CURRICULUM VITAE

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EDUCATION:

1978 - 1984 Candidate of Biology (PhD) (Evolutionary Genetics) from Research Computing Center, Pushchino

1973 - 1978 Diploma of Higher Education (MSc) (Zoology and Genetics) from Lomonosov Moscow Federal University

RESEARCH EXPERIENCE:

2006 - Professor, Department of Ecology and Evolutionary Biology, University of Michigan

1999 - 2006 Senior Investigator, National Center for Biotechnology Information, NIH

1993 - 1999 Assistant and Associate (1996) Professor, Section of Ecology and Systematics, Cornell University

1990 - 1992 Associate Visiting Scientist, Lab. of Genetics, U. of Wisconsin, Madison; Research Associate, Department of Ecology and Evolution, U. of Chicago; Research Associate, Department of Biology, U. of Oregon, Eugene

1978 - 1990 Junior Researcher and Researcher (1986), Research Computing Center, Pushchino, USSR

TEACHING EXPERIENCE:

2011 - now Moscow State University. Evolutionary Biology

2007 - now University of Michigan. Introduction to Evolutionary Biology, Evolution at the Population Level, Importance of the Evolution of Life outside Natural Sciences.

1993 - 1999 Cornell University. Evolution (two sophomore-level courses: for biology majors and for non-majors); Population and Evolutionary Ecology

(advanced undergraduate course, with D. Winkler); Population Genetics (advanced undergraduate course); Theoretical Population Genetics (introductory graduate course); Mathematical Ecology (introductory graduate course, with C. Castillo-Chavez); Evolutionary Genetics of Reproduction (graduate course); Genetics of Structured Populations (graduate course, with R. Durret and C. Green); Speciation (advanced graduate course).

1991 University of Chicago. Evolution of Reproduction (with B. and D. Charlesworth and S. Pruett-Jones)

1984 - 1990 Moscow State University. Population Genetics; Mathematical and Computer Methods in Biology, Moscow State University (a team course)

1981 - 1989 Pushchino High School. Advanced Biology (with S. I. Rozanov)

GRANTS:

1995 - 1998 PI to NSF grant "Evolutionary Genetics of Deleterious Mutations"

1996 - 1998 PI to NSF grant "The Effect of Relaxed Selection on Population Fitness"

1999 - 2002 co-PI (later, consultant) to NSF grant "Recessive Lethals in Wild Fish Populations"

2010 - 2015 PI to MON (Russia) grant "Phylogenetic analysis of complex selection in molecular evolution"

2016 - 2018 PI to RSF (Russia) grant "Genomic analysis of deleterious mutations"

GEOGRAPHY OF INVITED PRESENTATIONS:

Baku (Azerbajan); Montreal, Toronto (Canada); Beijing (China); San Jose (Costa Rica); Cologne, Heidelberg, Seewiesen (Germany); Debrecen (Hungary); Sde Boker, Eilat, Haifa, Tel Aviv, Rehovot (Israel); Riga (Latvia); Ignalina, Vilnius (Lithuania); Cisinau (Moldova); Chernogolovka, Dubna, Moskva, Novosibirsk, Primorskiij, Pushchino, Sankt-Piterburg (Russia); El Escorial (Spain); Stockholm (Sweden); Bath, Brighton, Cambridge, Edinburgh, London, Liverpool, Oxford, Warwick (UK); Kyiv (Ukraine); Ann Arbor, Asilomar, Baltimore, Bethesda, Blacksburg, Boston, Boulder, Cold Spring Harbor, Atlanta, Davis, DeKalb, Madison, New Haven, Raleigh, Rochester, Salt Lake City, Santa Barbara, Santa Cruz, Snowbird, St. Paul, Stony Brook (USA); Samarkand (Uzbekistan).

PUBLICATIONS:

1. Kondrashov A. S. (1982). Selection against harmful mutations in large sexual and asexual populations. *Genetical Research* **40**, 325-332.

2. Kondrashov A. S. (1983). Multilocus model of sympatric speciation. I. One character. *Theoretical Population Biology* **24**, 121-135.

3. Kondrashov A. S. (1983). Multilocus model of sympatric speciation. II. Two characters. *Theoretical Population Biology* **24**, 136-144.

4. Kondrashov A. S. (1984). Rate of evolution in a changing environment. *Journal of Theoretical Biology* **107**, 249-260.

5. Kondrashov A. S. (1984). A possible explanation of cyclical parthenogenesis. *Heredity* **52**, 307-308.

6. Kondrashov A. S. (1984). Deleterious mutations as an evolutionary factor. I. The advantage of recombination. *Genetical Research* **44**, 199-217.

7. Kondrashov A. S. (1985). Deleterious mutations as an evolutionary factor. II. Facultative apomixis and selfing. *Genetics* **111**, 635-653.

8. Kondrashov A. S. (1986). Multilocus model of sympatric speciation. III. Computer simulations. *Theoretical Population Biology* **29**, 1-15.

9. Kondrashov A. S. and Mina M. V. (1986). Sympatric speciation: when is it possible? *Biological Journal of Linnean Society* **27**, 201-223.

10. Kondrashov A. S. (1988). Deleterious mutations as an evolutionary factor. III. Mating preference and some general remarks. *Journal of Theoretical Biology* **131**, 487-496.

11. Kondrashov A. S. (1988). Deleterious mutations and the evolution of sexual reproduction. *Nature* **336**, 435-440.

12. Kondrashov A. S. and Crow J. F. (1988). King's formula for the mutation load with epistasis. *Genetics* **120**, 853-856.

13. Kondrashov A. S., Beridze T. G. and Chiaureli N. B. (1990). Two regions of M13 phage genome hybridizing with human DNA are similar to several keratin genes. *Biochimie* **72**, 867-871.

14. Kondrashov A. S. and Crow J. F. (1991). Haploidy or diploidy: which is better? *Nature* **351**, 314-315.

15. Shabalina S. A., Yurieva O. V. and Kondrashov A. S. (1991). On the frequencies of nucleotides and nucleotide substitutions in conservative regulatory DNA sequences. *Journal of Theoretical Biology* **149**, 43-54.

16. Kondrashov A. S. (1992). Species and speciation. *Nature* **356**, 752 (Scientific Correspondence).

17. Kondrashov A. S. and Turelli M. (1992). Deleterious mutations, apparent stabilizing selection and maintenance of quantitative variation. *Genetics* **132**, 603-618.

18. Kondrashov A. S. (1992). The third phase of Wright's shifting-balance: a simple analysis of the extreme case. *Evolution* **46**, 1972-1975.

19. Kondrashov A. S. (1993). Classification of hypotheses on the advantage of amphimixis. *Journal of Heredity* **84**, 372-387.

20. Kondrashov A. S. and Crow J. F. (1993). A molecular approach to measuring the human genomic deleterious mutation rate. *Human Mutation* **2**, 229-234.

21. Shnol E. E. and Kondrashov A. S. (1993). The effect of selection on the phenotypic variance. *Genetics* **134**, 995-996.

22. Kondrashov A. S. (1994). Muller's ratchet under epistatic selection. *Genetics* **136**, 1469-1473.

23. Kondrashov A. S. (1994). Mutation load under vegetative reproduction and cytoplasmic inheritance. *Genetics* **137**, 311-318.

24. Kondrashov A. S. (1994). Sex and deleterious mutation. *Nature* **369**, 99-100 (News and Views).

25. Kondrashov A. S. (1994). Gradual origin of amphimixis by natural selection. In: M. Kirkpatrick, ed. *The Evolution of Haploid-Diploid Life Cycles*. Lectures on Mathematics in the Life Sciences, vol. **25**, 27-51.

26. Kondrashov A. S. (1994). The asexual ploidy cycle and the origin of sex. *Nature* **370**, 213-216.

27. Shnol E. E. and Kondrashov A. S. (1994). On some relations between different characteristics of selection. *Journal of Mathematical Biology* **32**, 835-840.

28. Kondrashov A. S. and Houle D. (1994). Genotype-environment interactions and the estimation of the genomic mutation rate in *Drosophila melanogaster*. *Proceedings of the Royal Society, ser. B* **258**, 221-227.

29. Kondrashov A. S. (1995). Dynamics of unconditionally deleterious mutations under soft selection. *Genetical Research* **65**, 113-121.

30. Kondrashov A. S. (1995). Modifiers of reproduction under the mutation-selection balance: general approach and the evolution of mutability. *Genetical Research* **66**, 53-69.

31. Kondrashov A. S. (1995). Contamination of the genome by very slightly deleterious mutations: why have we not died 100 times over? *Journal of Theoretical Biology* **175**, 583-594.

32. Nazipova N. N., Shabalina S. A., Ogurtsov A. Y., Kondrashov A. S., Roytberg M. A., Buryakov G. V. and Vernoslov S. E. (1995). SAMSON: a software package for the biopolymer primary structure analysis. *CABIOS* **11**, 423-426.

33. Kondrashov A. S. and Yampolsky L. Y. (1996). High genetic variability under the balance between symmetric mutation and fluctuating stabilizing selection. *Genetical Research* **68**, 157-164.

34. Kondrashov A. S. and Yampolsky L. Y. (1996). Evolution of amphimixis and recombination under fluctuating selection in one and many traits. *Genetical Research* **68**, 165-173.

35. Khibnik A. I. and Kondrashov A. S. (1997). Three mechanisms of Red Queen dynamics. *Proceedings of the Royal Society, ser. B* **264**, 1049-1056.

36. Houle D., Kondrashov A. S., Yampolsky L. Y., Morikawa B., Caldwell S. and Steponkus P. L. (1997). The effect of cryopreservation on the lethal mutation rate in *Drosophila melanogaster* embryos. *Genetical Research* **69**, 209-213.

37. Shabalina S. A., Yampolsky L. Y. and Kondrashov A. S. (1997). Rapid decline of fitness in panmictic populations of *Drosophila* under relaxed selection. *Proceedings of the National Academy of Sciences USA* **94**, 13034-13039.

38. Kondrashov A. S. (1997). Evolutionary genetics of life cycles. *Annual Review of Ecology and Systematics* **28**, 391-435.

39. Kondrashov A. S. (1998). Measuring spontaneous deleterious mutation process. *Genetica* **102/103**, 183-197.

40. Kondrashov A. S., Yampolsky L. Y. and Shabalina S. A. (1998). On the sympatric origin of species by means of natural selection. In: *Endless Forms: Species and Speciation* (D. J. Howarth and S. H. Berlocher, eds.), pp. 90-98. Oxford Univ. Press.

41. Kondrashov A. S. and Shpak M. (1998). On the origin of species by means of assortative mating. *Proceedings of the Royal Society, ser. B* **265**, 2273-2278.

42. Shpak M. and Kondrashov A. S. (1999). Applicability of the hypergeometric phenotypic model to haploid and diploid populations. *Evolution* **53**, 600-604.

43. Yampolsky L. Y., Webb C. T., Shabalina S. A. and Kondrashov A. S. (1999). Rapid accumulation of a vertically transmitted parasite triggered by relaxation of natural selection among hosts. *Evolutionary Ecology Research* **1**, 581-589.

44. Shabalina S. A. and Kondrashov A. S. (1999). Pattern of selective constraint in *C. elegans* and *C. briggsae* genomes. *Genetical Research* **74**, 13-22.

45. Kondrashov A. S. and Kondrashov F. A. (1999). Interactions among quantitative traits in the course of sympatric speciation. *Nature* **400**, 351- 354.

46. Kondrashov A. S. (1999). Comparative genomics and evolutionary biology. *Current Opinion in Genetics and Development* **9**, 624-629.

47. Koonin E. V., Aravind L. and Kondrashov A. S. (2000). The impact of comparative genomics on our understanding of evolution. *Cell* **101**, 573-576.

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49. Wolf Y. I., Kondrashov A. S. and Koonin E. V. (2000). Interkingdom gene fusions. *Genome Biology* **1** (6), Research 0013.

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51. Kondrashov A. S. (2001). Sex and U. *Trends in Genetics* **17**, 75-77.

52. Yang H.-P., Tanikawa A. Y., Van Voorhies W. A., Silva J. C. and Kondrashov A. S. (2001). Whole-genome effects of EMS-induced mutation on nine quantitative traits in outbred *Drosophila melanogaster*. *Genetics* **157**, 1257-1265.

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54. Sunyaev S., Ramensky V., Koch I., Lathe III W., Kondrashov A. S. and Bork P. (2001). Prediction of deleterious human alleles. *Human Molecular Genetics* **10**, 591-597.

55. Shabalina S. A., Ogurtsov A. Y., Kondrashov V. A. and Kondrashov A. S. (2001). Selective constraint in intergenic regions of human and mouse genomes. *Trends in Genetics* **17**, 373-376.

56. Kondrashov F. A. and Kondrashov A. S. (2001). Multidimensional epistasis and the disadvantage of sex. *Proceedings of the National Academy of Sciences USA* **98**, 12089-12092.

57. Houle D. and Kondrashov A. S. (2002). Coevolution of costly mate choice and condition-dependent display of good genes. *Proceedings of the Royal Society, ser. B* **269**, 97-104.

58. Kondrashov A. S. and Shabalina S. A. (2002). Classification of common conserved sequences in mammalian intergenic regions. *Human Molecular Genetics* **11**, 669-674.

59. Webb C. T., Shabalina S. A., Ogurtsov A. Y. and Kondrashov A. S. (2002). Analysis of similarity within 142 pairs of orthologous intergenic regions of *Caenorhabditis elegans* and *C. briggsae*. *Nucleic Acids Research* **30**, 1233-1239.

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61. Silva J. C. and Kondrashov A. S. (2002). Patterns in spontaneous mutation revealed by human-baboon sequence comparison. *Trends in Genetics* **18**, 544-547.

62. Kondrashov A. S., Sunyaev S. and Kondrashov F. A. (2002). Dobzhansky-Muller incompatibilities in protein evolution. *Proceedings of the National Academy of Sciences USA* **99**, 14878-14883.

63. Roytberg M. A., Shabalina S. A., Ogurtsov A. Y. and Kondrashov A. S. (2002). A hierarchical approach to aligning collinear regions of genomes. *Bioinformatics* **18**, 1673-1680.

64. Ogurtsov A. Y., Shabalina S. A., Roytberg M. A. and Kondrashov A. S. (2002). OWEN: aligning long collinear regions of genomes. *Bioinformatics* **18**, 1703-1704.

65. Kondrashov A. S. (2003). A direct estimate of human per nucleotide spontaneous mutation rate. *Human Mutation* **21**, 12-27.

66. Kondrashov A. S. (2003). Accumulation of Dobzhansky-Muller incompatibilities within a spatially structured population. *Evolution* **57**, 151-153.

67. Yang H.-P. and Kondrashov A. S. (2003). Cyclical dynamics under constant selection against mutations in haploid and diploid populations with facultative selfing. *Genetical Research* **81**, 1-6.

68. Shabalina S. A., Ogurtsov A. Y., Lipman D. J., Kondrashov A. S. (2003). Patterns in interspecies similarity correlate with nucleotide composition in mammalian 3'UTRs. *Nucleic Acids Research* **31**, 5433-5439.

69. Silva J. C., Shabalina S. A., Harris D. G., Spouge J. L. and Kondrashov A. S. (2003). Conserved transposable element sequences in noncoding regions: evidence for widespread domestication of MIR and L2 elements in the mouse and human genomes. *Genetical Research* **82**, 1-18.

70. Kondrashov A. S. and Rogozin I. B. (2004). Context of deletions and insertions in human coding sequences. *Human Mutation* **23**, 177-185.

71. Arnegard M. and Kondrashov A. S. (2004). Sympatric speciation by sexual selection alone is unlikely. *Evolution* **58**, 222-237.

72. Kondrashov F. A., Ogurtsov A. Y. and Kondrashov A. S. (2004). Bioinformatical assay of human gene morbidity. *Nucleic Acids Research* **32**, 1731-1737.

73. Bazykin G. A., Kondrashov F. A., Sunyaev S., Ogurtsov A. Y. and Kondrashov A. S. (2004). Positive selection at sites of multiple amino acid replacements since rat-mouse divergence. *Nature* **429**, 558-562.

74. Ogurtsov A. Y., Sunyaev S. and Kondrashov A. S. (2004). Length-based estimate of evolutionary distance and human-mouse divergence. *Genome Research* **14**, 1610-1616.

75. McCune A. R., Houle D., McMillan K., Anable R. and Kondrashov A. S. (2004). Two classes of deleterious recessive alleles in a natural population of zebrafish, *Danio rerio*. *Proceedings of the Royal Society, ser. B* **271**, 2025-2033.

76. Jordan I. K., Kondrashov F. A., Adzhubey I. A., Wolf Y. I., Koonin E. V., Kondrashov A. S. and Sunyaev S. (2005). A universal trend of amino acid gain and loss in protein evolution. *Nature* **433**, 633-638.

77. Yampolsky L. Y., Kondrashov F. A. and Kondrashov A. S. (2005). Strength of selection against amino-acid replacements in human proteins. *Human Molecular Genetics* **14**, 3191-3201.

78. Yampolsky L. Y., Allen C., Shabalina S. A. and Kondrashov A. S. (2005). Persistence time of loss-of-function mutations at non-essential loci affecting eye color in *Drosophila melanogaster*. *Genetics* **171**, 2133-2138.

79. Kondrashov A. S. (2005). Fruitfly genome is not junk. *Nature* **437**, 1106 (News and Views).

80. Bazykin G. A. and Kondrashov A. S. (2006). Rate of promoter class turn-over in yeast evolution. *BMC Evolutionary Biology* **6**, Research 14.

81. Kondrashov F. A. and Kondrashov A. S. (2006). Role of selection in fixation of gene duplications. *Journal of Theoretical Biology* **239**, 141-151.

82. Kondrashov F. A., Ogurtsov A. Y. and Kondrashov A. S. (2006). Selection in favor of nucleotides G and C diversifies evolution rates and levels of polymorphism at mammalian synonymous sites. *Journal of Theoretical Biology* **240**, 616-626.

83. Ogurtsov A. Y., Shabalina S. A., Kondrashov A. S. and Roytberg M. A. (2006). Analysis of internal loops within the RNA secondary structure in an almost quadratic time. *Bioinformatics* **22**, 1317-1324.

84. Houle D. and Kondrashov A. S. (2006). Mutation. In: Fox C. W. and Wolf J. B., eds. *Evolutionary Genetics: Concepts and Case Studies*. Oxford Univ Press, pp. 32-48.

85. Bernat J. A., Crawford G. E., Ogurtsov A. Y., Collins F. S., Ginsburg D. and Kondrashov A. S. (2006). Distant conserved sequences flanking endothelial-specific promoters contain tissue-specific DNase-hypersensitive sites and overrepresented motifs. *Human Molecular Genetics* **15**, 2098-2105.

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87. Artzy-Randrup Y. and Kondrashov A. S. (2006). Sympatric speciation under incompatibility selection. *Proceedings of the National Academy of Sciences USA* **103**, 11619-11624.

88. Bazykin G. A., Dushoff J., Levin S. A. and Kondrashov A. S. (2006). Bursts of non-synonymous substitutions in HIV-1 evolution reveal instances of positive selection at conservative protein sites. *Proceedings of the National Academy of Sciences USA* **103**, 19396-19401.

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92. Assis R, Kondrashov AS, Koonin EV, Kondrashov FA (2008). Nested genes and increasing organizational complexity of metazoan genomes. *Trends in Genetics* **24**, 475-478.

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94. Donmez N, Bazykin GA, Brudno M, Kondrashov AS (2009). Polymorphism due to multiple amino acid substitutions at a codon site within *Ciona savignyi*. *Genetics* **181**, 685-690.

95. Assis R, Kondrashov AS (2009). Rapid repetitive element-mediated expansion of piRNA clusters in mammalian evolution. *Proceedings of the National Academy of Sciences USA* **106**, 7079-7082.

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101. Ermakova EA, Kondrashov AS, Shnol EE (2011). On the relationship between the load and the variance of relative fitness. *Biology Direct* **6**, 20.

102. Bazykin GA, Kondrashov AS (2011). Detecting past positive selection through ongoing negative selection. *Genome Biology and Evolution* **3**, 1006-1013.

103. Assis R, Kondrashov AS (2012). Nonallelic gene conversion is not GC-biased in *Drosophila* or primates. *Molecular Biology and Evolution* **29**, 1291-1295.

104. Assis R, Kondrashov AS (2012). A strong deletion bias in nonallelic gene conversion. *PLoS Genetics* **8**(2): e1002508.

105. Naumenko SA, Kondrashov AS (2012). Rate and breadth of protein evolution are only weakly correlated. *Biology Direct* **7**(1):8.

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108. Bazykin GA, Kondrashov AS (2012). Major role of positive selection in evolution of conservative segments of *Drosophila* proteins. *Proceedings of the Royal Society B* **279**, 3409-3417.

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110. Terekhanova NV, Neverov A, Kondrashov AS, Bazykin GB, Seplyarskiy VB. (2013). Prevalence of multinucleotide replacements in evolution of primates and *Drosophila*. *Molecular Biology and Evolution* **30**, 1315-1325.

111. Vakhrusheva OA, Bazykin GA, Kondrashov AS (2013). Genome-level analysis of selective constraint without apparent sequence conservation. *Genome Biology and Evolution* **5**, 532-541.

112. Leushkin EV, Bazykin GA, Kondrashov AS (2013). Strong mutational bias towards deletions in the *Drosophila melanogaster* genome is compensated by selection. *Genome Biology and Evolution* **5**, 514-524.

113. Leushkin EV, Sutormin RA, Nabieva ER, Penin AA, Kondrashov AS, Logacheva MD (2013). The miniature genome of a carnivorous plant *Genlisea aurea* contains a low number of genes and short non-coding sequences *BMC Genomics* **14**: 476.

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116. Assis R, Kondrashov AS (2014). Conserved proteins are fragile. *Molecular Biology and Evolution* **31**, 419-424.

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