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Education

May 2010	Ph.D. Pharmacology/Pharmaceutical Sciences	Northeastern University, Boston, MA
April 2006	M.S. Pharmaceutical Sciences	Northeastern University, Boston, MA

Positions and Employment

2003	Intern, Quality Control, MARS Therapeutics Ltd., Hyderabad, India
2005-2006	Research Fellow, Institute on Urban Health Research, Northeastern University, Boston, MA
2006	Co-Op, Preclinical Pharmacology, Genzyme, Framingham, MA
2010-2014	Postdoctoral Associate, Dr. Leonard Shultz's lab, The Jackson Laboratory, Bar Harbor, ME
2015-2018	Associate Research Scientist, The Jackson Laboratory, Bar Harbor, ME
2019-present	Research Scientist, The Jackson Laboratory, Bar Harbor, ME

Funding

2022	NCI R01
2019	NIH R21
2017	Director's Innovation Fund (DIF), JAX, Bar Harbor, ME
2011	Juvenile Diabetes Research Foundation (JDRF) International Postdoctoral Fellowship
2010	JAX Postdoctoral Scholarship, Bar Harbor, ME

Honors

2005	Fellowship from Northeastern University for outstanding performance in academia (summer and fall)
2005	Scholarship for the 20th Annual New England Biolabs, Inc. "Molecular Biology" summer course, Smith College, Northampton, MA
2006	Best Poster, 35th Annual New England Pharmacologists meeting, Boston, MA
2009	Best Poster Runner-up Award, Research and Scholarship Expo, Northeastern University, Boston, MA
2010	The John and Evelyn Neumeyer Research Achievement Award, Northeastern University, Boston, MA

Publications

1. Programmable RNA-Guided Large DNA Transgenesis by CRISPR/Cas9 and Site-Specific Integrase Bxb1. *Front Bioengineering Biotechnology 2022*.
2. Inactive rhomboid proteins RHBDF1 and RHBDF2 (iRhoms): A decade of research in murine models *Burzenski L, Low BE, Kohar V, Shultz LD, Wiles MV,* ***Hosur V***. *Mammalian Genome* 2021
3. Role of MicroRNA in Inflammatory Bowel Disease: Clinical Evidence and the Development of Preclinical Animal Models. *Suri K, Bubier J, Wiles MV, Shultz LD, Amiji MM,* ***Hosur V***. *Cells* 2021
4. Genes adapt to outsmart gene-targeting strategies in mutant mouse strains by skipping exons to reinitiate transcription and translation. ***Hosur V****, Low BE, Li D, Stafford GA, Kohar V, Shultz LD, Wiles MV. Genome Biology 2020.*
5. Improved mouse models and advanced genetic and genomic technologies for the study of neutrophils. ***Hosur V,*** *Skelly DA, Francis C, Low BE, Kohar V, Burzenski LM, Amiji MM, Shultz LD, Wiles MV*. *Drug Discovery Today*, 2020.
6. RHBDF2-regulated growth factor signaling in a rare human disease, tylosis with esophageal cancer: what can we learn from murine models? **Hosur V,** Farley ML, Low BE, Burzenski LM, Shultz LD, Wiles MV. *Frontiers in Genetics. 2018*
7. ADAM17 is essential for ectodomain shedding of the EGF-receptor ligand amphiregulin. **Hosur V,** Farley ML, Burzenski LM, Shultz LD, Wiles MV. *FEBS Open Bio. 2017*

8. Early induction of NRF2 antioxidant pathway by RHBDF2 mediates rapid cutaneous wound healing. **Hosur V,** Burzenski LM, Stearns TM, Farley ML, Sundberg JP, Wiles MV, Shultz LD. *Exp Mol Pathology. 2017*
9. Genetic deletion of amphiregulin restores the normal skin phenotype in a mouse model of the human skin disease tylosis. **Hosur V,** Low BE, Shultz LD, Wiles MV. *Biol Open. 2017*
10. Tissue-specific role of RHBDF2 in cutaneous wound healing and hyperproliferative skin disease. **Hosur V,** Lyons BL, Burzenski LM, Shultz LD. *BMC Res Notes. 2017*
11. Genetic modification of mice using CRISPR-Cas9: Best practices and practical concepts explained. **Hosur V**, Low BE, Wiles MV. *Rigor and Reproducibility in Genetics and Genomics 2021, In press*
12. Efficient targeted transgenesis of large donor DNAs in multiple mouse genetic backgrounds using bacteriophage Bxb1 integrase. Low BE, **Hosur V**, Lesbirel S, Wiles MV. *Scientific reports, In revision. 2022*
13. Development of Humanized Mice in the Age of Genome Editing. **Hosur V,** Low BE, Avery C, Shultz LD, Wiles MV. *J Cell Biochemistry. 2017*
14. Human cancer growth and therapy in immunodeficient mouse models. Shultz LD, Goodwin N, Ishikawa F, **Hosur V**, Lyons BL, Greiner DL. *Cold Spring Harbor Protocols. 2014*
15. Subcapsular transplantation of tissue in the kidney. Shultz LD, Goodwin N, Ishikawa F, **Hosur V**, Lyons BL, Greiner DL. *Cold Spring Harbor Protocols. 2014*
16. Rhbdf2 mutations increase its protein stability and drive EGFR hyperactivation through enhanced secretion of amphiregulin. **Hosur V**, Johnson KR, Burzenski LM, Stearns TM, Maser RS, Shultz LD. *Proc Natl Academy Sci U S A. 2014*
17. Retrotransposon insertion in the T-cell acute lymphocytic leukemia 1 (Tal1) gene is associated with severe renal disease and patchy alopecia in Hairpatches (Hpt) mice. **Hosur V**, Cox ML, Burzenski LM, Riding RL, Alley L, Lyons BL, Kavirayani A, Martin KA, Cox GA, Johnson KR, Shultz LD. *PLoS One. 2013*
18. Dystrophin and dysferlin double mutant mice: a novel model for rhabdomyosarcoma. **Hosur V**, Kavirayani A, Riefler J, Carney LM, Lyons B, Gott B, Cox GA, Shultz LD. *Cancer Genet. 2012*
19. Engraftment of human HSCs in nonirradiated newborn NOD-scid IL2rγ null mice is enhanced by transgenic expression of membrane-bound human SCF. Brehm MA, Racki WJ, Leif J, Burzenski L, **Hosur V**, Wetmore A, Gott B, Herlihy M, Ignotz R, Dunn R, Shultz LD, Greiner DL. *Blood. 2012*
20. Humanized mice for the study of type 1 and type 2 diabetes. Greiner DL, Brehm MA, **Hosur V,** Harlan DM, Powers AC, Shultz LD. *Ann N Y Acad Sci. 2012*
21. α4β2 nicotinic receptors partially mediate anti-inflammatory effects through Janus kinase 2-signal transducer and activator of transcription 3 but not calcium or cAMP signaling. **Hosur V,** Loring RH. *Mol Pharmacol. 2011*
22. Gene regulation of alpha4beta2 nicotinic receptors: microarray analysis of nicotine-induced receptor up-regulation and anti-inflammatory effects. **Hosur V,** Leppanen S, Abutaha A, Loring RH. *J Neurochem. 2009*

Research Support

NCI R01 07/01/22-06/30/27

Site-specific Integration of Large (10-100 kb) DNA constructs into the mouse genome and human induced pluripotent stem cells using the Cas9-Bxb1 integrase toolbox

Advances in experimental techniques to modify the genetic makeup of mice have enabled development of mice that "model" particular diseases, including cancers, providing live organisms that researchers can use to study disease progression and test therapies. However, a major roadblock in the development of such models is the inefficiency of inserting large tracts of DNA into mouse chromosomes, a limitation that hinders research on the role of many coding and non-coding DNA regions in cancer. In the proposed project we will develop, validate, and make publicly available an innovative technique for precise insertion of large tracts of DNA into mouse chromosomes, enabling researchers to develop improved and new models of cancer.

Role: Principal Investigator

NIH R21 04/01/19-03/31/22
Development and Validation of a Novel Cas13a and Nanoparticle Guide-RNA Delivery System that Allows Precise Ablation of Host Macrophage Populations in a Humanized Mouse Model
Role: Co-I
The goal is to develop a state-of-the-art technology to precisely modulate mouse macrophages *in vivo* in mice, thus enabling heightened engraftment of the human hematopoietic/immune system, including human RBCs.

Completed

JAX-DIF-FY17 06/01/17-05/31/19
The Jackson Laboratory Director's Innovation Fund
NSG-Bald, an improved PDX Model for Rapid Growth, Study and Treatment of Human Tumors
The goal of this project is to test the hypothesis that growth of certain tumor types is constrained by the lack of host oncogenic factors, including amphiregulin (AREG) and heparin-binding EGF (HB-EGF), both linked with angiogenesis.
Role: Principal Investigator

3-2011-391 09/01/11-08/31/14
Juvenile Diabetes Research Foundation International
Human Immune System-Engrafted mice for the study of Islet Rejection and type 1 diabetes.
The goal was to study human islet allograft rejection and the development of type 1 diabetes in novel strains of immunodeficient mice that have functional human immune systems generated by engraftment of human hematopoietic stem cells.
Role: Principal Investigator