Jeffrey C Bloodworth

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PROFILE

I am currently a fourth year PhD student in the Department of Microbiology and Immunology at Indiana University School of Medicine with a completed PhD Minor in Bioinformatics. I have extensive experience with immunology and cancer research from my doctoral training and previous research technician and Master's student experiences.

EDUCATION

Ph.D. (In progress) Microbiology and Immunology, Indiana University School of Medicine — Indianapolis, IN

Master of Science, Loyola University Chicago — Chicago, IL

B.S. Biology, The University of Mississippi — Oxford, MS

B.A. Biochemistry, The University of Mississippi — Oxford, MS

RESEARCH EXPERIENCE

Aug 2020 — Present

Graduate Research Assistant, Indiana University School of Medicine — Indianapolis, IN

I am currently a graduate student in the lab of Dr. Joan Cook-Mills in the Department of Microbiology and Immunology. I study maternal effects of allergen hypersensitivity in neonates. My specific areas of inquiry include the effects of lipids on the lung microbiota and neonatal hematopoiesis. I routinely perform advanced mouse experimental techniques, flow cytometry, ELISA, and qPCR assays. I have gained proficiency in R and Python programming languages and various bioinformatics modules for processing microbiota, sequencing, and lipidomics data.

Oct 2017 — Aug 2020

Research Specialist II, University of Chicago — Chicago, IL

I worked in the lab of Dr. Randy Sweis. My research focused on mechanisms of tumor resistance to immune checkpoint inhibitors in bladder cancer. I developed mouse models of cancer development and performed studies characterizing the link between FGFR3 and resistance to immune checkpoint inhibition. I also studied the link between bladder microbiota and response of bladder cancer to Bacillus Calmette Guerin. I gained proficiency in flow cytometry, mouse husbandry, ELISA assays, primary immune cell culture, and specialized experimentation with mice.

Oct 2016 — Oct 2017

Research Specialist I, University of Chicago — Chicago, IL

I studied mechanisms of retroviral infection in murine models. I gained proficiency in ELISA assays, viral plaque assays, and mouse husbandry.

Aug 2014 — Oct 2016

Master's Student, Loyola University Chicago — Chicago, IL

I worked in the lab of Dr. Clodia Osipo. Work toward my Master’s thesis employed several biochemistry and molecular biology techniques used to investigate the crosstalk between Notch, Estrogen Receptor-α, and MAP Kinase signaling pathways in breast cancer. Building on my previous research experience, I gained further proficiency in Western blotting, qQCR, and cell culture techniques.

Oct 2011 — Apr 2014	Research Assistant II, The Ohio State University	Columbus, OH

I worked in the lab of Dr. Nam Y. Lee. I carried out biochemistry and molecular biology experiments pertaining to TGF-β signaling in vascular endothelium. I gained proficiency in Western blotting, molecular cloning, immunofluorescence microscopy, and multiple cell culture techniques.

GRANTS AND AWARDS

Jan 2023 — Present	NIH T32 Institutional Training Grant	Indianapolis, IN
Jan 2024 — May 2024	Advanced Cyberinfrastructure Student Fellowship	Indianapolis, IN
May 2023	AAI Trainee Abstract Award	Washington, D.C.
Dec 2022	IUPUI Graduate Student Travel Fellowship	Indianapolis, IN
Aug 2023	Wells Center for Pediatric Research Annual Retreat Poster Award	Indianapolis, IN

SYMPOSIA PRESENTATIONS

May 2024	American Association of Immunologists Annual Meeting	Chicago, IL

Poster: *Maternal beta-glucosylceramides alter neonate lung microbiota and lung allergic inflammation.*

Nov 2023	Autumn Immunology Conference	Chicago, IL

Poster and oral presentation: *Maternal beta-glucosylceramide induces the generation of IRF4+ dendritic cells in offspring of allergic mothers.*

Aug 2023	Wells Center for Pediatric Research Annual Retreat	Indianapolis, IN

Poster: *Maternal beta-glucosylceramide induces the generation of IRF4+ dendritic cells in offspring of allergic mothers.*

May 2023	Indiana University SOM Microbiology/Immunology Annual Retreat	Bloomington, IN

Oral presentation: *Maternal beta-glucosylceramides induce the generation of IRF4 positive DCs in offspring in an allergy predisposition model.*

May 2023	American Association of Immunologists Annual Meeting	Washington, D.C.

Poster and oral block symposium: *Lung microbial dysbiosis during early life promotes predisposition to allergic asthma.*

May 2023	American Association of Immunologists Annual Meeting	Washington, D.C.

Poster: *Maternal beta-glucosylceramide induces the generation of IRF4+ dendritic cells in offspring of allergic mothers.*

Dec 2022	Keystone Symposia: The Human Microbiome - Ecology and Evolution	Banff, Alberta

Poster: *Lung microbial dysbiosis during early life promotes predisposition to allergic asthma.*

SERVICE

Student ambassador	I am organizing a campus visit by Dr. Sing Sing Way to deliver a seminar for Microbiology and Immunology and Indiana University in May 2024.
Student ambassador	I organized a campus visit by Dr. Arlene Sharpe as recipient of our Fong Clontech Award in February 2024.
Grant review	I reviewed student travel grants offered by the Dept. of Microbiology and Immunology at Indiana University in Fall 2023.
Retreat Planning Committee	I helped organize meals and organized the visit for our keynote speaker, Dr. De'Broski Herbert.

PUBLICATIONS

Bloodworth JC, Hoji A, Wolff G, Mandal RK, Schmidt NW, Deshane JS, Morrow CD, Kloepfer KM, Cook-Mills JM. *Dysbiotic lung microbial communities of neonates from allergic mothers confer neonate responsiveness to suboptimal allergen.* Front Allergy. 2023 Mar 10;4:1135412. doi: 10.3389/falgy.2023.1135412. PMID: 36970065; PMCID: PMC10036811.

Okuneye K, Bergman D, **Bloodworth JC**, Pearson AT, Sweis RF, Jackson TL. *A validated mathematical model of FGFR3-mediated tumor growth reveals pathways to harness the benefits of combination targeted therapy and immunotherapy in bladder cancer.* Comput Syst Oncol. 2021 Jun;1(2):e1019. doi: 10.1002/cso2.1019. Epub 2021 May 19. PMID: 34984415; PMCID: PMC8722426.

Rouhani SJ, Trujillo JA, Pyzer AR, Yu J, Fessler J, Cabanov A, Higgs EF, Cron KR, Zha Y, Lu Y, **Bloodworth JC**, Abasiyanik MF, Okrah S, Flood BA, Hatogai K, Leung MY, Pezeshk A, Kozloff L, Reschke R, Strohbehn GW, Chervin CS,

Kumar M, Schrantz S, Madariaga ML, Beavis KG, Yeo KJ, Sweis RF, Segal J, Tay S, Izumchenko E, Mueller J, Chen LS, Gajewski TF. *Severe COVID-19 infection is associated with aberrant cytokine production by infected lung epithelial cells rather than by systemic immune dysfunction.* Res Sq [Preprint]. 2021 Nov 24:rs.3.rs-1083825. doi: 10.21203/rs.3.rs-1083825/v1. PMID: 34845442; PMCID: PMC8629200.

Strohbehn GW, Heiss BL, Rouhani SJ, Trujillo JA, Yu J, Kacew AJ, Higgs EF, **Bloodworth JC**, Cabanov A, Wright RC, Koziol AK, Weiss A, Danahey K, Karrison TG, Edens CC, Bauer Ventura I, Pettit NN, Patel BK, Pisano J, Strek ME, Gajewski TF, Ratain MJ, Reid PD. *COVIDOSE: A Phase II Clinical Trial of Low-Dose Tocilizumab in the Treatment of Noncritical COVID-19 Pneumonia.* Clin Pharmacol Ther. 2021 Mar;109(3):688-696. doi: 10.1002/cpt.2117. Epub 2020 Dec 10. PMID: 33210302; PMCID: PMC7753375.

Andolfi C, **Bloodworth JC**, Papachristos A, Sweis RF. *The Urinary Microbiome and Bladder Cancer: Susceptibility and Immune Responsiveness*. Bladder Cancer. 2020 Sep 21;6(3):225-235. doi: 10.3233/BLC-200277. PMID: 33195783; PMCID: PMC7605348.

Shah N, Kumar S, Zaman N, Pan CC, **Bloodworth JC**, Lei W, Streicher JM, Hempel N, Mythreye K, Lee NY. *TAK1 activation of alpha-TAT1 and microtubule hyperacetylation control AKT signaling and cell growth.* Nat Commun. 2018 Apr 27;9(1):1696. doi: 10.1038/s41467-018-04121-y. PMID: 29703898; PMCID: PMC5923212.

Pandya K, Wyatt D, Gallagher B, Shah D, Baker A, **Bloodworth J**, Zlobin A, Pannuti A, Green A, Ellis IO, Filipovic A, Sagert J, Rana A, Albain KS, Miele L, Denning MF, Osipo C. *PKCα Attenuates Jagged-1-Mediated Notch Signaling in ErbB-2-Positive*

Breast Cancer to Reverse Trastuzumab Resistance. Clin Cancer Res. 2016 Jan 1;22(1):175-86. doi: 10.1158/1078-0432.CCR-15-0179. Epub 2015 Sep 8. PMID: 26350262; PMCID: PMC4703529.

Pan CC, Kumar S, Shah N, **Bloodworth JC**, Hawinkels LJ, Mythreye K, Hoyt DG, Lee NY. *Endoglin Regulation of Smad2 Function Mediates Beclin1 Expression and Endothelial Autophagy*. J Biol Chem. 2015 Jun 12;290(24):14884-92. doi: 10.1074/jbc.M114.630178. Epub 2015 Apr 30. PMID: 25931117; PMCID: PMC4463436.

Kumar S, Pan CC, B**loodworth JC**, Nixon AB, Theuer C, Hoyt DG, Lee NY. *Antibody-directed coupling of endoglin and MMP-14 is a key mechanism for endoglin shedding and deregulation of TGF-β signaling.* Oncogene. 2014 Jul 24;33(30):3970-9. doi: 10.1038/onc.2013.386. Epub 2013 Sep 30. PMID: 24077288; PMCID: PMC3969897.

Pan CC, **Bloodworth JC**, Mythreye K, Lee NY. *Endoglin inhibits ERK-induced c-Myc and cyclin D1 expression to impede endothelial cell proliferation.* Biochem Biophys Res Commun. 2012 Aug 3;424(3):620-3. doi: 10.1016/j.bbrc.2012.06.163. Epub 2012 Jul 10. PMID: 22789855; PMCID: PMC3412906.