

JINCHUAN XING, Ph.D.

Department of Genetics
Human Genetic Institute of New Jersey
Center for Human Evolutionary Studies
Rutgers, the State University of New Jersey
145 Bevier Road, Piscataway, NJ, 08854
Phone: (732) 445-1027 ext 40059
Fax: (732) 445-1147
Email: Xing@biology.rutgers.edu

I. EDUCATION

Ph.D. (Biochemistry) Louisiana State University, Baton Rouge. 2005
B.S. (Biochemistry) Nankai University, Tianjin, P.R. China. 2000

II. PROFESSIONAL EXPERIENCE

11/12 – present Full Member, Center for Human Evolutionary Studies, Rutgers, the State University of New Jersey
01/12 – present Associate Member, Human Genetic Institute of New Jersey, Rutgers, the State University of New Jersey
01/12 – present Assistant Professor, Department of Genetics, Rutgers, the State University of New Jersey
08/06 – 12/11 Postdoctoral Fellow, Department of Human Genetics, University of Utah School of Medicine, Salt Lake City.
05/05 – 08/06 Postdoctoral Fellow, Department of Biological Sciences, Louisiana State University, Baton Rouge.
01/03 – 05/05 Graduate Research Assistant, Louisiana State University, Baton Rouge. Advisor: Dr. Mark Batzer.
07/01 – 12/02 Graduate Teaching Assistant, Louisiana State University, Baton Rouge.

III. PUBLICATIONS

1. Wu, W., E. A. Clark, G. J. Stoddard, W. S. Watkins, M. S. Esplin, T. A. Manuck, **J. Xing**, M. W. Varner, and L. B. Jorde (2013) Effect of Interleukin-6 Polymorphism on Risk of Preterm Birth within Population Strata: A Meta-Analysis IL6 meta-analysis *BMC Genetics* 14:30

2. Witherspoon, D. J., Y. Zhang, W. S. Watkins, H. Ha, **J. Xing**, M. A. Batzer, and L. B. Jorde (2013) Mobile Element Scanning (ME-Scan) identifies thousands of novel Alu insertions in diverse human populations. *Genome Research*
3. Ge, R. L., Q. Cai, Y.Y. Shen, Asan, L. Ma, Y. Zhang, X. Yi, Y. Chen, L. Yang, Y. Huang, R. He, Y. Hui, M. Hao, Y. Li, B. Wang, X. Ou, J. Xu, Y. Zhang, K. Wu, C. Geng, W. Zhou, T. Zhou, D. Irwin, Y. Yang, J. Kim, L. Ying, D. M. Larkin, J. Ma, H. Lewin, **J. Xing**, R. Platt II, D. A. Ray, L. Auvil, B. Capitanu, H. Bao, X. Zhang, G. Zhang, R. Murphy, J. Wang, Y.P. Zhang, J. Wang (2013) Draft genome sequence of the Tibetan antelope. *Nature Communications*
4. **Xing, J.**, D. J. Witherspoon, and L. B. Jorde (2013) Mobile element biology - new possibilities with high-throughput sequencing. *Trends in Genetics* 29(5):280-289
5. Kim, W., D. Londono, L. Zhou, **J. Xing**, A. Nato, A. Musolf, T. C. Matisse, S. J. Finch, and D. Gordon (2012) Single variant and multi-variant trend tests for genetic association with next generation sequencing that are robust to sequencing error. *Human Heredity* 74(3-4):172-83
6. The 1000 Genomes Project Consortium (2012) An integrated map of genetic variation from 1,092 human genomes. *Nature* 491:56-65
7. Watkins, W. S., **J. Xing**, C. Huff, D. J. Witherspoon, Y. Zhang, U. A. Perego, S. R. Woodward, and L. B. Jorde (2012) Genetic analysis of ancestry, admixture and selection in Bolivian and Totonac populations of the New World. *BMC Genetics* 13(1):39
8. Ge, R. L., T. S. Simonson, R. C. Cooksey, U. Tanna, G. Qin, C. D. Huff, D. J. Witherspoon, **J. Xing**, B. Zhengzhong, J. T. Prchal, L. B. Jorde, and D. A. McClain (2012) Metabolic insight into mechanisms of high-altitude adaptation in Tibetans. *Molecular Genetics and Metabolism* 106(2):244-7
9. Stringham, S. A., E. E., Mulroy, **J. Xing**, D. Record, M. W. Guernsey, J. T. Aldenhoven, E. J. Osborne, and M. D. Shapiro (2012) Divergence, convergence, and the origins of feral populations in Darwin's pigeons. *Current Biology* 22(4):302-8 (PMCID:3288640)
10. Huff, C. D., D. J. Witherspoon, Y. Zhang, C. Gatenbee, S. Kugathasan, H. Hakonarson, A. Whiting, C. Davis, W. Wu, **J. Xing**, W. S. Watkins, M. Bamshad, K. Bulayeva, T. S. Simonson, L. B. Jorde, and S. L. Guthery (2012) Crohn's disease and genetic hitchhiking at IBD5. *Molecular Biology and Evolution* 29(1):101-111 (PMCID:3245542)
11. Stewart, C.*, D. Kural*, M. P. Stromberg*, J. A. Walker, M. K. Konkel, A. M. Stutz, A. E. Urban, F. Grubert, H. Y. Lam, W.-P. Lee, M. Busby, A. R. Indap, E. Garrison, C. Huff, **J. Xing**, M. P. Snyder, L. B. Jorde, M. A. Batzer, J. O. Korbel, G. T. Marth, and 1000 Genomes Project (2011) A comprehensive map of mobile element insertion polymorphisms in humans. *PLoS Genetics* 7(8): e1002236 (PMCID:3158055)
12. Lyon, G. J. , T. Jiang, R. Van Wijk, W. Wang, P. M. Bodily, **J. Xing**, L. Tian, R. J. Robison, M. Clement, Y. Lin, P. Zhang, Y. Liu, B. Moore, J. T. Glessner, J. Elia, F.

- Reimherr, W. W. van Solinge, M. Yandell, H. Hakonarson, J. Wang, W. E. Johnson, Z. Wei, and K. Wang (2011) Exome sequencing and unrelated findings in the context of complex disease research: ethical and clinical implications. *Discovery Medicine* 12(62):41-55
13. Yandell, M., C. D. Huff, H. Hu, M. Singleton, B. Moore, **J. Xing**, L. B. Jorde, and M. G. Reese (2011) A probabilistic disease-gene finder for personal genomes. *Genome Research* 21(9):1529-42 (PMCID: 3166837)
 14. Rope, A. F., K. Wang, R. Evjenth, **J. Xing**, J. J. Johnston, J. J. Swensen, W. E. Johnson, B. Moore, C. D. Huff, L. M. Bird, J. C. Carey, J. M. Opitz, C. A. Stevens, T. Jiang, C. Schank, H. D. Fain, R. Robison, B. Dalley, S. Chin, S. T. South, T. J. Pysher, L. B. Jorde, H. Hakonarson, J. R. Lillehaug, L. G. Biesecker, M. Yandell, T. Arnesen, and G. J. Lyon (2011) Using VAAST to identify an X-Linked disorder resulting in lethality in male infants due to N-terminal acetyltransferase deficiency. *American Journal of Human Genetics* 89(1):28-43 (PMCID: 3135802)
 15. Roos, C., D. Zinner, L. S. Kubatko, C. Schwarz, M. Yang, D. Meyer, S. D. Nash, **J. Xing**, M. A. Batzer, M. Brameier, F. H. Leendertz, T. Ziegler, D. Perwitasari-Farajallah, T. Nadler, L. Walter and M. Osterholz (2011) Nuclear versus mitochondrial DNA: Evidence for hybridization in colobine monkeys. *BMC Evolutionary Biology* 11:77 (PMCID: 3068967)
 16. Huff, C. D.*, Witherspoon, D. J.*, Simonson, T. S., **J. Xing**, W. S. Watkins, Y. Zhang, T. M. Tuohy, D. W. Neklason, R. W. Burt, S. L. Guthery, S. R. Woodward, and L. B. Jorde (2011) Maximum-likelihood estimation of recent shared ancestry (ERSA) using shared genome segments. *Genome Research* 21(5):768-74 (PMCID: 3083094)
 17. Simonson, T. S., **J. Xing**, R. Barrett, E. Jerah, P. Loa, Y. Zhang, W. S. Watkins, D. J. Witherspoon, C. D. Huff, S. Woodward, B. Mowry, and L. B. Jorde (2011) Ancestry of the Iban Is Predominantly Southeast Asian: Genetic Evidence from Autosomal, Mitochondrial, and Y Chromosomes. *PLoS One* 6(1): e16338 (PMCID: 3031551)
 18. **Xing, J.**, W. S. Watkins, Y. Hu, C. D. Huff, A. Sabo, D. M. Muzny, M. J. Bamshad, R. A. Gibbs, L. B. Jorde, and F. Yu (2010) Inference of human expansion in Eurasia and genetic diversity in India. *Genome Biology* 11:R113 (PMCID: 3156952)
 19. The 1000 Genomes Project Consortium (2010) A map of human genome variation from population scale sequencing. *Nature* 467:1061-1073 (PMCID: 3042601)
 20. **Xing, J.**, W. S. Watkins, A. Shlien, E. Walker, C. D. Huff, D. J. Witherspoon, Y. Zhang, T. S. Simonson, R. B. Weiss, J. D. Schiffman, D. Malkin, S. R. Woodward and L. B. Jorde (2010) Toward a more Uniform Sampling of Human Genetic Diversity: A Survey of Worldwide Populations by High-density Genotyping. *Genomics* 96:199-210 (PMCID: 2945611)
 21. Witherspoon, D. J., **J. Xing**, Y. Zhang, W. S. Watkins, M. A. Batzer and L. B. Jorde (2010) Mobile element scanning (ME-Scan) by targeted high-throughput sequencing. *BMC Genomics* 11(1):410 (PMCID: 2996938)
 22. Simonson, T. S., Y. Yang, C. D. Huff, H. Yun, G. Qin, D. J. Witherspoon, Z. Bai, F. R. Lorenzo, **J. Xing**, L. B. Jorde, J. T. Prchal, and R. Ge (2010) Genetic Evidence for High-Altitude Adaptation in Tibet. *Science* 329 (5987):72-5

23. Simonson, T. S., Y. Zhang, C. D. Huff, **J. Xing**, W. S. Watkins, D. J. Witherspoon, S. R. Woodward and L. B. Jorde (2010) Limited Distribution of a Cardiomyopathy-Associated Variant in India. *Annals of Human Genetics* 74(2):184-8 (PMCID: 2901538)
24. Huff, C. D., **J. Xing**, A. R. Rogers, D. J. Witherspoon, and L. B. Jorde (2010) Mobile elements reveal small population size in the ancient ancestors of *Homo sapiens*. *Proceedings of the National Academy of Sciences, USA* 107:2147-2152 (PMCID: 2836654)
25. Witherspoon, D. J., W. S. Watkins, Y. Zhang, **J. Xing**, W. L. Tolpinrud, D. J. Hedges, M. A. Batzer and L. B. Jorde (2009) *Alu* repeats increase local recombination rates. *BMC Genomics* 10:530 (PMCID: 2785838)
26. Damert, A., J. Raiz, A. V. Horn, J. Löwer, H. Wang, **J. Xing**, M. A. Batzer, R. Löwer and G. G. Schumann (2009) 5'-transducing SVA retrotransposon groups spread efficiently throughout the human genome. *Genome Research* 19(11):1992-2008 (PMCID: 2775593)
27. Li, J., K. Han, **J. Xing**, H.-S. Kim, J. Rogers, O. A. Ryder, T. Disotell, B. Yue and M. A. Batzer (2009) Phylogeny of the macaques (Cercopithecidae: *Macaca*) based on *Alu* elements. *Gene* 448(2):242-9 (PMCID: 2783879)
28. **Xing, J.**, Y. Zhang, K. Han, A. H. Salem, S. K. Sen, C. D. Huff, Q. Zhou, E. F. Kirkness, S. Levy, M.A. Batzer, and L. B. Jorde (2009) Mobile elements create structural variation: analysis of a complete human genome. *Genome Research* 19(9):1516-26 (PMCID: 2752133)
29. Marchani E. E., **J. Xing**, D. J. Witherspoon, L. B. Jorde, and A. R. Rogers (2009) Estimating the age of retrotransposon subfamilies using maximum likelihood. *Genomics* 94(1):78-82 (PMCID: 2703446)
30. **Xing, J.**, W. S. Watkins, D. J. Witherspoon, Y. Zhang, S. L. Guthery, R. Thara, B. J. Mowry, K. Bulayeva, R. B. Weiss, and L. B. Jorde (2009) Fine-Scaled Human Genetic Structure Revealed by SNP Microarrays. *Genome Research* 19(5):815-25 (PMCID: 2675970)
31. **Xing, J.**, W. S. Watkins, Y. Zhang, D. J. Witherspoon, and L. B. Jorde (2008) High Fidelity of Whole-Genome Amplified DNA on High-Density Single Nucleotide Polymorphism Arrays. *Genomics* 92(6):452-6 (PMCID: 2659594)
32. **Xing, J.**, D. J. Witherspoon, W. S. Watkins, Y. Zhang, W. Tolpinrud and L. B. Jorde. (2008) HapMap tagSNP transferability in multiple populations: general guidelines. *Genomics* 92:41-51 (PMCID: 2471876)
33. **Xing, J.**, D. J. Witherspoon, D. A. Ray, M. A. Batzer and L. B. Jorde (2007) Mobile elements and primate evolution. *American journal of physical anthropology* Suppl 45: 2-19
34. Han K.*, M. K. Konkel*, **J. Xing*** (Co-first author), H. Wang*, J. Lee, T. J. Meyer, C. T. Huang, E. Sandifer, K. Hebert, E. W. Barnes, R. Hubley, W. Miller, A. F. A. Smit, B. Ullmer and M. A. Batzer (2007) Mobile DNA in Old World monkeys: a glimpse through the rhesus macaque genome. *Science* 316: 238-240 *These authors contributed equally to this work.

35. Rhesus Macaque Genome Sequencing and Analysis Consortium (2007) Evolutionary and biomedical insights from the rhesus macaque genome. *Science* 316: 222-234 [cover article]
36. **Xing, J.**, H. Wang, Y. Zhang, D. A. Ray, A. J. Tosi, T. R. Disotell and M. A. Batzer (2007) A mobile element based evolutionary history of guenons (Tribe Cercopithecini). *BMC Biology* 5:5 (PMCID: 1797000)
37. Herke S. W., **J. Xing**, D. A. Ray, J. W. Zimmerman, R. Cordaux and M. A. Batzer (2007) A SINE-based dichotomous key for primate identification. *Gene* 390:39-51
38. Ray, D. A., **J. Xing**, A.-H. Salem and M. A. Batzer (2006) SINEs of a nearly perfect character. *Systematic Biology* 55: 928-935
39. **Xing, J.***, H. Wang*, V. P. Belancio, R. Cordaux, P. L. Deininger and M. A. Batzer (2006) Emergence of new primate genes by retrotransposon-mediated sequence transduction. [cover article] *Proceedings of the National Academy of Sciences, USA* 103: 17608-17613 *These authors contributed equally to this work. (PMCID: 1693794)
40. Wang, H.*, **J. Xing*** (Co-first author), D. Grover*, D. J. Hedges, K. Han, J. A. Walker and M. A. Batzer (2005) SVA elements: a hominid specific retroposon family. [cover article] *Journal of Molecular Biology* 354:994-1007 *These authors contributed equally to this work.
41. **Xing, J.**, H. Wang, K. Han, D. A. Ray, C. H. Huang, L. G. Chemnick, C.-B. Stewart, T. Disotell, O. A. Ryder and M. A. Batzer (2005) A mobile element based phylogeny of Old World monkeys. *Molecular Phylogenetics and Evolution* 37:872-880
42. Hedges, D. J., R. Cordaux, **J. Xing**, D. J. Witherspoon, A. R. Rogers, L. B. Jorde and M. A. Batzer (2005) Modeling the amplification dynamics of human *Alu* retrotransposons. *PLOS Computational Biology* 1: e44 (PMCID: 1239904)
43. Han K.*, **J. Xing*** (Co-first author), H. Wang, D. J. Hedges, R. K. Garber, R. Cordaux and M. A. Batzer (2005) Under the Genomic Radar: The Stealth Model of *Alu* Amplification.[cover article] *Genome Research* 15:655-664 *These authors contributed equally to this work. (PMCID: 1088293)
44. Ray, D. A., **J. Xing**, D. J. Hedges, M. Hall, M. E. Laborde, B. A. Anders, B. R. White, J. D. Fowlkes, L. Chemnick, O. A. Ryder, and M. A. Batzer (2005) *Alu* insertion polymorphisms and Platyrrhine primate phylogenetic relationships. *Molecular Phylogenetics and Evolution* 35:117-126
45. **Xing, J.**, D. J. Hedges, K.D. Han, H. Wang, R. Cordaux and M.A. Batzer (2004) *Alu* elements mutation spectra: Molecular clocks and the effect of DNA methylation. *Journal of Molecular Biology* 344:657-682
46. Hedges, D. J., P. A. Callinan, R. Cordaux, **J. Xing**, E. Barnes and M. A. Batzer. (2004) Differential *Alu* mobilization and polymorphism among the human and chimpanzee lineages. *Genome Research* 14: 1068-1075 (PMCID: 419785)
47. Walker, J. A., R. K. Garber, D. J. Hedges, G. E. Kilroy, **J. Xing**, and M. A. Batzer (2004) Resolution of mixed human DNA samples using mtDNA sequence variants. *Analytical Biochemistry* 325: 171-173
48. Salem, A.-H., D. A. Ray, **J. Xing**, P. A. Callinan, J. S. Myers, D. J. Hedges, R. K. Garber, D. J. Witherspoon, L. B. Jorde and M. A. Batzer(2003) *Alu* elements and

Hominid phylogenetics. *Proceedings of the National Academy of Sciences, USA*. 22: 12787-12791 (PMCID: 240696)

49. **Xing, J.**, A.-H. Salem, D. J. Hedges, G. E. Kilroy, W. S. Watkins, J. E. Schienman, C.-B. Stewart, J. Jurka, L. B. Jorde and M. A. Batzer (2003) Comprehensive analysis of two *Alu* Yd subfamilies. *Journal of Molecular Evolution* 57: S76-S89
50. Callinan, P. A., D. J. Hedges, A.-H. Salem, **J. Xing**, J. A. Walker, R. K. Garber, W. S. Watkins, M. J. Bamshad, L. B. Jorde and M. A. Batzer (2003) Comprehensive analysis of *Alu* associated diversity on the human sex chromosomes. *Gene* 317: 103-110
51. Walker, J. A., G. E. Kilroy, **J. Xing**, J. Shewale, S. Sinha, and M. A. Batzer (2003) Human DNA quantitation using *Alu* element based PCR. *Analytical Biochemistry* 315: 122-128
52. Gao Y, **J. Xing**, M. Streuli, T.L. Leto and Y. Zheng (2001) Trp(56) of Rac1 specifies interaction with a subset of guanine nucleotide exchange factors. *Journal of Biological Chemistry* 276: 47530-4754

IV. RESEARCH SUPPORT

COMPLETED

K99HG005846 \$180,000 09/26/2010 – 03/31/2012
NIH Pathway to Independence Award (K99/R00)
NIH/NHGRI
High-throughput Mobile Element Genotyping Using Next-generation Sequencing
Principal Investigator

ACTIVE

R00HG005846 \$735,943 04/01/2012 – 02/28/2015
NIH Pathway to Independence Award (K99/R00)
NIH/NHGRI
High-throughput Mobile Element Genotyping Using Next-generation Sequencing
Principal Investigator

Busch Biomedical Grant \$25,000 07/01/2012 – 05/01/2014
Busch Biomedical Grant Program
Correlating piRNA and mobile element expression in human individuals
Principal Investigator

V. PRESENTATIONS

Platform and Invited Talks

Understanding Human Evolutionary History in the Genomics Era Center for Human Evolutionary Studies, Rutgers, the State University of New Jersey, Nov 2012. *Invited talk*

Population Dynamics of Human Mobile Elements 63rd Fujihara Seminar, a new horizon of retroposon research, Kyoto, Japan, Aug 2012. *Invited talk*

Mobile Elements Demonstrate that *Australopithecus* Effective Population Size was Twice that of *Homo* FASEB Summer Research Conferences on Mobile DNA in Mammalian Genomes, Snowmass, CO., Aug 2011. *Platform Presentation*

Toward a more Uniform Sampling of Human Genetic Diversity The American Society of Human Genetics 59th annual meeting, Honolulu, HI, Oct 2009. *Platform Presentation*

Genetic Variation Associated with Mobile Elements in an Individual Human Genome The genome instability satellite meeting of the American Society of Human Genetics 58th annual meeting, Philadelphia, PA, Nov 2008. *Platform Presentation*

Under the Genomic Radar: the Stealth Model of *Alu* Amplification FASEB Summer Research Conferences on Mobile Elements in Mammalian Genomes 2005, Tucson, AZ, Jun 2005. *Platform Presentation*

Under the Genomic Radar: the Stealth Model of *Alu* Amplification CBMM Seminar Series, Louisiana State University, Baton Rouge, LA, May 2005. *Platform Presentation*

VI. TEACHING

- | | |
|-------------|--|
| Spring 2013 | Honors Seminar (01:447:404:02), Rutgers, the State University of New Jersey |
| Oct. 2012 | <u>Bioinformatics: Genome Browser, BLAST, etc</u> , Topics in Molecular and Cell Biology (16:695:611:01), Rutgers, the State University of New Jersey |
| Oct. 2012 | <u>Genetic evidence for human high-altitude adaptation</u> , Genetics, Evolution, and Human Health (01:119:156), Rutgers, the State University of New Jersey |
| Apr. 2006 | <i>Guest Lecture</i> <u>Mobile elements</u> , Human Molecular Genetics (BIOL 4800), Louisiana State University |
| Nov. 2005 | <i>Guest Lecture</i> <u>Mobile elements and genomic diversity</u> , Evolution (BIOL 3040), Louisiana State University |

VII. PROFESSIONAL SERVICE

Editorial Activities

Associate Editor: Gene (2013-)

Editorial Board: Analytical Biochemistry (2012-), Gene (2011-)

Guest Editor: Comparative and Functional Genomics, for the special issue “Genomic Impact of Transposable Elements in Mammals” (2012)

Review Activities

Grant proposals: National Science Foundation (NSF), Netherlands Organisation for Health Research and Development (ZonMw), Arabian Gulf University Research Committee

Book Chapter: Human Evolutionary Genetics

Journal articles: American Journal of Human Genetics, Analytical Biochemistry, Annals of Human Genetics, Bioinformatics, Biotechniques, BMC Bioinformatics, BMC Genetics, Gene, Genetica, Genome Biology and Evolution, Genomics, European Journal of Human Genetics, Human Immunology, Human Molecular Genetics, Human Mutation, Mobile DNA, Molecular Biology and Evolution, Nucleic Acids Research, Plos Genetics, Plos One, Zoological Science.

Professional Societies

Member, American Association for the Advancement of Science 2010 - present

Member, American Society of Human Genetics 2007 - present

Member, American Society for Microbiology 2006

Full Member, Sigma Xi 2007

Departmental Service

Abstract Judge, Human Genetic Institute of New Jersey (HGINJ) Research Day (2012)

Member, Computational Genetics Major Committee (2012)

Member, Genetic Major Honors and Awards Committee (2013)

University Service

Member, Graduate Program in Molecular Biosciences Recruiting Committee (2012)

Member, Busch Biomedical Grant Program Committee (2013)

VIII. HONORS & AWARDS

- | | |
|------|--|
| 2011 | Nominee for the Searle Scholars Program |
| 2010 | Science Program for Excellence in Science - The American Association for the Advancement of Science |
| 2009 | ASHG Trainee Research Award finalist - The American Society of Human Genetics |
| 2005 | The Robert Scott and Louise Pierce Allen Award for the outstanding graduate student in biochemistry - Louisiana State University, Baton Rouge, LA. |