CURRICULUM VITAE

NAME: William Robert Jacobs, Jr.

ADDRESS: Albert Einstein College of Medicine
Dept. of Microbiology and Immunulogy
Price Research pavilion,
1301 Morris Park Avenue
Bronx, NY 10461
E-mail: william.jacobs@einsteinmed.org

EDUCATIONAL DEGREES:

Ph.D.	Molecular Cell Biology University of Alabama at Birmingham Birmingham, Alabama, June, 1985
B.A.	Mathematics Edinboro State University Edinboro, Pennsylvania, May, 1977

POST-GRADUATE TRAINING:

June 1985 - Nov. 1986	Postdoctoral Fellow in the laboratory of Barry R. Bloom, Dept. of Microbiology and Immunology Albert Einstein College of Medicine
Sept. 1979 - June 1985	Predoctoral Fellow in the laboratories of Drs. Roy Curtiss III and Josephine E. Clark-Curtiss, Dept. of Microbiology, University of Alabama at Birmingham and Dept. of Biology, Washington University at St. Louis

PROFESSIONAL EMPLOYMENT AND APPOINTMENTS:

April 2015 – Present	Leo and Julia Forcheimer Chair, Microbiology and Immunology Albert Einstein College of Medicine
July 1996 – Present	Professor Depts. Of Microbiology and Immunology and Molecular Genetics Albert Einstein College of Medicine
Oct. 1997 – Aug. 2018	Investigator Howard Hughes Medical Institute Albert Einstein College of Medicine
May 1993 - Oct. 1997	Associate Investigator Howard Hughes Medical Institute Albert Einstein College of Medicine
July 1992 - July 1996	Associate Professor Depts. of Microbiology and Immunology and Molecular Genetics Albert Einstein College of Medicine

Oct. 1990 - June 1992	Assistant Professor Dept. of Molecular Genetics Albert Einstein College of Medicine
May 1990 - May 1993	Assistant Investigator Howard Hughes Medical Institute Albert Einstein College of Medicine
Sept. 1987 - June 1992	Assistant Professor Dept. of Microbiology and Immunology Albert Einstein College of Medicine
Nov. 1986 - Aug. 1987	Associate Scientist, Dept. of Microbiology and Immunology Albert Einstein College of Medicine
Oct. 1978 - July 1979	Instructor of Calculus and Physics, Triangle Tech, Erie, PA

AECOM SERVICES AND RESPONSIBILITIES:

Recruitment, Appointments, & Promotions Committee, Full Prof. Promotions & Tenure Committee, Ph.D. Admissions Committee, Faculty Senate, External Seminar Committee, Member of Diversity, Equality, and Inclusion Committee, Gene Therapy Core Committee, Institutional Biosafety Committee (35 years), Division Qualifying Exam Committee, Chairman Divisional Qualifying Exam Committee, Event Planning Committee

TEACHING RESPONSIBILITIES:

Lecturer Mechanisms of Disease Course, Lecturer in Molecular Genetics Course, Lecturer in Infectious Disease Course

PROFESSIONAL SOCIETY MEMBERSHIP:

Member of the National Academy of Inventors, American Society for Microbiology, Infectious Diseases Society of America, Member of the National Academy of Sciences, Member of the editorial board of Infection and Immunity, Association for the Advancement of Science

AWARDS AND HONORS:

March 2019	Fellow, Trudeau Institute
April 2018	Elected to the National Academy of Inventors (NAI)
April 2015	Leo and Julia Forchiemer Chair, Microbiology and Immunology
April 2013	Member, National Academy of Sciences
January 2013	Marshall Horwitz Lecture Award
November 2011	Fellow, American Association for the Advancement of Science (AAAS)
May 2003	Gardner Middlebrook Life-Time Achievement Award

April 2003	Fellow, American Academy of Microbiology
October 2001	Ellison Medical Foundation Senior Scholar Award in Global Infectious Disease
July 2000	Burroughs Wellcome Fund Award
January 1998	K.F. Myers Memorial Lecture; Tuberculosis Control: Finding Gold in Soil and Cow Dung. University of California, San Francisco
October 1997	Mellini Award
May 1996	American Society of Microbiology Annual Meeting, Division U Honorary Lecture, New Orleans, LA A View from a Geneticist: A 1914-D Penny. Lotto, Tuberculosis Control, and Beyond.
Sept. 1993	Special Grant Award for Drug Discovery Burroughs Wellcome Fund
May 1993	Distinguished Alumni Award Dept. of Microbiology and Immunology University of Alabama at Birmingham
June 1991	Distinguished Alumni Award Edinboro State University, PA
March 1985	Raymond W. Sarber Fellowship Award American Society for Microbiology

OTHER PROFESSIONAL ACTIVITIES:

Jan. 2011 - Present	Ad hoc member Drug Discovery for the Nervous System Study Section, HIV Comorbidities and Clinical Studies Study Section, Host Interactions with Bacterial Pathogens Study Section, Innate Immunity and Inflammation Study Section, Vaccines Against Microbial Diseases Study Section, R24 special study sections, and SBIR/STTR study sectons
Nov. 1999-Oct. 2003	Member, National Advisory Allergy and Infectious Diseases Council of the National Institutes of Health
July 1999	Part of DHHS BTEP TB Team to Russia
1990 - Present	Ad hoc reviewer for Science, Nature, PNAS (USA), J. Bacteriol., Molec. Microbiol., J. Clin. Microbiol., Antimicrobial Agent and Chemo., Gene, and J. Gen. Microbiology
1990 - 1993	Ad hoc reviewers for RFAs for "Opportunistic Infections in AIDS Patients", Bacterial and Mycology Infections Study Section (BM1), and Food and Drug Administration's Program on Mycobacterial Research.

PUBLICATIONS: Basic Science

1. Clark-Curtiss JE, Jacobs WR, Docherty MA, Ritchie LR, Curtiss R, 3rd. Molecular analysis of DNA and construction of genomic libraries of *Mycobacterium leprae*. *J Bacteriol*. 1985;161(3):1093-102.

2. Jacobs WR, Barrett JF, Clark-Curtiss JE, Curtiss R, 3rd. *In vivo* repackaging of recombinant cosmid molecules for analyses of *Salmonella typhimurium*, Streptococcus mutans, and mycobacterial genomic libraries. *Infect Immun*. 1986;52(1):101-9.

3. Jacobs WR, Docherty MA, Curtiss R, 3rd, Clark-Curtiss JE. Expression of *Mycobacterium leprae* genes from a Streptococcus mutans promoter in *Escherichia coli* K-12. *Proc Natl Acad Sci U S A*. 1986;83(6):1926-30.

4. Jacobs WR, Jr., Tuckman M, Bloom BR. Introduction of foreign DNA into mycobacteria using a shuttle phasmid. *Nature.* 1987;327(6122):532-5.

5. Snapper SB, Lugosi L, Jekkel A, Melton RE, Kieser T, Bloom BR, et al. Lysogeny and transformation in mycobacteria: stable expression of foreign genes. *Proc Natl Acad Sci U S A*. 1988;85(18):6987-91.

6. Bloom BR, Jacobs WR, Jr. New strategies for leprosy and tuberculosis and for development of bacillus Calmette-Guerin into a multivaccine vehicle*. Ann N Y Acad Sci*. 1989;569:155-73.

7. Grosskinsky CM, Jacobs WR, Jr., Clark-Curtiss JE, Bloom BR. Genetic relationships among *Mycobacterium leprae, Mycobacterium tuberculosis*, and candidate leprosy vaccine strains determined by DNA hybridization: identification of an *M. leprae*-specific repetitive sequence. *Infect Immun*. 1989;57(5):1535-41.

8. Jacobs WR, Jr., Snapper SB, Lugosi L, Jekkel A, Melton RE, Kieser T, et al. Development of genetic systems for the mycobacteria. *Acta Leprol*. 1989;7 Suppl 1:203-7.

9. Jacobs WR, Jr., Snapper SB, Tuckman M, Bloom BR. Mycobacteriophage vector systems. *Rev Infect Dis*. 1989;11 Suppl 2:S404-10.

10. Lugosi L, Jacobs WR, Jr., Bloom BR. Genetic transformation of BCG. *Tubercle*. 1989;70(3):159-70.

11. Barletta RG, Snapper B, Cirillo JD, Connell ND, Kim DD, Jacobs WR, et al. Recombinant BCG as a candidate oral vaccine vector. *Res Microbiol*. 1990;141(7-8):931-9.

12. Snapper SB, Melton RE, Mustafa S, Kieser T, Jacobs WR, Jr. Isolation and characterization of efficient plasmid transformation mutants of *Mycobacterium smegmatis*. *Mol Microbiol*. 1990;4(11):1911-9.

13. Belisle JT, Pascopella L, Inamine JM, Brennan PJ, Jacobs WR, Jr. Isolation and expression of a gene cluster responsible for biosynthesis of the glycopeptidolipid antigens of *Mycobacterium avium*. *J Bacteriol*. 1991;173(21):6991-7.

14. Cirillo JD, Barletta RG, Bloom BR, Jacobs WR, Jr. A novel transposon trap for mycobacteria: isolation and characterization of IS1096. *J Bacteriol*. 1991;173(24):7772-80.

16. Kalpana GV, Bloom BR, Jacobs WR, Jr. Insertional mutagenesis and illegitimate recombination in mycobacteria. *Proc Natl Acad Sci U S A*. 1991;88(12):5433-7.

17. Lee MH, Pascopella L, Jacobs WR, Jr., Hatfull GF. Site-specific integration of mycobacteriophage L5: integration-proficient vectors for *Mycobacterium smegmatis, Mycobacterium tuberculosis*, and bacille Calmette-Guerin. *Proc Natl Acad Sci U S A*. 1991;88(8):3111-5.

18. Sirawaraporn W, Sirawaraporn R, Chanpongsri A, Jacobs WR, Jr., Santi DV. Purification and characterization of dihydrofolate reductase from wild-type and trimethoprim-resistant *Mycobacterium smegmatis*. *Exp Parasitol*. 1991;72(2):184-90.

19. Stover CK, de la Cruz VF, Fuerst TR, Burlein JE, Benson LA, Bennett LT, et al. New use of BCG for recombinant vaccines. *Nature*. 1991;351(6326):456-60.

20. Barletta RG, Kim DD, Snapper SB, Bloom BR, Jacobs WR, Jr. Identification of expression signals of the mycobacteriophages Bxb1, L1 and TM4 using the Escherichia-Mycobacterium shuttle plasmids pYUB75 and pYUB76 designed to create translational fusions to the lacZ gene. *J Gen Microbiol*. 1992;138(1):23-30.

21. Daley CL, Small PM, Schecter GF, Schoolnik GK, McAdam RA, Jacobs WR, Jr., et al. An outbreak of tuberculosis with accelerated progression among persons infected with the human immunodeficiency virus. An analysis using restriction-fragment-length polymorphisms. *N Engl J Med*. 1992;326(4):231-5.

22. Stover CK, de la Cruz VF, Bansal GP, Hanson MS, Fuerst TR, Jacobs WR, Jr., et al. Use of recombinant BCG as a vaccine delivery vehicle. Adv Exp Med Biol. 1992;327:175-82.

23. Averill LE, Cavallo U, Wallis RS, Boom WH, Bona M, Mincek M, et al. Screening of a cosmid library of *Mycobacterium bovis* BCG in *Mycobacterium smegmatis* for novel T-cell stimulatory antigens. *Res Microbiol*. 1993;144(5):349-62.

24. Belisle JT, Klaczkiewicz K, Brennan PJ, Jacobs WR, Jr., Inamine JM. Rough morphological variants of *Mycobacterium avium*. Characterization of genomic deletions resulting in the loss of glycopeptidolipid expression. *J Biol Chem*. 1993;268(14):10517-23.

25. Cirillo J.D. WTR, Jacobs W.R. Jr., Inamine J. . Efficient Electro-Transfromation of *Mycobacterium smegmatis*. *Biored Tech Bull* 1993:1360.

26. Cooksey RC, Crawford JT, Jacobs WR, Jr., Shinnick TM. A rapid method for screening antimicrobial agents for activities against a strain of *Mycobacterium tuberculosis* expressing firefly luciferase. *Antimicrob Agents Chemother*. 1993;37(6):1348-52.

27. Donnelly-Wu MK, Jacobs WR, Jr., Hatfull GF. Superinfection immunity of mycobacteriophage L5: applications for genetic transformation of mycobacteria. *Mol Microbiol*. 1993;7(3):407-17.

28. Ellner JJ, Hinman AR, Dooley SW, Fischl MA, Sepkowitz KA, Goldberger MJ, et al. Tuberculosis symposium: emerging problems and promise. *J Infect Dis*. 1993;168(3):537-51.

29. Jacobs WR, Jr., Barletta RG, Udani R, Chan J, Kalkut G, Sosne G, et al. Rapid assessment of drug susceptibilities of *Mycobacterium tuberculosis* by means of luciferase reporter phages. *Science*. 1993;260(5109):819-22.

29. Pascopella L, Collins FM, Martin JM, Jacobs WR, Jr., Bloom BR. Identification of a genomic fragment of *Mycobacterium tuberculosis* responsible for *in vivo* growth advantage. *Infect Agents Dis*. 1993;2(4):282-4.

30. Banerjee A, Dubnau E, Quemard A, Balasubramanian V, Um KS, Wilson T, et al. inhA, a gene encoding a target for isoniazid and ethionamide in *Mycobacterium tuberculosis*. *Science*. 1994;263(5144):227-30.

31. Bloom BR, Jacobs WR, Jr., Clark-Curtiss JE. Leprosy vaccine. *Nature*. 1994;368(6472):579.

32. Brunhuber NM, Banerjee A, Jacobs WR, Jr., Blanchard JS. Cloning, sequencing, and expression of Rhodococcus L-phenylalanine dehydrogenase. Sequence comparisons to amino-acid dehydrogenases. *J Biol Chem*. 1994;269(23):16203-11.

33. Cirillo JD, Weisbrod TR, Banerjee A, Bloom BR, Jacobs WR, Jr. Genetic determination of the meso-diaminopimelate biosynthetic pathway of mycobacteria. *J Bacteriol*. 1994;176(14):4424-9.

34. Cirillo JD, Weisbrod TR, Pascopella L, Bloom BR, Jacobs WR, Jr. Isolation and characterization of the aspartokinase and aspartate semialdehyde dehydrogenase operon from mycobacteria. *Mol Microbiol*. 1994;11(4):629-39.

35. Fiss EH, Yu S, Jacobs WR, Jr. Identification of genes involved in the sequestration of iron in mycobacteria: the ferric exochelin biosynthetic and uptake pathways. *Mol Microbiol*. 1994;14(3):557-69.

36. Heym B, Honore N, Truffot-Pernot C, Banerjee A, Schurra C, Jacobs WR, Jr., et al. Implications of multidrug resistance for the future of short-course chemotherapy of tuberculosis: a molecular study. *Lancet*. 1994;344(8918):293-8.

37. Mills JA, McNeil MR, Belisle JT, Jacobs WR, Jr., Brennan PJ. Loci of *Mycobacterium avium* ser2 gene cluster and their functions. *J Bacteriol*. 1994;176(16):4803-8.

38. Pascopella L, Collins FM, Martin JM, Lee MH, Hatfull GF, Stover CK, et al. Use of *in vivo* complementation in *Mycobacterium tuberculosis* to identify a genomic fragment associated with virulence. *Infect Immun*. 1994;62(4):1313-9.

39. Takiff HE, Salazar L, Guerrero C, Philipp W, Huang WM, Kreiswirth B, et al. Cloning and nucleotide sequence of *Mycobacterium tuberculosis* gyrA and gyrB genes and detection of quinolone resistance mutations. *Antimicrob Agents Chemother*. 1994;38(4):773-80.

40. Cirillo JD, Stover CK, Bloom BR, Jacobs WR, Jr., Barletta RG. Bacterial vaccine vectors and bacillus Calmette-Guerin. *Clin Infect Dis*. 1995;20(4):1001-9.

41. Collins DM, Kawakami RP, de Lisle GW, Pascopella L, Bloom BR, Jacobs WR, Jr. Mutation of the principal sigma factor causes loss of virulence in a strain of the *Mycobacterium tuberculosis* complex. *Proc Natl Acad Sci U S A*. 1995;92(17):8036-40.

42. Dessen A, Quemard A, Blanchard JS, Jacobs WR, Jr., Sacchettini JC. Crystal structure and function of the isoniazid target of *Mycobacterium tuberculosis*. *Science*. 1995;267(5204):1638-41.

43. Kapur V, Li LL, Hamrick MR, Plikaytis BB, Shinnick TM, Telenti A, et al. Rapid Mycobacterium species assignment and unambiguous identification of mutations associated with antimicrobial resistance in *Mycobacterium tuberculosis* by automated DNA sequencing. *Arch Pathol Lab Med*. 1995;119(2):131-8.

44. McAdam RA, Weisbrod TR, Martin J, Scuderi JD, Brown AM, Cirillo JD, et al. *In vivo* growth characteristics of leucine and methionine auxotrophic mutants of *Mycobacterium bovis* BCG generated by transposon mutagenesis. *Infect Immun*. 1995;63(3):1004-12.

45. Quemard A, Sacchettini JC, Dessen A, Vilcheze C, Bittman R, Jacobs WR, Jr., et al. Enzymatic characterization of the target for isoniazid in *Mycobacterium tuberculosi*s. *Biochemistry*. 1995;34(26):8235-41.

46. Sarkis GJ, Jacobs WR, Jr., Hatfull GF. L5 luciferase reporter mycobacteriophages: a sensitive tool for the detection and assay of live mycobacteria. *Mol Microbiol*. 1995;15(6):1055-67.

47. Balasubramanian V, Pavelka MS, Jr., Bardarov SS, Martin J, Weisbrod TR, McAdam RA, Bloom BR, Jacobs WR, Jr. Allelic exchange in Mycobacterium tuberculosis with long linear recombination substrates. J Bacteriol. 1996;178(1):273-9.

48. Bange FC, Brown AM, Jacobs WR, Jr. Leucine auxotrophy restricts growth of *Mycobacterium bovis* BCG in macrophages. *Infect Immun*. 1996;64(5):1794-9.

49. Dubnau E, Soares S, Huang TJ, Jacobs WR, Jr. Overproduction of mycobacterial ribosomal protein S13 induces catalase/peroxidase activity and hypersensitivity to isoniazid in *Mycobacterium smegmatis*. *Gene*. 1996;170(1):17-22.

50. Guleria I, Teitelbaum R, McAdam RA, Kalpana G, Jacobs WR, Jr., Bloom BR. Auxotrophic vaccines for tuberculosis. *Nat Med*. 1996;2(3):334-7.

51. Hewinson RG, Michell SL, Russell WP, McAdam RA, Jacobs WR, Jr. Molecular characterization of MPT83: a seroreactive antigen of *Mycobacterium tuberculosis* with homology to MPT70. *Scand J Immunol*. 1996;43(5):490-9.

52. Jacobs WR, Jr. Science for combatting tuberculosis. *Bull N Y Acad Med*. 1996;73(1):46-52.

53. Pavelka MS, Jr., Jacobs WR, Jr. Biosynthesis of diaminopimelate, the precursor of lysine and a component of peptidoglycan, is an essential function of *Mycobacterium smegmatis*. *J Bacteriol*. 1996;178(22):6496-507.

54. Pearson RE, Jurgensen S, Sarkis GJ, Hatfull GF, Jacobs WR, Jr. Construction of D29 shuttle phasmids and luciferase reporter phages for detection of mycobacteria. *Gene*. 1996;183(1-2):129-36.

55. Philipp WJ, Poulet S, Eiglmeier K, Pascopella L, Balasubramanian V, Heym B, Bergh S, Bloom BR, Jacobs WR Jr., Cole ST. An integrated map of the genome of the tubercle bacillus, *Mycobacterium tuberculosis* H37Rv, and comparison with *Mycobacterium leprae*. *Proc Natl Acad Sci U S A*. 1996;93(7):3132-7.

56. Quemard A. DA, Sugantino M., Jacobs W.R., Jr., Sacchettini J.C., Blanchard J.S. Binding of Catalase Peroxidase-Activated Isoniazid to Wild-Type and Mutant *Mycobacterium tuberculosis* Enoyl-ACP-Reductases. *JAm Chem Soc*. 1996;118:1561-2.

57. Takiff HE, Cimino M, Musso MC, Weisbrod T, Martinez R, Delgado MB, Salazar L, Bloom BR, Jacobs WR Jr. Efflux pump of the proton antiporter family confers low-level fluoroquinolone resistance in *Mycobacterium smegmatis*. *Proc Natl Acad Sci U S A*. 1996;93(1):362-6.

58. Bardarov S, Kriakov J, Carriere C, Yu S, Vaamonde C, McAdam RA, et al. Conditionally replicating mycobacteriophages: a system for transposon delivery to *Mycobacterium tuberculosi*s. *Proc Natl Acad Sci U S A*. 1997;94(20):10961-6.

59. Carriere C, Riska PF, Zimhony O, Kriakov J, Bardarov S, Burns J, Chan J, Jacobs WR. Conditionally replicating luciferase reporter phages: improved sensitivity for rapid detection and assessment of drug susceptibility of *Mycobacterium tuberculosis*. *J Clin Microbiol*. 1997;35(12):3232-9.

60. Cirillo JD, Weisbrod TR, Banerjee A, Bloom BR, Jacobs WR, Jr. Genetic determination of the meso-diaminopimelate biosynthetic pathway of mycobacteria. *J Bacteriol*. 1997;179(8):2792.

61. Pavelka MS, Jr., Weisbrod TR, Jacobs WR, Jr. Cloning of the dapB gene, encoding dihydrodipicolinate reductase, from *Mycobacterium tuberculosis. J Bacteriol*. 1997;179(8):2777-82.

62. Pelicic V, Jackson M, Reyrat JM, Jacobs WR, Jr., Gicquel B, Guilhot C. Efficient allelic exchange and transposon mutagenesis in *Mycobacterium tuberculosis. Proc Natl Acad Sci U S A*. 1997;94(20):10955-60.

63. Riska PF, Jacobs WR, Jr., Bloom BR, McKitrick J, Chan J. Specific identification of *Mycobacterium tuberculosis* with the luciferase reporter mycobacteriophage: use of p-nitro-alpha-acetylamino-beta-hydroxy propiophenone. *J Clin Microbiol*. 1997;35(12):3225-31.

64. Sreevatsan S, Stockbauer KE, Pan X, Kreiswirth BN, Moghazeh SL, Jacobs WR, Jr., Telenti A, Musser JM. Ethambutol resistance in *Mycobacterium tuberculosis*: critical role of embB mutations. *Antimicrob Agents Chemother*. 1997;41(8):1677-81.

65. Telenti A, Philipp WJ, Sreevatsan S, Bernasconi C, Stockbauer KE, Wieles B, Musser JM, Jacobs WR Jr. The emb operon, a gene cluster of *Mycobacterium tuberculosis* involved in resistance to ethambutol. *Nat Med*. 1997;3(5):567-70.

66. Telenti A, Southworth M, Alcaide F, Daugelat S, Jacobs WR, Jr., Perler FB. The *Mycobacterium xenopi* GyrA protein splicing element: characterization of a minimal intein. *J Bacteriol*. 1997;179(20):6378-82.

67. Tuckman D, Donnelly RJ, Zhao FX, Jacobs WR, Jr., Connell ND. Interruption of the phosphoglucose isomerase gene results in glucose auxotrophy in *Mycobacterium smegmatis*. *J Bacteriol*. 1997;179(8):2724-30.

68. Alland D, Kramnik I, Weisbrod TR, Otsubo L, Cerny R, Miller LP, Jacobs WR Jr., Bloom BR. Identification of differentially expressed mRNA in prokaryotic organisms by customized amplification libraries (DECAL): the effect of isoniazid on gene expression in *Mycobacterium tuberculosis*. *Proc Natl Acad Sci U S A.* 1998;95(22):13227-32.

69. Banerjee A, Sugantino M, Sacchettini JC, Jacobs WR, Jr. The mabA gene from the inhA operon of *Mycobacterium tuberculosis* encodes a 3-ketoacyl reductase that fails to confer isoniazid resistance. *Microbiology*. 1998;144 (Pt 10):2697-704.

70. Basso LA, Zheng R, Musser JM, Jacobs WR, Jr., Blanchard JS. Mechanisms of isoniazid resistance in *Mycobacterium tuberculosis*: enzymatic characterization of enoyl reductase mutants identified in isoniazid-resistant clinical isolates. *J Infect Dis*. 1998;178(3):769-75.

71. Klabunde T, Sharma S, Telenti A, Jacobs WR, Jr., Sacchettini JC. Crystal structure of GyrA intein from *Mycobacterium xenopi* reveals structural basis of protein splicing. *Nat Struct Biol*. 1998;5(1):31-6.

72. Miesel L, Rozwarski DA, Sacchettini JC, Jacobs WR, Jr. Mechanisms for isoniazid action and resistance. *Novartis Found Symp*. 1998;217:209-20; discussion 20-1.

73. Miesel L, Weisbrod TR, Marcinkeviciene JA, Bittman R, Jacobs WR, Jr. NADH dehydrogenase defects confer isoniazid resistance and conditional lethality in *Mycobacterium smegmatis. J Bacteriol*. 1998;180(9):2459-67.

74. Riska PF, Jacobs WR, Jr. The use of luciferase-reporter phage for antibiotic-susceptibility testing of mycobacteria. *Methods Mol Biol*. 1998;101:431-55.

75. Rozwarski DA, Grant GA, Barton DH, Jacobs WR, Jr., Sacchettini JC. Modification of the NADH of the isoniazid target (InhA) from *Mycobacterium tuberculosis. Science.* 1998;279(5347):98-102.

76. Yu S, Fiss E, Jacobs WR, Jr. Analysis of the exochelin locus in *Mycobacterium smegmatis*: biosynthesis genes have homology with genes of the peptide synthetase family. J Bacteriol. 1998;180(17):4676-85.

77. Bange FC, Collins FM, Jacobs WR, Jr. Survival of mice infected with *Mycobacterium smegmatis* containing large DNA fragments from *Mycobacterium tuberculosis. Tuber Lung Dis.* 1999;79(3):171-80.

78. Cox JS, Chen B, McNeil M, Jacobs WR, Jr. Complex lipid determines tissue-specific replication of *Mycobacterium tuberculosis* in mice. *Nature*. 1999;402(6757):79-83.

79. Daugelat S, Jacobs WR, Jr. The *Mycobacterium tuberculosis* recA intein can be used in an ORFTRAP to select for open reading frames. *Protein Sci*. 1999;8(3):644-53.

80. Dussurget O, Timm J, Gomez M, Gold B, Yu S, Sabol SZ, Holmes RK, Jacobs WR Jr., Smith I. Transcriptional control of the iron-responsive fxbA gene by the mycobacterial regulator IdeR. *J Bacteriol*. 1999;181(11):3402-8.

81. Pavelka MS, Jr., Jacobs WR, Jr. Comparison of the construction of unmarked deletion mutations in *Mycobacterium smegmatis, Mycobacterium bovis* bacillus Calmette-Guerin, and *Mycobacterium tuberculosis* H37Rv by allelic exchange. *J Bacteriol*. 1999;181(16):4780-9.

82. Riska PF, Su Y, Bardarov S, Freundlich L, Sarkis G, Hatfull G, et al. Rapid film-based determination of antibiotic susceptibilities of *Mycobacterium tuberculosis* strains by using a luciferase reporter phage and the Bronx Box. *J Clin Microbiol*. 1999;37(4):1144-9.

83. Alland D, Steyn AJ, Weisbrod T, Aldrich K, Jacobs WR, Jr. Characterization of the *Mycobacterium tuberculosis* iniBAC promoter, a promoter that responds to cell wall biosynthesis inhibition. *J Bacteriol*. 2000;182(7):1802-11.

84. Braunstein M, Griffin TI, Kriakov JI, Friedman ST, Grindley ND, Jacobs WR, Jr. Identification of genes encoding exported *Mycobacterium tuberculosis* proteins using a Tn552'phoA *in vitro* transposition system. *J Bacteriol*. 2000;182(10):2732-40.

85. Chambers MA, Williams A, Gavier-Widen D, Whelan A, Hall G, Marsh PD, Bloom BR, Jacobs WR Jr., Hewinson RG. Identification of a *Mycobacterium bovis* BCG auxotrophic mutant that protects guinea pigs against M. bovis and hematogenous spread of *Mycobacterium tuberculosis* without sensitization to tuberculin. *Infect Immun*. 2000;68(12):7094-9.

86. Glickman MS, Cox JS, Jacobs WR, Jr. A novel mycolic acid cyclopropane synthetase is required for cording, persistence, and virulence of *Mycobacterium tuberculosis. Mol Cell*. 2000;5(4):717-27.

87. Hondalus MK, Bardarov S, Russell R, Chan J, Jacobs WR, Jr., Bloom BR. Attenuation of and protection induced by a leucine auxotroph of *Mycobacterium tuberculosis. Infect Immun*. 2000;68(5):2888-98.

88. Kremer L, Douglas JD, Baulard AR, Morehouse C, Guy MR, Alland D, Dover LG, Lakey JH, Jacobs WR Jr., Brennan PJ, Minnikin DE, Bersa GS. Thiolactomycin and related analogues as novel anti-mycobacterial agents targeting KasA and KasB condensing enzymes in *Mycobacterium tuberculosis. J Biol Chem*. 2000;275(22):16857-64.

89. McKinney JD, Honer zu Bentrup K, Munoz-Elias EJ, Miczak A, Chen B, Chan WT, Swenson D, Sacchettini JC, Jacobs WR Jr, Russell DG. Persistence of *Mycobacterium tuberculosis* in macrophages and mice requires the glyoxylate shunt enzyme isocitrate lyase. *Nature*. 2000;406(6797):735-8.

90. Mediavilla J, Jain S, Kriakov J, Ford ME, Duda RL, Jacobs WR, Jr., Hendrix RW, Hatfull GF. Genome organization and characterization of mycobacteriophage Bxb1. *Mol Microbiol*. 2000;38(5):955-70.

91. Piatek AS, Telenti A, Murray MR, El-Hajj H, Jacobs WR, Jr., Kramer FR, Alland D. Genotypic analysis of *Mycobacterium tuberculosis* in two distinct populations using molecular beacons: implications for rapid susceptibility testing. *Antimicrob Agents Chemother*. 2000;44(1):103-10.

92. Sharma V, Sharma S, Hoener zu Bentrup K, McKinney JD, Russell DG, Jacobs WR, Jr.,Sacchettini JC. Structure of isocitrate lyase, a persistence factor of *Mycobacterium tuberculosis*. *Nat Struct Biol*. 2000;7(8):663-8.

93. Vilcheze C, Morbidoni HR, Weisbrod TR, Iwamoto H, Kuo M, Sacchettini JC, Jacobs WR Jr. Inactivation of the inhA-encoded fatty acid synthase II (FASII) enoyl-acyl carrier protein reductase induces accumulation of the FASI end products and cell lysis of *Mycobacterium smegmatis. J Bacteriol*. 2000;182(14):4059-67.

94. Zimhony O, Cox JS, Welch JT, Vilcheze C, Jacobs WR, Jr. Pyrazinamide inhibits the eukaryotic-like fatty acid synthetase I (FASI) of *Mycobacterium tuberculosis. Nat Med.* 2000;6(9):1043-7.

95. Banaiee N, Bobadilla-Del-Valle M, Bardarov S, Jr., Riska PF, Small PM, Ponce-De-Leon A, Jacobs WR Jr, Hatfull GF, Sifuentes-Osomio J. Luciferase reporter mycobacteriophages for detection, identification, and antibiotic susceptibility testing of *Mycobacterium tuberculosis* in Mexico. *J Clin Microbiol*. 2001;39(11):3883-8.

96. Bardarov SS, Bardarov SS, Jr., Jacobs WR, Jr. Transposon mutagenesis in mycobacteria using conditionally replicating mycobacteriophages. *Methods Mol Med*. 2001;54:43-57.

97. Braunstein M, Brown AM, Kurtz S, Jacobs WR, Jr. Two nonredundant SecA homologues function in mycobacteria. *J Bacteriol*. 2001;183(24):6979-90.

98. Brennan MJ, Delogu G, Chen Y, Bardarov S, Kriakov J, Alavi M, Jacobs WR Jr. Evidence that mycobacterial PE_PGRS proteins are cell surface constituents that influence interactions with other cells. *Infect Immun*. 2001;69(12):7326-33.

99. Glickman MS, Cahill SM, Jacobs WR, Jr. The *Mycobacterium tuberculosis* cmaA2 gene encodes a mycolic acid trans-cyclopropane synthetase. *J Biol Chem*. 2001;276(3):2228-33.

100. Raman S, Song T, Puyang X, Bardarov S, Jacobs WR, Jr., Husson RN. The alternative sigma factor SigH regulates major components of oxidative and heat stress responses in *Mycobacterium tuberculosis. J Bacteriol*. 2001;183(20):6119-25.

101. Schwebach JR, Jacobs WR, Jr., Casadevall A. Sterilization of *Mycobacterium tuberculosis* Erdman samples by antimicrobial fixation in a biosafety level 3 laboratory. *J Clin Microbiol*. 2001;39(2):769-71.

102. Bardarov S, Bardarov S, Jr., Pavelka MS, Jr., Sambandamurthy V, Larsen M, Tufariello J, Chan J, Hatfull G, Jacobs WR Jr. Specialized transduction: an efficient method for generating marked and unmarked targeted gene disruptions in *Mycobacterium tuberculosis, M. bovis* BCG and M. smegmatis. *Microbiology*. 2002;148(Pt 10):3007-17.

103. Braunstein M, Bardarov SS, Jacobs WR, Jr. Genetic methods for deciphering virulence determinants of *Mycobacterium tuberculosis*. *Methods Enzymol*. 2002;358:67-99.

104. Fleischmann RD, Alland D, Eisen JA, Carpenter L, White O, Peterson J, DeBoy R, Dodson R, Gwinn M, Haft D, Hickey E, . Whole-genome comparison of Mycobacterium tuberculosis clinical and laboratory strains. J Bacteriol. 2002;184(19):5479-90.

105. Goulding CW, Apostol M, Anderson DH, Gill HS, Smith CV, Kuo MR, Yang JK, Wado GS, Suh SW, Chauhan R, Kale A, Bachhawat N, Mande SC, Johnston JM, Lott JS, Baker EN, Arcus VL, Leys D, McLean KJ, Munro AW, Berendzen J, Sharma V, Park MS, Eisenberg D, Sacchettini J, Alber T, Rupp B, Jacobs WR, Jr., Terwilliger TC. The TB structural genomics consortium: providing a structural foundation for drug discovery. *Curr Drug Targets Infect Disord*. 2002;2(2):121-41.

106. Huang CC, Smith CV, Glickman MS, Jacobs WR, Jr., Sacchettini JC. Crystal structures of mycolic acid cyclopropane synthases from *Mycobacterium tuberculosis*. J Biol Chem. 2002;277(13):11559-69.

107. Larsen MH, Vilcheze C, Kremer L, Besra GS, Parsons L, Salfinger M, Heifets L, Hazbono MH, Alland D, Sacchettini JC, Jacobs WR, Jr. Overexpression of *inhA*, but not *kasA*, confers resistance to isoniazid and ethionamide in *Mycobacterium smegmatis*, *M. bovis* BCG and *M. tuberculosis*. *Mol Microbiol*. 2002;46(2):453-66.

108. McAdam RA, Quan S, Smith DA, Bardarov S, Betts JC, Cook FC, Hooker EU, Lewis AP, Woollard P, Everett MJ, Lukey PT, Bancroft GJ, Jacobs WR, Jr., Duncan K. Characterization of a *Mycobacterium tuberculosis* H37Rv transposon library reveals insertions in 351 ORFs and mutants with altered virulence. *Microbiology*. 2002;148(Pt 10):2975-86.

109. Perozzo R, Kuo M, Sidhu A, Valiyaveettil JT, Bittman R, Jacobs WR, Jr., Fidock DA, Sacchettini JC. Structural elucidation of the specificity of the antibacterial agent triclosan for malarial enoyl acyl carrier protein reductase. *J Biol Chem*. 2002;277(15):13106-14.

110. Sambandamurthy VK, Wang X, Chen B, Russell RG, Derrick S, Collins FM, Morris SL, Jacobs WR, Jr. A pantothenate auxotroph of *Mycobacterium tuberculosis* is highly attenuated and protects mice against tuberculosis. *Nat Med*. 2002;8(10):1171-4.

111. Schwebach JR, Chen B, Glatman-Freedman A, Casadevall A, McKinney JD, Harb JL, McGuire PJ, Barkley WE, Bloom BR, Jacobs WR, Jr. Infection of mice with aerosolized *Mycobacterium tuberculosis*: use of a nose-only apparatus for delivery of low doses of inocula and design of an ultrasafe facility. *Appl Environ Microbiol*. 2002;68(9):4646-9.

112. Steyn AJ, Collins DM, Hondalus MK, Jacobs WR, Jr., Kawakami RP, Bloom BR. *Mycobacterium tuberculosis* WhiB3 interacts with RpoV to affect host survival but is dispensable for *in vivo* growth. *Proc Natl Acad Sci U S A*. 2002;99(5):3147-52.

113. Vecino WH, Morin PM, Agha R, Jacobs WR, Jr., Fennelly GJ. Mucosal DNA vaccination with highly attenuated *Shigella* is superior to attenuated *Salmonella* and comparable to intramuscular DNA vaccination for T cells against HIV. *Immunol Lett*. 2002;82(3):197-204.

114. Wooff E, Michell SL, Gordon SV, Chambers MA, Bardarov S, Jacobs WR, Jr., et al. Functional genomics reveals the sole sulphate transporter of the *Mycobacterium tuberculosis* complex and its relevance to the acquisition of sulphur *in vivo*. *Mol Microbiol*. 2002;43(3):653-63.

115. Banaiee N, Bobadilla-del-Valle M, Riska PF, Bardarov S, Jr., Small PM, Ponce-de-Leon A, Jacobs WR, Jr., Hatfull GF, Sifuentes-Osornio J. Rapid identification and susceptibility testing of *Mycobacterium tuberculosis* from MGIT cultures with luciferase reporter mycobacteriophages. *J Med Microbiol*. 2003;52(Pt 7):557-61.

116. Bardarov S, Jr., Dou H, Eisenach K, Banaiee N, Ya S, Chan J, Jacobs WR, Jr., Riska PF. Detection and drug-susceptibility testing of *M. tuberculosis* from sputum samples using luciferase reporter phage: comparison with the Mycobacteria Growth Indicator Tube (MGIT) system. *Diagn Microbiol Infect Dis*. 2003;45(1):53-61.

117. Bhatt A, Jacobs WR, Jr. Conjugal rites of mycobacteria. *Nat Genet*. 2003;34(1):3-4.

118. Braunstein M, Espinosa BJ, Chan J, Belisle JT, Jacobs WR, Jr. SecA2 functions in the secretion of superoxide dismutase A and in the virulence of *Mycobacterium tuberculosis*. *Mol Microbiol*. 2003;48(2):453-64.

119. Consaul SA, Jacobs WR, Jr., Pavelka MS, Jr. Extragenic suppression of the requirement for diaminopimelate in diaminopimelate auxotrophs of *Mycobacterium smegmatis*. *FEMS Microbiol Lett*. 2003;225(1):131-5.

120. Gokulan K, Rupp B, Pavelka MS, Jr., Jacobs WR, Jr., Sacchettini JC. Crystal structure of *Mycobacterium tuberculosis* diaminopimelate decarboxylase, an essential enzyme in bacterial lysine biosynthesis. *J Biol Chem*. 2003;278(20):18588-96.

121. Hazbon MH, Guarin N, Ferro BE, Rodriguez AL, Labrada LA, Tovar R,. Photographic and luminometric detection of luciferase reporter phages for drug susceptibility testing of clinical *Mycobacterium tuberculosis* isolates. *J Clin Microbiol*. 2003;41(10):4865-9.

122. Hsu T, Hingley-Wilson SM, Chen B, Chen M, Dai AZ, Morin PM, Marks CB, Padiyar J, Goulding C, Gingery M, Eisenberg D, Russell RG, Derrick SC, Collins FM, Morris SL, King CH, Jacobs WR, Jr. The primary mechanism of attenuation of bacillus Calmette-Guerin is a loss of secreted lytic function required for invasion of lung interstitial tissue. *Proc Natl Acad Sci U S A*. 2003;100(21):12420-5.

123. Kremer L, Dover LG, Morbidoni HR, Vilcheze C, Maughan WN, Baulard A, Tu SC, Honore N, Deretic V, Sacchettini J, Locht C, Jacobs WR, Jr. Inhibition of InhA activity, but not KasA activity, induces formation of a KasA-containing complex in mycobacteria. *J Biol Chem*. 2003;278(23):20547-54.

124. Kriakov J, Lee S, Jacobs WR, Jr. Identification of a regulated alkaline phosphatase, a cell surface-associated lipoprotein, in *Mycobacterium smegmatis*. *J Bacteriol*. 2003;185(16):4983-91.

125. Kuo MR, Morbidoni HR, Alland D, Sneddon SF, Gourlie BB, Staveski MM, Leonard M, Gregory JS, Janjigian AD, Yee C, Musser JM, Kreiswirth B, Iwamoto H, Perozzo R, Jacobs WR, Jr., Sacchettini JC, Fiddock DA. Targeting tuberculosis and malaria through inhibition of Enoyl reductase: compound activity and structural data. *J Biol Chem*. 2003;278(23):20851-9.

126. Ohno H, Zhu G, Mohan VP, Chu D, Kohno S, Jacobs WR, Jr., Chan J. The effects of reactive nitrogen intermediates on gene expression in *Mycobacterium tuberculosis*. *Cell Microbiol*. 2003;5(9):637-48.

127. Otero J, Jacobs WR, Jr., Glickman MS. Efficient allelic exchange and transposon mutagenesis in *Mycobacterium avium* by specialized transduction. *Appl Environ Microbiol*. 2003;69(9):5039-44.

128. Pavelka MS, Jr., Chen B, Kelley CL, Collins FM, Jacobs WR, Jr. Vaccine efficacy of a lysine auxotroph of *Mycobacterium tuberculosis*. *Infect Immun*. 2003;71(7):4190-2.

129. Pedulla ML, Ford ME, Houtz JM, Karthikeyan T, Wadsworth C, Lewis JA, Jacobs-Sera D, Falbo J, Gross J, Pannunzio NR, Brucker W, Kumar V, Kandasamy J, Keenan L, Bardarov S, Kriakov J, Lawrence JG, Jacobs WR, Jr. Hendrix RW, Hatfull GF. Origins of highly mosaic mycobacteriophage genomes. *Cell*. 2003;113(2):171-82.

130. Sharma V, Arockiasamy A, Ronning DR, Savva CG, Holzenburg A, Braunstein M, Jacobs WR, Jr., Sacchettini JC. Crystal structure of *Mycobacterium tuberculosis* SecA, a preprotein translocating ATPase. *Proc Natl Acad Sci U S A*. 2003;100(5):2243-8.

131. Dao DN, Kremer L, Guerardel Y, Molano A, Jacobs WR, Jr., Porcelli SA, . *Mycobacterium tuberculosis* lipomannan induces apoptosis and interleukin-12 production in macrophages. *Infect Immun*. 2004;72(4):2067-74.

132. Glatman-Freedman A, Casadevall A, Dai Z, Jacobs WR, Jr., Li A, Morris SL, Navoa JA, Piperdi S, Robbins JB, Schneerson R, Schwebach JR, Shapiro M. Antigenic evidence of prevalence and diversity of *Mycobacterium tuberculosis* arabinomannan. *J Clin Microbiol.* 2004;42(7):3225-31.

133. Hisert KB, Kirksey MA, Gomez JE, Sousa AO, Cox JS, Jacobs WR, Jr., Nathan CF, McKinney JD. Identification of *Mycobacterium tuberculosis* counterimmune (cim) mutants in immunodeficient mice by differential screening. *Infect Immun*. 2004;72(9):5315-21.

134. Lee S, Kriakov J, Vilcheze C, Dai Z, Hatfull GF, Jacobs WR, Jr. Bxz1, a new generalized transducing phage for mycobacteria. *FEMS Microbiol Lett*. 2004;241(2):271-6.

135. Matsunaga I, Bhatt A, Young DC, Cheng TY, Eyles SJ, Besra GS, Briken V, Porcelli SA, Costello CE, Jacobs WR, Jr., Moody DB. *Mycobacterium tuberculosis pks12* produces a novel polyketide presented by CD1c to T cells. *J Exp Med*. 2004;200(12):1559-69.

136. Sampson SL, Dascher CC, Sambandamurthy VK, Russell RG, Jacobs WR, Jr., Bloom BR, . Protection elicited by a double leucine and pantothenate auxotroph of *Mycobacterium tuberculosis* in guinea pigs. *Infect Immun*. 2004;72(5):3031-7.

137. Tufariello JM, Jacobs WR, Jr., Chan J. Individual *Mycobacterium tuberculosis* resuscitation-promoting factor homologues are dispensable for growth in vitro and in vivo. *Infect Immun*. 2004;72(1):515-26.

138. Vecino WH, Quanquin NM, Martinez-Sobrido L, Fernandez-Sesma A, Garcia-Sastre A, Jacobs WR, Jr., Fennelly G. Mucosal immunization with attenuated *Shigella flexneri* harboring an influenza hemagglutinin DNA vaccine protects mice against a lethal influenza challenge. *Virology*. 2004;325(2):192-9.

139. Zimhony O, Vilcheze C, Jacobs WR, Jr. Characterization of *Mycobacterium smegmatis* expressing the *Mycobacterium tuberculosis* fatty acid synthase I (fas1) gene. *J Bacteriol*. 2004;186(13):4051-5.

140. Bhatt A, Kremer L, Dai AZ, Sacchettini JC, Jacobs WR, Jr. Conditional depletion of KasA, a key enzyme of mycolic acid biosynthesis, leads to mycobacterial cell lysis. *J Bacteriol*. 2005;187(22):7596-606.

141. Colangeli R, Helb D, Sridharan S, Sun J, Varma-Basil M, Hazbon MH, Harbacheuski R, Megjugorac N, Jacobs WR, Jr., Holzenberg J, Sacchettini J, Alland D. The *Mycobacterium tuberculosis iniA* gene is essential for activity of an efflux pump that confers drug tolerance to both isoniazid and ethambutol. *Mol Microbiol*. 2005;55(6):1829-40.

142. Freundlich JS, Anderson JW, Sarantakis D, Shieh HM, Yu M, Valderramos JC, Lucumi E, Kuo M, Jacobs WR, Jr., Fidock D, Schiehser G, Jacobus D, Sacchettini J. Synthesis, biological activity, and X-ray crystal structural analysis of diaryl ether inhibitors of malarial enoyl acyl carrier protein reductase. Part 1: 4'-substituted triclosan derivatives. *Bioorg Med Chem Lett*. 2005;15(23):5247-52.

143. Ojha A, Anand M, Bhatt A, Kremer L, Jacobs WR, Jr., Hatfull GF. GroEL1: a dedicated chaperone involved in mycolic acid biosynthesis during biofilm formation in mycobacteria. *Cell*. 2005;123(5):861-73.

144. Sambandamurthy VK, Derrick SC, Jalapathy KV, Chen B, Russell RG, Morris SL, Jacobs WR, Jr. Long-term protection against tuberculosis following vaccination with a severely attenuated double lysine and pantothenate auxotroph of *Mycobacterium tuberculosis*. *Infect Immun*. 2005;73(2):1196-203.

145. Sambandamurthy VK, Jacobs WR, Jr. Live attenuated mutants of *Mycobacterium tuberculosis* as candidate vaccines against tuberculosis. *Microbes Infect*. 2005;7(5-6):955-61.

146. Vilcheze C, Weisbrod TR, Chen B, Kremer L, Hazbon MH, Wang F, Alland DM Sacchettini JC, Jacobs WR, Jr. Altered NADH/NAD+ ratio mediates coresistance to isoniazid and ethionamide in mycobacteria. *Antimicrob Agents Chemother*. 2005;49(2):708-20.

147. Aravindhan V, Narayanan S, Gautham N, Prasad V, Kannan P, Jacobs WR, Jr., Narayanan P. T-h-2 immunity and CD3+CD45RBlow-activated T cells in mice immunized with recombinant bacillus Calmette-Guerin expressing HIV-1 principal neutralizing determinant epitope. *FEMS Immunol Med Microbiol*. 2006;47(1):45-55.

148. Banaiee N, Jacobs WR, Jr., Ernst JD. Regulation of *Mycobacterium tuberculosis whiB3* in the mouse lung and macrophages. *Infect Immun*. 2006;74(11):6449-57.

149. Banaiee N, Kincaid EZ, Buchwald U, Jacobs WR, Jr., Ernst JD. Potent inhibition of macrophage responses to IFN-gamma by live virulent *Mycobacterium tuberculosis* is independent of mature mycobacterial lipoproteins but dependent on TLR2. *J Immunol*. 2006;176(5):3019-27.

150. Cayabyab MJ, Hovav AH, Hsu T, Krivulka GR, Lifton MA, Gorgone DA, Fennelly G, Haynes B, Jacobs WR, Jr., Letvin Generation of CD8+ T-cell responses by a recombinant nonpathogenic Mycobacterium smegmatis vaccine vector expressing human immunodeficiency virus type 1 Env. *J Virol*. 2006;80(4):1645-52.

151. Freundlich JS, Yu M, Lucumi E, Kuo M, Tsai HC, Valderramos JC, Karagyozov L, Jacobs WR, Jr., Schiehser GA, Fidock DA, Jacobus DP, Sacchettini JC. Synthesis and biological activity of diaryl ether inhibitors of malarial enoyl acyl carrier protein reductase. Part 2: 2'-substituted triclosan derivatives. *Bioorg Med Chem Lett*. 2006;16(8):2163-9.

152. Govan VA, Christensen ND, Berkower C, Jacobs WR, Jr., Williamson AL. Immunisation with recombinant BCG expressing the cottontail rabbit papillomavirus (CRPV) L1 gene provides protection from CRPV challenge. *Vaccine*. 2006;24(12):2087-93.

153. Junqueira-Kipnis AP, Basaraba RJ, Gruppo V, Palanisamy G, Turner OC, Hsu T, Jacobs WR, Jr., Fulton SA, Reba SM, Boom WH, Orme IM. Mycobacteria lacking the RD1 region do not induce necrosis in the lungs of mice lacking interferon-gamma. *Immunology*. 2006;119(2):224-31.

154. Lee S, Jeon BY, Bardarov S, Chen M, Morris SL, Jacobs WR, Jr. Protection elicited by two glutamine auxotrophs of *Mycobacterium tuberculosis* and in vivo growth phenotypes of the four unique glutamine synthetase mutants in a murine model. *Infect Immun*. 2006;74(11):6491-5.

155. Morbidoni HR, Vilcheze C, Kremer L, Bittman R, Sacchettini JC, Jacobs WR, Jr. Dual inhibition of mycobacterial fatty acid biosynthesis and degradation by 2-alkynoic acids. *Chem Biol*. 2006;13(3):297-307.

156. Nkrumah LJ, Muhle RA, Moura PA, Ghosh P, Hatfull GF, Jacobs WR, Jr., Fidock DA. Efficient site-specific integration in *Plasmodium falciparum* chromosomes mediated by mycobacteriophage Bxb1 integrase. *Nat Methods*. 2006;3(8):615-21.

157. Perez J, Garcia R, Bach H, de Waard JH, Jacobs WR, Jr., Av-Gay Y, Bubis J, Takiff HE. *Mycobacterium tuberculosis* transporter MmpL7 is a potential substrate for kinase PknD. *Biochem Biophys Res Commun*. 2006;348(1):6-12.

158. Rao V, Gao F, Chen B, Jacobs WR, Jr., Glickman MS. Trans-cyclopropanation of mycolic acids on trehalose dimycolate suppresses *Mycobacterium tuberculosis* -induced inflammation and virulence. *J Clin Invest*. 2006;116(6):1660-7.

159. Roy E, De Silva AD, Sambandamurthy VK, Clark SO, Stavropoulos E, Jacobs WR, Jr., Brenna J, Chan J, Williams A, Colston MJ, Tascon R. Induction of high levels of protective immunity in mice after vaccination using dendritic cells infected with auxotrophic mutants of *Mycobacterium tuberculosis*. *Immunol Lett*. 2006;103(2):196-9.

160. Sambandamurthy VK, Derrick SC, Hsu T, Chen B, Larsen MH, Jalapathy KV, Chen M, Kim J, Porcelli SA, Chan J, Morris SL, Jacobs WR, Jr. *Mycobacterium tuberculosis* DeltaRD1 Delta*pan*CD: a safe and limited replicating mutant strain that protects immunocompetent and immunocompromised mice against experimental tuberculosis. *Vaccine*. 2006;24(37-39):6309-20.

161. Schwebach JR, Jacobs, WR, Jr. Phage Finding Using Mycobacteria: A Secondary School of Undergrdaute Research Module with the Potential to Gain Scientific Authorship. *The American Biology Teacher*. 2006;68:482-90.

162. Tufariello JM, Mi K, Xu J, Manabe YC, Kesavan AK, Drumm J, Tanaka, K, Jacobs, WR, Jr., Chan J. Deletion of the *Mycobacterium tuberculosis* resuscitation-promoting factor Rv1009 gene results in delayed reactivation from chronic tuberculosis. *Infect Immun*. 2006;74(5):2985-95.

163. Vilcheze C, Wang F, Arai M, Hazbon MH, Colangeli R, Kremer L, Weisbrod T, Alland D, Sacchettini J, Jacobs WR, Jr. Transfer of a point mutation in *Mycobacterium tuberculosis inh*A resolves the target of isoniazid. *Nat Med*. 2006;12(9):1027-9.

164. Yu JS, Peacock JW, Vanleeuwen S, Hsu T, Jacobs WR, Jr., Cayabyab MJ, Letvin NL, Frothingham R, Staats HF, Liao H, Haynes BF. Generation of mucosal anti-human immunodeficiency virus type 1 T-cell responses by recombinant *Mycobacterium smegmatis*. *Clin Vaccine Immunol*. 2006;13(11):1204-11.

165. Al-Sayyed B, Piperdi S, Yuan X, Li A, Besra GS, Jacobs WR, Jr., Casadevall A, Glatman-Freedman A. Monoclonal antibodies to *Mycobacterium tuberculosis* CDC 1551 reveal subcellular localization of MPT51. *Tuberculosis (Edinb).* 2007;87(6):489-97.

166. Banaiee N, Jacobs WR, Ernst JD. LspA-independent action of globomycin on *Mycobacterium tuberculosis*. *J Antimicrob Chemother*. 2007;60(2):414-6.

167. Bhatt A, Fujiwara N, Bhatt K, Gurcha SS, Kremer L, Chen B, Chan J, Porcelli SA, Kobayashi K, Besra GS, Jacobs WR, Jr. Deletion of *kas*B in *Mycobacterium tuberculosis* causes loss of acid-fastness and subclinical latent tuberculosis in immunocompetent mice. *Proc Natl Acad Sci U S A*. 2007;104(12):5157-62.

168. Bhatt K, Gurcha SS, Bhatt A, Besra GS, Jacobs WR, Jr. Two polyketide-synthase-associated acyltransferases are required for sulfolipid biosynthesis in *Mycobacterium tuberculosis*. *Microbiology*. 2007;153(Pt 2):513-20.

169. Colangeli R, Helb D, Vilcheze C, Hazbon MH, Lee CG, Safi H, Sayers B, Sardone I, Jones MB, Fleischmann RD, Peterson SN, Jacobs WR, Jr., Alland, D. Transcriptional regulation of multi-drug tolerance and antibiotic-induced responses by the histone-like protein Lsr2 in *M. tuberculosis*. *PLoS Pathog*. 2007;3(6):e87.

170. Derrick SC, Evering TH, Sambandamurthy VK, Jalapathy KV, Hsu T, Chen B, Chen M, Russell RG, Junqueira-Kipnis AP, Orme IM, Porcelli SA, Jacobs WR, Jr., Morris S. Characterization of the protective T-cell response generated in CD4-deficient mice by a live attenuated *Mycobacterium tuberculosis* vaccine. *Immunology*. 2007;120(2):192-206.

171. Freundlich JS, Wang F, Tsai HC, Kuo M, Shieh HM, Anderson JW, Nkrumah LJ, Valderramos JC, Yu M, Kumar TR, Valderramos SG, Jacobs WR, Jr., Schiehser GA, Jacobus DP, Fidock DA, Sacchettini JC. X-ray structural analysis of *Plasmodium falciparum* enoyl acyl carrier protein reductase as a pathway toward the optimization of triclosan antimalarial efficacy. *J Biol Chem*. 2007;282(35):25436-44.

172. Glover RT, Kriakov J, Garforth SJ, Baughn AD, Jacobs WR, Jr. The two-component regulatory system *senX3-regX3* regulates phosphate-dependent gene expression in *Mycobacterium smegmatis. J Bacteriol*. 2007;189(15):5495-503.

173. Hinchey J, Lee S, Jeon BY, Basaraba RJ, Venkataswamy MM, Chen B, Chan J, Braunstein M, Orme I, Derrick SC, Morris SL, Jacobs WR, Jr., Porcelli SA. Enhanced priming of adaptive immunity by a proapoptotic mutant of *Mycobacterium tuberculosis*. *J Clin Invest*. 2007;117(8):2279-88.

174. Hovav AH, Cayabyab MJ, Panas MW, Santra S, Greenland J, Geiben R, Haynes BF, Jacobs WR, Jr., Letvin NL. Rapid memory CD8+ T-lymphocyte induction through priming with recombinant *Mycobacterium smegmatis*. *J Virol*. 2007;81(1):74-83.

175. Larsen MH, Biermann K, Jacobs WR, Jr. Analyses of *Mycobacterium tuberculosis* proteins. *Curr Protoc Microbiol*. 2007;Chapter 10:Unit 10A 4.

176. Larsen MH, Biermann K, Jacobs WR, Jr. Laboratory maintenance of *Mycobacterium tuberculosis*. *Curr Protoc Microbiol*. 2007;Chapter 10:Unit 10A 1.

177. Larsen MH, Biermann K, Tandberg S, Hsu T, Jacobs WR, Jr. Genetic Manipulation of *Mycobacterium tuberculosis*. *Curr Protoc Microbiol*. 2007;Chapter 10:Unit 10A 2.

178. Mo Y, Quanquin NM, Vecino WH, Ranganathan UD, Tesfa L, Bourn W, Derbyshire KM, Letvin NL, Jacobs WR, Jr., Fennelly GJ. Genetic alteration of *Mycobacterium smegmatis* to improve mycobacterium-mediated transfer of plasmid DNA into mammalian cells and DNA immunization. *Infect Immun*. 2007;75(10):4804-16.

179. Ngo SC, Zimhony O, Chung WJ, Sayahi H, Jacobs WR, Jr., Welch JT. Inhibition of isolated *Mycobacterium tuberculosis* fatty acid synthase I by pyrazinamide analogs. *Antimicrob Agents Chemother*. 2007;51(7):2430-5.

180. Pinto R, Harrison JS, Hsu T, Jacobs WR, Jr., Leyh TS. Sulfite reduction in mycobacteria. *J Bacteriol*. 2007;189(18):6714-22.

181. Velmurugan K, Chen B, Miller JL, Azogue S, Gurses S, Hsu T, . *Mycobacterium tuberculosis nuoG* is a virulence gene that inhibits apoptosis of infected host cells. *PLoS Pathog*. 2007;3(7):e110.

182. Vilcheze C, Jacobs WR. Isolation and analysis of *Mycobacterium tuberculosis* mycolic acids. *Curr Protoc Microbiol*. 2007;Chapter 10:Unit 10A 3.

183. Vilcheze C, Jacobs WR, Jr. The mechanism of isoniazid killing: clarity through the scope of genetics. *Annu Rev Microbiol*. 2007;61:35-50.

184. Wang F, Langley R, Gulten G, Dover LG, Besra GS, Jacobs WR, Jr., Sacchettini. Mechanism of thioamide drug action against tuberculosis and leprosy. *J Exp Med*. 2007;204(1):73-8.

185. Waters WR, Palmer MV, Nonnecke BJ, Thacker TC, Scherer CF, Estes DM, Jacobs WR, Jr., Glatman-Freedman A, Larsen MH. Failure of a *Mycobacterium tuberculosis* DeltaRD1 DeltapanCD double deletion mutant in a neonatal calf aerosol M. bovis challenge model: comparisons to responses elicited by M. bovis bacille Calmette Guerin. *Vaccine*. 2007;25(45):7832-40.

186. Yu JS, Peacock JW, Jacobs WR, Jr., Frothingham R, Letvin NL, Liao HX, Haynes BF. Recombinant *Mycobacterium bovis* bacillus Calmette-Guerin elicits human immunodeficiency virus type 1 envelope-specific T lymphocytes at mucosal sites. *Clin Vaccine Immunol*. 2007;14(7):886-93.

187. Zimhony O, Vilcheze C, Arai M, Welch JT, Jacobs WR, Jr. Pyrazinoic acid and its *n*-propyl ester inhibit fatty acid synthase type I in replicating tubercle bacilli. *Antimicrob Agents Chemother*. 2007;51(2):752-4.

188. Arai M, Sobou M, Vilcheze C, Baughn A, Hashizume H, Pruksakorn P, Ishida A, Matsumoto M, Jacobs WR, Jr., Kobayashi M. Halicyclamine A, a marine spongean alkaloid as a lead for anti-tuberculosis agent. *Bioorg Med Chem*. 2008;16(14):6732-6.

189. Banaiee N, January V, Barthus C, Lambrick M, Roditi D, Behr MA, Jacobs WR, Jr., Steyn LM. Evaluation of a semi-automated reporter phage assay for susceptibility testing of *Mycobacterium tuberculosis* isolates in South Africa. *Tuberculosis (Edinb).* 2008;88(1):64-8.

190. Bueno SM, Gonzalez PA, Cautivo KM, Mora JE, Leiva ED, Tobar HE, Fen. Protective T cell immunity against respiratory syncytial virus is efficiently induced by recombinant BCG. *Proc Natl Acad Sci U S A*. 2008;105(52):20822-7.

191. Dao DN, Sweeney K, Hsu T, Gurcha SS, Nascimento IP, Roshevsky D, Besra GS, Chan J, Porcelli SA, Jacobs WR, Jr. Mycolic acid modification by the *mmaA4* gene of *M. tuberculosis* modulates IL-12 production. *PLoS Pathog*. 2008;4(6):e1000081.

192. Gopalaswamy R, Narayanan S, Jacobs WR, Jr., Av-Gay Y. *Mycobacterium smegmatis* biofilm formation and sliding motility are affected by the serine/threonine protein kinase PknF. *FEMS Microbiol Lett*. 2008;278(1):121-7.

193. Huang D, Shen Y, Qiu L, Chen CY, Shen L, Estep J, Hunt R, Vasconcelos D, Gu G, Aye P, Lackner AA, Larsen MH, Jacobs WR, Jr., Haynes BF, Letvin N, Chen Z. Immune distribution and localization of phosphoantigen-specific Vgamma2Vdelta2 T cells in lymphoid and nonlymphoid tissues in *Mycobacterium tuberculosis* infection. *Infect Immun*. 2008;76(1):426-36.

194. Im JS, Kang TJ, Lee SB, Kim CH, Lee SH, Venkataswamy MM, Serfass E, Chen B, Illarionov PA, Besra GS, Jacobs WR, Jr., Chae GT, Porcelli SA. Alteration of the relative levels of iNKT cell subsets is associated with chronic mycobacterial infections. *Clin Immunol*. 2008;127(2):214-24.

195. Jayakumar D, Jacobs WR, Jr., Narayanan S. Protein kinase E of *Mycobacterium tuberculosis* has a role in the nitric oxide stress response and apoptosis in a human macrophage model of infection. *Cell Microbiol*. 2008;10(2):365-74.

196. Kumar V, Loganathan P, Sivaramakrishnan G, Kriakov J, Dusthakeer A, Subramanyam B, Chan J, Jacobs WR, Jr., Rama NP. Characterization of temperate phage Che12 and construction of a new tool for diagnosis of tuberculosis. *Tuberculosis (Edinb).* 2008;88(6):616-23.

197. Mishra AK, Alderwick LJ, Rittmann D, Wang C, Bhatt A, Jacobs WR, Jr., et al. Identification of a novel alpha(1-->6) mannopyranosyltransferase MptB from *Corynebacterium glutamicum* by deletion of a conserved gene, *NCgl1505*, affords a lipomannan- and lipoarabinomannan-deficient mutant. *Mol Microbiol*. 2008;68(6):1595-613.

198. Mohamedmohaideen NN, Palaninathan SK, Morin PM, Williams BJ, Braunstein M, Tichy SE, Locker J, Russell DH, Jacobs WR, Jr., Sacchettini JC. Structure and function of the virulence-associated high-temperature requirement A of *Mycobacterium tuberculosis*. *Biochemistry*. 2008;47(23):6092-102.

199. Ojha AK, Baughn AD, Sambandan D, Hsu T, Trivelli X, Guerardel Y, Alahari A, Kremer L, Jacobs WR, Jr., Hatfull GF. Growth of *Mycobacterium tuberculosis* biofilms containing free mycolic acids and harbouring drug-tolerant bacteria. *Mol Microbiol*. 2008;69(1):164-74.

200. Qiu L, Huang D, Chen CY, Wang R, Shen L, Shen Y, et al. Severe tuberculosis induces unbalanced up-regulation of gene networks and overexpression of *IL-22*, *MIP-1alpha*, *CCL27*, *IP-10, CCR4, CCR5, CXCR3, PD1, PDL2, IL-3, IFN-beta, TIM1*, and *TLR2* but low antigen-specific cellular responses. *J Infect Dis*. 2008;198(10):1514-9.

201. Reddy MC, Gokulan K, Jacobs WR, Jr., Ioerger TR, Sacchettini JC. Crystal structure of *Mycobacterium tuberculosis* LrpA, a leucine-responsive global regulator associated with starvation response. *Protein Sci*. 2008;17(1):159-70.

202. Vilcheze C, Av-Gay Y, Attarian R, Liu Z, Hazbon MH, Colangeli R, Chen B, Liu W, Alland D, Sacchettini JC, Jacobs WR, Jr. Mycothiol biosynthesis is essential for ethionamide susceptibility in *Mycobacterium tuberculosis*. *Mol Microbiol*. 2008;69(5):1316-29.

203. Yu M, Kumar TR, Nkrumah LJ, Coppi A, Retzlaff S, Li CD, Kelly B, Moura P, Lakshmann V, Freundlich JS, Valderramos JC, Vilcheze C, Siedner M, Tsai JH, Falkard B, Sidhu AB, Purcell LA, Gratraud P, Kremer L, Waters AP, Schiehser G, Jacobus DP, Janse CJ, Ager A, Jacobs WR, Jr., Sacchettini JC, Heussler V, Sinnis P, Fidock DA. The fatty acid biosynthesis enzyme FabI plays a key role in the development of liver-stage malarial parasites. *Cell Host Microbe*. 2008;4(6):567-78.

204. Banaei N, Kincaid EZ, Lin SY, Desmond E, Jacobs WR, Jr., Ernst JD. Lipoprotein processing is essential for resistance of *Mycobacterium tuberculosis* to malachite green. *Antimicrob Agents Chemother*. 2009;53(9):3799-802.

205. Baughn AD, Garforth SJ, Vilcheze C, Jacobs WR, Jr. An anaerobic-type alpha-ketoglutarate ferredoxin oxidoreductase completes the oxidative tricarboxylic acid cycle of *Mycobacterium tuberculosis*. *PLoS Pathog*. 2009;5(11):e1000662.

206. Bhatt A, Jacobs WR, Jr. Gene essentiality testing in mycobacterium smegmatis using specialized transduction. *Methods Mol Biol*. 2009;465:325-36.

207. Capinos Scherer CF, Endsley JJ, de Aguiar JB, Jacobs WR, Jr., Larsen MH, Palmer MV, Nonnecke BJ, Waters WR, Estes DM. Evaluation of granulysin and perforin as candidate biomarkers for protection following vaccination with *Mycobacterium bovis* BCG or *M. bovis*DeltaRD1. *Transbound Emerg Dis*. 2009;56(6-7):228-39.

208. Capyk JK, Kalscheuer R, Stewart GR, Liu J, Kwon H, Zhao R, Okamoto A, Jacobs WR, Jr., Eltis LD, Mohn WM. Mycobacterial cytochrome p450 125 (cyp125) catalyzes the terminal hydroxylation of c27 steroids. *J Biol Chem*. 2009;284(51):35534-42.

209. Cayabyab MJ, Korioth-Schmitz B, Sun Y, Carville A, Balachandran H, Miura A, Carlson KR, Buzby AP, Haynes BF, Jacobs WR, Jr., Letvin NL. Recombinant *Mycobacterium bovis* BCG prime-recombinant adenovirus boost vaccination in rhesus monkeys elicits robust polyfunctional simian immunodeficiency virus-specific T-cell responses. *J Virol*. 2009;83(11):5505-13.

210. Chen CY, Huang D, Wang RC, Shen L, Zeng G, Yao S, Shen Y, Halliday L, Fortman J, McAllister M, Estep J, Hunt R, Vasconcelos D, Du G, Porcelli SA, Larsen MH, Jacobs WR, Jr., Haynes BF, Letvin NL, Chen Z. A critical role for CD8 T cells in a nonhuman primate model of tuberculosis. *PLoS Pathog*. 2009;5(4):e1000392.

211. Chen J, Kriakov J, Singh A, Jacobs WR, Jr., Besra GS, Bhatt A. Defects in glycopeptidolipid biosynthesis confer phage I3 resistance in *Mycobacterium smegmatis*. *Microbiology*. 2009;155(Pt 12):4050-7.

212. Cirillo SL, Subbian S, Chen B, Weisbrod TR, Jacobs WR, Jr., Cirillo JD. Protection of *Mycobacterium tuberculosis* from reactive oxygen species conferred by the *mel2* locus impacts persistence and dissemination. *Infect Immun*. 2009;77(6):2557-67.

213. Colangeli R, Haq A, Arcus VL, Summers E, Magliozzo RS, McBride A, Mitra AK, Radjainia M, Khajo A, Jacobs WR, Jr., Salgame P, Alland D. The multifunctional histone-like protein Lsr2 protects mycobacteria against reactive oxygen intermediates. *Proc Natl Acad Sci U S A*. 2009;106(11):4414-8.

214. Endsley JJ, Waters WR, Palmer MV, Nonnecke BJ, Thacker TC, Jacobs WR, Jr., Larsen MH, Hogg A, Shell E, McAlauy M, Capinosh Scherer CF, Coffey T, Howard CJ, Villareal-Ramos B, Estes DM. The calf model of immunity for development of a vaccine against tuberculosis. *Vet Immunol Immunopathol*. 2009;128(1-3):199-204.

215. Freundlich JS, Wang F, Vilcheze C, Gulten G, Langley R, Schiehser GA, Jacobus DP, Jacobs WR, Jr., Sacchettini JC. Triclosan derivatives: towards potent inhibitors of drug-sensitive and drug-resistant *Mycobacterium tuberculosis*. *ChemMedChem*. 2009;4(2):241-8.

216. Gopalaswamy R, Narayanan S, Chen B, Jacobs WR, Av-Gay Y. The serine/threonine protein kinase PknI controls the growth of *Mycobacterium tuberculosis* upon infection. *FEMS Microbiol Lett*. 2009;295(1):23-9.

217. Gratraud P, Huws E, Falkard B, Adjalley S, Fidock DA, Berry L, Jacobs WR, Jr., Baird MS, Vial H, Kremer L. Oleic acid biosynthesis in *Plasmodium falciparum*: characterization of the stearoyl-CoA desaturase and investigation as a potential therapeutic target. *PLoS One*. 2009;4(9):e6889.

218. Ioerger TR, Koo S, No EG, Chen X, Larsen MH, Jacobs WR, Jr., Pillay M, Sturm AW, Sacchettini JC. Genome analysis of multi- and extensively-drug-resistant tuberculosis from KwaZulu-Natal, South Africa. *PLoS One*. 2009;4(11):e7778.

219. Larsen MH, Biermann K, Chen B, Hsu T, Sambandamurthy VK, Lackner AA, Aye PP, Didier P, Huang D, Shao L, Wei H, Letvin NL, Frothingham R, Haynes BF, Chen ZW, Jacobs WR, Jr. Efficacy and safety of live attenuated persistent and rapidly cleared *Mycobacterium tuberculosis* vaccine candidates in non-human primates. *Vaccine*. 2009;27(34):4709-17.

220. Lim J, Derrick SC, Kolibab K, Yang AL, Porcelli S, Jacobs WR, Morris SL. Early pulmonary cytokine and chemokine responses in mice immunized with three different vaccines against *Mycobacterium tuberculosis* determined by PCR array. *Clin Vaccine Immunol*. 2009;16(1):122-6.

221. Nascimento IP, Dias WO, Quintilio W, Hsu T, Jacobs WR, Jr., Leite LC. Construction of an unmarked recombinant BCG expressing a pertussis antigen by auxotrophic complementation: protection against Bordetella pertussis challenge in neonates. *Vaccine*. 2009;27(52):7346-51.

222. Parra M, Yang AL, Lim J, Kolibab K, Derrick S, Cadieux N, Perera LP, Jacobs WR, Jr., Brennan M, Morris SL. Development of a murine mycobacterial growth inhibition assay for evaluating vaccines against *Mycobacterium tuberculosis. Clin Vaccine Immunol*. 2009;16(7):1025-32.

223. Piuri M, Jacobs WR, Jr., Hatfull GF. Fluoromycobacteriophages for rapid, specific, and sensitive antibiotic susceptibility testing of *Mycobacterium tuberculosis*. *PLoS One*. 2009;4(3):e4870.

224. Ranganathan UD, Larsen MH, Kim J, Porcelli SA, Jacobs WR, Jr., Fennelly GJ. Recombinant pro-apoptotic *Mycobacterium tuberculosis* generates CD8+ T cell responses against human immunodeficiency virus type 1 Env and *M. tuberculosis* in neonatal mice. *Vaccine*. 2009;28(1):152-61.

225. Venkataswamy MM, Baena A, Goldberg MF, Bricard G, Im JS, Chan J, Reddington F, Besra GS, Jacobs WR, Jr., Porcelli SA. Incorporation of NKT cell-activating glycolipids enhances immunogenicity and vaccine efficacy of *Mycobacterium bovis* bacillus Calmette-Guerin. *J Immunol*. 2009;183(3):1644-56.

226. Waters WR, Palmer MV, Nonnecke BJ, Thacker TC, Estes DM, Larsen MH, et al. Signal regulatory protein alpha (SIRPalpha) cells in the adaptive response to ESAT-6/CFP-10 protein of tuberculous mycobacteria. *PLoS One*. 2009;4(7):e6414.

227. Waters WR, Palmer MV, Nonnecke BJ, Thacker TC, Scherer CF, Estes DM, Hewinson RG, Vordermeier HM, Barnes SW, Federe GC, Walker JR, Glynne RJ, Hsu T, Weinrick B, Biermann K, Larsen MH, Jacobs WR, Jr. Efficacy and immunogenicity of *Mycobacterium bovis DeltaRD1* against aerosol *M. bovis* infection in neonatal calves. *Vaccine*. 2009;27(8):1201-9.

228. Yam KC, D'Angelo I, Kalscheuer R, Zhu H, Wang JX, Snieckus V, Ly LH, Converese PJ, Jacobs WR, Jr., Strynadka N, Eltis LD. Studies of a ring-cleaving dioxygenase illuminate the role of cholesterol metabolism in the pathogenesis of *Mycobacterium tuberculosis*. *PLoS Pathog*. 2009;5(3):e1000344.

229. Zimmerman DM, Waters WR, Lyashchenko KP, Nonnecke BJ, Armstrong DL, Jacobs WR, Jr., Larsen MH, Egan E, Dean GA. Safety and immunogenicity of the *Mycobacterium tuberculosis DeltalysA DeltapanCD* vaccine in domestic cats infected with feline immunodeficiency virus. *Clin Vaccine Immunol*. 2009;16(3):427-9.

230. Baughn AD, Deng J, Vilcheze C, Riestra A, Welch JT, Jacobs WR, Jr., Zimhony O. Mutually exclusive genotypes for pyrazinamide and 5-chloropyrazinamide resistance reveal a potential resistance-proofing strategy. *Antimicrob Agents Chemother*. 2010;54(12):5323-8.

231. Ioerger TR, Feng Y, Ganesula K, Chen X, Dobos KM, Fortune S, Jacobs WR, Jr., Mizrahi V, Parish T, Rubin E, Sassetti C, Sacchettini JC. Variation among genome sequences of H37Rv strains of *Mycobacterium tuberculosis* from multiple laboratories. *J Bacteriol*. 2010;192(14):3645-53.

232. Kalscheuer R, Weinrick B, Veeraraghavan U, Besra GS, Jacobs WR, Jr. Trehalose-recycling ABC transporter LpqY-SugA-SugB-SugC is essential for virulence of *Mycobacterium tuberculosis*. *Proc Natl Acad Sci U S A*. 2010;107(50):21761-6.

233. Kinhikar AG, Verma I, Chandra D, Singh KK, Weldingh K, Andersen P, Hsu T, Jacobs, WR, Jr., Laal S. Potential role for ESAT6 in dissemination of *M. tuberculosis* via human lung epithelial cells. *Mol Microbiol*. 2010;75(1):92-106.

234. Larsen MH, Jacobs WR, Porcelli SA, Kim J, Ranganathan UD, Fennelly GJ. Balancing safety and immunogenicity in live-attenuated mycobacterial vaccines for use in humans at risk for HIV: response to misleading comments in Ranganathan et al. "recombinant pro-apoptotic *Mycobacterium tuberculosis* generates CD8+ T cell responses against human immunodeficiency virus type 1 Env and M. tuberculosis in neonatal mice". *Vaccine*. 2010;28(21):3633-4.

235. Lazar-Molnar E, Chen B, Sweeney KA, Wang EJ, Liu W, Lin J, Porcelli SA, Almo SC, Nathenson SG, Jacobs WR, Jr. Programmed death-1 (PD-1)-deficient mice are extraordinarily sensitive to tuberculosis. *Proc Natl Acad Sci U S A*. 2010;107(30):13402-7.

236. Molle V, Gulten G, Vilcheze C, Veyron-Churlet R, Zanella-Cleon I, Sacchettini JC, Jacobs WR, Jr., Kremer L. Phosphorylation of InhA inhibits mycolic acid biosynthesis and growth of *Mycobacterium tuberculosis*. *Mol Microbiol*. 2010;78(6):1591-605.

237. Pruksakorn P, Arai M, Kotoku N, Vilcheze C, Baughn AD, Moodley P, Jacobs WR, Jr., Kobayashi M. Trichoderins, novel aminolipopeptides from a marine sponge-derived *Trichoderma* sp., are active against dormant mycobacteria. *Bioorg Med Chem Lett*. 2010;20(12):3658-63.

238. Vilcheze C, Weinrick B, Wong KW, Chen B, Jacobs WR, Jr. NAD+ auxotrophy is bacteriocidal for the tubercle bacilli. *Mol Microbiol*. 2010;76(2):365-77.

239. Chen B, Weisbrod TR, Hsu T, Sambandamurthy V, Vieira-Cruz D, Chibbaro A, Ghidoni D, Kile T, Barkley WE, Vilcheze C, Colon-Berezin C, Thaler DS, Larsen MH, Sturm AW, Jacobs WR, Jr. Einstein Contained Aerosol Pulmonizer (ECAP): Improved Biosafety for Multi-Drug Resistant (MDR) and Extensively Drug Resistant (XDR) *Mycobacterium tuberculosis* Aerosol Infection Studies. *Appl Biosaf*. 2011;16(3):134-8.

240. Hinchey J, Jeon BY, Alley H, Chen B, Goldberg M, Derrick S, Morris S, Jacobs WR, Jr., Porcelli SA, Lee S. Lysine auxotrophy combined with deletion of the *SecA2* gene results in a safe and highly immunogenic candidate live attenuated vaccine for tuberculosis. *PLoS One*. 2011;6(1):e15857.

241. Parra M, Derrick SC, Yang A, Tian J, Kolibab K, Oakley M, Perera LP, Jacobs WR, Jr., Kumar S, Morris S. Malaria infections do not compromise vaccine-induced immunity against tuberculosis in mice. *PLoS One*. 2011;6(12):e28164.

242. Pope WH, Ferreira CM, Jacobs-Sera D, Benjamin RC, Davis AJ, DeJong RJ, Elgin SC, Guilfoile FR, Forsyth MH, Harris AD, Harvey SE, Hughes LE, Hynes PM, Jackson AS, Jalal MD, MacMurray EA, Manley CM, McDonough MJ, Mosier JL, Osterbann LJ, Rabinowitz HS, Rhyan CN, Russell DA, Saha MS, Shaffer CD, Simon SE, Sims EF, Tovar IG, Weisser EG, Wertz JT, Weston-Hefer KA. Cluster K mycobacteriophages: insights into the evolutionary origins of mycobacteriophage TM4. *PLoS One*. 2011;6(10):e26750.

243. Prados-Rosales R, Baena A, Martinez LR, Luque-Garcia J, Kalscheuer R, Veeraraghavan U, Camara C, Nosanchuk JD, Besra GS, Chen B, Jimenez J, Glatman-Freedman A, Jacobs WR, Jr., Porcelli SA, Casadevall A. Mycobacteria release active membrane vesicles that modulate immune responses in a TLR2-dependent manner in mice. *J Clin Invest*. 2011;121(4):1471-83.

244. Pruksakorn P, Arai M, Liu L, Moodley P, Jacobs WR, Jr., Kobayashi M. Action-mechanism of trichoderin A, an anti-dormant mycobacterial aminolipopeptide from marine sponge-derived *Trichoderma* sp. *Biol Pharm Bull*. 2011;34(8):1287-90.

245. Rondon L, Piuri M, Jacobs WR, Jr., de Waard J, Hatfull GF, Takiff HE. Evaluation of fluoromycobacteriophages for detecting drug resistance in *Mycobacterium tuberculosis*. *J Clin Microbiol*. 2011;49(5):1838-42.

246. Sweeney KA, Dao DN, Goldberg MF, Hsu T, Venkataswamy MM, Henao-Tamayo M, Ordway D, Sellers RS, Jain P, Chen B, Chen M, Kim J, Lukose R, Chan J, Orme IM, Porcelli SA, Jacobs WR, Jr. A recombinant Mycobacterium smegmatis induces potent bactericidal immunity against *Mycobacterium tuberculosis*. *Nat Med*. 2011;17(10):1261-8.

247. Vilcheze C, Av-Gay Y, Barnes SW, Larsen MH, Walker JR, Glynne RJ, Jacobs WR, Jr. Coresistance to isoniazid and ethionamide maps to mycothiol biosynthetic genes in *Mycobacterium bovis*. *Antimicrob Agents Chemother*. 2011;55(9):4422-3.

248. Vilcheze C, Baughn AD, Tufariello J, Leung LW, Kuo M, Basler CF, Alland D, Sacchettini JC, Freundlich JS, Jacobs WR, Jr. Novel inhibitors of InhA efficiently kill *Mycobacterium tuberculosis* under aerobic and anaerobic conditions. *Antimicrob Agents Chemother*. 2011;55(8):3889-98.

249. Wong KW, Jacobs WR, Jr. Critical role for NLRP3 in necrotic death triggered by *Mycobacterium tuberculosis*. *Cell Microbiol*. 2011;13(9):1371-84.

250. Xu X, Vilcheze C, Av-Gay Y, Gomez-Velasco A, Jacobs WR, Jr. Precise null deletion mutations of the mycothiol synthesis genes reveal their role in isoniazid and ethionamide resistance in *Mycobacterium smegmatis*. *Antimicrob Agents Chemother*. 2011;55(7):3133-9.

251. Yu JS, Whitesides J, Lee SH, Taylor N, Jacobs WR, Jr., Letvin NL, Haynes BF. Flow cytometry sorting of recombinant mycobacterial species yields bacterial clones with enhanced insert expression. *Clin Vaccine Immunol*. 2011;18(1):43-9.

252. Ahmad Z, Tyagi S, Minkowsk A, Almeida D, Nuermberger EL, Peck KM, Welch JT, Baughn AD, Jacobs WR, Jr., Grosset JH. Activity of 5-chloro-pyrazinamide in mice infected with *Mycobacterium tuberculosis* or *Mycobacterium bovis*. *Indian J Med Res*. 2012;136(5):808-14.

253. Bourai N, Jacobs WR, Jr., Narayanan S. Deletion and overexpression studies on DacB2, a putative low molecular mass penicillin binding protein from *Mycobacterium tuberculosis* H(37)Rv. *Microb Pathog*. 2012;52(2):109-16.

254. Chapman R, Shephard E, Stutz H, Douglass N, Sambandamurthy V, Garcia I, Ryffel B, Jacobs WR, Jr., Williamson AL. Priming with a recombinant pantothenate auxotroph of *Mycobacterium bovis* BCG and boosting with MVA elicits HIV-1 Gag specific CD8+ T cells. *PLoS One*. 2012;7(3):e32769.

255. Derrick SC, Dao D, Yang A, Kolibab K, Jacobs WR, Morris SL. Formulation of a mmaA4 gene deletion mutant of *Mycobacterium bovis* BCG in cationic liposomes significantly enhances protection against tuberculosis. *PLoS One*. 2012;7(3):e32959.

256. Jain P, Hartman TE, Eisenberg N, O'Donnell MR, Kriakov J, Govender K, et al. phi(2)GFP10, a high-intensity fluorophage, enables detection and rapid drug susceptibility testing of *Mycobacterium tuberculosis* directly from sputum samples. *J Clin Microbiol*. 2012;50(4):1362-9.

257. Jensen K, Ranganathan UD, Van Rompay KK, Canfield DR, Khan I, Ravindran R, Luciw PA, Jacobs WR, Jr., Fennelly G, Larsen MH, Abel K. A recombinant attenuated *Mycobacterium tuberculosis* vaccine strain is safe in immunosuppressed simian immunodeficiency virus-infected infant macaques. *Clin Vaccine Immunol*. 2012;19(8):1170-81.

258. Jensen K, Ranganathan UD, Van Rompay KK, Canfield DR, Khan I, Ravindran R, Luciw PA, Jacobs WR, Jr., Fennelly G, Larsen MH, Abel K. A recombinant attenuated *Mycobacterium tuberculosis* vaccine strain is safe in immunosuppressed simian immunodeficiency virus-infected infant macaques. *Clin Vaccine Immunol*. 2012;19(8):1170-81.

259. Kolibab K, Derrick SC, Jacobs WR, Morris SL. Characterization of an intracellular ATP assay for evaluating the viability of live attenuated mycobacterial vaccine preparations. *J Microbiol Methods*. 2012;90(3):245-9.

260. McShane H, Jacobs WR, Fine PE, Reed SG, McMurray DN, Behr M, Williams A, Orme IM. BCG: myths, realities, and the need for alternative vaccine strategies. *Tuberculosis (Edinb).* 2012;92(3):283-8.

261. Sayahi H, Pugliese KM, Zimhony O, Jacobs WR, Jr., Shekhtman A, Welch JT. Analogs of the antituberculous agent pyrazinamide are competitive inhibitors of NADPH binding to M. tuberculosis fatty acid synthase I. *Chem Biodivers*. 2012;9(11):2582-96.

262. Taylor N, Bahunde F, Thompson A, Yu JS, Jacobs WR, Jr., Letvin NL, Haynes BF, Lee S. Enhanced priming of adaptive immunity by *Mycobacterium smegmatis* mutants with high-level protein secretion. *Clin Vaccine Immunol*. 2012;19(9):1416-25.

263. Venkataswamy MM, Goldberg MF, Baena A, Chan J, Jacobs WR, Jr., Porcelli SA. *In vitro* culture medium influences the vaccine efficacy of *Mycobacterium bovis* BCG. *Vaccine*. 2012;30(6):1038-49.

264. Vilcheze C, Jacobs WR, Jr. The combination of sulfamethoxazole, trimethoprim, and isoniazid or rifampin is bactericidal and prevents the emergence of drug resistance in *Mycobacterium tuberculosis*. *Antimicrob Agents Chemother*. 2012;56(10):5142-8.

265. Yamada H, Bhatt A, Danev R, Fujiwara N, Maeda S, Mitarai S, Chikamatsu K, Aono A, Nitta K, Jacobs WR, Jr., Nagayama, K. Non-acid-fastness in *Mycobacterium tuberculosis DeltakasB* mutant correlates with the cell envelope electron density. *Tuberculosis (Edinb).* 2012;92(4):351-7.

266. Anderson JW, Sarantakis D, Terpinski J, Kumar TR, Tsai HC, Kuo M, Ager AL, Jacobs WR, Jr., Schiehser GA, Ekins S, Sacchettini JC, Jacobus DP, Fidock DA, Freundlich JS. Novel diaryl ureas with efficacy in a mouse model of malaria. *Bioorg Med Chem Lett*. 2013;23(4):1022-5.

267. Chapman R, Stutz H, Jacobs W, Jr., Shephard E, Williamson AL. Priming with recombinant auxotrophic BCG expressing HIV-1 Gag, RT and Gp120 and boosting with recombinant MVA induces a robust T cell response in mice. *PLoS One*. 2013;8(8):e71601.

268. Chege GK, Burgers WA, Stutz H, Meyers AE, Chapman R, Kiravu A, Bunjun R, Shephard EG, Jacobs WR, Jr., Rybicki EP, Williamson AL. Robust immunity to an auxotrophic *Mycobacterium bovis* BCG-VLP prime-boost HIV vaccine candidate in a nonhuman primate model. *J Virol*. 2013;87(9):5151-60.

269. Chen CY, Yao S, Huang D, Wei H, Sicard H, Zeng G, et al. Phosphoantigen/IL2 expansion and differentiation of Vgamma2Vdelta2 T cells increase resistance to tuberculosis in nonhuman primates. *PLoS Pathog*. 2013;9(8):e1003501.

270. Cheshenko N, Trepanier JB, Stefanidou M, Buckley N, Gonzalez P, Jacobs W, Herold B. HSV activates Akt to trigger calcium release and promote viral entry: novel candidate target for treatment and suppression. *FASEB J*. 2013;27(7):2584-99.

271. Jensen K, Pena MG, Wilson RL, Ranganathan UD, Jacobs WR, Jr., Fennelly G, Larsen M, Van Rompay KA, Kozlowski PA, Abel K. A neonatal oral *Mycobacterium tuberculosis*-SIV prime / intramuscular MVA-SIV boost combination vaccine induces both SIV and *Mtb*-specific immune responses in infant macaques. *Trials Vaccinol*. 2013;2:53-63.

272. Junqueira-Kipnis AP, de Oliveira FM, Trentini MM, Tiwari S, Chen B, Resende DP, Silva BD, Chen M, Tesfa L, Jacobs WR, Jr., Kipnis A. Prime-boost with *Mycobacterium smegmatis* recombinant vaccine improves protection in mice infected with *Mycobacterium tuberculosis*. *PLoS One*. 2013;8(11):e78639.

273. Kozakiewicz L, Chen Y, Xu J, Wang Y, Dunussi-Joannopoulos K, Ou Q, Flynn JL, Porcelli SA, Jacobs WR, Jr., Chan J. B cells regulate neutrophilia during *Mycobacterium tuberculosis* infection and BCG vaccination by modulating the interleukin-17 response. *PLoS Pathog*. 2013;9(7):e1003472.

274. Lim LE, Vilcheze C, Ng C, Jacobs WR, Jr., Ramon-Garcia S, Thompson CJ. Anthelmintic avermectins kill *Mycobacterium tuberculosis*, including multidrug-resistant clinical strains. *Antimicrob Agents Chemother*. 2013;57(2):1040-6.

275. Ly D, Kasmar AG, Cheng TY, de Jong A, Huang S, Roy S, Bhatt A, van Summeren RP, Altman JD, Jacobs WR, Jr., Adams EJ, Minnaard AJ, Porcelli SA, Moody DB. CD1c tetramers detect ex vivo T cell responses to processed phosphomycoketide antigens. *J Exp Med*. 2013;210(4):729-41.

276. Miallau L, Jain P, Arbing MA, Cascio D, Phan T, Ahn CJ, Chan S, Chernishof I, Maxson M, Chiang J, Jacobs WR, Jr., Eisenberg DS. Comparative proteomics identifies the cell-associated lethality of *M. tuberculosis* RelBE-like toxin-antitoxin complexes. *Structure*. 2013;21(4):627-37.

277. Sambandan D, Dao DN, Weinrick BC, Vilcheze C, Gurcha SS, Ojha A, Kremer L, Besra GS, Hatfull GF, Jacobs WR, Jr. Keto-mycolic acid-dependent pellicle formation confers tolerance to drug-sensitive *Mycobacterium tuberculosis*. MBio. 2013;4(3):e00222-13.

278. Vilcheze C, Hartman T, Weinrick B, Jacobs WR, Jr. *Mycobacterium tuberculosis* is extraordinarily sensitive to killing by a vitamin C-induced Fenton reaction. *Nat Commun*. 2013;4:1881.

279. Wang F, Sambandan D, Halder R, Wang J, Batt SM, Weinrick B, Ahmad I, Yang P, Zhang Y, Kim J, Hassani M, Huszar S, Trefzer C, Ma Z, Kaneko T, Mdluli KE, Franzblau S, Chatterjee AK, Johnsson K, Mikusova K, Besra GS, Futterer K, Robbins SH, Barnes SW, Walker JR, Jacobs WR, Jr., Schultz PG. Identification of a small molecule with activity against drug-resistant and persistent tuberculosis. *Proc Natl Acad Sci U S A*. 2013;110(27):E2510-7.

280. Wilson R, Kumar P, Parashar V, Vilcheze C, Veyron-Churlet R, Freundlich JS, Barnes SW, Walker JR, Szymonifka MJ, Marchiano E, Shenai S, Colangeli R, Jaocbs WR, Jr., Neiditch MB, Kremer L, Alland D. Antituberculosis thiophenes define a requirement for Pks13 in mycolic acid biosynthesis. *Nat Chem Biol*. 2013;9(8):499-506.

281. Wong KW, Jacobs WR, Jr. *Mycobacterium tuberculosis* exploits human interferon gamma to stimulate macrophage extracellular trap formation and necrosis. *J Infect Dis*. 2013;208(1):109-19.

282. Bartek IL, Woolhiser LK, Baughn AD, Basaraba RJ, Jacobs WR, Jr., Lenaerts AJ, Voskuil MI. *Mycobacterium tuberculosis* Lsr2 is a global transcriptional regulator required for adaptation to changing oxygen levels and virulence. MBio. 2014;5(3):e01106-14.

283. Berney M, Greening C, Conrad R, Jacobs WR, Jr., Cook GM. An obligately aerobic soil bacterium activates fermentative hydrogen production to survive reductive stress during hypoxia. *Proc Natl Acad Sci U S A*. 2014;111(31):11479-84.

284. Berney M, Hartman TE, Jacobs WR, Jr. A *Mycobacterium tuberculosis* cytochrome bd oxidase mutant is hypersensitive to bedaquiline. *MBio*. 2014;5(4):e01275-14.

285. Berney M, Hartman TE, Jacobs WR, Jr. A *Mycobacterium tuberculosis* cytochrome bd oxidase mutant is hypersensitive to bedaquiline. *MBio*. 2014;5(4):e01275-14.

286. Cheshenko N, Trepanier JB, Gonzalez PA, Eugenin EA, Jacobs WR, Jr., Herold BC. Herpes simplex virus type 2 glycoprotein H interacts with integrin alphavbeta3 to facilitate viral entry and calcium signaling in human genital tract epithelial cells. *J Virol*. 2014;88(17):10026-38.

287. Cortesia C, Vilcheze C, Bernut A, Contreras W, Gomez K, de Waard J, Jacobs WR, Jr., Kremer L, Takiff H. Acetic Acid, the active component of vinegar, is an effective tuberculocidal disinfectant. *MBio*. 2014;5(2):e00013-14.

288. Hartman T, Weinrick B, Vilcheze C, Berney M, Tufariello J, Cook GM, Jacobs WR, Jr. Succinate dehydrogenase is the regulator of respiration in *Mycobacterium tuberculosis*. *PLoS Pathog*. 2014;10(11):e1004510.

289. Hingley-Wilson SM, Connell D, Pollock K, Hsu T, Tchilian E, Sykes A, Grass L, Potiphar L, Bremang S, Kon OM, Jacobs WR, Jr., Lalvani A. ESX1-dependent fractalkine mediates chemotaxis and *Mycobacterium tuberculosis* infection in humans. *Tuberculosis (Edinb)*. 2014;94(3):262-70.

290. Jain P, Hsu T, Arai M, Biermann K, Thaler DS, Nguyen A, Gonzalez PA, Tufariello JM, Kriakov J, Chen B, Larsen MH, Jacobs WR, Jr. Specialized transduction designed for precise high-throughput unmarked deletions in *Mycobacterium tuberculosis*. *MBio*. 2014;5(3):e01245-14.

291. Panas MW, Jain P, Yang H, Mitra S, Biswas D, Wattam AR, Letvin NL, Jacobs WR, Jr. Noncanonical SMC protein in *Mycobacterium smegmatis* restricts maintenance of *Mycobacterium fortuitum* plasmids. *Proc Natl Acad Sci U S A*. 2014;111(37):13264-71.

292. Panas MW, Sixsmith JD, White K, Korioth-Schmitz B, Shields ST, Moy BT, Lee S, Schmitz JE, Jacobs WR, Jr., Porcelli SA, Haynes BF, Letvin NL, Gillard GO. Gene deletions in *Mycobacterium bovis* BCG stimulate increased CD8+ T cell responses. *Infect Immun*. 2014;82(12):5317-26.

293. Pecsi I, Hards K, Ekanayaka N, Berney M, Hartman T, Jacobs WR, Jr., Cook GM. Essentiality of succinate dehydrogenase in *Mycobacterium smegmatis* and its role in the generation of the membrane potential under hypoxia. *MBio*. 2014;5(4).

294. Pope WH, Jacobs-Sera D, Russell DA, Rubin DH, Kajee A, Msibi ZN, Larsen MH, Jacobs WR, Jr., Lawrence JG, Hendrix RW, Hatfull GF. Genomics and proteomics of mycobacteriophage patience, an accidental tourist in the *Mycobacterium* neighborhood. *MBio*. 2014;5(6):e02145.

295. Prados-Rosales R, Carreno LJ, Batista-Gonzalez A, Baena A, Venkataswamy MM, Xu J, Yu X, Wallstrom G, Magee DM, LaBaer J, Achkar JM, Jacobs WR, Jr., Chan J, Porcelli SA, Casadevall A. Mycobacterial membrane vesicles administered systemically in mice induce a protective immune response to surface compartments of *Mycobacterium tuberculosis*. *MBio*. 2014;5(5):e01921-14.

296. Prados-Rosales R, Weinrick BC, Pique DG, Jacobs WR, Jr., Casadevall A, Rodriguez GM. Role for *Mycobacterium tuberculosis* membrane vesicles in iron acquisition. *J Bacteriol*. 2014;196(6):1250-6.

297. Ramon-Garcia S, Vilcheze C, Lim LE, Ng C, Jacobs WR, Jr., Thompson CJ. Measurements of the in vitro anti-mycobacterial activity of ivermectin are method-dependent--authors' response. *J Antimicrob Chemother*. 2014;69(6):1725-6.

298. Sixsmith JD, Panas MW, Lee S, Gillard GO, White K, Lifton MA, Balachandran H, Mach L, Miller JP, Lavine C, DeMarco CT, Tomaras GD, Gee C, Porcelli SA, Larsen MH, Frothingham R, Schmitz JE, Jacobs WR, Jr., Haynes BF, Letvin NL, Korioth-Schmitz B. Recombinant *Mycobacterium bovis* bacillus Calmette-Guerin vectors prime for strong cellular responses to simian immunodeficiency virus gag in rhesus macaques. *Clin Vaccine Immunol*. 2014;21(10):1385-95.

299. Smith KL, Saini D, Bardarov S, Larsen M, Frothingham R, Gandhi NR, Jacobs WR, Jr., Sturm AW, Lee S. Reduced virulence of an extensively drug-resistant outbreak strain of *Mycobacterium tuberculosis* in a murine model. *PLoS One*. 2014;9(4):e94953.

300. Stec J, Vilcheze C, Lun S, Perryman AL, Wang X, Freundlich JS, Bishai W, Jacobs WR, Jr., Kozikowski AP. Biological evaluation of potent triclosan-derived inhibitors of the enoyl-acyl carrier protein reductase InhA in drug-sensitive and drug-resistant strains of *Mycobacterium tuberculosis*. *ChemMedChem*. 2014;9(11):2528-37.

301. Tufariello JM, Malek AA, Vilcheze C, Cole LE, Ratner HK, Gonzalez PA, Jain P, Hatfull GF, Larsen MH, Jacobs WR, Jr. Enhanced specialized transduction using recombineering in *Mycobacterium tuberculosis*. *MBio*. 2014;5(3):e01179-14.

302. Venkataswamy MM, Ng TW, Kharkwal SS, Carreno LJ, Johnson AJ, Kunnath-Velayudhan S, Liu Z, Bittman R, Jervis PJ, Cox LR, Besra GS, Wen X, Yuan W, Tsuji M, Li X, Ho D, Chan J, Lee S, Frothingham R, Haynes BF, Panas MW, Gillard GO, Sixsmith JD, Korioth-Schmitz B, Schmitz JE, Larsen MH, Jacobs WR, Jr., Porcelli SA. Improving *Mycobacterium bovis* bacillus Calmette-Guerin as a vaccine delivery vector for viral antigens by incorporation of glycolipid activators of NKT cells. *PLoS One*. 2014;9(9):e108383.

303. Vilcheze C, Jacobs WR, Jr. Resistance to Isoniazid and Ethionamide in *Mycobacterium tuberculosis*: Genes, Mutations, and Causalities. *Microbiol Spectr*. 2014;2(4):MGM2-0014-2013.

304. Vilcheze C, Molle V, Carrere-Kremer S, Leiba J, Mourey L, Shenai S, Baronian G, Tufariello J, Hartman T, Veyron-Churlet R, Trivelli X, Tiwari S, Weinrick B, Alland D, Guerardel Y, Jacobs WR, Jr., Kremer L. Phosphorylation of KasB regulates virulence and acid-fastness in *Mycobacterium tuberculosis*. *PLoS Pathog*. 2014;10(5):e1004115.

305. Wong KW, Jacobs WR, Jr. Reply to Wallis. *J Infect Dis*. 2014;209(4):628-9.

306. Berney M, Berney-Meyer L, Wong KW, Chen B, Chen M, Kim J, Wang J, Harris D, Parkhill J, Chan J, Wang F, Jacobs WR, Jr. Essential roles of methionine and S-adenosylmethionine in the autarkic lifestyle of *Mycobacterium tuberculosis*. *Proc Natl Acad Sci U S A*. 2015;112(32):10008-13.

307. Chandrabos C, M'Homa Soudja S, Weinrick B, Gros M, Frangaj A, Rahmoun M, Jacobs WR, Jr., Lauvau G. The p60 and NamA autolysins from Listeria monocytogenes contribute to host colonization and induction of protective memory. *Cell Microbiol*. 2015;17(2):147-63.

308. Harbut MB, Vilcheze C, Luo X, Hensler ME, Guo H, Yang B, Chatterjee AK, Nizet V, Jacobs WR, Jr., Schultz PG, Wang F. Auranofin exerts broad-spectrum bactericidal activities by targeting thiol-redox homeostasis. *Proc Natl Acad Sci U S A*. 2015;112(14):4453-8.

309. Hart BE, Asrican R, Lim SY, Sixsmith JD, Lukose R, Souther SJ, Rayasam SDG, Saelens JW, Chen CJ, Seay SA, Berney-Meyer L, Magtanong L, Vermeul K, Pajanirassa P, Jimenez AE, Ng TW, Tobin DM, Porcelli SA, Larsen MH, Schmitz JE, Jaynes BF, Jacobs WR, Jr., Lee S, Frothingham R. Stable Expression of Lentiviral Antigens by Quality-Controlled Recombinant *Mycobacterium bovis* BCG Vectors. *Clin Vaccine Immunol*. 2015;22(7):726-41.

310. Li SG, Vilcheze C, Chakraborty S, Wang X, Kim H, Anisetti M, Ekins S, Rhee KY, Jacobs WR, Jr., Freundlich JS. Evolution of a thienopyrimidine antitubercular relying on medicinal chemistry and metabolomics insights. *Tetrahedron Lett*. 2015;56(23):3246-50.

311. O'Donnell MR, Pym A, Jain P, Munsamy V, Wolf A, Karim F, Jacobs WR, Jr., Larsen MH. A Novel Reporter Phage To Detect Tuberculosis and Rifampin Resistance in a High-HIV-Burden Population. *J Clin Microbiol*. 2015;53(7):2188-94.

312. Ojha AK, Jacobs WR, Jr., Hatfull GF. Genetic dissection of mycobacterial biofilms. *Methods Mol Biol*. 2015;1285:215-26.

313. Packiam M, Weinrick B, Jacobs WR, Jr., Maurelli AT. Structural characterization of muropeptides from *Chlamydia trachomatis* peptidoglycan by mass spectrometry resolves "chlamydial anomaly". *Proc Natl Acad Sci U S A*. 2015;112(37):11660-5.

314. Petro C, Gonzalez PA, Cheshenko N, Jandl T, Khajoueinejad N, Benard A, Sengupta Mayami, Herold B, Jacobs WR, Jr. Herpes simplex type 2 virus deleted in glycoprotein D protects against vaginal, skin and neural disease. *Elife*. 2015;4.

315. Pope WH, Bowman CA, Russell DA, Jacobs-Sera D, Asai DJ, Cresawn SG, Jacobs WR, Jr., Hendrix RW, Lawrence JG, Hatfull GF. Whole genome comparison of a large collection of mycobacteriophages reveals a continuum of phage genetic diversity. *Elife*. 2015;4:e06416.

316. Tufariello JM, Kerantzas CA, Vilcheze C, Calder RB, Nordberg EK, Fischer JA, Hartman TE, Yan G, Driscoll T, Cole LE, Sebra R, Maqbool SB, Wattam AR, Jacobs WR, Jr. The Complete Genome Sequence of the Emerging Pathogen *Mycobacterium haemophilum* Explains Its Unique Culture Requirements. *MBio*. 2015;6(6):e01313-15.

317. Zolla V, Nizamutdinova IT, Scharf B, Clement CC, Maejima D, Akl T, Nagai T, Luciani P, Leroux JC, Halin C, Stukes S, Tiwari S, Casadevall A, Jacobs WR, Jr., Entenberg D, Zawieja DC, Condeelis J, Fooksman DR, Gashev AA, Santambrogio L. Aging-related anatomical and biochemical changes in lymphatic collectors impair lymph transport, fluid homeostasis, and pathogen clearance. *Aging Cell*. 2015;14(4):582-94.

318. Bernstein J, Gebel C, Vargas C, Geltman P, Walter A, Garcia RI, Tinanoff N. Integration of Oral Health Into the Well-Child Visit at Federally Qualified Health Centers: Study of 6 Clinics, August 2014-March 2015. *Prev Chronic Dis*. 2016;13:E58.

319. Foreman TW, Mehra S, LoBato DN, Malek A, Alvarez X, Golden NA, Bucsan AN, Didier PJ, Doyle-Meyers LA, Russell-Lodrigue KE, Roy CJ, Blanchard J, Kuroda MJ, Lackner AA, Chan J, Khader SA, Jacobs WR, Jr., Kaushal D. CD4+ T-cell-independent mechanisms suppress reactivation of latent tuberculosis in a macaque model of HIV coinfection. *Proc Natl Acad Sci U S A*. 2016;113(38):E5636-44.

320. Halloum I, Carrere-Kremer S, Blaise M, Viljoen A, Bernut A, Le Moigne V, Vilcheze C, Guerardel Y, Lutfalla G, Herrmann JL, Jacobs WR, Jr., Kremer L. Deletion of a dehydratase important for intracellular growth and cording renders rough Mycobacterium abscessus avirulent. *Proc Natl Acad Sci U S A*. 2016;113(29):E4228-37.

321. Jain P, Weinrick BC, Kalivoda EJ, Yang H, Munsamy V, Vilcheze C, Weisbrod T, Larsen MH, O'Donnell MR, Pym A, Jacobs WR, Jr. Dual-Reporter Mycobacteriophages (Phi2DRMs) Reveal Preexisting *Mycobacterium tuberculosis* Persistent Cells in Human Sputum. *MBio*. 2016;7(5).

322. Jensen K, Nabi R, Van Rompay KKA, Robichaux S, Lifson JD, Piatak M, Jacobs WR, Jr, Fennelly G, Canfield D, Mollan KR, Hudgens MG, Larsne MH, Amedee AM, Kozlowski PA, de Paris K. Vaccine-Elicited Mucosal and Systemic Antibody Responses Are Associated with Reduced Simian Immunodeficiency Viremia in Infant Rhesus Macaques. *J Virol*. 2016;90(16):7285-302.

323. Koliwer-Brandl H, Syson K, van de Weerd R, Chandra G, Appelmelk B, Alber M, Ioerger TR, Jacobs WR, Jr., Geurtsen J, Bornemann S, Kalscheuer R. Metabolic Network for the Biosynthesis of Intra- and Extracellular alpha-Glucans Required for Virulence of *Mycobacterium tuberculosis*. *PLoS Pathog*. 2016;12(8):e1005768.

324. Korte J, Alber M, Trujillo CM, Syson K, Koliwer-Brandl H, Deenen R, Kohrer K, DeJesus MA, Hartman T, Jacobs WR, Jr., Bornemann S, Ioerger TR, Ehrt S, Kalscheuer R. Trehalose-6-Phosphate-Mediated Toxicity Determines Essentiality of OtsB2 in *Mycobacterium tuberculosis In Vitro* and in Mice. *PLoS Pathog*. 2016;12(12):e1006043.

325. Maggioli MF, Palmer MV, Thacker TC, Vordermeier HM, McGill JL, Whelan AO, Larsen MH, Jacobs WR, Jr., Waters WR. Increased TNF-alpha/IFN-gamma/IL-2 and Decreased TNF-alpha/IFN-gamma Production by Central Memory T Cells Are Associated with Protective Responses against Bovine Tuberculosis Following BCG Vaccination. *Front Immunol*. 2016;7:421.

326. Mayer O, Jain P, Weisbrod TR, Biro D, Ho L, Jacobs-Sera D, Hatfull GF, Jacobs WR, Jr. Fluorescent Reporter DS6A Mycobacteriophages Reveal Unique Variations in Infectibility and Phage Production in Mycobacteria. *J Bacteriol*. 2016;198(23):3220-32.

327. Noy T, Vergnolle O, Hartman TE, Rhee KY, Jacobs WR, Jr., Berney M, Blanchard JS. Central Role of Pyruvate Kinase in Carbon Co-catabolism of *Mycobacterium tuberculosis*. *J Biol Chem*. 2016;291(13):7060-9.

328. Olsen A, Chen Y, Ji Q, Zhu G, De Silva AD, Vilcheze C, Weisbrod T, Li W, Xu J, Larsen M, Zhang J, Porcelli SA, Jacobs WR, Jr., Chan J. Targeting *Mycobacterium tuberculosis* Tumor Necrosis Factor Alpha-Downregulating Genes for the Development of Antituberculous Vaccines. *MBio*. 2016;7(3).

329. Petro CD, Weinrick B, Khajoueinejad N, Burn C, Sellers R, Jacobs WR, Jr., Herold BC. HSV-2 DeltagD elicits FcgammaR-effector antibodies that protect against clinical isolates. *JCI Insight*. 2016;1(12).

330. Portal-Celhay C, Tufariello JM, Srivastava S, Zahra A, Klevorn T, Grace PS, Mehra A, Park HS, Ernst JD, Jacobs WR, Jr., Philips JA. *Mycobacterium tuberculosis* EsxH inhibits ESCRT-dependent CD4(+) T-cell activation. *Nat Microbiol*. 2016;2:16232.

331. Prados-Rosales R, Carreno LJ, Weinrick B, Batista-Gonzalez A, Glatman-Freedman A, Xu J, Chan J, Jacobs WR, Jr., Porcelli SA, Casadevall A. The Type of Growth Medium Affects the Presence of a Mycobacterial Capsule and Is Associated With Differences in Protective Efficacy of BCG Vaccination Against *Mycobacterium tuberculosis*. *J Infect Dis*. 2016;214(3):426-37.

332. Saini NK, Baena A, Ng TW, Venkataswamy MM, Kennedy SC, Kunnath-Velayudhan S, Carreno LJ, Xu J, Chan J, Larsen MH, Jacobs WR, Jr., Porcelli SA. Suppression of autophagy and antigen presentation by *Mycobacterium tuberculosis* PE_PGRS47. *Nat Microbiol*. 2016;1(9):16133.

333. Tufariello JM, Chapman JR, Kerantzas CA, Wong KW, Vilcheze C, Jones CM, Cole LE, Tinaztepe E, Thompson V, Fenyo D, Niederweis M, Ueberheide B, Philips JA, Jacobs WR, Jr. Separable roles for *Mycobacterium tuberculosis* ESX-3 effectors in iron acquisition and virulence. *Proc Natl Acad Sci U S A*. 2016;113(3):E348-57.

334. Vergnolle O, Xu H, Tufariello JM, Favrot L, Malek AA, Jacobs WR, Jr., Blanchard JS. Post-translational Acetylation of MbtA Modulates Mycobacterial Siderophore Biosynthesis. *J Biol Chem*. 2016;291(42):22315-26.

335. Vilcheze C, Leung LW, Bittman R, Jacobs WR, Jr. Synthesis and biological activity of alkynoic acids derivatives against mycobacteria. *Chem Phys Lipids*. 2016;194:125-38.

336. Waters WR, Maggioli MF, Palmer MV, Thacker TC, McGill JL, Vordermeier HM, Berney-Meyer L, Jacobs WR, Jr., Larsen MH. Interleukin-17A as a Biomarker for Bovine Tuberculosis. *Clin Vaccine Immunol*. 2016;23(2):168-80.

337. Wong KW, Jacobs WR, Jr. Postprimary Tuberculosis and Macrophage Necrosis: Is There a Big ConNECtion? *MBio*. 2016;7(1):e01589-15.

338. Yu X, Gu Y, Jiang G, Ma Y, Zhao L, Sun Z, Jain P, O'Donnell, Larsen M, Jacobs WR, Jr., Huang H. Evaluation of a High-Intensity Green Fluorescent Protein Fluorophage Method for Drug- Resistance Diagnosis in Tuberculosis for Isoniazid, Rifampin, and Streptomycin. *Front Microbiol*. 2016;7:922.

339. Glass LN, Swapna G, Chavadi SS, Tufariello JM, Mi K, Drumm JE, Lam TT, Zhu G, Zhan C, Vilcheze C, Arcos J, Chen Y, Bi L, Mehta S, Porcelli SA, Almo SC, Yeh SR, Jacobs WR, Jr., Torrelles JB, Chan J. *Mycobacterium tuberculosis* universal stress protein Rv2623 interacts with the putative ATP binding cassette (ABC) transporter Rv1747 to regulate mycobacterial growth. *PLoS Pathog*. 2017;13(7):e1006515.

340. Hanauer DI, Graham MJ, Sea P, Betancur L, Bobrownicki A, Cresawn SG, Garlena RA, Jacobs-Sera D, Kaufmann N, Pope WH, Russell DA, Jacobs WR, Jr., Sivanathan V, Asai DJ, Hatfull GF. An inclusive Research Education Community (iREC): Impact of the SEA-PHAGES program on research outcomes and student learning. *Proc Natl Acad Sci U S A*. 2017;114(51):13531-6.

341. Jensen K, Dela Pena-Ponce MG, Piatak M, Jr., Shoemaker R, Oswald K, Jacobs WR, Jr., Fennelly G, Lucero C, Mollan KR, Hudgens MG, Amedee A, Kozlowski PA, Estes JD, Lifson JD, Van Rompay K, Larsen M, De Paris K. Balancing Trained Immunity with Persistent Immune Activation and the Risk of Simian Immunodeficiency Virus Infection in Infant Macaques Vaccinated with Attenuated *Mycobacterium tuberculosis* or *Mycobacterium bovis* BCG Vaccine. *Clin Vaccine Immunol*. 2017;24(1).

342. Johnson AJ, Kennedy SC, Lindestam Arlehamn CS, Goldberg MF, Saini NK, Xu J, Paul S, Hedge SS, Blanchard JS, Chan J, Jacobs WR, Jr., Sette A, Porcelli SA. Identification of Mycobacterial RplJ/L10 and RpsA/S1 Proteins as Novel Targets for CD4(+) T Cells. *Infect Immun*. 2017;85(4).

343. Kunnath-Velayudhan S, Goldberg MF, Saini NK, Johndrow CT, Ng TW, Johnson AJ, Xu J, Chan J, Jacobs WR, Jr., Porcelli SA. Transcriptome Analysis of Mycobacteria-Specific CD4(+) T Cells Identified by Activation-Induced Expression of CD154. *J Immunol*. 2017;199(7):2596-606.

344. Liu R, Lyu X, Batt SM, Hsu MH, Harbut MB, Vilcheze C, Chen B, Ajayi K, Yang Y, Guo H, Lin C, Gan F, Wang C, Franzblau SG, Jacobs WR, Jr., Besra GS, Johnson EF, Petrassi M, Chatterjee AK, Futterer K, Wang F. Determinants of the Inhibition of DprE1 and CYP2C9 by Antitubercular Thiophenes. *Angew Chem Int Ed Engl*. 2017;56(42):13011-5.

345. Prados-Rosales R, Carreno L, Cheng T, Blanc C, Weinrick B, Malek A, Lowary TL, Baena A, Joe M, Bai Y, Kalscheuer R, Batista-Gonzalez A, Saavedra N, Sampedro L, Tomas J, Anguita J, Hung SC, Tripathi A, Xu J, Glatman-Freedman A, Jacobs WR, Jr., Chan J, Porcelli SA, Achkar AM, Casadevall A. Enhanced control of *Mycobacterium tuberculosis* extrapulmonary dissemination in mice by an arabinomannan-protein conjugate vaccine. *PLoS Pathog*. 2017;13(3):e1006250.

346. Qaqish A, Huang D, Chen CY, Zhang Z, Wang R, Li S, Yang E, Lu Y, Larsen MH, Jacobs WR, Jr., Qian L, Frencher J, Shen L, Chen ZW. Adoptive Transfer of Phosphoantigen-Specific gammadelta T Cell Subset Attenuates *Mycobacterium tuberculosis* Infection in Nonhuman Primates. *J Immunol*. 2017;198(12):4753-63.

347. Retamal-Diaz A, Weiss KA, Tognarelli EI, Freire M, Bueno SM, Herold BC, Jacobs WR, Jr., Gonzalez PA. US6 Gene Deletion in Herpes Simplex Virus Type 2 Enhances Dendritic Cell Function and T Cell Activation. *Front Immunol*. 2017;8:1523.

348. Ryan A, Polycarpou E, Lack NA, Evangelopoulos D, Sieg C, Halman A, Bhakta Sanjib, Eleftheriadou O, McHugh TD, Keany S, Lowe ED, Baller R, Abuhammad A, Jacobs WR, Jr., Ciulli A, Sim E. Investigation of the mycobacterial enzyme HsaD as a potential novel target for anti-tubercular agents using a fragment-based drug design approach. *Br J Pharmacol*. 2017;174(14):2209-24.

349. Saito K, Warrier T, Somersan-Karakaya S, Kaminski L, Mi J, Jiang X, Park S, Shigyo K, Gold B, Roberts J, Weber E, Jacobs WR, Jr., Nathan CF. Rifamycin action on RNA polymerase in antibiotic-tolerant *Mycobacterium tuberculosis* results in differentially detectable populations. *Proc Natl Acad Sci U S A*. 2017;114(24):E4832-E40.

350. Stratton TP, Perryman AL, Vilcheze C, Russo R, Li SG, Patel JS, Singleton E, Ekins S, Connell N, Jacobs WR, Jr., Freundlich JS. Addressing the Metabolic Stability of Antituberculars through Machine Learning. *ACS Med Chem Lett*. 2017;8(10):1099-104.

351. Vilcheze C, Hartman T, Weinrick B, Jain P, Weisbrod TR, Leung LW, Freundlich JS, Jacobs WR, Jr. Enhanced respiration prevents drug tolerance and drug resistance in *Mycobacterium tuberculosis*. *Proc Natl Acad Sci U S A*. 2017;114(17):4495-500.

352. Yang Y, Thomas J, Li Y, Vilcheze C, Derbyshire KM, Jacobs WR, Jr., Ojha AK. Defining a temporal order of genetic requirements for development of mycobacterial biofilms. *Mol Microbiol*. 2017;105(5):794-809.

353. Bhatt K, Machado H, Osorio NS, Sousa J, Cardoso F, Magalhaes C, Chen B, Chen M, Kim J, Singh A, Ferreira CM, Castro AG, Torrado E, Jacobs WR, Jr., Bhatt A, Saraiva M. A Nonribosomal Peptide Synthase Gene Driving Virulence in *Mycobacterium tuberculosis*. *mSphere*. 2018;3(5).

354. Burn C, Ramsey N, Garforth SJ, Almo S, Jacobs WR, Jr., Herold BC. A Herpes Simplex Virus (HSV)-2 Single-Cycle Candidate Vaccine Deleted in Glycoprotein D Protects Male Mice From Lethal Skin Challenge With Clinical Isolates of HSV-1 and HSV-2. *J Infect Dis*. 2018;217(5):754-8.

355. Harbut MB, Yang B, Liu R, Yano T, Vilcheze C, Cheng B, Lockner J, Guo H, Yu C, Franzblau SG, Petrassi HM, Jacobs WR, Jr., Rubin H, Chatterjee AK, Wang F. Small Molecules Targeting *Mycobacterium tuberculosis* Type II NADH Dehydrogenase Exhibit Antimycobacterial Activity. *Angew Chem Int Ed Engl*. 2018;57(13):3478-82.

356. Johndrow CT, Goldberg MF, Johnson AJ, Ng TW, Kunnath-Velayudhan S, Lauvau G, Kaplan DH, Gossel GH, Kadolsky UD, Yates AJ, Chan J, Jacobs WR, Jr., Porcelli SA. Suppression of Th1 Priming by TLR2 Agonists during Cutaneous Immunization Is Mediated by Recruited CCR2(+) Monocytes. *J Immunol*. 2018;201(12):3604-16.

357. Kennedy SC, Johnson AJ, Bharrhan S, Lindestam Arlehamn CS, Xu J, Garforth SJ, Chan J, Jacobs WR, Jr., Sette A, Almo SC, Porcelli SA. Identification of Mycobacterial Ribosomal Proteins as Targets for CD4(+) T Cells That Enhance Protective Immunity in Tuberculosis. *Infect Immun*. 2018;86(9).

358. Tiwari S, van Tonder AJ, Vilcheze C, Mendes V, Thomas SE, Malek A, Chen B, Chen M, Kim J, Blundell TL, Parkhill J, Weinrick B, Berney M, Jacobs WR, Jr. Arginine-deprivation-induced oxidative damage sterilizes *Mycobacterium tuberculosis*. *Proc Natl Acad Sci U S A*. 2018;115(39):9779-84.

359. Vilcheze C, Copeland J, Keiser TL, Weisbrod T, Washington J, Jain P, Malek A, Weinrick B, Jacobs WR, Jr. Rational Design of Biosafety Level 2-Approved, Multidrug-Resistant Strains of *Mycobacterium tuberculosis* through Nutrient Auxotrophy. *MBio*. 2018;9(3).

360. Vilcheze C, Kim J, Jacobs WR, Jr. Vitamin C Potentiates the Killing of *Mycobacterium tuberculosis* by the First-Line Tuberculosis Drugs Isoniazid and Rifampin in Mice. *Antimicrob Agents Chemother*. 2018;62(3).

361. Vilcheze C, Weinrick B, Leung LW, Jacobs WR, Jr. Plasticity of *Mycobacterium tuberculosis* NADH dehydrogenases and their role in virulence. *Proc Natl Acad Sci U S A*. 2018;115(7):1599-604.

362. Chiner-Oms A, Berney M, Boinett C, Gonzalez-Candelas F, Young DB, Gagneux S, Jacobs WR, Jr., Parkhill J, Cortes T, Comas I. Genome-wide mutational biases fuel transcriptional diversity in the *Mycobacterium tuberculosis* complex. *Nat Commun*. 2019;10(1):3994.

363. Hasenoehrl EJ, Rae Sajorda D, Berney-Meyer L, Johnson S, Tufariello JM, Fuhrer T, Cook GM, Jacobs WR, Jr., Berney M. Derailing the aspartate pathway of *Mycobacterium tuberculosis* to eradicate persistent infection. *Nat Commun*. 2019;10(1):4215.

364. Kunnath-Velayudhan S, Goldberg MF, Saini NK, Ng TW, Arora P, Johndrow CT, Saavedra N, Johnson AJ, Xu J, Kim J, Khajoueinejad N, Petro C, Herold BC, Lauvau G, Chan J, Jacobs WR, Jr., Porcelli SA. Generation of IL-3-Secreting CD4(+) T Cells by Microbial Challenge at Skin and Mucosal Barriers. *Immunohorizons*. 2019;3(5):161-71.

365. Shen L, Frencher J, Huang D, Wang W, Yang E, Chen CY, Zhnag Z, Wang R, Qadish A, Larsen MH, Shen H, Porcelli SA, Jacobs WR, Jr., Chen ZW. Immunization of Vgamma2Vdelta2 T cells programs sustained effector memory responses that control tuberculosis in nonhuman primates. *Proc Natl Acad Sci U S A*. 2019;116(13):6371-8.

366. Rajagopalan S, Levi MH, Wattam AR, Malek A, Asare E, Behin DS, Pan DH, Jacobs WR Jr., Szymczak WA. *Helicobacter pylori* Infections in the Bronx, New York: Surveying Antiobiotic Suceptibility and Strain Lineage by Whole-Genome Sequencing. *Journal of Clinical Microbiology*. 2020;58(3).

367. Luchtel RA, Bhagat K, Pradham K, Jacobs WR Jr., Levine M, Shenoy N. High-dose Ascorbic acid synergizes with anti-PD1 in a Lymphoma mouse model. *Proc Natl AcadSci U S A*. 2020;117(3):1666-1677.

368. Hingley-Wilson SM, Ma N, Hu Y, Casey R, Bramming A, Curry RJ, Tang HL, Wu H, Butler RE, Jacobs WR, Jr., Rocco A, McFadden J. Loss of phenotypic inheritance associated with *ydcI* mutation leads to

increased frequency of small, slow persisters in *Escherichia coli*. *Proc Natl Acad Sci USA.* 2020; 117(8):4152-4157.

369. Sumii Y, Kotoku N, Han C, Kamiya K, Setiawan A, Vilcheze C, Jacobsm WR, Jr., Arai M. 3-(Phenethylamino)demethyl(oxy)aaptamine as an anti-dormant mycobacterial substance: Isolation, evaluation and total synthesis. *Tetrahedron Lett*. 2020;61(22).

370. Ramsey NLM, Visciano M, Hunte R, Loh LN, Burn Aschner C, Jacobs WR, Jr., Herold BC. A Single-Cycle Glycoprotein D Deletion Viral Vaccine Candidate, ΔgD-2, Elicits Polyfunctional Antibodies That Protect against Ocular Herpes Simplex Virus. *J Virol.* 2020;94(13).

371. Vilcheze C, Saranathan R, Weinrick B, Jacobs WR, Jr. Characterization of large deletion mutants of *Mycobacterium tuberculosis* selected for isoniazid resistance. *Antimicrob Agents Chemother*. 2020.

372. Ng TWM Wirchnianski AS, Wec AZ, Fels JM, Jonhdrow CT, Saunders LO, Liao HX, Chan J, Jacobs WR, Jr., Chandran K. Porcelli SA. Exploiting Pre-Existing $CD4^+$ T Cell Help from Bacille Calmette-Guérin Vaccination to Improve Antiviral Antibody Responses. *J Immunol*. 2020;205(2):425-437.

373. Burn Aschner C, Loh LN, Galen B, Delwel I, Jangra RK, Garforth SJ, Chandran K, Almo S, Jacobs WR, Jr. Ware CF, Herold BC. HVEM signaling promotes protective antibody-dependent cellular cytotoxicity (ADCC) vaccine responses to herpes simplex viruses. *Sci Immunolol*. 2020;5(50).

374. Jain P, Garing S, Verma D, Saranathan R, Clute-Reinig N, Gadwa J, Peterson C, Hermansky G, Astashkina Fernandez A, Asare E, Weisbrod TR, Spencer E, Mulholland CV, Berney M, Bell D, Nichols KP, Le Ny AM, Ordway D, Jacobs WR, Jr., Somoskovi A, Minch KJ. NanoLuciferase reporter mycobacteriophage for sensitive and rapid detection of *Mycobacterium tuberculosis* drug susceptibility. *J Bacteriol*. 2020.

375. Tiwari S, Dutt TS, Chen B, Chen M, Kim J, Dai AZ, Lukose R, Shanley C, Fox A, Karger BR, Porcelli SA, Chan J, Podell BK, Obregon-Henao A, Orme IM, Jacobs WR, Jr., Henao-Tamayo M. BCG-Prime and boost with Esx-5 secretion system deletion mutant leads to better protection against clinical strains of *Mycobacterium tuberculosis. Vaccine*. 2020;38(45):7156-7165.

376. Modlin SJ, Conkle-Gutierrez D, Kim C, Mitchell SN, Morrissey C, Weinrick BC, Jacobs WR, Jr., Ramirez-Busby SM, Hoffner SE, Valafar F. Drivers and sites of diversity in the DNA adenine methylomes of 93 *Mycobacterium tuberculosis* complex clinical isolates. *Elife*. 2020.

377. Vilcheze C, Porcelli SA, Chan J, Jacobs WR, Jr., Sterilization by Adaptive Immunity of a Conditionally Persisten Mutant of *Mycobacterium Tuberculosis*. *mBio*. 2021;12(1).

378. Vilchèze C, Jacobs WR Jr. The promises and limitations of N-acetylcysteine as a potentiator of first-line and second-line tuberculosis drugs. *Antimicrob Agents Chemother.* 2021 Feb 22.

379. Kaugars K, Dardick D, De Oliveira AP, Weiss K, Lukose R, Kim J, Leung L, Rajagopalan S, Wolin S, Akabas L, Bajic G, Harrison S, Jacobs WR, Jr., A Herpes Virus Vector Expressing Influenza Hemagglutinin Confers Protection through an Antibody-Dependent Cellular Cytotoxicity Response. ***In Preparation***.

PUBLICATIONS: Reviews

1. Jacobs, W.R., Jr., Snapper SB, Lugosi L, Bloom BR., *Development of BCG as a recombinant vaccine vehicle. Curr Top Microbiol Immunol*, 1990. **155**: p. 153-60.

2. Jacobs, W.R., Jr., Kalpana GV, Cirillo JD, Pascopella L, Snapper SB, Udani RA, Jones W, Barletta RG, Bloom BR., *Genetic systems for mycobacteria. Methods Enzymol*, 1991. **204**: p. 537-55.

3. Connell, N., C.K. Stover, and W.R. Jacobs, Jr., *Old microbes with new faces: molecular biology and the design of new vaccines. Curr Opin Immunol*, 1992. **4**(4): p. 442-8.

4. Jacobs, W.R., Jr., *Advances in mycobacterial genetics: new promises for old diseases. Immunobiology*, 1992. **184**(2-3): p. 147-56.

5. Riska, P.F., W.R. Jacobs, Jr., and D. Alland, *Molecular determinants of drug resistance in tuberculosis. Int J Tuberc Lung Dis*, 2000. **4**(2 Suppl 1): p. S4-10.

6. Glickman, M.S. and W.R. Jacobs, Jr., *Microbial pathogenesis of Mycobacterium tuberculosis: dawn of a discipline. Cell*, 2001. **104**(4): p. 477-85.

7. Hingley-Wilson, S.M., V.K. Sambandamurthy, and W.R. Jacobs, Jr., *Survival perspectives from the world's most successful pathogen, Mycobacterium tuberculosis. Nat Immunol*, 2003. **4**(10): p. 949-55.

8. Bhatt, A., Molle V, Besra GS, Jacobs WR, Jr., Kremer L., *The Mycobacterium tuberculosis FAS-II condensing enzymes: their role in mycolic acid biosynthesis, acid-fastness, pathogenesis and in future drug development. Mol Microbiol*, 2007. **64**(6): p. 1442-54.

9. Porcelli, S.A. and W.R. Jacobs, Jr., *Tuberculosis: unsealing the apoptotic envelope. Nat Immunol*, 2008. **9**(10): p. 1101-2.

10. Jain, P., Thaler DS, Maiga M, Timmins GS, Bishai WR, Hatfull GF, Larsen MH, Jacobs WR, Jr., *Reporter phage and breath tests: emerging phenotypic assays for diagnosing active tuberculosis, antibiotic resistance, and treatment efficacy. J Infect Dis*, 2011. **204 Suppl 4**: p. S1142-50.

11. Goldberg, D.E., R.F. Siliciano, and W.R. Jacobs, Jr., *Outwitting evolution: fighting drug-resistant TB, malaria, and HIV. Cell*, 2012. **148**(6): p. 1271-83.

12. Jacobs, W.R., Jr., *Gene Transfer in Mycobacterium tuberculosis: Shuttle Phasmids to Enlightenment. Microbiol Spectr*, 2014. **2**(2).

13. Foreman, T.W., Mehra S, LoBato DN, Malek A, Alvarez X, Golden NA, Bucsan AN, Didier PJ, Doyle-Meyers LA, Russell-Lodrigue KE, Roy CJ, Blanchard J, Kuroda MJ, Lackner AA, Chan J, Khader SA, Jacobs WR, Jr., Kaushal D., *CD4+ T-cell-independent mechanisms suppress reactivation of latent tuberculosis in a macaque model of HIV coinfection. Proc Natl Acad Sci U S A*, 2016. **113**(38): p. E5636-44.

14. Kerantzas, C.A. and W.R. Jacobs, Jr., *Origins of Combination Therapy for Tuberculosis: Lessons for Future Antimicrobial Development and Application. MBio*, 2017. **8**(2).

15. Vilcheze, C. and W.R. Jacobs, Jr., *Reply to Yew et al., "Vitamin C and Mycobacterium tuberculosis Persisters". Antimicrob Agents Chemother*, 2018. **62**(11).

16. Kalscheuer, R., Palacios A, Anso I, Cifuente J, Anguita J, Jacobs WR, Jr., Guerin ME, Prados-Rosales R., *The Mycobacterium tuberculosis capsule: a cell structure with key implications in pathogenesis. Biochem J*, 2019. **476**(14): p. 1995-2016.

17. Porcelli, S.A. and W.R. Jacobs, Jr., *Exacting Edward Jenner's revenge: The quest for a new tuberculosis vaccine. Sci Transl Med*, 2019. **11**(490).

18. Tiwari, S., Casey R, Goulding CW, Hingley-Wilson S, Jacobs WR, Jr., *Infect and Inject: How Mycobacterium tuberculosis Exploits Its Major Virulence-Associated Type VII Secretion System, ESX-1. Microbiol Spectr*, 2019. **7**(3).

19. Vilcheze, C. and W.R. Jacobs, Jr., *The Isoniazid Paradigm of Killing, Resistance, and Persistence in Mycobacterium tuberculosis. J Mol Biol*, 2019. **431**(18): p. 3450-3461.

BOOK CHAPTERS:

1. **Jacobs, W. R., Jr.** (2014). Eradicating infectious disease. *Nat Med* **20** (11)**:**1227.

2. Jacobs, W.R., Jr., *Gene Transfer in Mycobacterium tuberculosis: Shuttle Phasmids to Enlightenment. Microbiol Spectr*, 2014. **2**(2).

3. **Siliciano, R.F., Goldberg, D.E., Jacobs, W.R. Jr.,** (2012).Outwitting Evolution-Fighting Drug Resistance in the Treatment of Tuberculosis Malaria, and HIV. *Cell* (accepted).

4. Vilchèze C and Jacobs WR Jr. The Mechanism of Isoniazid Killing: Clarity Through the Scope of Genetics. Annu. Rev. Microbiol., 2007, 61:35-50.

5. Vilchèze C and Jacobs WR Jr. Isolation and Analysis of *Mycobacterium tuberculosis* Mycolic Acids. Current Protocols in Microbiology, 2007, 10A.3.1-11.

6. Murillo, A.C., Li, H.Y., Albert, T., Baker, E.N., Berger, J.M., Cherney, L.T., Cherny, M.M., Cho, Y.S., Eisenberg, D., Garen, C.R., Goulding, C.W., Hung, L.W., Ioerger, T.R., Jacobs, W.R., James, M.N., Kim, C., Krieger, L., Lott, J.S., Sankaranarayanan, R., Segelke, B.W., Terwilliger, T.c., Wang, F., Sacchettini, J.C. (2007) High Throughput Crystallography of TB Drug Targets. *Infect Disord Drug Targets* 7:127-139.

7. Larsen, M.H., Biermann, K., Tandberg, S., Hsu, T., Jacobs, W.R., Jr. (2007) Genetic Manipulation of *Mycobacterium tuberculosis*. *Curr protoc microbial* 10:Unit 10A 2.

8. Larsen, M.H., Biermann, K., Jacobs, W.R., Jr. (2007) Laboratory maintenance of *Mycobacterium tuberculosis*. *Curr Protoc Microbiol* 10:Unit 10A 1.

9. Larsen, M.H., Biermann, K., Jacobs, W.R., Jr., (2007) Analyses of *Mycobacterium tuberculosis* proteins. *Curr Protoc Microbiol* 10: Unit10A4.

10. Zhand, Y., Vilcheze, C., Jacobs, W.R. Jr., (2005) Mechanisms of Drug Resistance in *Mycobacterium tuberculosis.* ASM Press, Washington, DC. 8:115-140.

11. Zhand, Y., Vilcheze, C., Jacobs, W.R. Jr., (2005) Mechanisms of Drug Resistance in *Mycobacterium tuberculosis.* ASM Press, Washington, DC. 8:115-140.

12. Terwilliger, T.C., Park, M.S., Waldo, G.S., Berendzen, J., Hung, L.-W., Kim, C.-Y., Smith, C.V., Sacchettini, J.C., Bellinzoni, M., Bossi, R., De Ross, E., Mattevi, A., Milano, A., Riccardi, G., Rissi, M., Roberts, M.M., Coker, A.R., Fossati, G., Mascagni, P., Coates, A.R.M., Wood, S.P., Goulding, C.W., Apostol, M.I., Anderson, D.H., Gill, H.S., Eisenberg, D.S., Taneja, B., Mande, S., Pohl, E., Lamzin, V., Tucker, P., Wilmanns, M., Colovos, C., Meyer-Klaucke, W., Munro, A.W., McLean, K.J., Marshall, K.R., Leys, D., Yang, J.K., Yoon, H.-J., Lee, B.I., Lee, M.G., Kwak, J.E., Han, B.W., Lee, J.Y., Baek, S.-H., Suh, S.W., Komen, M.M., Arcus, V.L., Baker, E.N., Lott, J.S., Jacobs, W., Jr., Albert, T., Rupp, B. (2003) The TB Structural Genomics Consortium: A Resource for *Mycobacterium tuberculosis* Biology. *Tuberculosis* 83:223-24.

13. Goulding, C.W., Apostol, M., Anderson, D.H., Gill, H.S., Smith, C.V., Kuo, M.R., Yang, J.K., Waldo, G.S., Suh, S.W., Chauhan, R., Kale, A., Bachhawat, N., Mande, S.C., Johnston, J.M., Lott, J.S., Baker, E.N., Arcus, V.L., Leys, D., McLean, K.J., Munro, A.W., Berendzen, J., Sharma, V., Park, M.S. Eisenberg, D., Sacchettini, J., Alber, T., Rupp, B., Jacobs, W., Jr., Terwilliger, T.C. (2002) The TB Structural Genomics

Consortium: Providing a Structural Foundation for Drug Discovery. Curr. Drug Targets Infec. Disord. 2:121-141.

14. Braunstein, M., Bardarov, S.S. and Jacobs, W.R., Jr. (2002) Genetic Methods for Deciphering Virulence Determinants of *Mycobacterium tuberculosis*, in Methods in Enzymology, P.M. Bavoil (ed.) Academic Press, London, England, 358:67-99.

15. Jacobs, W.R. Jr. (2000) *Mycobacterium tuberculosis*: a Once Genetically Intractable Organism in Molecular Genetics of Mycobacteria, G.F. Hatfull and W.R. Jacobs, Jr. (eds). ASM Press, Washington, DC., pp. 1-16.

16. McKinney, J.D., W.R. Jacobs, Jr. and B.R. Bloom. (1998) Persisting Problems in Tuberculosis. In: Fauci and R. Krause (eds.) Emerging Infections. Academic Press, London. pp. 51-146.

17. Riska, P.F. and W.R. Jacobs, Jr. (1998) The Use of Luciferase Reporter Phage for Antibiotic Susceptibility Testing of Mycobacteria. In: T. Parish and N.G. Stoker (eds.) Methods in Molecular Biology: Mycobacteria Protocols. Humana Press Inc., Totowa, NJ. 101:431-455.

18. Miesel, L., Rozwarski, D.A., Sacchettini, J.C. and Jacobs, W.R. Jr. (1998) Mechanisms for Isoniazid Action and Resistance. In: D.J. Chadwick and G. Cardew (eds.) Genetics & Tuberculosis. John Wiley & Sons Ltd., West Sussex England pp. 209-220.

19. Fennelly, G.J., W.R. Jacobs, Jr., Bloom, B.R. (1997) BCG as a Recombinant Vaccine Vector. In: M.M. Levine, G.C. Woodrow, J.B. Kaper and G.S. Cobon (eds) New Generation Vaccines, Second Edition. Marcel Dekker, Inc., New York. pp. 363-377.

20. Jacobs, W.R. Jr. (1996) Science for Combating Tuberculosis. Bulletin of the New York Academy of Medicine. 73:46-52.

21. Cirillo JD, Stover, C.K., Bloom, B.R., Jacobs, W.R., Jr., Barletta, R.G. (1995) Bacterial Vaccine Vectors and Bacillus Calmette-Guerin. Clin. Infect. Dis. 20:1001-1009. (Review).

22. Hatfull, G.F. and W.R. Jacobs, Jr. (1994) Mycobacteriophages: Cornerstones of Mycobacterial Research. In: Tuberculosis, Pathogenesis, Protection, and Control. B.R. Bloom (ed.) American Society for Microbiology Press, Washington, D.C. pp. 165-183.

23. Jacobs, W.R. Jr. and B.R. Bloom. (1994) Molecular Strategies for Identifying Virulence Determinants of *Mycobacterium tuberculosis*. In: Tuberculosis, Pathogenesis, Protection, and Control. B.R. Bloom (ed.) American Society for Microbiology Press, Washington, D.C. pp. 253-268.

24. Bloom, B.R., Jacobs, W.R., Jr., Clark-Curtiss, J.E. (1994) Leprosy Vaccine. Nature 368:579.

25. Spitznagel, J.K. and W.R. Jacobs, Jr. (1993) *Mycobacteria: Tuberculosis* and Leprosy, p. 316-333. In M. Schaechter, G. Medoff, and B.I. Eisenstein. (eds.) Mechanisms of Microbial Disease. Williams & Wilkins, Baltimore, MD.

26. Ellner, J.J., Hinman, A.R., Dooley, S.W., Fischl, M.A., Sepkowitz, K.A., Goldberger, M.J., Schinnick, T.M., Iseman, M.D. and W.R. Jacobs, Jr. (1993) Tuberculosis Symposium: Emerging Problems and Promise. J. Infec. Dis. 168:537-551.

27. Stover, C.K., de la Cruz, VF, Bansal, G.P., Hanson, M.S., Fuerst, T.R., Jacobs, W.R., Jr., Bloom, B.R. (1992) Use of Recombinant BCG as a Vaccine Delivery Vehicle. Adv. Exp. Med. Biol. 327:175-182. (Review).

28. Mehra,V., P. Salgame, S.B. Snapper, L. Lugosi, W.R. Jacobs Jr., and B.R. Bloom. (1990) Vaccines Against Leprosy. pp. 611-629. In: Woodrow,G.C. and M.M. Levine (eds.) New Generation Vaccines. Marcel Dekker, New York.

29. Jacobs, W.R., Jr., S.B. Snapper, M. Tuckman, and B.R. Bloom. (1989) Mycobacteriophage Vector Systems. Rev. Infect. Dis. 11(Suppl. 2):404-410.

30. Mehra,V., R.L. Modlin, T.H. Rea, W.R. Jacobs Jr., S.B. Snapper, J. Convit, and B.R. Bloom. (1989) Molecular Approaches to Developing a Vaccine for Leprosy. pp. 335-346. In: G.P. Talwar (ed.) Progress in Vaccinology. Springer Verlag, New York.

31. Jacobs, W.R. Jr., S.B. Snapper, L. Lugosi, A. Jekkel, R.E. Melton, T. Kieser, and B.R. Bloom. (1989) Development of genetic systems for the mycobacteria. Acta Leprol. 7(Suppl. 1):203-207. (Review).

32. Bloom, B.R. and W.R. Jacobs Jr. (1989) New Strategies for Leprosy and Tuberculosis and for the Development of BCG into a Multivaccine Vehicle. Ann. NY Acad. Sci. 1989; 569:155-173. (Review)

33. Jacobs, W.R. Jr. (1992) Advances in Mycobacterial Genetics: New Promises for Old Diseases. Immunobiology 184:147-156.

34. Connell, N., C.K. Stover, and W.R. Jacobs, Jr. (1992) Old Microbes with New Faces: Molecular Biology and Design of New Vaccines. Curr. Opinion Immunol. 4:442-448.

35. Stover, C.K., de la Cruz, VF, Bansal, G.P., Hanson, M.S., Fuerst, T.R., Jacobs, W.R., Jr., Bloom, B.R. (1992) Use of Recombinant BCG as a Vaccine Delivery Vehicle. Adv. Exp. Med. Biol. 327:175-182. (Review).

36. Jacobs, W.R. Jr., G.V. Kalpana, J.D. Cirillo, L. Pascopella, R.A. Udani, W.D., Jones, Jr., R.G. Barletta, and B.R. Bloom. (1991) Genetic Systems for the Mycobacteria. In: Miller, J. (ed.) Method. Enzymol., Vol. 204:537-555.

37. Jacobs, W.R. Jr., G.V. Kalpana, J.D. Cirillo, L. Pascopella, R.A. Udani, W.D., Jones ,Jr., R.G. Barletta, and B.R. Bloom. (1991) Genetic Systems for the Mycobacteria. In: Miller, J. (ed.) Method. Enzymol., Vol. 204:537-555.

38. Jacobs, W.R. Jr., G.V. Kalpana, J.D. Cirillo, L. Pascopella, R.A. Udani, W.D., Jones, Jr., R.G. Barletta, and B.R. Bloom. (1991) Genetic Systems for the Mycobacteria. In: Miller, J. (ed.) Method. Enzymol., Vol. 204:537-555.

39. Bloom, B.R., S.B. Snapper, T. Kieser and W.R. Jacobs, Jr. (1990) Development of Recombinant BCG Vaccines pp. 21-30. In: Brown, F. (ed.) Seminars in Virology. W.B. Saunders, London.

40. Snapper, S.B., B.R. Bloom, and W.R. Jacobs Jr. (1990) Molecular Genetic Approaches to Mycobacterial Investigations. pp. 199-218. In: McFadden, J.J. (ed.) Molecular Biology of the Mycobacteria. Academic Press, London.

41. Jacobs, W.R., Jr., S.B. Snapper, and B.R. Bloom. (1988) Beyond BCG: Developing a Recombinant BCG Multivaccine Vehicle. In: M. Schwarz (ed.) Molecular Biology and Infectious Diseases. Elsevier, New York, pp. 207-212.

U.S AND INTERNATIONAL PATENTS ISSUED:

1. Recombinant Herpes Simplex Virus 2 (HSV-2) Vaccine Vector. W.Jacobs, Jr., Gonzalez Munoz, Pablo A., Herold Betsy, Petro Christopher. Patent No. 10,980,874. Issue Date: April 20, 2021

2. Passive transfer of immunity using recombinant herpes simplex virus 2 (HSV-2) vaccine vectors. W.Jacobs, Jr., Patent No. 9,999,665. Issue Date June 19, 2018

3. Mycobacteria tuberculosis ΔESX-3 Mutants. W.R. Jaocbs Jr., J. Tufariello. U.S. Patent No. 9,637,749. Issue Date: May 2, 2017.

4. Recombinant mycobacteriophages for delivery of nucleic acids of interest into mycobacteria. W.R. Jacobs Jr., G. Hatfull. U.S. Patent No. 9,447,449. Issue Date: Septermber 20, 2016.

5. Mycobacterial mutants inducing IL-12. W.R. Jacobs Jr., K. Sweeney, D. Dao, S. Porcelli, J. Chan, T, Hsu. U.S. Patent No. 8,591,918. Issue Date: November 26, 2013.

6. Methods for determining chemotherapeutic agenst targeting alpha-glucan pathways and uses thereof. W.R. Jacobs Jr., R. Kalscheuer, S. Bornemann, K. Syson. U.S. Patent No. 8,455,214. Issue Date: June 4, 2013.

7. Myocbacterial mutants affecting host apoptosis. W.R. Jaocbs Jr., S. Porcelli, V. Briken, M. Braunstein. U.S. Patent No. 8,394,388. Issue Date: March 12, 2013.

8. Methods for determining chemotherapeutic agenst targeting alpha-glucan pathways and uses thereof. W.R. Jacobs Jr., R. Kalscheuer, S. Bornemann, K. Syson. U.S. Patent No. 8,455,214. Issue Date: June 4, 2013.

9. Myocbacterial mutants affecting host apoptosis. W.R. Jaocbs Jr., S. Porcelli, V. Briken, M. Braunstein. U.S. Patent No. 8,394,388. Issue Date: March 12, 2013.

10. Myocbacterial SecA2 mutants. W.R. Jacobs Jr., S. Porcelli, M. Braunstein. U.S. Patent No. 8,101,191. Issue Date: January 24, 2012.

11. Use of mycrobacterial vaccines in CD4 or CD8 lymphocyte-defincient mammals. W.R. Jacobs Jr., T. Hsu, V. Sambandamurthy, S. Morris, S. Bardrov. U.S. Patent No. 8,084,041. Issue Date: December 27, 2011.

12. Attenuated vaccines. W.R. Jacobs Jr., B. Bloom, M. Hondalus, S. Sampson, V. Sambandamurthy. U.S. Patent No. 7,758,874. Issue Date: July 10, 2010.

13. Attenuated vaccines. W.R. Jacobs Jr., T. Hsu, S. Bardarov, V. Sambandamurthy. U.S. Patent No. 7,722,861. Issue Date: May 25, 2010.

14. Recombinant M. tuberculosis auxotrophic for leucine and vaccines using same. M. Hondalus, B. Bloom, W.R. Jacobs Jr. U.S. Patent No. 6, 562, 348. Issue Date: May 13, 2003.

15. Mycobacterial species-specific reporter mycobacteriophages. W.R. Jacobs Jr., B. Bloom, G. Hatfull. U.S. Patent No. 6,300,061. Issue Date: October 9, 2001.

16. Dim mutants of mycobacteria and use thereof. J. Cox, W.R. Jacobs Jr. U.S. Patent No. 6,290,966. Issue Date: September 18, 2001.

17. One step allelic exchange in mycobacteria using in vitro conditional transducing pahges. S. Bardarov, W.R. Jacobs Jr. U.S. Patent No. 6,271,034. Issue Date: August 7, 2001.

18. IniB, iniA, and iniC genes of mycobacteria and methods of use. D. Alland, B. Bloom, W.R. Jacobs Jr. U.S. Patent No. 6,268,201. Issue Date: July 31, 2001.

19. Mycobacterial species-specific reporter mycobacteriophages. W.R. Jacobs Jr., B. Bloom, G. Hatfull. U.S. Patent No. 6,225,066. Issue Date: May 1, 2001.

20. Recombinant mycobacteria auxotrophic for diaminopimelate. M. S. Pavelka Jr., W.R. Jaocbs Jr. U.S. Patent No. 6,221,364. Issue Date: April 24, 2001.

21. EmbCAB operon of mycobacteria and mutants thereof. W.R. Jacobs Jr., J. Musser, A. Telenti. U.S. Patent No. 6,015,890. Issue Date: January 18, 2000.

22. L5 Shuttle Phasmids. W.R. Jacobs, G. Hatfull, S. Bardarov, R. McAdam. U.S. Patent No. 5,994,137. Issue Date: November 30, 1999.

23. Vector constructs for the selection and identification of open reading frames. W.R. Jacobs Jr., S. Daugelat. U.S. Patent No. 5,981,182. Issue Date: November 9, 1999.

24. TM4 conditional shuttle phasmids and uses thereof. W.R. Jacobs Jr., S. Bardarov, G. Hatfull. U.S. Patent No. 5,972,700. Issue Date: October 26, 1999

25. Myocbacteriophages and uses thereof. B. Bloom, R. Davis, W.R. Jacobs Jr., R. Young, R. Husson. U.S. Patent No. 5,968,733. Issue Date: October 19, 1999.

26. Recombinant mycobacteria. B. Bloom, W.R. Jacobs Jr., R. Davis, R. Young, R. Husson. U.S. Patent No. 5,854,055. Issue Date: December 29, 1998.

27. Antimycobacterial compounds and method of using same. J. Sacchettini, J. Blanchard, W.R. Jacobs Jr., R. Bittman. U.S. Patent No. 5,837,732. Issue Date: November 17, 1998.

28. Methods and compounds for inhibiting lipid biosynthesis of bacteria and plants. J. Sacchettini, J. Blanchard, W. R. Jaocbs Jr. U.S. Patent No. 5,837,480. Issue Date: November 17, 1998.

29. D29 shuttle phasmids and uses thereof. W.R. Jacobs, G. Hatfull. U.S. Patent No. 5,773,267. Issue Date: June 30, 1998.

30. L5 shuttle phasmids. W. R. Jacobs, G. Hatfull, S. Bardarov, R. McAdam. U.S. Patent No. 5,750,384. Issue Date: May 12, 1998.

31. Vectors and prokaryotes which autocatalytically delete antibiotic resistance. S. Haun, C. Stover, G. Hatfull, M. Hanson, W.R. Jacobs. U.S. Patent No. 5,736,367. Issue Date: April 7, 1998.

32. Method and compounds for inhibiting lipid biosynthesis of bacteria and plants. J. Sacchettini, J. Blanchard, W.R. Jacobs Jr. U.S. Patent No. 5,702,935. Issue Date: December 30, 1997.

33. Methods and Compositions for Detecting and Treating Mycobacterial Infections Using an INHA Gene. W. Jacobs, Banerjee, D. Collins, W. DeLisle, T. Wilson. U.S. Patent No. 5,686,590, Issue Date: November 11, 1997. Australian Patent No. 690121, Issue Date: August 6, 1998.

34. Recombinant Mycobacterial Expression Vehicles and Uses Thereof. B. Bloom, W. Jacobs, Jr., R. Young, R. Davis, R. Husson. Canadian Patent No. 1,339,526, Issue Date: November 4, 1997.

35. Identification of *Mycobacterium tuberculosis* Complex Species. B. Bloom, S. Jurgensen, M. Little, P. Hamilton, P. Riska, J. Chan. U.S. Patent No. 5,656,424, Issue Date: August 12, 1997.

36. Antimycobacterial Compounds and Method of Using Same. W. Jacobs, Jr., J.Blanchard, J. Sacchettini. U.S. Patent No. 5,648,392. Issue Date: July 15, 1997.

PATENTS PENDING:

1. Double auxotrophic Mycobacterium and uses thereof. W. Jacobs, Jr. US Patent Application No. 17/268,789 US Patent Filing Date: March 1, 2021

2. Reporter mycobacteriophage, assays and methods comprising the reporter mycobacteriophage. W. Jacobs, Jr. US Patent Application No 63/107,144 US Filing Date: October 30, 2020

3. HSV-2-Delta-GD vaccines and methods for their production and use. W. Jacobs, Jr. US Patent Application No. 17/051,992. US Filing Date: October 30, 2020

4. Vero attB cell line, transgenic vero cell lines derived therefrom, and methods of making the same. W. Jacobs, Jr. US Patent Application No. 63/082,701, US Filing Date: September 24, 2020

5. Recombinant Herpes Simplex Virus 2 (HSV-2) Vaccine Vectors. W.Jacobs, Jr., Gonzalez Munoz, Pablo A., Herold Betsy, Petro Christopher International Application No.: PCT/US2015/018272, Publication No.:WO/2015/134368 International Filing Date: 02.03.2015