

DeLacy V. L. Rhodes
Berry College
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Education

Doctorate of Philosophy 2007-2011
Department of Microbiology and Immunology
Virginia Commonwealth University Medical Center
Graduate Research Advisor: Dr. Richard T. Marconi
Richmond, VA
Dissertation Title: Investigating the Role of Outer Surface Protein C (OspC) in *Borrelia burgdorferi*

Master of Science 2004-2006
Department of Biology
Austin Peay State University
Graduate Research Advisor: Dr. Chad S. Brooks
Clarksville, TN
Thesis Title: Reservoir Competence of North American bird and rodent species for the Lyme disease spirochete, *Borrelia burgdorferi*

Bachelor of Science 2000-2004
Major Biology, minor in Agriculture
Austin Peay State University
Clarksville, TN

Professional Appointments

Berry College August 2015
Department of Biology
Assistant Professor, Tenure-track

J. Sargeant Reynolds Community College 2013-2015
Department of Biology
Adjunct Professor

Virginia Commonwealth University IRACDA Postdoctoral program 2011-2013
Mentor: Dr. Todd O. Kitten
MCV School of Dentistry
Project: Investigating the role of ribonucleotide reductase genes in *Streptococcus sanguinis* pathogenesis

Mentoring

2017 – Charlotte Sinkula, Hannah Stanley, Sydney Bardwell, Austin Fowler, Ashley Woodard, and Ethan Hart, research assistants
2016-2017 – Kelsey Morkem and Hannah Stanley, teaching assistants
2016 – Leah Burndt and William Moraga, teaching assistants for Microbiology lab
2016 – Charlotte Sinkula, Hannah Stanley, Sydney Bardwell, and Savannah McKenzie, research assistants
2012 – Ashwin Chetty, middle school student for science fair

2012 – Bethel Kedebe, HERO program undergraduate student
2011 – Rashmi Reddy, Independent Research undergraduate student
2009 – Katherine Mallory, Howard Hughes Medical Institute undergraduate student
2006 – Joseph Vazquez, Independent Research undergraduate student
2006-2007 – APSU1000 course mentor for undergraduate biology majors

Manuscripts

Oliver L., Earnhart, C., **Rhodes, D.**, Theisen, M., Marconi R., Antibody profiling of canine IgG responses to the OspC protein of the Lyme disease spirochetes supports a multivalent approach in vaccine and diagnostic assay development. *Vet. J.* 2016 Dec;218:27-33.

Earnhart, C., **Rhodes, D.**, Smith, A., Yang, X., Tegels, B., Carlyon, J., Pal, U., and Marconi, R. Assessment of the highly conserved C-terminal motif (C10) of *Borrelia burgdorferi* outer surface protein C (OspC) in transmission and infectivity. *Pathog Dis.* 2014 Mar;70(2):176-84.

Rhodes, DV, Crump, KE, Makhlynets, O., Snyder, M., Ge, X., Xu, P., Stubbe, J., and Kitten, TO. Genetic Characterization and Role in Virulence of the Ribonucleotide Reductases of *Streptococcus sanguinis*. *J Biol Chem.* 2014 Feb 28;289(9):6273-87

Makhlynets O, Boal AK, **Rhodes DV**, Kitten T, Rosenzweig AC, Stubbe J. *Streptococcus sanguinis* class Ib ribonucleotide reductase: high activity with both iron and manganese cofactors and structural insights. *J Biol Chem.* 2014 Feb 28;289(9):6259-72

Rhodes DV, Earnhart CG, Mather TN, Meeus PF, Marconi RT. Identification of *Borrelia burgdorferi* ospC genotypes in canine tissue following tick infestation: Implications for Lyme disease vaccine and diagnostic assay design. *Vet J.* 2013 Nov;198(2):412-8

Miller DP, McDowell JV, **Rhodes DV**, Allard A, Caimano M, Bell JK, Marconi RT. Sequence divergence in the *Treponema denticola* FhbB protein and its impact on factor H binding. *Mol Oral Microbiol.* 2013 Aug;28(4):316-30.

Earnhart CG, **Rhodes DV**, Marconi RT. Disulfide-mediated oligomer formation in *Borrelia burgdorferi* outer surface protein C, a critical virulence factor and potential Lyme disease vaccine candidate. *Clin Vaccine Immunol.* 2011 Jun;18(6):901-6.

Earnhart, C. G., **LeBlanc, DV.**, Alix, K. E., Desrosiers, D. C., Radolf, J. D., and Marconi, R. T. Identification of residues within ligand binding domain 1 (LBD1) of the *B. burgdorferi* OspC protein required for function in the mammalian environment. *Mol Micro.* 2010 76(2):393-408.

Manuscripts in review/preparation

Oliver, L. D., Earnhart, C. G., **Rhodes, D. V. L.**, Theisen, M., Marconi, R. T. In submission. Antibody profiling of canine IgG responses to the OspC protein of the Lyme disease spirochetes supports a multi-valent approach in vaccine and diagnostic assay development. *The Veterinary Journal.*

Rhodes, D. V., Earnhart, C. G., and Marconi, R. T. In preparation. Alteration of outer surface protein C (OspC) ligand binding domain 2 surface charge results in loss of *Borrelia burgdorferi* persistence in mice. Infection and Immunity.

Rhodes, D. V. L., Earnhart, C. G., and Marconi, R. T. In preparation. Analysis of the OspC type-specific epitopes found to elicit an antibody response during murine infection. Infection and Immunity.

Presentations/Invited Seminars

Rhodes, D.V.L., 2014. Investigating the Ecology and Pathogenesis of the Lyme Disease Spirochete *Borrelia burgdorferi*. Invited Seminar. Berry College. Mount Berry, GA.

Rhodes, D.V.L., Earnhart, C. G., and Marconi, R. T. 2012. Investigating the Lyme Disease Bacteria Through Genetic Manipulation of Outer Surface Protein C (OspC). Invited seminar. Virginia Union University. Richmond, VA.

Earnhart, C.G., **Rhodes, D. V. L.**, and Marconi, R. T. 2010. Phylotypes of outer surface protein C (OspC) of the Lyme *Borrelia* may mediate mammalian host species specificity. Presentation to the Virginia Branch of the American Society for Microbiology Meeting, Lynchburg, VA.

Rhodes, D. V. L., Earnhart, C. G., and Marconi, R. T. 2010. Analysis of ligand binding domain 2 (LBD2) surface charge on *Borrelia burgdorferi* infectivity and dissemination. Presentation to the Virginia Branch of the American Society for Microbiology Meeting, Lynchburg, VA.

Earnhart, C. G., **LeBlanc, D. V.**, Alix, K. E., Desrosiers, D. C., Radolf, J. D., and Marconi, R. T. 2010. Identification of residues within ligand binding domain 1 (LBD1) of the *B. burgdorferi* OspC protein required for function in the mammalian environment. Poster. Presentation to the Gordon Conference on the Biology of Spirochetes, Ventura, CA.

Earnhart, C. G., **LeBlanc, D. V.**, Desrosiers, D. C., Radolf, J. D., and Marconi, R. T. 2009. Allelic exchange replacement of *B. burgdorferi* outer surface protein C (*ospC*) with site-directed mutants that alter a putative ligand binding pocket dramatically influences infectivity and dissemination properties. Presentation to the Virginia Branch of the American Society for Microbiology Meeting, Richmond, VA.

LeBlanc, D. V., Earnhart, C. G., and Marconi R. T. 2009. Analysis of Differences in Common Outer Surface Protein C (OspC) Types Found During Canine and Human Lyme Disease: Investigation of the Use of Dogs as a Sentinel. Presented to the Virginia Branch of the American Society of Microbiology. Richmond, VA.

LeBlanc, D. V., Earnhart, C. G., and Marconi, R. T. 2009. Identification of the Predominant OspC Types Found During Canine Lyme Borreliosis. Poster. Presentation to the 26th Annual Daniel T. Watt's Day Research Symposium. Richmond, VA.

LeBlanc, D. V., Earnhart, C. G., and Marconi, R. T. 2009. Identification of the Predominant OspC Types Found During Canine Lyme Borreliosis. Poster. Presentation to the Summit on Systems Biology. Richmond, VA.

Earnhart, C. G., **LeBlanc, D. V.**, Desrosiers, D. C., Radolf, J. D., and Marconi, R. T. 2009. Mutations altering protein structure of surface electrostatic charge of *Borrelia burgdorferi* outer surface protein C can modify infectivity and dissemination in the murine model of Lyme disease. Poster. Presentation to the Summit on Systems Biology, Richmond, VA.

LeBlanc, D. V., Earnhart, C. G., and Marconi, R. T. 2009. Identification of the Predominant OspC Types Found During Canine Lyme Borreliosis. Poster. Presentation to the Mid-Atlantic Microbial Pathogenesis Meeting. Wintergreen, VA.

Earnhart, C. G., **LeBlanc, D. V.**, and Marconi, R. T., 2009. Development of an outer surface protein C (OspC)-based polyvalent chimeric Lyme disease vaccine for use as a companion animal vaccine. Poster. Presentation to the Mid-Atlantic Microbial Pathogenesis Meeting. Wintergreen, VA.

LeBlanc, D. V., Earnhart, C. G., Meeus, P., and Marconi, R. T. 2008. Development of a second generation, canine Lyme vaccine: Identification of the predominant OspC types found in canine Lyme borreliosis. Presented to the Virginia Branch of the American Society of Microbiology. Harrisonburg, VA.

LeBlanc, D. V., Freedman, J. C., McDowell, J. V., and Marconi, R. T. 2008. Inactivation of spirochetal Factor H binding proteins using allelic exchange mutagenesis. Poster. Presentation to the 25th Annual Daniel T. Watt's Day Research Symposium. Richmond, VA.

LeBlanc, D.V., McMahan, J. L., Vazquez, J. V., and Brooks, C. S. 2007. Reservoir Competence of North American Bird and Rodent Species for the Lyme Disease Spirochete, *Borrelia burgdorferi*. Poster. Presented for Graduate Education Week. Nashville, TN.

LeBlanc, D.V., McMahan, J. L., Vazquez, J. V., and Brooks, C. S. 2007. Endemicity of *Borrelia burgdorferi*, the bacterial agent of Lyme disease, in Middle Tennessee. Presentation to the Land Between the Lakes Research Forum. Golden Pond, KY.

LeBlanc, D.V., McMahan, J. L., Vazquez, J. V., and Brooks, C. S. 2007. Reservoir Competence of North American Bird and Rodent Species for the Lyme Disease Spirochete, *Borrelia burgdorferi*. Poster. Presentation to the College of Science and Math Research Forum. Clarksville, TN.

LeBlanc, D.V., McMahan, J. L., Vazquez, J. V., and Brooks, C. S. 2006. Endemicity of *Borrelia burgdorferi*, the bacterial agent of Lyme disease, in Middle Tennessee. Presentation to the Tennessee Academy of Science. Clarksville, TN.