

LAURA ALINE KATZ
 Department of Biological Sciences
 Smith College
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EDUCATION

- Ph.D. **Cornell University**, Ithaca NY, 1996
 Ecology and Evolutionary Biology
 Dissertation: "Molecular Evolution of Phosphoglucose Isomerase"
 Advisor: Richard G. Harrison
- A.B. **Harvard College**, Cambridge MA, 1989
Magna Cum Laude in History of Science
 Senior Honors Thesis: "Soviet Agriculture & Lysenkoism under Khrushchev"

POSITIONS HELD

- 1997- **Smith College**, Northampton MA
 Associate Professor, Department of Biological Sciences (2003-present)
 Assistant Professor, Department of Biological Sciences (1997-2003)
- 1998- **UMass-Amherst**, Amherst MA
 Graduate faculty member of Organismic and Evolutionary Biology Program (1998-)
 Adjunct faculty member in Microbiology (2004-present)

GRANTS

- 2004 **NSF Assembling the Tree of Life:** "Collaborative Research: Reconstructing Eukaryotic Phylogeny through Multigene Analyses of Microbial Eukaryotes" \$1,213,102 (Smith College portion). I am lead PI on this \$3M collaborative grant, which includes PIs from University of Iowa, American Type Culture Collection and Marine Biological Laboratories.
- 2004 **Sloan Foundation:** With Debashish Bhattacharya (University of Iowa) "Symposium: Genome Evolution in Eukaryotic Microbes" \$8,900.
- 2004 **Burroughs Wellcome Fund:** With Debashish Bhattacharya (University of Iowa) "Symposium: Genome Evolution in Eukaryotic Microbes" \$5,000.
- 2004 **NSF Symposium Grant:** Co-PI with Debashish Bhattacharya (University of Iowa) "Genome Evolution in Eukaryotic Microbes" (MCB-0346532): \$25,000.
- 2003 **NSF REU Supplement CAREER Award:** "Phylogeny of Ciliates in the Class Phyllopharyngea" (DEB-0092908): \$6,000.
- 2003 **NSF REU Supplement Oceanography Award:** "Phylogeny of Ciliates in the Class Phyllopharyngea" (OCE-0221062): \$6,000

- 2002 **NSF Biological Oceanography:** Collaborative Research: Diversity and biogeography of marine oligotrich and choreotrich ciliates assessed by morphological and molecular markers. (OCE-0221062) 9/15/02-8/31/05: \$217,600 (Smith College portion). With Drs. O. Snoeyenbos-West (Smith College) and G. McManus (Univ. Connecticut):
- 2002 **Smith College Blakeslee Research Fund:** "Evolution of chromosomal rearrangements in ciliates," 9/02-8/03: \$7,000
- 2002 **NSF REU Supplement CAREER Award:** "Phylogeny of Ciliates in the Class Phyllopharyngea" (DEB-0092908): \$5,710.
- 2001 **NSF CAREER Award:** "Phylogeny of Ciliates in the Class Phyllopharyngea" (DEB-0092908) 6/1/01-5/31/06: \$411,874.
- 2001 **NSF REU Supplement to SGER:** "Multi-gene approach to understanding relationships among ciliates in the class Spirotrichea" (DEB-0079325): \$5,000
- 2000 **Smith College Blakeslee Research Fund:** "Evolution of chromosomal rearrangements in ciliates," 9/01-8/02: \$8,000
- 2000 **NSF-SGER:** "Multi-gene approach to understanding relationships among ciliates in the class Spirotrichea" (DEB-0079325) 5/1/00-4/30/02: \$100,000.
- 2000 **Smith College Blakeslee Research Fund:** "Evolution of chromosomal rearrangements in ciliates," 9/00-8/01: \$7,000
- 1999 **The Foundation for Microbiology** for support of publication "Evolutionary relationships among eukaryotes:" \$5,800
- 1999 **Burroughs-Wellcome Fund** for support of publication "Evolutionary relationships among eukaryotes:" \$2,500
- 1999 **Smith College Blakeslee Research Fund:** "Evolution of chromosomal rearrangements in ciliates," 9/99-8/00: \$7,000
- 1998 **Sloan Foundation** for support of symposium "Evolutionary relationships among eukaryotes," co-organized with Mitch Sogin (MBL, Woods Hole MA): \$7,260
- 1998 **Burroughs-Wellcome Fund** for support of symposium "Evolutionary relationships among eukaryotes," co-organized with Mitch Sogin (MBL, Woods Hole MA): \$2,500
- 1998 **Society for the Study of Evolution and Society of Systematic Biologists** for support of symposium "Evolutionary relationships among eukaryotes," co-organized with Mitch Sogin (MBL, Woods Hole MA): \$1,000
- 1998 **Society for Molecular Biology and Evolution** for support of symposium "Evolutionary relationships among eukaryotes," co-organized with Mitch Sogin (MBL, Woods Hole MA): \$1,500
- 1998 **Smith College Blakeslee Research Fund:** "Evolution of chromosomal rearrangements in ciliates," 9/98-8/88: \$6,000

AWARDS AND FELLOWSHIPS

- 2000 **Jean Picker Fellowship**, Smith College
- 1996-1998 **NSF-Sloan Postdoctoral Fellowship**
with John Tyler Bonner, Princeton University, Princeton NJ
"Evolution of DNA deletion and gene scrambling in ciliates"
- 1996 **Sigma Xi**, Full Member
- 1995 **R.H. Whittaker award for outstanding graduate presentation**
Cornell University, Ithaca NY

PROFESSIONAL ACTIVITIES

- 2004-2006 Councilor for the Society of Molecular Biology and Evolution
- 2004 Co-organizer (with Debashish Bhattacharya) of a workshop and a symposium on genome evolution in microbial eukaryotes
- 2003-2005 Associate Editor for *Molecular Biology and Evolution*
- 2003-2005 Associate Editor for *Evolution*
- 2003 Chair of "Evolution and Natural Populations" sections. FASEB conference on ciliate molecular biology.
- 2002 Chair of "Tree of Life" section. Gordon conference on molecular evolution. Ventura, CA
- 2001-2002 Participant in NSF funded workshops on developing an 'Evolutionary Synthesis Center.'
- 2001 Organizer for New England Molecular Evolutionary Biologists (NEMEB) conference. Smith College.
- 2000- Founded research program in the biological sciences at Smith College for students from underrepresented groups. Supported by the Dean of Faculty's office.
- 2000-05 Member, board of reviewers, *Journal of Eukaryotic Microbiology*.
- 1999, 2001 Faculty advisor for two students at the Council for Undergraduate Research's "Posters on the Hill" session: Tovah Salcedo (2001) and Jennifer L. Riley (1999).
- 1999 Guest Editor for supplemental volume of *American Naturalist* "Evolutionary relationships among eukaryotes"
- 1998 Co-organizer (with M.L. Sogin) of first SMBE/SSE/SSB symposium "Evolutionary relationships among eukaryotes," Vancouver Canada.
- Ongoing *Ad hoc* reviewer for intro biology and microbiology textbooks from Sinauer Press Assoc.
- Ongoing *Ad hoc* reviewer for *Molecular Biology & Evolution*, *Trends in Ecology & Evolution*, *International Journal of Systematic and Evolutionary Microbiology*

PROFESSIONAL SOCIETIES

- American Society of Microbiologists
- International Society of Evolutionary Protistology
- Society for Molecular Biology & Evolution
- Society for the Study of Evolution
- Society of Protozoology

UNDERGRADUATES MENTORED SINCE '98: 28 total

Jennifer Riley '99, Rachel Israel '00, Jessica Linzmeier '00, Jill Testerman '00, Juliet Christian-Smith '01, Anna Campbell '01, Tracy Levin '01, Erica Lasek-Nesselquist '02, Kim Porter '02, Tovah Salcedo '02, Nisha Gandhi '03, Alexandra Houston '03, Kimberly Wade '03, Lindsey Able '03, Tarka Ayres '03, Nora Wilkins '03, Angela Baron AC, Jessica Cardillo '04, Kaveri Rajaraman '04 (MHC), Kate Pirog '04, Amanda Schack '04, Casey McGrath '05, Jessica Wallis '05, Kate Brenneman '06, Elyse Lasser '06, Tessa Robinson '06, Frances Terry '06, Nikki Knight '07.

GRADUATE STUDENTS:

Micah Dunthorn, Ph.D. candidate 2003-

Mary Doherty, M.S. candidate, Smith College 2003-

Jacob Bornstein, Ph.D. candidate: Organismic & Evolutionary Biology, UMass, 2002-2003

Louise Mead, Ph.D. 2000, Organismic & Evolutionary Biology, UMass-Amherst

POSTDOCTORAL FELLOW

Rebecca Zufall, NSF Microbiology Postdoc, 2003-

PUBLICATIONS (* = undergraduate author, # = graduate author)**Articles in Preparation**

Katz, L.A., J. Bornstein and S.V. Muse. Adaptive Genome Evolution in Ciliates: Insights from multigene analyses

Katz, L.A., Snoeyenbos-West, O.L.O., and F. P. Doerder. Unusual patterns of molecular evolution at the *SerH* surface antigen locus in *Tetrahymena thermophila*: implication for estimates of effective population

Snoeyenbos-West, O.L.O., K. Pirog, G. McManus and L.A. Katz. Cryptic Species of the Tide Pool Ciliate *Strombidium oculatum*: Reframing the Microbial "Everything is Everywhere" Debate

*Griffin, A., O.L.O. Snoeyenbos-West and L.A. Katz. Molecular and Morphological Analyses Reveal Tremendous Diversity of the Freshwater Ciliates *Halteria* spp., *Meseres corlissi*, and *Neohalteria* sp

Peer-reviewed articles

Snoeyenbos-West, O.L.O., *A. Campbell, J. Cole, D.W. Coats and L.A. Katz. 2004. Molecular phylogeny of phyllopharyngean ciliates and their group I introns. *J. Eukaryot. Microbiol.* **51**: 441-450.

Katz, L.A., *E. Lasek-Nesselquist, #J. Bornstein and S.V. Muse. 2004. Dramatic diversity of histone H4 sequences in ciliates. *Mol Biol. Evol.* **21**: 555-562.

*McGrath, C. and L.A. Katz. 2004. Genome diversity in microbial eukaryotes. *Trends Ecol. Evol.* **19**: 32-38.

Katz, L.A., *E. Lasek-Nesselquist and O.L.O. Snoeyenbos-West. 2003. Structure of the micronuclear α -tubulin gene in the phyllopharyngean ciliate *Chilodonella uncinata*: implications for the evolution of chromosomal processing. *Gene* **315**: 15-19.

Jacobs, M.E., A. Sánchez-Blanco, L.A. Katz, and L.A. Klobutcher. 2003. Tec3: A New Developmentally Eliminated DNA Element in *Euplotes crassus*. *Eukaryot. Cell.* **2**: 103-114.

Snoeyenbos-West, O.L.O., *Salcedo, T., G.B. McManus and L.A. Katz. 2002. Insights into the diversity of choreotrich and oligotrich ciliates (Class: Spirotrichea) based on genealogical analyses of multiple loci. *Int. J. Syst. Evol. Micro.* **52**: 1901-1913.

Katz, L.A. 2002. Lateral gene transfers and the evolution of eukaryotes: theories and data. *Int. J. Syst. Evol. Micro.* **52**: 1893-1900.

*Israel, R.I., S. L. Kosakovsky Pond, S. Muse and L.A. Katz. 2002. Evolution of duplicated alpha-tubulin genes in ciliates. *Evolution.* **56**: 1110-1122.

#Mead, L.S., S.G. Tilley and L.A. Katz. 2001. Genetic structure of the Blue Ridge dusky salamander (*Desmognathus orestes*): inferences from allozymes, mitochondrial DNA and behavior. *Evolution.* **55**: 2287-2302.

*Lasek-Nesselquist, E. and L.A. Katz. 2001. Phylogenetic position of *Sorogena stoianovitchae* and relationships within the Class Colpodea (Ciliophora) based on ssu rDNA sequences. *J. Euk. Micro.* **48**: 604-607.

- * Riley, J.L. and L.A. Katz. 2001. Widespread distribution of extensive chromosomal fragmentation in ciliates. *Mol. Biol. Evol.* **18**: 1372-1377.
- Katz, L.A. 2001. Evolution of nuclear dualism in ciliates: a reanalysis in light of recent molecular data. *Int. J. Evol. Syst. Microbiol.* **51**: 1587-1592.
- Katz, L.A., *E.A. Curtis, M. Pfunder and L.F. Landweber. 2000. Characterization of novel sequences from distantly related taxa using walking PCR. *Mol. Phylo. Evol.* **14**: 318-321.
- Katz, L.A. and J.D. Berger. 1999. Parade of the little millions. *American Naturalist* **154**: S93-S95.
- Katz, L.A. 1999. The tangled web: gene genealogies and the origin of eukaryotes. *American Naturalist* **154**: S137-S145.
- Katz, L.A. 1998. Changing perspectives on the origin of eukaryotes. *Trends Ecol. Evol.* **13**: 493-497.
- Katz, L.A. and R.G. Harrison. 1997. Balancing selection on electrophoretic variation of the phosphoglucose isomerase gene in two species of field crickets: *Gryllus pennsylvanicus* and *G. veletis*. *Genetics*. **147**: 609-621.
- Katz, L.A. 1997. Characterization of the phosphoglucose isomerase gene from crickets: an analysis of phylogeny, amino acid conservation and nucleotide composition. *Insect Mol. Biol.*, **6**: 305-318.
- Katz, L.A. 1996. Transkingdom transfer of the phosphoglucose isomerase gene. *J. Mol. Evol.* **43**: 453-459.
- Katz, A.M. and L.A. Katz. 1991. Molecular biology in cardiology: A paradigmatic shift *J. Mol. Cell Cardiol.* **23**: 403-408.

Book chapters:

- Katz, L.A. 2004. "Eukaryotic Diversity - a synoptic view." Invited chapter (pp. 57-65) in *Microbial Diversity & Bioprospecting*. A.T. Bull, editor. ASM Press, Washington D.C.

Other publications:

- Katz, L.A. 2002. "Protists: origin and diversification of eukaryotes." Invited contribution to the *Oxford Encyclopedia of Evolution*. Mark Pagel, ed. Oxford University Press, Oxford, pp.956-961.
- Katz, L.A. (guest editor). 1999. Evolutionary Relationships Among Eukaryotes. *American Naturalist* **154**. October supplement.
- Landweber, L.F. and Katz, L.A. 1998. Evolution: lost worlds (meeting review). *Trends Ecol. Evol.* **13**: 93-94.
- Lemon, K.M., L.A. Katz and N.J. Rosenberg. 1991. Uncertainties with Respect to Biogenic Emissions of Methane and Nitrous Oxide. Report for Climate Resources Program, Resources for the Future, Washington, D.C.
- Rosenberg, N.J. and L.A. Katz. 1991. Climate variability and Great Plains agriculture. pp. 55-64 in Proceedings of the Symposium on Impacts of Climatic Change and Variability on the Great Plains. Dept. of Geography Occasional Paper, University of Waterloo, Canada.

Published abstracts:

- *E. Lasek-Nesselquist and L.A. Katz. 2002. "Histone H4 diversity in ciliates." *J. Euk. Micro.* **49**: 3A.

- *T. Salcedo, O. Snoeyenbos-West, G. McManus and L. Katz. 2002. "Phylogenetic relationships among members of the ciliate class Spirotrichea based on multiple molecular markers." *J. Euk. Micro.* **49**: 5A.
- O. Snoeyenbos-West, *T. Salcedo, , G. McManus and L. Katz. 2002. "Biogeography and level of endemism in ciliate populations from coastal environments (poster)." *J. Euk. Micro.* **49**: 6A.
- L.A. Katz. 2000. Evolution of chromosomal rearrangements in ciliates: a reinterpretation in light of phylogeny (abstract). *J. Euk. Micro.* **47**: 3A.
- *Riley, J.L. and L.A. Katz. 2000. Evolution of nuclear dimorphism in ciliates: insights from the suctorians (abstract). *J. Euk. Micro.* **47**: 3A.