



Department of Ecology and Evolution
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CURRICULUM VITAE

Manyuan Long, Ph.D.

The Edna K. Papazian Distinguished Service Professor

July 30, 2014

EDUCATION

Postdoctoral fellow, July 1 1993 -- October 31, 1997, Departments of Molecular and Cellular Biology and Organismic and Evolutionary Biology, Joint Appointment, 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, University of California at Davis.

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

M.S. & B.S., Plant Genetics and Breeding, 1985, 1982, Sichuan Agricultural University, Ya'an, Sichuan. Plant Quantitative Genetics Institute and Crop Plant Department, Sichuan Agricultural University.

PROFESSIONAL EXPERIENCE

Edna K. Papazian Distinguished Service Professor, Department of Ecology and Evolution, The University of Chicago. Started on July 1, 2011.

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:

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

Scientific impacts:

- Recognized as the pioneer who started and has been leading the scientific research area of the origination and evolution of new genes since the early 1990s.
- His discovers have helped shape the new chapters and sections about new gene evolution in major textbooks of evolutionary biology (e.g. Douglas Futuyma, 2009 and 2005, *Evolution*, Sinauer, Massachusetts; Michael Lynch, 2007, *The Origins of Genome Architecture*, 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*, *Chicago Tribune*, *Sacramento Bee*, *La Vanguardia*, *New Scientist*, *Scientist*, *Discover*, *La Recherche*, and other news media in US, Europe, Taiwan reported in various languages his scientific discovers and commentaries.
- His research results summarized in a *Nature Rev Genet* article (Manyuan Long et al, 2003) were cited as major evidence for a successful defense of the Amendment I to the United States Constitution in the nationally famous case of *Kitzmiller et al. vs. Dover Area School District* in Pennsylvania in 2005.

HONORS

Appointed by National Institute of Genetics, Japan, as one of two visiting professors (with an Austrian scholar in Vienna) to its Division of Theoretical Genetics (a major international power house for the neutral theory of molecular evolution), 2013-2016.

Appointed by European Molecular Biological Organization (EMBO) to its Advisory Editorial Board for EMBO Reports, 2013-2015.

Appointed by Chinese Academy of Sciences as its International Review Expert, 2013-2016.

Edna K. Papazian Distinguished Service Professor, Department of Ecology and Evolution, The University of Chicago, 2011-Tenured appointment.

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 as chair to organize the 21st International Conference of Molecular Biology and Evolution in 2013, Chicago.

National Science Foundation CAREER award, 2003.

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.

INTERVIEWS AND NEWS MEDIA

New Scientist (January 16, 2013, London). “Genes from nowhere: Orphans with a surprising story” (by Helen Pilcher).

Wen Hui Bao (Wenhui Review, April 15, 2013, Shanghai). “The Life has no progress but evolution” (by Chunyi Li).

The Scientist (July 19, 2012). “Sex drives chromosome evolution” (by Ruth Williams).

PLoS Blogs (June 17, 2012) Tooth & Claw: “What’s in a (Gene) Name?” (By Hillary Rosner).

The Scientist (October 18, 2011). “New Genes, New Brain” (*News & Opinion* by Cristina Luiggi).

The Fisher Scientific (October 25, 2011, UK). “Youngest genes ‘teach us the most about the human brain’”(by Tania).

Bionews (October 24, 2011, UK). “Young genes in young humans provide clue to brain evolution.” (By James Brooks).

The Huffington Post (October 19, 2011, UK). “Modern Human Brain Full Of New Genes” (*By Press-Association*).

ScienceDaily (October 19, 2011). “Young Human-Specific Genes Correlated With Brain Evolution” (By Robert Mitchum).

PLoS Blogs (February 7, 2011). Tooth & CLAW: “Of bad odors and good yarns” (By Hillary Rosner).

BBC Radio Interview for The Naked Scientists (www.thenakedscientists.com, October 18, 2011): “[The Manyuan Long group’s] current findings on the genes involved in the evolution of the human brain” (by Meera Senthilingam).

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, New York): “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 meessoonrõhk*”;

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, New York) : “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".

SERVICE AND HONORARY APPOINTMENTS

NATIONAL / INTERNATIONAL ACADEMIC ACTIVITIES

Chair, the organizing committee of the 21st annual international conference of molecular biology and evolution (2013, Chicago).
Secretary, the international Society of Molecular Biology and Evolution (2010-2012).
Board of Directors of the Chinese Biological Investigator Society (CBIS) in USA 2010-2015.
Changjiang Scholar Chair Professorship, Peking University, 2006-2015.
Invited Expert for Faculty Promotion in the Center for Biological Diversity and the Institute of Molecular Biology, Academia Sinica, Taiwan (2009-2014).
Member, the Conference Committee, The Genetics Society of America (2013-2016).
Organizer/leader, the scientific education programs in evolutionary biology and ecology in Shanghai Jiaotong University (2011-2014) and Peking University (2008-2013)
The academic evaluation expert, the State Science and Technology Prizes, the State Council of the People's Republic of China (2012-2013).

PANEL MEMBER / GRANT REVIEWER

National Science Foundation, USA (Reviewers and Review Panel)
National Institutes of Health, USA (reviewed R01 and Predoctoral and Postdoctoral Fellowships Application)
Austrian Science Foundation, Austria
Health Research Board, Dublin, Ireland
Canada Foundation for Innovation, Canada
Canada Research Chairs Program, Canada
The Netherlands Organization for Scientific Research, Netherlands
National Natural Science Foundation, China

EDITORIAL BOARD SERVICE

EMBO Reports, the European Molecular Biology Organization, published by Nature Publishing Group, Advisory Editorial Board (2013-2015).
BMC Genomics, Associate Editor (2012-2015).

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; 2010-)
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 (2006-2015).
Journal of Systematics and Evolution (2009-2012).
Journal of Genetics & Genomics and Hereditas (2005-2011)
Genetica and Contemporary Issues in Genetics and Evolution (2002-2003).

JOURNAL AND BOOK REVIEWER

Biotechniques; BMC Genomics; Current Biology; Development; Evolution; 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; Nature Communication; Nucleic Acid Research; The Plant Cell; Plant Physiology; PLoS Biology; PLoS Genetics; PLoS Computational Biology; Plant Genome; PNAS; Quarterly Review of Biology; Royal Society Proceedings B: Biological Letters; Science; Scientific Reports; Trends in Biotechnology; Trends in Genetics; Genome Biology and Evolution; Mammalian Genome

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;
International Society of Molecular Evolution.

RESEARCH SUPPORT BY

National Institutes of Health (1R01GM100768-01A1): PI (04/01/2012-03/31/2016)
National Science Foundation: PI (2011, Doctoral Dissertation Improvement Grant, Sidi Chen).
National Science Foundation (NSF1051826): PI (05/01/2011-04/31/2016).
National Institutes of Health (R01GM078070-03S1): PI (09/18/2009--04/30/2012);
National Institutes of Health (R01GM078070-01A1): PI (05/01/2007--04/30/2012);
National Science Foundation (NSF1026200): Co-PI (08/01/2010-07/31/2014, with PI, Rod Wing et al University of Arizona).
National Institutes of Health (R01GM078070-03S1): PI (09/18/2009--04/30/2012);
National Institutes of Health (R01GM078070-01A1): PI (05/01/2007--04/30/2012);
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: PI (2004, Doctoral Dissertation Improvement Grant, JJ Emerson);
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 fellowships)
International scholarships (European, South American, and Asian (2003-current).

STUDENTS / POSTDOCTORAL RESEARCH ASSOCIATES / VISITING SCHOLARS

Postdoctoral research associates (Past: 8; Current: 4)
Doctoral Graduate students (Past: 9; Current, 6)
Undergraduate research assistants (Past: 13)
Doctoral thesis committees (Having served for 23 Ph.D. graduate students; Currently, 2)

Four doctoral students in my lab won the distinguished research awards: the best dissertation award at the Committee on Genetics, Genomics and Systems Biology (Kevin Thornton and Hongzheng Dai), the university-wide prestigious Harper Fellowship (Roman Arguello), and the best dissertation award at the University of Chicago (Biological Science) for 2011-2012 (Sidi Chen). Two graduate students won the prestigious NSF Doctoral Dissertation Improvement Grants (JJ Emerson and Sidi Chen). One graduate student won prestigious NSF predoctoral fellowship (Nicholas VanKuren) and one postdoctoral associate won prestigious NIH postdoctoral fellowship (Grace Lee). The most of the students/postdocs I trained have been in various stages of successful career development in science, with 10 being tenured or tenure-tracked faculty members (the rank of assistant professors to full professors) in major research universities or institutes in Europe, USA, South America and Asia. Several former graduate students graduated in recent three years are postdoctoral research fellows in the top research universities in USA and Europe.

TEACHING

Undergraduate courses:

The Chicago curriculum “Big Problems” series:
BP29100/BioSci 29319: What Do The Genomes Teach Us About Evolution? (Spring, 2009-2012, with James Shapiro)

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).

Undergraduate round-table research meetings.

Graduate courses:

ECEV36100, Genetic Networks in Molecular Evolution: Theories and Empirical Data (2014, Spring, with Chung-I Wu).

ECEV35901, New Gene Problems (2013, Fall)

EE35900, Genomic Evolution (Since Spring 1998, the odd years, with Martin Kreitman, until 2013; with John Reinitz, since 2014 Autumn);

EE35800, Classics of Evolutionary Genetics (Since Winter 1998, the even years, with Wen-Hsiung Li, until 2011; with Chung-I Wu since 2015 Spring).

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

WITHIN-CAMPUS ADMINISTRATIVE SERVICE

BSD Faculty Advisory Committee, 2014-2017.

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; 2001 – 2002; 2009-2012);

EE Committee for recruitment of new faculty (1998 -- 1999);

EE Committee of Students Affairs (1998 – 2000; 2009-2011);

EE Committee for organizing the departmental seminars (1998 – 2000; 2002 – 2003; 2011-2012);

COG (Committee on Genetics) Admission Committee (1999 -- 2000).

OTHER HONORARY APPOINTMENTS

2013 Organizing Committee of the National Institute of Genetics, Japan/SMBE international meeting in Mishima, Japan, “Causes of Genome Evolution”.

2013- External Advisory Board, School of Life Sciences, Peking University, Beijing.

2011 Co-organizer, the symposium of Gene Evolution and Phenotypic Evolution, the the 19th Annual International Conference of Molecular Biology and Evolution, Kyoto.

2011 the international organizing committee member, the 19th Annual International Conference of Molecular Biology and Evolution, Kyoto.

2010 Co-organizer, the symposium of Evolution of Sex chromosome 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 Chair, the 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 2015 Cheung Kong Scholars Chair Adjunct Professorship, 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.
- 2004 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. melanogaster*. *Mol. Biol. Evol.* 17:1294-1301.
33. Sakharkar, M. K., P. Kanguane, 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. (Highlighted by *Nature Rev Genet* (Vol. 3(3): 158).
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 phosphoglycerate 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.
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133. Zhang Y and Long M, 2014. New genes contribute to genetic and phenotypic novelties in human evolution. *Curr Opin Genet Dev* (Accepted).
134. Zhang C, Li Zhang L, Gschwend AR, Song X, Chougule K, Wang M, Dario Copetti D, Long M and Wing RA, 2014. Gene Fusion as an Important Mechanism to Generate New Genes in the *Oryza* Genomes. (A Special Volume for *Oryza* Genome Evolution for Genome Research, submitted).

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

2014 – Centre of Social Evolution, University of Copenhagen, Denmark; The Theory Lunch, Department of Systems Biology, Harvard Medical School; Modern Insights into Evolutionary Genetics, Training Program in Genetics, the University of Michigan, Ann

Arbor; Center of Computational Biology, the University of Toledo, Toledo, Ohio; the 18th Evolutionary Biology Meeting, Marseilles, the Association for the Study of Biology Evolution; Symposium for The Causes of Genome Evolution, Society of Molecular Biology and Evolution, Mishima, Japan; National Institute of Genetics, Mishima, Japan; Kunming Botany Institute, Kunming, Chinese Academy of Sciences; Integration of Molecular Genetics and Paleontology, Xiangshan Scientific Meeting, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Science, Beijing; The Zhiyuan College, Shanghai Jiao Tong University; The Cold Spring Harbor Conference Asia-Evolutionary Genetics and Genomics, Suzhou, Cold Spring Harbor Laboratory; Bioinformatics and Proteomics / Genomics Program, The University of Toledo; Key Laboratory of Systems Biology, Shanghai Institutes for Biological Sciences.

2013 – Department of Molecular, Cellular and Developmental Biology, Yale University; Institute of Biochemistry and Cellular Biology, Shanghai; School of Life Science, Shanghai Jiaotong University; Graduate student-invited talk, Molecular Cluster Retreat, the University of Chicago, Galena, Illinois; International Conference of Bioinformatics and Systems Biology and Translational Studies, Taicang, Suzhou; STEM (Science/Math), Global Citizenship Experience, Chicago; Graduate School of Life Science, Chinese Academy of Science, Shanghai; 2013 International Symposium on Evolutionary Genomics and Bioinformatics, Taichung, Taiwan; Institute of Biological Diversity Graduate Program, Academia Sinica, Nankang, Taiwan; The Mini-Symposium on Conservation Biology, Ecology & Biological Evolution, College of Life Sciences, Peking University; Minilecture series of New Gene Evolution to graduate students, College of Life Sciences, Peking University.

2012 – Public lecture of evolution in universe and organisms, Dayin Theater, Beijing. The Plenary Speaker, the 53rd Annual Drosophila Research Conference, the Genetics Society of America. International Symposium of Copy Number Variation at the 23rd Annual Conference of Society of Molecular Biology and Evolution, Dublin, Ireland. Departmental Seminar, Department of Plant Science, University of Illinois at Urbana-Champaign. Public Lecture, Division of Biological Sciences, The University of Chicago. Shanghai Institute of Neuroscience, Chinese Academy of Sciences. Systems Biomedicine Institute, Shanghai Jiaotong University, Shanghai; School of Life Sciences, Huanzhong Normal University, Wuhan. School of Life Sciences, Shanghai Jiaotong University, Shanghai; Workshop on genomic evolution in agriculturally related species, sponsored by Ministry of Education, China, Wuhan; The Fifth National Conference of Systems Biology and Bioinformatics of China, Haerbin; International Symposium of Genetics Development & Evolution, Institute of Zoology, Kunming; Graduate Student Seminar, Ecology Evolution & Population Biology, Washington University, St. Louis; Public lecture: The meanings of evolution and the origins of genes, the University Library, Beijing Normal University; Phenotypic Evolution by New Gene Origination, Institute of Vertebrate Paleontology and Paleoanthropology, Beijing.

2011 -- The International Conference of Rice Functional Genomics, Taipei. Department of Evolutionary Genetics and Ecology the University of Munster, Munster, Germany. Department of Biological Science, Poznan University, Poznan, Poland. Genetics & Biochemistry Branch, NIDDK, National Institutes of Health; Molecular Evolution in the Genomic Era, Roma Tre University, Genome Biology and Evolution and International Union of Biological Sciences, Rome, Italy; The Symposium of Gene Evolution and phenotypic Evolution, 19th International Conference of Society of Molecular Biology and Evolution, Kyoto; The Rice Genome Meeting, University of Arizona, Tucson; Plant and Animal Genome Conference, San Diego; The 1st Asian-Pacific Drosophila Conference, Taipei; Institute of Biological Diversity, Sinica Academia. Nankang, Taiwan. Shanghai JiaoTong University, Shanghai; Institute of Plant Genomes; Second International Symposium on Genomics and Crop Genetic Improvement, Wuhan. School of Biological Science, Shanxi University, Taiyuan, China. Institute of Systems Biology, Soozhou University, Soozhou

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 SBE 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 Fairy Lake 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; Darwin 200 International Beijing conference, Beijing

2008 – Max-Planck-Institutes for Developmental Biology and for Biological Cybernetics and the Friedrich-Miescher Laboratory, Tübingen, Germany; Max-Planck 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, Shanghai; 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, Wellcome Trust Sanger Institute, Cambridge, UK; Programme du Colloque 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 Institutes 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 (Tartu, Estonia); the 14th International Congress of the Origin of Life (Beijing); the 6th Anton Dohrn Workshop, 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; Loyola 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.