Stanley Sawyer

Vita – October 6, 2014

Academic Rank: Emeritus Professor of Mathematics
Research Interests: Probability and Statistics, Genetics
Education: Ph.D., California Institute of Technology, 1964
                     B.S.,   California Institute of Technology, 1960

Professional Experience:

1985–	Professor of Mathematics, Genetics, and Biostatistics, Washington University in St. Louis
1984–	Professor of Mathematics, Washington University
1978–1984	Professor of Mathematics and Statistics, Purdue University
1977–1978	Visiting Prof. of Math., University of Washington, Seattle
1975–1977	Chairman and Prof., All-Univ. Dept. of Mathematics, Yeshiva University
1970–1975	Associate Professor of Mathematics, Yeshiva University
1969–1971	Associate Professor of Mathematics (on leave), Brown University
1969–1970	Assistant Professor of Mathematics, Yeshiva University
1967–1969	Assistant Professor of Mathematics, Brown University
1965–1967	Courant Instructor, New York University
1964–1965	Temporary Member, Courant Institute, New York University

Affiliations: Institute of Mathematical Statistics (elected Fellow in 1985)
                  Society for Molecular Biology and Evolution
                  Genetics Society of America
                  American Mathematical Society

Professional Offices: One of three Advisory Editors, Molecular Biology and Evolution (2002–2008)
Associate Editor, Annals of Applied Probability (Jan 2006–May 2007)
Deputy Editor, Online Publishing, MBE (2000–2002)
Associate Editor, MBE (1994–2000)
Probability Editor, Proc. American Math. Society (1996–1999)
Associate Editor, Annals of Probability (1979–1985, 1991–1994)
NIH Genetics Study Section, ad hoc member (1991, 1998–2004)
NIH Genetics GVE Study Section, ad hoc member (2005–2007)

Publications

1. AMEI, AMEI, and STANLEY A. SAWYER (2012) Statistical inference of selection and divergence from a time-dependent poisson random field model. *PLoS ONE* **7(4),** doi:10.1371/journal.pone.0034413

2. LEOPOLD, SHANA R., STANLEY A. SAWYER, THOMAS S. WHITTAM, and PHILLIP I. TARR (2011) Obscured phylogeny and recombinational dormancy in *Escherichia coli*. *BMC Evolutionary Biology* **11,** 183.

3. AMEI, AMEI, and STANLEY A. SAWYER (2010) A time-dependent Poisson random field model for polymorphism within and between two related biological species. *Annals of Applied Probability* **20,** 1663–1696.

4. LEOPOLD SHANA R, MAGRINI V, HOLT NJ, SHAIKH N, MARDIS ELAINE R, CAGNO J, OGURA Y, IGUCHI A, HAYASHI TETSUYA, MELLMANN A, KARCH HELGE, BESSER THOMAS E, SAWYER STANLEY A, WHITTAM THOMAS S, and TARR PHILLIP I (2009) A precise reconstruction of the emergence and constrained radiations of *Escherichia coli* O157 portrayed by backbone concatenomic analysis. *Proc. Nat. Acad. Sci. USA* **106,** 8713–8718.

5. CHEN, CHRISTINA T. L., QUO-SHIN CHI, and STANLEY A SAWYER (2008) Effects of dominance on the probability of fixation of a mutant allele. *Jour. Math. Biol.* **58,** 413–434.

6. BAINES, JOHN F., STANLEY A. SAWYER, DANIEL L. HARTL, and JOHN PARSCH (2008) Effects of X-linkage and sex-biased gene expression on the rate of adaptive protein evolution in Drosophila. *Mol. Biol. Evol.* **25,** 1639–1650.

7. SAWYER, STANLEY A, JOHN PARSCH, ZHI ZHANG, and DANIEL L HARTL (2007) Prevalence of positive selection among nearly neutral amino acid replacements in *Drosophila*. *Proc. Nat. Acad. Sci. USA* **104,** 6504–6510.

8. BUTLER, MARGUERITE A., STANLEY A. SAWYER, and JONATHAN B. LOSOS (2007) Sexual dimorphism and adaptive radiation in *Anolis* lizards. *Nature* **447,** 202–205.

9. VOLKMAN, SARAH K., ELENA LOZOVSKY, ALYSSA E. BARRY, TREVOR BEDFORD, LARA BETHKE, ALISSA MYRICK, KAREN P. DAY, DANIEL L. HARTL, DYANN F. WIRTH, and STANLEY A. SAWYER (2007) Genomic heterogeneity in the density of noncoding single-nucleotide and microsatellite polymorphisms in *Plasmodium falciparum*. *Gene* **387,** 1–6.

10. KULATHINAL, ROB J., STANLEY A. SAWYER, CARLOS D. BUSTAMANTE, DMITRY NURMINSKY, RITA PONCE, JOSE M. RANZ, and DANIEL L. HARTL (2005) Selective sweep in the evolution of a new sperm-specific gene in *Drosophila*. *In* Dmitry Nurminsky (Ed.), *Selective Sweeps* (pp 22–33), Landes Bioscience/Eurekah.com and Kluwer Academic/Plenum.

11. FAUQUET, C. M., S. SAWYER, A. M. IDRIS, and J. K. BROWN (2005) Sequence analysis and classification of apparent recombinant begomoviruses infecting tomato in the Nile and Mediterranean Basins. *Phytopathology* **95,** 549–555.

12. SAWYER, STANLEY A, ROB J. KULATHINAL, CARLOS D. BUSTAMANTE, and DANIEL L. HARTL (2003) Bayesian analysis suggests that most amino acid replacements in *Drosophila* are driven by positive selection. *Journal of Molecular Evolution* **57,** Suppl S154–164.

13. NAIDU, R. A., S. A. SAWYER, and C. M. DEOM (2003) Molecular diversity of RNA-2 genome segments in pecluviruses causing peanut clump disease in West Africa and India. *Archives of Virology* **148,** 83–98.

14. BUSTAMANTE, CARLOS D., RASMUS NIELSEN, STANLEY A. SAWYER, KENNETH M. OLSEN, MICHAEL D. PURUGGANAN, and DANIEL L. HARTL (2002) The cost of inbreeding in *Arabidopsis*. *Nature* **416,** 531–534.

15. RICH, STEPHEN M., STANLEY A. SAWYER, and ALAN G. BARBOUR (2001) Antigen polymorphism in *Borrelia hermsii*, a clonal pathogenic bacterium. *Proc. Nat. Acad. Sci. USA* **98,** 15038–15043.

16. BUSTAMANTE, CARLOS D., JOHN WAKELEY, STANLEY SAWYER, and DANIEL L. HARTL (2001) Directional selection and the site-frequency spectrum. *Genetics* **159,** 1779–1788.

17. GOLDFELD, ANNE E., JESSICA Y. LEUNG, STANLEY A. SAWYER, and DANIEL L. HARTL (2000) Post-genomics and the neutral theory: variation and conservation in the tumor necrosis factor-alpha promoter. *Gene* **261,** 19–25.

18. HARTL, D. L., E. F. BOYD, C. D. BUSTAMANTE, and S. A. SAWYER (2000) The glean machine: What can we learn from DNA sequence polymorphisms? *In* S. Suhai (Ed.), *Genomics and proteomics*, Kluwer Academic / Plenum Publishers, New York, 37–49.

19. PADIDAM, MALLA, STANLEY SAWYER, and CLAUDE M. FAUQUET (1999) Possible emergence of new geminiviruses by frequent recombination. *Virology* **265,** 218–225.

20. SAWYER, S. A. (1997) Martin boundaries and random walks. *In* A. Koranyi (Ed.), *Harmonic functions on trees and buildings*, Contemporary Mathematics **206**, American Mathematical Society, Providence, 17–44.

21. SAWYER, S. A. (1997) Estimating selection and mutation rates from a random field model for polymorphic sites. *In* P. Donnelly and S. Tavaré (Eds.), *Progress in population genetics and human evolution*, IMA Volumes in Mathematics and its Applications **87**, Springer-Verlag, New York, 193–205.

22. STRAUB, P. F., GEORGIA SHEARER, P. H. S. REYNOLDS, STANLEY SAWYER, and DANIEL H. KOHL (1997) Effect of the ability of bacteroids to catabolize proline on the response of soybeans to repeated drought. *Journal of Experimental Botany* **48,** 1299–1307.

23. PHILLIPS, O. L., PAMELA HALL, S. A. SAWYER, and R. VÁSQUEZ (1997) Species richness, tropical forest dynamics, and sampling: response to Sheil. *OIKOS* **79,** 183–187.

24. SAWYER, STANLEY, ANN PODLESKI, DAN KRANE, and DANIEL HARTL (1996) DNA fingerprinting loci do show population differences: Comments on Budowle et al. (Letter to editor.) *Amer. J. Human Genet.* **59,** 272–274.

25. KAPUR, VIVEK, S. KANJILAL, M. R. HAMRICK, LING-LING LI, T. S. WHITHAM, S. A. SAWYER, and J. M. MUSSER (1995) Molecular population genetic analysis of the streptokinase gene of *Streptococcus pyogenes*: mosaic alleles generated by recombination. *Molecular Microbiology* **16,** 509–519.

26. SAWYER, S. A. (1994) Inferring selection and mutation from DNA sequences: The McDonald-Kreitman test revisited. *In* G. B. Golding (Ed.) *Non-Neutral Evolution: Theories and Molecular Data.* Chapman & Hall, New York, 77–87.

27. HARTL, D. L., E. N. MORIYAMA, and S. A. SAWYER (1994) Selection intensity for codon bias. *Genetics* **138,** 227–234.

28. PHILLIPS, O. L., A. H. GENTRY, P. HALL, S. A. SAWYER, and R. VÁSQUEZ (1994) Dynamics and species-richness of tropical rain forests. *Proc. Nat. Acad. Sci. USA* **91,** 2805–2809.

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33. SAWYER, S. A. (1991) Gene conversion and the infinite-sites model. *In* I. Basawa and R. L. Taylor (Eds.), *Selected Proceedings of the Sheffield Symposium on Applied Probability*. Inst. Math. Statist. Lecture Notes–Monograph Series **18**, 269–277.

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38. SAWYER, S. A. (1989) Statistical tests for detecting gene conversion. *Mol. Biol. Evol.* **6,** 526–538.

39. MORROW, G., and S. A. SAWYER (1989) Large deviation results for a class of Markov chains arising from population genetics. *Ann. Probab.* **17,** 1124–1146.

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42. HARTL, D. L., and S. A. SAWYER (1988) Why do unrelated insertion sequences occur together in the genome of *Escherichia coli*? *Genetics* **118,** 537–541.

43. SAWYER, S. A., and T. STEGER (1987) The rate of escape for anisotropic random walks in a tree. *Probab. Th. Rel. Fields* **76,** 207–230.

44. SAWYER, S. A., D. E. DYKHUIZEN, and D. L. HARTL (1987) Confidence interval for the number of selectively neutral amino acid polymorphisms. *Proc. Nat. Acad. Sci. USA* **84,** 6225–6228.

45. SAWYER, S. A., D. E. DYKHUIZEN, R. DUBOSE, L. GREEN, T. MUTANGA-DURA-MHLANGA, D. WOLCZYK, and D. L. HARTL (1987) Distribution and abundance of insertion sequences among natural isolates of *Escherichia coli*. *Genetics* **115,** 51–63.

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47. SAWYER, S. A., and D. L. HARTL (1985) A sampling theory for local selection. *J. Genetics* **64,** 21–29.

48. DYKHUIZEN, D. E., S. A. SAWYER, L. GREEN, R. MILLER, and D. L. HARTL (1985) Joint distribution of insertion elements IS*4* and IS*5* in natural isolates of *Escherichia coli*. *Genetics* **111,** 219–231.

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51. FELSENSTEIN, J., S. A. SAWYER, and R. KOCHIN (1982) An efficient method for matching nucleic acid sequences. *Nucleic Acids Research* **10,** 133–139.

52. SAWYER, S. A., and M. SLATKIN (1981) Density independent fluctuations of population size. *Theor. Popul. Biol.* **19,** 37–57.

53. SAWYER, S. A., and J. FELSENSTEIN (1981) A continuous migration model with stable demography. *J. Math. Biol.* **11,** 193–205.

54. SAWYER, S. A., and D. L. HARTL (1981) On the evolution of behavioral reproductive isolation: the Wallace effect. *Theor. Popul. Biol.* **19,** 261–273.

55. SAWYER, S. A. (1980) Random walks and probabilities of genetic identity in a tree, p290–295 in *Biological Growth and Spread: Mathematical Theories and Applications*, Springer Lecture Notes in Biomathematics **38.**

56. SLATKIN, M., G. THOMSON, and S. A. SAWYER (1979) Genetic drift in sex-linked lethal disorders. *Amer. J. Human Genet.* **31,** 156–160.

57. SAWYER, S. A., and J. FLEISCHMAN (1979) Maximum geographic range of a mutant allele considered as a sub-type of a Brownian branching random field. *Proc. Nat. Acad. Sci. USA* **76,** 872–875.

58. SAWYER, S. A. (1979) A limit theorem for patch sizes in a selectively-neutral migration model. *J. Appl. Probab.* **16,** 482–495.

59. SAWYER, S. A. (1978) Isotropic random walks in a tree. *Z. Wahrschein. Verw. Gebiete* **42,** 279–292.

60. SAWYER, S. A. (1977) On the past history of an allele now known to have frequency p. *J. Appl. Probab.* **14,** 439–450.

61. SAWYER, S. A. (1977) Asymptotic properties of the equilibrium probability of identity in a geographically structured population. *Adv. Appl. Probab.* **9,** 268–282.

62. SAWYER, S. A. (1977) Rates of consolidation in a selectively neutral migration model. *Ann. Probab.* **5,** 486–493.

63. ROSENKRANTZ, W., and S. A. SAWYER (1977) L^p estimates for stopping times of Bessel processes. *Z. Wahrschein. Verw. Gebiete* **41,** 145–151.

64. SAWYER, S. A. (1976) Results for the stepping stone model for migration in population genetics. *Ann. Probab.* **4,** 699–728.

65. SAWYER, S. A. (1976) Branching diffusion processes in population genetics. *Adv. Appl. Probab.* **8,** 659–689.

66. SAWYER, S. A. (1975) An application of branching random fields to genetics, p100–112 in *Probabilistic Methods in Differential Equations*, Springer Lecture Notes in Mathematics **451**, Springer-Verlag, New York.

67. SAWYER, S. A. (1974) A Fatou theorem for the general one-dimensional parabolic equation. *Indiana Univ. Math. J.* **24,** 451–498.

68. SAWYER, S. A. (1974) The Skorokhod representation. *Rocky Mountain J. Math.* **4,** 579–596.

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70. SAWYER, S. A. (1972) A remark on the Skorokhod representation. *Z. Wahrschein. Verw. Gebiete* **23,** 67–74.

71. SAWYER, S. A. (1972) Rates of convergence for some functionals in probability. *Ann. of Math. Statist.* **43,** 273–284.

72. ROSENCRANS, S., and S. A. SAWYER (1972) An extremal property of independent random variables. *Proc. Amer. Math. Soc.* **36,** 552–556.

73. SAWYER, S. A. (1970) A remark on the S-equation for branching processes. *Proc. Japan Acad.* **46,** 427–429.

74. SAWYER, S. A. (1970) A formula for semi-groups, with an application to branching diffusion processes. *Trans. Amer. Math. Soc.* **152,** 1–38.

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77. SAWYER, S. A. (1967) Some topological properties of the function $n(y)$. *Proc. Amer. Math. Soc.* **18,** 35–40.

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Computer Packages

1. S. A. SAWYER (1998) GENECONV: A computer package for the statistical detection of gene conversion. *Distributed by the author, Department of Mathematics, Washington University in St. Louis.*
   Available at `http://www.math.wustl.edu/~sawyer/geneconv/`. Current version 1.81a posted May 16, 2007.

Books

1. SAWYER, S. A., and S. G. KRANTZ (1995) *A T$_E$X Primer for Scientists*. CRC Press, Boca Raton (399 + viii pgs).