**CURRICULUM VITAE**

**NAME:** William Robert Jacobs, Jr.

**ADDRESS:** Howard Hughes Medical Institute

 Albert Einstein College of Medicine

 1300 Morris Park Avenue

 Bronx, NY 10461

**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 laboratory of Drs. Roy Curtiss III

 and Josephine E. Clark-Curtiss, University of Alabama at

 Birmingham, and Dept. of Biology, Washington University

 Oct. 1978 - July 1979 Instructor of Calculus and Physics, Triangle Tech, Erie, PA

**PROFESSIONAL EMPLOYMENT AND APPOINTMENTS:**

 October 1997 - Present 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 1996 – Present Professor

 Depts. Of Microbiology and Immunology and Molecular

 Genetics

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

**AECOM RESPONSIBILITIES:**

 1992 - 1993 Co-Chairman of the Divisional Qualifying Exam Committee

 1993 - 1994 Chairman, Divisional Qualifying Exam Committee

 1988 - Present Division Qualifying Exam Committee

 1991 - Present Biohazard Committee

 2002 – Present Gene Therapy Core Committee

**TEACHING RESPONSIBILITIES:**

 1989 - Present Lecturer in Molecular Genetics Course

 1989 - Present Lecturer in Infectious Disease Course

 1996 – Present Lecturer in the Pathogenesis Course

2003 Lecturer in the Waksman Foundation for Microbiology Lectures Program

**PROFESSIONAL SOCIETY MEMBERSHIP:**

 Jan. 1991 - Present Member of the editorial board of Infection and Immunity

 June 1990 - Present Ad hoc Member of the Molecular Biology of Mycobacteria

 Subcommittee of IMMLEP (Immunology of Leprosy)

 Steering

 Committee, World Health Organization

 June 1987 - May 1990 Member of THELEP (Chemotherapy of Leprosy) Steering

 Committee, World Health Organization

**AWARDS AND HONORS:**

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:**

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. Microbiol.

 1990 - 1993 Ad hoc reviewer 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**

1. **Jain, P., Hsu, T., Arai, M., Biermann, K. E., Thaler, D. S., Nguyen, A., Gonzalez, P., Ratner, H., Kriakov, J. Chen, B., Larsen, M. H., Jacobs Jr, W. R., Jr.** (2013) Specialized Transduction Designed for Precise High throughput Deletions in *Mycobacterium tuberculosis.* *PloS Genet* (submitted).
2. **Kozakiewicz, L., Y. Chen, J. Xu, Y. Wang, K. Dunussi-Joannopoulos, Q. Ou, J. L. Flynn, S. A. Porcelli, W. R. Jacobs, Jr., and J. Chan.** (2013). B Cells Regulate Neutrophilia during *Mycobacterium tuberculosis* Infection and BCG Vaccination by Modulating the Interleukin-17 Response. *PLoS Pathog* **9** (7)**:**e1003472.
3. **Wang,F., Sambandan, D., Halder, R., Wang, J., Batt, S., Weinrick, B.C., Ahmad, I., Yang, P., Zhang, Y., Kim, J.,Hassani, M., Huszar, S., Trefzer, C., Ma, Z., Kaneko, T., Mdluli, K.E., Franzblau, S.c Chatterjee, A., Johnsson, K., Mikusova, K., Besra, G., Fütterer, K., Jacobs,W.R., Jr. Schultz, P.G.** (2013) Identification of a Small Molecule with Activity against Drug-resistant and Persistent Tuberculosis. *PNAS* (in press).
4. **Wilson, R., P. Kumar, V. Parashar, C. Vilcheze, R. Veyron-Churlet, J. S. Freundlich, S. W. Barnes, J. R. Walker, M. J. Szymonifka, E. Marchiano, S. Shenai, R. Colangeli, W. R. Jacobs, Jr., M. B. Neiditch, L. Kremer, and D. Alland.** (2013). Antituberculosis thiophenes define a requirement for Pks13 in mycolic acid biosynthesis. *Nat Chem Biol.*9(8) 499-506.
5. **Vilchèze, C., Hartman, T., Weinrick, B., and Jacobs, W.R.** (2013). *Mycobacterium tuberculosis* is extraordinarily sensitive to killing by a vitamin C-induced Fenton reaction. *Nat. Commun* 4:1881. (PMCID in process).
6. **Sambandan, D., Dao, D.N., Weinrick, B.C., Vilcheze, C., Grucha, S.S., Ojha, A., Kremer, L., Besra, G.S., Hatfull, G.F., Jacobs, W.R.** (2013) Keto-Mycolic acid-dependent pellicle formation confers tolerance to drug-sensitive *Mycobacterium tuberculosis. Mbio*. 4(3). PMCID: PMC3663190.
7. **Ly, D., Kasmar, A.G., Cheng, T., DeJong, A., Huang, S., Roy, S., Bhatt, A., vanSummeren, R.R., Altman, J.D., Jacobs, W.R., Adams, E.J., Minnaard, A. J., Porcelli, S.A., Moody, D.B.** (2013) CD1c tetramers and sicovery of *M. tuberculosis* phosphomycoketides reveal cellular antigen processing for the human CD1c system. *J Exp Med* **210** (4)**:**729-41. PMCID: PMC3620358.
8. **Miallau, L., P. Jain, M. A. Arbing, D. Cascio, T. Phan, C. J. Ahn, S. Chan, I. Chernishof, M. Maxson, J. Chiang, W. R. Jacobs, Jr., and D. S. Eisenberg.** (2013). Comparative proteomics identifies the cell-associated lethality of *M. tuberculosis* RelBE-like toxin-antitoxin complexes. *Structure* **21** (4)**:**627-37. (PMCID in process).
9. **Chege, G.K., Burgers, W.A., Stutz, H., Meyers, A., Chapman, R., Kiravu, A., Bunjun, R., Shephard, E.G., Jacobs, W.R., Rybicki, E., Williamson, A.** (2013)Robust immunity to a auxotrophic BCG-VLP prime-boost HIV vaccine candidate in a non-human primate model. *J Virol* **87** (9)**:**5151-60. PMCID: PMC3624307.
10. **Anderson, J. W., D. Sarantakis, J. Terpinski, T. R. Santha Kumar, H. C. Tsai, M. Kuo, A. L. Ager, W. R. Jacobs, Jr., G. A. Schiehser, S. Ekins, J. C. Sacchettini, D. P. Jacobus, D. A. Fidock, and J. S. Freundlich.** (2013). Novel diaryl ureas with efficacy in a mouse model of malaria. *Bioorg Med Chem Lett* **23:**1022-5.(PMCID PMC in process).
11. **Lim, L. E., C. Vilcheze, C. Ng, W. R. Jacobs, Jr., S. Ramon-Garcia, and C. J. Thompson.** (2013). Anthelmintic Avermectins Kill *Mycobacterium tuberculosis*, Including Multidrug-Resistant Clinical Strains. *Antimicrob Agents Chemother* **57:**1040-6. PMCID PMC 3553693.
12. **Cheshenko, N., Trepanier,J.B., Stefanidou, M., Buckley, N., Gonzalez, P., Jacobs,W., Herold, B.C**. (2013) HSV Activates Akt to Trigger Calcium Release and Promote viral entry: Novel candidate target for treatment and suppression. *FASEB J.* 27(7):2584-99).PMCID PMC( in process).
13. **Wong, K-W., Jacobs, W.R. Jr.** (2013) *Mycobacterium tuberculosis* exploits human interferon-γ to stimulate macrophage extracellular trap formation and necrosis. *J Infect Dis* **208** (1)**:**109-19 PMCID PMC3666134.
14. **Sayahi, H., K. M. Pugliese, O. Zimhony, W. R. Jacobs, Jr., A. Shekhtman, and J. T. Welch.** (2012). Analogs of the Antituberculous Agent Pyrazinamide Are Competitive Inhibitors of NADPH Binding to *M. tuberculosis* Fatty Acid Synthase I. *Chem Biodivers* **9:**2582-96. PMCID PMC.
15. **Vilcheze, C., Jacobs, W.R. Jr.** (2012) The combination of sulfamethoxazole, trimethoprim, and isoniazid or rifampin is bactericidal and prevents the emergence of drug resistance in *Mycobacterium tuberculosis*. *Antimicrob Agents Chemother* . **56**: (10) 5142-8. PMCID PMC 3457372.
16. **Taylor, N., F. Bahunde, A. Thompson, J. S. Yu, W. R. Jacobs, N. L. Letvin, B. F. Haynes, and S. Lee.** (2012). Enhanced priming of adaptive immunity by high secretor mutants of Mycobacterium smegmatis. *Clin Vaccine Immunol* PMCID PMC 3428392.
17. **Jensen, K., U. D. Ranganathan, K. K. Van Rompay, D. R. Canfield, I. Khan, R. Ravindran, P. A. Luciw, W. R. Jacobs, Jr., G. Fennelly, M. Larsen, and K. Abel.** (2012). A recombinant attenuated *Mycobacterium tuberculosis* vaccine strain is safe in immunosuppressed SIV-infected infant macaques. *Clin Vaccine Immunol* PMCID PMC 3416096.
18. **Kolibab, K., S. C. Derrick, W. R. Jacobs, and S. L. Morris.** (2012). Characterization of an intracellular ATP assay for evaluating the viability of live attenuated mycobacterial vaccine preparations. *J Microbiol Methods* **90:**245-9. PMCID PMC.
19. **Yamada, H., A. Bhatt, R. Danev, N. Fujiwara, S. Maeda, S. Mitarai, K. Chikamatsu, A. Aono, K. Nitta, W. R. Jacobs, Jr., and K. Nagayama.** (2012). Non-acid-fastness in Mycobacteriumtuberculosis DeltakasB mutant correlates with the cell envelope electron density. *Tuberculosis (Edinb)* PMCID PMC.
20. **Derrick, S. C., D. Dao, A. Yang, K. Kolibab, W. R. Jacobs, and S. L. Morris.** (2012). Formulation of a mmaA4 Gene Deletion Mutant of *Mycobacterium bovis* BCG in Cationic Liposomes Significantly Enhances Protection against Tuberculosis. *PLoS One* **7:**e32959. PMCID PMC 3307709.
21. **Goldberg, D.E., Siliciano,R.F., and Jacobs, W.R.Jr.** (2012). Outwitting Evolution: Fighting Drug-Resistant TB, Malaria, and HIV. *Cell* **148:**1271-83. PMCID PMC 3322542.
22. **McShane, H., W. R. Jacobs, P. E. Fine, S. G. Reed, D. N. McMurray, M. Behr, A. Williams, and I. M. Orme.** (2012). BCG: myths, realities, and the need for alternative vaccine strategies. *Tuberculosis (Edinb)* **92** (3)**:**283-8.
23. **Jain, P., Hartman, T., Eisenberg, N., O'Donnell, M.R., Kriakov, J., Govender, K., Makume, M., Thaler, D., Hatfull, G.F., Sturm, A.W., Larsen, M.H., Moodley, P., Jacobs,W.R. Jr.** (2012) ф2GFP10: A high-intensity fluorophage enables detection and rapid drug susceptibility testing of *Mycobacterium tuberculosis* directly from sputum samples. *J Clin Microbiol* **50:**1362-9. PMCID PMC 3318544.
24. **Venkataswamy, M. M., M. F. Goldberg, A. Baena, J. Chan, W. R. Jacobs, Jr., and S. A. Porcelli.** (2012). In vitro culture medium influences the vaccine efficacy of Mycobacterium bovis BCG. *Vaccine* **30:**1038-49. PMCID PMC 3269512.
25. **Chapman, R.**, **Shepard, E., Stutz, H., Douglass, N., Sambandamurthy, V., Garcia, I., Ryffel, B., Jacobs, W., Williamson, A.** (2012) Priming with a Recombinant Pathtothenate Auxotroph of *Mycobacterium bovis* BCG and Boosting with MVA Elicits HIV-1 Gag Specific CD8+ TCells. *PLoS One,***7**:3 e32769.
26. **Bourai, N., W. R. Jacobs, Jr., and S. Narayanan.** (2012). Deletion and overexpression studies on DacB2, a putative low molecular mass penicillin binding protein from *Mycobacterium tuberculosis* H(37)Rv. *Microb Pathog* **52:**109-16. PMCID PMC.
27. **Yu, J. S., J. Whitesides, S. H. Lee, N. Taylor, W. R. Jacobs, Jr., N. L. Letvin, and B. F. Haynes.** (2011). Flow cytometry sorting of recombinant mycobacterial species yields bacterial clones with enhanced insert expression. *Clin Vaccine Immunol* **18** (1)**:**43-9.PMCID PMC3019783.
28. **Hinchey, J., B. Y. Jeon, H. Alley, B. Chen, M. Goldberg, S. Derrick, S. Morris, W. R. Jacobs, Jr., S. A. Porcelli, and S. Lee.** (2011). Lysine auxotrophy combined with deletion of the SecA2 gene results in a safe and highly immunogenic candidate live attenuated vaccine for tuberculosis. *PLoS One* **6** (1)**:**e15857.PMCID PMC3018466
29. **Rondon, L., M. Piuri, W. R. Jacobs, Jr., J. de Waard, G. F. Hatfull, and H. Takiff.** (2011). Evaluation of Fluoromycobacteriophages for detecting drug resistance in *Mycobacterium tuberculosis*. *J Clin Microbiol*.49:1838-42. PMCID PMC 3122682.
30. **Prados-Rosales, R., A. Baena, L. R. Martinez, J. Luque-Garcia, R. Kalscheuer, U. Veeraraghavan, C. Camara, J. D. Nosanchuk, G. S. Besra, B. Chen, J. Jimenez, A. Glatman-Freedman, W. R. Jacobs, Jr., S. A. Porcelli, and A. Casadevall.** (2011). Mycobacteria release active membrane vesicles that modulate immune responses in a TLR2-dependent manner in mice. *J Clin Invest*. PMCID PMC3069770.
31. **Xu, X., Vilcheze, C., Av-Gay, Y., Gomez-Velasco, A., and Jacobs, W.R. Jr.,** (2011) Precise Null Deletion Mutations of the Mycothiol Synthesis Genes Reveal Their Roll in Isoniazid and Ethionamide Resistance in *Mycobacterium smegmatis*. *Antimicrob Agents Chemother*.**55** (7)**:**3133-9. PMCID PMC 3122461.
32. **Sweeney, K. A., D. N. Dao, M. F. Goldberg, T. Hsu, M. M. Venkataswamy, M. Henao-Tamayo, D. Ordway, R. S. Sellers, P. Jain, B. Chen, M. Chen, J. Kim, R. Lukose, J. Chan, I. M. Orme, S. A. Porcelli, and W. R. Jacobs, Jr.** (2011). A recombinant Mycobacterium smegmatis induces potent bactericidal immunity against *Mycobacterium tuberculosis*. *Nat Med* **17:**1261-8. PMCID PMC 3250071.
33. **Wong,K.W., and Jacobs,W.R.** (2011) Critical role for NLRP3 in necrotic death triggered by *M. tuberculosis*. *Cell Microbio*. **13** (9)**:**1371-84. PMCID PMC 3257557.
34. **Vilchèze, C., Baughn, A.D., Tufariello, J., Leung,L., Kuo, M., Basler, C., Alland, D., Sacchettini, J.C., Freunlich, J.S., and Jacobs, W.R.Jr.** (2011) Novel inhibitors of InhA efficiently kill *Mycobacterium tuberculosis* under aerobic and anaerobic conditions. *Antimicrob Agents Chemother.* **55** (8)**:**3889-98. PMCID PMC 3147652.
35. **Sayahi, H., O. Zimhony, W. R. Jacobs, Jr., A. Shekhtman, and J. T. Welch.** (2011). Pyrazinamide, but not pyrazinoic acid, is a competitive inhibitor of NADPH binding to *Mycobacterium tuberculosis* fatty acid synthase I. *Bioorg Med Chem Lett*. **21:**4804-7. PMCID PMC.
36. **Pruksakorn, P., M. Arai, L. Liu, P. Moodley, W. R. Jacobs, Jr., and M. Kobayashi.** (2011). Action-Mechanism of Trichoderin A, an Anti-dormant Mycobacterial Aminolipopeptide from Marine Sponge-Derived Trichoderma sp. *Biol Pharm Bull* **34** (8)**:**1287-90. PMCID PMC (in process).
37. **Pope, W. H., C. M. Ferreira, D. Jacobs-Sera, R. C. Benjamin, A. J. Davis, R. J. DeJong, S. C. R. Elgin, F. R. Guilfoile, M. H. Forsyth, A. D. Harris, S. E. Harvey, L. E. Hughes, P. M. Hynes, A. S. Jackson, M. D. Jalal, E. A. MacMurray, C. M. Manley, M. J. McDonough, J. L. Mosier, L. J. Osterbann, H. S. Rabinowitz, C. N. Rhyan, D. A. Russell, M. S. Saha, C. D. Shaffer, S. E. Simon, E. F. Sims, I. G. Tovar, E. G. Weisser, J. T. Wertz, K. A. Weston-Hafer, K. E. Williamson, B. Zhang, S. G. Cresawn, P. Jain, M. Piuri, W. R. Jacobs, Jr., R. W. Hendrix, and G. F. Hatfull.** (2011). Cluster K Mycobacteriophages: Insights into the Evolutionary Origins of Mycobacteriophage TM4. *PLoS One* **6:**e26750. PMCID PMC 3203893.
38. **Chen, B., Weisbrod, T.R., Hsu, T., Sambandamurthy, V., Viera-Cruz, D., Chibbaro, A., Ghidoni, D., Kile, T., Barkley, W.E., Vilcheze, C., Colon-Berezin, C., Thaler, D., Larsen, M.H., Sturm, A.W., Jacobs. W.R. Jr.(**2011) Einstein Contained Aerosol Pulmonizer (ECAP): Inproved Biosafety for Multi-Drug Resistant (MDR) and Extensively Drug Resistant (XDR) *Mycobacterium tuberculosis* Aerosol Infection Studies. *Applied Biosafety* **16** (3):134-138. PMCID PMC.
39. **Parra, M., S. C. Derrick, A. Yang, J. Tian, K. Kolibab, M. Oakley, L. P. Perera, W. R. Jacobs, S. Kumar, and S. L. Morris.** (2011). Malaria Infections Do Not Compromise Vaccine-Induced Immunity against Tuberculosis in Mice. *PLoS One* **6:**e28164. PMCID PMC. 3242757.
40. **Jain, P., D. S. Thaler, M. Maiga, G. S. Timmins, W. R. Bishai, G. F. Hatfull, M. H. Larsen, and W. R. Jacobs.** (2011). Reporter phage and breath tests: emerging phenotypic assays for diagnosing active tuberculosis, antibiotic resistance, and treatment efficacy. *J Infect Dis* **204 Suppl 4:**S1142-50. PMCID PMC 3247800.
41. **Vilcheze, C., Y. Av-Gay, S. W. Barnes, M. H. Larsen, J. R. Walker, R. J. Glynne, and W. R. Jacobs, Jr.** (2011). Coresistance to isoniazid and ethionamide maps to mycothiol biosynthetic genes in Mycobacterium bovis. *Antimicrob Agents Chemother* **55:**4422-3. PMCID PMC. 3165297.
42. **Vilcheze, C., B. Weinrick, K. W. Wong, B. Chen, and W. R. Jacobs, Jr.** (2010). NAD+ auxotrophy is bacteriocidal for the tubercle bacilli. *Mol Microbiol* **76:**365-77. PMCID PMC2945688.
43. **Kalscheuer, R., Syson, K., Veeraraghavan, U., Weinrick, B., Biermann, K.E., Liu, Z., Sacchettini, J.C., Besra, G., Bornemann, S., Jacobs, W.R., Jr.** (2010) Self-poisoning of *Mycobacterium tuberculosis* by inhibition of GlgE reveals a new class of drug target. *Nature Chem Bio.* **6(5):**376-84. PMCID PMC(in process).
44. **Larsen, M.H., Jacobs, W.R., Porcelli, S.A, Kim, J., Ranganathan, U.D., Fennelly G. J.** (2010) 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*. 28**(21):** 3633-3634. PMCID PMC (in process).
45. **Kinhikar,A.G., Verma, I., Chandra, D., Singh, K.K., Weldingh, K., Andersen, P., Hsu, T., Jacobs, W.R., Jr., Laal, S.** (2010) Potential role for ESAT6 in dissemination of *M. tuberculosis* via human lung epithelial cells. *Mol. Microbiol*. **(75)**1:92-106. PMCID PMC 2846543.
46. **Ioerger, T. R., Y. Feng, K. Ganesula, X. Chen, K. M. Dobos, S. Fortune, W. R. Jacobs, Jr., V. Mizrahi, T. Parish, E. Rubin, C. Sassetti, and J. C. Sacchettini.** (2010). Variation among genome sequences of H37Rv strains of *Mycobacterium tuberculosis* from multiple laboratories. *J Bacteriol* **192:**3645-53. PMCID PMC2897344.
47. **Pruksakorn, P., M. Arai, N. Kotoku, C. Vilcheze, A. D. Baughn, P. Moodley, W. R. Jacobs, Jr., and M. Kobayashi.** (2010). Trichoderins, novel aminolipopeptides from a marine sponge-derived Trichoderma sp., are active against dormant mycobacteria. *Bioorg Med Chem Lett* **20:**3658-63. PMCID PMC.
48. **Wang, F., P. Jain, G. Gulten, Z. Liu, Y. Feng, K. Ganesula, A. S. Motiwala, T. R. Ioerger, D. Alland, C. Vilcheze, W. R. Jacobs, Jr., and J. C. Sacchettini.** (2010). *Mycobacterium tuberculosis* Dihydrofolate Reductase is Not a Target Relevant to the Anti-tubercular Activity of Isoniazid. *Antimicrob Agents Chemother* PMCID PMC2935018.
49. **Lazar-Molnar, E., B. Chen, K. A. Sweeney, E. J. Wang, W. Liu, J. Lin, S. A. Porcelli, S. C. Almo, S. G. Nathenson, and W. R. Jacobs, Jr.** (2010). Programmed death-1 (PD-1)-deficient mice are extraordinarily sensitive to tuberculosis. *Proc Natl Acad Sci U S A.* **107:**13402-7. PMCID: PMC2922129.
50. **Baughn, A. D., J. Deng, C. Vilcheze, A. Riestra, J. T. Welch, W. R. Jacobs, Jr., and O. Zimhony.** (2010). Mutually exclusive genotypes for pyrazinamide and 5-chloropyrazinamide resistance reveal a potential resistance proofing strategy. *Antimicrob Agents Chemother* PMCID PMC2981270.
51. **Koser, C. U., D. K. Summers, J. A. Archer, and W. R. Jacobs, Jr.** (2010). Role of the Dihydrofolate Reductase DfrA (Rv2763c) in Trimethoprim-Sulfamethoxazole (Co-Trimoxazole) Resistance in *Mycobacterium tuberculosis*. *Antimicrob Agents Chemother* **54:**4951-2. PMCID PMC.
52. **Kalscheuer, R., B. Weinrick, U. Veeraraghavan, G. S. Besra, and W. R. Jacobs, Jr.** (2010). Trehalose-recycling ABC transporter LpqY-SugA-SugB-SugC is essential for virulence of *Mycobacterium tuberculosis*. *Proc Natl Acad Sci U S A*.PMCID PMC3003129.
53. **Molle, V., G. Gulten, C. Vilcheze, R. Veyron-Churlet, I. Zanella-Cleon, J. C. Sacchettini, W. R. Jacobs, Jr., and L. Kremer.** (2010). Phosphorylation of InhA inhibits mycolic acid biosynthesis and growth of *Mycobacterium tuberculosis*. *Mol Microbiol* **78** (6)**:**1591-605
54. **Kalscheuer, R., and W. R. Jacobs, Jr.** (2010). The significance of GlgE as a new target for tuberculosis. *Drug News Perspect* **23** (10)**:**619-24.
55. **Lee, W.L., Gold, B., Darby, C., Brot, N., Jiang, X, de Carvalho, L.P., Wellner, D., John, G., Jacobs, W.R., Jr., Nathan, C.** (2009) *Mycobacterium tuberculosis* Expresses Methionine Sulfoxide Reductases A and B that Protect from Killing by Nitrite and Hypochlorite. *Mol Microbiol* **71**:583-593. PMCID: PMC in process.
56. **Lim, J., Derrick, S.C., Kolibab, K., Yang, A.L., Porcelli, S., Jacobs, W.R., Morris, S.L.** (2009) Early Pulmonary Cytokine and Chemokine Responses in Mice Immunized with Three Different Vaccines Against *Mycobacterium tuberculosis* Determined by PCR Array. *Clin Vaccine Immunol* **16**:122-126. PMCID: PMC2620659.
57. **Endsley, J.J., Waters, W.R., Palmer, M.V., Nonnecke, B.J., Thacker, T.C., Jacobs, W.R., Jr., Larsen, M.H., Hogg, A., Shell, E., McAlauy, M., Scherer, C.F., Coffey, T., Howard, C.J., Villareal-Ramos, B., Estes, D.M.** (2009) The Calf Model of Immunity for Development of a Vaccine Against Tuberculosis. *Vet Immunol Immunopathol* **128**(1-3):199-204. PMCID: PMC in process.
58. **Yam, K.C., D’Angelo, I., Kalscheuer, R., Zhu, H., Wang, J.X., Snieckusk, V., Ly, L.H., Converse, P. J., Jacobs, W.R., Jr., Strynadka, N., Eltis, L.D.** (2009) Studies of a ring-cleaving dioxygenase illuminate the role of cholesterol metabolism in the pathogenesis of *Mycobacterium tuberculosis*. *PLoS Pathog.* **5** (3):e1000344 [Epub]. PMCID: PMC2652662.
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266. **Jacobs, W.R., Jr., Tuckman, M. and Bloom, B.R.** (1987) Introduction of Foreign DNA into Mycobacteria Using a Shuttle Phasmid. *Nature* **327**:532‑536. PMCID: PMC in process.
267. **Jacobs, W.R., Jr., Docherty, M.A., Curtiss, R. III, and Clark‑Curtiss, J.E.** (1986) Expression of *Mycobacterium leprae* Genes from a Streptococcus mutans Promoter in *Escherichia coli* K‑12. *Proc. Natl. Acad. Sci. USA*. **83**:1926‑1930. PMCID: PMC323197.
268. **Jacobs, W.R., Jr., Barrett, J.F., Clark‑Curtiss, J.E. and Curtiss R. III**. (1986) *In vivo* Repackaging of Recombinant Cosmid Molecules for Analysis of *Salmonella typhimurium*, *Streptococcus mutans*, and Mycobacterial Genomic Libraries. *Infect. Immun*. **52**:101‑109.PMCID: PMC262204.
269. **Clark‑Curtiss, J.E., Jacobs, W.R., Jr., Docherty, M.A., Ritchie, L.R. and Curtiss, R. III.** (1985) Molecular Analysis of DNA and Construction of Genomic Libraries of *Mycobacterium leprae*. *J. Bacteriol*. **161**:1093‑1102. PMCID: PMC215012.

**BOOK CHAPTERS AND REVIEWS:**

1. **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).
2. **Porcelli, S.A. and Jacobs, W.R., Jr.** (2008) Tuberculosis: Unsealing the Apoptotic Envelope. *Nat Immunol* **9**:1189-1197 Review.
3. **Vilchèze C and Jacobs WR Jr.** The Mechanism of Isoniazid Killing: Clarity Through the Scope of Genetics. Annu. Rev. Microbiol., 2007, 61:35-50.
4. **Vilchèze C and Jacobs WR Jr.** Isolation and Analysis of *Mycobacterium tuberculosis* Mycolic Acids. Current Protocols in Microbiology, 2007, 10A.3.1-11.
5. **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.
6. **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.
7. **Larsen, M.H., Biermann, K., Jacobs, W.R., Jr**. (2007) Laboratory maintenance of *Mycobacterium tuberculosis*. *Curr Protoc Microbiol* **10:**Unit 10A 1.
8. **Larsen, M.H., Biermann, K., Jacobs, W.R., Jr.**, (2007) Analyses of *Mycobacterium tuberculosis* proteins. *Curr Protoc Microbiol* **10:** Unit10A4.
9. **Zhand, Y., Vilcheze, C., Jacobs, W.R. Jr.,** (2005) Mechanisms of Drug Resistance in *Mycobacterium tuberculosis.* ASM Press, Washington, DC. 8:115-140.
10. **Hingley-Wilson, S.M., Sambandamurthy, V.K. and Jacobs, W.R., Jr.** (2003) Survival Perspectives From the World’s Most Successful Pathogen, *Mycobacterium tuberculosis*. *Nat. Immunol.* **4**:949-955*.*
11. **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.
12. **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.
13. **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.
14. **Glickman, M.S. and Jacobs, W.R. Jr.** (2001) Microbial Pathogenesis of *Mycobacterium tuberculosis*: Dawn of a Discipline. (Review) Cell 104:477-485.
15. **Riska, P.F., Jacobs, W.R. Jr., and Alland, D.** (2000) Molecular determinants of drug resistance in tuberculosis. Int. J.Tuberc Lung Dis Feb; 4(2 Suppl 1):S4-10.
16. **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.
17. **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.
18. **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.
19. **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.
20. **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.
21. **Jacobs, W.R. Jr.** (1996) Science for Combating Tuberculosis. Bulletin of the New York Academy of Medicine. 73:46-52.
22. **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).
23. **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.
24. **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.
25. **Bloom, B.R., Jacobs, W.R., Jr., Clark-Curtiss, J.E.** (1994) Leprosy Vaccine. Nature 368:579.
26. **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.
27. **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.
28. **Jacobs, W.R. Jr.** (1992) Advances in Mycobacterial Genetics: New Promises for Old Diseases. Immunobiology 184:147-156.
29. **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.
30. **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).
31. **Jacobs, W.R. Jr., S.B. Snapper, L. Lugosi, and B.R. Bloom.** (1990) Development of BCG as a Recombinant Vaccine Vector. Curr. Top. Microbiol. Immunol. 155:153-160. (Review).
32. **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.
33. **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.
34. **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.
35. **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).
36. **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)
37. **Jacobs, W.R. Jr.** (1992) Advances in Mycobacterial Genetics: New Promises for Old Diseases. Immunobiology 184:147-156.
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39. **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).
40. **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.
41. **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.
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43. **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.
44. **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.
45. **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.

**EDITOR:**

1. **Cole, S.T., Eisenach, K.D., McMurray, D.N. and Jacobs, W.R. Jr**. (editors) Tuberculosis and the Tubercle Bacillus. 2005 ASM Press, Washington, DC.
2. **Hatfull, G.F. and Jacobs, W.R. Jr**. (editors) Molecular Genetics of Mycobacteria. 2000 ASM Press, Washington, D.C.

**PATENTS ISSUED:**

Recombinant Mycobacterial Vaccines. B. Bloom, W. Jacobs, Jr., R. Young, R. Davis, R. Husson,. U.S. Patent No. 5,504.005, Issue Date: April 2, 1996.

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.

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.

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.

Vectors and Prokaryotes Which Autocatalytically Delete Antibiotic Resistance. W. Jacobs, Jr., S. Haun, M., Hanson, C., Stover, G. Hatfull. U.S. Patent No. 5,736,367, Issue Date: April 7, 1998.

D29 Shuttle Phasmids and Uses Thereof. W. Jacobs, Jr., G. Hatfull. U.S. Patent No. 5,773,267, Issue Date: June 30, 1998.

Method and Compounds for Inhibiting Lipid Biosynthesis of Bacteria and Plants. W. Jacobs, Jr., J. Blanchard, J. Sacchettini. U.S. Patent No. 5,702,935, Issue Date: December 30, 1997, Issue. U.S. Patent No. 5,837,480, Issue Date: November 17, 1998.

Methods and Compositions for Detecting and Treating Mycobacterial Infections Using an INHA Gene. W. Jacobs, A. Banerjee, D. Collins, W. DeLisle, T. Wilson. U.S. Patent No. 5,686,590, Issue Date: 11/11/97. Australian Patent No. 690121, Issue Date: August 6, 1998.

Antimycobacterial Compounds and Method of Using Same. W. Jacobs, Jr., J. Blanchard, J. Sacchettini, R. Bittman. U.S. Patent No. 5,837,732, Issue Date: November 17, 1998.

Mycobacteriophages and Uses Thereof. B. Bloom, W. Jacobs, Jr., R. Davis, R. Young, R. Husson. U.S. Patent No. 5,854,055, Issue Date: December 29, 1998.

Mycobacteriophages and Uses Thereof. B. Bloom, W. Jacobs, Jr., R. Davis, R. Young, R. Husson. U.S. Patent 5,968,733, Issue Date: October 19, 1999.

TM4 Conditional Shuttle Phasmids and Uses Thereof. W. Jacobs, Jr., S. Bardarov, G. Hatfull. U.S. Patent No. 5,972,700, Issue Date: October 26, 1999.

Vector Constructs for the Selection and Identification of Open Reading Frames. W. Jacobs, Jr., S. Daugelat. U.S. Patent No. 5,981,182, Issue Date: November 9, 1999.

L5 Shuttle Phasmids, W. Jacobs, Jr., G. Hatfull, S. Bardarov, R. McAdam. U.S. Patent No. 5,750,384, Issue Date: May 12, 1998. U.S. Patent No. 5,994,137, Issue

Date: November 30, 1999.

An EMBCAB Operon of Mycobacteria and Mutations Thereof. W. Jacobs, Jr., J. Musser, A. Telenti. U.S. Patent No. 6,015,890, Issue Date: January 18, 2000.

Recombinant Mycobacterial Auxotrophic for Diaminopimelate. W. Jacobs, Jr., M. Pavelka. U.S. Patent No.6,221,364, B1. Issue Date: April 24, 2001.

Recombinant Mycobacteria Auxotrophic for Diaminopimelate, M.S. Pavelka, Jr., W.R.Jacobs, Jr.. U.S. Patent No. 6,221,364 B1. Issue Date: March 13, 2003.

Mycobacterial Mutants affecting Host apoptosis, W. Jacobs, Jr., S.A.Porcelli, V. Briken, M. Braunstein. U.S. Patent No. 60/643,614, Issue Date: January 12, 2005.

Methods for Determining Chemotherapeutic Agents Targeting Alpha-Glucan Pathways and uses Thereof, W. Jacobs, Jr., R. Kalscheuer, S. Bornemann, K. Syson. U.S. Patent No. 96700/1659, Issue Date: October 26, 2010.

Attenuated Mycobacteria as Vectors for Gene Delivery for Mammalian Cells, W. Jacobs, Jr., Fennelly, G. U.S. Patent No. 7,939,089 B2, Issue Date: May 10, 2011.

Mycobacteria Expressing HIV-1 and malaria Antigens, W. Jacobs,Jr., N. Letvin, M. Cayabyab, B. Haynes, HX. Liao, JS. Yu and AH. Hovav. Patent No. 7,998,471 B2. Issue Date August 16, 2011.

Recombinant Mycobacteriophages for Delivery of Nucleic Acids of Interest into Mycobacteria, W.R. Jacobs, Jr. and G.Hatfull, No. 61 550,094. Issue Date: October 21, 2011.

Mycobacterial Seca2 Mutants, W.R. Jacobs,S.A. Porcelli, M. Braunstein, No. 8,101,191,B2 Issue Date: January 24, 2012.

Mycobacterial Mutants Affecting Host apoptosis, W.R. Jacobs, S.A. Porcelli, V. Briken, M.Braunstein, No. 8394388 B2, Issued March 12, 2013..

Mycobacterial Seca 2 Mutants, W. Jacobs, S.A. Porcelli, M. Braunstein, No. 200780007413.0 Issue Date: June 12, 2013.

**INVITED LECTURES:**

March 1988 Joint Meeting of World Health Organization & Govt. of India on

Leprosy, Karigiri, India

September 1988 Fourth International Colloquium on the Mycobacteria, State of the Art

 Lecture, Institut Paris, Paris France

May 1989 ASM Meeting, Convener and Speaker, Mycobacterial Genetics, New

 Orleans, LA

May 1989 TransGene/Institut Merieux, Symposium on Vaccines of the Future, Annecy, France

July 1989 Keystone Symposium on Microbial Pathogenesis, Vail, CO

March 1990 WHO/Germany Meeting on Advances on Novel Vaccine Approaches, Ulm, Germany

October 1990 Frontiers in Mycobacteriology: Immunobiology of Mycobacterial Infections, Vale, CO

May 1991 ASM Meeting, Dallas, TX Convener of Mycobacterial Genetics Symposium

February 1992 Joint Meeting of WHO & Govt. of Spain: Working Towards New and Improved Vaccines, Madrid, Spain

September 1992 Smith-Kline Beecham Anti-Infectives Conference, Tuscon, AZ

October 1992 Infectious Disease Society Meeting, Los Angeles, CA

November 1992 First World Congress on Tuberculosis, Plenary Lecture, Washington, DC

February 1993 Microbial Pathogenesis Club, Boston, MA

March 1993 Microbial Pathogenesis Course, Rockefeller University

April 1993 Meharry Medical College, Recent Advances in the Immunobiology and Biochemistry of Tropical Diseases, Nashville, TN

May 1993 Recombinant Vectors in Vaccine Development, Albany, NY

May 1993 American Thoracic Society's Annual Meeting, Convener and Speaker, Los Angeles, CA

May 1993 American Society for Microbiology, Convener and Speaker for two Sessions - Multi-Drug Resistant Tuberculosis, Mycobacterial Genetics, Atlanta, GA

May 1993 Symposium dedicating the opening of the Microbiology and Immunology Research Facility, Emerging Pathogens, University of Alabama at Birmingham, Birmingham, AL

June 1993 American Society of Clinical Laboratory Microbiologists, New Haven, CT

July 1993 Second International Conference on Mycobacterial Pathogenesis, Stockholm, Sweden

July 1993 Roussel Round Table Conference on Drug Resistance, Versailles, France

July 1993 Gordon Conference on Microbial Populations and Evolution, Colby Sawyer College

August 1993 Science INNOVATION Conference, Boston, MA

September 1993 Molecular Mechanisms of Drug Resistance, Albany, NY

October 1993 ICAAC Meeting, Convener and Speaker on Session on Multi-Drug-Resistant Tuberculosis, New Orleans, LA

May 1994 American Society of Microbiologists Annual Meeting, Las Vegas, NV, Invited Speaker for two Symposia; Intracellular Growth of Mycobacteria and Uses of Luciferase.

August 1994 Molecular Biology of Phage and Bacteria, Chair and Speaker in Bacterial Surfaces Symposium, Madison, WI

September 1994 Annual Meeting of the Laboratory of Tumor Cell Biology, National Institutes of Health, Spoke on the MDR-TB at the AIDS Conference

October 1994 ICCAC and IDSA, Speaker in Drug Resistance Symposium, Orlando, FL

February 1995 Keystone Meeting - Tuberculosis - Tammarron, CO Symposium speaker on Molecular Genetics of Mycobacteria

May 1995 American Society of Microbiology Annual Meeting, Washington, DC. Convener and Speaker in Symposium on Molecular Analysis of Mycobacterial Pathogenesis and Speaker in Symposium on Uses of Phages in Diverse Bacteria

June 1995 Child Health 2000, World Conference of Pediatricians, Speaker on Symposium on Drug-Resistant Pathogens, Vancouver, Canada

August 1995 Advanced Bacterial Genetics Course, Cold Spring Harbor, Speaker

November 1995 Institute of Medicine and New York Academy of Science Joint Symposium - Inside Urban Health , New York, NY; Science for Combating Tuberculosis

March 1996 Keystone Meeting on Drug Resistance, Mechanisms of Isoniazid Resistance, Vail, CO

May 1996 Herman C. Lichstein Symposium, Cincinnati, Ohio - Speaker on Tuberculosis Control: Beyond Isoniazid and BCG

June 1996 13th International Convocation on Immunology, Buffalo, New York-Speaker on Molecular Strategies for Identifying Genes of *M. tuberculosis*

July 1996 Microbial Ecology & Infectious Disease Conference, Bethesda, MD

September 1996 Infectious Diseases Society of America, New Orleans, LA

September 1996 World Health Organization, Genetic Systems for Mycobacteria, Geneva, Switzerland

October 1996 New York Biotechnology Association’s New Science in NY Symposium; Beyond BCG: The New Tuberculosis Vaccine

October 1996 Vaccines 2000; Challenge for a New Tuberculosis Vaccine

December 1996 Ernst A.H. Friedheim Memorial Lecture; Tuberculosis Control: Beyond Isoniazid & BCG, Rockefeller University, NY

March 1997 Center for Tropical Diseases/WHO Collaborating Center; University of Texas Medical Branch; Tuberculosis Control: Beyond Isoniazid and BCG

April 1997 Uniformed Services University of Health Sciences; Guest Lecturer and Seminar Speaker on Pathogenic Mechanisms

April 1997 Temple University, Philadelphia, PA; 1997 Philadelphia Infection & Immunity Forum; Tuberculosis Control: Beyond Isoniazid and BCG

April 1997 National Institutes of Health; National Cooperative Drug Discovery Groups for Opportunistic Infections Focus on Mycobacteria

May 1997 National Vaccine Advisory Committee “TB Vaccines – Barriers & Opportunities Speaker on Vaccine Options

May 1997 Whitehead Institute/Museum of Science Biomedical Series. “Emerging Plagues: The Evolution of Tomorrow’s Epidemics”

July 1997 Chair of American Society of Microbiology-sponsored meeting, “Tuberculosis: Past, Present & Future” held in Copper Mountain, Colorado; July 8-12, 1997

September 1997 Keynote Speaker at Microbial Pathogenesis & Host Response Meeting, Cold Spring Harbor Laboratory, Cold Spring, New York

October 1997 Tuberculosis in Africa - The Promise of Scientific Advances; International Conference on Scientific Advances in Tuberculosis, Kampala, Uganda

December 1997 Freidheim Memorial Lecture; Rockefeller University, NY

January 1998 Hooper Memorial Lecture Seminar, University of California at San

 Francisco

February 1998 The 19th Annual Darwin Festival; Controlling Multi-Drug Resistant Tuberculosis: Finding Gold in Soil and Cow Dung. Salem State College

March 1998 Keystone Symposium on TB: Molecular Mechanisms and Immunologic Aspects; Keystone, Colorado

March 1998 International Glaxo Wellcome Action TB Conference 1998; Cape Town, South Africa

June 1998 48th Annual Meeting of the Canadian Society of Microbiologists; University of Guelph, Ontario

August 1998 1998 International Symposium On TB Vaccines; San Francisco

October 1998 Life Sciences Symposium; Dartmouth Medical School

November 1998 The University of Texas-Houston Medical School Seminar Series

January 1999 “New and Emerging Therapies: Cancer Vaccine Biology” Speaker at

Cancer Center Retreat, Briarcliff, NY.

February 1999 “New Drugs and Vaccines for Tuberculosis: Lessons from Isoniazid” Seminar at Glaxo Wellcome, London.

February 1999 “Combating Multi-Drug Resistant Tuberculosis: The New York City Lotto Paradigm: Seminars at Columbia University and Yale Universtiy.

July 1999 “Approaches for Development of New More Efficient Vaccines” – Fourth International Conference on the Pathogenesis of Mycobacterial Infections, Stockholm, Sweden

September 1999 “New Tools to Enhance Expression for Foreign Genes in BCG and How They Might be Used to Develop Vaccines for Diseases such as HIV and Malaria” - Twelfth Meeting of the Steering Committee on New Vaccination Approaches, WHO Headquarters, Geneva, Switzerland

October 1999 “Lipid Metabolism: A Life and Death Struggle for the Tubercle Bacillus” - Discovery Research Meeting sponsored by Wyeth-Lederle Laboratories, Lake George, New York

January 2000 Guest Lecturer, Department of Microbiology and Immunology - “Lipid Metabolism: The Life and Death Struggle of the Tubercle Bacilli,” Uniformed Services University of the Health Sciences, Bethesda, Maryland.

February 2000 Course Lecturer: Molecular Basis of Microbial Pathogenesis, College of Physicians and Surgeons, Columbia University, New York, NY.

February 2000 Grybowski Lecture - Tuberculosis: Moving from Control to Elimination. Obstacles and Opportunities - A Program of the International Union Against Tuberculosis and Lung Disease, North American Region. Sheraton Wall Centre Hotel, Vancouver, BC

March 2000 Invited Lecturer, New York University Medical Center, New York, NY.

March 2000 Invited Lecturer, The Catholic University, Washington, DC.

May 2000 Invited Speaker and Convener: ASM 100th General Meeting – “*Mycobacterium tuberculosis* and Its Interaction with Its Environment”, Los Angeles, CA.

June 2000 Advanced Bacterial Genetics Course Lecturer - “The Power of Bacterial Genetics: A 1914-D Penny, Lotto, Tuberculosis Control and Beyond” Cold Spring Harbor Laboratories, Cold Spring Harbor, New York.

August 2000 Third International Conference on Mycobacterium bovis - TB Vaccine Development, St. John’s College, Cambridge, United Kingdom

August 2000 The Nobel Symposium No. 114. - “Prevention and Treatment of Tuberculosis in the Coming Century”, Karolinska Institutet, Stockholm, Sweden.

October 2000 Distinguished Lecture Series - “The Mechanism of Action of Isoniazid in *Mycobacterium tuberculosis*: Implications for tuberculosis and Malaria,” Harvard School of Public Health, Boston, Massachusetts.

October 2000 Guest Lecturer, Department of Microbiology and Immunology, “Tuberculosis and Its Emergence As A Global Health Emergency” –Uniformed Services University of the Health Sciences, Bethesda, Maryland.

November 2000 Guest Lecturer, Department of Microbiology and Molecular Genetics -“Molecular Genetic Approaches To Control Multi-Drug Resistant Tuberculosis,” University of Medicine and Dentistry of New Jersey, Newark, NJ.

December 2000 Invited Speaker: Workshop on Molecular Approaches to Tuberculosis, “Mycobacterial Genetics and Mycobacteriophages,”Instituto Juan March de Estudios e Investigaciones, Madrid, Spain.

January 2001 Invited Speaker: Rockefeller University - Infectious Disease Centennial Lecture: “Mycolic Acids of *Mycobacterium tuberculosis*: An Achilles Heel or a Neutralizing Weapon?” Rockefeller University, New York, NY

January 2001 Invited Speaker: Keystone Symposia - Molecular and Cellular Aspects of Tuberculosis in the Post Genome Era. “Molecular Approaches to Vaccine Development, and Session Leader: “Vaccine Development and Testing”, Taos, New Mexico.

March 2001 Invited Speaker: Department of Microbiology, “Mycolic Acids of *Mycobacterium tuberculosis*: An Achilles Heel or a Neutralizing Weapon?” - University of Illinois at Urbana-Champaign, Illinois.

March 2001 Invited Speaker:“Frontiers in Biology” - Sponsored by the Center for Infectious Diseases, Mycolic Acids of *Mycobacterium tuberculosis*: An Achilles Heel or a Neutralizing Weapon?” - SUNY, Stony Brook, Stony Brook, New York.

April 2001 Invited Speaker: “Gateway to the Immune System: T Cell Receptor Recognition of Peptide MHC Complexes” - The Trudeau Institute, Saranac Lake, New York

August 2001 Invited Speaker: “The Streptomyces Influence on Mycobacterial Genetics: Finding Gold in Soil and Zebra Dung” – ISBA Meeting, Vancouver, BC, Canada

February 2002 Invited Speaker: “TB Vaccines: The Genetic Basis of BCG Attenuation and How to Improve It”. Molecular Genetics Seminar Series, Princeton University, Princeton, New Jersey.

February 2002 Invited Speaker: “Exploiting *M. tuberculosis* Metabolism: The Mechanism of Bacteriocidal Action of Isoniazid,” University of Alabama, Birmingham, Birmingham, Alabama.

March 2002 Invited Speaker: “TB Vaccines: Understanding the Past to Improve the Future”. David Axelrod Institute for Public Health, Albany, New York.

April 2002 Invited Speaker: “Tuberculosis Vaccines: Understanding BCG and What is Needed to Make a Better TB Vaccine”. Committee on Microbiology Seminar Series, University of Chicago, Chicago, Illinois.

May 2002 Invited Speaker: “Tuberculosis Vaccines,” The Anderson Symposium: Plagues of the 21st Century: HIV, Viral Hepatitis, Tuberculosis and Malaria, University of Virginia, Charlottesville, Virginia.

June 2002 Invited Speaker: “Advances in Molecular Genetics,” 4th World Congress on Tuberculosis, Washington, DC.

July 2002 Invited Speaker: “Unmasking the Lifestyle of the World’s Most Effective Pathogen*: M. tuberculosis*.” Yerkes Center at Emory University, Atlanta, Georgia

November 2002 Invited Speaker: “Unmasking the Lifestyle of the World’s Most Effective Pathogen: *Mycobacterium tuberculosis*.” International Symposium in Commemoration of the 159th Birthday of Dr. Shibasaburo Kitasato, 7th Robert Koch Institute-Kitasato Institute Joint Symposium for Overcoming Infectious Diseases. Kitasato Institute, Tokyo, Japan.

December 2002 Invited Speaker: “Unmasking the Lifestyle of the World’s Most Effective Pathogen: *M. tuberculosis*.” University of Pennsylvania, Philadelphia, Pennsylvania.

February 2003 Invited Speaker: “A 2003 Pathogen Survival Guide: Perspectives from the World’s Most Effective Pathogen, *Mycobacterium tuberculosis*.” Tufts University, Boston, Massachusetts.

February 2003 Invited Speaker: “A 2003 Pathogen Survival Guide: Perspectives from the Word’s Most Effective Pathogen, *Mycobacterium tuberculosis*.” Johns Hopkins, Baltimore, Maryland.

March 2003 Invited Speaker: “A 2003 Pathogen Survival Guide: Perspectives from the World’s Most Effective Pathogen, *Mycobacterium tuberculosis*.” University of California at Los Angeles, Los Angeles, California.

April 2003 Invited Speaker: “A 2003 Pathogen Survival Guide: Perspectives from the World’s Most Effective Pathogen, *Mycobacterium tuberculosis*.” Cornell University, New York, New York.

September 2003 Invited Speaker: “Evaluation of a *Mycobacterium tuberculosis* *ΔleuD/*

*ΔpanCD* Auxotrophic vaccine candidate,” First International Conference on TB Vaccines for the World, Montreal, Canada.

October 2003 Invited Speaker: “A 2003 Pathogen Survival Guide: Perspectives from the World’s Most Effective Pathogen, *Mycobacterium tuberculosis*.” Mount Sinai Medical Center, New York, New York.

November 2003 Invited Speaker: “A 2003 Pathogen Survival Guide: Perspectives from the World’s Most Effective Pathogen, *Mycobacterium tuberculosis*.” Harvard Medical School, Boston, Massachusetts.

March 2004 Invited Speaker:  The 2004 Pathogens Survival guide:  Perspectives from the Worlds Most Successful Pathogen  *Mycobacterium tuberculosis*  Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma.

March 2004 Invited Speaker:  *Mycobacterium tuberculosis*.  Vaccines Symposium In Honor of Professor Ruth S. Nussenzweig on the Occasion of Her Retirement as Chair of Parasitology.  New York University School of Medicine, New York, New York.

March 2004 Invited speaker:  The Mechanisms of Bacteriocidal Action of Isoniazid on *Mycobacterium tuberculosis*.  Strategic Research Institute.  Cherry Hill, New Jersey.

April 2004 Invited Speaker:  Novel  Strategies for Vaccine Protection Against *M. tuberculosis*.   2004 Keystone Symposium, Whistler, British Columbia, Canada.

April 2003 Invited Speaker: “A 2003 Pathogen Survival Guide: Perspectives from the World’s Most Effective Pathogen, *Mycobacterium tuberculosis*.” Cornell University, New York, New York.

March 2004 Invited Speaker:  The 2004 Pathogens Survival guide:  Perspectives from the Worlds Most Successful Pathogen  *Mycobacterium tuberculosis*  Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma.

March 2004 Invited Speaker:  *Mycobacterium tuberculosis*.  Vaccines Symposium In Honor of Professor Ruth S. Nussenzweig on the Occasion of Her Retirement as Chair of Parasitology.  New York University School of Medicine, New York, New York.

March 2004 Invited speaker:  The Mechanisms of Bacteriocidal Action of Isoniazid on *Mycobacterium tuberculosis*.  Strategic Research Institute.  Cherry Hill, New Jersey.

April 2004 Invited Speaker:  Novel  Strategies for Vaccine Protection Against *M. tuberculosis*.   2004 Keystone Symposium, Whistler, British Columbia, Canada.

April 2004 Invited Speaker: Mycobacterial Vaccines for West Nile Virus and SARS. 10th National Symposium: Basic Aspects of Vaccines, Walter Reed Army Institute of Research, Silver Spring, Maryland.

May 2004 Invited Speaker: Rediscovering Metabolism through the:Drug Isoniazid, ASM Integrating Metabolism and Genomics (IMAGE), Montreal, Quebec.

May 2004 Invited Speaker: The 2004 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen, *Mycobacterium tuberculosis*. . University of North Carolina, Chapel Hill, North Carolina.

May 2004 Invited Speaker: 2004 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen, *Mycobacterium tuberculosis.* Medicine Grand Rounds, Vanderbilt University, Nashville, TN.

July 2004 Invited Speaker: The 2004 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen, *Mycobacterium tuberculosis*. Astrazeneca, Bangalore, India.

July 2004 Invited Speaker: Rediscovering Metabolism: The Mechanism of Action of Isoniazid. Tuberculosis Research Centre, Chennai, India.

September 2004 Invited Speaker: The 2004 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen, *Mycobacterium tuberculosis*. University of Notre Dame, Notre Dame, Indiana.

October 2004 Invited Speaker: The 2004 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen: *Mycobacterium tuberculosis*. ASM and Waksman Foundation for Microbiology. Bowling Green, Kentucky.

November 2004 Invited Speaker: The 2004 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen: *Mycobacterium tuberculosis*.
44th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC), Washington, D.C.

November 2004 Invited Speaker: New Strategies for TB Vaccine Development: Duke University Human Translational Immunology Center Review and Symposium, Durham, North Carolina.

November 2004 Invited Speaker: The 2004 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen: *Mycobacterium tuberculosis*. NYSDOH, Wadsworth Center Division of Genetic Disorders, Albany, NY.

January 2005 Invited Speaker: The 2005 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen: *Mycobacterium tuberculosis.* Grand Rounds, The Children’s Hospital at Montefiore, Bronx, NY.

January 2005 Invited Speaker: The 2005 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen: *Mycobacterium tuberculosis.* Tulane National Primate Research Center, Covington, Louisiana.

January 2005 Invited Speaker: Increasing the Immunogenicity of Recombinant Mycobacterial Vaccines. Vaccine Platforms, Northeast Biodefense Center, Mount Sinai Medical Center, New York City.

February 2005 Invited Speaker: Strategies to Generate Recombinant Mycobacterial Vaccines for TB, Malaria and HIV. New York Academy of Sciences, New York City.

February 2005 Invited Speaker: Symposium entitled: The Good, The Bad and the Ugly. AAAS Annual Meeting, Washington, DC.

February 2005 Invited Speaker: The 2005 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen, *Mycobacterium tuberculosis*. North Shore LIJ Institute for Medical Research, Manhasset, NY.

April 2005 Invited Speaker: The 2005 Pathogens Survival Guide: Perspectives from the World’s Most Successful Pathogen, *Mycobacterium tuberculosis.* New York Medical Center, Valhalla, New York.

June 2005 Invited Speaker: Strategies to Increase Immunogenicity in Live Tuberculosis Vaccines. ASM 105th General Meeting, Atlanta, Georgia.

June 2005 Invited Speaker: The Exported Weapons Arsenal of *Mycobacterium tuberculosis.* HHMI International Research Scholars Meeting, Merida, Mexico.

July 2005 Invited Speaker: Isoniazid Mechanism of Action: What We Know and What We Do Not Know. Tuberculosis Drug Development GRC Conference at the University of New England. Biddeford, Maine.

July 2005 Invited Speaker: Functional Genomics of Mycobacteria. IUMS Meeting. San Francisco, California

September 2005 Invited Speaker: Viable Vaccines and Vaccine Carriers, Part 1. New Approaches to Vaccine Development. Berlin, Germany.

September 2005 Invited Speaker: A 2005 Pathogen Survival Guide: Perspective from the World’s Most Effective pathogen, *Mycobacterium tuberculosis.* University of Michigan. Ann Harbor, Michigan.

October 2005 Invited Speaker: From Genetics to the Molecular Mechanism of Action of Isoniazid. Drexel University College of Medicine. Philadelphia, Pennsylvania.

October 2005 Invited Speaker: Generation of a Safe Live Attenuated *Mycobacterium tuberculosis* Vaccine with Enhanced Immunogenicity. 36th Union World Conference. Paris, France.

November 2005 Invited Speaker: How Does *Mycobacterium tuberculosis* Evade Innate and Adaptive Immune Responses? Host Pathogen Interaction and Human Disease Meeting Hosted by *Cell*, Welcome Trust and MA General Hospital. Cambridgeshire, England.

January 2006 Invited Speaker: Tuberculosis Drugs, Past, Present, and Future. Vertex Pharmaceuticals. Cambridge, Massachusetts.

April 2006 Invited Speaker. Tuberculosis: Past, Present and Future. Trinity College, Hartford, Connecticut.

June 2006 Invited Speaker. The 2006 Pathogen’s Survival Guide: Perspectives from the World’s Most Successful Pathogen, *Mycobacterium tuberculosis.* Tulane University, Covington, Louisiana.

June 2006 Invited Speaker. Fulfilling Koch’s Corollary for *Mycobacterium tuberculosis*. Cold Spring Harbor Laboratory. Cold Spring Harbor, New York.

June 2006 Invited Speaker. The five Unassailable Truths of Bacterial Genetics: Elucidating the Mechanism of Action of Isoniazid on *Mycobacterium tuberculosis*. Cold Spring Harbor Laboratory. Cold Spring Harbor, New York.

June 2006 Invited Speaker. Mycobacteriophages: The Key to Fulfilling Koch’s Corollary for *Mycobacterium tuberculosis*. 2006 NIAID Research Conference. Opatija, Croatia.

July 2006 Invited Speaker. Mycobacteriophages: Their Uses in dispelling the Vampire Hypothesis of Tuberculosis. University of Pittsburgh, Pittsburgh, Pennsylvania.

August 2006 Invited Speaker. Novel technologies for target identification validation in *M. tuberculosis.* San Diego California.

September 2006 Invited Speaker. Pathogenesis of *Mycobacterium Tuberculosis*. Iowa State University “Virulence Mechanisms of Bacterial Pathogens, International Symposium. Ames, Iowa.

September 2006 Invited Speaker. Intelligent design of Tuberculosis Vaccines. Aeras Global TB Vaccine Foundation, Scott J. Thaler Lecture Series. Rockville, Maryland.

November 2006 Invited Speaker. Elucidation of the Immune Evasion functions of *Mycobacterium tuberculosis.* University of Texas Medical branch “The Changing Landscape of vaccine Development: Vaccines for Global Health. Galveston, Texas

January 2007 Invited Speaker. Eradicating Tuberculosis, A War on Two Fronts: Chemotherapy and Immune Evasion Function. Imperial College. South Kensington, London, England.

January 2007 Invited Speaker. Eradicating Tuberculosis: A War on Two Fronts. California State University Program for Education and Research in Biotechnology. Los Angeles, California.

February 2007 Invited Speaker. Eradicating Tuberculosis, A War on Two Fronts: Chemotherapy and Immune Evasion Mechanisms. Arizona State University, Tempe, Arizona.

March 2007 Invited Speaker. TB diagnostics and vaccines. BD Technologies, Research Triangle Park, North Carolina.

March 2007 Invited Speaker. Eradicating Tuberculosis, A War on Two Fronts: Chemotherapy and Immune Evasion Mechanisms. Keystone Symposia. Vancouver, Canada.

April 2007 Invited Speaker. Creating Combined tuberculosis/HIV therapies. Whitehead Institute for Biomedical Research. Cambridge, Massachusetts.

May 2007 Invited Speaker. Tuberculosis genetics and vaccines. Infectious Diseases Meeting. Genomics Institute of Novartis Research Foundation, Siena Italy.

June 2007 Invited Speaker. The next generation of TB vaccines Lessons from Understanding How *M.tuberculosis* Evades the Immune System. University of California Rady Children’s Hospital and Health Center, San Diego California.

June 2007 Invited Distinguished Speaker. Eradicating Tuberculosis, A War on Two Fronts: Chemotherapy and Immune Evasion Mechanisms. Humigen, L.L.C., The Institute for Genetic Immunology.Hamilton, New Jersey.

July 2007 Invited Speaker. Killing the Tubercle Bacillus: Strategies to make a better TB Vaccine. Aids in India 2007 a regional workshop-Symposium to enhance HIV/Aids Research. Bangalore, India.

July 2007 Invited Speaker. How Do We Know Anything about Mycobacteria. University of Pittsburgh, Pittsburgh, Pennsylvania.

January 2008 Invited Speaker. Death of Tubercle Bacillus. 2nd Southeastern Mycobacteria Meeting @ University of Georgia, Athens, Georgia.

January 2008 Invited Speaker. Eradicating tuberculosis, a war on two fronts: chemotherapy & Immune Evasion Mechanisms. Harvard School of Public Health, Boston, Massachusetts.

February 2008 Invited Speaker. Targeting mycolic Acid Biosynthesis of *Mycobacterium tuberculosis*: An Achilles heel of Bacteriocidal Killing and Immune Evasion. University of Princeton, Princeton, New Jersey.

March 2008 Invited Speaker. The Death of the Tubercle Bacillus. Case Western Reserve University, Cleveland, Ohio.

April 2008 Invited Speaker. The Death of the Tubercle Bacillus. University of Colorado Denver, Denver, Colorado.

April 2008 Invited Speaker. Death of the Tubercle Bacillus. Washington University in St. Louis. St.Louis, Missouri.

June 2008 Invited Speaker. The Death of the Tubercle Bacillus – There Must Be 50 Ways to Kill the Bug. 2008 Wind River Conference on Prokaryotic Biology. Estes Park and Rocky Mountain National Park.

July 2008 Invited Speaker. Sterilizing Immunity Against Tuberculosis. Trudeau Institute, Saranac Lake, New York.

September 2008 Invited Speaker. Fulfilling Molecular Koch’s Postulate: A New Era of Tuberculosis Biology. Congreso Internacional Macobacterias, Bogotá, Columbia.

September 2008 Invited Speaker. Mycolic Acids: The Signature Molecule of Tubercle Bacilli. Congreso Internacional Macobacterias, Bogotá, Columbia.

October 2008 Invited Speaker. Recombinant *M. smegmatis* that Elicits Bacteriocidal Immunity against Virulent *M. tuberculosis*. Keystone Symposia on Molecular & Cellular Biology. Bangkok, Thailand.

January 2009 Invited Speaker. XDR TB – Survival of the fittest. Oregon Health & Science University, Portland, Oregon.

February 2009 Invited Speaker. XDR TB – Survival of the fittest. Texas A & M Health Science Center, College of Medicine, College Station, Texas.

February 2009 Invited Speaker. Drugs against XDR-TB: Lession from Isoniazid, Stanford University, Stanford California.

February 2009 Invited Speaker. How does *Mycobacterium tuberculosis* evade killing by Innate and Adaptive Immunity, Stanford University, Stanford, California.

April 2009 Invited Speaker. Extremely Drug-Resistant TB – Survival of the Fittest. Western Connecticut State University, Danbury Connecticut.

October 2009 Invited Speaker. Cysteine prevents the emergency of isoniazid resistance in *Mycobacterium tuberculosis*: Luria and Delbruck-revisted, 17th Microbial Genomics Conference at Rocky Gap Conference Center, Western, Maryland.

November 2009 Invited speaker. Molecular Genetics to find cures and vaccines, Johns Hopkins University, Center for TB Research,Baltimore, Maryland.

November 2009 Invited speaker. XDR TB – Survival of the fittest, The Scripps Research Institute, La Jolla, California.

November 2009 Invited speaker. XDR TB – Survival of the fittest, 9th Latin American Congress of Immunology, Vina del mar, Chile.

February 2010 Invited speaker. A Sweet New Way to Kill *Mycobacterium tuberculosis*, Scripps Research Institute,Jupiter, Florida.

March 2010 Invited speaker. XDR-TB Survival of the Fittest, University of Wisconsin, Madison, Wisconsin.

March 2010 Invited speaker. Preclinical Development of TB Vaccines, U.S.-Southern Africa Joint Research Forum on Tuberculosis, Pretoria, South Africa

April 2010 Invited speaker. Genetic Strategies Reveal sweet new ways to kill Mtb, New York Academy of Sciences, New York.

April 2010 Invited speaker. XDR-TB Survival of the Fittest, Columbia University, New York.

April 2010 Invited speaker. Versatility High throughput specialize transduction: and its application to identify New Targets of *Mycobacterium tuberculosis*, Target Expert Panel meeting, Bethesda, Maryland.

May 2010 Invited speaker. XDR-TB: Survival of the Fittest Means Understanding Death Escape Mechanisms, Wellcome Trust Center, Hinxton, Cambridge UK

September 2010 Invited speaker. High throughput Genetic Analysis of *Mycobacterium tuberculosis*, Global TB Vaccine Forum, Tallinn, Estonia.

October 2010 Invited speaker. Live-attenuated TB vaccines, Cala Carlo diLeva, Circolo dei Forestieri, Sorrento, Italy

November 2010 Invited speaker. Live-attenuated TB vaccines, Innovative Strategies for Vaccines: malaria, tuberculosis, HIV, Sala Carlo di Leva, Circolo Dei Forestieri, Sorrento, Italy.

February 2011 Invited speaker. Beyond BCG: New Generations of TB Vaccines, 11th Annual St. Judes Pediatric Infectious Disease Society Conference on TB, Memphis, TN.

March, 2011 Invited speaker. Phenotype and Genotypes of MDR and XDR TB, T-Tract Meeting, Durban, South Africa.

April 2011 Invited speaker. XDR TB-Survival of the fittest, Uniformed Services University of the Health Sciences, Bethesda, Maryland.

April 2011 Invited speaker. XDR TB-Survival of the fittest. The College of William & Mary, Williamsburg, VA.

April 2011 Invited speaker. XDR TB: Survival of the fittest. College of Veterinary Medicine/University of Minnesota, St. Paul, MN.

June 2011 Invited speaker. XDR TB: Survival of the fittest. Dartmouth Medical School, Hanover NH.

September 2011 Invited speaker, A recombinant Mycobacterium smegmatis induces potent bactericidal immunity. Tuberculosis Vaccines: Status and Path Forward, Beijing, China.

October, 2011 Invited speaker, Extensively Drug-Resistant *Mycobacterium tuberculosis*: The Death Defying Pathogen, The Welch Foundation, Houston Texas.

October 2011 Invited speaker, Combating Extensively Drug Resistant Tuberculosis: Finding solutions in Soil, NYU Honors Program, New York, NY.

December 2011 Invited speaker, A genetically modified recombinant Mycobacterium smegmatis strain that induces potent bactericidal immunity against *M.tuberculosis*, 2011 Novo Nordic Prize Symposium, Copenhagen Denmark.

April 2012 Invited speaker, Mycobacteriophages: The Key to Acquiring Molecular Knowledge of Tuberculosis. Queensborough Community College, Queens, New York.

April 2012 Invited speaker, Targets and virulence factors of *M. tuberculosis*. American Society for Biochemistry and Molecular Biology, San Diego, California.

May 2012 Invited speaker, XDR-TB: Survival of the Fittest. Banff Conference on Infectious Diseases, Alberta, Canada.

May 2012 Invited speaker, Live TB Vaccines. TB Vaccines for the World, Orlando, Florida.

July 2012 Invited speaker, Extensively Drug-Resistant *Mycobacterium tuberculosis*: The Death Defying Pathogen. CSIR Materials Sciences and Manufacturing. Pretoria, South Africa.

September 2012 Invited speaker, XDR-TB: Survival of the fittest. Queens College, Flushing, New York.

September 2012 Invited speaker, XDR-TB: Survival of the fittest. University of Rochester Medical Center, Rochester, New York.