Erika Lutter, Ph.D.

Associate Professor

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Education:
1999: BSc, Biochemistry, University of Lethbridge, Canada
2002: MSc, Microbiology and Infectious Diseases, University of Calgary, Canada
2008: PhD, Cellular and Molecular Microbiology, University of Calgary, Canada
2009-2013: Postdoctoral, Laboratory of Intracellular Parasites, NIAID Rocky Mountain Laboratories Hamilton, MT

Academic Appointments:
2000-2002: Masters Student, Department of Medicine, University of Calgary
2002-2008: PhD Student, Department of Biology, University of Calgary
2009-2013: Postdoctoral Fellow, Laboratory of Intracellular Parasites, National Institutes of Health
2013-2019: Assistant Professor, Department of Microbiology and Molecular Genetics, Oklahoma State University

2013-present: Associate Professor, Department of Microbiology and Molecular Genetics, Oklahoma State University

Teaching:

2001-2002 Teaching Assistant, Department of Medicine, University of Calgary

2001-2007 High School Math and Science Instructor, Sylvan Learning Center, Calgary
2005-2008 Undergraduate research student mentor, Department of Biology, University of Calgary
2006-2008 Teaching Assistant, Department of Biology, University of Calgary
2013 Microbiology and Molecular Genetics seminar series
2014 Introduction to Microbiology, Oklahoma State University
2015-16 Recent Advancements in Microbiology, Oklahoma State University
2016- Pathogenic Microbiology, Oklahoma State University
2016- Pathogenic Microbiology Laboratory, Oklahoma State University

Honors and Awards:
2014: Ralph E Power Junior Faculty Award Nomination
2008: Sharon Wilkinson Teaching Excellence Award Nomination
2006: Summit Foundation CF Studentship
2009-2013: Postdoctoral IRTA Fellowship, NIH
2013: OSU Nominee for Ralph E. Powe Junior Faculty Award
2014: Nominee for Outstanding Faculty Mentor, College of Arts and Sciences, Oklahoma State University
2016: Nominee for Sigma Xi Young Investigator Award

2017: Outstanding Mentor, Oklahoma Mentor Day, Oklahoma Center for Excellence
2017: Outstanding Faculty Mentor, College of Arts and Sciences, Oklahoma State University

2017: Provost's Advising Excellence Award, Oklahoma State University

2019: Travel Award, Laney Graduate School STEM Symposium, Emory University

2019: Peggy Cotter Awards for Early Career Branch Members, American Society for Microbiology

Other Professional Experiences and Memberships:
2008: Member, American Society of Microbiology
2013: Member, American Society of Microbiology, Missouri Valley Branch
2015: Member, American Heart Association
2015 and 2019: NIH Study section ZRG1 IDM S (81)
2014: Reveiw editor for the Journal of Microbiological Methods
2015: Review editor for Frontiers Microbiology

2018: Associate editor for Frontiers, Molecular Bacterial Pathogenesis

2018: Vice Chair, Oklahoma Academy of Science, Microbiology

2019: President Elect, American Society of Microbiology, Missouri Valley Branch

Ad hoc reviewing: Microbiology Open, International Journal of Medical microbiology, Gene, Pathogens and Disease, PLOS one, Genomics and Frontiers in Microbiology

Research Support:

Current Support:

- 07/01/2017-06/30/2020: 1R15GM124670-01, NIH, EF hand Ca2+ binding protein mediates Ca2+ regulation of virulence in *Pseudomonas aeruginosa* (role-collaborator,managing and overseeing experiments for the 3rd aim of the proposal focusing on the interaction of *P. aeruginosa* with host cells), Awarded: $300,000 direct plus $137,357 indirect, Role: PI

Past Support:

- 07/14-08/14: Salary Research Grant. Arts and Sciences Summer Research Support (ARS), Chlamydia host interactions, Role: PI
- 07/14-08/14: Travel Research Grant. Arts and Sciences Summer Research Support (ARS), *Chlamydia* host interactions, Role: PI
- 07/01/2014-6/30/2015: NIH CoBRE grant # 5P20GM103648-03, pilot project, *Pseudomonas aeruginosa* Intra-Species Interactions Dates, Awarded: $50,000, Role: PI
- 08/15/2013-08/14/2015: New faculty lab start-up and equipment grant, Oklahoma State University. Dates, These funds are being used to equip and establish Dr. Lutter's laboratory at OSU, Role: PI
- 07/01/16-06/30/17: NIH CoBRE grant #5P20GM103648-04, pilot project, Ribosome Analysis of *Pseudomonas* Biofilms from Cystic Fibrosis Patient Strains, Awarded: $50,000, Role: Co-PI
- 09/01/2016-8/31/2017: 1R15AI119906-03 NIH, - Diversity supplement to: The role of CT228 in *Chlamydia trachomatis* pathogenesis, Awarded: $23,225, Role: PI
- 07/01/2015-06/30/2019: 1R15AI119906-01, NIH, The role of CT228 in *Chlamydia trachomatis* pathogenesis, Awarded: $429,889, Role: PI
- 4/1/2018-6/30/2019: Oklahoma State University Seed Grant, Swinging for the Fences-Establishing the feasibility using two novel approaches towards a Q fever vaccine, Awarded: $25,000, Role: Co-PI

Selected Publications:

1. Luedtke, B. E., Mahapatra, S., Lutter, E. I. & Shaw, E. I. The Coxiella Burnetii Type IVB Secretion System (T4BSS) Component DotA is Released/Secreted During Infection of Host Cells and During in vitro Growth in a T4BSS Dependent Manner. Pathog Dis, doi:10.1093/femspd/ftx047 (2017).

2. Jennifer Shaw, Charlotte Key, Timothy Snider, Prakash Sah, Edward Shaw, Derek Fisher and Erica I. Lutter, Genetic inactivation of *Chlamydia trachomatis* inclusion membrane protein CT228 alters MYPT1 recruitment, extrusion production and murine infection. Frontiers Microbiology, Molecular Bacterial Pathogenesis. *Front Cell Infect Microbiol. 2018 Nov 30;8:415. doi: 10.3389/fcimb.2018.00415. eCollection 2018. PMID: 30555802.*
3. Zenas George, Yusuf Omosun, Anthony Azenabor, Jason Goldstein, James Partin, Kahaliah Joseph, Debra Ellerson, Qing He, Francis Eko, Melissa McDonald, Matthew Reed, Pavel Svoboda, Olga Stuchlik, Jan Pohl, Erica Lutter, Claudiu Bandea, Carolyn Black, and Joseph Igietseme. The Molecular Mechanism of Induction of Unfolded Protein Response by *Chlamydia.* Biochemical and Biophysical Research Communications, 2018 Nov 28. pii: S0006-291X(18)32440-9. doi: 10.1016/j.bbrc.2018.11.034.
4. Nguyen PH, Lutter EI, Hackstadt T. *Chlamydia trachomatis* inclusion membrane protein MrcA interacts with the inositol 1,4,5-triphosphate receptor type 3 (ITPR3) to regulate extrusion formation. PLoS Pathog. doi:10.1371/journal.ppat.1006911. eCollection 2018 Mar. (2018).
5. Shaw JH, Behar AR, Snider TA, Allen NA, Lutter EI. Comparison of Murine Cervicovaginal Infection by Chlamydial Strains: Identification of Extrusions Shed In vivo. Front Cell Infect Microbiol. 2017 Feb 3;7:18. doi: 10.3389/fcimb.2017.00018.
6. Couger, M.B., Wright, A. Lutter, E.I., Youssef, N. Draft Genome Sequences of Five Pseudomonas aeruginosa Clinical Strains Isolated from Sputum Samples from Cystic Fibrosis Patients. Genome Announc. 2016 Jan 28;4(1). pii: e01528-15. doi: 10.1128/genomeA.01528-15.
7. Mital, J. Lutter, E.I., Barger, A.C, Dooley, C.A, and Hackstadt T. Chlamydia trachomatis inclusion membrane protein CT850 interacts with the dynein light chain DYNLT1 (Tctex1). Biochemical and Biophysical Research Communications 05/2015. DOI:10.1016/j.bbrc.2015.04.116
8. Clark, T. R., Noriea, N. F., Bublitz, D. C., Ellison, D. W., Martens, C., Lutter, E. I., & Hackstadt, T. Comparative Genomic Sequencing of Rickettsia rickettsii strains differing in virulence. Infect Immun. 2015 Feb 2. pii:IAI.03140-14.
9. Lutter, E.I., Barger, A.C. & Hackstadt, T. Chlamydia trachomatis inclusion membrane protein CT228 recruits elements of the myosin phosphatase pathway to regulate release mechanisms. Cell Rep. 2013 May 29. doi:pii: S2211-1247(13)00209-X. 10.1016/j.celrep.2013.04.027. PMID:23727243.
10. Lutter, E.I., Martens, C. & Hackstadt, T. Evolution and Conservation of Predicted Inclusion Membrane Proteins in Chlamydiae. Comparative and Functional Genomics. 2012, 2012:362104 PMID:22454599.
11. Lutter, E.I., Duong, J., Purighalland, S. & Storey, D.G. Lethality and cooperation of Pseudomonas aeruginosa quorum sensing mutants in Drosophila melanogaster infection models. Microbiology 2012 Aug;158 (Pt 8):2125-32. Epub 2012 May 24. PMID:22628480.
12. Clark, T.R., Lackey, A.M., Kleba, B., Driskell, L.O., Lutter, E.I., Martens, C.,Wood, D. O., & Hackstadt, T. Transformation frequency of a mariner-based transposon in Rickettsia rickettsii. J Bacteriol. 2011 Sep;193(18):4993-5. Epub 2011 Jul 15 PMID:21764933.
13. Lutter, E.I., Bonner, C., Holland, M.J., Suchland, R.J., Stamm, W.E., Jewett, T.J., McClarty G. & Hackstadt, T. Phylogenetic analysis of Chlamydia trachomatis Tarp and correlation with clinical phenotype. Infection and Immunity 2010 Sep;78(9):3678-88. Epub 2010 Jul 6. PMID:2060598.
14. Kleba, B., Clark, T.R., Lutter, E.I., Ellison, D.W. & Hackstadt T. Disruption of the Rickettsia rickettsii Sca2 autotransporter inhibits actin based motility. Infection and Immunity 2010 May; 78(5):2240-7. PMID:20194597.
15. Lutter, E.I., Faria, M.M., Rabin, H.R. & Storey, D.G. Pseudomonas aeruginosa cystic fibrosis isolates from individual patients demonstrate a range of lethality in two Drosophila melanogaster infection models. Infection and Immunity 2008 May;76(5):1877-88. PMID:18285499.
16. Lynch, T., Livingstone, S., Buenaventura, E., Lutter, E., Fedwick, J., Buret, A.G., Graham, D. & DeVinney, R. Vibrio parahaemolyticus disruption of epithelial cell tight junctions occurs independently of toxin Production. Infection and Immunity 2005 Mar;73(3):1275-83. PMID:15731024.
17. Chambers, C.E., Lutter, E.I., Visser, M.B., Law, P. & Sokol. P.A. Identification of Potential CepR Regulated Genes using a cep box Motif-Based Search of the Burkholderia cenocepacia Genome BMC Microbiology 2006 Dec; 6:104. PMID:17187664.
18. Marriott, R.A., Hakin, A.W., Liu, J.L. & Lutter. E. The volumetric properties of aqueous solutions of glycylglycine and L-serine at elevated temperatures and pressures, Journal Chemical Thermodynamics 2001, 959-982, 33.
19. Lutter, E. Lewenza, S., Dennnis, J. J. & P.A Sokol. Distribution of quorum sensing genes in the Burkholderia cepacia complex. Infection and Immunity 2001 Jul; 69 (7):4661-6. PMID:11402012.