inhibitor plus a multi-peptide melanoma vaccine in patients with advanced melanoma. 2018 ASCO Annual Meeting. Abstract #3033. Poster Presentation.
 24. Theivanthiran, B., DeVito, N., Evans, K., Zhao, F., Xiao, C., Goldschmidt, B., Edgar, R., Holtzhausen, A., Salama, A.K.S., Lewicki, J., Strickler, J., Viator, J., and Hanks, B.A. (2017) *Journal for Immunotherapy of Cancer*. 5(Suppl 2): P385.
 25. Bhardwaj, N., Friedlander, P., Pavlick, A., Ernstoff, M., Gastman, B., Hanks, B.A., Albertini, M., Luke, J., Yellin, M., Keler, T., Davis, T., Crocker, A., Vitale, L., Hess, B., D'Amico, L., Morishima, C., Disis, N., Danaher, P., Sharon, E., Salim, B., Cheever, M., Fling, S. A Dendritic Cell Targeting NY-ESO-1 Vaccine Significantly Augments Immune Responses in Melanoma Patients Pre-treated with Flt3L. (2017). **3rd CRI-CIMT-EATI-AACR International Cancer Immunotherapy Conference**.
 26. DeVito, N.C., Xiao, C., Zhao, F., Evans, K., Theivanthiran, B., Lewicki, J., Hoey, T., Hurwitz, H., Strickler, J.H., Hanks, B.A. Paracrine Wnt- β -catenin Signaling Inhibition as a Strategy to Enhance the Efficacy of Anti-PD-1 Antibody Therapy in a Transgenic Model of Melanoma. (2017). *J Clin Oncol*. 35: (suppl; abstr 3053).
 27. Zhao, F., Xiao, C., Evans, K., Holtzhausen, A., Boczkowski, D., Nair, S., and Hanks, B.A. Paracrine Wnt5a- β -catenin Signaling Triggers a Metabolic Switch that Drives Dendritic Cell Tolerization and Indoleamine 2,3-dioxygenase Enzymatic Activity in the Melanoma Microenvironment. (2016) *Journal for Immunotherapy of Cancer*. 4(Suppl 1): O11.
 28. Bhardwaj, N., Friedlander, P., Pavlick, A., Ernstoff, M., Gastman, B., Hanks, B.A., Albertini, M., Luke, J., Keler, T., Davis, T., Vitale, L.A., Sharon, S., Danaher, P., Morishima, C., Cheever, M., and Fling, S. Increased immune responses in melanoma patients pre-treated with CDX-301, a recombinant human Flt3 ligand, prior to vaccination with CDX-1401, a dendritic cell targeting NY-ESO-1 vaccine, in a phase II study. (2016) *Journal for Immunotherapy of Cancer* 4(Suppl 1):P166.
 29. Zhao, F., Evans, K., Xiao, C., Holtzhausen, A., and Hanks, B.A. Stromal fibroblasts promote Wnt5a expression and suppress responses to anti-PD-1 antibody therapy in an autochthonous melanoma model. (2016) *Journal for Immunotherapy of Cancer* 4(Suppl 1):P383.
 30. Bhardwaj, N., Pavlick, A., Ernstoff, M., Curti, B., Hanks, B.A., Albertini, M., Luke, J., Yellin, M., Keler, T., Davis, T., Vitale, L., Crocker, A., Friedlander, P., Morishima, C.,

- Cheever, M., and Fling, S. A Phase II Randomized Study of CDX-1401, a Dendritic Cell Targeting NY-ESO-1 Vaccine, in Patients with Malignant Melanoma Pre-Treated with Recombinant CDX-301, a Recombinant Human Flt3 Ligand. (2016) *J Clin Oncol*. 34: (suppl; abstr 9589).
31. Zhao, F., Evans, K., Xiao, C. and **Hanks, B.A.** Tumor-mediated Metabolic Re-Programming of Dendritic Cells as a Fundamental Mechanism of Immune Tolerance and Immunotherapy Resistance. (2016) **Keystone Symposium: Immunometabolism**. Banff, Alberta, Canada.
 32. Qin, R., Singh, B., Olson, A., Peterson, B., Thomas, S., Wolf, S., Bhavsar, N., **Hanks, B.A.**, Salama, J.K., and Salama, A.K.S. : Safety and efficacy of radiation in advanced melanoma patients treated with ipilimumab. (2015) **Society for Melanoma Research 2015 Congress**. San Francisco, California.
 33. Gibney, G.T., Hamid, O., Lutzky, J., Olszanski, A.J., Gangadhar, T.C., Gajewski, T.F., Chmielowski, B., **Hanks, B.A.**, Boasberg, P.D., Zhao, Y., Newton, R.C., Bowman, J., Maleski, J., Leopold, L. and Weber, J.S. Updated results from a phase 1/2 study of epacadostat (INCB024360) in combination with ipilimumab in patients with metastatic melanoma. (2015) **European Society for Medical Oncology - European Cancer Congress**. Vienna, Austria.
 34. Zhao, F., Evans, K., Holtzhausen, A. Tsutsui, M. Tyler, D.S., and **Hanks, B.A.** Targeting the Wnt5a- β -catenin pathway in the melanoma microenvironment to augment checkpoint inhibitor immunotherapy. (2015) *J Clin Oncol*. 33 (suppl; abstr 3054).
 35. Holtzhausen, A., Zhao, F. Evans, K., Orabona, C., **Hanks, B.A.** Melanoma-derived Wnt5a conditions dendritic cells to promote regulatory T cell differentiation via the upregulation of indoleamine 2,3-dioxygenase: novel pharmacological strategies for augmenting immunotherapy efficacy. (2014) *J Immunother Cancer*. 2(Suppl 3):P209 (6 November 2014).
 36. Holtzhausen, A., Evans, K., Siska, P., Rathmell, J., and **Hanks, B.A.** Combinatorial TGF- β signaling blockade and anti-CTLA-4 antibody immunotherapy in a murine BRAF^{V600E}-PTEN^{-/-} transgenic model of melanoma.. (2014) *J Clin Oncol* 32:5s, (suppl; abstr 3011).
 37. Holtzhausen, A., Evans, K., and **Hanks, B.A.** Role of the Wnt- β -catenin Signaling Pathway in Melanoma-mediated Dendritic Cell Tolerization. (2013) *J Immunother Cancer*. 1: 153, (suppl 1).
 38. **Hanks, B.A.**, Holtzhausen, A., Gimpel, P, Jamieson, P. Campbell, O., Sun, L., Augustine, C.K., Tyler, T.S., Osada, T., Morse, M., Ling, L.E., Lyster, H.K. and Blobe, G.C. (2012) *J Clin Oncol* 30 (suppl; abstr 10563).

Patents

1. **Hanks, B.A.**, Slawin, K.M., and Spencer, D.M. Inducible Activation of Dendritic Cells (2003) U.S. Patent Application Serial No.: 60/448,046. U.S. Patent Approved in 2006. Extension approved in 2015. Expiration 2024.
2. Zhao, F. and **Hanks, B.A.** (2016). Alteration of Dendritic Cell Metabolism to Augment Cancer Vaccine Efficacy. U.S. Patent Application Serial No: 10,617,749 B1. U.S. Patent Approved in 2020.
3. Zhao, F., Theivanthiran, B., DeVito, N., and **Hanks, B.A.** Components of the Wnt-Beta-catenin Paracrine Signaling Pathway as Predictive Biomarkers for Cancer Immunotherapy (2018) U.S. Patent Application Serial No.: 62/657,132.
4. Theivanthiran, B. and **Hanks, B.A.** Targeting the NLRP3 Inflammasome as a Strategy for Augmenting the Efficacy of Checkpoint Inhibitor Immunotherapy (2020). U.S. Patent Application Serial No.: 17/020,164.
5. Theivanthiran, B. and **Hanks, B.A.** Tumor-intrinsic NLRP3 Inflammasome Signaling Pathway as a Genetic and Functional Biomarker for Immunotherapy Response (2021) U.S. Provisional Patent Application No. 63/280,270. U.S. Patent Application Serial No.: 18/055,406.
6. Theivanthiran, B. and **Hanks, B.A.** Targeting HSP70 to Suppress Metastatic Progression and Augment Anti-PD-1 Efficacy (2022). *Pending*.
7. Theivanthiran, B., Yarla, N., and **Hanks, B.A.** Tumor NLRP3 Inflammasome as a Therapeutic Target for Immune-Related Adverse Events. (2023). *Pending*.

Book Chapters

1. DeVito, N., Morse, M.A., **Hanks, B.A.**, and Clarke, J.M. Immune checkpoint combinations with inflammatory pathway modulators. Cancer Immunotherapy. 2017. Springer International Publishing. Berlin, Germany.

Current Grant Support

1. **1R37CA249085-01 (Hanks)** 08/01/2020-03/31/2027
National Institutes of Health Annual Direct Costs: \$237,502
 Investigating the PD-L1:NLRP3 signaling axis as a tumor intrinsic mechanism of adaptive resistance to anti-PD-1 antibody immunotherapy
Goals: The overall goal of this proposal is to determine that the tumor NLRP3 inflammasome is essential for the induction of this signaling cascade and the ultimate recruitment of PMN-MDSCs to the tumor bed.
2. **1R37CA249085-01S1 (Hanks)** 07/01/2021-03/31/2025
National Institute of Health Annual Direct Costs: \$75,000
 Exploration of Tumor-Intrinsic NLRP3 Signaling Regulators

- 3. 1R01CA251136-01 (Hanks)** 08/01/2021-06/30/2026
National Institutes of Health Annual Direct Costs: \$242,302
 Role of the tumor NLRP3 inflammasome in the generation of anti-PD-1 antibody immunotherapy-associated toxicities
 Goals: Overall, this work promises to provide mechanistic insight into the development of irAEs which has direct implications on the development of rational therapeutic options and predictive biomarkers for improving the management of these conditions.
Percentile: 7%, Impact Score: 24
Expected funding to initiate in July 2021.
- 4. ME200215 Idea Award (Hanks)** 08/01/2021-05/31/2025
Department of Defense Annual Direct Costs: \$185,000
 Investigating the Role of a Novel Dendritic Cell Subset within Sentinel Lymph Node Tissues in Immune Evasion and Melanomagenesis
- 5. ME230249 Mid-Career Accelerator Award (Hanks)** 11/01/2024 – 10/31/2027
 Department of Defense Annual Direct Costs: \$241,000
 Role of the NLRP3-NLRC5 Signaling Pathway in Melanoma Immune Evasion and Dormancy
- 6. ACRA (Hanks)** 08/01/2021-12/31/2025
Conquer Cancer Foundation Annual Direct Costs: \$139,500
Advanced Clinical Research Award
 Clinical Biomarker Study of the Tumor NLRP3 Inflammasome and its Role in Anti-PD-1 Immunotherapy Resistance
 Goals: We hypothesize that dapansutride will suppress both circulating and tumor PMN-MDSC levels in advanced melanoma patients. We further propose that suppressed levels of PMN-MDSCs will correlate with diminished plasma levels of HSP70 and the CXCR2 chemokines, CXCL1, CXCL2, CXCL3, CXCL5, and CXCL8.
- 7. Clinical Integration Program Grant (Hanks)** 08/01/2022-07/31/2025
Cancer Research Institute Annual Direct Costs: \$100,000
 Goals. To determine whether the tumor-intrinsic NLRP3 inflammasome-HSP70 pathway primes bone marrow neutrophil progenitors through epigenetic remodeling. To determine whether tumor-intrinsic NLRP3-HSP70-mediated innate training promotes distant organ inflammation in response to adjuvant anti-PD-1 immunotherapy.
- 8. Established Investigator Award (Hanks)** 9/30/2022 – 9/29/2025
Melanoma Research Foundation Annual Direct Costs: \$100,000
 Overcoming Anti-PD-1 Resistance in Melanoma by Targeting Immunologic Mediators of the Gli2 Pathway
 Goals: We hypothesize that a Gli2transcriptional phenotype represents a subset of anti-PD-1 refractory melanomas and that Gli2-active melanomas will respond more favorably to a combinatorial triplet immunotherapy regimen comprised of an EP2/EP4 inhibitor / PORCN inhibitor / anti-PD-1 antibody.

9. **V Foundation 30th Anniversary Gala Award (Hanks)** 12/01/2024 – 11/31/27
V Foundation Annual Direct Costs: \$150,000
Role of mregDC-PCSK9-mediated Inhibition of DC Antigen Cross-Presentation in Tumor Immunotherapy Resistance
10. **Mathers Foundation Award (Hanks)** 11/01/2024 – 10/31/2027
Mathers Foundation Annual Direct Costs: \$250,000
Characterizing and Targeting the Dendritic Cell MerTK-NR4A1 Signaling Axis to Overcome Cancer Immunotherapy Resistance
11. **Pre-Clinical Research Award (Hanks)** 02/01/20 – 6/31/25
Merck Sharp & Dohme Corp. Annual Direct Costs: \$386,836
Investigating a Novel PD-L1:NLRP3 Inflammasome Pathway as a Driver of Metastatic Recurrence in Melanoma
12. **Oncology Translational Studies Program (Hanks)** 7/01/2021 - 6/31/2025
Merck Annual Direct Costs: \$150,000
Integrated analysis of a NLRP3-dependent adaptive resistance mechanism to pembrolizumab immunotherapy in advanced gastroesophageal cancer

Pending Grant Support

1. **R01CA295876 (Hanks)**
NCI/NIH
Investigating the Role of the Dendritic Cell Lactate-SREBP2-NR4A1 Signaling Axis in Tumor Immune Evasion and Immunotherapy Resistance
2. **NIH/NCI K22 (M. Plebanek, Mentor: Hanks)**
Understanding the impact of metabolism on epigenetic reprogramming during dendritic cell tolerization.

Completed Grant Support

1. **2001 – 2004: Pre-doctoral Research Fellowship, Department of Defense, PC010463**
Redesigning the CD40 Receptor to Enable Potent *in vivo* Pharmacological Activation of Dendritic Cell-based Prostate Cancer Vaccines
Advisor: David M. Spencer, Ph.D.
2. **2010 – 2013: Post-doctoral Research Fellowship, Department of Defense, BC096641**
The Role of the Type III TGF- β Receptor in Mediating Immunosuppression During Breast Cancer Progression: Translational Implications of TGF- β Inhibition
Role: PI (Advisor: Gerard Blobe, M.D., Ph.D.)
Goals: To investigate the potential immunoregulatory properties of the type III TGF- β receptor during breast cancer progression and to determine if pharmacologic inhibition of TGF- β in the tumor microenvironment can enhance immunotherapeutic strategies for the treatment of breast cancer.

- 3. Young Investigator Award (Hanks)** 11/1/2013-12/31/2016
Melanoma Research Alliance Annual Direct Costs: \$75,000
 Therapeutic Targeting of the TGF- β Signaling Axis to Modulate the Tumor Immune Microenvironment and Enhance Melanoma CTLA-4-targeted Immunotherapy.
- 4. Pre-Clinical Award (Hanks)** 01/1/2015-12/31/2016
MedPacto, Inc. Annual Direct Costs: \$71,650
 Investigation of TEW-7197 in Combination with Immune Checkpoint Inhibition in the BRAFV600E-PTEN-/- Melanoma Model
- 5. P30-CA014236-42S (Kastan)** 01/1/17-12/31/17
Internal award-Mini#33-C2035958 Pilot (Hanks) Annual Direct Costs: \$50,000
Goals: Aim 1. To determine whether elevated levels of TGF- β signaling in the PDAC TME promotes an immunosuppressive TME, in part, by inducing the secretion of soluble factors from activated pancreatic stellate cells, which upregulate the expression of unique checkpoint proteins on PDAC cells. Aim 2. To determine whether inhibiting TGF- β signaling in conjunction with inhibition of PDAC expressed checkpoint proteins will result in a more effective anti-PDAC immune response in vivo.
- 6. Pre-Clinical Research Award (Hanks)** 09/1/2015-10/30/2018
OncoMed Pharmaceuticals Annual Direct Costs: \$108,768
 Investigation of the Therapeutic Efficacy of the FZD8-Fc Wnt Ligand Antagonist, OMP-54F28, and the Fzd Receptor Monoclonal Antibody, OMP-18R5, in Combination with Immune Checkpoint Blockade in Pre-Clinical Melanoma, Non-Small Cell Lung Cancer, and Colon Cancer Models
- 7. DCI Pilot Award (Hanks)** 7/1/15 – 12/31/18
Duke Cancer Institute Annual Direct Costs: \$50,000
 Identifying Immunotherapeutic Resistance Mechanisms in Melanoma Patients Undergoing Active Checkpoint Inhibitor Therapy.
- 8. Pre-Clinical Research Award (Hanks)** 7/1/17-12/31/18
Astrazeneca Annual Direct Costs: \$20,000
 Targeting CXCR2-mediated Myeloid-derived Suppressor Cell Recruitment as a Strategy for Reversing Adaptive Resistance to Anti-PD-1 Antibody Immunotherapy
- 9. 5K08-CA191063-05 (Hanks)** 08/04/2015-07/31/2020
National Institutes of Health Annual Direct Costs: \$152,900
 Melanoma-mediated Dendritic Cell Tolerization and Immune Evasion.
Goals: 1) characterizing the effect that this novel Wnt5a- β -catenin-dependent pathway has on anti-melanoma immunity and melanoma progression, 2) determining if the Wnt5a- β -catenin signaling pathway contributes to immunotherapy resistance and whether this process can be pharmacologically reversed, and 3) elucidating the metabolic alterations induced by Wnt5a in DCs and how these metabolic changes contribute to generating an immunotolerant microenvironment.

10. Young Investigator Award (Hanks)

06/10/2016-06/09/2020

Alliance for Cancer Gene Therapy

Annual Direct Costs: \$82,809

Metabolic Reprogramming of Dendritic Cell-based Cancer Vaccines to Enhance Anti-Tumor Immunity

Goals: 1) To test the hypothesis that the genetic silencing of CPT1a expression using a shRNA-expressing lentiviral vector will augment the ability of DC-based vaccines to stimulate antigen-specific T cell responses. 2) To test the hypothesis that the genetic silencing of CPT1a expression will augment the ability of DC-based vaccines to suppress tumor progression in both a syngeneic luciferase-expressing BRAFV600E-PTEN-/- melanoma model and an autochthonous BRAFV600E-PTEN-/- transgenic melanoma model.

11. Pilot Grant Award (Hanks)

05/15/2017-12/31/2019

Melanoma Research Alliance

Annual Direct Costs: \$50,000

MDSC Recruitment as an Adaptive Resistance Mechanism to PD-1 Ab Resistance

Goals: 1) To test the hypothesis that the CXCL5 chemokine drives resistance to anti-PD-1 ab therapy in an autochthonous melanoma model. 2) To test the hypothesis that CXCR2 blockade reverses the development of anti-PD-1 ab resistance in an autochthonous melanoma model. 3) To test the hypothesis that CXCR2 ligand expression contributes to resistance to anti-PD-1 ab therapy in advanced melanoma patients.

12. Internal Duke Pilot 5P30-CA014236-45 (Kastan)

06/01/2015-12/31/2019

MINI #30-CA030828 (Hanks)

Annual Direct Costs: \$10,545

Goals: Aim 1. To determine whether elevated levels of TGF- β signaling in the PDAC TME promotes an immunosuppressive TME, in part, by inducing the secretion of soluble factors from activated pancreatic stellate cells, which upregulate the expression of unique checkpoint proteins on PDAC cells. Aim 2. To determine whether inhibiting TGF- β signaling in conjunction with inhibition of PDAC expressed checkpoint proteins will result in a more effective anti-PDAC immune response in vivo.

13. #1-P2931995 (Counter)

03/24/2018-03/23/2020

GlaxoSmithKline

Annual Direct Costs: \$28,301

Developing Pip 5K1A Inhibitors for the Treatment of Oncogenic Kras-Driven Cancers

Goals: To evaluate the effect of knocking out the PIP5K1A gene on the tumorigenic growth of KRAS-mutant xenografts as well as neutrophil function.

14. Clinical Trial/0000876056 (Hanks)

09/01/2016-04/14/2020 \

Fred Hutchinson Cancer Research Center

Annual Total Costs: \$28,750

CITN-09 A Phase II Study of MK-3475 in Patients with Advanced Merkel Cell Carcinoma (MCC) Goals: An additional 24 participants will be enrolled under Amendment 4 and subsequent amendments. Additional funding for this trial has been provided by Merck.

15. Pre-Clinical Research Grant (Hanks)

05/23/2018-12/31/2020

A*STAR

Annual Direct Costs: \$74,071

Investigating the Combination PORCN Inhibitor, ETC-159, and Checkpoint Inhibitor Immunotherapy in Pre-Clinical Cancer Models

Goals: This data was further supported by studies which showed the genetic silencing of Wnt5a to sensitize melanomas to both anti-CTLA-4 antibody and anti-PD-1 antibody immunotherapy. Additional RNAseq-based studies performed in our lab have shown that escape from anti-PD-1 antibody therapy in the autochthonous BRAFV600E-PTEN^{-/-} melanoma model is associated with enhanced activation of the Wnt- β -catenin signaling pathway along with upregulation in expression of the Wnt5a ligand.

16. Emerson Collective Research Award (Hanks) 05/06/2019-05/05/2022

Goldman Sachs

Annual Direct Costs: \$86,956

Oncolytic Viral Delivery of Exosomal miRNAs as a Strategy for Metabolically Reprogramming the Tumor Immune Microenvironment and Enhancing the Efficacy of Immunotherapy

Goals: We hypothesize that the development of oncolytic viral vectors capable of leveraging tumor derived exosomes to deliver gene-targeted microRNA species will reverse this tumor-mediated metabolic reprogramming process in local immune cell populations. An oncolytic viral strategy capable of delivering exosome-enriched microRNAs will be the most impactful method for targeting this pathway in the clinic thereby broadening the patient population capable of responding to immunotherapy.

17. Clinical Trial (Hanks)

11/02/2020-02/30/2022

Exicure, Inc.

AST-008-102

Goals: Primary objective: To evaluate the safety and tolerability of cavrotolimod alone and in combination with pembrolizumab or cemiplimab in adult patients with advanced solid tumors. Secondary objectives: To recommend a dose of cavrotolimod and a combination regimen for further development. To determine the PK of cavrotolimod and pembrolizumab

18. Pre-Clinical Research Grant (Hanks)

11/26/2018-11/25/2022

Leap Therapeutics, Inc.

Direct Costs: \$85,070

Investigating the Immunotherapeutic Properties of the DKK1 Antibody, DKN-01, in Pre-Clinical Models of Melanoma

Goals: 1) To determine if DKN-01 is capable of blocking the recruitment of Gr-MDSCs in response to anti-PD-1 ab therapy and to examine the impact of Gr-MDSC inhibition on tumor phenotype. 2) To verify the role of MDSC populations, CD8⁺ T cells, and NK cells in the anti-tumor immune response generated by DKN-01. 3) To determine if DKN-01 can rescue anti-PD-1 ab-resistant tumors.

19. Physician Scientist Award (Mentee: DeVito, Mentor: Hanks) 07/01/2017 – 06/31/2022

Damon Runyon

Annual Direct Costs: \$110,000

Mechanisms of Tumor EMT-mediated Dendritic Cell Tolerization

20. W81XWH-18-1-0189 (Somarelli)

09/01/2018-10/31/2022

Department of Defense

Direct Costs: \$374,977

Targeting the p38/Snail/PD-L1 axis in hormone-therapy resistance and metastasis

Goals: Our overall hypothesis is that p38a mediates both cell intrinsic hormone therapy resistance and cell extrinsic immune evasion.

21. Internal Pilot Award (Hanks) 01/01/2021-12/31/2022
Duke Cancer Institute Annual Costs: \$50,000
Mechanistic and Clinical Investigation of a Novel CD63⁺ Tolerized DC Subset in Tumor-draining Lymph Node Tissues

22. Pre-Clinical Research Grant (Hanks) 07/01/2015-9/1/23
Merck Sharp & Dohme Corp. Direct Costs: \$319,014
Resistance Mechanisms to Anti-PD-1 Antibody Immunotherapy
Goals: Investigating the changes in gene and protein expression that occur at the point of tumor escape while undergoing treatment with anti-PD-1 antibody and determining if these factors contribute to primary resistance to anti-PD-1 immunotherapy in genetically modified tumor cell lines derived from the same pre-clinical model.

23. 1F32CA247067-01A1 (Mentee: Plebanek, Mentor: Hanks) 09/01/2020-11/31/2023
National Institute of Health Annual Direct Costs: \$61,226
Tumor-derived Exosome Induction of Dendritic Cell Tolerization
Goals: First, we will use melanoma cell lines isolated from BRAFV600E and PTEN^{-/-} transgenic mice that are engineered to express a CD63-RFP fusion protein to fluorescently tag melanoma exosomes. In tumor implant models, the biodistribution of exosomes to DCs and the resulting phenotypic changes of DCs in the lymph nodes, and primary tumor will be assessed using flow cytometry and RNA-seq. Next, we will utilize cellular metabolism analysis and high-resolution mass spectrometry to determine the impact of tumor-derived exosomes on changes in the flux of metabolites through key metabolic pathways. We anticipate that melanoma exosomes cause increased FAO leading to subsequent DC tolerization. Finally, the therapeutic application of utilizing oncolytic herpes viral vectors (oHSV1) to both kill tumor cells and suppress FAO in dendritic cells will be investigated.

24. 1R01CA233585-01 (Armstrong) 08/01/2019-07/31/2024
National Institutes of Health Direct Costs: \$265,538
Targeting convergent oncogenic signaling during AR inhibition to overcome metastasis and immune evasion in prostate cancer
Goals: The overall goal of this proposal is to provide the preclinical and clinical correlative studies to justify clinical trials to provide near-term benefit for men with metastatic, hormone therapy-resistant prostate cancer.

25. Clinical Trial (Hanks) 01/18/2019-07/24/2024
Sanofi US Annual Direct Costs: \$451,368
Sanofi SAR439459
Goals: Dose escalation (Part 1) Primary objective Part 1A (SAR439459 monotherapy) To determine the maximum tolerated dose (MTD) and/or maximum administered dose (MAD) of SAR439459 when administered intravenously as monotherapy in adult patients with advanced solid tumors. Part 1B (SAR439459 and REGN2810 combination therapy) To determine the MTD and/or MAD of SAR439459 administered intravenously in combination with 3 mg/kg of REGN2810 administered intravenously in adult patients with advanced solid tumors.

26. Clinical Trial (Hanks)

03/01/2019-02/28/2025

Alliance

STOMP Adjuvant Trial for Merkel Cell Carcinoma

Goals: To test the hypothesis that adjuvant pembrolizumab immunotherapy will prolong recurrence free survival in stage III Merkel cell carcinoma patients.

27. Pre-Clinical Research Grant (Hanks)

06/25/2018 -

Tempest Therapeutics

Annual Direct Costs: \$154,975

Investigating the Impact of TPST-1120 α PPAR Inhibition on Anti-PD-1 Antibody

Immunotherapy Efficacy in Pre-Clinical Melanoma Models

Goals: Recent studies have demonstrated the existence of a variety of myeloid cell populations within the tumor microenvironment which exhibit altered states of activation and that are functionally compromised. In some cases, these myeloid cells have been transformed such that they are capable of actively tolerizing adaptive immunity. These are exemplified by M2 macrophages, myeloid-derived suppressor cells, and regulatory or tolerized dendritic cells (DCs). Importantly, functional DC populations have been shown to be critical for the development of anti-tumor immune responses to anti-PD-1 antibody immunotherapy. Therefore, it is of considerable interest that various investigators in the emerging field of immunometabolism have demonstrated that each of these myeloid cell populations are functionally tolerized by biochemical pathways promoting fatty acid oxidation (FAO).

28. Clinical Research Grant (Hanks)

07/09/2018-

Merck Sharp & Dohme Corp.

Annual Direct Costs: \$543,716

Investigating Biomarkers of Adaptive Resistance to Anti-PD-1 Antibody Immunotherapy in Melanoma

Goals: The primary hypothesis of this study is that an upregulation of the CXCR2 chemokine ligands and/or melanoma tissue myeloid markers in patients with advanced melanoma will correlate with anti-PD-1 antibody treatment failure. The secondary hypothesis of this study is that elevated baseline levels of the CXCR2 chemokine ligands and/or melanoma tissue myeloid markers in patients with advanced melanoma will correlate with anti-PD-1 antibody treatment failure.

29. Pre-Clinical Research Grant (Hanks)

02/13/2019-12/31/2024

Merck Sharp & Dohme Corp.

Annual Direct Costs: \$325,549

HSP70-TLR4-mediated MDSC Recruitment as an Adaptive Resistance Mechanism to Anti-PD-1 Antibody Therapy in Cancer

Goals: To investigate the role of the HSP70-TLR4 signaling axis in the promotion of MDSC recruitment in response to CD8⁺ T cell-mediated tumor cell killing following anti-PD-1 antibody immunotherapy.

30. Innovation and Discovery Grant in Gastric Cancer (Hanks)

12/1/23–11/31/24

AACR-Debbie's Dream Foundation

Annual Direct Costs: \$50,000

The NLRP3-HSP70 Axis and Immunotherapy Resistance in Gastric Cancer

Goals: 1) To determine the role of the NLRP3-HSP70 signaling pathway in anti-PD-1 resistance in an orthotopic gastric cancer model. 2) To determine whether inhibitors of NLRP3 and HSP70 can enhance the efficacy of anti-PD-1 immunotherapy in an orthotopic model of

gastric cancer. 3) To determine whether NLRP3 amplification may serve as a marker of response to NLRP3 and/or HSP70 inhibitors in gastric cancer.

31. SPARC Seed Grant (Hanks) 12/1/23-2/1/25
Duke Science and Technology Annual Direct Costs: \$150,000
Tumor-dependent Innate Training of Dendritic Cell Progenitors as a Novel Mechanism of Immune Escape and Immunotherapy Resistance
Goals: To determine whether tumors can epigenetically modulate dendritic cell progenitors in the bone marrow in a manner that suppresses anti-tumor immunity.

32. Internal Duke Health Scholar Award (Hanks) 07/01/2016-2/1/25
Funding to support Dr Hanks' research Direct Costs:\$600,000

33. Internal Duke Strong Start Award (Hanks) 07/01/2019 – 2/1/25
New Physician-Scientist Award Program Annual Direct Costs: \$70,000
Tumor-mediated Mechanisms of Immune Evasion and Immunotherapy Resistance
These funds are to be used by PI discretion to best support the research program.

34. Internal Fund to Retain Physician Scientists (Mentee: Nicholas DeVito, Mentor: Brent Hanks) 01/01/2022 - 12/31/2024
Duke Department of Medicine Annual Direct Costs: \$50,000
Investigating EMT-mediated mechanisms of tumor immune evasion and immunotherapy resistance.

35. Internal Duke Strong Start Award (Mentee: Nicholas DeVito, Mentor: Brent Hanks) 07/01/2022 - 06/30/2025
Duke Health System Annual Direct Costs: \$75,000
Investigating EMT-mediated mechanisms of tumor immune evasion and immunotherapy resistance.

36. Clinical Trial (Hanks) 06/01/2023-12/31/2026
Lyell ImmunoPharma
A Phase I Study to Assess the Safety and Efficacy of LYL845 in Adults with Relapsed and/or Refractory Metastatic or Locally Advanced Melanoma and Selected Solid Tumor Malignancies.

Clinical Trials

2013-2016. A Phase 1/2 Randomized, Blinded, Placebo-controlled Study of Ipilimumab in combination with INCB024360 or placebo in subjects with unresectable or metastatic melanoma. Incyte, Corp. Protocol INCB 24360-201. Role: Site-PI.

2014-2017. A Phase II, Open-label, Multicenter, Randomized Study of CDX-1401, a Dendritic Cell Targeting NY-ESO-1 Vaccine, in Patients with Malignant Melanoma Pre-Treated with CDX-301, A Recombinant Human Flt3 Ligand. Cancer Immunotherapy Network. Protocol CITN-07. Role: Site-PI.

- 2014-2017. A phase II trial of an Indoleamine 2,3-dioxygenase-1 (IDO1) inhibitor (INCB024360) plus a multi-peptide melanoma vaccine (MELITAC 12.1) in patients with advanced melanoma. Cancer Immunotherapy Network. Incyte, Corp. Protocol CITN-04-IDO- Melanoma. Role: Site-PI.
- 2015-2023. Understanding Immunotherapy Resistance Mechanisms in Advanced Melanoma. NCT02694965. Protocol: Pro00059349. Role: PI.
- 2016-2022. Pembrolizumab in Treating Patients With Advanced Merkel Cell Cancer. Protocol CITN-09. Role: Site-PI
- 2018-2020. A Randomized Phase II Study of Anti-PD-1 Antibody Alone Versus Anti-PD1 Antibody Plus Stereotactic Body Radiation Therapy in Advanced Merkel Cell Carcinoma. Alliance A091605. Role: Site-PI
- 2019-2023. A Phase 1/1b first-in-human dose escalation and expansion study for the evaluation of safety, pharmacokinetics, pharmacodynamics and anti-tumor activity of SAR439459 administered intravenously as monotherapy and in combination with REGN2810 in adult patients with advanced solid tumors. Sanofi. Role: Site-PI
- 2019-2023. STAMP: Surgically Treated Adjuvant Merkel Cell Carcinoma with Pembrolizumab, a Phase III Trial. ECOG-ACRIN. Role: Site-PI.
- 2021-2022. Merkel Cell Carcinoma, Cutaneous Squamous Cell Carcinoma, or Other Advanced Solid Tumors: A Phase Ib/2 Study of Cavrotolimod Combined with Pembrolizumab or Cemiplimab. Exicure. Role: Site-PI
- 2022-2025. Prospective Study to Evaluate Immune-Related Adverse Events and Associated Biomarkers in Patients Receiving Immunotherapy (IMBARC). Role: PI.
- 2022-2025. Stratifying the Occurrence of Immune Related Adverse Events by Patient Demographic Characteristics among Patients Admitted to Duke University Hospital. Role: PI.
- 2023-2025. A Phase I Study to Assess the Safety and Efficacy of LYL845 in Adults with Relapsed and/or Refractory Metastatic or Locally Advanced Melanoma and Selected Solid Tumor Malignancies. Lyell ImmunoPharma, Inc. Role: Site-PI.

Oral Presentations (2008-2024)

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| 2024 | The Critical Role of Translational Research in the Future of Immuno-Oncology: A Case Study. Keynote Presentation. 2024 Annual Immuno-Oncology Retreat. October 25, 2024. Atrium Health Wake Forest Baptist Comprehensive Cancer Center. Winston Salem, NC. |
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- 2024 The Role of the NLRP3-HSP70 Signaling Axis in Gastric Cancer Immunotherapy Resistance. **2024 AACR Grantee Summit: Igniting Innovation in Cancer Research**. October 8, 2024. Philadelphia, PA.
- 2024 *Role of Inflammation and Stress in Melanoma Immune Evasion, Relapse, and Immunotherapy Resistance*. **Pinnell Center for Investigative Dermatology Annual Research Symposium**. Duke University. Durham, NC. September 6, 2024.
- 2024 *Tumor-mediated Education of Bone Marrow Neutrophil Progenitors Facilitates the Development of Checkpoint Inhibitor-associated Toxicity*. **DCI Immuno-Oncology Seminar**. Durham, NC. August 20, 2024
- 2024 *Exploring the Role of Dendritic Cell Tolerization and the NLRP3 Inflammasome in Cancer Immunotherapy Resistance*. **University of North Carolina Lineberger Cancer Center**. Chapel Hill, NC May 29, 2024
- 2024 *Tumor-mediated Education of Bone Marrow Neutrophil Progenitors Facilitates the Development of Checkpoint Inhibitor-associated Toxicity*. **3rd International Symposium of Clinical Immunology**. Hokkaido, Japan. May 16, 2024
- 2024 Role of the Tumor-intrinsic NLRP3-HSP70 Signaling Axis in Immune Evasion and Immunotherapy Resistance. **Duke Radiation Oncology Program Retreat**. Durham, NC May 7, 2024.
- 2024 *Discovery of a Lactate-SREBP2 Signaling Axis in Tumor-mediated Dendritic Cell Tolerization and Immune Evasion*. **DCI Scholar Research Symposium**. Durham, NC. March 25, 2024
- 2023 *Tumor-mediated Education of Bone Marrow Neutrophil Progenitors Facilitates the Development of Checkpoint Inhibitor-associated Toxicity*. **2023 Society for Immunotherapy of Cancer (SITC) Annual Meeting**. San Diego, CA. November 4, 2023.
- 2023 *Overcoming Immunotherapy Resistance in Cancer: Exploring the NLRP3 and Lactate-SREBP2 Signaling Pathways*. **Vanderbilt University Medical Center**. Nashville, TN, August 22, 2023.
- 2023 *Overcoming Immunotherapy Resistance in Melanoma by Leveraging the Tumor-intrinsic NLRP3-HSP70 Signaling Pathway*. **Melanoma Research Foundation Winter Meeting**. March 6, 2023.
- 2022 *Improving Cancer Immunotherapy Outcomes in the Clinic*. **Hem/Onc Grand Rounds. Duke University**. December 21, 2022.
- 2021 **Wnt and β -catenin Targeted Drug Discovery Meeting. Updates on Immuno-Oncology - A New Therapeutic focus through Wnt- β -catenin**. Invited Expert. Panel Discussant. Virtual Meeting. November 17, 2021.
- 2021 *The Tumor-intrinsic PD-L1-NLRP3 Inflammasome Signaling Axis: Opportunities for Improving Immunotherapy Outcomes in Cancer*. **Hematology-Oncology Grand Rounds Cutter Lecture Series. Vanderbilt University Medical Center**. Virtual Presentation. Nashville, TN. October 25, 2021.
- 2021 *The Tumor-intrinsic PD-L1-NLRP3 Inflammasome Signaling Axis: Opportunities for Improving Immunotherapy Outcomes in Cancer*. **Kemp Cease Hematology-Oncology Research Conference. University of Michigan School of Medicine**. Virtual Presentation. Ann Arbor, Michigan. October 19, 2021.
- 2021 *Role of the Tumor-intrinsic PD-L1-NLRP3 Inflammasome Signaling Axis in*

- Adaptive Resistance to Immunotherapy. 8th European Immunotherapy of Cancer Conference (iTOC8) Annual Meeting.* Virtual Presentation. Munich, Germany. October 8, 2021.
- 2021 *Overcoming Resistance to PD-1 Immunotherapy in Advanced Melanoma. Department of Medicine, Grand Rounds. Duke University Medical Center.* Durham, NC. September 10, 2021.
- 2021 *Dendritic Cell Tolerization in the Tumor Microenvironment. Department of Immunology Seminar. Duke University.* February 23, 2021.
- 2020 *Targeting a Tumor Intrinsic PD-L1-NLRP3 Signaling Pathway to Overcome Adaptive Resistance to Anti-PD-1 Antibody Immunotherapy. 2020 Immuno-Oncology Summit Virtual Meeting.*
- 2020 *Rise of the Machines: AI in Predicting Immunotherapy Outcomes. Clinical Science Symposium. 2020 Annual ASCO Virtual Meeting.* May 29, 2020.
- 2020 *A Tumor PD-L1-NLRP3 Inflammasome Signaling Axis Drives Adaptive Resistance to Anti-PD-1 Immunotherapy. Duke Center for Cancer Immunotherapy. Duke University.* February 18, 2020.
- 2019 *Tumor-mediated Dendritic Cell Tolerization via Metabolic Reprogramming. 2019 Japanese Society of Immunology Annual Meeting.* Hamamatsu, Japan. December 10, 2019.
- 2019 *Targeting Wnt Ligand Signaling as a Strategy for Overcoming Resistance to Anti-PD-1 Antibody Immunotherapy. Immuno-Oncology Summit.* Boston, MA. August 5, 2019
- 2019 *Melanoma Research: Where we have been and where we are going. 2019 Melanoma Research Alliance Annual Meeting.* Patient Forum. Washington, DC. February 25, 2019.
- 2018 *Inflammasome-Wnt Ligand Signaling Axis Promotes Immune Escape During Anti-PD-1 Antibody Immunotherapy. 2018 Society for Immunotherapy (SITC) of Cancer Annual Meeting.* Washington, DC. November 7, 2018.
- 2018 *Tumor-mediated Modulation of Immunometabolism as a Mechanism of Immunotherapy Resistance. Immuno-Oncology Summit.* Boston, MA. August 27, 2018
- 2018 *Investigating the Role of Innate Immunity in Adaptive Resistance to Cancer Immunotherapy. Biomarkers and Immuno-Oncology World Congress.* Boston, MA. June 13, 2018
- 2018 *Role of the Wnt- β -catenin Signaling Pathway in Tumor-mediated Immune Evasion and Immunotherapy Resistance. Duke-NUS Singapore.* March 27, 2018.
- 2018 *Uncovering the Role of the Wnt- β -catenin Signaling Pathway in Driving Melanoma Immune Evasion and Immunotherapy Resistance. 2018 Duke Solid Tumor Therapeutics Program Annual Retreat.* Durham, NC. March 19, 2018.
- 2018 *Uncovering the Role of the Wnt- β -catenin Signaling Pathway in Driving Melanoma Immune Evasion and Immunotherapy Resistance. 2018 Pinnel Center Talk.* Duke Dermatology. Durham, NC. March 2, 2018.
- 2017 Theivanthiran, B., DeVito, N., Evans, K., Zhao, F., Xiao, C., Goldschmidt, B., Edgar, R., Holtzhausen, A., Salama, A.K.S., Lewicki, J., Strickler, J.H., Viator, J., and **Hanks, B.A.** A HSP-TLR-Wnt5a Paracrine Signaling Axis Drives CXCR2

- Ligand Recruitment of Myeloid-derived Suppressor Cells and Represents a Novel Adaptive Resistance Mechanism to Anti-PD-1 Antibody Therapy. (2017) Poster Presentation. Society for Immunotherapy of Cancer. 2017 Annual Meeting. Washington, DC. November 10, 2017.
- 2017 *Recent Developments in the Research and Management of Melanoma and Merkel Cell Carcinoma. Virginia Oncology Associates-Duke Oncology Network Symposium.* November 4, 2017. Virginia Beach, VA.
- 2017 *Mechanisms of Immune Evasion and Immunotherapy Resistance. Department of Medicine Grand Rounds. Duke University.* Durham, NC. September 29, 2017.
- 2017 *Immunotherapy and the Future of Melanoma. Duke Cancer Review.* Keynote Presentation. July 28, 2017. Research Triangle, NC.
- 2017 How to Integrate Immunotherapy into Your Clinical Practice. *The Immune System and Cancer: Mechanisms of Immune Suppression. ASCO-SITC Joint Conference.* June 1, 2017. Chicago, IL.
- 2017 DeVito, N., Xiao, C., Zhao, F., Evans, K., Theivanthiran, T., Lewicki, J., Hoey, T., Hurwitz, H., Strickler, J., and Hanks, B.A. Paracrine Wnt- β -catenin Signaling Inhibition as a Strategy to Enhance the Efficacy of Anti-PD-1 Antibody (Ab) Therapy in a Transgenic Model of Melanoma. *Journal of Clinical Oncology.* 35: (suppl; abstract 3053). Poster Presentation. June 3, 2017. Chicago, IL.
- 2017 *Understanding Immunotherapy Resistance in Advanced Melanoma.* Keynote Presentation. **2017 Duke Melanoma Consortium.** Durham, NC. May 5, 2017.
- 2017 *Utilizing Pre-Clinical Melanoma Models to Design Rational Combinatorial Immunotherapy Regimens : Lessons Learned from Targeting the TGF- β Signaling Pathway.* **Melanoma Research Alliance Annual Meeting.** Washington, DC. February 14, 2017.
- 2016 *The Wnt5a- β -catenin Pathway Triggers a Metabolic Switch That Drives Indoleamine 2,3-dioxygenase Activity and Dendritic Cell Tolerization in the Melanoma Microenvironment.* **Society for Immunotherapy of Cancer. 2016 Annual Meeting.** Washington, DC. November 11, 2016.
- 2016 *Stromal fibroblasts promote Wnt5a expression and suppress responses to anti-PD-1 antibody therapy in an autochthonous melanoma model.* **Society for Immunotherapy of Cancer. 2016 Annual Meeting.** Washington, DC. Poster Presentation, #383. November 10, 2016.
- 2016 *The Influence of the Tumor Microenvironment on Checkpoint Inhibitor Efficacy: Lessons Learned from Targeting the TGF- β Signaling Pathway.* **Melanoma Research Alliance Annual Meeting.** Washington, DC. February 12, 2016.
- 2016 *Understanding Tumor-mediated Immune Evasion: The Path to Rationale Combinatorial Immunotherapy.* **Oncology Grand Rounds, Duke University Medical Center.** Durham, North Carolina. January 26, 2016.
- 2016 *Manipulating Immune Evasion Mechanisms in the Tumor Microenvironment to Enhance Immunotherapy Efficacy.* Leaf Huang Lab, **University of North Carolina.** Chapel Hill, North Carolina. January 6, 2016.
- 2015 *Targeting the TGF- β Signaling Pathway to Augment the Efficacy of Immunotherapy Checkpoint Inhibitors in Melanoma.* **2nd Annual Summit on Melanoma.** Pasadena, California. September 18-20, 2015.

- 2015 *Understanding the Immunology of the Melanoma Microenvironment: Towards the Development of Novel Immunotherapy Strategies.* **Duke Dermatology Grand Rounds.** Duke University Medical Center, Durham, NC. August 19, 2015
- 2015 *Basic Mechanisms of Tumor Immune Suppression.* **Society of Immunotherapy of Cancer Regional Meeting.** Chicago, Illinois. May 29, 2015.
- 2014 Society of Immunotherapy of Cancer 2013 Annual Meeting, Washington, DC
Poster Presentation, #321
- 2014 *Modulating the Immune Response.* **Society of Immunotherapy of Cancer Regional Meeting.** Charlotte, North Carolina. October 3, 2014.
- 2014 *Exploring Dendritic Cell-Targeted Immune Evasion Mechanisms in Melanoma: Developing Pharmacological Strategies to Synergistically Enhance Immunotherapy Efficacy.* **Georgia Regents University.** Augusta, Georgia. August, 2014.
- 2014 *Combinatorial TGF- β Signaling Blockade and anti-CTLA-4 Antibody Immunotherapy in a Murine BRAF^{V600E}-PTEN^{-/-} Transgenic Model of Melanoma.* Developmental Therapeutics – Immunotherapy Poster Highlight Session
American Society of Clinical Oncology, 2014 Annual Meeting, Chicago, Illinois
- 2014 *Exploring Dendritic Cell-Targeted Immune Evasion Mechanisms in Melanoma: Developing Pharmacological Strategies to Synergistically Enhance Immunotherapy Efficacy.* **Oncology Grand Rounds, Duke University Medical Center,** Durham, NC. Oral Presentation
- 2013 Society of Immunotherapy of Cancer
2013 Annual Meeting, Washington, DC
Poster Presentation, #174
- 2012 American Society of Clinical Oncology
2012 Annual Meeting, Chicago, Illinois
Poster Presentation, J Clin Oncol 30, 2012 (suppl; abstr 10563)
- 2012 American Association of Cancer Research
2012 Annual Meeting, Chicago, Illinois
Poster Presentation, Abstract # 3548
- 2011 FASEB Meeting
The TGF- β Superfamily: Signaling in Development and Disease, Lucca, Italy
Poster Presentation
- 2011 Era of Hope Breast Cancer Meeting, Orlando, Florida
Oral Presentation
- 2011 American Society of Clinical Oncology
2011 Annual Meeting, Chicago, Illinois,
Poster Presentation, J Clin Oncol 29, 2011 (suppl; abstr 10540)
- 2011 **Invited Talk.** Type III TGF- β Receptor Downregulation Generates an Immunotolerant Tumor Microenvironment. Keystone Symposium
Cancer Control by Tumor Suppressors and Immune Effectors
Sante Fe, New Mexico
Oral and Poster Presentation
- 2010 American Association of Cancer Research
2010 Annual Meeting, Chicago, Illinois

- 2008 Poster Presentation, J Clin Oncol 28:15s, 2010 (suppl; abstr 10577)
 Duke University Robert Califf Resident Research Grand Rounds
 Oral Presentation

Lectures

- 2024 *Development of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. March 25, 2024
- 2024 Management of Checkpoint Inhibitor-associated Colitis. Duke Multi-disciplinary irAE Conference (MICC). Duke University. February 20, 2024.
- 2023 *Development of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. March 27, 2023
- 2022 *Management of Advanced Melanoma*. Hematology/Oncology Fellows Lecture. Duke University Medical Center. August 22, 2022.
- 2022 *Development of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. April 54, 2022.
- 2021 *Immune System and Cancer*. Duke Undergraduate Immunology Club Talk. April 20, 2021.
- 2021 *Development of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. April 5, 2021.
- 2021 *Tumor Immunotherapy: Immunology and Patient Management*. Hematology/Oncology Fellows Lecture. Duke University Medical Center. February 22, 2021
- 2020 Department of Medicine, Grand Rounds. Duke University Medical Center. *Investigating Mechanisms of Tumor Immune Evasion as a Strategy for Overcoming Cancer Immunotherapy Resistance*. January 31, 2020.
- 2019 *Tumor Immunotherapy and Immune-related Adverse Events*. Hematology/Oncology Fellows Lecture. Duke University Medical Center. September 12, 2019.
- 2019 *Development of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. March 25, 2019.
- 2019 *Tumor Immunology and Immunotherapy*. Hematology/Oncology Fellows Lecture. Duke University Medical Center. March 11, 2019
- 2018 *Immune System and Cancer*. Duke Undergraduate Immunology Club Talk. October 23, 2018.
- 2018 *Development and Application of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. March 5, 2018.
- 2018 *Immunotherapy for the Treatment of Melanoma*. Society of Immunotherapy for Cancer (SITC) Regional Meeting. Durham, North Carolina. February 9, 2018.
- 2017 *Development and Application of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. March 27, 2017.
- 2017 Hematology/Oncology Fellows Lecture. Duke University Medical Center. *Cancer Immunotherapy*. February 7, 2017

- 2016 *Development and Application of Immune Checkpoint Inhibitor Therapy in Oncology*. Cancer as a Disease (MOLCAN 819). Department of Pharmacology and Cancer Biology. Duke University Graduate School. March 28, 2016.
- 2015 *Basic Mechanisms of Tumor Immune Suppression*. Society of Immunotherapy of Cancer (SITC) Regional Meeting. Chicago, Illinois. May 29, 2015
- 2015 Hematology/Oncology Fellows Lecture. Duke University Medical Center. *Cancer Immunotherapy*. April 27, 2015
- 2014 *Modulating the Immune Response*. Society of Immunotherapy of Cancer (SITC) Regional Meeting. Charlotte, North Carolina. October 3, 2014.
- 2013 Hematology/Oncology Fellows Lecture. Duke University Medical Center. *Cancer Immunotherapy*. June 17, 2013.

Conference Chair/Leadership Positions

- 2022 Immunometabolism in Health and Disease. Immunometabolism in the Tumor Microenvironment. Section Discussion Leader. Gordon Research Conference. Bryant University, Rhode Island. June 20-24, 2022.

Lab Mentorship

Name	Title	Dates	Project	Current Position	Awards/1st Author Papers
Cody Weaver	Summer Undergraduate Trainee	6/2024 – 8/2024	Role of mregDC-derived PCSK9 in modulating CD8 ⁺ T cell responses	Undergraduate Student, University of Wisconsin, Madison	
Mahere Rezazadebazaz, Ph.D.	Post-doctoral Associate	2/1/24 – present	Characterizing the transcriptional network of mregDCs in the TME	Post-Doctoral Associate, Duke University	
Sohag Chakraborty, Ph.D.	Post-doctoral Associate	2/1/24 – 1/15/25	Role of NLRP3 in immune evasion and immunotherapy resistance in GI cancers	Post-Doctoral Associate, Duke University	
Maya Chandar	Undergraduate Trainee	9/8/23 – 5/30/24	Generation of a Melanoma-specific NLRP3-knockout Mouse Model	Undergraduate Trainee/Work Study Program, Duke University	
Kaylee Villareal, B.S.	Research Technician II	7/13/22 – 1/31/25	Tumor-intrinsic inflammasome biology beyond NLRP3	Research Technician II, Duke University	
Hyungsoon Park, M.D.	Visiting Scholar	2/1/22 – 12/1/22	Germline Whole Exome Sequencing Analysis of Anti-PD-1 Responders and	Assistant Professor at St. Vincent's Hospital,	

			Nonresponding Melanoma Patients	Catholic Medical School of Korea	
Nagendra Yarla, Ph.D.	Post-Doctoral Associate	8/16/21 – 11/30/23	Investigating novel mechanisms of immunotherapy resistance in CRC	Post-Doctoral Associate – Emory University	
Linda Cao	Undergraduate Trainee/Post-bac	6/15/21 - present	MDSC-mediated Inhibition of Tumor IFN Signaling via S100A8/9-RAGE Signaling	Post-bac, Duke University	Graduation with Distinction, Duke University
Y-Van Nguyen, B.S.	Research Technician II	6/9/21 - present	Generation of a CD63+ Tolerogenic DC Subset from Bone Marrow Cultures / Role of LRRK2 in regulating tumor-intrinsic NLRP3 activity.	Research Technician II/Lab Manager, Duke University	
Tarek Haykal, M.D.	Hem/Onc Fellow	1/1/21 – 11/1/22	Role of the Tumor-intrinsic NLRP3 Inflammasome in Anti-PD-1 Immunotherapy Resistance	Medical Instructor, Cleveland Clinic	
Mandy Wang, B.S.	Graduate Student	7/30/20 - present	Role of tumor-derived exosomes in anti-PD-1 resistance.	Graduate Student, Duke University	2023 Precision Genomics Collaboratory Award
Li Lu, M.D.	Visiting Scholar	12/4/2019 - 12/15/20	Interrogating mechanisms of resistance to anti-PD-1 ab immunotherapy in colorectal cancer.	GI Surgeon, Tianjin Medical University	
Michael Plebanek, Ph.D.	Post-doctoral Associate	10/2018 - present	Investigating the role of tumor-derived exosomes in mediating tumor immune evasion and immunotherapy resistance	Post-doctoral Associate, Duke University	1. 2020 F32 Post-doctoral Fellowship 2. 2020 <i>International J. Immunol.</i> - 1st Author 3. 2021 DCI Research Retreat Bell Award 4. Oral Presentation at 2023 Keystone Meeting

					5. 2023 DCI Young Investigator Award 6. 2024 <i>Science Immunology</i> manuscript - 1 st Author 7. 2024 Duke Department of Medicine Distinguished Research Publication Award
Michael Sturdivant, B.S.	Research Assistant	7/2018 - 6/2020	Characterizing the ability of Wnt ligand antagonists to augment dendritic cell-mediated anti-tumor immunity.	Graduate Student at UNC Chapel Hill	
Michelle Dantzler	Undergraduate Trainee	6/2018 - 5/1/2021	Investigating mechanisms of MDSC-DC Cross-Talk	Medical Student, University of Florida Medical School	2019 Genentech Undergraduate Training Award
Theivanthiran Balamayooran, Ph.D.	Post-doctoral Associate	2016 - present	Investigating checkpoint inhibitor resistance in melanoma. Re-engineering DC-based cancer vaccines by manipulating their cellular metabolism.	Senior Research Scientist, Duke University	1. 2020 <i>JCI</i> Manuscript – 1 st Author 2. 2021 <i>Cancers</i> - 1st Author 3. 2022 <i>STM</i> Manuscript – 1 st Author
Nicholas DeVito, M.D.	Oncology Fellow	2016 – 1/31/25	Investigating the ability of oncogenic signaling pathways in developing cancers to induce the tolerization of dendritic cells within the tumor microenvironment	Assistant Professor, Duke University	1. 2017 ASCO Young Investigator Award 2. 2017 Hem/Onc Fellows Research Presentation Award 3. 2018 Damon Runyon Physician Scientist Award 4. 2019 <i>Frontiers Immunol</i> – 1 st Author

					5. 2021 <i>Cell Reports</i> Manuscript - 1st Author 6. 2022 Duke Strong Start Award 7. 2024 <i>Cancer Research</i> – 1 st Author Manuscript Under Revision
Fei Zhao, Ph.D.	Post-doctoral Associate	8/2014 – 6/2018	Characterizing the metabolic re-programming of dendritic cells within the tumor microenvironment	Staff Scientist, NIH	1. 2016 Duke Basic Science Platform Presentation Award 2. 2018 <i>Immunity</i> Manuscript – 1 st Author 2018 <i>Cancer Immunol Res</i> Manuscript – 1 st Author
Christine Xiao, B.S.	Research Assistant	2015 - 8/2018	Characterizing the ability of Wnt ligand antagonists to augment dendritic cell-mediated anti-tumor immunity.	IP Law, Womble Bond Dickinson, Raleigh, NC	
Nick Jerles, B.S.	Undergraduate Trainee	2017-2018	Investigating the Role of INPP4B in Cancer-Associated Fibroblast-associated Immune Evasion	Electronics Engineer, DEVOM C5ISR, Washington, DC	
Allison Dyevoich, B.S.	Undergraduate Trainee	2014-2015	Examining the regulation of Wnt5a expression by murine melanoma models.	Medical Science Liaison, Amgen	
Petra Gimpel, B.S.	Graduate Student	2012-2013	Investigating TGF- β signaling in plasmacytoid dendritic cells within the tumor microenvironment	Post-doctoral Associate, Sorbonne Universite	

Other Mentorship

Name	Title	Dates	Project	Current Position	Awards/ Papers
Kelsie Schiavone	Graduate Student	2024 - present	Role of M2 Macrophages in Melanoma Immune Evasion	Graduate Student, Duke University	
Othmane Jadi, M.D.	Internal Medicine Resident	2024 – present	Bioinformatic Analysis of Tumor-mediate Innate Training of Bone Marrow Neutrophil Progenitors	Internal Medicine Resident, Duke University	
Eziafa Oduah, M.D., Ph.D.	Assistant Professor	2024 – present	PCSK9 Inhibition as a Strategy to Overcome Anti-PD-1 Resistance	Assistant Professor, Duke University	
Michelle Ferreira, M.D., Ph.D.	Internal Medicine Resident	2020 - 2023	Correlation of Plasma HSP70 with irAEs in Melanoma Patients Undergoing Checkpoint Inhibitor Immunotherapy	Hem/Onc Fellow, Johns Hopkins, Baltimore, MD	2022 Research Poster Award, Department of Medicine, Duke
Felicia Limm	Graduate Student	2021 - 2023	ER Signaling in DCs in Breast Cancer		
Shane Killarney	MD/PhD Student	2021 - 2023	Investigating Caspase Inhibition on Anti-Tumor Immunity	MD/PhD Student, Duke University	
Luke Wachsmuth	MD/PhD Student	2019 – 2020	Retrospective Studies of Melanoma Patients Undergoing Checkpoint Inhibitor Immunotherapy	MD/PhD Student, Duke University	Co-author in 2020 <i>JCI</i> Manuscript
Cameron Oswalt, M.D.	Internal Medicine Resident	2018 - present	Investigating Genetic Associations with Spontaneous Responses in Melanoma Patients	Assistant Professor, Duke University	2022 <i>J Immunotherapy</i> - 1st author
Jared Lowe, M.D.	Internal Medicine Resident	2015 - 2017	Investigating the Impact of BMI on anti-PD-1 Antibody Efficacy in Advanced Melanoma	Assistant Professor, University of North Carolina	2016 <i>J Immunotherapy for Cancer</i> – 1 st Author
A. Doran Bostwick, M.D.	Internal Medicine Resident	2014 - 2015	Managing Advanced Melanoma in Ulcerative Colitis Patients	Assistant Professor, University of New Mexico	2014 <i>J Immunotherapy for Cancer</i> – 1 st Author
Binita Das, Ph.D.	Post-doctoral Associate, Dr. Donald McDonnell's Lab	2016 - present	Investigating the Impact of Estrogen Signaling on Anti-Melanoma Immunity	Post-doctoral Associate, Dr. Donald McDonnell's Lab	
Andrea Walens, B.S.	Graduate Student, Pharmacology and Cancer Biology / Alvarez Lab	2016 - 2019	Investigating the Role of the Immune Microenvironment on Breast Cancer	Post-doctoral Associate, UNC Cancer Care Quality Training Program	

			Dormancy and Recurrence		
Ashley DiMarco, B.S.	Graduate Student, Pharmacology and Cancer Biology / Alvarez Lab	2019 - present	APOBEC and its impact on the tumor immune microenvironment in breast cancer	Graduate Student, Pharmacology and Cancer Biology	
Jovita Byemerwa, B.S.	Graduate Student, Pharmacology and Cancer Biology / McDonnell Lab	2019 - present	Role of Estrogen on Macrophage Polarization in the Tumor Microenvironment	Graduate Student, Pharmacology and Cancer Biology	

Clinical Teaching

- Duke Medical School Immunology Course – consultant on clinical case lectures
- Duke Internal Medicine Residents - outpatient clinic
- Duke Dermatology Residents - outpatient clinic
- Duke Scholars Program – outpatient clinic.
- Duke Medical Student Rotations – outpatient clinic.
- Duke Undergraduate Student Shadowing Program – outpatient clinic

Service

National Cancer Institute/National Institute of Health

- NIH/NCI P01 Tumor Immunology and Immunotherapy Scientific Study Section, June 18th-19th, 2020
- NIH/NCI F30/F31/F32 Tumor Immunology and Immunotherapy Fellowship Review Committee, March 26th-28th, 2021
- NIH/NCI R03/R21 Novel Therapeutics Scientific Study Section, February 23rd-24th, 2022
- NIH/NCI R03/R21 Clinical and Translational Study Section, October 26th, 2022
- NIH/NCI R03/R21 Clinical and Translational Study Section, October 26th, 2023
- NIH/NCI Oncological Sciences F09C Tumor Immunology and Immunotherapy Panel, July 15th-16th, 2024

Duke University

- MSTP Admissions Committee Member, 2022 - present
- Hem/Onc Fellowship Program
 - Conduct Hematology/Oncology Fellowship interviews
 - Interview PSTP applicants for the Hematology/Oncology Fellowship Program
 - Conduct Internal Medicine Residency interviews
 - Recruit ABIM MD/PhD applicants for the Department of Medicine
- Department of Pharmacology and Cancer Biology (PCB)

- Conduct interviews for the Department of Pharmacology and Cancer Biology
- Lecture for Graduate School courses in the Department of Pharmacology and Cancer Biology
- Serve on Preliminary Exam Committees and Thesis Committees for the Department of Pharmacology and Cancer Biology
- Participate in graduate student grant writing workshops; grant reviews, 2018-
- PCB Chair Search Committee Member, 2021-2022
- PCB Retreat Poster Judge, 2023
- Medical School
 - 2018 – current, Co-Lecturer for annual Tumor Immunotherapy Lecture for the Medical School Immunology Course
 - 2022 Poster Reviewer, Annual Duke School of Medicine Student Research Symposium
- Department of Medicine
 - K08 Bridge Funding Reviewer
 - Internal Grant Reviewer for other Faculty
 - R01 Bridge Funding Reviewer
- Provide back-up support for inpatient coverage of the solid tumor service
- Duke Undergraduate Immunology Club
 - Give Annual Talk
 - Serve as Faculty Sponsor
- Cardio-Oncology Seminar. Checkpoint Inhibitor-associated Myocarditis. Co-Host with Dr. Michel Khouri in the Division of Cardiology. May 26, 2021.
- Conduct interviews for the Department of Immunology
- Conduct interviews for the Department of Radiation Oncology
- Singapore Health Grant Services - Grant Reviewer 2019, 2023

Foundations/Committee Memberships

- American Society for Clinical Investigation (ASCI)
 - 2025, Annual Meeting Abstract Review Committee
- Society for Immunotherapy of Cancer (SITC)
 - 2025 - present, SITC Communications Committee
 - 2023 – 2024, SITC Annual Fellowship Awards Review Committee
 - 2022, SITC Annual Meeting Abstract Review Committee
 - 2018 - 2021, SITC Biomarker Task Force Committee Member
 - 2018, SITC Fellowship Award Review Committee
 - 2017, SITC Annual Meeting Abstract Review Committee
- Melanoma Research Foundation (MRF)
 - 2020 Immunotherapy Taskforce Committee member
 - 2021 Grant Reviewer
 - 2022 Grant Reviewer

- 2023 Grant Reviewer
- Alliance for Cancer Gene Therapy (ACGT)
 - 2022 Scientific Advisory Council Member
- Emerson Collective Foundation
 - 2020 Grant Reviewer
 - 2021 Grant Reviewer
- ASCO Conquer Cancer Foundation Grants Selection Committee Member 2018 - 2020
- NIH Lung-MAP Immunotherapy Drug Selection Committee Member 2017 - 2019
- Medical Research Council UK Grant Reviewer
- Cancer Research UK Grant Reviewer
- Florida Department of Health Biomedical Research Program - Peer Reviewer, Bankhead-Coley Panel: 2019, 2023

Journal Review

- *BMC Geriatrics*
- *Cancer Immunology and Immunotherapy*
- *Cancer Immunology Research*
- *Cancer Research*
- *Clinical Cancer Research*
- *Cancer Research Communications*
- *Cancers*
- *Cell Reports*
- *Cell Reports Medicine*
- *Critical Reviews in Oncology / Hematology*
- *Frontiers in Immunology*
- *Immunotherapy*
- *JAMA*
- *JAMA Oncology*
- *JCI Insight*
- *Journal for Immunotherapy of Cancer*
- *Journal of Clinical Investigation*
- *Journal of Immunology Research*
- *Journal of Translational Medicine*
- *Lancet EBiomedicine*
- *Medicinal Chemistry*
- *Molecular Therapy*
- *Nature Communications*
- *Nature Nanotechnology*
- *Nature Reviews Immunology*

- *Oncoimmunology*
- *Oncogenesis*
- *Plos One*
- *The Oncologist*
- *Theranostics*
- *Trends in Immunology*
- *Journal of Molecular Cell Biology*
- *Signal Transduction and Targeted Therapy*

Journal Editorial Positions

- *Frontiers in Immunology*, Tumor Signaling Pathways in Immune Evasion

Scientific Advisory Boards

- 2017 EMD Serono (Ad hoc)
- 2018 G1 Therapeutics (Ad hoc)
- 2020 – current PSI CRO Deutschland GmbH
- 2022 – 2023 Compugen Ltd. (Ad hoc)
- 2023 Astellas (Ad hoc)

Editorial Commentary

- *Drug Discovery News*, <https://www.drugdiscoverynews.com/the-race-to-develop-more-effective-il-2-cancer-therapies-15296>
- *Duke Medicine Letter*
- *Duke Forward News Letter*
- *HemOnc Today*
- *ABC News*
- *Cancer Discovery*. Chromatin-Remodeling Genes Promote Immunotherapy Resistance
DOI: 10.1158/2159-8290.CD-NB2018-006
- *Cancer Discovery*.
- *The Scientist*. July 15, 2021. [Cross-Resistance: One Cancer Therapy Can Undermine the Next](#)
- *Towards an integrated understanding of immunotherapy resistance*. Forward. *Immunology Insights* 2021; 2(1), 47-49.
- *Wall Street Journal*. October 21, 2022
- *CBS17 News*. November 22, 2022
- *WPTF Radio*. November 22, 2022

Institutional Accolades

- Duke Cancer Institute Blog: <http://www.dukecancerinstitute.org/news/teacher-melanoma-survivor-thanks-her-dci-%E2%80%9Cd dragonslayer%E2%80%9D>
- Duke Cancer Institute Blog: <http://www.dukecancerinstitute.org/news/hanks-team-awarded-500000-study-immunotherapy-resistance>

- Duke Health. <https://corporate.dukehealth.org/news-listing/researchers-identify-new-way-unmask-melanoma-cells-immune-system?h=nl>
- Duke Cancer Institute Blog: <http://www.dukecancerinstitute.org/donors/your-gifts-at-work/mydukecancerstory-melanoma-survivor-thanks-her-dragonslayer>
- <https://dukecancerinstitute.org/news/hanks-receives-asci-young-physician-scientist-award>
- <https://medicine.duke.edu/medicineneeds/hall-and-hanks-receive-2019-asci-young-physician-scientist-awards>
- <https://medicine.duke.edu/medicineneeds/abraham-and-hanks-receive-duke-physician-scientist-strong-start-awards>
- <https://prostateurologiccenter.dukecancerinstitute.org/news/nih-awards-25-million-prostate-cancer-research>
- <http://www.dukecancerinstitute.org/donors/your-gifts-at-work/overcoming-resistancehttps://dukecancerinstitute.org/news/hanks-lab-identifies-mechanism-immunotherapy-resistance>
- <https://medicine.duke.edu/medicineneeds/lessons-master-mentors>; <https://twitter.com/dukemedicine/status/1259935073991667715>
- <http://dukecancerinstitute.org/news/hanks-named-leadership-role-melanoma-group>
- <https://medicine.duke.edu/news/duke-oncology-researchers-launch-immunotherapy-dream-trial>
- <https://dukecancerinstitute.org/index.php/news/biomarker-predicts-immunotherapy-resistance-melanoma>
- <https://www.dukecancerinstitute.org/blogs/hanks-elected-american-society-clinical-investigation>
- <https://medschool.duke.edu/news/how-cancer-tumors-hijack-bodys-defense-system>

Professional Organizations

1997-Present Phi Beta Kappa
 2004-2011 American Medical Association
 2006-Present American Society of Internal Medicine
 2008-Present American Society of Clinical Oncology
 2009-Present Alpha Omega Alpha
 2010-Present American Association of Cancer Research
 2013-Present Society for Immunotherapy of Cancer
 2024-Present American Society for Clinical Investigation