

CURRICULUM VITAE  
**Nicholas Eriksson**

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U.S. Citizen, born 12 December, 1978

### **Employment**

- 2007–08: Visiting Assistant Professor,  
**University of Chicago**, Department of Statistics
- 2006–07: NSF Postdoctoral Research Fellow,  
**Stanford University**, Department of Statistics
- Fall 2006: Postdoctoral Fellow,  
**Mathematical Sciences Research Institute**, Berkeley, California
- Summers 1998, 1999, 2001: Research Fellow,  
**Institute for Defense Analysis**, Bowie, Maryland
- Summer 2000: Research Fellow,  
**AT&T Shannon Laboratories**, Florham Park, New Jersey

### **Education**

- Ph.D. Mathematics, Designated Emphasis in Computational and Genomic Biology  
**University of California, Berkeley**, May 2006.  
Dissertation: Algebraic combinatorics for computational biology  
Advisor: Bernd Sturmfels.
- S.B. Mathematics, minor in Music.  
**Massachusetts Institute of Technology**, June 2001.

### **Research interests: Computational and evolutionary biology**

Combinatorial, algebraic, and computational methods in statistics and mathematics, particularly as applied to problems in phylogenetics, viral evolution, and population genetics.

### **Publications**

18. N. Eriksson. Predicting the risk of drug resistance. 2008 (in preparation).
17. N. Eriksson, P. Huggins, and A.S. Malaspinas. Sensitivity of phylogenetic analysis to alignment parameters. 2008 (in preparation).
16. N. Eriksson and Y. Yao. Metric learning for phylogenetic invariants. 2008 (under submission).
15. N. Eriksson, L. Pachter, Y. Mitsuya, S.Y. Rhee, C. Wang, B. Gharizadeh, M. Ronaghi, R.W. Shafer, and N. Beerenwinkel. Viral population estimation using pyrosequencing. *PLoS Computational Biology*, 2008 (to appear).

14. N. Eriksson. Using invariants for phylogenetic tree construction. In M. Putinar and S. Sullivant (eds.), *Emerging Applications of Algebraic Geometry*, I.M.A. Volumes in Mathematics and its Applications, 2008 (to appear).
13. R.J. Gifford, S.Y. Rhee, N. Eriksson, M. Kiuchi, A.K. Das, and R.W. Shafer. APOBEC-Mediated G to A Hypermethylation and Epidemiologic Studies of Transmitted HIV-1 Drug Resistance. *AIDS*, 2008 (to appear).
12. N. Beerenwinkel, N. Eriksson, and B. Sturmfels. Conjunctive Bayesian networks. *Bernoulli*, 13 (4):893–909, 2007.
11. N. Eriksson and J.C. Lagarias. Apollonian circle packings: Number theory II. Spherical and hyperbolic packings. *Ramanujan Journal*, 14 (3):437–469, 2007.
10. Algebraic combinatorics for computational biology. Ph.D. dissertation, Department of Mathematics, University of California, Berkeley, May 2006.
9. N. Beerenwinkel, N. Eriksson, and B. Sturmfels. Evolution on distributive lattices. *Journal of Theoretical Biology*, 242 (2):409–420, 2006.
8. P. Diaconis and N. Eriksson. Markov bases for noncommutative Fourier analysis of ranked data. *Journal of Symbolic Computation*, 41 (2):182–195, 2006.
7. N. Eriksson, S. Fienberg, A. Rinaldo, and S. Sullivant. Polyhedral conditions for the nonexistence of the MLE for hierarchical log-linear models. *Journal of Symbolic Computation*, 41 (2):222–233, 2006.
6. N. Eriksson. Tree construction with singular value decomposition. In L. Pachter and B. Sturmfels (eds.), *Algebraic Statistics for Computational Biology*, 347–358. Cambridge University Press, Cambridge, UK, 2005.
5. M. Drton, N. Eriksson, and G. Leung. Ultra-conserved elements in vertebrate and fly genomes. In L. Pachter and B. Sturmfels (eds.), *Algebraic Statistics for Computational Biology*, 387–402. Cambridge University Press, Cambridge, UK, 2005.
4. N. Eriksson, K. Ranestad, B. Sturmfels, and S. Sullivant. Phylogenetic algebraic geometry. In C. Ciliberto, A. Geramita, B. Harbourne, R-M. Roig, and K. Ranestad (eds.), *Projective Varieties with Unexpected Properties: A Volume in Memory of Giuseppe Veronese*, 237–255. de Gruyter, Berlin, 2005.
3. N. Eriksson. Toric ideals of homogeneous phylogenetic models. In *Proceedings of the 2004 International Symposium on Symbolic and Algebraic Computation*, 149–154. ACM Press, New York, 2004.
2. N. Eriksson. Clifford algebras and spin groups. *MIT Undergraduate Journal of Mathematics*, 3, 2001.
1. N. Eriksson.  $q$ -series, elliptic curves, and odd values of the partition function. *International Journal of Mathematics and Mathematical Sciences*, 22 (1):55–66, 1999.

**Awards**

- National Science Foundation Postdoctoral Research Fellowship in the Mathematical Sciences, 2006–2008.
- Bernard Friedman Prize, UC Berkeley, top thesis in applied mathematics, 2006.
- National Defense Science and Engineering Graduate Fellowship, 2001–2004.
- National Science Foundation Graduate Research Fellowship, 2001. Declined.
- Third place, Westinghouse Science Talent Search, 1997.

**Teaching Experience**

- University of Chicago, *Metagenomics and population genetics*, Winter 2008, *planned course*.
- University of Chicago, Statistics 234: *Statistical Models/Methods*, Autumn 2007.
- Second Argentine School of Mathematics and Biology, short course on *Drug resistance in HIV*, July 2007.
- First Argentine School of Mathematics and Biology, short course on *Algebraic statistics for computational biology*, December 2005.
- Park City Mathematics Institute, Teaching assistant for *The Mathematics of Phylogenetic Trees*, Summer 2005.
- UC Berkeley, Graduate Student Instructor, Calculus 1A, Fall 2004.

**Seminar and Conference talks**

- Statistics seminar, Columbia University, January 25, 2008.
- Viral Paradigms: Molecules, Populations, Ecosystems and Infectious Disease; Georgia Tech, January 15, 2008.
- Mathematics seminar, Duke University, January 10, 2008.
- Bioinformatics seminar, University of Basel, Switzerland, December 10, 2007.
- AMS Central Section Annual Meeting, Chicago, IL October 6, 2007.
- Second Argentine School of Mathematics and Biology, La Falda, Argentina, 6/28 - 7/6/07
- UC Irvine, 2007 WNAR/IMS annual meeting, June 25, 2007.
- Stanford University, Workshop in Biostatistics, May 31, 2007.
- UC San Diego, April 11, 2007.
- UCLA, Statistics seminar, April 10, 2007.
- University of Minnesota, Combinatorics seminar, March 2, 2007.
- Bay area biosystematists meeting, Berkeley, February 13, 2007.
- Duke University, Mathematics seminar, February 2, 2007.
- Stanford University, BioMathematical Methodology Seminar, January 30, 2007.
- University of Chicago / Toyota Technological Institute, November 14, 2006.
- University of Chicago, Statistics seminar, November 13, 2006.

- UC Davis, Berkeley-Davis Mathematical Genomics Meeting, September 15, 2006.
- MSRI Summer Graduate Workshop: Mathematical aspects of computational biology, June 26, 2006.
- University of Miami, Mathematics colloquium, March 3, 2006.
- University of Miami, Combinatorics seminar, March 2, 2006.
- Massachusetts Institute of Technology, Special applied mathematics seminar, February 9, 2006.
- Carnegie Mellon University, Statistics seminar, January 23, 2006.
- Joint AMS/MAA Meeting, Special Session on Algebraic Statistics: Theory and Practice, January 12, 2006.
- UC Berkeley, Computational biology seminar, September 19, 2005.
- Park City Mathematics Institute, July 12, 2005.
- International Conference on Research in Computational Molecular Biology (RECOMB) 2005 Poster Session, May 19, 2005.
- UC Berkeley, Algebraic statistics for computational biology seminar, March 14, 2005.
- UC Berkeley, Combinatorial commutative algebra class, December 7, 2004.
- UC Berkeley, Algebraic statistics for computational biology seminar, October 28, 2004.
- Harvey Mudd, Geometry, Algebra, and Phylogenetic Trees Conference Poster Session, October 22, 2004.
- University of Barcelona, Seminari D'àlgebra commutativa, combinatòria, i computacional, July 9, 2004.
- University of Cantabria, Santander, Spain, International Symposium on Symbolic and Algebraic Computation, July 7, 2004.
- UC Berkeley, Working seminar on algebraic statistics, May 27, 2004.
- International Conference on Research in Computational Molecular Biology (RECOMB) 2004 poster session, March 2004.
- UC Berkeley, Commutative algebra and algebraic geometry seminar, January 2004.
- UC Berkeley, Mathematics of phylogenetic trees seminar, November 2003.
- UC Berkeley, Combinatorial commutative algebra seminar, August 2003.
- UC Berkeley, Mini-workshop on algebraic statistics, January 16, 2003.

### **Selected Conferences Attended**

- Second Argentine School of Mathematics and Biology, La Falda, Argentina, June–July 2007.
- WNAR/IMS annual meeting, UC Irvine, June 2007.
- Computing in statistics, MSRI, May 2007.

- Applications of Algebraic Geometry, Institute for Mathematics and Its Applications, Minnesota, February–March 2007.
- Computational Applications of Algebraic Topology, MSRI, September 2006.
- Second Young Researchers Workshop in Mathematical Biology, Mathematical Biosciences Institute, Ohio State, March 2006.
- Cyberinfrastructure for Phylogenetic Research (CIPRES) annual meeting, University of Texas, February 2006.
- Joint AMS/MAA Mathematics Meetings, San Antonio, TX, January 2006.
- First Argentine School of Mathematics and Biology, La Cumbre, Argentina, December 2005.
- Workshop on Algebraic Statistics and Computational Biology, Clay Mathematics Institute, November 2005.
- Park City Mathematics Institute, graduate summer school in mathematical biology, June–July 2005.
- International Conference on Research in Computational Molecular Biology (RECOMB), MIT, May 2005.
- Geometry, Algebra, and Phylogenetic Trees, Harvey Mudd, October, 2004.
- International Symposium on Symbolic and Algebraic Computation (ISSAC), Santander, Spain, July 2004.
- International Conference on Research in Computational Molecular Biology (RECOMB), San Diego, March 2004.
- MSRI Summer School on Triangulations of point sets, MSRI, July 2003.

### Professional Activities

- Referee: Journal of Symbolic Computation; Bulletin of the London Mathematical Society; Statistica Sinica; Statistical Applications in Genetics and Molecular Biology; Annals of Combinatorics.
- Member: American Mathematical Society; Institute of Mathematical Statistics.

### References

- Niko Beerenwinkel, ETH Zürich,  
`niko.beerenwinkel@bsse.ethz.ch`.
- Reinhard Laubenbacher, Virginia Bioinformatics Institute,  
`reinhard@vbi.vt.edu`, (540) 231-7506
- Lior Pachter, University of California, Berkeley,  
`lpachter@math.berkeley.edu`, (510) 642-2028
- Bernd Sturmfels, University of California, Berkeley,  
`bernd@math.berkeley.edu`, (510) 642-4687

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