

Assistant Professor
 Dept. of Microbiology, Immunology, and Cell Biology
 West Virginia University School of Medicine
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Updated: June 14, 2022

Education

Bachelor of Science in Biology (Molecular Biology Emphasis), Minor in Chemistry 2006-2010
 Bloomsburg University, Bloomsburg, PA
 Research Mentor: Angela R. Hess, Ph.D.

Doctor of Philosophy in Anatomy and Cell Biology 2011-2015
 East Carolina University, Brody School of Medicine, Greenville, NC
 Mentor: Christopher B. Geyer, Ph.D.
 Dissertation: "The role of retinoic acid in directing initiation of spermatogenesis in the mouse"

Postdoctoral Training

National Institute of Environmental Health Sciences, NIH, Research Triangle Park, NC 2015-2020
 Signal Transduction Laboratory (STL)
 Mentor: John A. Cidlowski, Ph.D.

Current Position

Assistant Professor-Tenure Track April 2020-present
 West Virginia University, School of Medicine, Morgantown, WV
 Department of Microbiology, Immunology, and Cell Biology

Professional Appointments

President Elect American Society of Microbiology Allegany Branch 2021-

Honors and Awards

Commonwealth of Pennsylvania University Biologist student research grant. *High levels of the receptor tyrosine kinase EPHA2 lead to increased cell metastasis through increased activity of RAC1 and RHOA GTPases.* 2009
 Pennsylvania Academy of Science student research grant. *High levels of EPHA2 expression correlates with increased migration in human melanoma.* 2010
 Commonwealth of Pennsylvania University Biologist student research grant. *High levels of the receptor tyrosine kinase EPHA2 leads to increased melanoma tumor cell invasion and vasculogenic mimicry in the presence of Ephrin-A1.* 2011
 Lalor Foundation Merit Award, Society for the Study of Reproduction Annual Meeting 2014
 Trainee Platform Competition, Society for the Study of Reproduction Annual Meeting 2014
 Fellows Award for Research Excellence (FARE) Award, NIEHS 2016
 American Gastroenterological Association travel award, Digestive Disease Week 2018
 Fellows Award for Research Excellence (FARE) Award, NIEHS 2018
 NIEHS Sciences Days Best Presentation 2019
 FASEB Young Investigator Award 2019

Society and Professional Memberships

Brody Graduate Student Association 2012-2015

Trainee Member, Society for the Study of Reproduction (SSR)	2013-2015
Trainee Member, The American Association of Immunologists (AAI)	2019-2020
Regular Member, American Gastroenterological Association (AGA)	2018-present
Regular Member, The American Association of Immunologists (AAI)	2021-present
Regular Member, American Association for Cancer Research (AACR)	2021-present
Regular Member, American Society for Microbiology (ASM)	2021-present
Regular Member, Society of Toxicology (SOT)	2021-present

Institutional Committees

Director	Departmental Undergraduate Research Internship Program	2021-present
Member	Departmental Undergraduate Scholarship Committee	2021-present
Member	Departmental Undergraduate Curriculum Committee	2021-present
Member	Microbiology Immunology and Cell Biology Faculty Search Committee	2021
Member	Biomedical Sciences Graduate Student Admissions Committee	2022-present
Member	Microbiology Immunology and Cell Biology Faculty Search Committee	2022

Editorial Board Appointments

Review Editor: <i>Frontiers in Immunology</i>	2019-present
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Ad hoc Reviewer

Clinical Nutrition
Cellular and Molecular Gastroenterology and Hepatology
Neuroscience
Frontiers in Immunology
eLife
Frontiers in Pharmacology
Steroids
Bioengineering
Cancer Informatics
Journal of Clinical Medicine

Study Sections

WVU CTSI Pilot Grant	Nov. 16, 2020
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Professional Service

Society for the Study of Reproduction–Trainee Volunteer	2013
Society for the Study of Reproduction–Trainee Volunteer	2014
Bloomsburg University College of Science and Technology Career Day–Invited Panelist	2015
NIEHS Fellows Grant Writing Group–Reviewer	2018
22nd Annual NIEHS Biomedical Career Symposium–Volunteer	2019
Fellows Award for Research Excellence (FARE) –Abstract Judge	2019
Triangle Consortium for Reproductive Biology–Volunteer	2019
(NIGMS) Postdoctoral Research Associate Training (PRAT) annual symposium planning committee	2020
Bloomsburg University College of Science and Technology Career Day–Judge	2021
(NIEHS) Awardees' Advice: Perspectives on Writing Successful Grant Applications	2021
American Society for Microbiology Allegany Branch–President Elect	2021-2022
Session Moderator “Mechanisms of Gastric Carcinogenesis” Digestive Disease Week. San Diego CA	2022

Grant Activity

Active

NIH/NIGMS—1P20GM121322-01A1	Awarded: July 2021
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Title: *"Immune Regulation of Gastric Cancer"*

2021-2024

Amount: \$175,000/year

Role: PI

Completed

NIH/NIGMS—1Fi2GM123974

Awarded: Sept., 2017-Aug., 2020

Title: *"The role of glucocorticoids in preserving stomach health"*

Role: PI

NIH/NIGMS—1P20GM121322-01A1 (TME Pilot)

Awarded: Jan., 2021 - June 2021

Title: *"Immune Regulation of Gastric Cancer"*

Amount: \$50,000

Role: PI

Submitted

NIH/NIEHS—R01ES034694

Submitted January, 2022

Title: *"Impact of environmental exposures on gastric inflammation, injury, and carcinogenesis."*

Role: PI

Submitted, Not Funded

NIH/NIDDK—K99DK122012

Submitted October, 2018

Title: *"Glucocorticoid regulation of gastric inflammation and metaplasia"*

Role: PI

Score: 50

NIH/NIGMS—1P20GM121322-01A1

Title: *"Immune Regulation of Gastric Cancer"*

Role: PI

AACR-Debbie's Dream Foundation Career Development Award for
Gastric Cancer Research

Submitted February, 2022

Title: Glucocorticoid regulation of gastric inflammation and carcinogenesis

Role: PI

Teaching

Tutor: "General Biology", Bloomsburg University

Spring, 2010

Graduate Teaching Assistant: "Gross Anatomy for the Health Professional"; ECU

Summer, 2012

Tutor: "Medical Gross Anatomy and Embryology"; ECU

Fall, 2012

Lecturer: "Fellows Grant Writing Group"; NIEHS

Spring, 2019

Instructor: "Experiential Learning"—Course Number: BMS 707; WVU

Fall, 2020

Co-Course Director: Immunology Colloquium I—Course Number: IMMB 200-01,02; WVU

Spring, 2021

Course Director: Cancer Cell Biology Graduate Seminar—Course Number: CCB796

Spring, 2022

Graduate Student Mentorship

Stuti Khadka—Ph.D. Candidate

2020-present

Sara Druffner—Ph.D. Student

2020-present

Benjamin Duncan—Ph.D. Student

2022-present

Maeve Morris—Ph.D. Student

2022-present

Undergraduate Student Mentorship

Kate McPherson—undergraduate researcher	2013
Evelyn Kaye—undergraduate researcher	2013-2014
Kenneth Cook—undergraduate researcher	2014-2015
Kylie Peterson—undergraduate researcher	2019-2020
Alex Chervenick—undergraduate researcher	2020-2022
Maeve Morris—undergraduate researcher	2020-2022
Michael Willis—undergraduate researcher	2021-2022
Emily Peeles—undergraduate researcher	2021-present
Shrinidhi Venkateshwaraprabu—undergraduate researcher	2022-present

Student Committee Service

Chair, Graduate Student Committee—Stuti Khadka, WVU, IMMP Ph.D. Program	2020-present
Chair, Graduate Student Committee—Sara Druffner, WVU, IMMP Ph.D. Program	2021-present
Member, Graduate Student Committee—Sarah Milne, WVU, IMMP Ph.D. Program	2021-present
Member, Graduate Student Committee—Ashley Divens, WVU, IMMP Ph.D. Program	2021-present
Member, Graduate Student Committee—Leland Earp, WVU, CCB Ph.D. Program	2021-present
Chair, Graduate Student Committee—Benjamin Duncan, WVU, IMMP Ph.D. Program	2022-present
Member, Graduate Student Committee—Roxy Nicoletti, WVU, CCB Ph.D. Program	2022-present
Chair, Graduate Student Committee—Maeve Morris, WVU, IMP Ph.D. Program	2022-present
Member, Graduate Student Committee—Remi Nohoesu, WVU, IMP Ph.D. Program	2022-present

Keynote Presentations

1. Stress and Sex Regulation of Gastric Inflammation. Allegany-Erie Society of Toxicology Regional Meeting. Morgantown, WV. 2022.

Conference Presentations

1. *Overexpression of EPHA2 correlates with increased tumor cell migration.* Pennsylvania Academy of Science Annual Meeting, Camp Hill, PA. 2010.
2. *A high level of the receptor tyrosine kinase EPHA2 leads to increased cell migration through increased activity of RAC1 and RHOA GTPases.* Commonwealth of Pennsylvania University Biologist Annual Meeting, Stroudsburg, PA. 2010.
3. *Investigating the effects of EphA2/ephrin-A1 signaling on aggressive melanoma metastatic characteristics.* Commonwealth of Pennsylvania University Biologist Annual Meeting, Altoona, PA. 2011.
4. *Retinoic acid stimulates translation in the neonatal testis.* The Triangle Consortium for Reproductive Biology Annual Meeting, Durham, NC. 2013.
5. *Retinoic acid induces multiple hallmarks of the prospermatogonia-to-spermatogonia transition in the neonatal mouse.* ECU Research and Creative Achievement Week. 2014.
6. *Retinoic acid (RA) regulates Kit translation in prospermatogonia in the neonatal testis: a novel non-genomic mechanism of RA-regulated gene expression.* The Triangle Consortium for Reproductive Biology Annual Meeting, Research Triangle Park, NC. 2014.
7. *Retinoic acid (RA) regulates Kit translation in prospermatogonia in the neonatal testis: a novel non-genomic mechanism of RA-regulated gene expression.* The Society for the Study of Reproduction Annual Meeting, Grand Rapids, MI. 2014.
8. *Retinoic acid (RA) regulates Kit translation in prospermatogonia in the neonatal testis: a novel non-genomic mechanism of RA-regulated gene expression.* ECU Research and Creative Achievement Week. 2015.
9. *Endogenous glucocorticoids are required to suppress spontaneous gastric inflammation and metaplasia in the mouse.* Digestive Disease Week, Washington, DC. 2018.

10. *Stress and sex regulation of gastric inflammation*. The Gastrointestinal Tract XVIII Conference: Integrated Biology of the GI Super-Organ. FASEB. Steamboat Springs, CO. 2019.
11. *Stress and sex regulation of gastric inflammation*. NIEHS Science Days. EPA, Research Triangle Park, NC. 2019.
12. *The Good, the Bad, and the Ugly: How Immune Dysregulation Promotes Gastric Cancer Development*. PRAT Symposium. NIGMS, Bethesda, MD. 2020.

Invited Seminars

1. *PI3K/AKT/MTOR is Required for Spermatogonial Differentiation in the Mouse*. Bloomsburg University, Bloomsburg, PA. 2015.
2. *Endogenous glucocorticoids are required to suppress spontaneous gastric inflammation and metaplasia*. Bloomsburg University, Bloomsburg, PA. 2017.
3. *Stress and sex regulation of gastric inflammation*. West Virginia University, Morgantown, WV. 2019.
4. *Stress and sex regulation of gastric inflammation*. NIEHS/NIH, Reproductive Developmental Biology Laboratory, RTP, NC. 2020.
5. *The Good, the Bad, and the Ugly: How Immune Dysregulation Promotes Gastric Cancer Development*. Science Exchange. WVU, Morgantown, WV. 2020.

Presented Abstracts (Posters)

1. **Busada JT**, Chappell VA, Kieper BD, Geyer CB. *Retinoic acid stimulates translation in the neonatal testis*. Society for the Study of Reproduction Annual Meeting, Montreal, CA. 2013.
2. **Busada JT**, Cook KK, Willis WD, Goulding EH, Eddy M, Geyer CB. *RHOX13 is required for normal spermatogenesis and fertility in male mice*. The Triangle Consortium for Reproductive Biology Annual Meeting, Research Triangle Park, NC. 2015.
3. **Busada JT**, Cook KK, Willis WD, Goulding EH, Eddy M, Geyer CB. *RHOX13 is required for normal spermatogenesis and fertility in male mice*. Society for the Study of Reproduction Annual Meeting, San Juan, PR. 2015.
4. **Busada JT**, Ramamoorthy S, Cain DW, Cidlowski JA. *Glucocorticoids are required for normal stomach function in the mouse*. NIEHS Science Days, Research Triangle Park, NC. 2016.
5. **Busada JT**, Ramamoorthy S, Cain DW, Xu X, Cidlowski JA. *Corticosteroids are required for gastric health in the mouse*. The Gastrointestinal Tract XVII Conference: Current Biology of the GI Tract, Mucosa, Microbiota, and Beyond. FASEB. Steamboat Springs, CO. 2017.
6. **Busada JT**, Cook DN, Cidlowski JA. *Non-classical monocytes are pathogenic drivers of spasmolytic polypeptide expressing metaplasia*. Cellular Plasticity: Reprogramming, Regeneration and Metaplasia. Keystone Conference. Keystone, CO (2019)

Mentored Student Presentations

Oral

1. *Tristetraprolin (TTP) protects from gastric metaplasia by suppressing pathogenic inflammation*. Microbiology Immunology and Cell Biology Fall Seminar Series. WVU, Morgantown, WV., 2020. Presenting Student: Stuti Khadka.
2. *Glucocorticoids protect from gastric inflammation and spasmolytic polypeptide- expressing metaplasia*. Autumn Immunology Conference. Chicago, IL., 2021. Presenting Student: Sara Druffner

*Won American Immunology Association Young Investigator Award

3. Glucocorticoid signaling primes the macrophages response to inflammatory stimuli. Autumn Immunology Conference. Chicago, IL., 2021
Presenting Student: Stuti Khadka

Posters

1. Morris M, Pascoe J, **Busada JT**. *Screening Potential Endocrine Disrupting Compounds and their Impacts on Glucocorticoid Signaling*. SURE Symposium. WVU, Morgantown, WV. 2021.
2. Willis M, Khadka S, Druffner SR, **Busada JT**. *Developing a Gastric Organoid Culture System to Study the Interaction of Helicobacter Pylori with the Gastric Epithelium*. SURE Symposium. WVU, Morgantown, WV. 2021.
3. Morris M, Pascoe J, **Busada JT**. *Screening Potential Endocrine Disrupting Compounds and their Impacts on Glucocorticoid Signaling*. Autumn Immunology Conference. Chicago, IL., 2021.
*Won undergraduate poster presentation award
4. Morris M, Pascoe J, **Busada JT**. *Screening Potential Endocrine Disrupting Compounds and their Impacts on Glucocorticoid Signaling*. Society of Toxicology. San Diego, CA., 2022.
5. Morris M, Pascoe J, **Busada JT**. *Screening Potential Endocrine Disrupting Compounds and their Impacts on Glucocorticoid Signaling*. Allegany-Erie Society of Toxicology Regional Meeting. Morgantown, WV., 2022.

Original Published Peer-Reviewed Articles

1. Chappell VA, **Busada JT**, Keiper BD, and Geyer CB. Translational activation of developmental mRNAs during neonatal testis development. *Biol Reprod* 89(3): 61-71. 2013.
2. **Busada JT**, Kaye EP, Renegar RH, and Geyer CB. Retinoic acid induces multiple hallmarks of the prospermatogonia-to-spermatogonia transition in the neonatal mouse. *Biol Reprod*, 90(3): 64-75. 2014.
3. * **Busada JT**, Chappell VA, Niedenberger BA, Kaye EP, Keiper BD, Hogarth CA, and Geyer CB. Retinoic acid regulates *Kit* translation during spermatogonial differentiation in the mouse. *Dev Biol*, 397(1): 140-149. 2015.
*F1000Prime: K. Loveland, April, 2016.
4. Niedenberger BA, **Busada JT**, Geyer CB. Marker expression reveals heterogeneity of spermatogonia in the neonatal mouse testis. *Reproduction*, 149(4): 329-338. 2015.
5. * **Busada JT**, Niedenberger BA, Velte EK, Keiper BD, Geyer CG. Mammalian target of rapamycin complex1 (mTORC1) is required for spermatogonial differentiation in vivo. *Dev Biol*, 407(1): 90-102. 2015.
*F1000Prime: K. Orwig, December, 2016.
6. **Busada JT**, Geyer CG. The role of retinoic acid (RA) in spermatogonial differentiation. *Biol Reprod*, 94(1): 10-20. 2016.
7. **Busada JT**, Velte EK, Serra ND, Cook KK, Niedenberger BA, Willis WD, Goulding EH, Eddy EM, Geyer CB. RhoX13 is required for quantitatively normal first wave of spermatogenesis in mice. *Reproduction*. 152(5): 379-388. 2016.
8. Oakley RH, Ramamoorthy S, Foley JF, **Busada JT**, Lu NZ, Cidlowski JA. (2018) Glucocorticoid receptor isoform-specific regulation of development, circadian rhythm, and inflammation in mice. *FASEB J*. 32(10):5258-5271. 2018.

9. **Busada JT**, Ramamoorthy S, Cain, DW, Xu X, Cook DN, Cidlowski JA. (2019) Endogenous glucocorticoids prevent gastric metaplasia by suppressing spontaneous inflammation. *J Clin Invest.* 129(3): 1345-1358. 2019.
10. Diaz-Jimenez DO, Petrillo MG, **Busada JT**, Hermosa MA, Cidlowski JA. Glucocorticoids mobilize macrophages by transcriptionally up-regulating the exopeptidase DPP4. *J Biol Chem.* 295(10): 3213-3227. 2020.
11. Chung Nien Chin S, O'Connor L, Scurr M, **Busada JT**, Graham A, Alipour Talesh G, Tran C, Sarkar S, Minamoto M, Giraud A, Cidlowski J, Sutton P, and Menheniott T. Coordinate expression loss of GKN1 and GKN2 in gastric cancer via impairment of a glucocorticoid-responsive enhancer. *Am J Physiol Gastrointest Liver Physiol.* 319(2): G175-188. 2020.
12. Kirsanova O, Renegar RH, **Busada JT**, Serra ND, Harrington EV, Johnson TA, Geyer CB. The rapamycin analog Everolimus reversibly impairs male germ cell differentiation and fertility in the mouse. *Biol Reprod.* 103(5):1132-1143. 2020.
13. **Busada JT***, Peterson KN, Khadka S, Xu X, Oakley RH, Cook DN, Cidlowski JA*. Glucocorticoids and Androgens Protect from Gastric Metaplasia by Suppressing Group 2 Innate Lymphoid Cell Activation. *Gastroenterology.* 161(2):637-652. 2021.
*Co-corresponding authors
Commentary: Noto CN, DiPaolo RJ. More testosterone less aggression...At least in the stomach. *Gastroenterology.* DOI: 10.1053/j.gastro.2021.05.046. 2021.
14. **Busada JT***, Kadka S, Peterson KN, Druffner SR, Stumpo DJ, Zhou L, Cidlowski JA, Blackshear PJ. Tristetraprolin prevents gastric metaplasia in mice by suppressing pathogenic inflammation. *Cell and Mol Gastro Hepatol.* 12(5):1831-1845. 2021.
*Corresponding author

Peer-Reviewed Book Chapters

1. **Busada JT** and Cidlowski JA. Mechanisms of glucocorticoid action during development. *Curr Top in Dev Biol.* 125:147-170. 2017.

Quotations in Lay Press

1. Stacey Elza. "All gas, no brakes: Testosterone may act as 'brake pedal' on immune response, protect men from stomach inflammation." WVU Today. May, 2021.
https://wvutoday.wvu.edu/stories/2021/05/12/all-gas-no-brakes-testosterone-may-act-as-brake-pedal-on-immune-response-protect-men-from-stomach-inflammation?fbclid=IwAR1qzACe9luPsf-qNN9gDOybus4sR_VHwNK0-UJEKKphF3j-T1-f2qz2Vgc
2. Robin Arnette. "Male hormones regulate stomach inflammation in mice." Environmental Factor. June, 2021. <https://factor.niehs.nih.gov/2021/6/papers/stomach-inflammation/index.htm>