Edward I. Shaw, Ph.D.

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Education:

1989: B.S., Biology/Chemistry, Georgia Southwestern College

1997: PhD, Microbiology, University of South Alabama College of Medicine

2000: Microbiology, NIH, Postdoctoral, Rocky Mountain Laboratories Academic Appointments:

1990-1997: Graduate student, Department of Microbiology and Immunology, University of South Alabama College of Medicine, Mobile, AL. Graduate Advisor - David O. Wood, Ph.D.

1997-2000: Intramural Research Training Award Postdoctoral Fellow, National Institutes of Health, National Institutes of Allergy and Infectious Diseases, Rocky Mountain Laboratories. Advisor – Ted Hackstadt, Ph.D.

2000-2004: Senior Service Fellow, Microbiologist, Coxiella Unit, Rickettsiology Section, Viral and Rickettsial Zoonoses Branch, DVRD, NCID, Centers for Disease Control and Prevention.

2005-2011: Assistant Professor, Department of Microbiology and Molecular Genetics, Oklahoma State University.

2011-present: Associate Professor, Department of Microbiology and Molecular Genetics, Oklahoma State University.

2006-present: Adjunct Assistant Prof, Dept. of Pathobiology, Center for Veterinary Health Sciences, Oklahoma State University.

Awards and Honors

1996: University of South Alabama Graduate College Travel Award

1996: American Society for Microbiology Student Travel Grant

Other Professional Experiences and Memberships:

1991-1997: Alabama College of Medicine, Mobile, AL. Graduate Advisor - David O. Wood, Ph.D.

1997-2000: Intramural Research Training Award Postdoctoral Fellow, National Institutes of Health, National Institutes of Allergy and Infectious Diseases, Rocky Mountain Laboratories. Advisor – Ted Hackstadt, Ph.D.

1990-1997: Graduate student, Department of Microbiology and Immunology, University of South 2000-2004: Senior Service Fellow, Microbiologist, Coxiella Unit, Rickettsiology Section, Viral and Rickettsial Zoonoses Branch, DVRD, NCID, Centers for Disease Control and Prevention.

2011-present: Associate Professor, Department of Microbiology and Molecular Genetics, Oklahoma State University.

2005-2007: NABS & ASM Fellow Mentor for undergraduate student – Ryan Trojan

2005-2011: Assistant Professor, Department of Microbiology and Molecular Genetics, Oklahoma State University.

2005-present: Principle mentor to 3 graduated PhD students and 2 MS students. Currently mentoring 2 PhD students.

2005-present: Principle lab mentor to 12 undergraduate research students.

2005-present: Thesis/Dissertation committee member for 27 PhD and MS students.

2006-present: Adjunct Assistant Prof, Dept. of Pathobiology, Center for Veterinary Medicine, Oklahoma State University.

Research Support:

Current: None

Past:

2014-2015. National Institutes of Health (NIH) COBRE. Oklahoma for Respiratory and Infectious Diseases-Pilot Project. Role-PI. The Effect of "Avirulent" Rickettsial Infections on Rocky Mountain Spotted Fever Pathogenesis: Aerosol and Needle Inoculation. Award amount - $50,000 total costs over 10 months. September 1, 2014- June 30, 2015.

2014-2015. National Institutes of Health (NIH) Contract award. Role PI with Susan Little, CoI. Task A13-" Cultivating Currently Uncultivable Bacterial Pathogens". Award amount - $378,232 total costs over 1 year. Shaw portion - $191,726. September 30, 2014- September 29, 2015.

2013-2016: Defense Threat Reduction Agency (DTRA),. "Assessment of Type 4 Secretion System Proteins as Vaccines against Coxiella burnetii". Role-Co-PI along with W. Picking Award - $333,680.

2011-2015: National Institutes of Health (NIH), "Analysis of the Coxiella burnetii Type IV secretion system during infection, Role: PI, Award - $347,163.

2012-2014: National Institutes of Health (NIH), Research Supplement to Promote Diversity in Health Related Research. For support and training of Devin Leslie (undergraduate). Supplement to R15 (E.I.S-PI). "Analysis of the Coxiella burnetii Type IV Secretion System During Infection". Role-PI. Award - $20,678.

2013: Zinpro Corporation. Research Agreement." Analysis of C. burnetii Phase II (avirulent) in Colostrum Whey: The Effect of H2O2 Treatment on Subsequent C. burnetii Infectivity". Role-PI. Award - $22,645.

2012: Zinpro Corporation. Research Agreement. Role-PI."Coxiella burnetii Inactivation by Heat". Role-PI. Award - $23,924

2011-2011: subcontract from OSU University Multispectral Lab , "Analysis of Coxiellae and Rickettsiae sp. growth in cultured mammalian cells after hypochlorite exposure", Role:PI, Award - $83,088. 2010-2011: subcontract from OSU University Multispectral Lab. "Analysis of Coxiellae and Rickettsiae sp. growth in cultured mammalian cells after hypochlorite exposure", Role:PI, Award - $51,692

2008-2010: National Institutes of Health (NIH), Research Supplement to Promote Diversity in Health Related Research. Support and training of Brian Herrin (undergraduate). Supplement to R15 (E.I.S-PI). "Analysis of the Coxiella burnetii Type IV Secretion System During Infection". . Role-PI. Award - $38,514

2007-2011: National Institutes of Health (NIH), "Analysis of the Coxiella burnetii Type IV secretion system during infection." Role: PI, Award- $215,000

2009: National Institutes of Health (NIH), Research Equipment Supplement, "Analysis of the Coxiella burnetii Type IV Secretion System During Infection", Role-PI, Award - $52,000

2007: OSU-Big XII Faculty Fellowship Program award, "Coxiella burnetii-host cell molecular interactions.", Role: PI, Award - $2,422.00.

2005-2007: New faculty lab start-up and equipment grant, Oklahoma State University. These funds were used to equip and establish Dr. Shaw's lab at OSU, Role: PI.

2005-2005: Summer Salary Research Grant. Oklahoma NSF EPScOR, "Microarray Analysis of Host Cell Response to Infection with Rickettsiae", Role: PI, Award- $16,783.

Selected Publications:

1. Elder, Elizabeth D., Scott, J. B., Reid, J. C., and Shaw, E. I. Utilization of Organic N-Halamine Disinfectants Against Legionella Pneumophila. Georgia J. Of Science. 51, 4 (1993) 173-182.

2. Shaw, Edward I. and Wood, D. O. Characterization of a Rickettsia rickettsii DNA Fragment Analogous to the firA-ORF-lpxA Region of Escherichia coli. Gene. 140 (1994) 109-113.

3. Foster, John W., Park, Y. K., Bang, I. S., Karem, K., Betts, H., Hall, H. K. and Shaw, E. I. Regulatory Circuits Involved with pH-Regulated Gene Expression in Salmonella typhimurium. Microbiology. 104 (1994) 341-352.

4. Shaw, Edward I., Marks, G. L., Winkler, H. H., and Wood, D. O.. Transcriptional Characterization of the Rickettsia prowazekii Major Molecular Synthesis Operon. J. Bacteriol. 179 (1997) 6448-6452. Waite, Rebecca T., Shaw, E. I., Winkler, H. H., and Wood, D. O.. Isolation and characterization of

the dnaA gene of Rickettsia prowazekii. Acta Virol. 42(2), (1997) 95-101.

5. Scidmore-Carlson, M., Shaw, E.I., Dooley, C.A., and Hackstadt, T. 1998 Identification and Characterization of Putative Chlamydia trachomatis Inclusion Membrane Proteins. Chlamydial Infections: Proceedings of the Ninth International Symposium on Human Chlamydial Infection. Napa, CA. pg 103-106.

6. Shaw, Edward I., Scidmore-Carlson, M. A., and Hackstadt, T. 1998.Temporal Expression of Chlamydia trachomatis Transcripts from Putative Membrane Spanning Protein Genes. Chlamydial Infections: Proceedings of the Ninth International Symposium on Human Chlamydial Infection. Napa, CA. pg 559-562.

7. Scidmore-Carlson, Marci A., E. I. Shaw, C. A. Dooley, E. R. Fischer, and T. Hackstadt. Identification and characterization of a Chlamydia trachomatis early operon encoding four novel inclusion membrane proteins. Mol. Micro. (1999) Aug; 33(4): pg 753-765.

8. Hackstadt, Ted, Scidmore-Carlson, M. A., Shaw, E. I., and Fischer, E. R. The Chlamydia trachomatis IncA protein is required for homotypic vesicle fusion. Cell. Micro. 1 (1999) 119-130.

9. Shaw, Edward I., Dooley, C. A., Fischer, E. R., Scidmore-Carlson, M. A., Fields, K. A.,and Hackstadt, T.. Three temporal classes of gene expression during the Chlamydia trachomatis developmental cycle. Mol. Micro. (2000) 37(4), 913-925.

10. Thompson, Herbert A., Hoover, T. A., Vodkin, M. H., and Shaw, E. I.. Do Chromosomal Deletions in the Lipopolysaccharide Biosynthetic Regions Explain All Cases of Phase Variation in Coxiella burnetii Strains? An Update. In Rickettsiology: Present and Future Directions. Annals of the New

York Academy of Science. (2003) Vol. 990. pg 664-670.

11. Shaw, Edward I., Moura, H., Woolfitt, A. R., Ospina, M., Thompson, H. A., and Barr, J. R.. Identification of Biomarkers of Whole Coxiella burnetii Phase I by MALDI-TOF Mass Spectrometry. Analytical Chemistry. (2004) July 15; 76(14), 4017-4022.

12. McQuiston, Jennifer H., Nargund, V., Miller, Jeffrey D., Priestley, R., Shaw, E. I., and Thompson, H. A.. Prevalence of Antibodies to Coxiella burnetii among Veterinary School Dairy Herds in the United States, 2003. Vector-Borne and Zoonotic Diseases, (2005) Spring 5(1), 90-91.

13. Carrie Y. Pierce, John R. Barr, Adrian R. Woolfitt, Hercules Moura, Edward I. Shaw, Herbert A. Thompson, Robert F. Massung and Facundo M. Fernandez. Strain and phase identification of the U.S. category B agent Coxiella burnetii by matrix assisted laser desorption/ionization time-of-flight

mass spectrometry and multivariate pattern recognition. Analytica Chimica Acta,Volume 583, Issue 1,30 January 2007, Pages 23-31.

14. Morgan, J. Kent, Leudtke, B. E., and Shaw, E.I. Polar localization of the Coxiella burnetii Type IVB Secretion System. FEMS Microbiol Lett (2010) 305: 177-183.

15. Morgan, J. Kent, Leudtke, B. E., Thompson, H. A., and Shaw, E.I.. Coxiella burnetii type IVB secretion system Region I genes are expressed early during infection of host cells. FEMS Microbiol Lett (2010) 311: 61-69.

16. Mahapatra, Saugata, Ayoubi, P., and Shaw, E.I. Coxiella burnetii Nine Mile II proteins modulate gene expression of monocytic host cells during infection. BMC Microbiol. (2010) Sept. 20;10(1):244. Designated "Highly Accessed"

17. Herrin, Brian, Mahapatra, S., Blouin, E. F., and Shaw, E.I. Growth of Coxiella burnetii in the Ixodes scapularis derived IDE8 tick cell line. Vector Born Zoonotic Diseases (2011), Jan. 22.

18. Youssef, N. H., Savage-Ashlock, K. N., McCully, A. M., Luedtke, B., Shaw, E. I.,Hoff, W. D., and Elshahed, M. S. Trehalose/2-sulfotrehalose biosynthesis and glycine-betaine uptake are widely spread mechanisms for osmoadaptation in the Halobacteriales. The ISME Journal. (2013) Sept. 9.

19. Barrett, Anne, Shaw, E. I., and Little, S. E. Rickettsia amblyommii and R. montanensis infection in dogs following natural exposure to ticks. Vector Born Zoonotic Diseases Epub Dec. 2013. In print Jan. 2014

20. Julie M. Angle, Julie M., Colston, N.M., French, D.P., Gustafson, J.E., O'Hara, S.E., and Shaw, E.I..Addressing the Call to Increase High School Students' STEM Awareness Through a Collaborative Event Hosted by Science and Education Faculty: A How-To Approach. Science Educator. (2016)

21. Mahapatra, Saugata, Gallaher, B., Smith, S.C., Graham, J.G., Voth, D.E., and Shaw, E.I. Coxiella burnetii Employs the Dot/Icm Type IV Secretion System to Modulate Host NF-κB/RelA Activation. Frontiers Cell. Infect. Microbiol., 19 December (2016)

22. Brandon E. Luedtke, Saugata Mahapatra, Erika I. Lutter and Edward I. Shaw. 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. FEMS Pathogen and Disease. 25 April (2017). doi: 10.1093/femspd/ftx047