Sarah Kathleen Lucas

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Education

2014 – present **Ph.D. Candidate, University of Minnesota**
Microbiology, Immunology, and Cancer Biology (MICaB) Doctoral Program
Advisor: Ryan Hunter, Ph.D.
Anticipated Graduation: Fall 2019

2010 **B.S. Microbiology, The Pennsylvania State University**
Minor: Biochemistry and Molecular Biology

Research and Professional Experience

2011 – 2014 **Research Associate, J. Craig Venter Institute, Rockville, MD**
Laboratory of Karen Nelson, Ph.D., Genomic Medicine Group
Overview: Microbiome studies involving multiplexed 16S rDNA sequencing library construction from a variety of environmental samples (e.g. stool, soil, urine, dust)

2009 – 2010 **Undergraduate Research Assistant, The Pennsylvania State University**
Advisor: Pamela A. Hankey Giblin, Ph.D.
Overview: The murine receptor tyrosine kinase Stk and its role in macrophage regulation, inflammation and in leukemic development.

Teaching Experience and Professional Training

Summer 2017 **MBL Intensive Course: Strategies and Techniques for Analyzing Microbial Population Structure (STAMPS)**
A selective intensive course at Marine Biological Laboratory in Woods Hole, MA, for training in the computational analysis of microbial communities.

Fall 2015, 2016 **Teaching Assistant, University of Minnesota**
MICB 3301 "Biology of Microorganisms" laboratory course
Overview: I conducted twice-weekly lectures introducing the theory, application, and methodology of basic microbiological techniques.

Writing Across the Curriculum: Teaching With Writing Workshop (2015)
Center for Writing, University of Minnesota
Training in instruction of undergraduate science courses, with focus on responding to student writing, evaluating writing assignments, creating rubrics, and identifying, preventing, and reporting plagiarism.

Publications

2019 Valentini, TD, **SK Lucas** , KA Binder, LC Cameron, J Motl, JM Dunitz, RC Hunter. Bioorthogonal non-canonical amino acid tagging reveals translationally active subpopulations of the cystic fibrosis lung microbiota. *In prep.*

Lucas SK, RA Itabiyi, E Feddema, HC Boyer, RC Hunter. Anaerobic mucin degradation as a bacterial community phenotype associated with chronic rhinosinusitis pathogenesis. *in prep.*

2018 Vangay P, AJ Johnson, TL Ward, GA Al-Ghalith, RR Shields-Cutler, BM Hillman, **SK Lucas**, L Beura, EA Thompson, LM Till, R Batres, B Paw, SL Pergament, P Saenyakul, M Xiong, AD Kim, G Kim, D Masopust, EC Martens, C Angkurawaranon, R McGready, PC Kashyap, KA Culhane-Pera, D Knights. US Immigration Westernizes the Human Gut Microbiome. *Cell*, 175(4), pp.962-972.e10

Choi, Y, A Banerjee, S McNish, KS Couch, MG Torralba, **S Lucas**, A Tovchigrechko, R Madupu, S Yooseph, KE Nelson, VK Shanmugam, AP Chan 2018. Co-occurrence of Anaerobes in Human Chronic Wounds. *Microbial ecology*, pp.1-13.

2017 **Lucas, SK**, R Yang, JM Dunitz, HC Boyer, RC Hunter, 2018 (Published online August 2017). 16S rRNA gene sequencing reveals site-specific signatures of the upper and lower airways of cystic fibrosis patients. *Journal of Cystic Fibrosis*, *17*(2), pp.204-212.

2016 Sismaet HJ, A Banerjee, S McNish, Y Choi, M Torralba, **S Lucas**, A Chan, VK Shanmugam, and ED Goluch. Electrochemical detection of Pseudomonas in wound exudate samples from patients with chronic wounds. Wound Repair Regen 2016; 24(2):366-72

2015 Shankar J, MH Nguyen, MM Crespo, EJ Kwak, **SK Lucas**, KJ McHugh, S Mounaud, JF Alcorn, JM Pilewski, N Shigemura, et al. Looking beyond respiratory cultures: Microbiome-cytokine signatures of bacterial pneumonia and tracheobronchitis in lung transplant recipients. Am J Transplant 2015; 16(6):1766-78

2013 Yeoman CJ, SM Thomas, MEB Miller, AV Ulanov, M Torralba, **S Lucas**, M Gillis, M Cregger, A Gomez, M Ho, et al. A multi- omic systems-based approach reveals metabolic markers of bacterial vaginosis and insight into the disease. PloS One 2013; 8(2):e56111

2012 Fouts DE, R Pieper, S Szpakowski, H Pohl, S Knoblach, M-J Suh, S-T Huang, I Ljungberg, BM Sprague, **SK Lucas,** et al. Integrated next-generation sequencing of 16s rDNA and metaproteomics differentiate the healthy urine microbiome from asymptomatic bacteriuria in neuropathic bladder associated with spinal cord injury. J Transl Med 2012; 10(1):174

Presentations

2018 **North American Cystic Fibrosis Conference (Talk/Poster)**
Workshop: Microbial Ecology of the CF Airways
Abstract: Mucin as a nutrient source for Staphylococcus aureus in vitro and in cystic fibrosis associated chronic rhinosinusitis. **Authors**: Sarah K. Lucas, Jeffrey Flynn, R. Abayo Itabiyi, Jordan M. Dunitz, Holly C. Boyer, Ryan C. Hunter

Midwest Microbial Pathogenesis Conference – MMPC (Trainee Talk/Poster)
Abstract: Anaerobic mucin degradation as a bacterial phenotype associated with chronic rhinosinusitis. **Authors**: Sarah K. Lucas, Jeffrey Flynn, R. Abayo Itabiyi, Holly C. Boyer, Ryan C. Hunter

International Society for Microbial Ecology – ISME17 (Poster)
Abstract: Anaerobic mucin degradation as a bacterial phenotype associated with chronic rhinosinusitis. **Authors**: Sarah K. Lucas, Jeffrey Flynn, R. Abayo Itabiyi, Holly C. Boyer, Ryan C. Hunter

2017 **University of Minnesota Cystic Fibrosis Research Collaborative Meeting (Talk)**
Title: Microbial communities associated with chronic rhinosinusitis in cystic fibrosis.

ASM Microbe 2017 (Poster)
Abstract: Bacterial Diversity in the Human Paranasal Sinuses Associated with Chronic Rhinosinusitis. **Authors**: Sarah K. Lucas, Robert Yang, Ali Nicholson, Jordan M. Dunitz, Holly C. Boyer, Ryan C. Hunter

2016 **MICaB Student Seminar (Talk)**
Title: Sinus and lung microbial communities provide insights into chronic sinusitis in cystic fibrosis patients

Center for Infectious Diseases and Microbiology Translational Research (CIDMTR) Seminar (Talk)
Title: Research in Progress: A comprehensive analysis of microbial communities in the upper and lower airways of cystic fibrosis patients

Midwest Microbial Pathogenesis Conference (MMPC) (Poster)
Abstract: 16S sequencing reveals site-specific signatures of the paranasal sinuses and lower airways of cystic fibrosis patients. **Authors**: Sarah K. Lucas, Robert Yang, Ali Nicholson, Jordan M. Dunitz, Holly C. Boyer, Ryan C. Hunter

ASM Microbe 2016 (Poster)
Abstract: 16S sequencing reveals site-specific signatures of the paranasal sinuses and lower airways of cystic fibrosis patients. **Authors**: Sarah K. Lucas, Robert Yang, Ali Nicholson, Jordan M. Dunitz, Holly C. Boyer, Ryan C. Hunter

Mayo Clinic Microbial Ecology Retreat: Integrating Microbial Ecology and Evolution in Human Microbiome Health Research (Talk)
Title: Microbial ecology in cystic fibrosis

2015 **Telluride Science and Research Center Workshop: Cystic Fibrosis: Ecology, Evolution, and Eradication (Talk)**
Title: The microbiome of cystic fibrosis associated chronic rhinosinusitis

Awards and Fellowships

2019 **Microbial and Plant Genomics Institute (MPGI) Travel Award**
Amount awarded: $400. For travel to ASM Microbe 2019.

2018 **MICaB CGS Student Service Award**
Annual graduate program award in recognition of student embodiment of MICaB scholarly and service values.

2017 **Microbiology, Immunology, and Cancer Biology Travel Award**
Amount awarded: $1000

NIDCR/NIH Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (F31). Title: The role of mucin degradation by anaerobic bacteria in Staphylococcus aureus pathogenesis in chronic rhinosinusitis.

Microbiology, Immunology, and Cancer Biology Student Service Award
In recognition of outstanding contributions to the MICaB graduate program and for promoting program excellence.

Outstanding Performance Award for Teaching Assistants – Fall 2016 (finalist)
Annual college-wide award recognizing teaching assistants who have demonstrated excellence in teaching and/or other instructional activities. Nominations are voluntarily made by undergraduate students.

2016 **Minnesota Craniofacial Research Training (MinnCResT) Predoctoral Fellowship (September 2016 – December 2017)**
A National Institute of Dental and Craniofacial Research (NIDCR/NIH) T32 predoctoral training fellowship. A three-year fellowship granting a full stipend and financial research support.

2015 **Peter Salamon Award for Young Scientists**
Travel Award for the Telluride Science and Research Center Workshop - Cystic Fibrosis: Ecology, Evolution, and Eradication.

Professional Organizations/Community Outreach

American Society for Microbiology (ASM), 2011 - Present

Graduate Women in Science (GWIS), Xi Chapter, 2016 – Present

2017 **High School Science Fair Judge, Animal Sciences**
Twin Cities Regional Science Fair, Minneapolis, MN

Market Science Event Organizer, Medical Microbiology
Midtown Farmers Market table for community education on basic medical microbiological concepts.