

SUSHEEL BHANU BUSI

Curriculum Vitae

E-mail: susheelbhanu@gmail.com
susheel.busi@uni.lu

Phone: +352 671-548-556

Address: 1 rue Marcel Reuland,
Esch-sur-Alzette, L-4305, Luxembourg

EDUCATION

University of Missouri, Columbia, MO

Ph.D. in Molecular Pathogenesis and Therapeutics

2018

Dissertation title: "Elucidating the role of biofilms and the complex gut microbiome in the etiology of cancer in a rat model of human familial adenomatous polyposis"

Hood College, Frederick, MD

M.S. in Biomedical Science

2012

Thesis title: "Studies on the Selection of a Strain of *Pediococcus acidilactici* to grow at Optimal Conditions for the Production of Probiotics"

Madras Christian College, Chennai, India

B.S. in Microbiology

2008

Areas of Concentration: Microbiology, Introduction to Biochemistry, Virology, Food and Agricultural Microbiology, and Applied Microbiology

PROFESSIONAL AND RESEARCH EXPERIENCE

Research and Development Specialist

January 2018 – Present

Supervisor: Dr. Paul Wilmes

Eco-Systems Biology group

Luxembourg Center for Systems Biology

University of Luxembourg, Esch-sur-Alzette, Luxembourg

Research: Multi-omics approaches to understanding the nature, biochemical functions, and genetic makeup of biofilms in alpine glacier-fed streams

Graduate Research Associate

December 2013 – December 2018

Advisors: Dr. James Amos-Landgraf and Dr. Craig Franklin

Molecular Pathogenesis and Therapeutics (MPT) Program

Department of Molecular Microbiology & Immunology

University of Missouri, Columbia, MO

PhD Research: Multi-omics approaches to understanding the role of biofilms and the complex gut microbiome in a rat model of human colon cancer

- Investigated the effect of the microbiome in colon cancer models using integrated RNAseq, 16S rDNA sequencing and metabolomics methodologies
- Utilized LC-MS/MS to narrow down identity of putative metabolites that affect the phenotype
- Analyzed the effects of gut bacteria on the adenoma development in rodent models

- Tested the prevalence and/or absence of bacteria taxa affecting tumorigenesis by treating PirC rats with specific bacterial taxa
- Investigated markerless deletion methods in *Desulfovibrio sp.* to determine the role of biofilms in colon cancer progression

Graduate Research Associate

October 2013 – November 2013

Advisor: Dr. Huatao Guo

Molecular Pathogenesis and Therapeutics (MPT) Program
Department of Molecular Microbiology & Immunology
University of Missouri, Columbia, MO

- Cloned the *Bordetella spp* reverse-transcriptase (RT) gene to determine the process of bacterial replication
- Designed and established a synthetic self-cleaving RNA-intermediate to be copied into a double-stranded DNA for replication, using an antibiotic-selection system

Graduate Research Associate

September 2013 – October 2013

Advisor: Dr. Jerod Skyberg

Molecular Pathogenesis and Therapeutics (MPT) Program
Department of Molecular Microbiology & Immunology
University of Missouri, Columbia, MO

- Determined the effect of *Brucella abortus* on innate immune response in a murine host
- Examined and tested the IL-18 pathway using immune blockers to study infection mechanisms and for disease treatment

Research Scientist/Operations Manager

January 2012 – August 2013

Imagilin Technology LLC.

Frederick, Maryland

- Research – Probiotic supplements
 - *Team Lead:* Developed non-GMO novel nutraceutical products using *Pediococcus*-based probiotics
 - Formulated probiotic supplements for small animals and humans
 - Selected for a strain of *Pediococcus acidilactici* to grow at optimal conditions large-scale probiotic production
 - Developed methods for detection and confirmation high-temperature, low-pH resistant strain of *P.acidilactici*
 - Aseptic culturing techniques, media preparation & optimization methods, serial dilution, spectrophotometric determination of optical density, and standard microbiological procedures used on a regular basis
 - Associate Research Scientist: Fermentation of selected *P.acidilactici* strain in conjunction with University of Maryland
 - Presented results and research proposal weekly to the Senior Scientist to organize the course of projects

- Manufacture and Production
 - Oversaw production of probiotic supplements manufactured by the company
 - Implemented and supervised requirements to obtain certified General Manufacturing Practices (cGMP) rating
 - Developed SOPs and established inventory tracking system
 - Work included ordering and checking inventory, scheduling, organizing manufacturing and vialling bottles of *Pacidilactici*-based probiotics and stocking
 - Generated monthly sales reports and set-up maintenance of production library

Associate Research Scientist

July 2009 – December 2011

Imagilin Technology LLC.

Frederick, Maryland

- Identified and selected high-temperature, low-pH resistant strain of *P.acidilactici*
- Setup protocols for large-scale fermentation and process of the bacteria in collaboration with University of Maryland
- Presented course project and research proposals at weekly meeting to Senior Scientist and CEO

AdWords Representative

May 2008 – January 2009

Google Inc.

Hyderabad, India

- Assigned appropriate Family status to online advertisements
- Reviewed text, image and video ads
- Presented weekly to team lead; challenges to appraising ads and methods to improving reviewer's efficiency

AWARDS AND HONORS

People's Choice Award

April 2018

3-Minutes Thesis (3MT) Competition Finals; *Midwestern Association of Graduate Schools (MAGS)*

MU Professional Presentation Award

April 2018

Office of Graduate Studies; *University of Missouri*

AACR-Get Your Rear in Gear Philadelphia Scholar-in-Training Award

February 2018

2018 Annual Meeting, *American Association of Cancer Research; Chicago, IL*

Second place

February 2018

3-Minutes Thesis (3MT) Competition Finals; *Conference of Southern Graduate Schools (CSGS)*

Mizzou 18 Inaugural Class Inductee

February 2018

Mizzou Alumni Association, *University of Missouri*

First place and People's Choice Awards

December 2017

3-Minutes Thesis (3MT); *University of Missouri*

Strategies and Techniques for Analyzing Microbial Populations Travel Grant

July 2017

Marine Biological Laboratory, University of Chicago

CVM Research Day: 1st place Advanced residents, Graduate students and Post-docs; <i>College of Veterinary Medicine University of Missouri</i>	May 2017
Missouri Life Sciences Week: Most Creative Research Organismal Biology, <i>University of Missouri</i>	April 2017
34th Annual Research and Creative Activities Forum: 1st place Health Sciences, Medicine & Veterinary Medicine; <i>University of Missouri</i>	March 2017
The Allied Genetics Conference (TAGC) Travel Award <i>International Mammalian Genome Society (IMGS)</i>	July 2016
CVM Research Day: 3rd place 2 nd , 3 rd year residents and Graduate students and Post-docs; <i>College of Veterinary Medicine University of Missouri</i>	May 2016
33rd Annual Research and Creative Activities Forum: 1st place Health Sciences, Medicine & Veterinary Medicine; <i>University of Missouri</i>	February 2016
MU Phi Zeta Research Grant <i>College of Veterinary Medicine, University of Missouri</i>	December 2015
MU Phi Zeta Research Day: 2nd place 2 nd and 3 rd year residents and Graduate students; <i>College of Veterinary Medicine University of Missouri</i>	May 2015
Outstanding Graduate Student Award Biomedical Science Program, <i>Hood College</i>	May 2012

MANUSCRIPTS, PUBLICATIONS AND PATENTS

Susheel Bhanu Busi, William Spollen, Scott Givan, Zhentian Lei, Lloyd W. Sumner, and James Amos-Landgraf (*in preparation*). Complex gut microbiota modulate rat colon adenoma susceptibility, affecting metabolites, and host gene expression.

Susheel Bhanu Busi, Kara De Leon, Judy Wall, and James Amos-Landgraf (*in preparation*). Biofilm-producing sulfate-reducing bacteria suppress tumor burden in a rat model of human colon cancer.

Susheel Bhanu Busi, Daniel Davis, Daniel Royce Montonye, Sarah Hansen, and James Amos-Landgraf (*in preparation*). Treatment with *Prevotella copri* and *Fusobacterium nucleatum* subsp. *Polymorphum* alleviates tumor burden in the Pir rat model of familial adenomatous polyposis.

Jade E. Jones, **Susheel Bhanu Busi**, Jonathan B. Mitchem, James M. Amos-Landgraf, and Michael Lewis (*under review*). Use of a tumor-targeting, near infrared fluorescent peptide for early detection and endoscopic resection of polyps in a rat model of colorectal cancer.

Daniel R. Montonye, Aaron C. Ericsson, **Susheel B. Busi**, Cathleen Lutz, Keegan Wardwell and Craig L. Franklin (2018). Acclimation and Institutionalization of the Mouse Microbiota Following Transportation. *Front. Microbiol.* 9:1085. doi: 10.3389/fmicb.2018.01085.

Sarah Hansen, Marcia Hart, **Susheel Busi**, Taybor Parker, Angela Goerndt, Kevin Jones, James Amos-Landgraf and Elizabeth Bryda (2016). Fischer-344 *Tp53*-knockout rats exhibit a high rate of bone and brain neoplasia with frequent metastasis. *Disease Models and Mechanisms* 9(10):1139-1146.

Daniel Davis, Holly Doerr, Agata Grzelak, **Susheel Busi**, Eldin Jasarevic, Aaron Ericsson and Elizabeth Bryda (2016). *Lactobacillus plantarum* attenuates anxiety-related behavior and protects against stress-induced dysbiosis in adult zebrafish. *Scientific Reports* 6, Article number: 33726.

Susheel Busi, Jhy-Jhu Lin. (2016). *Patent*. High Temperature, Resistant Probiotics for Food and Feed Preparations. *United States Patent and Trademark Organization (USPTO) No. 9289008 (Publication No. US2016019325A1)*

Aaron C. Ericsson, Sadia Akter, Marina M. Hanson, **Susheel B. Busi**, Taybor W. Parker, Rebecca J. Schehr, Miriam A. Hankins, Carin E. Ahner, Justin W. Davis, Craig L. Franklin, James M. Amos-Landgraf and Elizabeth C. Bryda (2015). Differential susceptibility to colorectal cancer due to naturally occurring gut microbiota. *Oncotarget*, 6(32), 33689-33704.

Marina McCoy, Aaron Ericsson, Miriam Hankins, **Susheel Busi**, Taybor Parker, Craig Franklin, James Amos-Landgraf, and Elizabeth Bryda (2015). The impact of the gut microbiota on phenotype following rederivation. *Transgenic Research* 23(5):905-905.

SELECTED ABSTRACTS, WORKSHOPS AND PRESENTATIONS

Busi S, De Leon K, Wall J and Amos-Landgraf JM (2018). Biofilm-producing sulfate-reducing bacteria suppress tumor burden in a rat model of colon cancer. **Platform presentation**, *American Association of Cancer Research (AACR) Annual Meeting, Chicago, IL*.

Busi S, Lei Z, Sumner L and Amos-Landgraf JM (2018). Complex gut microbiota modulate rat colon adenoma susceptibility, metabolites, and host gene expression. Poster presentation, *American Association of Cancer Research (AACR) Annual Meeting, Chicago, IL*.

Busi S, De Leon K, Wall J and Amos-Landgraf JM (2017). Suppression of tumor growth using biofilm producing sulfate-reducing bacteria in a rat model of colon cancer. **Platform presentation**, *Keystone Symposia J8: 6*.

Busi S (2017). Strategies and Techniques for Analyzing Microbial Population Structure. Summer workshop, *Marine Biological Laboratory (MBL), Woods Hole, MA*.

Busi S, Ericsson A, Parker T, Franklin C, Amos-Landgraf JM and Bryda EC (2016). Adenoma Susceptibility Modulated by Variable Complex Gut Microbiota in a Rat Model of Familial Colon Cancer. **Platform presentation**, *The Allied Genetic Conference (TAGC): PgmNr M299*.

Franklin C, Hart M, Ericsson A, **Busi S**, Moskowitz J, Amos-Landgraf J, and Bryda E. (2016). Complex Microbiota Targeted Rederivation: a Tool for Assessing the Role of Complex Microbiota in Rodent Model Refinement and Reproducibility. Poster presentation, *Comparative Medicine Resource Directors Meeting, Bethesda, MD*.

Davis DJ, **Busi S**, Hart ML, Gillespie C, Amos-Landgraf JM, Franklin C, Ericsson A and Bryda EC. (2016). Influences of the gut microbiota on animal models of multiple species. Poster presentation, *International Society of Transgenic Technologies, Prague, Czechoslovakia*.

Amos-Landgraf JM, **Busi S**, Ericsson A, McCoy MH, Parker T, Schehr R, Hankins M, Franklin C, and Bryda EC (2015). Modulating disease susceptibility in a model of human colon cancer by microbiome rederivation. Poster presentation, *Cancer Research 75(15 Supplement):2880-2880*.

TEACHING EXPERIENCE

Comparative Medicine Program – Graduate Scholars **July 2014 – present**
Veterinary Pathobiology, University of Missouri

Veterinary Research Scholars Program **May 2014 – present**
Veterinary Pathobiology, University of Missouri

American Society of Laboratory Animal Practitioners Summer Program **May 2014 – present**
Veterinary Pathobiology, University of Missouri

MICROB 3200: Medical Microbiology and Immunology **January 2015 – April 2015**
School of Medicine, University of Missouri

MICROB 2800: Medical Microbiology and Immunology **August 2014 – December 2014**
School of Medicine, University of Missouri

PROFESSIONAL MEMBERSHIPS

University of Missouri Alumni Association	2018 – present
American Association of Cancer Research	2014 – present
International Mammalian Genome Society	2016 – present
Genetics Society of America	2016 – 2017
Molecular Pathogenesis and Therapeutics Graduate Council	2014 – 2018

FUNDING AND RESEARCH SUPPORT

Start-up Funding. Department of Veterinary Pathobiology, University of Missouri-Columbia. (2012 – present). P.I. - J. Amos-Landgraf, Ph.D.

Phi Zeta grant, College of Veterinary Medicine, University of Missouri-Columbia. Identifying fecal biomarkers of disease progression using congenic strains of a rat model of human colon cancer. (2015) P.I. - **Susheel Busi**.

University of Missouri Research Board grant, Microbiota conferred resistance to colon cancer. (2017)
P.I. - J. Amos-Landgraf, Ph.D.

*Veterinary Medicine Faculty Research grant, University of Missouri-Columbia. *Desulfovibrio vulgaris* Hildenborough modulates tumor burden and complex gut microbiota structure in a rat model of familial adenomatous polyposis. (2017)* P.I. - J. Amos-Landgraf, Ph.D.

Molecular Cytology Core (MCC) grant, University of Missouri-Columbia. Evaluation of biofilms' effect on colonic tumor burden in a rat model of familial adenomatous polyposis. (2017-2018)
P.I. – **Susheel Busi**