

**BIOGRAPHICAL SKETCH**, May 10, 2014 [blevin@emory.edu](mailto:blevin@emory.edu) , [www.ecf.net](http://www.ecf.net)

<b>Education:</b>	Degree	Year	Field
University of Michigan	BS	1963	Zoology
University of Michigan	MS	1964	Genetics
University of Michigan	Ph.D.	1967	Genetics

### **Area of Graduate Training**

Population Genetics and Population Ecology:

### **Professional Positions Held:**

Instructor, Department of Zoology, University of Michigan 1967 Summer  
 Assistant Professor, Department of Biological Sciences, Brown University, 1967-1971  
 Associate Professor, Department of Zoology, University of Massachusetts, 1971-1980  
 Professor, Department of Zoology, University of Massachusetts, 1980 –1992  
 Professor, Department of Biology, Emory University, 1992-1999  
 Samuel Candler Dobbs Professor, Emory University, 1999-

### **Professional Organizations (past and present):**

Sigma Xi  
 Genetics Society of America  
 Society for the Study of Evolution  
 American Society of Naturalists  
 American Society of Microbiology

### **Other Professional Activities**

Organized five meetings of the Population Biologists of New England  
 Chairman, first Gordon Conference "The Population Biology and Evolution of Microbes " (1985)  
 Organized two symposia for the American Society of Naturalists  
 Co-organized a AAAS symposium on the Population Biology and Evolution of Infectious Disease  
 Co-organized a two day workshop on the Population Biology and Evolution of Infectious Disease  
 Co-organized three symposia – Interscience Congress on Antimicrobial Chemotherapy (ICAAC)  
 First and now past Director, Graduate Program in Population Biology, Ecology and Evolution (PBEE) Emory University  
 Past Editorial Board and/or Associate Editorships *Evolution*, *American Naturalist*, *Theoretical Population Biology*, *BioEssays*, *Trends in Ecology and Evolution*  
 Associate Editor *Evolutionary Ecology Research*  
 Editorial Boards *Proceedings Royal Society B*, *PLoS Pathogens*  
 US National Research Council Panel on Pesticide Resistance, (1986)  
 US National Research Council Committee on Trends in Early Careers of PhDs in the Biological Sciences, (1996-1998)  
 US National Research Council Commission on Life Sciences and Board on Biology (past)  
 Ad Hoc Panel Member, Genetics Study Section, NIH (about 12 times).  
 World Health Organization - Committee on Antibiotic Resistance  
 On a number of occasions I have sat (as well as drank coffee, spoke and even listened to others) on a number of committees about science and public policy organized by the

Town of Amherst, The Congressional Office of Technology Assessment, The Environmental Protection Agency, The Bookings Institute, Arthur D. Little Co. I once testified in for a US Senate Committee (on Genetic Engineering)

**Courses and Seminars Taught**

Introductory Biology  
Experimental Design  
Population Biology  
Principles of Genetics  
Population Genetics  
Quantitative Methods in Population Biology  
Evolution  
Introduction to Microbiology  
Evolutionary Theory and History  
Biology for the People  
Population Biology and Evolution of Disease  
Various seminars on the biology of social, health and environmental issues, population biology and the evolution of disease and Molecular evolution.

**Current Research Support**

*Theoretical and experimental studies of the population dynamics of antibiotic treatment*  
US National Institutes of Health (NIH) GM091875  
The population dynamics of bacteria and bacteriophage in biofilms Proctor and Gamble

**Honors and Awards**

NIH Research Career Development Award. 1975 -1980  
Vice President, Society for the Study of Evolution, 1985  
Best Paper in the American Naturalist, President's Award (shared with R. E. Lenski) 1985  
Vice President, American Society of Naturalist, 1988  
Wellcome Trust Lecturer 1989 (British Parasitological Society, The University of Cambridge, The University of Bristol, Oxford University, Imperial College)  
1997 Distinguished Glasser Visiting Professorship, Florida International University 1997  
1998-1999 Tage Erlander Guest Professorship, Sweden  
1997-1998 Bellman Prize for the best paper in a two year period. *Mathematical Biosciences* Shared with James Bull and Frank Stewart)  
1998 Charnock Bradly Lecture – Royal (Dick) School of Veterinary Studies, The University of Edinburgh  
2000 Doctor of Philosophy, honoris causa, Faculty of Science and Technology, Uppsala University, Sweden  
2001 – Fellow American Academy of Microbiology  
2004 – Fellow American Academy of Arts and Sciences  
2004 – Foreign Member Royal Swedish Academy of Sciences  
2005 – Foreign Member Uppsala Academy of Science  
2012 – Member US National Academy of Science

**Invited Lectures**

I have not separately listed the invited lectures I presented at universities, research institutes and professional meetings. I will, however, say the number of these invitations has been increasing over the years: more than 40 during the past three. Of course, I interpret these invitations as evidence for the popularity and quality of our research. But, I will admit to not ruling out alternative explanations, like my being such a fabulous dresser.

**Bruce R. Levin, Former Graduate Students and Postdoctoral Fellows**

<b>Name</b>	<b>Student/Postdoc</b>	<b>Current Position and more than average accolades</b>
Lin Chao	PhD. Student	Professor, University of California, San Diego
Jon Goguen	PhD. Student	Associate Professor, University of Massachusetts Medical School
Richard E. Lenski	Postdoc	Hanna Professor, Michigan State University, MacArthur Fellow, Member US National Academy of Sciences
Franklyn Lerner	PhD, Student	Deceased
Richard Condit	Postdoc	Research Scientist, Smithsonian Tropical Research Institute, Panama
Lone Simonsen	PhD Student	Professor, George Washington University, Former EIS Officer CDC
Ralph V. Evans	PhD Student	Deceased
Judith Mongold	PhD Student	Superb Scientist and now Mother Extraordinaire
Ryzard Korona	Postdoc	Head, Department of Ecological Microbiology, Jagiellonian University, Krakow
Margaret Riley	Postdoc	Professor, University of Massachusetts, Amherst (Former Tenured Associate Professor Yale University)
David Gordon	Postdoc	Reader, School of Botany and Zoology, Australian National University, Canberra
Peter Sykora	Postdoc	Faculty, Comenius University, Bratislava, Slovakia
Pamela Wiener	Postdoc	Research Scientist, Roslin Institute, Edinburgh, Scotland
Marc Lipsitch	Postdoc	Professor, Harvard School of Public Health Director Center for Communicable Disease Dynamics (an NIH funded MIDSAS program).
Veronique Perrot	Postdoc	Teaching Science at the Waldorf School, Atlanta
Stephanie Schrag	Postdoc	Research Scientist, CDC, Former EIS Officer CDC
John Mittler	Postdoc	Associate Professor, University of

**Biographical Sketch and Publications****Bruce R. Levin**

		Washington
Mary Reynolds	Postdoc	Research Scientist, CDC Former EIS Officer CDC
Joanna Björkman	Postdoc	Deceased
Carl Bergstrom	Postdoc	Professor, Dept. of Zoology, University of Washington (early tenure)
Andrew Demma	MS Student	Research Scientist, CDC
Marc Tanaka	Postdoc (shared with R. Antia)	Senior Lecturer, University of New South Wales, Australia
Tomoko Steen	Postdoc	Historian of Science, US Library of Congress
Lauren Ancel Meyers	Postdoc	Professor, University of Texas, Austin
Mark Jensen	Postdoc	Research Scientist, National Institutes of Health
Renata Zappala	MD/PhD Student	Resident, Hospital, Florida
Jeff Smith	PhD Student	Postdoctoral Research Associate, Indiana University
Daniel Rozen	Postdoc	Lecturer, University of Manchester, GB
Elisa Margolis	MD/PhD Student	Resident U of Washington- Infectious Disease Fellow
Omar Cornejo	PhD Student	Assistant Professor, Washington Sate Univ
Yan Wei	PhD Student	Research Scientist Chinese CDC - Beijing
Pål Johnsen	Postdoc	Associate Professor, Tromsø University
Amoolya Singh	Postdoc	Research Scientist, Amyris Biotech
Klas Udekwu	Postdoc	Assistant Professor, Karolinska, Stockholm
Amy Kirby	Postdoc	Research Assistant Professor, SPH Emory
Paul T. Johnson	Postdoc	Assistant Professor, Univ. North Georgia
Peter Ankomah	MD/PhD Student	Finishing Medical School, Emory University

**PUBLICATIONS – List prepared May 2014**

Schull, W. J., and B. R. Levin. 1964, Monte Carlo simulation: some uses in the genetic study of primitive man. J. Gurland, ed. *Stochastic Models in Medicine and Biology*:179-197

Levin, B. R. 1967. The effect of reproductive compensation on the long-term maintenance of the Rh polymorphism: the Rh crossroad revisited. *American Journal of Human Genetics* 19:Suppl 19:288

Levin, B. R. 1969. A model for selection in systems of species competition, Pages 237-273 in F. Heinmets, ed. *Concepts and Models in Biomathematics*. New York, M Dekker.

Levin, B. R. 1969, Simulation of genetic systems. N. Morton, ed. *International Conference on Computer Applications in Genetics*:38 - 46.

Levin, B. R., M. L. Petras, and D. I. Rasmussen. 1969. The effect of migration on the maintenance of a lethal polymorphism in the house mouse. *American Naturalist* 103:647-661.

Levin, B. 1971. The operation of selection in situations of interspecific competition. *Evolution* 25:249-264.

Levin, B. R. 1972. Coexistence of two asexual strains on a single resource. *Science* 175:1272-1274.

Stewart, F. M., and B. R. Levin. 1973. Resource partitioning and the outcome of interspecific competition: a model and some general considerations. *American Naturalist* 107:171-198.

Levin, B. R., and W. L. Kilmer. 1975. Interdemic selection and the evolution of altruism: a computer simulation study. *Evolution* 28:527-545.

Chao, L., B. R. Levin, and F. M. Stewart. 1977. A complex community in a simple habitat: an experimental study with bacteria and phage. *Ecology* 58:369-378.

Levin, B. R., F. M. Stewart, and L. Chao. 1977. Resource - limited growth, competition, and predation: a model and experimental studies with bacteria and bacteriophage. *American Naturalist* 97:3-24.

Stewart, F. M. and B.R. Levin, B. R. 1977. The population biology of bacterial plasmids: a priori conditions for the existence of conjugationally transmitted factors. *Genetics* 87:209-228.

Levin, B. R., and F. M. Stewart. 1977. Probability of establishing chimeric plasmids in natural populations of bacteria. *Science* 196:218-220.

Levin, B. R. 1978. Assessing the likelihood of contaminating natural populations of bacteria with chimeric plasmids. *Journal of Infectious Diseases* 137:691-693.

Levin, B. R., F. M. Stewart, and V. A. Rice. 1979. The kinetics of conjugative plasmid transmission: fit of a simple mass action model. *Plasmid* 2:247-260.

Levin, B. R., and F. M. Stewart. 1980. The population biology of bacterial plasmids: A priori conditions for the existence of mobilizable nonconjugative factors. *Genetics* 94:425-443.

Selander, R. K., and B. R. Levin. 1980. Genetic diversity and structure in populations of *Escherichia coli*. *Science* 210:545- 547.

Levin, B. R. 1980. Conditions for the existence of R-plasmids in bacterial populations. IN *IV International Symposium on Antibiotic Resistance*, S. Mitsuhashi, L. Rosival and V. Krcmery, (eds.). Avicem Prague, Springer-Verlag, Berlin. 197-202.

Levin, B. R., and V. A. Rice. 1981. The kinetics of transfer of nonconjugative plasmids by mobilizing conjugative factors. *Genet. Res., Camb.* 35:241-259.

Chao, L., and B. R. Levin. 1981. Structured habitats and the evolution of anticompetitor toxins in bacteria. *Proc. Nat. Acad. Sci. U.S.A.* 78:6324-6328.

Caugant, D. A., B. R. Levin, and R. K. Selander. 1981. Genetic diversity and temporal variation in the *E. coli* populations of a human host. *Genetics* 98:467-490.

Levin, B. R. 1981. Periodic selection, infectious gene exchange and the genetic structure of *Escherichia coli* populations. *Genetics* 99:1-23.

Levin, B. R., A. C. Allison, H. J. Bremmermann, B. C. Clarke, R. Frentzel-Beyme, W. D. Hamilton, S. A. Levin, R. M. May, and H. R. Thieme. 1982. Evolution of parasites and hosts (group report). IN R. M. Anderson and R. M. May. Eds. *Population Biology of Infectious Diseases*. Dalham Konferenzen. Springer Verlag, Heidleberg 213-243

Levin, B. R., and R. E. Lenski. 1983. Coevolution in bacteria and their viruses and plasmids. IN *Coevolution*, D. J. Futuyma, M. Slatkin (eds.). Sinauer Associates, Sunderland, Massachusetts. 99- 127.

Caugant, D. A., B. R. Levin, G. Linden-Janson, T. S. Whittam, C. Svanborg Edén, and R. K. Selander. 1983. Genetic diversity and the relationships among strains of *Escherichia coli* in the intestines and those causing urinary tract infections. *Prog. in Allergy*. 33:203-207.

Stewart, F. M., and B. R. Levin. 1984. The population biology of bacterial viruses: Why be temperate? *Theor. Pop. Biol.* 26:93-117.

Levin, B. R. 1984. Science as a way of knowing - molecular evolution. *Amer. Zool.* 24: 541-464

Caugant, D. A., B.R. Levin and R. K. Selander. 1984. The distribution of multilocus genotypes of *Escherichia coli* within and between host families. *J. Hyg. Camb.* 92: 377-384

Levin, B.R. 1984. Changing views of the hazards of recombinant DNA manipulation and the regulation of these procedures. IN *Proc. Vth International Symp. on the Transfer of Antibiotic Resistance*. V. Krcmry Ed. Avicenum, Prague. Republished in the *Recombinant DNA Research Bulletin* of the NIH.

Caugant, D. A., B. R. Levin, I. Ørskov, F. Ørskov, C. Svanborg Eden, and R. K. Selander. 1985. Genetic diversity in relation to serotype in *Escherichia coli*. *Infect. and Immun.* 49: 407-413.

Levin, B. R., and R. E. Lenski. 1985. Bacteria and phage: A model system for the study of the ecology and co-evolution of hosts and parasites. In *Ecology and Genetics of Host-Parasite Interactions*, D. Rollison and R. M. Anderson (eds.). Academic Press. 227 – 242

Lenski, R. E., and B. R. Levin. 1985. Constraints on the coevolution of bacteria and virulent phage: A model, some experiments and predictions for natural communities. *Amer. Nat.* 125 (No.4):585-602.

Levin, B.R. 1986. Restriction-modification and the maintenance of genetic diversity in bacterial populations IN *Proceedings Conference on Evolutionary Processes and Theory*. E. Nevo and S. Karlin Eds., Academic Press, New York 669-688

Lundquist, P. A. and B. R. Levin, 1986. Transitory derepression and the maintenance of conjugative plasmids. *Genetics* 113: 483- 497

Porras, O. D.A. Caugant, B. Gray, T. Lagerard, B.R. Levin and C. Svanborg Edén. 1986. Difference in Structure between type b and nontypable *Haemophilus influenzae* populations. *Infect. and Immun.* 53:79-89

Levin, B. R. 1986. The maintenance of plasmids and transposons in natural populations of bacteria. IN: *Antibiotic Resistance Genes: Ecology, Transfer and Expression*. R. Novick and S. Levy Eds. Cold Spring Harbor Laboratory 57-70\*

Michod, R. and B. R. Levin, 1987. Editors, *The Evolution of Sex: A Critical Review of Current Ideas*. Sinauer Assoc., Sunderland

Levin, B. R. 1987. The Evolution of Sex in Bacteria. In *The Evolution of Sex: A Critical Review of Current Ideas*: R. Michod and B.R. Levin Eds., Sinauer Assoc. Publisher

Condit, R., F. M. Stewart, and B. R. Levin. 1988. The population biology of transposons: a priori conditions for maintenance as parasitic DNA. *American Nat.* 132: 129-147

Levin, B. R. 1988. Frequency dependent selection in bacteria. *Phil. Trans. R. Soc. Lond. B* 319: 549-472

Simonsen, L. and B. R. Levin. 1988. Assessing the risks of releasing genetically engineered organisms. *Trends in Ecology and Evolution* 3: S27-S30

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Stewart, F. M., D. M. Gordon and B. R. Levin. 1990. Fluctuation analysis: The probability distribution of the number of mutants under different conditions. *Genetics* 124: 175-185

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Svanborg Eden, C. and B. R. Levin, 1990, Infectious disease and evolution in human populations: A critical Reexamination. *Disease and Populations in Transition : Anthropological and Epidemiological Perspectives*, A. Swedlund and G. Armelagos Eds., Bergan and Garby Press, South Hadley, Ma. 31-46

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Simonsen, L., D. M. Gordon, F. M. Stewart and B.R. Levin. 1990. Estimating the rate of plasmid transfer: an endpoint method. *J. Gen. Microbiol.* 136: 2319-2325

Antia, R, B. R. Levin and P. Williamson, 1991. A quantitative model suggests immunological memory involves the colocalization of B and Th cells. *J. Theor. Biol.* 153: 371-384

Levin, B. R., R. Antia and L. Simonsen, 1991. AIDS as a population-dynamic - evolutionary process. *Trends in Ecol. and Evol.* 6: 237-239

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Levin, B. R. 1992. Evolution and the future of AIDS. IN *AIDS the Modern Plague, Symposium Virginia Polytechnic Institute and State University: Presidential Symposium II.*, B. Wallace Editor, pp 101-111

Levin, B. R. 1992. DNA technology and the release of genetically engineered organisms. IN *Conservation of Genetic Resources for Sustainable Development*. O.T. Sandlund, K. Hindar and A.D.H. Brown Editors. Scandinavian Univ. Press. Pp.245 - 259

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Levin, B. R. 1993. The maintenance of genetic variation in bacterial populations. IN. *The Genetics of Cellular, Individual, Family and Population Variability*. C.F. Sing and C.L. Hanis, Editors, Oxford U. Press, Oxford, pp. 193-20

Korona, R. Korona, B. Levin, B. R. 1993. Sensitivity of naturally occurring coliphages to type I and type II restriction and modification *J. Gen Micro.* 139: 1283-1290

Antia, R., J.C. Koella, B. R. Levin, G. P. Garnett, and R. M. Anderson, 1993. Parasite Evolution in Response to Immunological Defences. *In Oxford Surveys in Evolutionary Biology* Vol 9. D. Futuyama and J. Antonovics Eds. Pp 383-405

Levin, B. R. 1993. The accessory genetic elements of bacteria: existence conditions and (Co) Evolution. *Curr. Opin. Genet. Dev.* 3:849-854

Levin, B. R. and J. J. Bull. 1994. Short-sighted evolution and the virulence of pathogenic microorganisms. *Trends in Microbiol.* 2: 76-81

Antia, R. and B.R. Levin, R.M. May. 1994 Within-host population dynamics and the evolution and maintenance of microparasite virulence. *Amer. Natur.* 144:457-472.

Levin, B. R. 1994. Conditions for the evolution of multiple antibiotic resistance plasmids: A theoretical and experimental excursion. IN *Population Genetics of Bacteria*. Eds. S. Baumberg, J.P.W. Young, S.R. Saunders and E.M.H. Wellington. Cambridge Univ. Press, Cambridge 175-192

Mittler, J., R. Antia, R. and B.R. Levin 1995. Population Dynamics of HIV Pathogenesis Trends. In *Ecol. and Evol.* 10: 224-227

Levin, B. R. J. J. Bull and F.M. Stewart.1996. The intrinsic rate of increase of HIV/AIDS: Epidemiological and evolutionary implications. *Mathematical Biosciences* 132:69-96

Levin, B. R. and J.J. Bull. 1996 Phage therapy revisited: the population biology of a bacterial infection and its treatment with bacteriophage and antibiotics. *American Naturalist* 147:881-898

Levin, B.R. 1996. The evolution and maintenance of virulence in microparasites. *Emerging Infectious Diseases* 2:93-102.

Mittler, J.E., B.R. Levin, and R. Antia. 1996 T-cell homeostasis, competition and drift: AIDS, HIV-accelerated senescence of the immune repertoire. *J. AIDS and Human Retrovirology*: 12: 233-248

Levin, B. R. and R. V. Tauxe 1996. Cholera: Nice bacteria and bad viruses. *Current Biology*. 6:1389-1391

Levin, B.R., M. Lipsitch , V. Perrot, S. Schrag, R.Antia, L. Simonsen N. Moore, and F. M. Stewart 1997 The Population Genetics of Antibiotic Resistance *Clinical Infectious Diseases* 24:S9-S16

Lipsitch, M. and B. R. Levin 1997. The population dynamics of antimicrobial chemotherapy. *Antimicrobial Agents and Chemotherapy* 41: 363-373

Lipsitch, M. and B. R. Levin 1997. The within-host population dynamics of anti-bacterial chemotherapy: conditions for the evolution of resistance. *CIBA Foundation Symposium 207* pp 112-127, J. Wiley, New York.

Schrag, S., V. Perrot, and B.R. Levin 1997. Adaptation to the fitness cost of antibiotic resistance in *Escherichia coli*. *Proc. Roy. Soc. Lond. Ser.B.* 264: 1287-1291

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Levin B. R., R. Antia, E. Berliner, P. Bloland, S. Bonhoeffer, M. Cohen, T. DeRouin, P. I. Fields, H. Jafari, D. Jernigan, M. Lipsitch, J., McGowan Jr., P. Mead, M. Nowak, T. Porco, P. Sykora, L. Simonsen, J. Spitznagel, R. Tauxe, F. Tenover, 1998. Resistance to Antimicrobial Chemotherapy: A Prescription for Research and Action. *The Amer. Journ. of Med. Sciences.* 315:87-94.

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Stewart, F. M. R. Antia, B.R. Levin, M. Lipsitch and J. Mittler 1998. The population genetics of antibiotic resistance II: analytical theory for sustained populations of bacteria in a community of hosts. *Theor. Pop. Biol.* 53:152-165

Levin, B. R. and R. M. Anderson, 1998. The population biology of anti-infective chemotherapy and the evolution of drug resistance: more questions than answers. In *Evolution in Health and Disease*, S. Stearns Ed., Oxford University Press pp. 125-137

Levin, B. R. 1998. Drug resistance: we may not be able to go back again. IN *New and Resurgent Infections: Prediction, Detection and Management of Tomorrow's Epidemics*, B. Greenwood and K. deCock Eds. John Wiley and Sons, Sussex, GB (pp. 55-70)

Levin, B. R., M. Lipsitch and S. Bonhoeffer 1999. Population Biology, Evolution and Infectious Disease: Convergence and Synthesis, *Science* 283: 806-809

Andersson, D.A. and B. R. Levin. 1999. The biological cost of antibiotic resistance. *Current Opinion in Microbiology.* 2: 487-491

Levin, B. R. 1999. Mathematical models of the emergence and spread of antibiotic resistance. In *Antibiotic Therapy and the Control of Antibiotic Resistance in Hospitals.* 6th Maurice Rapin Colloquium, A. Andremenot, C. Brun-Bulsson, J.E. McGowan, Editors. Pp 39- 51

Lipsitch, M., C. T. Bergstrom and B.R. Levin 2000. The epidemiology of antibiotic resistance in hospitals: Paradoxes and Prescriptions. *Proc. Nat. Acad. Sci. US.* 97: 1938-1943

Levin, B. R. 2000. The population genetics of antibiotic resistance. IN *Evolutionary Genetics From Molecules to Morphology* Singh and Krimbas Editors, Cambridge University Press Pp. 235-253

Levin, B. R., V. Perrot and N. Walker 2000. Compensatory evolution, antibiotic resistance and the population genetics of adaptive evolution in bacteria. *Genetics* 194:185-197

Levin, B. R., C. T. Bergstrom. 2000. Bacteria are different: observations, interpretations, speculations and opinions about the mechanisms of adaptive evolution in prokaryotes. *Proc. Nat. Acad. Sci. US* 97: 6981-6985

Bergstrom, C. T., M Lipsitch, BR Levin, 2000. Natural selection, infectious gene transfer and the existence conditions for bacterial plasmids. *Genetics* 155:1505-1519

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Lipsitch, M, T.A. Bacon, J.Y. Leary, R. Antia, B.R. Levin 2000. Effects of antiviral usage on transmission dynamics of herpes simplex virus type 1 on antiviral resistance: predictions of mathematical models. *Antimicrobial Agents and Chemotherapy* 44: 2824-2835

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- Levin, B. R., Bull, J.J. F.M. Stewart 2001 Epidemiology, Evolution, and Future of the HIV/AIDS Pandemic. *Emerging Infectious Diseases* 7: 505-511
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- Levin, B. R. 2001. How can we predict the ecological impact of an antimicrobial: the opinions of a population and evolutionary biologist. *Clinical Microbiology and Infectious Disease*. 7: Supl 5. 24-28
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- Meyers, L.A., B.R. Levin, A.R. Richardson, and I. Stojiljkovic 2003. The evolution, maintenance and consequences of phase shifting in *Neisseria Meningitidis* *Proc. Roy Soc. B* 270: 1667-1677
- Levin, B. R. and J.J. Bull 2004. Population and evolutionary dynamics of phage therapy. *Nature Reviews Microbiology* 2: 166-173
- Regoes, R., C. Wiuff, R. Zappala, K.N. Garner, F. Baquero and B.R. Levin 2004. Pharmacodynamic functions: a multi-parameter approach to the design of antibiotic treatment regimens. *Antimicrobial Agents and Chemotherapy* 48: 3670-3676
- Levin, B. R. and M. J. M. Bonten 2004. Cycling may be bad for your health. *Proceedings of the National Academy of Sciences US* 101: 13101-13102
- Levin, B. R. 2004. Non-Inherited resistance to antibiotics. *Commentary Science* 305: 1578-1579
- A. Olivier, B. R. Levin, F. Baquero, and J. Blázquez 2004. Hypermutation and the Pre-Existence of Antibiotic Resistance in Chronic *Pseudomonas aeruginosa* Infections: Implications for Susceptibility Testing and Treatment. *Antimicrobial Agents and Chemotherapy* 48: 4266-4233
- Wiuff, R. M. Zappala, R. R. Regoes, K. N. Garner, F. Baquero, B. R. Levin 2005. Phenotypic tolerance: antibiotic enrichment of non-inherited resistance in bacterial populations. *Antimicrobial Agents and Chemotherapy* 49: 1483-1494

Klugman, K.P., B. R. Levin, 2006. One enzyme inactivates two antibiotics. Commentary *Nature Medicine* 12: 19-20

Jensen, M. S. Faruque, J.J. Mekalanos B. R. Levin 2006. Modeling the role of bacteriophage in the control of cholera outbreaks *Proc. Nat. Acad. Sci. US* 103:4652-4657

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Lipsitch, M., T. Cohen, M. Murray, B.R. Levin 2007. Antiviral resistance and the control of pandemic influenza. *PLoS Med* 4(1): e15.

Rozen, D. E. L.E. McGee, B.R. Levin and K. P. Klugman 2007. The fitness costs of fluoroquinolone resistance in *Streptococcus pneumoniae*. *Antimicrobial Agents and Chemotherapy, Antimicrobial Agents and Chemo Therapy* 51:412-416

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## ARTICLES BY STUDENTS AND POSTDOCTORAL FELLOWS

The following papers were written by Graduate students (Ralph Evans, Susan Hattingh, Lone Simonsen, Judy Mongold, Jeff Smith, Elisa Margolis and Omar Cornejo), Postdoctoral Fellows (Richard Lenski, Richard Condit, David Gordon, Margaret Riley, John Mittler, Peter Sykora, Stephanie Schrag, Veronique Perrot, Marc Lipsitch, and Carl Bergstrom, Mary Reynolds, Danny Rozen and Amy Kirby, and a visiting scientist, Anna Hajnal) reporting research they did while working in my laboratory. My role in these endeavors was more that of a producer, advisor, editor, kibitzer, and general busybody than a collaborator.

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