

Biographical sketch

Natalia Komarova

(i) Professional preparation:

1988-1993: M.S. in Physics, Moscow State University (Diploma with Highest Honors).

1993-1994: M.S. in Applied Mathematics, the University of Arizona, Tucson.

1994-1998: Ph.D. in Applied Mathematics, the University of Arizona, Tucson.

(ii) Appointments:

2006 –: Associate Professor, Department of Mathematics, University of California, Irvine.

2004-2006: Assistant Professor, Dept of Mathematics and Dept of Eco & Evo, UCI

2003-2005: Assistant Professor, Department of Mathematics, Rutgers University.

2000-2003: Member, Program in Theor. Biology, Institute for Advanced Study, Princeton.

2001-2002: Visiting Scholar, the University of Chicago.

1999-2000: Member, School of Mathematics, Institute for Advanced Studies, Princeton.

1998-1999: Research Fellow, Mathematics Institute, the University of Warwick, UK.

1993-1998: Research Assistant, Program in Applied Mathematics, the University of Arizona.

(iii) Publications:

Five publications most relevant to the proposal

- Komarova, N.L. (2004) Replicator-mutator equation, universality property and population dynamics of learning. *Jour. of Theor. Biol.* 230(2), pp. 227-239.
- Komarova, N.L. and Niyogi, P. (2004) Optimizing the mutual intelligibility of linguistic agents in a shared world. *Jour. of Artificial Intelligence*, 154(1-2), pp. 1-42.
- Nowak, M.A., Komarova, N.L. & Niyogi, P. (2002) Computational and evolutionary aspects of language. *Nature*, **417**, pp. 611-617.
- Komarova, N.L. & Rivin, I. (2003). Harmonic mean, random polynomials and stochastic matrices. *Advances in Appl. Math.*, 31(2), pp. 501–526.
- Nowak, M.A., Komarova, N.L. and Niyogi, P. (2001) Evolution of universal grammar. *Science*, **291**, pp. 114–118.

Five other publications

- Komarova, N.L., Niyogi, P. & Nowak, M.A. (2001) Evolutionary dynamics of grammar acquisition. *Jour. Theor. Biol.*, **209**(1), pp. 43–59.
- Komarova, N.L. & Nowak, M.A. (2003) Language dynamics in finite populations. *Jour. of Theor. Biol.* 221, pp. 445-457.
- Komarova, N.L. and Nowak, M.A. (2003) Language, learning and evolution, in S. Kirby & M. Christiansen (eds.) *Language Evolution: The States of the Art*, pp. 317-337, Oxford University Press.
- Komarova, N.L. and Nowak, M.A. (2001) Population dynamics of grammar acquisition, in A. Cangelosi & D. Parisi (eds.) *Simulating the Evolution of Language*, pp. 149-164, Springer Verlag, London.
- Komarova, N.L. and Wodarz, D. (2005) Drug resistance in cancer: principles of emergence and prevention. *Proc. Natl. Acad. Sci.* **102** (27), pp. 9714-9.

(iv) Synergetic activities:

- Discover the Physical Sciences 2005-2006: a lecturer at the Breakfast Lecture Series at UCI, aimed at the general public. Topic: “Mathematics can cure: Understanding cancer in a new way”.
- 2002-2003 - Participant in the activities of the Student Achievement & Advocacy Services, an organization dedicated to helping promising students maximize their potential. This organization is developing an integrated system of programs that provide advocacy, guidance, mentoring, and scholarships. Participated in the *Adventures of the Mind* conference aimed at providing guidance to high school students.
- The 2002 Prize for Promise recipient. The Prize’s main objective is to identify a woman who can serve as a role model for a generation of younger women making career and life choices.
- Since 2002: a member of DIMAX (Center for Discrete Mathematics and Theoretical Computer Science Founded as an NSF Science and Technology Center). 2004 - co-organized a conference “Genomic instability: biological and mathematical approaches” (with A. Levine).
- Wrote the textbook “Computational biology of cancer: lecture notes and mathematical modeling” (with D. Wodarz, World Scientific, 2005).

(iv) Collaborators and other affiliations

(a) Collaborators: Pierre Baldi (UCI), Lee Bardwell (UCI), Eleanor Barnes (Oxford), Richard Boland (Baylor University Medical Center), Philip Chen (UCI), Ajay Goel (Baylor University Medical Center), Yoh Iwasa (Kyushu), Prasad Jallepalli (Sloan Kettering), Kimberly Jameson (UCI), Andrey Korotaev (Moscow), Paul Klenerman (Oxford), David Krakauer (Santa Fe), Christoph Lengauer (Johns Hopkins), John Lowengrub (UCI), Junia Melo (Imperial, UK), Franzisca Michor (Harvard), Vladimir Mironov (Medical University of South Carolina), Louis Narens (UCI), Qing Nie (UCI), Partha Niyogi (Chicago), Martin Nowak (Harvard), Igor Rivin (Temple), Anirvan Sengupta (Rutgers), George Shaw (Alabama), Ie-Ming Shih (Sidney Kimmel Cancer Center), Avy Soffer (Rutgers), Bert Vogelstein (Johns Hopkins), Liming Wang (Rutgers), Dominik Wodarz (UCI), Lin Wu (UCI), Xiufen Zou (Wuhan, China).

(b) PhD Thesis Adviser: Prof. A.C. Newell (University of Arizona).

(c) Thesis adviser: Supervising graduate students: Ray Mendoza (2005-present), Allen Katouli (2006-present)

Co-supervised graduate students: Liming Wang (2003-2004), Diana David (2003-2004), Lin Wu (2006), Paul Macklin (2005-2006)