THE UNIVERSITY OF CHICAGO

Committee on Genetics, Genomics and Systems Biology
Committee on Evolutionary Biology
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CURRICULUM VITAE

Manyuan Long, Ph.D.

Professor of Genetics and Evolution

February 8, 2011

EDUCATION

Postdoctoral fellow, July 1 1993 -- October 31, 1997, Departments of Molecular and Cellular Biology and Organismic and Evolutionary Biology, Joint Appointment, laboratories of Professors Walter Gilbert and Richard C. Lewontin, Harvard University, Cambridge, MA 02138.

Ph.D., Genetics, University of California, Davis. Degree received December 12, 1992. Dissertation: The origin and evolutionary mechanisms of new genes. Department of Genetics. Laboratory of Professor Charles Langley.

M.S., Genetics, University of California, Davis. 1990.

M.S., Plant Genetics, 1985, Sichuan Agricultural University, Ya'an, Sichuan. Plant Quantitative Genetics Institute led by Professor Zhiren Gao.

B.S., Agronomy, 1982, Sichuan Agricultural University, Ya'an, Sichuan

PROFESSIONAL EXPERIENCE

Full professor with tenure, Department of Ecology and Evolution, Committees on Genetics and Evolutionary Biology, and The College, The University of Chicago. Started on January 1, 2005.

Senior Fellow, The Institute for Genomics & Systems Biology, The University of Chicago and Argonne National Laboratory, April 2007 – April 2012.

The Dean's Chair Professor, Tuft University (offered and declined), 2004.

Associate Professor with tenure, Department of Ecology and Evolution, Committees on Genetics and Evolutionary Biology, and The College, The University of Chicago. July 1, 2003 – December 31, 2004.

Assistant professor, Department of Ecology and Evolution, Committees on Genetics and Evolutionary Biology, and The College, The University of Chicago. November 1, 1997 – June 30, 2003.

Postdoctoral research associate, Joint Appointment, Department of Molecular and Cellular Biology (Walter Gilbert's laboratory) and Department of Organismic and Evolutionary Biology (R.C. Lewontin's laboratory), Harvard University, July 1993 -- October 31, 1997.

Research Assistant, Department of Genetics and Center for Population Biology, UC Davis, 1988--1992.

Teaching Associate, Principles of Genetics, UC Davis, 1989--1992.

RESEARCH INTERESTS AND IMPACTS

Origin and evolution of new genes:

- The phenotypic effects and functions of new genes and their roles in development.
- Evolutionary analysis of gene interactions with new genes;
- Copy number variation within Drosophila populations;
- Evolution of sex chromosomes and sex-related genes and the pattern of gene traffics.
- Genes and Genomes in plants: high origination rate of chimeric genes in the grass family.

Scientific impacts:

- Recognized for the start of the systematic investigation of new gene evolution.
- Contributed to the addition of the new chapters and sections about new gene evolution into major textbooks (e.g. Douglas Futuyma, 2005 and 2009, Evolution, Sinauer, Massachusetts; Wen-Hsiung Li, 1997, Molecular Evolution, Sinauer, Massachusetts; Roderic Page and Edward Holmes, 1998, Molecular Evolution. Blackwell Science London).

Social impacts:

- New York Times, Washington Times, Sacramento Bee, La Vanguardia**,** New Scientist, Scientist, Discover**,** and other news media in US and Europe reported my scientific discovers.
- Our new gene research results in a Nature Rev Genet article were cited as evidence in a successful defense of the First Amendment to the United States Constitution in the nationally famous case of Kitzmiller et al. vs. Dover Area School District et al in Pennsylvania.

HONORS

Allen G. Marr Prize for the Best Ph.D. Dissertation of the University of California, Davis, 1993.

David and Lucile Packard Fellowship for Science and Engineering, 1998.

National Science Foundation CAREER award, 2003.

Elected as the council Secretary officer for the major international academic organization in the field of molecular and genomic evolution: Society of Molecular Biology and Evolution (SMBE), 2010-2012).

Elected into the Board of Directors of the Chinese Biological Investigator Society (CBIS) in USA in 2009.

INTERVIEWS AND NEWS MEDIA

New Scientist (December 23, 2010):"New genes needed for survival too" (by Debora MacKenzie).

ScienceDaily (December 16, 2010): "Age Doesn't Matter: New Genes Are as Essential as Ancient Ones" (by Robert Mitchum)

ScienceNews (July 16, 2009): "Old gene, short new trick" (By Laura Sanders)

GenomeWeb Daily News (June 5, 2008): ***"***Copy Number Variation Subject to Natural Selection in Drosophila*"*(By Andrea Anderson).

Richard Dawkins.Net (May 27, 2008): *"*Courtship pattern shaped by emergence of gene in fruit flies*"*

The New York Times (May 6, 2008): Opinion \ The Wild Side: Genes Go Retro (by Olivia Judson).

Discover magazine (May 27, 2008): "A team of scientists led by Manyuan Long at the University of Chicago call it the sphinx gene" (By Andrew Moseman***).***

Discovery Channel (November 10, 2005): "Male Sexual Prowess Drives Evolution?"

La Vanguardia (August 28, 2004, Barcelona): "He sido el primero en ver cómo surge un gen".

The Scientist (April 6, 2004, London): "Genes constantly evolve".

The University of Chicago Chronicle (April 15, 2004): "Gene 'traffic' study overturns claims of earlier research";

Eesti Geenikeskus (Jan 22, 2004, Estonia), "*X kromosoomi geenid ja meessoo n)rkus";*

The Washington Times (January 22, 2004): "Gene traffic high on X chromosome";

The Atlanta Journal-Constitution (January 22, 2004): "Male genes: The weaker sex?"

Wissenschaft-online (January 23, 2004, Heidelberg): "Ausgeprägter Genexport des X-Chromosoms ";

La Recherche (N°374 - AVRIL 2004, Paris): "Attributs mâles protégés";

Diario Medico (January 23, 2004, Spain): "El tráfico de genes en el X es superior a lo que se pensaba";

The Scientist (February 2, 2004, London) : "Sex and the X";

Sciscape (February 12, 2004, Taiwan): "Escaping from the X";

Chicago Tribune (July 10: 2003): "Gene swap in plants surprises scientists"

Hyde Park Herald (June 4, 2003): "Fruit fly evolution, the 2-million question for professor"

The University of Chicago Chronicle (May 29, 2003): " Long receives nearly $2 million in grant funding from NSF, NIH";

The University of Chicago Chronicle (February 21, 2002): "Variations discovered in fourth chromosome of fruit fly";

Diario Medico (January 7, 2002, Spain): "El cromosoma 4 de la 'Drosophila' incluye regiones con historias evolutivas diferentes";

Science (Volume 290: 1065-1066, November 10, 2000): "Twinned Genes Live Life in the Fast Lane" ;

The University of Chicago Magazine (December 1998) and ***The University of Chicago Chronicle*** (October 15, 1998): "Packard Fellowship Awarded to Professor Studying Gene Fragments";

The New York Times (November 12, 1996): "Reading the History of Life in the Text of Modern Genes";
Harvard Gazette (December 12, 1996): "Evidence Found for Origin of Genes";
The Sacramento Bee (April 4, 1993): "UC Davis Student Stumbles Upon Boon for Darwin";

The Davis Enterprise (April 2, 1993): "UCD researchers study the origin of genes";
The California Aggie (April 8, 1993): "Imagination as important to discovery as facts";
The Davis Enterprise (June 15, 1993): "Marr Prize goes to genetics researcher for top dissertation".

PANEL MEMBER / GRANT REVIEWER

National Science Foundation, USA (also served NSF Advisory Panel)
National Institutes of Health, USA
Austrian Science Foundation, Austria
Health Research Board, Dublin, Ireland
Canada Foundation for Innovation, Canada
The Netherlands Organisation for Scientific Research, Netherlands
National Natural Science Foundation, China

EDITORIAL BOARD SERVICE

Genetics, the Genetics Society of America, Associate Editor (2008-2011).
Journal of Molecular Evolution, Associate Editor (2001-2008).
Faculty of 1000 biology (Section of Genetics and Evolution) (2002-2008)
Proceedings of the National Academy of Sciences of the United States of America (Guest Editor, 2008);
PLoS Biology (Academic Editor; 2008);
Biology Direct (2005-)
Journal of Experimental Zoology – B. Developmental and Molecular Evolution (2006-)
Journal of Systematics and Evolution (2009-)
Journal of Genetics & Genomics and Hereditas (2005-)
Genetica and *Contemporary Issues in Genetics and Evolution* (2002-2003)

JOURNAL AND BOOK REVIEWER

Biotechniques;
Current Biology;
FASEB Journal;
Gene;
Genetica;
Genetical Research;
Genetics;

Genome Research;
Journal of Molecular Evolution;
Molecular Biology and Evolution;
Molecular Ecology;
Molecular Genetics and Genomics;
Molecular Phylogenetics and Evolution;
Nature;
Nature Genetics;
Nature Methods;
Nature Reviews Genetics;
Nucleic Acid Research;
Plant Physiology;
PLoS Biology;
PLoS Genetics;
PLoS Computational Biology;
Plant Genome;
Proceedings of the National Academy of Sciences of the United States of America;
Quarterly Review of Biology;
Royal Society Proceedings B: Biological Letters;
Science;
Trends in Biotechnology;
Trends in Genetics;

Evolutionary biology textbook for Jones and Bartlett Publishers.

PROFESSIONAL AFFILIATIONS

Genetics Society of America (GSA);
American Association for Advancement of Science;
The Society of Molecular Biology and Evolution;
The
International Society of Molecular Evolution.

RESEARCH SUPPORT BY

National Science Foundation: PI (05/01/2011-04/31/2016).
National Institutes of Health (R01GM078070-03S1): PI (09/18/2009 -- 04/30/2011);
National Institutes of Health (R01GM078070-01A1): PI (05/01/2007 -- 04/30/2011);
National Science Foundation: Co-PI (08/01/2010-07/31/2014).
The Chicago Biomedical Consortium (Spark award), Co-I (03/01/2009-02/30/2011).
The Chicago Biomedical Consortium (Catalyst award C-006), Co-I (08/01/2007-01/31/2009).
National Science Foundation (Dissertation Improvement Award for JJ Emerson) PI (10/01/2004 -09/30/2005);
National Science Foundation CAREER Award: PI (04/01/2003 -- 03/31/2008);
National Institutes of Health (R01 GM065429-02S1): PI (10/01/2004-09/30/2006).

National Institutes of Health (R01GM065429-01A1): PI (direct cost) (07/01/2003 -- 06/30/2007);
The David and Lucile Packard Foundation: PI (11/01/1998 – 10/31/2003;
National Science Foundation: PI (08/01/99 -- 07/31/2002);
Block fund award, The University of Chicago: PI (06/01/1998 -- 05/31/1999);
Block fund award, The University of Chicago: PI (06/01/2001 -- 05/31/2002);
The University of Chicago setup fund: PI.
Federal Training Grants (Genetics, GAAN, predoctoral fellowship)
International scholarships (European, South American, and Asian (2003-current).

STUDENTS / POSTDOCTORAL RESEARCH ASSOCIATES / VISITING SCHOLARS

Postdoctoral research associates (Past: 6; Current: 2)
Doctorial Graduate students (Past: 8; Current, 5)
Undergraduate research assistants (Past: 13)
Doctoral thesis committees (Having served for 23 Ph.D. graduate students; Currently, 2)
Visiting scholars (3)
Three doctoral students in my lab won the distinguished research awards at the Committee on Genetics and university-wide prestigious Harper Fellowship at the University of Chicago.

TEACHING SERVICE

Undergraduate courses:

The Chicago curriculum "Big Problems" series: BP29100/BioSci 29319: What Do The Genomes Teach Us About Evolution? (Spring, 2009-2011, with James Shapiro and Robert Richards)
BioSci 23259: Molecular Evolution II, Spring 2009

BioSci 28401: Introduction to Systems Biology II, Spring 2007, 2008 (with Hongyu Zhao of Yale)
BioSci 22600: Evolutionary Genomics (Computational Evolutionary Biology)
(Spring 1999-2001; 2002-2005, with Thomas Nagylaki).

Graduate courses:
EE35900, Genomic Evolution (Spring 1998-2007, with Martin Kreitman);
EE35800, Classics of Evolutionary Genetics (Winter 1999-2001; 2002-2010, with Wen-Hsiung Li and Richard Hudson).

Reading Courses: EE497, Evolutionary Biology and History of Evolutionary Biology.

WITHIN-CAMPUS ADMINISTRATIVE SERVICE

Ad Hoc BSD Faculty Science Review Committee, 2009.

Committee on Appointments and Promotions (CAOP), Division of Biological Sciences;
EE (Department of Ecology and Evolution) Admission committee (1997 -- 1998);
EE Committee for recruitment of new faculty (1998 -- 1999);
EE Committee of Students Affairs (1998 -- 2000);
EE Committee for organizing the departmental seminars (1998 – 2000; 2002 -- 2003);
EE Admission Committee (2001 -- 2002);
COG (Committee on Genetics) Admission Committee (1999 -- 2000).

ACADEMIC ACTIVITIES AND HONORABLE APPOINTMENTS

2010 Co-organizer, the symposium of Evolution of Sex chromsome and sex determination, the 2010 Society of Molecular Biology and Evolution annual conference, Lyon.

2010 Co-organizer, International Workshop of Evolution of Sex chromosomes and Sex determination, Functional Genomic Institut of Lyon, Ecole Normale Superieure.

2010-2012, The administrative council Secretary officer of the international organization Society of Molecular Biology and Evolution (SMBE), elected in the Iowa city annual conference of SMBE, 2009, to run secretary activities of SMBE.

2010-2012, The administrative board member of the Chinese Biological Investigator Society in USA (CBIS), elected in La Jolla biannual conference of CBIS.

2010 Lectured European workshop of Genomic Evolution, sponsored by Ecole Normale Supérieure, Lyon, France (01/2010).

2009 December 27-29 CBIS annual conference, co-chair, the session of Neuroscience, Development, Behaviors. Hilton Hotel, La Jolla, California.

2009 Co-chair, organized the international conference: "Darwin's Heritage Today, Darwin 200 International Beijing conference", sponsored by Peking University, Institute of Vertebrate Paleontology and Paleoanthropology, National Key Laboratories of Plant Systematics and Evolution, Beijing.

2006 – 2009, Lectured Bio2000 Seminar series, organized by Professor Weimin Zhong at Yale University.

2006 20012 Cheung Kong Scholars Chair Adjunct Professor, Peking University.

2008 Chair of New Gene Evolution and Morphology, The 11th Chinese-American Frontiers Sciences Symposiums, National Academy of Science USA & Chinese Academy of Sciences (Irvine, California, USA, 11/2008)

2008 Guest Professor, Soochow University, Soochow.

2007 2008 Panel members of key research projects. National Natural Science Foundation, China (Beijing, Changchun).

2006-2009 Visiting Professor, Zhejiang University, Hangzhou.

2007-2010 Guest Professor, Huazhong Agricultural University, Wuhan.

2006-2008 Professor of Graduate Courses in Molecular Biology: Bio2000 for Shanghai Institutes of Life Sciences, Tsinghua University and Peking University.

2005 Co-chair, organized the symposium in celebration of scientific exploration of Walter Gilbert, Cold Spring Harbor Laboratory, 2005.

2005 The section chair, the 14th International Congress of Origin of Life (Beijing, 06/2005).

2004 Lecture, the Southern European Evolutionary Genomics Workshop, Barcelona, Spain, 06/2004.

20004 and 2008 Summer Training Class of Molecular Evolution, Kunming, Chinese Academy of Sciences, Kunming Zoology Institute.

2004 Chair, Symposium of Genetics of Natural Selection (Chicago, 2004).

2004-2006 Guest Professor, Institute of Genetics and Development, Chinese Academy of Sciences. Beijing.

2001-2002 Visiting assistant professor, Tonghai University, the Republic of China.

1999-2000 The 8th and 9th SCBA international symposia of molecular evolution (Hong Kong, 1999; Taipei, 2000), co-chair.

PUBLICATIONS

1. Ming, D. and M. Long 1985. Mathematical principle and application of canonical correlation to quantitative genetic analysis. ***J. of Sichuan Agri. Univ.*** 3: 250-255.

2. Long, M. 1985. A new method to measure the kernel volume of maize (*Zea mays*, L.). ***J. of Sichuan Agri. Univ***. 3: 415-420.

3. Long, M. 1986. On the application of fuzzy clustering to genetic analysis. ***J. of Sichuan Agri. Univ.*** 4: 239-247.

4. Long, M. 1987. Study on the relationship between genetic distances and specific combining ability of yields in maize (*Zea mays*, L.). ***Genetic Research in China.*** 5 (ed by Genetics Society of China) (Hunnan Press of Science and Technology, Changsha).

5. Long, M. 1987. The methods for measuring genetic distance and the relationship between yield heterosis/specific combining ability and genetic distance in maize (*Zea mays*, L.). ***Acta Agronomica Sinica*** 13: 193-200.

6. Long, M. 1988. Computational search of a special orthogonal experiment design scheme. ***J. of Sichuan Agri. Univ.*** 6: 100-103.

7. Long, M. 1993. Estimating genetic variation in restriction fragment length polymorphism of nucleic acids. ***Hereditas*** (Beijing) 15: 44-48.

8. Long, M. 1986. History of science: G. W. Yule – A founder of polygene hypothesis of quantitative genetics who should not have been forgot. ***J of Sichuan Agri, Univ***. Volume 4.

9. Williamson, V. W., M. Long, G. Theodoris 1991. Isolation of *Caenorhabditis elegans* mutants
lacking alcohol dehydrogenase activity. ***Biochem. Genet.*** 29: 313-323.

10. Long, M., J. H. Gillespie 1991. Codon usage divergence of homologous vertebrate genes and codon usage clock. ***J. Mol. Evol.*** 32: 6-15.

11. Long, M., C. H. Langley 1993. Natural selection and the origin of *jingwei*, a chimeric processed functional gene in *Drosophila*. ***Science*** 260: 91-95.

12.Gilbert, W., M. Long, C. Rosenberg, M. Glylias 1995. Tests of the exon theory of genes. In: ***Tracing Biological Evolution in Protein and Gene Structures.*** Ed. M. Go and P. Schimmel. Elsevier Science B. V., Amsterdam.

13. Long, M, S. J. de Souza, W. Gilbert 1995. Evolution of intron/exon structure of eukaryotic genes. ***Curr. Opin. Genet. Dev.*** 5: 774-778.

14. Long, M., C. Rosenberg, W. Gilbert 1995. Intron phase correlations and the evolution of intron/exon structure of genes. ***Proc. Natl. Acad. Sci. USA*** 92: 12495-12499.

15. De Souza, S. J., M. Long, L. Schoenbach, W. Gilbert 1996. Intron positions correlate with module boundaries in ancient proteins. ***Proc. Natl. Acad. Sci. USA*** 93: 14632-14636.

16. Long, M., S. J. De Souza, C. Rosenberg, W. Gilbert 1996. Exon shuffling and origin of plant mitochondrial targeting targeting in cytochrome c1 precursor. ***Proc. Natl. Acad. Sci. USA*** 93: 7727-7731.

17. DeSouza, S. J., M. Long, and W. Gilbert 1996. Introns and gene evolution. ***Genes to Cells*** 1: 493-505.

18. Richter, B., M. Long, R. C. Lewontin, E. Nitasaka 1997. Nucleotide polymorphism and evolution of the *decapentaplegic* gene in *Drosophila*. ***Genetics*** 145: 311-323.

19. Long, M., S.J. De Souza, W. Gilbert 1997. Delta-interacting protein A and the origin of hepatitis delta antigen. ***Science*** 276: 824-825.

20. Gilbert, W., S.J. De Souza, M. Long 1997. Origin of genes. ***Proc. Natl. Acad. Sci. USA*** 94: 7698-7703.

21. Long, M., S.J. De Souza, W. Gilbert 1997. The yeast splice site revisited: A new exon consensus from genomic analysis. ***Cell*** 91: 739-740.

22. De Souza S.J., M. Long, L. Schoenbach, S.W. Roy, W. Gilbert 1997. The correlation between introns and the three-dimensional structure of proteins. ***Gene*** 205: 141-144.

23. Long, M., S.J. de Souza, W. Gilbert 1998. Relationship between "proto-splice sites" and intron phases: Evidence from Dicodon Analysis. ***Proc. Natl. Acad. Sci. USA*** 95: 219 -223.

24. De Souza, S. J., M. Long, R. J. Klein, S. Roy, S. Lin, W. Gilbert 1998. Towards a resolution of the introns early/late debate. Only phase zero introns are correlated with the structure of ancient proteins. ***Proc. Natl. Acad. Sci. USA*** 95: 5094-5099.

25. Long, M. and S. J. de Souza 1998. Intron-exon structures: from molecular to population biology. ***Adv. Genome Biol: Genes and Genomes*** 5A: 143-178.

26. Long, M., W. Wang, and J. Zhang 1999. Origin of New Genes and source for N-terminal domain of the chimerical gene, *jingwei*, in Drosophila. ***Gene*** 238: 135-142.

27. Long, M. and M. Deutsch 1999. Association of intron phases with conservation at splice site sequences and evolution of spliceosomal introns. ***Mol. Biol. Evol***. 16: 1528-1534.

28. Deutsch, M. and M. Long 1999. Intron-exon structures of model organisms. ***Nucl. Acid Research*** 27: 3219-3228.

29. Cáceres, M., J. M. Ranz, Barbadilla, M. Long, and A. Ruiz 1999, Generation of a widespread *Drosophila* inversion by a transposable element. ***Science*** 285: 415-418.

30. Sakharkar,M., M. Long, T. W. Tan, S. J. De Souza 2000. ExInt-an Exon/Intron database. ***Nucl. Acid Research*** 28: 191-192.

31. Long, M. 2000. Protein coding segments: evolution of exon-intron gene structure. ***Encyclopaedia of Life Science***, Macmillan Reference Ltd, London.

32. Wang, W., J. Zhang, C. Alvarez, A. Llopart, and M. Long 2000. The origin of the *jingwei* Gene and the complex modular structure of its parental gene, *yellow emperor*, in *D*. ***Mol. Biol. Evol***. 17:1294-1301.

33. Sakharkar, M. K., P. Kangueane, T. W. Woon, T. W. Tan, P. R. Kolatkar, M. Long, and S. J. De Souza 2000. IE-Kb: intron exon knowledge base. ***Bioinformatics*** 16: 1151-1152.

34. Long, M. 2000. A new function evolved from gene fusion. ***Genome Research*** 10: 1655-1657.

35. Long, M. and C. Rosenberg 2000. Testing the "proto-splice sites" model of intron origin: Evidence from analysis of intron-phase correlations. ***Mol. Biol. Evol.*** 17: 1789-1796.

36. Long, M. 2001. Book review : "Adaptive evolution of genes and genomes" by Austin Hughes, Oxford University Press, New York. ***Persp. Biol. Med.*** 44, 460-464.

37. Létitia J., M. Long, J. Young, P. Péry, F. Tomley 2001. AP genes from apicomplexan parasites: Evidence for evolution of the gene structure. ***Trends Paras.*** 17: 491-498.

38. Long, M., K. Thornton 2001. Gene duplication and evolution. ***Science*** 293:1551.

39. Long, M. 2001. Evolution of novel genes. ***Curr Opin Genet Dev*** 11:673-680.

40. Long, M. and R. Cerff. 2002. Introns: Movement. ***Encyclopaedia of the Human Genome***, Macmillan Reference Ltd, London.

41. Long, M. 2002. Pseudoexons. ***Encyclopaedia of the Human Genome***, Macmillan Reference Ltd, London.

42. Wang, W., K. Thornton, A. Berry, and M. Long. 2002. Nucleotide variation along the *Drosophila melanogaster* fourth chromosome. ***Science*** 295:134-137.

43. Wang, W., F. G. Brunet, E. Nevo, M. Long 2002. Origin of *sphinx*, a young chimeric RNA gene in *Drosophila melanogaster*. ***Proc. Natl. Acad. Sci. USA***.. 99: 4448-4453.

44. Betrán E., M. Long 2002. Expansion of genome coding regions by acquisition of new genes. ***Genetica*** 115: 65-80.

45. Betrán, E., W. Wang, L. Jin, M. Long 2002. Evolution of the phophoglycerate mutase processed gene in human and chimpanzee revealing the origin of a new primate gene. ***Mol. Biol. Evol***.. 19: 654-663.

46. Thornton, K., M. Long 2002. Rapid divergence of gene duplicates on the *Drosophila X* chromosome. ***Mol. Biol. Evol***. 19: 918-925.

47. Betrán, E., K. Thornton, and M. Long 2002. Retroposed new genes out of the *X* in *Drosophila* ***Genome Research.*** 12: 1854-1859.

48. Llopart, A., J. M. Comeron, F. G. Brunet, D. Lachaise, M. Long 2002. Intron presence / absence polymorphism in Drosophila driven by positive Darwinian selection. ***Proc. Natl. Acad. Sci. USA*** 99: 8121-8126.

49. Sakharkar M, F. Passetti F, J. E. de Souza, M. Long, S. J. de Souza 2002. ExInt: an Exon Intron Database. ***Nucl. Acid. Research***. 30:191-194.

50. Betran, E., M. Long 2003. *Dntf-2r*, a young *Drosophila* retroposed gene with specific male expression under positive Darwinian selection. ***Genetics*** 164: 977-988

51. Long, M., M. Deutsch, W. Wang, E. Betrán, F. Brunet, J. Zhang 2003. Origin of new genes: Results from experimental and computational analysis. ***Genetica*** 118: 171-182.

52. Long, M., 2003. Preface, Origin and evolution of new gene functions. ***Contemporary Issues In Genetics and Evoluton*** 10: 97.

53. Long, M. 2003. Fusion genes. ***Encyclopaedia of the Human Genome***, Macmillan Reference Ltd, London.Nature Publishing Group. Macmillan Publishers Ltd, Nature Publishing Group.

54. Long, M., E. Betrán, K. Thornton, and W. Wang. 2003. The origin of new genes: glimpses from the young and old. ***Nature Reviews Genetics*** 4: 865-875.

55. Wang, W, K. Thornton, J. J. Emerson, and M. Long 2004. Nucleotide Variation and Recombination Along the Fourth Chromosome in *Drosophila Simulans* ***Genetics*** 166: 1783- 1794.

56. Emerson J.J.*, H. Kaesmann*, E. Betrán and M. Long 2004. Extensive gene traffic on the human X chromosome. ***Science*** 303: 537-540. (*Equal contribution).

57. Wang, W., H. Yu and M. Long 2004. Duplication-degeneration as a mechanism of gene fission and the origin of *Drosophila* new genes. ***Nature Genetics*** 36: 523 – 527.

58. Zhang, J., A. M. Dean, F. Brunet and M. Long 2004. Evolving functional diversity in new genes of *Drosophila*. ***Proc Natl Acad Sci USA.*** 101: 16246 -16250

59. Betrán, E., J.J. Emerson, H. Kaessmann, and M. Long 2004. Sex chromosomes and male functions: where do new genes go? ***Cell Cycle*** 3: 873-875.

60. International Chick Genome Sequencing Consortium, 2004. Sequencing and comparative analysis of the chicken genome. ***Nature*** 432: 432:695-716.

61. Thornton K, Long M. 2005. Excess of Amino Acid Substitutions Relative to Polymorphism between X-linked Duplications in Drosophila melanogaster. ***Mol Biol Evol***.22: 273-284.

62. Zhang J, Long M, and Li L, 2005. Translational effects of differential codon usage among intragenic domains of the young Drosophila gene. ***Biochim Biophys Acta*** 1728:135-142.

63. Arguello JR, Chen Y, Yang S, Wang W, and Long M, 2006. An X-linked Testes Chimeric Gene by Illegitimate Recombination in *Drosophila*. ***PLoS Genetics*** 2: 0745-0754. e77.

64. Wang W, Zheng H, Fan C, Li J, Shi J, Cai Z, et al, 2006. High rate of chimeric gene origination by retroposition in plant genomes. ***Plant Cell*** 18: 1791-1802.

65. Dai H, Yoshimatsu TF, Long M, 2006. Retrogene movement within- and between-chromosomes in the evolution of *Drosophila* genomes. ***Gene*** (Special Volume for "6th Anton Dohrn Workshop: Genome Evolution). ***Gene*** 385: 96-102.

66. Arguello JR, Fan C, Wang W and Long M (2006). Origination of Chimeric Genes through DNA-level Recombination. ***Genome Dynamics***: ***Evolution of Gene Functions***. Karger publishers. 3: 131-146.

67. Fan C and Long M, 2007. A New Retroposed Gene in *Drosophila* Heterochromatin Detected by Microarray-Based Comparative Genomic Hybridization. ***J Mol Evol*** 64:272-283.

68. Shiao MS, Khil PP, Smirnova NA, Camerini-Otero RD, Shiroishi T, Yu HT, Long M. 2007. Natural Selection Targeting on Expression Novelties in X-related Retrogenes in Rodents. ***Mol Biol Evol*** 24: 2242-2253.

69. Havlioglu N, Wang J, Kuo D, Fushimi K, Vibranovski MD, Kan Z, Gish W, Fedorov A, Long M and Wu JY. 2007. Genomic Signal for Alternative Splicing of a Large Number of Gene Families in the Human Genome. ***PLoS One*** 2(11): e1246.

70. Elde. NC, Long M, and Turkwitz AP. 2007. A role for convergent evolution in the secretory life of cells. ***Trends Cell Biol*** 17:157-164**.**

71. Fan C, Vibranovsky M, Chen Y and Long M, 2007. A Microarray-based genomic hybridization method for identification of new genes in plants: case analyses of *Arabidopsis and Rice* ***Journal of Integrative Plant Biology***. 49: 915-926.

72. Long MY and Zhu ZY, 2007. Male non-coding RNA genes identified by comparative genomic analysis of the Drosophila genomes. ***Chinese Science Bulletin*** 52 : 721-724.

73. Long M., 2007. Journal Club: Mystery Genes. ***Nature*** 449: 511.

74. Arguello JR, Fan C, Wang W, and Long M, 2007. Origination of Chimeric Genes through DNA-level Recombination. ***Genome Dynamics*** 3: 131-146.

75. Drosophila 12 Genomes Consortium, 2007. Evolution of genes and genomes on the Drosophila phylogeny. ***Nature*** 450: 203-218.

76. Yang YF, Li Z, Fan QC, Long MY, and Zhang WX, 2007. Significant divergence of sex-related non-coding RNA expression patterns among closely related species in Drosophila. ***Chinese Science Bulletin*** 52: 748-754.

77. Vibranovski M, Nobara, M, Long M, 2007. Birth and Evolution of Human Exons. ***Encyclopedia of Life Sciences***. A0020777. John Wiley & Sons, Ltd. www.els.net

78. Fan C, Emerson JJ, and Long M, 2007. The Origin of New Genes. In: ***Evolutionary Genomics and Proteomics*** Ed. By Mark Pagel and Andrew Pomiankowski. Sinauer Associates.

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Books:

Long, M. ed. 2003 **Origin and Evolution of New Gene Functions.** (Volume 10, Contemporary Issues in Genetics and Evolution and Volume 118 (2-3), Genetica). Kluwer Academic Publishers, The Netherlands. 202 pages 260,000 words.

Long M, Gu HY, Zhou ZH ed. 2010, **Darwin's Heritage Today, Proceedings of the Darwin 200 Beijing International Conference.** Higher Education Press, Beijing. 385 pages, 500,000 words.

INVITED SEMINARS/LECTURES

2011 – Plant and Animal Genome Conference, San Diego; The 1st Asian-Pacific Drosophila Conference, Taipei; Shanghai JiaoTong University, Shanghai; Institute of Plant Genomes, University of Arizona, Tucson; Second International Symposium on Genomics and Crop Genetic Improvement, Wuhan.

2010 – Lecture for the European Genomic Evolution workshop, Ecole Normale Supérieure, Lyon, France; Departmental Seminar, University of Lyon, Lyon, France; 53rd annual conference of the Genetics Society of Canada, Hamilton, Canada; Symposium of Gene and Genome Duplication, The 2010 Annual SMBE conference, Lyon, France; Institute of Bioinformatics, Department of Genetics, North Carolina State University, Raleigh; The University of Chicago Beijing Center symposium, Beijing; Institute of Genetics and Development, CAS, Beijing; Institute of Biophysics, CAS, Beijing; Institute of Botany, CAS, Beijing; National Key Laboratory of Crop Genetics and Improvement, Huazhong Agricultural University, Wuhan.

2009 – CBIS conference, La Jolla, California; Graduate Program Research Symposium of Molecular Genetics and Evolution, the University of Munich, Germany; School of Biological Sciences, Zhejiang University, Hangzhou; Institute of Systems Biology, Suzhou University, Suzhou; Department of Biological Sciences, University of Texas at Arlington; "Graduate Student Sponsored Research Symposium", Biochemistry and Molecular Biology, Oklahoma State University, Stillwater; The 100th International Titisee Conference, Black Forest, Germany; Life Science Seminar Series, South Dakota State University, Brookings; Journal of Systematics and Evolution Symposia, Shenzhen Fairylake Botanical Garden & Beijing Institute of Botany, Shenzhen; Theoretical Center, Academia Sinica, Taiwan; Institute of Zoology, National Taiwan University, Taiwan; The 7th International Bioinformatics Workshop, Suzhou; Darwin-200 Lectureship, Cheng Gong University, National Research Council; Biodiversity Center, Academia Sinica, Taipei; Bio2000, Shanghai; Institute of Zoology, Chinese Academy of Science; National Taiwan University, Shanghai Institute of Biochemistry and Cell Biology, Chinese Academy of Sciences; Taipei; University of Porto, Porto, Portugal.

2008 – Max-Planck-Institutes for Developmental Biology and for Biological Cybernetics and the Friedrich-Miescher Laboratory, Tübingen, Germany; Max-Plank Institute for Chemical Biology, Jena, Germany; The Section of Ecology, Behavior, & Evolution, University of California, San Diego; School of Life Sciences, Sichuan University, Sichuan; National Natural Science Foundation of China, Changchun; Santa Barbara workshop of Theoretical Physical Series: Population Genetics and New Gene Functions, Kavli Institute for Theoretical Physics, University of California at Santa Barbara; The Peak Forum of Genetics, Institute of Genetics and Development, Beijing; Bio2000, Shnaghai; The 11th Chinese American Frontiers of Sciences Symposiums, National Academy of Sciences USA and Chinese Academy of Science, Irvine, California.

2007 – Genome Institute, University of Lausanne, Switzerland; CNRS / Ecology and Evolution, University of Lyon, Lyon, France; Evolution of Brain, Behaviour and Intelligence, Welcome Trust Sanger Institute, Cambridge, UK; Programme du Colleloque en L'Honneur de Daniel Lachaise, CNRS, Paris, France; Santa Barbara workshop of Theoretical Physical Series: Gene Duplication, Kavli Institute for Theoretical Physics, University of California at Santa Barbara; The 5th International Bioinformatics Workshop, Weihai; Bio2000, Chinese Academy of Sciences, Beijing/Shanghai; Graduate Program of Ecology and Evolution, Michigan State University; Department of Genetics, Yale University; College of Life Sciences, Tongji University, Shanghai; College of Life Sciences, Soochow University, Soochow.

2006 – Division of Bioinformatics; school of Life Science, Tsinghua University; Institute of Molecular Medicine, Peking University; Institute of Zoology, National Taiwan University; Bio2000, Shanghai Instites of Life Sciences; Plant Genome Conference VII, Harbin, China; Gordon Conference Posttranscription Regulation, Queen's College, Oxford, UK; The 31st Annual Conference of American Society of Andrology; The Argonne National Laboratory; Wenner-Gren Foundations International Symposium "Mutation, Selection and Genome Evolution", Stockholm, Sweden; Society of Molecular Biology and Evolution Symposium , Tampe; IGERT Symposium of Evolutionary Genomics, University of Arizona, Tucson.

2005 – National Institutes of Health USA; the 7th International Conference Bioinformatics (Tartum, Estonia); the 14th International Congress of the Origin of Life (Beijing); the 6th Anton Dohrn Worshop, Stazione Zoologica (Naples, Italy).

2004 – Tufts University; Harvard University (Dept of Systems Biology); Barcelona Autonomous University; Workshop of evolutionary genomics, Taiwan; The Second International Conference of Bioinformatics and Computational Biology (Rio Janeiro); Northern Illinois University.

2003 – Harvard University (Dept of Organismic Evolutionary Biology); North Carolina State University; Pennsylvania State University; National Institute of Genetics, Japan; University of California, Riverside; Loyalo University of Chicago; University of Michigan, Ann Arbor.

2002 – CNRS, Montpellier, France; CNRS, Valbonne, France; University of Oklahoma; Gordon Conference on Genomic Evolution and Bioinformatics; Texas A & M University; National Singapore University.

2001 – University of California, Davis. Jacques Monod Conference, Modane. CNRS, Gif-sur-Yvette, France; Loyola University of Chicago; Tunghai University; National Taiwan University; Chinese National Natural Science Foundation; Beijing University.

2000 -- The Salk Institute for Biological Research; University of Oregon; Academia Sinica, Taiwan, ROC; National Taiwan University, ROC; Western Michigan University.

1999 -- University of Nebraska; Purdue University; Beijing University, PRC; Zhejiang University, PRC; Eleventh Annual US Frontier of Science Symposium; International Symposium on Molecular Evolution, Costa Rica.

1998 -- Harvard University; University of California, Davis.

1997 -- State University of New York, Albany; University of Iowa; University of Rochester.

1996 -- Wayne State University; University of Houston.

1995 -- Fudan University, PRC; University of Missouri; University of Maryland.