

*CURRICULUM VITAE*

The Johns Hopkins University School of Medicine

(Typed Name) Petros C. Karakousis, M.D.

**DEMOGRAPHIC AND PERSONAL INFORMATION**

**Current Appointments**

Associate Professor  
Department of Medicine, Johns Hopkins University School of Medicine  
Department of International Health, Johns Hopkins Bloomberg School of Public Health

**Personal Data**

Center for Tuberculosis Research  
1551 E. Jefferson Street, Rm 110  
Baltimore, MD 21287-0014  
tel: (410) 502-8233  
fax: (410) 614-8173  
e-mail: petros@jhmi.edu

**EDUCATION AND TRAINING** (in chronological order)

- |                      | Year, Degree/Certificate, Institution, Discipline  |
|----------------------|--|
| • Undergraduate:     | 1994, B.A., Johns Hopkins University, Natural Sciences, <i>summa cum laude</i>   |
| • Doctoral/graduate: | 1998, M.D., Washington University School of Medicine, Medicine   |
| • Postdoctoral:      | 1999, Internship, Hosp. of the Univ. of PA, Internal Medicine<br>2001, Residency, Hosp. of the Univ. of PA, Internal Medicine<br>2005, Fellowship, Johns Hopkins Univ. School of Medicine, Infectious Diseases |

**PROFESSIONAL EXPERIENCE** (in chronological order, earliest first, including academic appointments)

Dates	Positions	Institutions
Jan-Jun/1994	Research Assistant	Dept. of Medicine, Johns Hopkins
Jul-Dec/2000	Research Assistant	Dept. of Ophthalmology, Univ. of Pennsylvania
Jan-Jun/2002	Clinical Instructor	Dept. of Medicine, Univ. of Pennsylvania
06/05-01/12	Assistant Professor	Dept. of Medicine, JHUSOM
01/07-02/12	Assistant Professor (2° appointment)	Dept. of International Health, Johns Hopkins Bloomberg School of Public Health
01/12-	Associate Professor	Dept. of Medicine, JHUSOM
01/12-	Associate Professor (2° appointment)	Dept. of International Health, Johns Hopkins Bloomberg School of Public Health

## RESEARCH ACTIVITIES

### Publications:

1. Canning BJ, Udem BJ, **Karakousis PC**, Dey RD. Effects of organotypic culture on parasympathetic innervation of guinea pig trachealis. *Am J Physiol*. 1996; 271:L698-L706.
2. **Karakousis PC**, John SK, Behling KC, Surace EM, Smith JE, Hendrickson A, Tang W-X, Bennett J, Milam AH. Localization of pigment epithelium derived factor (PEDF) in developing and adult human ocular tissues. *Mol Vis*. 2001; 7:154-163.
3. **Karakousis PC**, Page KR, Varello MA, Howlett PJ, Stieritz DD. Waterhouse-Friderichsen syndrome after infection with Group A streptococcus. *Mayo Clin Proc*. 2001;76:1167-1170.
4. Page KR, **Karakousis PC**, Maslow J. Postoperative pneumococcal cellulitis in systemic lupus erythematosus. *Scand J Infect. Dis*. 2003;35:141-3.
5. Coppola AG, **Karakousis PC**, Metz DC, Go MF, Mhokashi M, Howden CW, Raufman JP, Sharma VK. Hepatitis C knowledge among primary care residents: is our teaching adequate for the times? *Am J Gastroenterol*. 2004; 99:1720-5.
6. **Karakousis PC**, Moore RD, Chaisson RE. Mycobacterium avium complex in patients with HIV infection in the era of highly active antiretroviral therapy. *Lancet Infect Dis*. 2004;4:557-65.
7. **Karakousis PC**, Bishai WR, Dorman SE. Mycobacterium tuberculosis cell envelope lipids and the host immune response. *Cell Microbiol*. 2004;6:105-116.
8. **Karakousis PC**, Yoshimatsu T, Lamichhane L, Woolwine SC, Nuermberger EL, Grosset J, Bishai WR. Dormancy phenotype displayed by extracellular Mycobacterium tuberculosis within artificial granulomas in mice. *J Exp Med*. 2004; 200:647-57.
9. **Karakousis PC**, Trucksis M, Dumler JS. Chronic Q fever in the United States. *J Clin Microbiol*. 2006;44:2283-7.
10. Brastianos PK, Swanson J, Torbenson M, Sperati J, **Karakousis PC**. Tuberculosis-associated hemophagocytic syndrome. *Lancet Infect. Dis*. 2006;6:447-54.
11. **Karakousis PC**, Sifakis FG, Montes de Oca R, Amorosa VC, Page, KR, Manabe YC, Campbell J. Medical resident familiarity with national tuberculosis guidelines. *BMC Infect Dis*. 2007;7:89.
12. Riddell J 4th, Kaul DR, **Karakousis PC**, Gallant JE, Mitty J, Kazanjian PH. Mycobacterium avium complex immune reconstitution inflammatory syndrome: Long term outcomes. *J Transl Med*. 2007;5:50.
13. Jain SK, Hernandez-Abanto, Cheng Q-J, Singh P, Ly LH, Klinkenberg LG, Morrison NE, Converse PJ, Nuermberger EL, Grosset J, McMurray DN, **Karakousis PC**, Lamichhane G, Bishai WR. Accelerated detection of Mycobacterium tuberculosis genes essential for bacterial survival in guinea pigs compared with mice. *J Infect Dis*. 2007;195:1634-42.
14. Williams EP, Lee JH, Bishai WR, Colantuoni C, **Karakousis PC**. Mycobacterium tuberculosis SigF regulates genes encoding cell wall-associated proteins and directly regulates the transcriptional regulatory gene phoY1. *J Bacteriol*. 2007;189:4234-42.
15. Lee, J-H, **Karakousis PC**, Bishai WR. Characterization of sigma factor regulation in Mycobacterium tuberculosis by SigB and SigF. *J Bacteriol*. 2008;190:699-707.

16. **Karakousis PC**, Williams EP, Bishai WR. Altered expression of isoniazid-regulated genes in drug-treated dormant *Mycobacterium tuberculosis*. *J Antimicrob Chemother.* 2008;61:323-31.
17. Klinkenberg L, Sutherland L, Bishai WR, **Karakousis PC**. Metronidazole lacks activity against *Mycobacterium tuberculosis* in an *in vivo* hypoxic granuloma model of latency. *J Infect Dis.* 2008;198:275-83.
18. Albin TA, **Karakousis PC**, Rao NA. Interferon-gamma release assays in the diagnosis of tuberculous uveitis. *Am J Ophthalmol.* 2008;146:486-8.
19. Converse PJ, **Karakousis PC**, Klinkenberg LG, Kesavan AK, Ly LH, Allen SS, Grosset JH, Jain SK, Lamichhane G, Manabe YC, McMurray DN, Nuermberger EL, Bishai WR. The role of the DosR/DosS two-component regulatory system in *Mycobacterium tuberculosis* virulence in three animal models. *Infect. Immun.* 2009;77:1230-37.
20. Rifat D, Bishai WR, **Karakousis PC**. Phosphate depletion: A novel trigger for *Mycobacterium tuberculosis* persistence. *J Infect Dis.* 2009;200:1126-35.
21. Ahmad Z, Klinkenberg LG, Pinn ML, Fraig MM, Peloquin CA, Bishai WR, Nuermberger EL, Grosset J, **Karakousis PC**. Biphasic kill curve of isoniazid reveals the presence of drug-tolerant, not drug-resistant, *Mycobacterium tuberculosis* in the guinea pig. *J Infect Dis.* 2009;200:1136-43.
22. Rao NA, Albin TA, Kumaradas M, Pinn ML, Fraig MM, **Karakousis PC**. Experimental ocular tuberculosis in guinea pigs. *Arch. Ophthalmol.* 2009;127:1162-6. PMID: PMC3062475.
23. Ahmad Z, Nuermberger EL, Tasneen R, Pinn ML, Williams KN, Peloquin CA, Grosset J, **Karakousis PC**. Comparison of the 'Denver regimen' against acute tuberculosis in the mouse and guinea pig. *J Antimicrob Chemother.* 2010;65:729-34. PMID: PMC2837551.
24. Converse PJ, Eisenach KD, Theus SA, Nuermberger EL, Tyagi S, Ly LH, Geiman DE, Guo H, Nolan ST, Akar NC, Klinkenberg LG, Gupta R, Lun S, **Karakousis PC**, Lamichhane G, McMurray DN, Grosset JH, Bishai WR. The impact of mouse passaging of *Mycobacterium tuberculosis* strains prior to virulence testing in the mouse and guinea pig aerosol models. *PLoS One.* 2010;5:e10289.
25. Cutrufello NJ, **Karakousis PC**, Fishler J, Albin TA. Intraocular tuberculosis. *Ocul Immunol Inflamm.* 2010;18:281-91.
26. Ahmad Z, Pinn ML, Nuermberger EL, Peloquin CA, Grosset J, **Karakousis PC**. The potent bactericidal activity of streptomycin in the guinea pig model of tuberculosis ceases due to the presence of persisters. *J Antimicrob Chemother.* 2010;65:2172-5. PMID: PMC2941674.
27. Klinkenberg LG, Lee J-H, Bishai WR, **Karakousis PC**. The stringent response is required for full virulence of *Mycobacterium tuberculosis* in guinea pigs. *J Infect Dis.* 2010;202:1397-1404. PMID: PMC2949470.
28. Piggott D, **Karakousis PC**. Timing of antiretroviral therapy for HIV in the setting of TB treatment. *Clin Dev Immunol.* 2011;2011:103917.
29. Zhou A, Nawaz M, Xue X, **Karakousis PC**, Yao Y, Xu J. Molecular genotyping of *Mycobacterium tuberculosis* in Xi'an, China using MIRU-VNTR typing system. *Int J Tuberc Lung Dis.* 2011;15:517-22.

30. Ahmad Z, Fraig MM, Bisson GP, Nuermberger EL, Grosset JH, **Karakousis PC**. Dose-dependent activity of pyrazinamide in animal models of intracellular and extracellular tuberculosis. *Antimicrob Agents Chemother*. 2011;55:1527-32. PMID: PMC3067197.
  31. Ahmad Z, Fraig MM, Pinn ML, Tyagi S, Nuermberger EL, Grosset JH, **Karakousis PC**. Effectiveness of tuberculosis chemotherapy correlates with resistance to *Mycobacterium tuberculosis* infection in animal models. *J Antimicrob Chemother*. 2011;66:1560-6.
  32. Dutta NK, Mazumdar K, Dastidar SG, **Karakousis PC**, Amaral L. New Patentable Use of an Old Neuroleptic Compound Thioridazine to Combat Tuberculosis: A Gene Regulation Perspective. *Recent Pat Antiinfect Drug Discov*. 2011;6:128-38.
  33. Abomoelak B, Ward SK, Marcus S, **Karakousis PC**, Steinberg H, Talaat AM. Characterization of a novel heat shock protein (Hsp22.5) involved in the pathogenesis of *Mycobacterium tuberculosis*. *J Bacteriol*. 2011;193:3497-505. PMID: PMC3133320.
  34. Be NA, Klinkenberg LG, Bishai WR, **Karakousis PC**, Jain SK. Strain-dependent CNS dissemination in guinea pigs after *Mycobacterium tuberculosis* aerosol challenge. *Tuberculosis (Edinb)*. 2011;91:386-9.
  35. Thayil SM, Morrison N, Schechter N, Rubin H, **Karakousis PC**. The role of the novel exopolyphosphatase MT0516 in *Mycobacterium tuberculosis* drug tolerance and persistence. *PLoS One*. 2011;6:e28076.
  36. Thayil SM, Albin TA, Nazari H, Moshfeghi AA, Parel J-MA, Rao NA, **Karakousis PC**. Local Ischemia and Increased Expression of Vascular Endothelial Growth Factor Following Ocular Dissemination of *Mycobacterium tuberculosis*. *PLoS One*. 2011;6:e28383. PMID: PMC3230586.
  37. Dutta NK, Illei PB, Peloquin CA, Pinn ML, Mdluli KE, Nuermberger EL, Grosset JH, **Karakousis PC**. Rifapentine is not more active than rifampin against chronic tuberculosis in guinea pigs. *Antimicrob Agents Chemother*. 2012;56:3726-31.
  38. Dutta NK, **Karakousis PC**. Tuberculosis (TB) Chemotherapy: Present Situation, Possible Solutions, and Progress towards a TB-free world. *Indian J Med Microbiol*. 2012;30:261-3.
  39. Singh PP, Smith VL, **Karakousis PC**, Schorey JS. Exosomes isolated from *M. tuberculosis* infected cells can induce migration and recruitment of host immunecells *in vivo*. *J Immunol*. 2012;189:777-85. PMID: PMC3685416.
  40. Rosenthal IM, Tasneen R, Peloquin CA, Zhang M, Almeida D, Mdluli KE, **Karakousis PC**, Grosset JH, Nuermberger EL. Dose-ranging comparison of rifampin and rifapentine in two pathologically distinct murine models of tuberculosis. *Antimicrob Agents Chemother*. 2012;56:4331-40. PMID: PMC3421552.
  41. Chia B-S, Lanzas F, Rifat D, Herrera A, Kim EY, Sailer C, Torres-Chavolla E, Narayanaswamy P, Einarsson V, Bravo J, Pascale JM, Ioerger TR, Sacchetti JC, **Karakousis PC**. Use of Multiplex Allele-Specific Polymerase Chain Reaction (MAS-PCR) to Detect Multidrug-Resistant Tuberculosis in Panama. *PLoS One*. 2012;7:e40456. PMID: PMC3391257.
  42. Thayil SM, Ho Y-C, Bollinger RC, Blankson JN, Siliciano RF, **Karakousis PC\***, Page KR. Mycobacterium tuberculosis complex enhances HIV infection susceptibility of CD4 T cells to HIV through a TLR2-mediated pathway. *PLoS One*. 2012;7:e41093.
- \*Corresponding author. PMID: PMC3402510.

43. Bisson GP, Mehaffy C, Broeckling C, Prenni J, Rifat D, Lun D, Burgos M, Weissman D, **Karakousis PC**, Dobos KM. Upregulation of the phthiocerol dimycocerosate biosynthetic pathway by rifampicin-resistant, rpoB-mutant *Mycobacterium tuberculosis*. *J Bacteriol*. 2012;194:6441-52. PMID: PMC3497527.
44. Albini TA, **Karakousis PC**, Abbey AM, Bartlett JG, Flynn HW Jr. Association between oral fluoroquinolones and retinal detachment. *Am J Ophthalmol*. 2012;154:919-921.
45. Klinkenberg LG, **Karakousis PC**. Rv1894c is a novel hypoxia-induced nitronate monooxygenase required for *Mycobacterium tuberculosis* virulence. *J Infect Dis*. 2013;207:1525-34. PMID: PMC3627198.
46. Dutta NK, Sultan A, Peloquin CA, **Karakousis PC**. Preliminary Pharmacokinetic Study of Repeated Doses of Rifampin and Rifapentine in Guinea pigs. *Antimicrob Agents Chemother*. 2013;57:1535-7. PMID: PMC3591898.
47. Dutta NK, Pinn ML, Zhao M, Rudek MA, **Karakousis PC**. Thioridazine lacks bactericidal activity in an animal model of extracellular tuberculosis. *J Antimicrob Chemother*. 2013;68:1327-30. PMID: PMC3654222.
48. Subbian S, O'Brien P, Kushner NL, Yang G, Tsenova L, Peixoto B, Bandyopadhyay N, Bader JS, **Karakousis PC**, Fallows D, Kaplan G. Molecular immunologic correlates of spontaneous latency in a rabbit model of pulmonary tuberculosis. *Cell Commun Signal*. 2013;11:16. PMID: PMC3598925.
49. Chuang, Y-M, Belchis DA, **Karakousis PC**. The polyphosphate kinase gene *ppk2* is required for *Mycobacterium tuberculosis* inorganic polyphosphate regulation and virulence. *MBio*. 2013; 4:e00039-13. PMID: PMC3663568.
50. Skerry C, Pokkali S, Pinn ML, Be NA, Harper J, **Karakousis PC**, Jain SK. Vaccination with recombinant *Mycobacterium tuberculosis* PknD attenuates bacterial dissemination to the brain in guinea pigs. *PLoS One*. 2013; 8:e66310. PMID: PMC3679071.
51. Dutta NK, Alsultan A, Gniadek TJ, Belchis DA, Pinn ML, Mdluli KE, Nuermberger EL, Peloquin CA, **Karakousis PC**. Potent rifamycin-sparing regimen cures guinea pig tuberculosis as rapidly as the standard regimen. *Antimicrob Agents Chemother*. 2013;57:3910-6. PMID: PMC3719725
52. Lanzas F, **Karakousis PC**, Sacchetti JC, Ioerger TR. Multidrug-resistant tuberculosis in Panama is driven by clonal expansion of an MDR-TB strain related to the KZN XDR-TB strain from South Africa. *J Clin Microbiol*. 2013;51:3277-85. PMID: PMC3811646.
53. Subbian S, Bandyopadhyay N, Tsenova L, O'Brien P, Khetani V, Kushner NL, Peixoto B, Soteropoulos P, Bader JS, **Karakousis PC**, Fallows D, Kaplan G. Early innate immunity determines outcome of *Mycobacterium tuberculosis* pulmonary infection in rabbits. *Cell Commun Signal*. 2013;11:60. PMID: PMC3765177.
54. Zhou A, Ni J, Xu Z, Wang Y, Lu S, Sha W, **Karakousis PC**, Yao Y-F. Application of 1H-NMR spectroscopy-based metabolomics to sera of tuberculosis. *J Proteome Res*. 2013;12:4642-9. PMID: PMC3838786.
55. Nazari H, **Karakousis PC**, Rao NA. Replication of *Mycobacterium tuberculosis* in Retinal Pigment Epithelium. *JAMA Ophthalmol*. 2014;132:724-9.

56. Dutta N, Bandyopadhyay N, Veeramani B, Lamichhane G, **Karakousis PC\***, Bader J. Systems biology-based identification of *Mycobacterium tuberculosis* persistence genes in mouse lungs. *MBio* 2014;5:e01066-13. PMID: PMC3944818. \*Corresponding author.
57. Dutta NK, Illei P, Jain S, **Karakousis PC**. Characterization of a novel necrotic granuloma model of latent tuberculosis infection and reactivation in mice. *Am J Pathol*. 2014;184:2045-55. PMID: PMC4076462.
58. Rifat D, **Karakousis PC**. Differential regulation of the two-component regulatory system *senX3-regX3* in *Mycobacterium tuberculosis*. *Microbiology*. 2014;160:1125-33. PMID: PMC4039243.
59. Dutta NK, Pinn ML, **Karakousis PC**. Reduced emergence of isoniazid resistance with concurrent use of thioridazine against acute murine tuberculosis. *Antimicrob Agents Chemother*. 2014;58:4048-53. PMID: PMC4068531.
60. Heaton B, Barkan D, Bongiorno P, **Karakousis PC**, Glickman MS. Deficiency of double strand DNA break repair does not impair *M. tuberculosis* virulence in multiple animal models of infection. *Infect Immun*. 2014;82:3177-85.
61. Skerry C, Pinn ML, Bruiners N, Pine R, Gennaro ML, **Karakousis PC**. Simvastatin increases the *in vivo* activity of the first-line TB regimen. *J Antimicrob Chemother*. 2014;69:2453-7.
62. Dutta NK, Pinn ML, **Karakousis PC**. Sterilizing activity of thioridazine in combination with the first-line regimen against acute murine TB. *Antimicrob Agents Chemother*. 2014;58:5567-9.
63. Dutta NK, **Karakousis PC**. PA-824 is as effective as isoniazid against latent TB infection in C3HeB/FeJ mice. *Int J Antimicrob Agents*. 2014;44:564-6.
64. Dutta NK, **Karakousis PC**. Latent tuberculosis infection: Myths, models, and molecular mechanisms. *Microbiol Mol Biol Rev*. 2014;78:343-371.
65. Dutta NK, **Karakousis PC**. Thioridazine for treatment of tuberculosis: Promises and pitfalls. *Tuberculosis (Edinb)*. 2014;94:708-11.
66. Rifat D, Belchis DA, **Karakousis PC**. *senX3*-independent contribution of *regX3* to *Mycobacterium tuberculosis* virulence. *BMC Microbiol*. 2014;14:265.
67. Kana BD, **Karakousis PC**, Parish T, Dick T. Future target-based drug discovery for tuberculosis? *Tuberculosis (Edinb)*. 2014;94:551-556.
68. Chuang Y-M, Bandyopadhyay N, Rifat D, Rubin H, Bader, **Karakousis PC**. Deficiency of the novel exopolyphosphatase Rv1026/PPX2 leads to metabolic downshift and altered cell wall permeability in *Mycobacterium tuberculosis*. *MBio*. 2015;6:e02428.
69. Zhou A, Ni J, Xu Z, Wang Y, Zhang H, Wu W, Lu S, **Karakousis PC**, Yao Y-F. Metabolomics specificity of tuberculosis plasma revealed by (1)H NMR spectroscopy. *Tuberculosis (Edinb)*. 2015;95:294-302. PMID: PMC4428961.
70. Xu Z, Zhou A, Ni J, Wang Y, Lu J, **Karakousis PC**, Lu S, Yao Y. Differential expression of miRNAs and their relation to active tuberculosis. *Tuberculosis (Edinb)*. 2015;95:395-403.
71. Via L, Savic R, Weiner D, Zimmerman M, Prideaux B, Irwin S, O'Brien P, Gopal P, Eum S, Lee M, Lanoix J-P, Lyon E, Dutta N, Shim T, Cho JS, Kim W, **Karakousis PC**, Lenaerts A, Nuermberger E, Barry C, Dartois V. Host-mediated bioactivation of pyrazinamide: implications for efficacy, resistance and therapeutic alternatives. *ACS Infect Dis*. 2015;1:203-214. PMID: PMC4467917.

72. Subbian S, Tsenova L, Kim M-J, Wainwright HC, Visser A, Bandyopadhyay N, Bader JS, **Karakousis PC**, Murrmann GB, Bekker L-G, Russell DG, Kaplan G. Lesion-specific immune response in granulomas of patients with pulmonary tuberculosis: A pilot study. *PLoS One*. 2015;10:e0132249. PMID: PMC4489805.
73. Levine DM, Dutta NK, Eckels J, Scanga C, Stein C, Mehra S, Kaushal D, **Karakousis PC**, Salamon H. A Tuberculosis Ontology for Host Systems Biology. *Tuberculosis (Edinb)*. 2015;95:570-4. PMID: PMC4554888.
74. Dutta NK, **Karakousis PC**. Can the duration of tuberculosis treatment be shortened with higher dosages of rifampicin? *Front Microbiol*. 2015;6:1117. PMID: PMC4604300.
75. Skerry C, Klinkenberg LG, Page KR, **Karakousis PC**. TLR2-Modulating Lipoproteins of the *Mycobacterium tuberculosis* Complex Enhance the HIV Infectivity of CD4+ T Cells. *PLoS One*. 2016;11:e0147192. PMID: PMC4725761.
76. Dutta NK, Bruiners N, Pinn ML, Zimmerman MD, Prideaux B, Dartois V, Gennaro ML, **Karakousis PC**. Statin adjunctive therapy shortens the duration of TB treatment in mice. *J Antimicrob Chemother*. 2016;71:1570-7.
77. Srinivasan L, Gurses SA, Hurley BE, Miller JL, **Karakousis PC**, Briken V. Identification of a transcription factor that regulates host cell exit and virulence of *Mycobacterium tuberculosis*. *PLoS Pathog*. 2016;12:e1005652. PMID: PMC4871555.
78. Lanzas F, Ioerger TR, Shah H, Acosta W, **Karakousis PC**. First evaluation of GenoType MTBDRPlus 2.0 performed directly on respiratory specimens in Central America. (In press, *J Clin Microbiol*).
79. Dutta NK, He R, Pinn ML, He Y, Burrows F, Zhang Z-Y, **Karakousis PC**. Mycobacterial protein tyrosine phosphatases A and B inhibitors augment the bactericidal activity of standard anti-TB regimen. *ACS Infect Dis*. 2016;2:231-239.
80. Chuang YM, Dutta NK, Hung CF, Wu TC, Rubin H, **Karakousis PC**. The stringent response factors PPX1 and PPK2 play an important role in *Mycobacterium tuberculosis* metabolism, biofilm formation, and sensitivity to isoniazid in vivo (In press, *Antimicrob Agents Chemother*).

**Inventions, Patents, Copyrights** (pending, awarded)

Date	Title
09/06/2005	Hollow fiber technique for in vivo study of cell populations (pending)
06/02/2008	A novel, hollow-fiber-based technique for vaccination (pending)
06/02/2008	Genes involved in <i>Mycobacterium tuberculosis</i> dormancy (pending).
02/10/2011	Nitronate monooxygenases of <i>Mycobacterium tuberculosis</i> (pending)
02/10/2011	Exopolyphosphatases of <i>Mycobacterium tuberculosis</i> (pending)
08/17/2012	<i>Mycobacterium tuberculosis</i> detection using transrenal DNA (pending)
10/24/2013	Lipid-modulating agents as adjunctive therapy for tuberculosis

06/12/2015

Small Molecule Biosignature for TB diagnosis  
and Assessment of Drug Susceptibility

06/12/2015

A novel shock and kill strategy for targeting  
bacterial persisters

**Extramural Funding** (current, pending, previous)

Current Grants:

08/19/13-07/31/17, The role of cell wall lipids in pathogenesis of rifampin-resistant TB  
R01AI106613

NIH/NIAID

This study will use a combination of transcriptional, lipidomic, genetic, and imaging techniques to investigate whether phthiocerol dimycocerosate (PDIM) accumulation compensates for the fitness cost associated with *M. tuberculosis rpoB* mutation during host infection.

Role: Principal Investigator

12/01/14-11/30/17, Quantitative assessment of the tipping point in *Mycobacterium tuberculosis* transmission and infection

OPP1116944

Bill and Melinda Gates Foundation

Quantitative methods will be used to study Mtb dynamics to determine the tipping point for macrophage infection, which depends on the number and state of internalized bacteria and leads to either control of infection or uncontrolled Mtb replication.

Principal Investigator: Alex Sigal

Role: Co-Investigator

9/24/2015-08/31/2017, Statins as Adjunctive, Host-Directed Therapy for TB

UH2 AI122309

NIH/NIAID

The goal of this study is to investigate the potential role of statins as adjunctive, host-directed therapy for TB. Preclinical studies in relevant *in vitro* and animal models will inform selection of statin and dosing for a prospective, randomized clinical study. The primary outcomes will be median time to sputum culture conversion and proportion of sputum sample conversion at 8 weeks following treatment.

Role: Principal Investigator

07/01/15-06/30/17, Validation of RelA as a Target for *Mycobacterium tuberculosis*  
Persisters

R21AI114507

NIH/NIAID

The goal of this study is to provide proof of concept that inhibition of the Mtb enzyme RelA leads to increased bacterial killing under stress conditions *in vitro* and *in vivo*, as well as increased susceptibility to first-line anti-TB drugs.

Role: Principal Investigator



02/01/16-01/31/18, A novel “shock and kill” strategy for eliminating Mtb persisters in the CD4 T-cell-deficient host

R21AI122922

NIH/NIAID

This study will determine if inhibition of the Mtb stringent response leads to accelerated eradication of TB infection in CD4-deficient mice.

Total direct cost, \$125,000

Role: Principal Investigator

10/14/15-11/13/16, Testing the anti-TB activity of COMPOUND X in mice

BMGF/Texas A&M University

The objective of this study is to test the antitubercular activity of three different compounds relative to the first-line drug, isoniazid, against acute TB infection in the standard mouse model.

Principal Investigator: Jim Sacchetti

Role: Co-Investigator

12/01/14-11/30/15 (1-yr NCE), Lipid-modulating agents as HDT for tuberculosis

UM1AI068636 (Flexner/Karakousis)

Brigham and Women’s Hospital/NIAID

AIDS Clinical Trial Group Network

This study will investigate the utility of the lipid-lowering agents, statins, as adjunctive, host-directed therapy for tuberculosis in macrophage models and in preliminary mouse studies. Global gene expression will be used to begin to explore their antitubercular mechanism of action.

Role: Co-Investigator

06/30/15-06/29/17, Defining core signaling pathways regulating *Mycobacterium tuberculosis* dormancy and resuscitation

Willowcroft Foundation

This study will use a multidisciplinary approach, combining experimental methods with computational modeling, to identify common regulatory pathways responsible for *M. tuberculosis* dormancy and reactivation.

Role: Principal Investigator

12/01/15-11/30/16, Identifying molecular targets for preventing multidrug tolerance in *Mycobacterium avium* infection

Johns Hopkins University Fisher Center

Using a high-throughput genomic screen and bioinformatics tools, this study will identify and investigate *M. avium* genes involved in the phenomenon of multi-drug tolerance.

Role: Principal Investigator

Previous funding:

07/01/09-06/30/14, Regulatory networks involved in *Mycobacterium tuberculosis* persistence

R01AI083125-01

NIH/NIAID

The major goals of this study are to investigate regulatory pathways involved in *Mycobacterium tuberculosis* persistence, including the roles of (p)ppGpp and inorganic polyphosphate.

Role: Principal Investigator

09/01/10-08/31/2014, A Multidisciplinary Approach to Understanding TB Latency and Reactivation

R01HL106786-01

NIH/NHLBI

This study will use a systems biology-based approach to identify host cytokine networks and *M. tuberculosis* molecular pathways required for bacillary growth restriction and reactivation.

Role: Principal Investigator

3/15/05-02/28/11 (1-yr no-cost extension), Modeling latent TB infection

K08 AI64229-01

NIH/NIAID

This study investigated the genetic requirements of *Mycobacterium tuberculosis* survival in a novel in vivo granuloma model of latent TB infection.

Role: Principal Investigator

09/01/10-08/29/15, Animal Models of Infectious Diseases

AMoID Contract No. HHSN272201000015I

NIH/NIAID

This contract will use well-characterized and novel animal models of tuberculosis infection to evaluate new drug/drug combinations and recombinant strains to identify novel drug targets of *M. tuberculosis*.

Total direct cost, \$2,719,377

Principal Investigator: William R. Bishai

Role: Co-Principal Investigator

08/02/13-07/31/15, Testing the Anti-TB Activity of PTP Inhibitors in Guinea Pigs

Aarden Pharmaceuticals Inc.

The objective of this study is to determine the antitubercular activity of inhibitors targeting mycobacterial protein tyrosine phosphatase in the guinea pig model of TB infection.

Role: Principal Investigator

09/17/2010 - 09/16/2013, Qualifying New Pre-Clinical Models for the Development of Tuberculosis Drugs

U18FD004004-01

FDA

This study will address the hypothesis that that tissue necrosis is a critical determinant of *M. tuberculosis* persistence by comparing outcomes of experimental chemotherapy in animal models with and without necrotic granulomas.

Principal Investigator: Khisi Mdluli  
Role: Co-Investigator

01/01/10-12/31/11, Multiplex Allele-Specific PCR for the Detection of MDR-TB in Panama  
JHU Center for Global Health

This study will investigate the sensitivity and specificity of MAS-PCR in the detection of isoniazid and rifampin resistance among archived MDR-TB isolates at Gorgas Memorial Institute, Panama.

Role: Principal Investigator

11/01/07-10/31/10, Pharmacokinetics and pharmacodynamics of sterilizing activity across experimental models

TB Drug Accelerator

Bill and Melinda Gates Foundation

This study will evaluate the sterilizing activity of standard and novel anti-TB agents in the guinea pig aerosol and mouse hollow fiber models of TB infection.

Principal Investigator: Jacques H. Grosset

Role: Co-Principal Investigator

8/22/03 - 8/21/10, TB gene function in animal models

N01 AI 30036

NIH-NIAID-DMID

This study investigated the role of specific genes in *Mycobacterium tuberculosis* virulence in mice, guinea pigs, and rabbits.

Principal Investigator: William R. Bishai

Role: Co-Investigator

2/31/05-12/30/06, Pathogen and host factors involved in latent TB infection

Potts Memorial Foundation

This study investigated the role of host microenvironmental conditions on *Mycobacterium tuberculosis* dormancy in a novel in vivo granuloma model of latent TB infection.

Role: Principal Investigator

8/31/03-08/30/04, The hollow fiber encapsulation/implantation technique as a model for latent TB infection

Potts Memorial Foundation

This study helped establish a dormancy model of *Mycobacterium tuberculosis* using semi-diffusible hollow fibers in vivo.

Role: Principal Investigator

## **EDUCATIONAL ACTIVITIES**

### **Educational Publications**

1. **Karakousis PC**, Tomaszewski JE. Ulcerating subcutaneous nodules and advanced renal failure: is it time for a new liver? *Nephrol Dial Transplant*. 2001;16: 2095-2096.

2. **Karakousis PC**, Lee MS, Grostern RJ, Nichols CW. The role of conjunctival biopsy in the diagnosis of Wegener's granulomatosis: a case report. *Can J Ophthalmol*. 2002;37:179-181.
3. **Karakousis PC**, Page KR, Bishai WR. From the IDSA meeting—Important new findings in HIV treatment and pathogenesis, 2003. *Hopkins HIV Rep*. 2004;16:2-3.
4. **Karakousis P**, Moore RD, Chaisson RE. Non-tuberculous mycobacteria in HIV-infected patients: geographic, behavioural, and immunological factors - Authors' reply. *Lancet Infect Dis*. 2005; 5:396.
5. **Karakousis PC**, Magill SS, Gupta A. Paraplegia due to invasive spinal aspergillosis. *Neurology*. 2007;68:158.
6. **Karakousis PC**, Magill SS, Gupta A. Paraplegia due to invasive spinal aspergillosis- Reply from the authors. *Neurology*. 2007;69:222-23.
7. Nuermberger EL, Rosenthal IM, Tasneen R, Peloquin CA, Mdluli KE, **Karakousis PC**, Grosset JH. Reply to "contradictory results with high-dosage rifamycin in mice and humans". *Antimicrob Agents Chemother*. 2013;57:1104-5.
8. Suresh K, Semaan R, Arias S, **Karakousis P**, Lee H. Pleuropulmonary Kaposi Sarcoma in the Setting of Immune Reactivation. *J Pulm Respir Med*. 2016;6:352. PMID: PMC4943458.
9. **Karakousis PC**, Chaisson RE. Mycobacterial infections and HIV infection. In: Fishman's Pulmonary Diseases and Disorders, 4<sup>th</sup> edition, Fishman AP, Elias JA, Fishman JA, Grippi MA, Senior RM, Pack AI, ed. New York: McGraw Hill, 2008:2487-2497.
10. **Karakousis PC**. Mechanisms of Action and Resistance of the Antimycobacterial Agents. In: Antimicrobial Drug Resistance, Mayers D, ed. New York: Humana Press, 2009:271-291.
11. Kolyva A, **Karakousis PC**. Old and New TB Drugs: Mechanisms of Action and Resistance. In: Mycobacterium tuberculosis/Book 2, Cardona P-J, ed. InTech, 2011.
12. Subbian S, **Karakousis PC**, Kaplan G. Rabbit Model of Mycobacterial Diseases. In: Tuberculosis, Leprosy and Mycobacterial Diseases of Man and Animals: The Many Hosts of Mycobacteria, Mukundan H et al, ed. CAB International 2015: 402-418.
13. **Karakousis PC**, Bishai WR, Chaisson RE. Management of community-acquired pneumonia: Improving patient outcomes; a satellite symposium preceding the 40th IDSA Annual Meeting. JHU antibiotic guide website (<http://hopkins-abxguide.org>). Posted December 2002.
14. **Karakousis PC**, Bishai WR. Synopsis of key presentations at the 40th annual meeting of IDSA (October 24-27, 2002, Chicago). JHU antibiotic guide website (<http://hopkins-abxguide.org>). Posted November 2002.
15. **Karakousis PC**, Page KR, Bishai WR. Greetings from sunny (most of the time) San Diego: Highlights from the 41st annual meeting of the Infectious Diseases Society of America. JHU antibiotic guide website (<http://hopkins-abxguide.org>). Posted November 2003.
16. **Karakousis PC**. "XDR-TB Scare", Fox National News, 11:00 AM, Thursday, May 31, 2007.

## Teaching

January 22, 2007, “*Mycobacterium tuberculosis*: The persistent pathogen”, Lecturer, Dept of International Health graduate student seminar, Johns Hopkins Bloomberg School of Public Health, W2017.

April 17, 2009, “Animal models of TB infection”, Lecturer, JHU Pathobiology Graduate Program Infections and Immunology Course, Carnegie 489, Johns Hopkins Hospital.

June 15, 2009: “The Molecular Epidemiology of Infectious Disease”, Lecturer, Infectious Disease Epidemiology summer course, Johns Hopkins Bloomberg School of Public Health, W2015.

February 25-March 2, 2010, “Global Health Intersession Course” for First Year Medical Students, Lecturer, Armstrong Medical Education Building, Johns Hopkins University School of Medicine.

April 12, 2010, “Animal models of TB infection”, Lecturer, JHU Pathobiology Graduate Program Infections and Immunology Course, Carnegie 489, Johns Hopkins Hospital.

October 6, 2010, “*Mycobacterium tuberculosis* latency and persistence”, Lecturer, JHU Pathobiology Program graduate student seminar series, Ross 503, Johns Hopkins School of Medicine.

April 13, 2011, “TB infection”, Lecturer, JHU Pathobiology Program Infections and Immunology Course, Carnegie 489, Johns Hopkins Hospital.

December 14, 2011: “The Molecular Epidemiology of Infectious Disease”, Lecturer, Epidemiology of Infectious Diseases course, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Becton-Dickinson Lecture Hall.

March 7-8, 2012: “Tuberculosis”, Lecturer; Small group Leader, Medical Student Intersession on Infectious Disease, Armstrong Building.

April 9-April 27, 2012: “Infections and Immunology Course”, Course Director, JHU Pathobiology Graduate Program, Carnegie 489, Johns Hopkins Hospital.

April 11, 2012: “Overview of Tuberculosis”, Lecturer, JHU Pathobiology Graduate Program Infections and Immunology Course, Carnegie 489, Johns Hopkins Hospital.

June 19, 2012: “The Molecular Epidemiology of Infectious Disease”, Lecturer, Infectious Disease Epidemiology summer course, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, W2009.

November 14, 2012: “The Molecular Epidemiology of Infectious Disease”, Lecturer, Infectious Diseases Epidemiology course, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Becton-Dickinson Lecture Hall.

March 5-7, 2013: “Tuberculosis”, Lecturer; Small group Leader, Medical Student Intersession on Infectious Disease, Armstrong Building.

April 10, 2013, “TB pathogenesis and Animal Models”, Lecturer, JHU Pathobiology Program, Infectious Diseases and Immunological Disorders Course, Carnegie 489, Johns Hopkins Hospital.

June 14, 2013: “The Molecular Epidemiology of Infectious Disease”, Lecturer, Infectious Disease Epidemiology summer course, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, W2009.

September 9, 2013: “TB Diagnosis”, Lecturer, JHU Pathobiology Graduate Program, Carnegie 489, Johns Hopkins Hospital.

September 10, 2013: “The Molecular Epidemiology of Infectious Disease”, video recording of lecture for online Epidemiology course, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, WB509.

November 4, 2013: “The Molecular Epidemiology of Infectious Disease”, Lecturer, Infectious Diseases Epidemiology course, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Becton-Dickinson Lecture Hall.

December 17-19, 2013: “Tuberculosis”, Lecturer; Small group Leader, Medical Student Intersession on Infectious Disease, Armstrong Building, Room 345.

April 14-May 5, 2014: “Immunology and Infectious Disease”, Course Director, JHU Pathobiology Graduate Program, Carnegie 489, Johns Hopkins Hospital.

November 10, 2014: “The Molecular Epidemiology of Infectious Disease”, Lecturer, Infectious Diseases Epidemiology course, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Becton-Dickinson Lecture Hall.

April 13-May 1, 2015: “Immunology and Infectious Disease”, Course Director, JHU Pathobiology Graduate Program, Carnegie 489, Johns Hopkins Hospital.

April 17, 2015, “Animal Models of Tuberculosis”, Lecturer, JHU Pathobiology Program, Infectious Diseases and Immunological Disorders Course, Carnegie 489, Johns Hopkins Hospital.

May 1, 2015, “Clinical Mycology”, Lecturer, JHU Pathobiology Program, Infectious Diseases and Immunological Disorders Course, Carnegie 489, Johns Hopkins Hospital.

April 11-May 2, 2016: “Immunology and Infectious Disease”, Course Director, JHU Pathobiology Graduate Program, Carnegie 489, Johns Hopkins Hospital.

April 15, 2016, “Tuberculosis—Clinical Considerations”, Lecturer, JHU Pathobiology Program, Infectious Diseases and Immunology Course, PCTB, Room G-14.

April 15, 2016, “Classic Papers on Tuberculosis”, Facilitator, JHU Pathobiology Program, Pathobiology and Disease Mechanisms Course, PCTB, Room G-14.

October 19-20, 2016, “Tuberculosis and Antimicrobials” in Topics in Interdisciplinary Medicine, Room 470, Armstrong Medical Education Building, Johns Hopkins University School of Medicine.

### **Mentoring** (pre- and post-doctoral)

#### Visiting scientists/professors

06/12-10/12	Julià Gonzalez-Martin, M.D., Ph.D. Current Position: Associate Professor, Dept. Pathology, Pharmacology and Microbiology, Faculty of Medicine, University of Barcelona, Spain
04/13-04/14	Alpaslan Alp, M.D., Fulbright Scholar Current position: Associate Professor of Microbiology, Hacettepe University Faculty of Medicine, Ankara, Turkey
09/15-09/16	Jing Tao, Ph.D. Current position: Lecturer, Shanghai Jiao Tong University School of Medicine, Shanghai, China

#### Post-doctoral Trainees

09/05-present	Lee G. Klinkenberg, PhD, Postdoctoral fellow Potts Memorial Foundation Postdoctoral Fellowship recipient, Sept 2006-Sept 2008 Arthur M. Dannenberg, Jr. Award for Postdoctoral Research, 2009 Basic Research Junior Faculty Award, Dept. of Medicine, 2013 Current position: Research Associate, DOM, JHUSOM
01/08-10/10	Zahoor Parry, PhD, Postdoctoral fellow Current position: Scientist E1, Indian Institute of Integrative Medicine, Srinagar, India
05/08-11/11	Seema Thayil, PhD, Postdoctoral fellow Current position: Scientist at Guru Nanak Dev University, Amritsar, India
01/11-present	Noton Dutta, PhD, Postdoctoral fellow Annual Postdoc Symposium Poster Award, 2013
09/11-03/14	Edith Torres-Chavolla, PhD, Postdoctoral fellow
05/12-05/14	Ciaran Skerry, PhD, Postdoctoral fellow
10/13-12/14	Yu-Min Chuang, MD, PhD, Postdoctoral fellow Current position: Postdoctoral fellow, Dr. T.C. Wu Lab, JHUSOM
09/14-present	Victoria Campodónico, MD, PhD, Postdoctoral fellow

#### Medical residents

01/11-06/11	Anastasia Kolyva, MD Current position: Medical resident, University of Patras School of Medicine, Patras, Greece
-------------	---

Medical Students

06/11-08/11 Christine Sailer  
Current position: Internal Medicine resident, Johns Hopkins Hospital

06/12-08/12, Harita Shah  
06/13-08-13 Current position: Medical student, JHU School of Medicine

06/12-08/12, William Acosta  
06/13-08-13 Current position: Medical student, JHU School of Medicine

06/16-08/16 Keyane Haile, Minority student  
Meharry Medical College

Graduate Students

07/09-09/13 Yu-Min Chuang, M.D., Graduate student, Pathobiology Graduate Program, JHUSOM

04/08-06/08 Julia Drewes, Graduate rotation student, Cellular and Molecular Medicine Lab Rotation, JHUSOM

08/10-10/10 Michael Ayars, Graduate rotation student, Pathobiology Graduate Program Lab Rotation, JHUSOM

09/11-12/11 Wan Yee, Graduate rotation student, Pathobiology Graduate Program Lab Rotation, JHUSOM

07/12-09/12 Devin Sabin, Graduate rotation student, Pathobiology Graduate Program Lab Rotation, JHUSOM

09/13-11/13 Hee Sun Choi, Graduate rotation student, Pathobiology Graduate Program Lab Rotation, JHUSOM

0/2-14-present Will Matern, Biomedical Engineering Graduate Program, JHUSOM

09/14-12/14 Eva Shrestha, Graduate rotation student, Pathobiology Graduate Program Lab Rotation, JHUSOM

09/15-12/15 Lionel Chia, Graduate rotation student, Pathobiology Graduate Program Lab Rotation, JHUSOM

09/16-12/16 Monika Looney, Graduate rotation student, Pathobiology Graduate Program Lab Rotation, JHUSOM

Masters Students

07/09- Fedora Lanzas  
Instituto Conmemorativo Gorgas de Estudios de la Salud, Panama

09/11-05/12 Bing Shao Chia  
Danny Lee Award for Outstanding Undergraduate Research in Biomedical Sciences, Johns Hopkins University, 2012  
Current position: Ph.D. program, Harvard Virology Program

11/10-06/11 Elizabeth Kim  
MPH student, Johns Hopkins Bloomberg School of Public Health

07/14-06/15 Nicholas Degner  
MPH student, Johns Hopkins Bloomberg School of Public Health  
Current position: Medicine Resident, Stanford University

Undergraduate Students

05/07-08/08 Lesley Sutherland



	Current position: Medical student, University of Maryland School of Medicine
09/10-05/11	Bing Shao Chia
	Current position: Graduate student, Harvard Virology Program
06/11-08/11	Samrie Beshah
	Current position: Senior, Johns Hopkins University
05/12-08/12	David Garcia, Diversity Summer Internship Program, JHSPH
	Current position: Kean University
05/11-08/11	Aubrey Herrera, Diversity Summer Internship Program, JHSPH
	Current position: University of Texas
01/13-07/14	Clinton Ogega
	Current position: Senior, Johns Hopkins University
06/15-	Sameer Thakker
	Recipient of the Provost's Undergraduate Research Award (PURA), Johns Hopkins University
05/16-07/16	Christina Blonski, Diversity Summer Internship Program, JHSPH
	Current position: Senior, Caldwell University
05/16-08/16	Shreya Rangarajan
	Current position: Junior, Olin College of Engineering
09/16-	Grace Ren
	Current position: Freshman, Johns Hopkins University

Short-Term Trainees/High school students

06/05-08/05	Tonya Jackson, Minority student
	Current position: B.A., UMBC Baltimore
06/05-08/05	Omar A. Contreras, JHU Summer Minority Internship Program
	Current position: Diabetes Prevention and Control Program Manager, Arizona Department of Health Services, University of Arizona
05/09-08/09	Jennifer Lun
	Current position: St. Louis University School of Medicine
03/10-06/10	Cliff Magwira, Ph.D., Postdoctoral fellow
	Current position: Research scientist, Centre for Tuberculosis, National Institute for Communicable Diseases, Johannesburg, South Africa
06/10-07/10	Alexander Thomopoulos
	Current position: University of Maryland
06/11-08/11,	Ben Roytenberg
05/13-08/13	Current position: Case Western Reserve University
06/11-07-11	Maria Dagalakis
	Current position: The Catholic University of America
06/11-08/11	Cong Fan
	Current position: University of Maryland
06/15-	Jennifer Mendez, Centro Sol Minority Student Program
	Current position: Freshman, Goucher College

Thesis Committees

- 10/9/07 Oral Examination Committee Member for Maia Schoonmaker, graduate student in Cellular and Molecular Medicine, JHUSOM
- 10/27/09 Oral Examination Committee Member for Brian Luna, graduate student in Cellular and Molecular Medicine, JHUSOM
- 10/19/10 Oral Examination Committee Member for Kathryn Winglee, graduate student in Cellular and Molecular Medicine, JHUSOM
- 10/28/10 Final Thesis Committee Meeting member for Balaji Veeramani, graduate student in Dept. of Biomedical Engineering, JHU
- 08/17/12 First Thesis Committee meeting member for Benjamin Blumberg, graduate student in Dept. of Molecular Microbiology and Immunology, JHSPH
- 09/26/12 First Thesis Committee meeting member for Amanda McGillivray, graduate student in Dept. of Microbiology and Immunology, Tulane University School of Medicine
- 12/07/12 Oral Examination Committee Member for Amanda McGillivray, graduate student in Dept. of Microbiology and Immunology, Tulane University School of Medicine
- 09/11/13 Prospectus Committee Member for Amanda McGillivray, graduate student in Dept. of Microbiology and Immunology, Tulane University School of Medicine
- 10/11/13 Second Thesis Committee meeting member for Benjamin Blumberg, graduate student in Dept. of Molecular Microbiology and Immunology, JHSPH
- 11/11/13 Oral Examination Committee Member for Katie Bruner, graduate student in Cellular and Molecular Medicine, JHUSOM
- 06/03/14 Third Thesis Committee meeting member for Benjamin Blumberg, graduate student in Dept. of Molecular Microbiology and Immunology, JHSPH
- 11/06/15 Oral Examination Committee Member for Mary Soliman, graduate student in Cellular and Molecular Medicine, JHUSOM

## **CLINICAL ACTIVITIES**

### **Certification**

Medical Licensure: State of Pennsylvania, 2000, expired  
State of Maryland, 2005, D0063686

Diplomate Internal Medicine 2002, American Board of Internal Medicine

Diplomate Infectious Diseases 2005, American Board of Internal Medicine

Clinical (Service) Responsibilities (dates, specialty, role, time commitment):

Jul–Aug 2006, Infectious Diseases Inpatient Consult Service, Johns Hopkins Hospital, Attending Physician, (50 hr/wk x 2 wks)

Dec 2006-Jan 2007, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 3 wks)

Oct-Nov 2007, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 3 wks)

Sept-Oct 2008, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

Apr-May 2010, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

Feb 2011, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

Feb 2012, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

Feb 2013, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

Feb 2014, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

Oct 2014, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

April 2016, Polk Inpatient HIV service, Johns Hopkins Hospital, Attending Physician (60 hr/wk x 2 wks)

## **SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES**

None

## **ORGANIZATIONAL ACTIVITIES**

### **Institutional Administrative Appointments (date, committees)**

2007-2008: WorkLife Committee, Department of Medicine, Johns Hopkins University School of Medicine

05/2007-present: Hopkins Hellenic Initiative Board Member, Johns Hopkins University-University of Patras, Greece

06/2009-present: Graduate Program in Pathobiology, Faculty

09/2009-08/2011: Annual Research Retreat Organizing Committee, Department of Medicine, Johns Hopkins University School of Medicine

01/2014-present: Senior Advisory Council, Office of Faculty Development, Johns Hopkins University School of Medicine

05/2014-present: Instructor/Assistant Professor Reappointment Review Committee, Johns Hopkins University School of Medicine

### **Editorial Activities**

Academic Editor, *PLoS One* (09/2011- )

Editorial Advisory Board, *Journal of Infectious Diseases* (05/2013- )

### **Journal peer review activities (dates):**

*Lancet* (12/2010); *Journal of Experimental Medicine* (06/2007); *Journal of Clinical Investigation* (11/2005); *Lancet Infectious Diseases* (12/2007, 02/2010; 12/2015 (fast-track)); *Nature Communications* (07/2015; 01/2016); *Science Translational Medicine* (07/2015); *Clinical Microbiology Reviews* (09/2010); *PLoS Pathogens* (11/2007, 02/2009, 06/2009, 10/2009, 03/2010); *American Journal of Respiratory and Critical Care Medicine* (02/2007); *MBio* (03/2015); *Molecular Microbiology* (06/2008; 08/2012; 08/2016); *Clinical Infectious Diseases* (08/2014; 09/2015; 05/2016; 08/2016); *Journal of Infectious Diseases* (11/2009, 02/2010, 04/2013; 06/2013); *Cellular Microbiology* (06/2016); *Thorax* (10/2015); *Antimicrobial Agents and Chemotherapy* (10/2006; 08/2010; 09/2010; 02/2011; 04/2011;

02/2013); *Journal of Proteome Research* (05/2012); *Scientific Reports* (02/2015, 04/2015; 12/2015); *Journal of Bacteriology* (05/2007, 09/2007, 02/2009, 07/2012, 02/2013); *Infection and Immunity* (06/2006, 04/2008, 02/2010, 05/2010, 11/2013; 05/2014); *PLoS One* (08/2009; 10/2009; 06/2010; 09/2010; 11/2010; 01/2011; 02/2011; 08/2011; 09/2011; 01/2012; 08/2015); *BMJ Open* (02/2016); *Journal of Clinical Microbiology* (04/2008; 05/2010; 08/2011; 04/2014); *Emerging Infectious Diseases* (08/2011; 12/2011); *FEMS Microbiology Letters* (02/2011); *Microbiology* (10/2006; 05/2012); *Journal of Antimicrobial Chemotherapy* (12/2007); *International Journal of Antimicrobial Agents* (08/2014); *BMC Systems Biology* (05/2015); *BMC Infectious Diseases* (06/2014; 10/2015); *Immunotherapy* (09/2016); *Journal of Infection* (02/2012); *Applied Environmental Microbiology* (06/2009; 01/2015); *Microbial Drug Resistance* (09/2010); *British Journal of Ophthalmology* (02/2011); *Ocular Immunology and Inflammation* (03/2015); *International Journal of Infectious Diseases* (06/2009); *Tuberculosis* (04/2007; 01/2015; 09/2015; 03/2016; 05/2016); *Tuberculosis Research and Treatment* (07/2012); *Scandinavian Journal of Infectious Diseases* (05/2011, 07/2011); *Future Medicinal Chemistry* (05/2010); *Journal of Pharmacology and Pharmacotherapeutics* (04/2011); *Transplant Infectious Disease* (07/2007); *Infections in Medicine* (05/2009); *Indian Journal of Medical Sciences* (11/2009)

#### **Advisory committees, Review groups**

Expert Reviewer, U.K. Medical Research Council Health Clinician Scientist Award applications, August 2005

Stop TB Partnership, Working Group on New Drugs; Member (Biology/Targets Subgroup), March 2009-present; co-Leader, 2012-present

FDA, Anti-Infective Drugs Advisory Committee (AIDAC) Meeting on Development of Drugs to Treat Multi-Drug Resistant Tuberculosis (MDR-TB); Temporary Voting Member, June 3, 2009, Silver Spring, MD

Reviewer, South Africa National Research Foundation (NRF), September 2009  
Inter-CFAR HIV-TB Working Group National Meeting; Molecular Pathogenesis group leader, September 30, 2009, Houston, TX.

Expert Reviewer, U.K. Medical Research Council; Council's Triage: Infections and Immunity Board (t-IIB) G1001087, July 2010.

Review panel member, KwaZulu-Natal Research Institute for Tuberculosis and HIV (K-RITH) Collaborative Grants Program, 2010-2011.

Reviewer, Defense Threat Reduction Agency (DTRA) Basic Research Program, CBS-IS1 - Quantitative Modeling of Metabolic Networks of Intracellular Pathogens, January 2011.

External Reviewer, Canadian Institutes of Health Research (CIHR), Canada-UK Joint Health Research Program on Antibiotic Resistance grant program, March 2011.

Expert Reviewer, Centres of Excellence and Innovation in Biotechnology (CEIB), Government of India, Ministry of Science and Biotechnology, Department of Biotechnology, May 2011.

Committee Member, IDSA/NFID Joint Research Awards Committee, November 2011-present.

Expert Review Panel, Aristeia Programme, National Council for Research and Technology, Hellenic Ministry of Education, Lifelong Learning, and Religious Affairs, Greece, January 2012.

Expert Reviewer, SystemsX.ch Research Initiative for Transition Post-doctoral Fellowships, Swiss National Science Foundation, May 2012.

Peer Reviewer, Congressionally Directed Medical Research Program, US Department of Defense, Peer Reviewed Medical Research Program (PRMRP) FY12, Tuberculosis Panel, September 27, 2012

Reviewer, Immunology, Virology, Molecular Biology Study Section, Center for AIDS Research, Johns Hopkins University, November 16, 2012.

Review panel member, “Exploring the Impact of Inflammaging on Immune Function During M. Tb Infection”, NIH/NIA Program Project Review, November 19, 2012.

Expert Review Panel, Aristeia Programme II, National Council for Research and Technology, Hellenic Ministry of Education, Lifelong Learning, and Religious Affairs, Greece, January 2013.

Expert Reviewer, National Centre for the Replacement, Refinement, and Reduction of Animals in Research/UK, David Sainsbury Fellowships 2012, February 2013.

Peer reviewer, Special Emphasis Panel, ““Omics’ Technologies for Predictive Modeling of Infectious Diseases” (ZAI1 EC-M-M1), NIH/NIAID, Bethesda, February 25-27, 2013.

Expert Review Panel, Aristeia Programme, National Council for Research and Technology, Hellenic Ministry of Education, Lifelong Learning, and Religious Affairs, Greece, January-July 2013.

Peer reviewer, Special Emphasis Panel, Centers for Excellence in Translational Research (CETR) (ZAI1 LR-M(J1)), NIH/NIAID, July 31, 2013.

Reviewer, Immunology, Virology, Molecular Biology Study Section, Center for AIDS Research, Johns Hopkins University, November 12, 2013.

Peer reviewer, Special Emphasis Panel, “Research in latent tuberculosis infection (LTBI) in the setting of HIV Co-Infection (R01)” (ZRG1 AARR-D (59) R), NIH/NIAID, Bethesda, December 13, 2013.

Review panel member, National Institute on Aging Special Emphasis Panel, “Exploring the impact of inflammaging on immune function during M. tb infection”, ZAG1 ZIJ-8 (M1), February 28, 2014.

Peer reviewer, Johns Hopkins University School of Medicine Visiting Scientist LIBRA Initiative, April 1, 2014.

Peer reviewer, IDSA/NFID Joint Research Awards Committee, May 2014.

Global panelist/peer reviewer, CRDF Global RFA for applications on “Bactericidal Activity of Anti-TB Drugs in the face of Ambiguous Drug Susceptibility Test Results”, September 23, 2014.

Reviewer, Immunology, Virology, Molecular Biology Study Section, Center for AIDS Research, Johns Hopkins University, November 3, 2014.

Temporary member, AIDS-Associated Opportunistic Infections and Cancer Study Section [AOIC], NIH/NIAID, San Francisco, November 14, 2014.

Peer Reviewer, National Centre for the Replacement, Refinement, and Reduction of Animals in Research/UK grants, December 2014.

Peer Reviewer, MID 1 Microbiology and Infectious Diseases Research Committee, NIH/NIAID, Bethesda, MD, February 19-20, 2015.

Peer Reviewer, Special Emphasis Panel/Scientific Review Group, “ZAG1 ZIJ-8 (O1) meeting”, NIH/NIA Program Project Review, April 15, 2015.

Peer Reviewer, Health Research Board of Ireland, Tuberculosis Research Awards (POR-2015), May, 2015.

Peer Reviewer, «Swiss Programme for Research on Global Issues for Development (r4d.ch)», Swiss National Science Foundation (SNSF), June 2015.

External peer reviewer: Convocatoria: CIBERES. Nuevas líneas de investigación sobre Enfermedades Respiratorias (Respiratory Infections) 2015, Section of Clinical Medicine and Epidemiology, Ministry of Economy and Competitiveness, National Government of Spain, November 16, 2015.

Reviewer, Immunology, Virology, Molecular Biology Study Section, Center for AIDS Research, Johns Hopkins University, November 17, 2015.

Internal Reviewer for R21 grant application, Center for AIDS Research, Johns Hopkins University, November 23, 2015.

Peer Reviewer, Special Emphasis Panel/Scientific Review Group 2016/01 ZAI1 RCU-A, NIH/NIAID, November 24, 2015.

Peer Reviewer, Special Emphasis Panel/Scientific Review Group: “FOA: PAR15-360 “Characterization of mycobacterial induced immunity in HIV-infected and uninfected individuals (R21)” ZRG1 AARR M 57, NIH/NIAID, Rockville, MD, April 7, 2016.

Peer Reviewer, U.K. Medical Research Council; “Complex Chemical Scaffolds to Treat Tuberculosis”, May 17, 2016.

Peer Reviewer, 2016/10 ZAI1 PA-I (S1), Human Immunology Project Consortium, NIH/NIAID, Bethesda, MD, July 18-20, 2016.

Peer Reviewer, 2016 Peer Reviewed Medical Research Program, USAMRMC/CDMRP, September 4, 2016.

As Hoc Reviewer, Bacterial Pathogenesis (BACP) Study Section, NIH/NIAID, New Orleans, LA, October 17, 2016.

### **Professional Societies**

2000-present: American College of Physicians

2002-present: Infectious Disease Society of America

2002-present: American Society for Microbiology

2004-present: American Thoracic Society

### **RECOGNITION**

#### Awards, Honors

2010 Fellow, Infectious Diseases Society of America

2009 Basic Research Junior Faculty Award, JHUSOM Dept. of Medicine

2008 JHUSOM Dept. of Medicine Basic Research Junior Faculty Award Finalist

2005 Arthur M. Dannenberg, Jr. Award for Postdoctoral Research

2004 Best abstract, Assembly of Microbiology, Tuberculosis, and Pulmonary Infections, American Thoracic Society (ATS) annual meeting

2004 ATS Travel Grant to ATS annual meeting

2004 Basic Research Postdoctoral Fellow Award Nominee, JHU Dept. of Medicine

2003 Special citation, Infectious Diseases Society of America Annual Meeting

2003 Basic Research Postdoctoral Fellow Award Nominee, JHU Dept. of Medicine

2001 Edward W. Holmes Resident Research Award, Univ. of Pennsylvania, Dept. of Medicine (awarded to 1 resident by the faculty for excellence in research)

2000 Maurice F. Attie Resident Teaching Award, Univ. of Pennsylvania, Dept. of Medicine (awarded to 1 resident, by the Intern Class for excellence in teaching)

1998 Alpha Omega Alpha, Washington University School of Medicine

1998 Missouri State Medical Association Award

- 1997 Hellenic Medical Student Scholarship, Hellenic Medical Society of New York  
1995 Antoinette Frances Dames Prize in Cell Biology and Physiology, Washington University School of Medicine, St. Louis  
1994-8 Distinguished Alumni Scholarship (full-tuition academic scholarship at Washington University School of Medicine)  
1990-4 Dean's List, *summa cum laude*, Johns Hopkins University  
1994 Phi Beta Kappa, Johns Hopkins University  
1993 National Science Foundation Scholarship  
1992 Ford Foundation Scholarship

#### Invited Talks/Session Chairs

September 24, 2004, “Dormancy phenotype displayed by extracellular *Mycobacterium tuberculosis* within artificial granulomas in mice”. Microbial Pathogenesis Interest Group Seminar Series, Johns Hopkins University School of Medicine, Baltimore.

December 8, 2006, “*Mycobacterium tuberculosis*: The persistent pathogen”. Depts. of Molecular Microbiology, and Medicine, Division of Infectious Diseases, Washington University School of Medicine, St. Louis.

February 12, 2007, “*Mycobacterium tuberculosis*: The patiently persistent pathogen”, Division of Infectious Diseases Fellows Conference, Johns Hopkins University School of Medicine, Baltimore.

September 26, 2007, “*Mycobacterium tuberculosis* pathology in the mouse model”. Many Hosts of Mycobacteria Meeting, Ames, Iowa.

May 15, 2008, “Towards establishing a high-burden guinea pig model for TB chemotherapy”, First International Workshop on Clinical Pharmacology of Tuberculosis Drugs, Toronto.

July 8, 2008, “A guinea pig model of TB chemotherapy?”, U.S.-Japan Tuberculosis and Leprosy Annual Meeting, Baltimore.

July 14, 2008, “*Mycobacterium tuberculosis* dormancy: Tracking TB ‘sleeper cells’”, Grand Rounds, Department of Pathology, Johns Hopkins University School of Medicine, Baltimore.

September 11, 2008, “*Mycobacterium tuberculosis*: The persistent questions”. Molecular Microbiology and Immunology Seminar series, Department of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health, Baltimore.

November 11, 2008, “Modeling *Mycobacterium tuberculosis* latency and persistence”, Department of Medical Microbiology and Parasitology, Jiao Tong University School of Medicine, Shanghai, China.



November 12, 2008, “Regulatory pathways in *Mycobacterium tuberculosis* dormancy”, Department of Microbiology, Public Health Clinical Center, Fudan University School of Medicine, Shanghai, China.

March 20, 2009, “*Mycobacterium tuberculosis*: More than meets the eye”, Grand Rounds, Department of Ophthalmology, Doheny Eye Institute, University of Southern California School of Medicine, Los Angeles.

March 30, 2009, “Mecanismos de regulación involucrados en la persistencia de *Mycobacterium tuberculosis*”, Facultad de Ciencias, Universidad de la República, Montevideo, Uruguay.

July 2, 2009, “Pruebas de diagnóstico de *Mycobacterium tuberculosis*”, Departamento de Microbiología, Instituto Conmemorativo Gorgas de Estudios de la Salud, Panama City, Panama.

September 25, 2009, “The stringent response and *Mycobacterium tuberculosis* persistence”, Prokaryotic Seminar Series, University of Pennsylvania School of Medicine, Philadelphia.

October 9, 2009, “*Mycobacterium tuberculosis*: It pays to be persistent”, Department of Cell Biology and Molecular Genetics Seminar Series, University of Maryland, College Park.

October 23, 2009, “*Mycobacterium tuberculosis*: Lessons on Latency”, Grand Rounds, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore; October 23, 2009.

December 5, 2009, “Unanticipated responses of guinea pigs to TB chemotherapy”, Satellite Symposium: From Animal Models to Humans: New Developments and Perspectives in Experimental Chemotherapy for Tuberculosis, 40<sup>th</sup> Union World Conference on Lung Health, Cancún, Mexico.

December 7, 2009, “Modeling *Mycobacterium tuberculosis* persistence, Division of Infectious Diseases Didactic Conference, Johns Hopkins University School of Medicine, Baltimore.

May 14, 2010, “*Mycobacterium tuberculosis* dormancy: A tale of two global regulatory molecules”, Division of Microbiology Seminar series, Tulane National Primate Research Center, Tulane University, Covington, LA/Louisiana State University School of Medicine, New Orleans.

September 27, 2011, “Drug tolerance and persistence mediated by inorganic polyphosphate in *Mycobacterium tuberculosis*”, Department of Microbiology and Molecular Genetics Seminar Series, University of Medicine & Dentistry of New Jersey, Newark.

October 17, 2011, "TB or not TB and make it snapper: Novel rapid molecular diagnostic assays for the detection of *Mycobacterium tuberculosis* and drug resistance", Division of

Infectious Diseases Fellows Conference, Johns Hopkins University School of Medicine, Baltimore.

November 16, 2011, “Current understanding of latent, manifest, extrapulmonary, and disseminated tuberculosis”, 11<sup>th</sup> International Ocular Inflammation Society Congress and International Assembly of Ocular Inflammation Societies, Goa, India.

November 16, 2011, “Experimental disseminated TB in guinea pigs: What the future holds in addressing latency and dissemination of *Mycobacterium tuberculosis*”, 11<sup>th</sup> International Ocular Inflammation Society Congress and International Assembly of Ocular Inflammation Societies, Goa, India.

March 30, 2012, “Pruebas diagnósticas de TB: El presente y el futuro”, Departments of Pulmonology and Infectious Disease, Hospital General de Agudos Dr. Juan A. Fernández, Buenos Aires, Argentina.

April 16, 2012, “Guinea pigs and C3HeB/FeJ mice as models of TB chemotherapy”, “Toward an improved natural transmission model in TB” Meeting, Aeris, Rockville, MD.

September 5, 2012, “*pncA* mutations in MDR-TB strains from Panama”, Demystifying Pyrazinamide – Challenges and Opportunities Workshop, Baltimore, MD.

May 19, 2013, “A Multidisciplinary Approach to Understanding TB Latency and Reactivation”, session on TB Systems Biology: Studying Mechanisms of Latency and Reactivation, American Thoracic Society International Conference, Philadelphia, PA.

July 22, 2013, “Needs and Directions in TB Drug Discovery: A Clinical/Academic Perspective”, Targets for Tomorrow Satellite Workshop, Gordon Research Conference on TB Drug Development, Barga, Italy.

August 22, 2013, “Awakening persists to shorten TB treatment”, Bacterial Persistence Workshop, Los Alamos National Laboratory, Los Alamos, NM.

November 15, 2013, "Reactivation of Latent TB Infection by TNF Blockade: The Colchian Dragon Rears its Ugly Head", Grand Rounds, Division of Allergy & Clinical Immunology, Johns Hopkins Bayview, Baltimore, MD.

November 18, 2013, “Statins as adjunctive host-directed therapy for TB”, AIDS Clinical Trials Group Host-Directed Therapy Working Group, Washington, DC.

December 12, 2013, “Targeting *Mycobacterium tuberculosis* Persists: In Search of the Right Rattle to Rouse the Stymphalian Birds”, Department of Microbiology & Immunology Seminar Series, University of Michigan Medical School, Ann Arbor, MI.

March 5, 2014, “Is Latent TB Infection Really Latent?” Symposium on ‘Tuberculosis: Looking to the Future - Resistance, Persistence, Monitoring, and Control’, Conference on Retroviruses and Opportunistic Infections, Boston, MA.

March 31, 2014, “Latent TB Infection: Myths, Models, and Molecular Mechanisms”, Division of Infectious Diseases Conference, Johns Hopkins University School of Medicine, Baltimore, MD.

April 15, 2014, “Statins as adjunctive host-directed therapy for TB”, Advancing Host Directed Therapy (HDT) for Tuberculosis Workshop, sponsored by National Institute of Allergy and Infectious Diseases, Bill and Melinda Gates Foundation, and Stop TB Partnership Working Group on New Drugs, Rockville, MD.

April 25, 2014, “Latent tuberculosis infection: Lessons from the laboratory”, Pediatric Infectious Disease Conference, Johns Hopkins University School of Medicine, Baltimore, MD.

November 20, 2014, “Mycobacterial infections”, Good Samaritan/Union Memorial Lecture Series, Good Samaritan Hospital, Baltimore, MD.

March 5, 2015, “Host directed therapies and biomarkers for TB”, Regional Prospective Observational Research in Tuberculosis (RePORT) –India Meeting, BJ Medical College, Pune, India.

March 23, 2015, “*Mycobacterium tuberculosis*: Molecular Basis of Persistence”, Tuberculosis Day Symposium, Tuberculosis Day Symposium: “Mapping Missing Millions”, All India Institute of Medical Sciences (AIIMS), New Delhi, India.

June 16, 2015, “A Novel ‘Shock and Kill’ Strategy for Targeting Mtb Persisters”, Workshop on Developing Novel Strategies to Optimize Design of TB Drug Combinations, NIAID/NIH, Rockville, MD.

September 28, 2015, “Genetic and chemical validation of Rel<sub>Mtb</sub> as a target for *M. tuberculosis* persisters”, TB Alliance, New York, NY.

October 16, 2015, “Novel approaches to target *Mycobacterium tuberculosis* persisters”, Division of AIDS Seminar Series, NIAID, NIH, Rockville, MD.

March 15, 2016, “Updates on Tuberculosis from CROI 2016”, 2nd Annual Conference on Selected Hot Topics of CROI, Florence, Italy.

May 15, 2016, “Lessons Learned from the NHLBI-Sponsored Tuberculosis Systems Biology Program”, Mini-Symposium Session Chair, American Thoracic Society International Conference, San Francisco, CA.

May 15, 2016, “Novel Approaches to Understanding and Combating Latent TB Infection”, session on “Lessons Learned from the NHLBI-Sponsored Tuberculosis Systems Biology Program”, American Thoracic Society International Conference, San Francisco, CA.

May 16, 2016, “Tuberculosis: Susceptibility and Immune Response”, Mini-Symposium Co-Chair, American Thoracic Society International Conference, San Francisco, CA.

June 21, 2016, “Statins as Adjunctive, Host-Directed Therapy for Tuberculosis”, Athens Institute for Education and Research International Conference on Biology, Athens, Greece.

October 10, 2016, “Novel Paradigms to Treat TB”, Division of Infectious Diseases Conference, Johns Hopkins University School of Medicine, Baltimore, MD.