

JUSTIN DAVID RADOLF, M.D--CURRICULUM VITAE**PERSONAL DATA**

Address: Department of Medicine
Uconn Health
263 Farmington Ave.
Farmington, CT 06030-3710

Telephone No: 860 679-8480 (w)

Email: JRadolf@uchc.edu

EDUCATION

1975 B.S., Biology, Yale University

1979 M.D., University of California, San Francisco

PROFESSIONAL EXPERIENCE

1970 Summer Science Training Program, Jackson Laboratories, Bar Harbor Maine

1975 Summer Science Training Program, Dept. of Biology, Brookhaven National Laboratories, Upton, NY

1979-82 Resident, Internal Medicine, Hospital of the Univ. of Pennsylvania, Philadelphia, PA

1982-84 Fellow, Infectious Diseases, UCLA

1984-86 Postdoctoral Research Fellow, UCLA

1986-92 Assistant Professor, Depts. of Internal Medicine and Microbiology, U.T. Southwestern Medical Center at Dallas, Texas

1992-97 Associate Professor, Depts. of Internal Medicine and Microbiology, U.T. Southwestern Medical Center

1997-99 Professor, Depts. of Internal Medicine and Microbiology, U.T. Southwestern Medical Center

1997-99 Director, Fellowship Training, Division of Infectious Diseases, U.T. Southwestern Medical Center

1998-99 Chairman, Graduate Program in Molecular Microbiology, U.T. Southwestern Medical Center

1999- Professor of Medicine, University of CT Health Center

1999-02 Founding Director, Center for Microbial Pathogenesis, University of CT Health Center

2000 Professor, Genetics and Developmental Biology (now Genetics and Genomic Sciences), UCHC

2010	Professor, Department of Pediatrics, UCHC
2010	Senior Scientific Advisor, Connecticut Children's
2011	Professor, Department of Immunology, UCHC
2012	Professor, Department of Molecular Biology and Biophysics, UCHC
2013	Research Associate, Centro Internacional de Entrenamiento e Investigaciones Medicas (CIDEIM), Cali, Colombia
2014	Faculty, University of North Carolina Project China D43 Training Grant
2018	Director of Research, UConn Health Department of Medicine
2019	Advisory Committee Member, Institute for Global Health and Sexually Transmitted Diseases, Southern Medical University, Guangzhou, China
2022	Senior Scientific Advisor, Connecticut Children's and Connecticut Children's Research Institute

BOARD CERTIFICATION

1982	Internal Medicine
1984	Infectious Diseases

AWARDS AND HONORS

1970	National Merit Scholar
1975	Cum laude, Yale University
1984	Pfizer Medical Research Merit Award
1984-86	American Social Health Association Postdoctoral Research Fellowship
1985	American Society for Microbiology ICAAC Young Investigator Award
1986-88	Pfizer Scholars Award for New Faculty
1989-92	Scholar of the American Foundation for AIDS Research
1992-97	American Heart Association Established Investigatorship Award
1997	Member, American Society for Clinical Investigation
2002	NIH/NIAID Merit Award
2014	Vice-Chair Gordon Research Conference on the Biology of Spirochetes
2016	Chair, Gordon Research Conference on the Biology of Spirochetes

2017

Elected to fellowship in the American Academy of Microbiology (American Society for Microbiology)

PROFESSIONAL SOCIETIES

Infectious Diseases Society of America (fellow)
 American Society for Microbiology
 American Society for Clinical Investigation
 Connecticut Infectious Disease Society
 International Endotoxin Society

EDITORIAL BOARDS

Journal of Infectious Diseases (2007-)
 Infection and Immunity (1995-2003) and (2015-2017)
 Sexually Transmitted Diseases (1995-2014)
 Molecular Microbiology (2008-2011) and (2018-)

ad hoc reviewer for Annals of Internal Medicine, Journal of Biological Chemistry, Clinical Infectious Diseases, Journal of Bacteriology, Journal of Immunology, Clinical Chemistry, Journal of Clinical Microbiology, Nature Medicine, Nature Microbiology, Nature Reviews, Microbiology, New England Journal of Medicine, Plasmid, Gene, Microbes and Infection, Sexually Transmitted Infections, Journal of Molecular Evolution, Clinical and Diagnostic Laboratory Immunology, Human Immunology, Clinical Microbiology Reviews, Cell Host and Microbe, PLOS One, PLOS Pathogens, BMC Microbiology, Archives of Microbiology, Am J Pathology, Scientific Reports, Lancet Global Public Health

STUDY SECTIONS/REVIEW PANELS/ADVISORY GROUPS

1. NIAID special emphasis panels reviewing grants or contracts on Lyme disease pathogenesis (2/91); mycoplasma and HIV infection (7/91); animal models of Lyme disease (11/91); tick-mammalian host interactions in Lyme disease (3/96); chronic Lyme disease (5/97); neuroborreliosis (11/98); Vaccine research centers (3/00); *B. burgdorferi* molecular genetics (8/00), and chancroid molecular/cellular pathogenesis (4/02).
2. National Arthritis Foundation Clinical and Applied Immunology study section (11/91-10/93).
3. Scientific advisory council for the 11th bi-annual meeting of the International Society for STD Research (8/95, New Orleans).
4. Bacteriology and Mycology 1 Study Section (7/95-6/99).
5. NIH Advisory Panel on Studies of Chronic Lyme disease (1996-2001).
6. NIGMS special emphasis panel reviewing large scale collaborative research (GLUE) grant applications (4/01).
7. NIGMS/NIAID Special Emphasis Panel reviewing grant applications in response to RFA entitled "Infectious Etiology of Chronic Diseases: novel approaches to pathogen detection" (10/01).
8. Scientific Advisory Board for the Ninth International Conference on Lyme Borreliosis (8/02, NYC).

9. NHLBI Special Emphasis Panel reviewing grant applications in response to RFA entitled "The Role of Infectious Agents in Vascular Disease", (6/02).
10. Infectious Diseases and Microbiology Integrated Research Group Study Section Boundaries Team, Center for Scientific Review, National Institutes of Health (7/02).
11. Ad hoc reviewer for the Medical Research Council, United Kingdom (4/05).
12. Reviewer for the 15th International Society for STD Research (ISSTDR) biannual meeting, Amsterdam, The Netherlands, 2005.
13. Reviewer for the 17th International Society for STD Research (ISSTDR) biannual meeting, Seattle, WA, 2007.
14. Reviewer for the 19th International Society for STD Research (ISSTDR), London, UK, 2009.
15. NIH/NIAID: Special emphasis panel reviewing applications for the Regional Centers of Excellence for Biodefense and Emerging Infectious Diseases (10/08).
16. NASA: Special emphasis panel reviewing proposals for RFA entitled "Research Opportunities for Fundamental Space Biology Investigations in Microbial, Plant and Cell Biology".
17. CDC Task Force to produce recommendations for the Laboratory Diagnosis of *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Treponema pallidum* (1/09).
18. Reviewer for the 19th International Society for STD Research (ISSTDR) biannual meeting, London, UK
19. Planning committee and Scientific Faculty for the 2013 International Conference on Lyme Boreliosis and other Tick Borne Diseases, Boston, MA
20. Immunology of B Cells in Syphilis (IBIS): a project to use state of the art methodologies for the study of syphilis involving the University of Connecticut Health Center, the University of North Carolina at Chapel Hill, the Duke University Vaccine, and the Guangzhou, China Sexually Transmitted Diseases Control Unit.
21. F13 Infectious Diseases and Microbiology Fellowship Panel: ZRG1 F13-C (20) L, March 20-21, 2014
22. NIH/NIAID Study Section: Topics in Bacterial Pathogenesis (IDM-B 80), October 26-27, 2014
23. NIH/NIAID Study Section: Topics in Bacterial Pathogenesis (IDM-B 80), March 2-3, 2015
24. NIH/NIAID Study Section: Topics in Bacterial Pathogenesis (IMDM-B 80), October 29-30, 2015
25. Advisory Board, Bay Area Lyme Foundation
26. UConn Convergence Grants Review Panel, April, 2016
27. NIH/NIAID Bacterial Pathogenesis Study Section (BACP), June 26-27, 2017
28. NIH Workshop on the Development of a Syphilis Vaccine: August 30-31, 2017, Rockville, MD.
29. UConn Microbiome Research Seed Grants Review Panel, Dec 7, 2017
30. UConn Microbiome Research Seed Grants Review Panel, Nov 20, 2018.

31. NIH/NIAID Workshop on Congenital Syphilis. "Identifying Knowledge Gaps and Developing Innovative Strategies Towards Elimination of Congenital Syphilis". Rockville, MD.
32. NIH/NIAID: Study section for RFA on tick-borne diseases. January 30-31, 2020, Bethesda, MD.
33. NIH/NIAID Bacterial Pathogenesis (BACP) Study Section, June 17, 2021.
34. NIH/NIAID Special Emphasis Panel on "Vaccine Development and Vector Biology", December 8, 2021.

PUBLICATIONS (PEER-REVIEWED)

1. Fehniger TE, Walfield AM, Cunningham TM, **Radolf JD**, Miller JN, and Lovett MA. Purification and characterization of a cloned, protease-resistant *Treponema pallidum*-specific antigen. *Infect Immun* 1984;46:598-607.
2. Fehniger TE, **Radolf JD**, and Lovett MA. Properties of an ordered ring structure formed by recombinant *Treponema pallidum* surface antigen 4D. *J Bacteriol* 1986;165:732-739.
3. **Radolf JD**, Fehniger TE, Silverblatt FJ, Miller JN, and Lovett MA. The surface of virulent *Treponema pallidum*: resistance to antibody binding in the absence of complement and surface association of recombinant antigen 4D. *Infect Immun* 1986;52:579-585.
4. Fehniger TE, **Radolf JD**, Walfield AM, Cunningham TM, Miller JN, and Lovett MA. Native surface association of a recombinant 38-kDa *Treponema pallidum* antigen isolated from the *Escherichia coli* outer membrane. *Infect Immun* 1986;52:586-593.
5. **Radolf JD**, Lernhardt EB, Fehniger TE, and Lovett MA. Serodiagnosis of syphilis by enzyme-linked immunosorbent assay with purified recombinant *Treponema pallidum* antigen 4D. *J Infect Dis* 1986;153:1023-1027.
6. Blanco DR, **Radolf JD**, Lovett MA, and Miller JN. Correlation of treponemicidal activity in normal human serum with the presence of IgG antibody directed against polypeptides of *Treponema phagedenis* biotype Reiter and *Treponema pallidum*, Nichols strain. *J Immunol* 1986;137:2031-2036.
7. Blanco DR, **Radolf JD**, Lovett MA, and Miller JN. The antigenic interrelationship between the endoflagella of *Treponema phagedenis* biotype Reiter and *Treponema pallidum*, Nichols strain: I. Treponemicidal activity of cross-reactive endoflagellar antibodies against *T. pallidum*. *J Immunol* 1986;137:2973-2979.
8. **Radolf JD**, Blanco DR, Miller JN, and Lovett MA. The antigenic interrelationship between endoflagella of *Treponema phagedenis* biotype Reiter and *Treponema pallidum*, Nichols strain: molecular characterization of endoflagellar proteins. *Infect Immun* 1986;54:626-634.
9. **Radolf JD**, Borenstein LB, Fehniger TE, Kim J and Lovett MA. Role of disulfide bonds in the oligomeric structure and protease resistance of recombinant and native *Treponema pallidum* surface antigen 4D. *J Bacteriol* 1987;169:1365-1371.
10. Gonzales FR, Leachman S, Norgard MV, **Radolf JD**, McCracken GH Jr, Evans C, and Hansen EJ. Cloning and expression in *Escherichia coli* of the gene encoding the heat-modifiable major outer membrane protein of *Haemophilus influenzae* type b. *Infect Immun* 1987;55:2993-3000.

11. Jacobson MA, **Radolf JD**, and Young LS. Human IgG antibodies to *Pseudomonas aeruginosa* core lipopolysaccharide determinants are detected in chronic but not acute *Pseudomonas* infection. *Scand J Infect Dis* 1987;19:649-660.
12. Chamberlain NR, **Radolf JD**, Pei-Ling Hsu, Sell S, and Norgard MV. Genetic and physicochemical characterization of the recombinant 47 kilodalton surface immunogen of *Treponema pallidum* subsp. *pallidum*. *Infect Immun* 1988;56:71-78.
13. **Radolf JD**, Chamberlain NR, Clausell A, and Norgard MV. Identification and localization of integral membrane proteins of virulent *Treponema pallidum* subsp. *pallidum* by phase partitioning with the nonionic detergent Triton X-114. *Infect Immun* 1988;56:490-498.
14. **Radolf JD** and Kaplan RP. Unusual manifestations of secondary syphilis and abnormal humoral immune response to *Treponema pallidum* antigens in a homosexual male with asymptomatic human immunodeficiency virus infection. *J Amer Acad Dermatol* 1988;18: (Part 2):423-428.
15. Borenstein LB, **Radolf JD**, Fehniger TE, Blanco DR, Miller JN, and Lovett MA. Immunization with recombinant *Treponema pallidum* surface antigen 4D alters the course of experimental syphilis. *J Immunol* 1988;140:2415-2421.
16. **Radolf JD** and Norgard MV. Pathogen-specificity of *Treponema pallidum* subsp. *pallidum* integral membrane proteins identified by phase partitioning with Triton X-114. *Infect Immun* 1988;56:1825-1828.
17. Hsu P-L, Chamberlain NR, Orth K, Moomaw CR, Zhang L.Q, Slaughter CA, **Radolf JD**, Sell S, and Norgard MV. Sequence analysis of the 47-kilodalton major integral membrane immunogen of *Treponema pallidum*. *Infect Immun* 1989;57:196-203.
18. **Radolf JD**, Norgard MV, and Schulz W W. Outer membrane ultrastructure explains the limited antigenicity of virulent *Treponema pallidum*. *Proc Natl Acad Sci (USA)* 1989;86:2051-2055.
19. **Radolf JD**, Moomaw C, Slaughter CA, and Norgard MV. Penicillin-binding proteins and peptidoglycan of *Treponema pallidum* subsp. *pallidum*. *Infect Immun* 1989;57:1248-1254.
20. Patrick CC, Pelzel SE, Miller EE, Haanes-Fritz E, **Radolf JD**, Gulig PA, McCracken GH, Jr., and Hansen EJ. Antigenic evidence for simultaneous expression of two different lipooligosaccharides by some strains of *Haemophilus influenzae* type B. *Infect Immun* 1989;57:1971-1978.
21. Hansen EJ, Pelzel SE, Orth K, Moomaw CR, **Radolf JD**, Slaughter CA. Structural and antigenic conservation of the P2 porin protein among strains of *Haemophilus influenzae* type B. *Infect Immun* 1989;57:3270-3275.
22. McGehee JL, **Radolf JD**, Toews GB, and Hansen EJ. Effect of primary immunization on clearance of nontypable *Haemophilus influenzae*. *Amer J Respir Cell Mol Biol* 1989;1:201-210.
23. Jackman JD, Jr. and **Radolf JD**. Cardiovascular syphilis. *Am J Med* 1989;87:425-433.
24. Chamberlain NR, Brandt ME, Erwin AL, **Radolf JD**, and Norgard MV. Major integral membrane protein immunogens of *Treponema pallidum* are proteolipids. *Infect Immun*. 1989;57:2872-2877.
25. Chamberlain NR, DeOgny L, Slaughter C, **Radolf JD**, and Norgard MV. Acylation of the 47-kilodalton major membrane immunogen of *Treponema pallidum* determines its hydrophobicity. *Infect Immun* 1989;57:2878-2885.

26. Swancutt MA, Riley BS, **Radolf JD**, and Norgard MV. Molecular characterization of the pathogen-specific 34-kilodalton membrane immunogen of *Treponema pallidum*. *Infect Immun* 1989;57:3314-3323.
27. Isaacs RD, Hanke JH, Guzman-Verduzco L-M, Newport G, Agabian N, Lukehart SA, Norgard MV, and **Radolf JD**. Molecular cloning and DNA sequence analysis of the 37-kilodalton endoflagellar sheath protein of *Treponema pallidum*. *Infect Immun* 1989;57:3403-3411.
28. Purcell, BK, Chamberlain NR, Goldberg MS, Andrews LP, Robinson EJ, and Norgard MV, **Radolf JD**. Molecular cloning and characterization of the 15-kilodalton major immunogen of *Treponema pallidum*. *Infect Immun* 1989;57:3708-3714.
29. Swancutt MA, **Radolf JD**, and Norgard MV. The 34-kilodalton membrane immunogen of *Treponema pallidum* is a lipoprotein. *Infect Immun* 1990;58:384-392.
30. Brandt ME, Riley BS, **Radolf JD**, Norgard MV. Immunogenic integral membrane proteins of *Borrelia burgdorferi* are lipoproteins. *Infect Immun* 1990;58:983-991.
31. Isaacs RD and **Radolf JD**. Expression in *Escherichia coli* of the 37-kilodalton endoflagellar sheath protein of *Treponema pallidum* by use of the polymerase chain reaction and a T7 expression system. *Infect Immun* 1990;58:2025-2034.
32. Purcell BK, Swancutt M, and **Radolf JD**. Lipid modification of the 15-kilodalton major membrane protein of *Treponema pallidum*. *Mol Microbiol* 1990;4:1371-1379.
33. Burstain JM, Grimprel E, Lukehart SA, Norgard MV, and **Radolf JD**. Sensitive detection of *Treponema pallidum* by using the polymerase chain reaction. *J Clin Microbiol* 1991;29:62-69.
34. Purcell BK, Richardson JA, **Radolf JD**, and Hansen EJ. A temperature-dependent rabbit model for production of dermal lesions by *Haemophilus ducreyi*. *J Infect Dis* 1991;164:359-367.
35. Grimprel E, Sanchez PJ, Wendel GD, Burstain JM, McCracken GH Jr., **Radolf JD**, and Norgard MV. Use of polymerase chain reaction and rabbit infectivity to detect *Treponema pallidum* in amniotic fluid, fetal and neonatal sera, and cerebrospinal fluid. *J Clin Microbiol* 1991;29:1711-1718.
36. **Radolf JD**, Norgard MV, Brandt ME, Isaacs RD, Thompson PA, and Beutler B. Lipoproteins of *Borrelia burgdorferi* and *Treponema pallidum* activate cachectin/tumor necrosis factor synthesis. Analysis using a CAT reporter construct. *J Immunol* 1991;147:1968-1974.
37. Brusca JS, McDowall AW, Norgard MV, and **Radolf JD**. Localization of outer surface proteins A and B in both the outer membrane and intracellular compartments of *Borrelia burgdorferi*. *J Bacteriol* 1991;173:8004-8008.
38. Riley BS, Oppenheimer-Marks N, Hansen EJ, **Radolf JD**, and Norgard MV. Virulent *Treponema pallidum* activates human vascular endothelial cells. *J Infect Dis* 1992;165:484-493.
39. Cox DL, Chang P, McDowall AW, and **Radolf JD**. The outer membrane, not a coat of host proteins, limits antigenicity of virulent *Treponema pallidum*. *Infect Immun* 1992;60:1076-1083.
40. Hansen EJ, Latimer JL, Thomas SE, Helminen M, Albritton WL, and **Radolf JD**. Use of electroporation to construct isogenic mutants of *Haemophilus ducreyi*. *J Bacteriol* 1992;174:5442-5449.

41. Sánchez PJ, Wendel GD, Grimprel E, Goldberg M, Hall M, Arencibia-Mireles O, **Radolf JD**, and Norgard MV. Evaluation of molecular methodologies and rabbit infectivity testing for the diagnosis of congenital syphilis and neonatal central nervous system invasion by *Treponema pallidum*. J Infect Dis 1993;167:148-157.
42. Akins DR, Purcell BK, Mitra MM, Norgard MV, and **Radolf JD**. Lipid modification of the 17-kilodalton membrane immunogen of *Treponema pallidum* determines macrophage activation as well as amphiphilicity. Infect Immun 1993;61:1202-1210.
43. Bryson Y, Dillon M, Bernstein DI, **Radolf J**, Zakowski P, and Garratty E. Risk of acquisition of genital herpes simplex virus type 2 in sex partners of persons with genital herpes: a prospective couple study. J Infect Dis 1993;167:942-946.
44. **Radolf JD**. Southwestern Internal Medicine Conference. Brucellosis: Don't let it get your goat! Am J Med Sci. 1994;307:64-75.
45. Hansen EJ, Lumbley SR, Richardson JA, Purcell BK, Stevens MK, Cope LD, Datte J, and **Radolf JD**. Induction of protective immunity to *Haemophilus ducreyi* in the temperature-dependent rabbit model of experimental chancroid. J Immunol 1994;152:184-192.
46. **Radolf JD**, Bourell KW, Akins DR, Brusca JS, and Norgard MV. Analysis of *Borrelia burgdorferi* membrane architecture by freeze-fracture electron microscopy. J Bacteriol 1994;176:21-31.
47. Weigel LM, Belisle JT, **Radolf JD**, and Norgard MV. Digoxigenin-ampicillin conjugate for detection of penicillin-binding proteins by chemiluminescence. Antimicrob Agents Chemother 1994;38:330-336.
48. Becker PS, Akins DR, **Radolf JD**, and Norgard MV. Similarity between the 38-kilodalton lipoprotein of *Treponema pallidum* and the glucose/galactose-binding (MglB) protein of *Escherichia coli*. Infect Immun 1994;62:1381-1391.
49. Bourell KW, Schulz W, Norgard MV, and **Radolf JD**. *Treponema pallidum* rare outer membrane proteins: analysis by freeze-fracture electron microscopy. J Bacteriol 1994;176:1598-1608.
50. Belisle JT, Brandt ME, **Radolf JD**, and Norgard MV. Fatty acids of *Treponema pallidum* and *Borrelia burgdorferi* lipoproteins. J Bacteriol 1994;176:2151-2157.
51. DeOgny L, Pramanik BC, Arndt LL, Jones JD, Rush J, Slaughter CA, **Radolf JD**, and Norgard MV. Solid-phase synthesis of biologically-active lipopeptides as analogs for spirochetal lipoproteins. Peptide Res 1994;7:91-97.
52. **Radolf JD**. Role of outer membrane architecture in immune evasion by *Treponema pallidum* and *Borrelia burgdorferi*. Trends Microbiol 1994;2: 307-311.
53. Riley BS, Oppenheimer-Marks N, **Radolf JD**, and Norgard MV. Virulent *Treponema pallidum* promotes adhesion of leukocytes to human vascular endothelial cells. Infect Immun 1994;62:4622-4625.
54. Weigel LM, **Radolf JD**, and Norgard MV. The 47-kDa major lipoprotein immunogen of *Treponema pallidum* is a penicillin-binding protein with carboxypeptidase activity. Proc Natl Acad Sci (USA) 1994;91:11611-11615.
55. **Radolf JD**, Arndt LL, Akins DR, Curetty LL, Levi ME, Shen Y, Davis LS, and Norgard MV. *Treponema pallidum* and *Borrelia burgdorferi* lipoproteins and synthetic lipopeptides activate monocytes/macrophages. J Immunol 1995;154:2866-2877.

56. Hansen EJ, Lumbley SR, Saxen H, Kern K, Cope LD, and **Radolf JD**. Detection of *Haemophilus ducreyi* lipooligosaccharide by means of an immunolimus assay. *J Immunol Meth* 1995;185:225-235.
57. Cox DL, Akins DR, Porcella SF, Norgard MV, and **Radolf JD**. *Treponema pallidum* in gel microdroplets: a novel strategy for investigation of treponemal molecular architecture. *Mol Microbiol* 1995;15:1151-1164.
58. Norgard MV, Riley BS, Richardson JA, and **Radolf JD**. Dermal inflammation elicited by synthetic analogs of *Treponema pallidum* and *Borrelia burgdorferi* lipoproteins. *Infect Immun* 1995;63:1507-1515.
59. **Radolf JD**. *Treponema pallidum* and the quest for outer membrane proteins. *Mol Microbiol* 1995;16:1067-1073.
60. Alfa MJ, Stevens MK, DeGagne P, Klesney-Tait J, **Radolf JD**, and Hansen EJ. Use of tissue culture and animal models to identify virulence-associated traits of *Haemophilus ducreyi*. *Infect Immun* 1995; 63:1754-1761.
61. **Radolf JD**, Goldberg MS, Bourell K, Baker SI, Jones JD, and Norgard MV. Characterization of outer membranes isolated from *Borrelia burgdorferi*, the Lyme disease spirochete. *Infect Immun* 1995;63:2154-2163.
62. Jones JD, Bourell KW, Norgard MV, and **Radolf JD**. Membrane topology of *Borrelia burgdorferi* and *Treponema pallidum* lipoproteins. *Infect Immun* 1995; 63:2424-2434.
63. Stevens MK, Cope LD, **Radolf JD**, and Hansen EJ. A system for generalized mutagenesis of *Haemophilus ducreyi*. *Infect Immun* 1995;63:2976-2982.
64. Akins DR, Porcella SF, Popova TG, Shevchenko D, Baker SI, Li M, Norgard MV, and **Radolf JD**. Evidence for *in vivo* but not *in vitro* expression of a *Borrelia burgdorferi* outer surface protein (OspF) homologue. *Mol Microbiol* 1995;18:507-520.
65. **Radolf JD**, Robinson EJ, Bourell KW, Akins DR, Porcella SF, Weigel LM, Jones JD, and Norgard MV. Characterization of outer membranes isolated from *Treponema pallidum*, the syphilis spirochete. *Infect Immun* 1995;63:4244-4255.
66. Norgard MV, Baker SI, and **Radolf JD**. Chemiluminescent analysis of *Borrelia burgdorferi* penicillin-binding proteins using ampicillin conjugated to digoxigenin. *Microb Pathogen* 1995;19:257-272.
67. Stevens MK, Porcella S, Lumbley S, Klesney-Tait J, Lumbley S, Thomas SE, Norgard MV, **Radolf JD**, and Hansen EJ. A hemoglobin-binding outer membrane protein is involved in virulence expression by *Haemophilus ducreyi* in an animal model. *Infect Immun* 1996;64:1724-1735.
68. Sellati TJ, Abrescia LD, **Radolf JD**, and Furie MB. Outer surface lipoproteins of *Borrelia burgdorferi* activate vascular endothelium *in vitro*. *Infect Immun* 1996;64:3180-3187.
69. Porcella SF, Popova TG, Hagman KE, Penn CW, **Radolf JD**, and Norgard MV. A *mgl*-like operon in *Treponema pallidum*, the syphilis spirochete. *Gene* 1996;177:115-121.
70. Porcella SF, Popova TG, Akins DR, Li M, **Radolf JD**, and Norgard MV. *Borrelia burgdorferi* supercoiled plasmids encode multi-copy tandem open reading frames and a lipoprotein gene family. *J Bacteriol* 1996;178:3293-3307.

71. Cox DL, Akins DR, Bourell KW, Lahdenne P, Norgard MV, and **Radolf JD**. Limited surface exposure of *Borrelia burgdorferi* outer surface lipoproteins. Proc Natl Acad Sci (USA) 1996;93:7973-7978.
72. Stevens MK, Hassett DJ, **Radolf JD**, and Hansen EJ. Cloning and sequencing of the gene encoding Cu,Zn-superoxide dismutase of *Haemophilus ducreyi*. Gene 1996;183:35-40.
73. Rademacher SE and **Radolf JD**. Prominent osseous and unusual dermatologic manifestations of early syphilis in two patients with discordant serological statuses for human immunodeficiency virus infection. Clin Infect Dis 1996;23:462-467.
74. Norgard MV, Arndt LL, Akins DR, Curetty LL, Harrich DA, and **Radolf JD**. Activation of human monocytic cells by *Treponema pallidum* and *Borrelia burgdorferi* lipoproteins and synthetic lipopeptides proceeds via a pathway distinct from that of lipopolysaccharide but involves the transcriptional activator NF-kB. Infect Immun 1996;64:3845-3852.
75. Lahdenne P, Porcella SF, Hagman KE, Akins DR, Popova TG, Cox DL, Katona LI, **Radolf JD**, and Norgard MV. Molecular characterization of a 6.6-kilodalton *Borrelia burgdorferi* outer membrane-associated lipoprotein which appears to be downregulated during mammalian infection. Infect Immun 1997;65:412-421.
76. Klesney-Tait J, Hiltke TJ, Maciver I, Spinola SM, **Radolf JD**, and Hansen EJ. The major outer membrane protein of *Haemophilus ducreyi* consists of two OmpA homologs. J Bacteriol 1997;179:1764-1773.
77. Stevens MK, Klesney-Tait J, Lumbley S, Walters KA, Joffe AM, **Radolf JD**, and Hansen EJ. Identification of tandem genes involved in lipopolysaccharide expression by *Haemophilus ducreyi*. Infect Immun 1997;65:651-660.
78. Cope LD, Lumbley S, Latimer JL, Klesney-Tait J, Stevens MK, Johnson LS, Purven MS, Munson RS Jr., Lagergard T, **Radolf JD**, and Hansen EJ. A diffusible cytotoxin of *Haemophilus ducreyi*. Proc Natl Acad Sci (USA). 1997;94:4056-4061.
79. Shevchenko DV, Akins DR, Robinson E, Li M, Popova TG, Cox DL, and **Radolf JD**. Molecular characterization and cellular localization of TpLRR, a processed leucine-rich repeat protein of *Treponema pallidum*, the syphilis spirochete. J Bacteriol. 1997;179:3188-3195.
80. Hardham JM, Stamm LV, Porcella SF, Frye JG, Barnes NY, Howell JK, Mueller SL, **Radolf JD**, Weinstock GM, and Norris SJ. Identification and transcriptional analysis of a *Treponema pallidum* operon encoding a putative ABC transport system, an iron-activated repressor homolog, and a glycolytic pathway enzyme homolog. Gene. 1997;197:47-64.
81. Rolfs RT, Joesoef MR, Hendershot EF, Rompalo AM, Augenbraum MH, Chiu M, Bolan G, Johnson SC, French P, Steen E, **Radolf JD**, Larsen S for The Syphilis and HIV Study Group. A randomized trial of enhanced therapy for early syphilis in patients with and without human immunodeficiency virus infection. New Engl J Med. 1997;337:307-314.
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CHAPTERS, INVITED REVIEWS, ETC.

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INVITED SYMPOSIA AND SPEAKING ENGAGEMENTS

January, 5, 1987: "Syphilis 1987: Goodbye, Columbus". Presented at the Sexually Transmitted Diseases Seminar Series, U.T. Southwestern Medical Center and Dallas County Public Health Department.

April, 1988: Participant, panel discussion on "Syphilis and HIV Infection", Centers for Disease Control, Atlanta, GA.

April 11-14, 1989: "Molecular and ultrastructural Analysis of the *Treponema pallidum* outer membrane" presented at a World Health Organization-sponsored symposium entitled "The Biology and the Pathogenicity of Treponemes" held at the University of Birmingham, Birmingham, UK.

May, 1989: "Analysis of the *Treponema pallidum* outer membrane by freeze-fracture electron microscopy". Presented at a symposium entitled "Special Topics in Modern Treponema Research, Annual Meeting of the American Society for Microbiology, New Orleans, LA.

August 20, 1989: "Towards a molecular biology of *Treponema pallidum*". Sexually Transmitted Diseases Seminar, Harborview Medical Center, University of Washington, Seattle, WA.

February 16, 1989: "Molecular biology of neurosyphilis". Medical Genetics Rounds, UT Southwestern Medical Center.

May 9, 1990: Moderator "Molecular biology of pathogens", Annual Meeting of the American Society for Microbiology, Anaheim, CA.

June 16 and 17, 1990: "Syphilis and HIV Infection" and "Lyme disease 1990". Annual meeting of the Texas Infectious Diseases Society, Bandera, TX.

August 29, 1990: "Developing a molecular biology of syphilis". Infectious Diseases seminar at Brown University, Providence, R.I.

November 27-28, 1990: Invited participant, NIH symposium on Lyme disease, Bethesda, MD.

December 11, 1990: "Spirochete lipoproteins: Molecular biology and Implications for disease pathogenesis". Department of Microbiology, University of Alabama at Birmingham.

April 7-10, 1991: "Immunology and molecular biology of spirochetal lipoproteins". First Cold Spring Harbor Laboratory Symposium on the Immunobiology of Lyme Disease, Cold Spring Harbor, N.Y.

May 6, 1991: Organized and chaired symposium at the Annual Meeting of the American for Microbiology entitled "New Directions in the Study of the Pathogenesis of Sexually Transmitted Diseases". Also made a presentation entitled "Ultrastructure and molecular biology of *Treponema pallidum*: Implications for syphilis pathogenesis".

June, 1991: "Triton X-114 phase partitioning of spirochetal membrane proteins". 7th International Conference on Partitioning in Aqueous Two-Phase Systems, New Orleans, LA.

July, 30-August 3, 1991: participant in an NIH-sponsored symposium entitled "The Molecular Immunology of Sexually Transmitted Diseases" held at the Rocky Mountain National Laboratories, Hamilton, MN. Presented a synopsis of my research on *T. pallidum* molecular biology and ultrastructure.

Sept. 11-12, 1991: "Molecular immunology of spirochetal lipoproteins". Presented at an NIH-sponsored symposium on Lyme disease, Rocky Mountain National Laboratories, Hamilton, Montana.

October 21-23, 1991: Invited participant in symposium entitled "Molecular Biology of Spirochetes", Annecy, France (unable to attend).

November 19, 1991: "Spirochete ultrastructure and molecular biology: Implications for pathogenesis". Division of Infectious Diseases seminar, Vanderbilt University, Nashville, TN.

April 11-12, 1992: "Surface components of *Borrelia burgdorferi*". Presented at symposium entitled "Lyme Borreliosis, 1992 State of the Art Conference" held in Stamford, CT, sponsored by the Lyme Borreliosis Foundation and the Stamford, CT Dept. of Public Health.

October 3, 1992: "*Treponema pallidum* ultrastructure: Implications for syphilis pathogenesis". Presented at the annual meeting of the Texas chapter of the American Society of Microbiology, San Antonio, TX.

March 29-31, 1992: "New Insights into the molecular architecture of *Borrelia burgdorferi*". Presented at a symposium on the Immunobiology of Lyme Disease held at Cold Spring Harbor Laboratories, Cold Spring Harbor, NY.

September 11, 1993: "Lyme Disease 1993: of mice and men". Presented at the annual meeting of the Oklahoma Infectious Diseases Society.

January, 1994: "Outer membrane ultrastructure as a major virulence factor of *Treponema pallidum*". Presented at the First Gordon Conference on the Biology of Spirochetes, January 2-7, 1994, Ventura, CA.

April, 1994: "Syphilis in the HIV Era". International Society for Infectious Diseases, Prague, Czech Republic.

January 24, 1995: "*Borrelia burgdorferi* molecular Architecture and Lyme disease pathogenesis", Division of Infectious Diseases seminar, SUNY at Downstate Medical Center.

April 18, 1995: "Syphilis and rare outer membrane proteins". Keystone Symposium entitled "Sexually Transmitted Diseases in the HIV Era", Keystone, Colorado.

July 12, 1995: "*Treponema pallidum* molecular architecture: Implications for syphilis pathogenesis", SUNY at Stony Brook.

August 28, 1995: "The Molecular biology of *Treponema pallidum*: Where next?". Plenary Session at the International Society for STD Research, New Orleans, LA.

January, 1996: "Outer membrane ultrastructure as a virulence determinant of *Treponema pallidum* and *Borrelia burgdorferi*". Presented at the Second Gordon Conference on the Biology of Spirochetes, Ventura, CA.

March 5, 1996: "Lyme Disease 1996: the clouds are parting", the McBee Lectureship at Baylor Medical Center, Department of Internal Medicine.

August 1, 1996: "Lyme Disease 1996", Dermatology Grand Rounds, UT Southwestern and St. Paul's Medical Centers.

October 4, 1996: "*Treponema pallidum* molecular architecture: Implications for disease pathogenesis and vaccine development. Infectious Diseases Research Seminar Series, Univ. of Cincinnati, Cincinnati, OH.

October 7, 1996: "Syphilis and HIV: results of a prospective, multicenter, CDC sponsored study of syphilis and HIV infection". Sexually Transmitted Diseases Seminar Series, sponsored by the Division of Infectious Diseases, UT Southwestern Medical Center and the Dallas County Public Health Department.

January, 8, 1997: "Spirochetal Lipoproteins: Structure-function relationships and host responses", presented as part of a symposium on "Membrane-anchored Molecules" at the Annual Meeting of the Society for General Microbiology, Reading, UK.

July 30, 1997: "Spirochetal lipoproteins as inflammatory mediators in syphilis and Lyme disease". Division of Infectious Diseases/Dept. of Microbiology & Immunology seminar at the University of North Carolina, Chapel Hill.

August 21, 1997: "A new animal model for studying *Borrelia burgdorferi* in the mammalian host-adapted state". Department of Biochemistry & Molecular Biology, New York Medical College, Valhalla, NY.

September 29, 1997: "A vaccine for syphilis: the never ending story". Presented as part of a symposium entitled "Vaccines for Sexually Transmitted Diseases", 37th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Toronto, CA.

December 11, 1997: "Spirochetal lipoproteins as inflammatory mediators in syphilis and Lyme disease". Presented as a Division of Infectious Diseases/Department of Microbiology seminar at Louisiana State University School of Medicine, New Orleans, LA.

January 9, 1998: "New model systems for studying mammalian host adaptation by *Borrelia burgdorferi*". Presented as a joint seminar to the Depts. of Molecular Biology and Entomology, Oklahoma State University, Stillwater, OK.

January, 20, 1998: "Identification of rare outer membrane proteins in isolated *Treponema lidum* outer membranes - a reappraisal". Presented at the Third Conference on the Biology of Spirochetes, Ventura, CA.

January 26, 1998: "Syphilis Pathogenesis". Presented as part of a graduate student course on bacterial pathogenesis, NYU Skirball Institute.

January 26, 1998: "New model systems for studying differential gene expression by *Borrelia burgdorferi*". Skirball Institute, NYU School of Medicine, NYC.

February 24, 1998: "*Treponema pallidum* molecular architecture: implications for syphilis pathogenesis" and "A new model system for studying differential gene expression by *Borrelia burgdorferi*". Dept. of Microbiology and Immunology, Medical College of Virginia.

August 24, 1998: "Molecular architecture of *Borrelia burgdorferi*: implications for Lyme disease pathogenesis". Dept. of Microbiology and Internal Medicine at the University of Connecticut Health Sciences Center, Farmington, CT.

September 17, 1998: "Molecular architecture of *Borrelia burgdorferi*: implications for Lyme disease pathogenesis". Dept. of Biology, Brookhaven National Laboratory and Dept. of Internal Medicine, SUNY at Stony Brook, NY.

October 26, 1998: "*Treponema pallidum* biology: doing the best it can with what it's got" and "Pathogenesis of syphilis". International Business Conference-sponsored symposium on Spirochete Diseases (also served as co-organizer and co-Chair).

April 27, 1999: "Molecular architecture of *Treponema pallidum*: implications for syphilis pathogenesis". Depts. of Biochemistry and Microbiology at West Virginia University, Morgantown, W.Va.

May 17, 1999: "Spirochetal lipoproteins as proinflammatory agonists in syphilis and Lyme disease". Infectious Diseases Division, Boston University School of Medicine.

July 9, 1999: "Molecular architecture of *Treponema pallidum*: implications for syphilis pathogenesis". Oswaldo Cruz Foundation, Salvador, Brazil.

October 27, 1999: "Syphilis Pathogenesis" and "New Developments in Syphilis Diagnosis". Brazilian Congress of Microbiology, Salvador, Brazil.

January, 2000: "Structure-function relationships of *Treponema pallidum* membrane proteins". Presented at the Fourth Gordon Research Conference on the Biology of Spirochetes, Ventura, California.

September, 19, 2000: "*Treponema pallidum* and Syphilis Research: lessons from the genome". UCHC GMB&B Faculty Research Seminar Series.

September 28, 2000: "*Treponema pallidum* and syphilis research: Lessons from the genome". Department of Microbiology, Indiana University School of Medicine, Indianapolis, IN.

September 29, 2000: "Spirochetal lipoproteins as proinflammatory agonists in syphilis and Lyme disease". Division of Infectious Diseases, Indiana University School of Medicine, Indianapolis, IN.

November 16, 2000: "Molecular architecture of *Treponema pallidum*: implications for syphilis pathogenesis". Keynote address at the annual meeting of the Center for Excellence in Vaccine Research at UConn, Storrs.

December 13, 2000: "Spirochetal lipoproteins as proinflammatory agonists in syphilis and Lyme disease". Rheumatology Grand Rounds, Yale University School of Medicine, New Haven, CT.

January 11, 2001: "Spirochetal lipoproteins as proinflammatory mediators in syphilis and Lyme disease". Dental Dean's Seminar, University of Connecticut Health Center.

March 22, 2001: "TLR2 responses *in vivo*: bridging innate and adaptive immunity". Presented at the Toll-receptor club, Boston University Medical Center (Dr. D. Golenbock, organizer).

March 29, 2001: "Spirochetal lipoproteins as proinflammatory agonists in syphilis and Lyme disease". Division of Rheumatology, New England Medical Center, Boston, MA.

September, 11, 2001: "*B. burgdorferi* lipoproteins and innate immunity in Lyme disease", NIH-sponsored workshop on neuroborreliosis, Airlie Center, Virginia.

October 11, 2001: "Development of a *Borrelia burgdorferi* shuttle vector: turning the tables", Department of Molecular and Cellular Biology, University of Connecticut, Storrs.

January 23, 2002: Chaired a session on host-pathogen interactions and presented an overview entitled "Lipoproteins, innate immunity, and the cutaneous immune response to *Borrelia burgdorferi*" at the Fifth Gordon Research Conference on the Biology of Spirochetes, Ventura, CA.

March 7, 2002: "Differential expression by *Borrelia burgdorferi* and shuttle vector development: what goes around, comes around", Wadsworth Public Health Laboratories, Albany, NY.

May 21, 2002: Organized and convened a colloquium entitled "Arthropod-vector interactions: the flip-side of human disease" at the 102nd General Meeting of the American Society for Microbiology, Salt Lake City, Utah.

August 19, 2002: "Molecular pathogenesis of Lyme disease" Ninth International Conference on Lyme Borreliosis and other Tick-borne Diseases", New York, NY.

October 20, 2002: "The roll of toll-like receptors in innate inflammatory and immune responses to spirochetal infections". XXVIIth meeting of the Brazilian Society of Immunology, Salvador, Brazil.

May 6, 2003: "Differential gene expression by *Borrelia burgdorferi*: new tools and new paradigms". Department of Microbiology and Molecular Genetics, University of Dentistry and Medicine, New Jersey.

July 29, 2003: "20 years of syphilis research" presented at the Centro Internacional de Entrenamiento e Investigaciones Medicas (CIDIEM), Cali, Colombia.

March 12, 2004: "The Innate-Adaptive Immune Interface in Syphilis and Lyme disease", presented as a special research seminar at Albany Medical College, Albany, NY.

March 29, 2004: "Innate and adaptive immunity: an introduction", presented as a special teaching seminar at CIDEIM, Cali, Colombia.

April 1, 2004: "Syphilis-HIV Interactions: What we do and don't know", presented at the IX Curso Internacional de Enfermedades Infecciosas, X Seminario Integral del Sida y,

March 15, 2005: "Syphilis and Syphilis Research". Presented as a special seminar to students and faculty at Universidad del Valle, Cali Colombia. Sponsored by Drs. Socrates Herrera and Miriam Arevalo, Instituto de Inmunologia del Valle.

March 16 and 17, 2005: "Innate and Adaptive Immunity: An Infectious Disease Doc's Perspective" and "Infectious Diseases in the Post-Genomics Era", presented at the X Curso Internacional de Enfermedades Infecciosas, XI Seminario Integral del Sida y, Cali Colombia, sponsored by Corporacion de Lucha Contra El SIDA, Cali Colombia.

April 5, 2005: "Innate and Adaptive Immunity in Syphilis and Lyme Disease", presented at the UCHC Faculty Research Seminar Series (Dr. Carol Wu, organizer).

August 5, 2005: "Syphilis Research in the 21st Century: One Investigator's Perspective", presented as a special research seminar at the Walter Reed Army Institute for Research, Rockville, MD.

August 9, 2005: "Syphilis Research in the 21st Century: One Investigator's Perspective", presented as a special research seminar at CIDEIM, Cali, Colombia.

December 7, 2005: "Use of green fluorescent protein transcriptional reporters to study differential gene expression by *Borrelia burgdorferi*", presented at a NATO Advanced Research Workshop on the Molecular Biology of Spirochetes, Prague, Czech Republic.

March 17, 2006: "The *Treponema pallidum* outer membrane and what lies beneath", presented at the "Symposium on Pathogenic Spirochetes", a scientific tribute for the 80th birthday of Dr. James N. Miller, sponsored by the UCLA Department of Microbiology, Immunology, and Molecular Genetics.

August 1, 2007: Summary/Highlights: Basic Science Track, presented at the 17th meeting of the ISSTDR/10th IUSTI World Congress, Seattle, WA.

August 28, 2007: "*Treponema pallidum*, the syphilis spirochete: making a living as a stealth pathogen", presented as a Department of Microbiology & Immunology Research Seminar at Medical College of Virginia at Virginia Commonwealth University, Richmond, VA.

August 29, 2007: "Spirochetes and spirochetal diseases"; invited lecture to second year medical students at Medical College of Virginia at Virginia Commonwealth University, Richmond, VA.

September 7, 2006: "Immune recognition by pathogenic spirochetes: looking below the surface, presented as a Department of Medicine Research Seminar at the Division of Infectious Diseases, University of Massachusetts Medical School, Worcester, MA.

September 10, 2007: "Outer membrane proteins of *Treponema pallidum*, the syphilis spirochete"; presented at the Hauptman-Woodward Institute, Buffalo, NY.

September 19, 2007: "Recognition of pathogenic spirochetes by phagosomal signaling", presented as a research seminar in the Department of Veterinary and Animal Sciences, University of Massachusetts, Amherst, MA.

October 5, 2007: "Microbial Pathogenesis: a new frontier in translational research", presented to the pediatric residents at Connecticut Children's Medical Center, Hartford, CT.

November 28, 2007: "Syphilis Pathogenesis: a post-genomics perspective"; presented as Infectious Diseases Grand Rounds, New York Medical College, Valhalla, NY.

January 24, 2008: "The Quest for *Treponema pallidum* outer membrane proteins: a reappraisal", presented at the Eighth Gordon Research Conference on the Biology of Spirochetes, Ventura, CA.

February 28, 2008: "Immune recognition of pathogenic spirochetes by phagosomal signaling". Presented as a research seminar in the Department of Immunology, University of Connecticut Health Center, Farmington, CT.

April 10, 2008: "Immune recognition of pathogenic spirochetes by phagosomal signaling". Presented as a research seminar at the Forsyth Institute, Harvard School of Dental Medicine, Boston, MA.

February 10-11, 2009: "Tracking spirochetes and spirochete gene expression: illuminating the pathogenesis of Lyme disease", presented as a seminar at the Department of Microbiology and Immunology, University of Kentucky, Lexington, KY.

March 5, 2009: "Immune recognition of *Borrelia burgdorferi*, the Lyme disease spirochete by phagosomal signaling: signaling from the grave", presented as a seminar at the Department of Microbiology and Immunology, the University of Maryland School of Medicine, Baltimore, MD.

March 23, 2009: "Tracking spirochetes and spirochete gene expression: illuminating the pathogenesis of Lyme disease", presented as a seminar at the Department of Microbiology and Molecular Genetics, Stony Brook University, Stony Brook, NY.

May 4, 2009: "Tracking spirochetes and spirochete gene expression: illuminating the pathogenesis of Lyme disease", presented as a seminar at the Department of Oral Biology, School of Dental Medicine, SUNY at Buffalo, Buffalo, NY.

February 1, 2010: panel member, THEORETICAL BIOLOGY FORUM: Conceptual Leaps Forward, Spirochetal Research in the 21st Century, at the Ninth Gordon Research Conference on the Biology of Spirochetes, Ventura, CA.

March 18, 2010: "Tracking spirochetes and spirochete gene expression: illuminating the pathogenesis of Lyme disease", presented as a seminar in the Department of Microbiology, LSU Veterinary School, Baton Rouge, LA

April 9, 2010: “Molecular architecture of *Treponema pallidum*: making a living as a stealth pathogen”, presented as a seminar in the Department of Pathology and Laboratory Medicine, UT Houston Medical Center.

March 21, 2011: “The going and coming of Lyme disease: differential gene expression, environmental sensing, and spirochete tracking”, presented as a seminar in the Department of Microbiology and Immunology, University of Calgary, Calgary, CA.

March 29, 2011: “The going and coming of Lyme disease: differential gene expression, environmental sensing, and spirochete tracking”, presented as a basic research seminar in the Inter-city Infectious Diseases Conference, University of Connecticut Health Center.

January 6, 2012: “Molecular architecture of *Treponema pallidum*, the stealth pathogen: a translational perspective”, presented at the Pediatric Translational Research Seminar series, University of Connecticut Health.

April 13, 2012: “My 20+ years of (mostly) successful grant writing”: presented as a special seminar at Connecticut Children’s Medical Center.

April 30, 2012: “Molecular architecture of *Treponema pallidum*: making a living as a stealth pathogen”, presented at the Department of Microbiology and Immunology, University of Oklahoma Health Sciences Center, Oklahoma City, OK

June 20, 2013: “From the front lines: Update on Lyme Disease” presented as Department of Medicine Grand Rounds, University of Connecticut Health Center.

June 26, 2013: “Molecular architecture of *Treponema pallidum*, the stealth pathogen”, presented at the Second South China-UNC Sexually Transmitted Infections Academic Forum, Guangzhou, China.

August 29, 2013: “From the front lines: Update on Lyme disease” presented as Grand Rounds, Middlesex Hospital, Middletown, CT.

July 13-16, 2014: “Syphilis Clinical Immunology”, “Writing an NIH Grant”, and “Syphilis basic immunology: Explaining the duality of syphilis”, presented at the First South China-UNC Advanced STI Clinical and Research Training Course and the Third South China-UNC STI Academic Forum and, Guangzhou, China.

July 29, 2014: “Unmasking the stealth pathogen: characterization of *Treponema palladium* rare outer membrane proteins”, presented at the International Union of Microbiological Societies, Montreal Canada.

October 31, 2016: “Grant writing”, presented at the UNC-South China Colloquium on STI Research 2016: Past Partnerships, Future Collaborations, Guangzhou, China.

November 1, 2016: "Outer membrane proteins of *Treponema pallidum* and syphilis vaccine development", presented at the UNC-South China Colloquium on STI Research 2016: Past Partnerships, Future Collaborations, Guangzhou, China.

January 26, 2017: "From the front lines: update on Lyme disease", presented as Internal Medicine Grand Rounds, University of Massachusetts Medical School, Worcester, MA.

January 31, 2017: "From the front lines: update on Lyme disease", presented as Pediatric Grand Rounds, Connecticut Children's Medical Center, Hartford, MA

July 12, 2017: "Insights into the evolution of syphilis spirochetes within at-risk populations: Sequence variation of outer membrane protein β -barrel domains in clinical samples", presented at the STI and HIV World Congress, Rio de Janeiro, Brazil.

August 30, 2017: "The ongoing quest for *T. pallidum* outer membrane proteins: vaccines as the new frontier", presented at the NIAID Workshop on the Development of a Syphilis Vaccine, August 30-31, 2017, Rockville, MD.

January 22, 2018: ""The *Treponema pallidum* outer membrane: 30+ Years Trying figure out what is out there", presented at the 13th Gordon Research Conference on the Biology of Spirochetes, Ventura, CA.

September 6, 2018: "Gene regulation by *Borrelia burgdorferi* throughout the enzootic cycle: key to persistence", presented as a research seminar in the Department of Veterinary Medicine, University of Maryland, College Park.

November 27, 2018: "A fond and grateful remembrance", presented at a function honoring Dr. Eric J. Hansen upon his retirement from the Department of Microbiology, UT Southwestern Medical Center at Dallas, TX.

February 14, 2019: "Syphilis, a centuries old affliction: Is this the beginning of the end?", presented as Internal Medicine Grand Rounds, UConn Health Department of Medicine.

March 12, 2019: Intercity infectious disease rounds basic science journal club.

March 26, 2019: "The *Treponema pallidum* outer membrane from the outside in", presented at the 2019 Molecular Biology and Biophysics annual retreat.

October 22, 2019: "A structural path to a global syphilis vaccine: The *Treponema pallidum* OMPeome". Presented as a keynote talk at the opening ceremony for the Institute for Global Health and Sexually Transmitted Diseases, Southern Medical University, Guangzhou, China.

October 26, 2019: "What's new in syphilis vaccines? The *Treponema pallidum* OMPeome: A structural path to a global syphilis vaccine". Presented at the Syphilis Forum. International Union against Sexually Transmitted Infections-Asia Pacific 2019. Shanghai, China.

November 18, 2019. "Next steps for vaccines for syphilis prevention. The *Treponema pallidum* OMPeome: A structural path to a global syphilis vaccine. Presented at a combined NIAID/NICHHD workshop on congenital syphilis, Rockville, MD.

November 5, 2020. "Syphilis, a centuries old affliction: is this the beginning of the end?" presented as Grand Rounds at the Hospital of Central Connecticut.

November 13, 2020. "Gene regulation by *Borrelia burgdorferi* throughout the enzootic cycle: key to persistence". Presented virtually as a Bioscience Seminar at the University of South Florida, Tampa, FL.

February 18, 2021: "Contemporary Lyme disease research: Progress, unsolved problems, and controversies". Presented at the biweekly UConn Health Clinical Research Track seminar series.

March 15, 2021: "From the front lines: update on Lyme disease". Presented as Internal Medicine Grand Rounds, Hospital of Central Connecticut, New Britain, CT.

May 4, 2021: "*Treponema pallidum* outer membrane proteins and the quest for a global syphilis vaccine". Presented as a research seminar at The Wadsworth Center, Albany, NY.

October 12, 2021: "The *Treponema pallidum* OMPeome: roadmap for syphilis pathogenesis and vaccine development (a semi-biographical story)". Presented as a research seminar at the Department of Microbiology, UT Southwestern Medical Center at Dallas, TX.

January 20, 2022: "Translational research: bench to bedside and back again". Presented at the biweekly UConn Health Clinical Research Track seminar series.

May 19, 2022: Member of an expert panel at the "Stony Brook Southampton Hospital Symposium on Tick-borne Diseases".

June 20, 2022: "Paper writing", presented as a lecture in the Pediatric Fellows Core Curriculum.

September 13, 2022: "Paper writing", presented as a lecture in the adult Infectious Diseases Fellows Core Curriculum.

October 20, 2022: "The *Treponema pallidum* OMPeome: Roadmap for Syphilis Pathogenesis and Vaccine Development". Presented at a symposium entitled "New Battles With Old Foes: Addressing Syphilis and Drug-Resistant *Neisseria gonorrhoea*" (Session 89), ID week 2022.

November 17, 2022: "Spirochetology as a translational science", presented to the UCH internal medicine clinical research track residents.

FUNDING HISTORY

7/1/87-6/30/89, Pfizer Scholars Program for New Faculty: "Isolation and Characterization of the Outer Membrane of *Treponema pallidum*"; \$100,000 direct costs (PI).

10/1/87-9/30/89, Texas Higher Education Coordinating Board Advanced Technology Award: "Development of a Serodiagnostic Test Specific for Syphilis"; \$48,000 direct costs (PI).

7/1/88-6/30/93, NIH First Independent Research Award: "Membrane Proteins of *Treponema pallidum*"; \$342,000 direct costs (PI).

6/1/89-5/31/92, Dallas Biomedical Corporation, "Development of Monoclonal Antibodies and DNA probes for *Haemophilus ducreyi*, the Agent of Chancroid"; \$270,000 direct costs (co-PI with Dr. Eric J. Hansen, U.T. Southwestern Dept. of Microbiology).

7/1/89-6/30/92, American Foundation for AIDS Research Scholarship: "Recombinant DNA-based Diagnosis of Neurosyphilis"; \$102,000 direct costs (PI).

10/1/89-9/30/91, Centers for Disease Control (contract): "Detection of *Treponema pallidum* by Polymerase Chain Reaction"; \$42,000 in direct costs (PI).

4/1/90-3/31/95, NIH R01, "Membrane Proteins of *Borrelia burgdorferi*"; \$760,000 direct costs (co-PI with Dr. Michael V. Norgard).

6/1/90-6/31/92, Dallas Biomedical Corporation: "Improved Diagnosis of Syphilis and Lyme Disease"; \$140,000 direct costs (co-PI with Dr. Michael Norgard)..

4/1/91-3/31/92, Robert A. Welch Foundation, "Biochemical and Structural Analysis of Spirochete Lipoproteins"; \$90,000 direct costs (co-PI with Dr. Michael V. Norgard).

5/1/91-4/30/92, American Foundation for AIDS Research, "PCR-based Diagnosis of Neurosyphilis"; \$50,000 direct costs (PI).

7/1/91-6/30/94, American Heart Association Grant-in-Aid: "Endothelial Cell Activation in Syphilis and Lyme Disease"; \$120,000 direct costs (PI).

1/1/92-11/30/95, National Institutes of Health, "Molecular Pathogenesis and Diagnosis of Chancroid" \$600,000 direct costs (co-PI with Dr. Eric J. Hansen).

7/1/92-6/31/96, NIH R01, "Membrane Immunogens of *Treponema pallidum*"; \$670,000 in direct costs. (PI).

7/1/92-6/30/97, American Heart Association Established Investigatorship: "Endothelial Cell Activation in Syphilis and Lyme Disease"; \$280,000 direct costs (PI).

9/1/92-12/31/93, Centers for Disease Control multi-center study, "Syphilis and HIV Infection" \$240,000 direct costs (PI).

12/1/93-11/31/95, Texas Higher Education Coordinating Board Advanced Technology Program, "Bacterial lipopeptides as novel immune adjuvants"; \$237,727 direct costs (co-PI with Dr. Michael Norgard).

6/1/94-5/31/97, Robert A. Welch Foundation. Membrane behavior of novel chemically synthesized proteolipid analogs; \$96,000 direct costs (co-PI with Dr. Michael Norgard).

12/1/94-6/1/96, SmithKline Beecham Biologicals, "A double-blind, randomized placebo-controlled study to evaluate the efficacy of SmithKline Beecham Biologicals' herpes simplex candidate vaccine (gD2t) with MPL to prevent genital herpes disease in healthy consorts of subjects with genital herpes disease", \$80,000 direct costs (PI).

4/1/96-12/31/96, SmithKline Beecham Biologicals, "A double-blind, randomized, placebo controlled study to evaluate the safety of SmithKline Beecham Biological's herpes simplex candidate vaccine (gD2t) with MPL and its efficacy to prevent genital herpes disease in HSV positive or negative consorts of subjects with genital herpes disease" (PI).

2/1/96-1/31/01, NIH R01, "Membrane Proteins of *Borrelia burgdorferi*", \$1,193,269 direct costs (PI).

4/1/96-3/31/01, NIH R01, "Cutaneous Immune Response in Secondary Syphilis"; \$787,295, direct costs (PI).

7/1/96-6/30/01, NIH R01, "Membrane Immunogens of *Treponema pallidum*", \$1,080,098 direct costs (PI).

7/1/96-6/30/00, NIH R01, "Molecular Pathogenesis of Chancroid", \$726,000 direct costs (co-PI with Dr. Eric J. Hansen).

1/1/98-12/31/00, Texas Higher Education Coordinating Board, A DNA-derived Tick Vaccine, \$163,000 direct costs (PI).

6/1/97-5/31/00, Robert A. Welch Foundation, Structure and function of a novel zinc-dependent carboxypeptidase, \$110,000, (co-PI with Dr. Michael Norgard).

8/1/99-7/31/01, Connecticut Innovations Critical Technologies Award, Recombinant *Babesia microti* diagnostic antigens and vaccine, \$291,655 direct costs (co-PI with Dr. Peter Krause).

12/01/01-11/30/06, NIH R01 "Membrane proteins of *Borrelia burgdorferi*", \$1,477,510 direct costs (PI).

6/1/01-5/31/08, NIH R01 "Cutaneous Immune Response in Early Syphilis", \$1,256,165 direct costs (PI).

7/01/02-11/30/07, NIH R37, "*T. pallidum* membrane immunogens and anti-oxidant defense", \$1,250,000 in direct costs (PI).

4/01/07-3/31/12. NIH R01 "RpoS Regulation of *Borrelia burgdorferi* genes *in vivo*"; \$1,750,000 in direct costs (PI).

1/01/08-12/31/12 NIH R01. "*Treponema pallidum* outer membrane proteins and transition metal acquisition"; \$1,800,000 in direct costs (PI)

7/01/10-6/30/11 ARRA Administrative supplement to NIH R01 RpoS Regulation of *Borrelia burgdorferi* genes *in vivo*. \$197,000 in direct costs (PI).

9/01/10-8/31/14, NIH R01. Biophysics of the morphology and motility of *Borrelia burgdorferi* in diverse environments. \$ 1,000,000 in direct costs. (co-investigator, Charles Wolgemuth, Univ. Arizona, PI).

6/01/12-5/31/13 NIH R56. "RpoS Regulation of *Borrelia burgdorferi* genes *in vivo*"; \$350,000 in direct costs (PI).

3/01/13-2/28/18 NIH R01. "Rpos Regulation of *Borrelia burgdorferi* genes *in vivo*. \$1,600,000 in direct costs.

5/01-4/30/18 NIH R01 "Characterization of *Treponema pallidum* rare outer membrane proteins" \$1,500,000 in direct costs.

January, 2014: PI on USDA grant for the 2014 Gordon Research Conference on the Biology of Spirochetes.

January, 2014: PI on NIH/NIAID R13 grant for the 2014 Gordon Research Conference on the Biology of Spirochetes, Ventura California.

January, 2016: PI on NIH/NIAID R13 grant for the 2016 Gordon Research Conference on the Biology of Spirochetes, Ventura California.

6/15/18-5/31/20: NIH R21, "*Borrelia burgdorferi* oligopeptide (Opp) transporter control of cellular homeostasis and growth", \$275,000 direct costs.

9/9/18-8/31/23: NIH R01, "Rpos Regulation of *Borrelia burgdorferi* genes *in vivo*, \$1,600,000 direct costs.

3/2018-3/2024: NIH U19 Cooperative Research Center, "A global syphilis vaccine targeting outer membrane proteins of *Treponema pallidum*. \$7,500,000 direct costs.

11/01/2021-10/31/22: Bill and Melinda Gates Foundation (through UNC-Chapel Hill). "Genomic epidemiology of *Treponema pallidum* strains infecting women and men in low-income countries to Inform syphilis vaccine development. \$66,635 in direct costs.

PATENTS

CA 1341450. Methods and compositions for the preparation of *Treponema pallidum* antigens, including purified antigens and DNA sequences coding thereof.

Issued: Issued 2004-02-03

Inventors: Michael V. Norgard and Justin D. Radolf

Owners: Board of Regents, The University of Texas System

Licensees: Diasorin, Inc. and Serex International, Inc.

INTERACTIONS WITH PRIVATE INDUSTRY

11/90-5/92: Consultant to Gull Laboratories, Salt Lake City, Utah, on the development of new serodiagnostic tests for syphilis and Lyme disease.

1/91-6/95: Academic Associate for The Nichols Institute, San Juan Capistrano, CA. Infectious Disease Diagnostics.

1996 and 1998. Licensing agreements via UT Southwestern Medical Center with Biokit, SA (Spain) for the use of recombinant *T. pallidum* antigens for serodiagnosis of syphilis.

2007. Licensing agreement via University of Connecticut Health Center with Span Diagnostics (India) for the use of *T. pallidum* recombinant antigens for serodiagnosis of syphilis

2010. Licensing agreement via UCH with ChemBio Diagnostics (NY) for the use of recombinant *T. pallidum* antigens for serodiagnosis of syphilis.

2014. Material transfer and licensing agreement via UConn Health with ChemBio Diagnostics (NY) for the use of recombinant *T. pallidum* antigens for serodiagnosis of syphilis.