

JOSHUA B. PLOTKIN

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EDUCATION

- 1999–2003 Princeton University, *Ph.D.* in Applied and Computational Mathematics
Advisor: Simon Levin
1994–1999 Harvard University, *A.B. summa cum laude* in Mathematics
1997–1998 Oxford University, Visiting student in Mathematics
1988–1994 The Roxbury Latin School

SCIENTIFIC POSITIONS

- 2014– Professor of Biology, Mathematics, Computer & Information Science, U. Pennsylvania
2011–2014 Associate Professor of Biology and Computer Science (with tenure), U. Pennsylvania
2009–2011 Martin Meyerson Assistant Professor of Interdisciplinary Studies, U. Pennsylvania
2007–2011 Assistant Professor of Biology and Computer Science, University of Pennsylvania
2002–2007 Junior Fellow of the Harvard Society of Fellows
1999–2003 Member, Institute for Advanced Study, Princeton, NJ
1998–2011 Adjunct research faculty, Institute for Defense Analyses, Princeton, NJ
1997, 1998 Cryptographic research mathematician, US National Security Agency, Fort Meade, and
(summers) Government Communications HQ, England (top-secret/SCI clearance)

AWARDS AND FELLOWSHIPS

- 2015 Akira Okubo Prize of the Society for Mathematical Biology
2009–2014 David and Lucile Packard Fellowship in Science and Engineering
2009–2011 Alfred P. Sloan Foundation Research Fellowship
2005–2010 Burroughs Wellcome Fund Career Award at the Scientific Interface
2002–2007 Junior Fellow of the Harvard Society of Fellows
2002–2003 Porter Ogden Jacobus Award of Princeton University
2001–2003 Burroughs Wellcome Fund training fellowship
2001–2002 Teresa Heinz Scholarship for Environmental Research
1999–2002 National Science Foundation graduate fellowship in mathematics
1999–2002 Princeton University merit fellowship in the natural sciences and mathematics
1999 *A.B. summa cum laude*, Harvard University
1998 *Phi Beta Kappa*, Harvard University
1995–1999 John Harvard scholarship
1994 Detur Prize, Harvard University
1989–1994 Eight ACL national Latin and Greek Exam awards

EDITORIAL BOARD SERVICE

- 2012– Board of Reviewing Editors, *Science* (AAAS)
2011– Editorial Board, *Cell Reports*
2013– Guest Editor, *Proceedings of the National Academy of Sciences*
2006–2013 Associate Editor, *Journal of Molecular Evolution*

FUNDING HISTORY

- 2017–2020 Army Research Office W911NF-17-1-0083
Inferring the role of epistasis in molecular evolution
PI Plotkin
- 2016–2020 Defense Advanced Research Projects Agency (DARPA) D17AC00005
The Statistical Mechanics of Crowds: predictive modeling in the social sciences
PI Plotkin, with five co-investigators
- 2012–2016 Defense Advanced Research Projects Agency (DARPA) D12AP00025
Biochronicity: Time, Evolution, Networks and Function
Co-PIs Plotkin and Hogenesch (U. Penn portion)
- 2012–2015 Army Research Office
Inferring Microbial Fitness Landscapes
PIs Plotkin and Epstein
- 2012–2014 National Philanthropic Trust
An explanatory framework for the evolution of complexity
PI Plotkin
- 2009–2016 David and Lucile Packard Fellowship in Science and Engineering
Towards a quantitative understanding of molecular evolution
PI Plotkin
- 2009–2011 NIAID 3U54AI057168
Predicting the antigenic future of influenza A: a computational approach
Co-I Plotkin
- 2009–2011 Alfred P. Sloan Foundation Research Fellowship
PI Plotkin
- 2009–2010 National Academy of Sciences Keck Futures Initiative
Population dynamics of language evolution
PI Plotkin
- 2009–2010 University of Pennsylvania Research Foundation
PI Plotkin
- 2008–2013 James S. McDonnell Foundation
Robustness and adaptability in evolving viral populations
PI Plotkin
- 2008–2012 NIGMS R01GM085226-01
Methods for evolutionary analysis of eukaryotic transcriptional regulation
PI Hannenhalli, Co-I Plotkin
- 2009–2012 Defense Advanced Research Projects Agency (DARPA) HR0011-05-1-0057
Fundamental laws in biology
Co-PIs Plotkin and Epstein (U. Penn portion)
- 2005–2010 Burroughs Wellcome Fund, Career Award at the Scientific Interface
Novel methods to compute selection pressures on proteins at the genome-wide scale
PI Plotkin
- 2005–2012 United Nations Development Program UNOSP INT95R71
Conservation of Biodiversity Through Improved Forest Planning
Co-PIs Plotkin, Bossert, Davies

MENTORSHIP

Post-doctoral Fellows

- 2017– Arunas Radzvilavicius (PhD, UCL, Applied Mathematics)
2017– Andrew Tilman (PhD, Princeton, Ecology & Evolutionary Biology)
2017– Colin Twomey (PhD, Princeton, Ecology & Evolutionary Biology)
2013– Oana Carja (PhD, Stanford, Biology)
2013– Davorka Gulisija (PhD, University of Wisconsin Madison, Zoology)
2012– Jakub Otwinowski (PhD, Emory University, Physics)
2012–2016 David McCandlish (PhD, Duke University, Biology)
currently an Assistant Professor at Cold Spring Harbor Laboratories
2011–2015 Premal Shah (PhD, University of Tennessee, Biology)
currently a tenure-track Assistant Professor at Rutgers University
2010–2015 Alexander Stewart (PhD, University College London, Applied Mathematics)
currently Royal Society Research Fellow at University College London
2010–2013 Ricky Der (PhD, University of Pennsylvania, Mathematics)
2011–2013 David Bostick (PhD, UNC Chapel Hill, Physics)
2011–2013 Etienne Rajon (PhD, University of Lyon, Ecology)
currently a tenure-track Assistant Professor at *Université de Lyon*
2008–2012 Jeremy Draghi (PhD, Yale University, Biology)
currently a tenure-track Assistant Professor at City University New York
2007–2011 Todd Parsons (PhD, University of Toronto, Mathematics)
currently a permanent scientist of *CNRS* at *Université Pierre et Marie Curie*
2009–2011 Helene Morlon (PhD, University of Bordeaux, Biology)
currently a permanent scientist of *CNRS* at *École Normale Supérieure*
2008–2010 Gasper Tkacik (PhD, Princeton University, Applied Mathematics) joint with P. Nelson
currently a tenure-track Asst. Professor at Inst. of Science and Technology, Austria
2007–2010 Sergey Kryazhimskiy (PhD, Princeton University, Applied Mathematics)
currently a tenure-track Assistant Professor at UCSD
2007–2010 Michael Levy (PhD, Emory University, Biology)
currently a tenure-track Assistant Professor at U. Pennsylvania, Dept. of Biostatistics
2008–2010 Anchal Vishnoi (PhD, Nehru University, Biology) joint with S. Hannenhalli
currently a Lecturer at Nehru University
2005–2007 Grzegorz Kudla (PhD, University of Warsaw, Biology)
currently a Senior Scientist of the MRC, at the University of Edinburgh

Graduate Students

- 2012– Mitchell Johnson, PhD student in Biology
2014–2015 Koji Noshita, Visiting PhD student from Kyushu University, Japan
2010–2015 Yang Ding, PhD student in Biology, currently at post-doc with B. Palsson (UCSD)
2007–2010 Ricky Der, PhD student in Mathematics, joint with C. Epstein
2008–2010 Serena Rezny, MA student in Applied Mathematics
2009 Lena Gieschen, visiting PhD student from University of Kiel

Undergraduate Students

- 2012–2013 Krishna Kaliannan, undergraduate researcher
2008–2012 Alison Feder, undergraduate researcher, currently a graduate student at Stanford U.
2008–2010 Sebastian Akle, undergraduate researcher, currently a graduate student at Harvard U.
2007–2009 Daril Vilhena, undergraduate researcher, currently a graduate student at U. Washington
2007–2008 Bo Zhou, undergraduate researcher, currently a graduate student at Harvard U.

TEACHING EXPERIENCE

- 2009– Advanced Evolution (BIOL 410), University of Pennsylvania
2008– Statistics for Biologists (BIOL 446), University of Pennsylvania
2003 Biological Dynamics (APC 514) Princeton University, with E. Cox, W. Bialek

INVITED LECTURES

- 2016 Princeton University, Department of Ecology and Evolutionary Biology, Princeton NJ
2016 Temple University, Institute for Genomics and Evolutionary Medicine, Philadelphia PA
2015 Okubo Prize Lecture, Society for Mathematical Biology, Atlanta, GA
2015 Okubo Prize Lecture, Japanese Society for Mathematical Biology, Kyoto, Japan
2015 Keynote Address, Mathematical Models in Ecology and Evolution, Paris, France
2015 Stanford University, Department of Biology, Palo Alto, CA
2015 Session Chair, Society for Molecular Biology and Evolution, Vienna, Austria
2014 University of Maryland, Computational Biology Program student-invited speaker
2013 Rockefeller University, Center for Physics and Biology
2013 Rutgers University, 110th Statistical Physics Conference
2012 American Society for Microbiology Bio-defense Conference, Washington DC
2012 Institute for Systems Biology, Seattle WA, student-invited speaker
2012 Academia Sinica, Institute of Physics, Taipei, Taiwan
2012 New York University, Department of Biology
2012 Duke University, Department of Mathematics
2012 National Institute for Mathematical and Biological Synthesis, Knoxville TN
2012 University of Pennsylvania, Friday Research Discussion
2011 California Institute of Technology, Biophysics Lecture Series
2011 Princeton University, Colloquium in Applied Mathematics
2011 Yale University, Department of Ecology & Evolutionary Biology
2011 Cold Spring Harbor Laboratories, Quantitative Biology Seminar Series
2010 Duke University, Biology and Mathematics joint colloquium
2010 Packard Fellows Annual Meeting, Monterey CA
2010 UC Berkeley, Departments of Mathematics and Integrative Biology
2010 University of Chicago, Department of Ecology and Evolution
2010 Georgia Tech, Department of Biology
2009 Science/AAAS Webinar, Washington DC
2009 33rd Penn Linguistics Colloquium, University of Pennsylvania
2008 Kavli Institute for Theoretical Physics, Santa Barbara CA
2007 Mathematics colloquium, Penn State University
2007 National Academy of Sciences USA, US-Japan Frontiers of Science, Kanagawa, Japan
2006 Keck Graduate Institute, Claremont CA
2005 NIH Twinbrook Distinguished Lecture Series, Rockville MD
2004 The Fields Institute, Toronto ON
2004 Santa Fe Institute Workshop on Diversity Scaling, Czech Natl. Acad. Sci., Prague
2004 Gordon Conference on Theoretical Biology & Biomathematics, Tilton NH
2003 Gordon Conference on Evolutionary and Ecological Genomics, New London NH
2002 First European Influenza Conference, St. Juliens, Malta
2001 *Laboratoire d' Ecologie Terrestre, CNRS, Toulouse, France*
2001 Polish Academy of Sciences, Stefan Banach International Mathematics Centre, Warsaw
2000 Imperial College of Science, Technology and Medicine, Silwood Park, England
2000 Smithsonian Tropical Research Institute Annual Meeting, Singapore
1998 Mathematics Institute, Oxford University, Oxford, England

PUBLICATIONS ([google scholar](#))

1. **Newberry MG, Ahern C, Clark R, Plotkin JB***.
Evolutionary forces in language change.
Nature (in press)
2. **Plotkin JB.**
No escape from the tangled bank.
Nature (in press)
3. **Gulisija D, Plotkin JB**
Phenotypic plasticity promotes recombination and gene clustering in periodic environments.
Nature Communications (in press)
4. **Carja O, Xing T, Wallace EW, Plotkin JB, Shah P**
riboviz: analysis and visualization of ribosome profiling datasets.
BMC Bioinformatics 10.1186/s12859-017-1873-8 (2017)
5. **Carja O, Plotkin JB.**
Phenotypic plasticity can facilitate evolutionary rescue.
bioRxiv 10.1101/092718
6. **Carja O, Plotkin JB.**
The evolutionary advantage of heritable phenotypic heterogeneity.
Scientific Reports 7: 5090 (2017)
7. **Stewart A, Parsons T, Plotkin JB.**
Evolutionary consequences of behavioral diversity.
Proceedings of the National Academy of Sciences USA 113: 7003-7009 (2016)
8. **Newberry M, McCandlish D, Plotkin JB.**
Assortative mating can impede or facilitate fixation of underdominant alleles.
Theoretical Population Biology 112: 14-21 (2016)
9. **Nourmohammad A, Otwinowski J, Plotkin JB.**
Host-pathogen co-evolution and the emergence of broadly neutralizing antibodies in chronic infections.
PLOS Genetics 12: 1006171 (2016)
10. **Stewart A, Plotkin JB.**
Small groups and long memories promote cooperation.
Scientific Reports 6: 26899 (2016)
11. **McCandlish D, Shah P, Plotkin JB.**
Epistasis and the dynamics of reversion in molecular evolution.
Genetics 203: 1335-1351 (2016)
12. **Gulisija D, Kim Y, Plotkin JB.**
Phenotypic plasticity promotes balanced polymorphism in periodic environments by a genomic storage effect.
Genetics 202: 1437-1448 (2016)
13. **McCandlish D, Plotkin JB***.
Transcriptional errors and the drift barrier.
Proceedings of the National Academy of Sciences USA 113: 3136-3138 (2016)

14. Weinberg DE[#], **Shah P[#]**, Eichhorn SW, Hussmann JA, **Plotkin JB**, Bartel DP.
Improved ribosome-footprint and mRNA measurements provide insights into dynamics and regulation of yeast translation.
Cell Reports 14:1-13 (2016)
15. **McCandlish M, Otwinowski J, Plotkin JB.**
Detecting epistasis from an ensemble of adapting populations.
Evolution 69: 2359-2380 (2015)
16. Neverov AD, **Kryazhimskiy S, Plotkin JB**, Bazykin GA.
Coordinated evolution of Influenza A surface proteins.
PLoS Genetics 11: 1005404 (2015)
17. **Stewart A, Plotkin JB.**
The evolvability of cooperation under local and non-local mutations.
Games 6:231-250 (2015)
18. **McCandlish D, Epstein C, Plotkin JB.**
Formal properties of the probability of fixation: identities, inequalities and approximations.
Theoretical Population Biology 99:98-113 (2015)
19. Schulte MB, **Draghi JA, Plotkin JB**, Andino R.
Experimentally guided models reveal replication principles that shape the mutation distribution of RNA viruses.
eLife 4:3753 (2015)
20. Kumar S, **Plotkin JB**, Hannenhalli S.
Regulated CRISPR modules exploit a dual defense strategy of restriction and abortive infection in a model of prokaryote-phage coevolution.
PLoS Computational Biology 11: 1004603 (2015)
21. **Shah P, McCandlish M, Plotkin JB***
Historical contingency and entrenchment in protein evolution under purifying selection.
Proceedings of the National Academy of Sciences USA 112:3226–3235 (2015)
22. **Stewart A, Plotkin JB***
The collapse of cooperation in evolving games.
Proceedings of the National Academy of Sciences 111: 17558-17563 (2014)
23. **Otwinowski J, Plotkin JB***
Inferring fitness landscapes by regression produces biased estimates of epistasis.
Proceedings of the National Academy of Sciences USA 111:2301-2309 (2014)
24. **Der R, Plotkin JB.**
The equilibrium allele frequency distribution for a population with reproductive skew.
Genetics 196: 1199-1216 (2014)
25. **McCandlish D, Epstein C, Plotkin JB.**
The inevitability of unconditionally deleterious substitutions during adaptation.
Evolution 68:1351-1365 (2014)
26. **Stewart A, Plotkin JB***
From extortion to generosity, evolution in the Iterated Prisoner's Dilemma.
Proceedings of the National Academy of Sciences USA 110: 15348-15353 (2013)
27. **Shah P, Ding Y, Niemczyk M, Kudla G, Plotkin JB***
Rate-limiting steps in yeast protein translation.
Cell 153: 1589-1601 (2013)

28. **McCandlish D, Rajon E, Shah P, Ding Y, Plotkin JB***.
The role of epistasis in protein evolution.
Nature 497: E1-E2 (2013)
29. **Feder A, Kryazhimskiy S, Plotkin JB***.
Identifying signatures of selection in genetic time series.
Genetics 196: 509-522 (2013)
30. **Draghi J, Plotkin JB.**
Selection biases the prevalence and type of epistasis along adaptive trajectories.
Evolution 67: 3120–3131 (2013)
31. Lipsitch M, Fisman D, **Plotkin JB**, Simonsen L.
Ferret H7N9 flu model questioned.
Nature 501: 33 (2013)
32. Li Y, **Bostick D**, Sullivan C, Myers J, Griesemer S, St. George K, **Plotkin JB***, Hensley S*.
Single Hemagglutinin mutations that alter both antigenicity and receptor-binding avidity.
Journal of Virology 87: 9904-9910 (2013)
33. Li Y, Myers J, **Bostick D**, Sullivan C, Madara J, Linderman S, Liu Q, Carter D, Wranmert J, Esposito S, Principi N, **Plotkin JB**, Ross T, Ahmed R, Wilson P, Hensley S.
Immune history shapes specificity of pandemic H1N1 Influenza antibody responses.
Journal of Experimental Medicine 210: 1493-1500 (2013)
34. **Stewart A, Plotkin JB***.
The evolution of complex gene regulation by low-specificity binding sites.
Proceedings of The Royal Society B 280: 20131313 (2013)
35. **Rajon E, Plotkin JB.**
The evolution of genetic architectures underlying quantitative traits.
Proceedings of The Royal Society B 280: 20131552 (2013)
36. Harrison RD, Tan S, **Plotkin JB**, Slik F, Detto M, Brenes T, Itoh A, Davis SJ.
Consequences of defaunation for a tropical tree community.
Ecology Letters 16: 687–694 (2013).
37. **Stewart A, Hannenhalli S, Plotkin JB***.
Why transcription factor binding sites are ten nucleotides long.
Genetics 192: 973-985 (2012)
38. **Stewart A, Seymour R, Pomiankowski A*, Plotkin JB***.
The population genetics of cooperative gene regulation.
BMC Evolutionary Biology 12: 173 (2012)
39. **Ding Y, Shah P, Plotkin JB***.
Weak 5' mRNA structure in short eukaryotic genes.
Genome Biology and Evolution 4: 1046-1053 (2012)
40. **Stewart A, Plotkin JB***.
Extortion and cooperation in the Prisoner's Dilemma.
Proceedings of the National Academy of Sciences USA 109: 10134-10135 (2012)
41. Lipsitch M, **Plotkin JB**, Simonsen L, Bloom B.
Evolution, safety, and highly pathogenic Influenza viruses.
Science 336: 1529-1531 (2012)

42. **Der R, Epstein C, Plotkin JB** .
The dynamics of neutral and selected alleles when the offspring distribution is skewed.
Genetics 191:1331-1344 (2012)
43. **Stewart A, Parsons T, Plotkin JB** .
Environmental robustness and the adaptability of populations.
Evolution 66: 1598-1612 (2012)
44. **Toll-Riera M, Bostick D, Alba M^{*}, Plotkin JB^{*}** .
Structure and age jointly influence rates of protein evolution
PLoS Computational Biology 8:1002542 (2012)
45. **Morlon H, Kempes B, Plotkin JB, Brisson D.**
Explosive radiation of a bacterial species group.
Evolution 66: 2577–2586 (2012)
46. Walczak AM, Nicolaisen LE, **Plotkin JB**, Desai MM.
The structure of genealogies in the presence of purifying selection: a fitness-class coalescent.
Genetics 190: 753-779 (2012)
47. Desai MM, Nicolaisen LE, Walczak AM, **Plotkin JB** .
The structure of allelic diversity in the presence of purifying selection.
Theoretical Population Biology 8: 144-157 (2012)
48. **Draghi J, Plotkin JB.**
A network of paths towards innovation.
BioEssays 34: 518–520 (2012)
49. **Kryazhimskiy S, Draghi J, Plotkin JB** .
In evolution, the sum is less than its parts.
Science 332: 1160-1161 (2011)
50. **Draghi J, Plotkin JB** .
Hidden diversity sparks adaptation.
Nature 474: 45-46 (2011)
51. **Der R, Epstein C, Plotkin JB.**
Generalized population models and the nature of genetic drift.
Theoretical Population Biology 80: 80-99 (2011)
52. **Plotkin JB.**
The lives of proteins.
Science 331: 683-684 (2011)
53. **Vishnoi A, Sethupathy P, Simola D, Plotkin JB^{*}, Hannenhalli S^{*}** .
Genome-wide survey of natural selection on functional, structural, and network properties of polymorphic sites in *Saccharomyces paradoxus*.
Molecular Biology and Evolution 28: 2615-2627 (2011)
54. **Levy M, Small D, Vilhena D, Bowman N, Kawai V, Carpio J, Codova E, Gilman R, Plotkin JB.**
Retracing micro-epidemics of Chagas disease using epicenter regression.
PLoS Computational Biology 7: 1002146 (2011)
55. **Draghi J, Parsons T, Plotkin JB.**
Epistasis increases the rate of conditionally neutral substitution in an adapting population.
Genetics 187: 1139–1152 (2011)

56. **Morlon H, Parsons T, Plotkin JB.**
Reconciling molecular phylogenies with the fossil record.
Proceedings of the National Academy of Sciences USA 108: 16327-332 (2011, cover article)
57. **Plotkin JB^{*}, Kudla G.**
Synonymous but not the same: the causes and consequences of codon bias.
Nature Reviews Genetics 12: 32-42 (2011)
58. **Kryazhimskiy S, Dushoff J, Bazykin G, Plotkin JB^{*}.**
Prevalence of epistasis in the evolution of Influenza A surface proteins.
PLoS Genetics 7: 1001301 (2011)
59. **Draghi J, Parsons T, Wagner G, Plotkin JB^{*}.**
Mutational robustness can facilitate adaptation.
Nature 426: 353-355 (2010)
60. **Morlon H^{*}, Potts M, Plotkin JB^{*}.**
Inferring the dynamics of diversification: a coalescent approach.
PLoS Biology 8: 1000493 (2010)
61. **Vishnoi A, Kryazhimskiy S, Bazykin G, Hannenhalli S^{*}, Plotkin JB^{*}.**
Young proteins experience more variable selection pressures than old proteins.
Genome Research 20: 1574-1581 (2010)
62. Cao K, Chen-Plotkin AS, **Plotkin JB**, Wang LS.
Age-correlated gene expression in normal and neurodegenerative human brain tissues.
PLoS One 5: 13098 (2010)
63. Toole J, Eagle N, **Plotkin JB.**
Spatiotemporal correlations in criminal offense records.
ACM Transactions on Intelligent Systems and Technology 2:38 (2010)
64. Salguero-Gomez R, **Plotkin JB.**
The effects of dimensionality on demographic studies using projection matrices.
The American Naturalist 176:710-722 (2010)
65. **Levy MZ, Malaga F, Cornejo del Carpio JG, Vilhena D, McKenzie FE, Plotkin JB.**
Rational strategies for eliminating a Chagas disease vector.
Proceedings of the Royal Society Interface 7: 1061-1070 (2010)
66. Toole J, Eagle N, **Plotkin JB.**
Quantifying behavioral data sets of criminal activity.
AAAI Spring Symposium SS-10-01: 91-96 (2010)
67. Ndifon W, **Plotkin JB**, Dushoff J.
Environmental impact on the evolutionary accessibility of adaptive phenotypes of a bacterial metabolic network.
PLoS Computational Biology 5: 1000472 (2009)
68. **Plotkin JB.**
Transcriptional regulation is only half the story.
Molecular Systems Biology 6: 406 (2010)
69. Roy S, Vandenberghe L, **Kryazhimskiy S**, Grant R, Calcedo R, Yuan X, Keough M, Sandhu A, Wang Q, Medina-Jaszek C, **Plotkin JB**, Wilson JM.
Isolation and characterization of Adenoviruses persistently shed from the gastrointestinal tract of non-human primates.
PLoS Pathogens 5: 1000503 (2009)

70. Goldstein E, Dushoff J, Ma J, **Plotkin JB**, Earn DJ, Lipsitch M.
Reconstructing influenza incidence by de-convolution of daily mortality time series.
Proceedings of the National Academy of Sciences USA 106: 21825-21829 (2009)
71. **Kryazhimskiy S, Tkacik G, Plotkin JB***.
The dynamics of adaptation on correlated fitness landscapes.
Proceedings of the National Academy of Sciences USA 106:18638-18643 (2009)
72. **Kudla G**, Murray AW, Tollervey D, **Plotkin JB***.
Coding-sequence determinants of gene expression in *Escherichia coli*.
Science 324: 255-258 (2009)
73. **Levy MZ**, Bowman NM, Kawai V, **Plotkin JB**, Waller LA, Cabrera L, Steurer F, Seitz AE, Cancino VV, Cornejo del Carpio JG, Cordova BE, McKenzie F, Maguire J, Gilman RH, Bern C.
Spatial patterns in discordant diagnostic test results for Chagas disease: links to transmission hotspots.
Clinical Infectious Diseases 48:1104-1106 (2009)
74. **Kryazhimskiy S, Plotkin JB***.
The population genetics of dN/dS.
PLoS Genetics 4: 1000304 (2008)
75. Desai MM, **Plotkin JB***.
The polymorphism frequency spectrum of finitely many sites under selection.
Genetics 180: 2175-2191 (2008)
76. **Kryazhimskiy S**, Basykin GA, **Plotkin JB**, Dushoff J.
Directionality in the evolution of Influenza A Hemagglutinin.
Proceedings of the Royal Society B 275: 2455-2464 (2008)
77. **Parsons T**, Quince C, **Plotkin JB**.
Absorption and fixation times for neutral and quasi-neutral populations with density dependence.
Theoretical Population Biology 74: 302-310 (2008)
78. Sethupathy P, Giang H, **Plotkin JB**, Hannenhalli S.
Genome-wide analysis of natural selection on human cis-elements.
PLoS One 3: 3137- (2008)
79. Wu M, Li J, Engleka K, Zhou B, Lu M, **Plotkin JB**, Epstein JA.
Persistent expression of Pax3 in neural crest causes cleft palate and defective osteogenesis.
Journal of Clinical Investigation 118: 2076-2078 (2008)
80. Chen-Plotkin AS, Geser F, **Plotkin JB** et al.
Variations in the progranulin gene affect global gene expression in frontotemporal lobar degeneration.
Human Molecular Genetics 17: 1349-1362 (2008)
81. Lucks J, **Kudla G**, Nelson D, **Plotkin JB***.
Genome landscapes and bacteriophage codon usage.
PLoS Computational Biology 4:1 (2008)
82. Fraser HB, **Plotkin JB**.
Using protein complexes to predict phenotypic effects of gene mutation.
Genome Biology 8:252 (2007)
83. Green JL, **Plotkin JB***.
A statistical theory for sampling species abundances.
Ecology Letters 10: 1037-1045 (2007)

84. **Plotkin JB***, Fraser HB.
Assessing the determinants of evolutionary rates in the presence of noise.
Molecular Biology and Evolution 24: 1113-1121 (2007)
85. Dushoff J, **Plotkin JB**, Viboud C, Simonsen L, Miller M.
Vaccinating to protect a vulnerable subpopulation.
PLoS Medicine 4:174 (2007)
86. Seidler T, **Plotkin JB***.
Seed dispersal and spatial pattern in tropical trees.
PLoS Biology 4: 344 (2006)
87. **Plotkin JB***, Dushoff J, Desai MM, Fraser HB.
Codon usage and selection on proteins.
Journal of Molecular Evolution 63: 635-553 (2006)
88. **Plotkin JB***, Dushoff J, Desai MM, Fraser HB.
Estimating selection pressures from limited comparative data.
Molecular Biology and Evolution 23: 1457-1459 (2006)
89. Dushoff J, **Plotkin JB**, Viboud C, Earn JD, Simonsen L.
Mortality due to influenza in the US – an annualized approach to estimation using multiple-cause mortality data.
American Journal of Epidemiology 163: 181-187 (2006)
90. Ng K, Soon LL, Saw LG, **Plotkin JB**, Koh CL.
Spatial structure and genetic diversity of three tropical tree species with different habitat preferences.
Tree Genetics and Genomes 2: 121-131 (2006)
91. HB Fraser, P Khaitovich, **JB Plotkin**, S Paabo, MB Eisen.
Aging and gene expression in the primate brain.
PLoS Biology 3: 274- (2005)
92. Lukhtanov V, Kandul N, **Plotkin JB**, Dantchenko A, Haig D, Pierce N.
Reinforcement of pre-zygotic isolation and karyotype evolution in *Agrodiaetus* butterflies.
Nature 436: 385-389 (2005)
93. **Plotkin JB***, Dushoff J, Fraser HB.
Codon bias and selection on single genomes – reply.
Nature 433 E7-E8 (2005)
94. Dushoff J, **Plotkin JB**, Levin SA, Earn DE.
Dynamic resonance can explain the seasonality of influenza incidence.
Proceedings of the National Academy of Sciences USA, 101: 16915-16916 (2004)
95. **Plotkin JB***, Robins H, Levine A.
Tissue specific codon usage and the expression of human genes.
Proceedings of the National Academy of Sciences USA 101: 12588-12591 (2004)
96. **Plotkin JB***, Dushoff J, Fraser HB.
Detecting selection using a single genome sequence of *M. tuberculosis* and *P. falciparum*.
Nature 428: 942-945 (2004)
97. Levin SA, Dushoff J, **Plotkin JB**.
Evolution and persistence of Influenza A and other diseases.
Mathematical Biosciences 188: 12-28 (2004)

98. **Plotkin JB***, Muller-Landau H.
Sampling the species composition of a landscape.
Ecology 83: 3344-3356 (2002)
99. **Plotkin JB***, Nowak MA.
The different effects of apoptosis and DNA repair on tumorigenesis.
Journal of Theoretical Biology 214: 453-467 (2002)
100. Krakauer D, **Plotkin JB**.
Principles and parameters of molecular robustness.
In *Robust Design*, ed. Erica Jen, Santa Fe Press (2002)
101. **Plotkin JB***, Chave J, Ashton PS.
Cluster analysis of spatial patterns in Malaysian tree species.
The American Naturalist 160: 629-644 (2002)
102. Potts MD, Ashton PS, Kaufman LS, **Plotkin JB**.
Habitat patterns in tropical rain forests: a comparison of 105 plots in Northwest Borneo.
Ecology 83: 2782-2797 (2002)
103. **Plotkin JB***, Dushoff J.
Codon bias and frequency-dependent selection on the Hemagglutinin epitopes of Influenza A virus.
Proceedings of the National Academy of Sciences USA 100: 7152-7157 (2003)
104. **Plotkin JB***, Dushoff J, Levin SA.
Hemagglutinin sequence clusters and the antigenic evolution of Influenza A virus.
Proceedings of the National Academy of Sciences USA 99: 6263-6268 (2002)
105. Krakauer D, **Plotkin JB**.
Redundancy, anti-redundancy, and the stability of genomes.
Proceedings of the National Academy of Sciences USA 99: 1405-1409 (2002)
106. **Plotkin JB***, Levin SA.
The spatial distribution and abundances of species: Lessons from tropical forests.
Comments on Theoretical Biology 6: 251-278 (2001)
107. **Plotkin JB***, Nowak MA.
Major transitions in language evolution.
Entropy 4: 227-246 (2001)
108. Potts MD, **Plotkin JB**, Lee HS, Manokaran N.
Sampling biodiversity: effects of plot shape.
The Malaysian Forester 64: 29-34 (2001)
109. **Plotkin JB***, Nowak MA.
Language evolution and information theory.
Journal of Theoretical Biology 205: 147-159 (2000)
110. **Plotkin JB***, Potts M, Leslie N, Manokaran N, LaFrankie J, Ashton P.
Species-area curves, spatial aggregation, and habitat specialization in tropical forests.
Journal of Theoretical Biology 207:81-99 (2000)
111. **Plotkin JB***, Potts M, Yu D, Bunyavejchewin S, Condit R, Foster R, Hubbell S, LaFrankie J, Manokaran N, Seng L, Sukumar R, Nowak MA, Ashton PS.
Predicting species diversity in tropical forests.
Proceedings of the National Academy of Sciences USA 97, 10850-10854 (2000)

112. Nowak M, **Plotkin JB**, Jansen V.
The evolution of syntactic communication.
Nature 404: 495-498 (2000)
113. Nowak MA, **Plotkin JB**, Krakauer D.
The evolutionary language game.
Journal of Theoretical Biology 200: 147-162 (1999)

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CLASSIFIED PUBLICATIONS

114. **Plotkin JB**.
Classified research paper on cryptography and number theory.
Institute for Defense Analyses internal peer-reviewed journal (1998)
115. **Plotkin JB**.
Classified research paper on cryptography and number theory
Institute for Defense Analyses internal peer-reviewed journal (1998)
116. **Plotkin JB**.
Classified research paper on cryptography and number theory
U.S. National Security Agency internal R51 journal (1997)