

A. Publications of APUA and the Center for Adaptation Genetics and Drug Resistance (2007-12):

1. Lister, I., C. Rafferty, J. Meccas, S.B. Levy (2012). *Yersinia pestis acrAB-tolC* in antibiotic resistance and virulence. *Antimicrob Agents Chemother.* 56(2):1120
2. Warner, D. and S.B. Levy (2012). SoxS increases the expression of the zinc uptake system ZnuACB in an *Escherichia coli* murine pyelonephritis model. *J. Bacteriol.* 194(5): 1177-85.
3. Mastropaolo, M.D., M.W. Silby, J.S. Nicoll, and S.B. Levy (2012). Novel genes involved in motility and infection function in *Pseudomonas fluorescens* Pf0-1. *Appl. Env. Microb.* 78(12): 4318-29.
4. Silby, M.W., J.S. Nicoll and S.B. Levy (2012). Regulation of polyphosphate kinase production by anti-sense RNA in *Pseudomonas fluorescens* Pf0-1. *Appl Env. Microb.* 78(12): 4533-7.
5. Berns K.I., Casadevall A, Cohen ML, Ehrlich SA, Enquist LW, Fitch JP, Franz DR, Fraser-Liggett CM, Grant CM, Imperiale MJ, Kanabrocki J, Keim PS, Lemon SM, Levy SB, Lumpkin JR, Miller JF, Murch R, Nance ME, Osterholm MT, Relman DA, Roth JA, Vidaver AK (2012). Public health and biosecurity. Adaptations of avian flu virus are a cause for concern. *Science.* 335(6069):660-1.
6. Berns KI, Casadevall A, Cohen ML, Ehrlich SA, Enquist LW, Fitch JP, Franz DR, Fraser-Liggett CM, Grant CM, Imperiale MJ, Kanabrocki J, Keim PS, Lemon SM, Levy SB, Lumpkin JR, Miller JF, Murch R, Nance ME, Osterholm MT, Relman DA, Roth JA, Vidaver AK (2012). Policy: Adaptations of avian flu virus are a cause for concern. *Nature.* 482(7384):153-4.
7. Lichtenstein, S. J., L. DeLeon, W. Heller, B. Marshall, G. Cupp, K. Foster, C. McLean, S.B. Levy, and D. Stroman (2012). Topical ophthalmic moxifloxacin elicits minimal or no selection of fluoroquinolone resistance among bacteria isolated from the skin, nose, and throat. *J Pediatr Ophthalmol Strabismus.* 49:88-97.
8. Marshall, B. M., E. Robleto, T. Dumont, and S.B. Levy (2012). The frequency of antibiotic-resistant bacteria in homes differing in their use of surface antibacterial agents. *Current Microbiol.* 65(4):407-15.
9. C. Cogliani, H. Goossens, C. Greko. [Restricting antimicrobial use in food animals: lessons from Europe.](#) *Microbe* 6, 6: 274-279. (2011).23. Marshall, B.M. and S.B. Levy (2011). Microbial contamination of musical wind instruments. *Intl J Environ Health Research.* 5/10/11: 1-11
10. Marshall, B.M. and S.B. Levy (2011). Food animals and antimicrobials: impacts on human health. *Cin Microb. Rev.* 24: 718-733.
11. O'Brien, T, J. Stelling. Integrated multilevel surveillance of the world's infecting microbes and their resistance to antimicrobial agents. *Clin. Microbiol. Rev.* 24, 2: 281-295. (2011).24.
12. Garbeva, P., M.W. Silby, J.M. Raaijmakers, S.B. Levy and W. de Boer (2011). Transcriptional and antagonistic responses of *Pseudomonas fluorescens* Pf0-1 to phylogenetically different bacterial competitors. *ISME J.* 5, 973-985

13. Bush, K., P. Courvalin, G. Dantas ... S.B. Levy, et al (2011). Perspective: Tackling antibiotic resistance. *Nature Rev. Medicine* 9: 894-896
14. McMurry, L.M. and S.B. Levy (2011). The periplasmic Protein MppA is not involved in regulation of MarA in *Escherichia coli*. *Antimicrob Agents Chemother* 55: 4939
15. [“AMROAR scientific meeting report on commensals as reservoirs of antibiotic resistance”](#) (APUA and NBACC, Tufts University Health Sciences Campus, Boston, MA, June 2010).
16. Garrity-Ryan, L.K., O.K. Kim, J-M Balada-Llasat, V.J. Bartlett, A.K. Verma, M.L. Fisher, C. Castillo, W. Songsunghong, S.K. Tanaka, S.B. Levy, J. Meccas, and M.N. Alekshun (2010). Small Molecule Inhibitors of LcrF, a *Yersinia pseudotuberculosis* transcription factor, attenuate virulence and limit infection in a murine pneumonia model. *Infection and Immunity* 78:4683-4690.
17. Ruiz-Rueda, C. and S.B. Levy (2010). Use of functional interactions with MarA to discovery of chromosomal genes affecting antibiotics. *Intl J Antimicrob Agents* 37(2):177-8.
18. Grier, M.C., L.K. Garrity-Ryan, V.J. Bartlett, K.A. Klausner, P.J. Donovan, C. Dudley, M.N. Alekshun, S.K. Tanaka, M.P. Draper, S.B. Levy (2010). N-Hydroxybenzimidazole inhibitors of ExsA MAR transcription factor in *Pseudomonas aeruginosa*: In vitro anti-virulence activity and metabolic stability. *Bioorg Med Chem Lett* 3380-3383.
19. McMurry, L.M. and S.B. Levy (2010) Evidence that the regulatory protein MarA of *Escherichia coli* represses *robby* steric hindrance. *J Bacteriol* 192:3977-3982.
20. Ruiz-Rueda, C and S.B. Levy (2010) Many chromosomal genes modulate MarA-mediated multidrug resistance in *Escherichia coli*. *Antimicrob Agents Chemother* 54:2125-2134
21. Warner, D and S.B. Levy (2010) Different effects of transcriptional regulators *marA*, *soxS* and *rob* on susceptibility of *Escherichia coli* to cationic antimicrobial peptides (CAMPs): Rob-dependent CAMP induction of the *marRAB* operon. *Microbiology* 156:570-578
22. Lister, I and S.B. Levy (2010). The effect of MarA-like proteins on antibiotic resistance and virulence in *Yersinia pestis*. *Infection and Immunity* 78:364-371
23. A. Sosa, D. Byarugaba, C. Amábile-Cuevas, et al. [Antimicrobial Resistance in Developing Countries](#). (Springer Science+Business Media, LLC, New York, NY, 2010).
24. Roberts, R., B. Hota, I. Ahmad, R.D. Scott II, S.D. Foster, F. Abbasai, S. Schabowski, L.M. Kampe, G.G. Viavrella, M. Supino, J. Naples, R. Cordell, S.B. Levy, R.A. Weinstein (2009) Hospital and societal costs of antimicrobial-resistant infections in a Chicago teaching hospital: implications for antibiotic stewardship. *Clin Inf Dis* 49:1175–1184.
25. Kim, W., M.W. Silby, S.O. Purvine, J. Nicoll, K.K. Hixson, M. Munroe, C.D. Nicora, M.S. Lipton, S.B. Levy (2009) Proteomic detection of non-annotated protein-coding genes in *Pseudomonas fluorescens* Pf0-1. *PlosOne* 4(12):e8455, doi:10.1371/journal.pone.
26. Kim, O.K., L. K. Garrity-Ryan, V. J. Bartlett, M. C. Grier, A. K. Verma, G. Medjanis, J. E. Donatelli, A. B. Macone, S. K. Tanaka, S. B. Levy, and M. N. Alekshun. (2009) N-Hydroxybenzimidazole Inhibitors of the transcription factor LcrF in *Yersinia*: novel antivirulence agents. *J. Med. Chem.*

52: 5626-5636

27. Duval, V., H. Nicoloff, S.B. Levy (2009) Simultaneous inactivation of *lon* and *ycgE* increases multidrug resistance by decreasing the amount of OmpF porin in *Escherichia coli*. *Antimicrobial Agents Chemother.* 53:4944-8
28. Marshall, B.M., D.J. Ochieng, S.B. Levy. (2009). Commensals: underappreciated reservoir of antibiotic resistance. *Microbe* 4:231-238.
29. Silby, M. W., Cerdeño-Tárraga, A. M., Vernikos, G., Giddens, S. R., Jackson, R. W., Preston, G. M., Zhang, X. X., Moon, C. D., Gehrig, S. M., Godfrey, S. A. C., Knight, C. G., Malone, J. G., Robinson, Z., Spiers, A. J., Harris, S., Challis, G. L., Yaxley, A. M., Harris, D., Seeger, K., Murphy, L., Rutter, S., Squares, R., Quail, M. A., Saunders, E., Mavromatis, K., Brettin, T. S., Bentley, S. D., Hothersall, J., Stephens, E., Thomas, C. M., Parkhill, J., Levy, S. B., Rainey, P. B., Thomson, N. R. (2009). Genomic and functional analyses of diversity and plant interactions of *Pseudomonas fluorescens*. *Genome Biology*10(5):R51
30. Silby, M. W., Nicoll, J. S., and Levy, S. B. (2009) Requirement of polyphosphate by *Pseudomonas fluorescens* Pf0-1 for competitive fitness and heat tolerance in laboratory media and sterile soil. *App. Environ. Microbiol.*75:3872-3881.
31. R.R. Roberts, B. Hota, I. Ahmad, R.D. Scott, S.D. Foster, F. Abbasi, S. Schabowski, L.M. Kampe, G.G. Ciavarella, M Supino, J Naples, R. Cordell, S.B. Levy, R.A.Weinstein. Hospital and societal costs of antimicrobial-resistant infections in a Chicago teaching hospital: implications for antibiotic stewardship. *Clin Infect Dis.* **49**, 8: S1175-S1184. (2009).9.
32. Carson, R.T., E. Larson, S.B. Levy, B.M. Marshall and A.E. Aiello. (2008) Use of antibacterial consumer products containing quaternary ammonium compounds and drug resistance in the community. *J. Antimicrob Chemother.* 62:1160-62
33. C. Nweneka, N. Tapha-Sosse, A. Sosa. Curbing the menace of antimicrobial resistance in developing countries. *Harm Reduct J.* **6**, 31. (2009).
34. T. Edgar, S. Boyd, M. Palamé. Sustainability for behaviour change in the fight against antibiotic resistance: a social marketing framework. *J. Antimicrob. Chemother.* **63**, 2 : 230-237. (2009).
35. Marcel, J.-P., M. Alfa, F. Baquero, J. Etienne, H. Goossens, S. Harbarth, W. Hryniewicz, W. Jarvis, M. Kaku, R. Leclercq, S.B. Levy, D. Mazel, P. Nercelles, T. Perl, D. Pittet, C. Vandenbroucke-Grauls, N. Woodford and V. Jarlier. (2008) Healthcare-associated infections: think globally, act locally. *Clin Microb Infect.* 14:895-907
36. Kim, W. and S.B. Levy. (2008) Increased fitness of *Pseudomonas fluorescens* Pf0-1 leucine auxotrophs in soil. *Appl. Env. Microb.* 74: 3644-51
37. Silby, M. and S.B. Levy. Overlapping protein-encoding genes in *Pseudomonas fluorescens* Pf0-1 *PlosGenet* (2008) 4(6): e 1000094
38. McDermott, P., L.M. McMurry, I. Podglajen, J.L. Dzink-Fox, T. Schneiders, M.P. Draper, S.B. Levy (2008). The *marC* gene of *Escherichia coli* is not involved in multiple antibiotic resistance. *Antimicrob. Agents Chemother.* 52:382-383



39. Ruiz, C., L. McMurry and S.B. Levy (2008). Role of the multidrug resistance regulator MarA in global regulation of the hdeAB acid resistance operon in *Escherichia coli*. *J. Bacterol.* 190: 1290-1297
40. Bowser, T.E, V. Bartlett, M. Grier, A. Verma, T. Warchol, S.B. Levy and M. Alekshun(2007). Novel anti-infection agents: small-molecule inhibitors of bacterial transcription factors. *Bioorganic & Medicinal Chemistry Letters.* 17: 5652-5655
41. Sapunarcic, F. and S.B. Levy (2007). Interdomain loop mutation Asp190Cys of tetracycline efflux transporter TetA(B) decreases affinity for substrate. *Antimicrob. Agents Chemother.* 51: 3036-3037
42. Nicoloff, H., V. Perreten and S.B. Levy (2007). Increased genome instability in *Escherichia coli lon* mutants: relation to emergence of multiple antibiotic resistant (Mar) mutants caused by insertion sequence elements and large tandem genomic amplifications. *Antimicrob. Agents Chemother.* 51:1293-1303
43. Aiello, A.E., E.L. Larson and S.B. Levy (2007). Consumer antibacterial soaps: effective or just risky? *Clinical Infect. Dis.* 45: S137-47.
44. Alekshun, M.N. and S.B. Levy (2007). Molecular mechanisms of antibacterial resistance. *Cell.* 128:1037-1050

B. Grant funding for the Alliance for the Prudent Use of Antibiotics (APUA) (2007-2012):

International Surveillance of Reservoirs of Antibiotic Resistance: Pilot for a Global Surveillance System US Army Medical Research Institute on Infectious Diseases (USAMRIID), US NBACC's Biological Threat Characterization Program (BTC): Contract # W81XWH-07-P-0969 : 2007-2008

Measuring the Economic Burden of Drug Resistance in the US
bioMérieux and the Centers for Disease Control and Prevention (CDC): (2009-2010)

International Surveillance of Reservoirs of Antibiotic Resistance
Battelle National Biodefense Institute (BNBI) BN 09 0007: 2010-2011

Control of Antibiotic Resistance: Situation Analysis and Needs Assessment in Uganda and Zambia
Bill & Melinda Gates Foundation: 2008-2012

Antibiotics in Animal Feeds
PEW Charitable Trusts Contract ID#: 00002080: (2011-2012)

Hand Hygiene Study
TORK 2011

C. Grant funding for the Center for Adaptation Genetics and Drug Resistance (2007-2012):

Genetic determinants of adaptation of *Pseudomonas fluorescens* Pf0-1 to diverse soils
NSF: 2008-2010

The Multiple Antibiotic Resistance (Mar) regulon
NIH NIAID: 2007-2012

Topical Treatment of AOMT
Alcon Laboratories: 2009-2012

Ecological Fitness Traits in Soil Bacteria
USDA: 2009-2012

Bacterial Communities in Soils
USDA: 2011-2012