

Kun Yan Zhu, Ph.D.

Professor

CONTACT INFORMATION

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EDUCATION AND PROFESSIONAL TRAINING

1992-1994 **Postdoctoral Research Associate (Insect Molecular Toxicology)**, University of Massachusetts at Amherst, MA
1989-1992 **Ph.D. in Biology (Insect Toxicology)**, Utah State University, Logan, UT
1987-1989 **M.S. in Biology (Insect Toxicology)**, Utah State University, Logan, UT
1978-1982 **B.S. in Plant Protection (Entomology)**, Zhejiang University, Hangzhou, China
2004 Visiting Scientist (sabbatical leave, June- December), Cellular and Molecular Toxicology Branch, Neurotoxicology Division, U.S. EPA National Health and Environmental Effects Research Laboratory, Research Triangle Park, NC

PROFESSIONAL HISTORY

2007- **Professor**, Department of Entomology, Kansas State University, Manhattan, KS
2002-2007 **Associate Professor**, Department of Entomology, Kansas State University, Manhattan, KS
1996-2002 **Assistant Professor**, Department of Entomology, Kansas State University, Manhattan, KS
1994-1995 **Research Associate Professor (graduate faculty)**, Department of Entomology, University of Massachusetts at Amherst, MA
1992-1994 **Postdoctoral Research Associate**, Department of Entomology, University of Massachusetts at Amherst, MA
1987-1992 **Graduate Research Assistant, Teaching Assistant**, Department of Biology, Utah State University, Logan, UT
1982-1987 **Teaching Assistant (faculty member)**, Division of Entomology, Zhejiang University, China

EXTENSION SERVICE

1984 Integrated Pest Management Extension Services at the Jiangshan Agricultural Development Center of Zhejiang Agricultural University, Jiangshan County, Zhejiang Province, China (six months)

HONORS AND AWARDS

2014 Commerce Bank Distinguished Graduate Faculty Award, Kansas State University
2014 Elected as Fellow of the Entomological Society of America (ESA)
2013 Award of Excellence for Multi-State Research Project entitled "W-2045: Agrochemical Impacts on Human and Environmental Health: Mechanisms and Mitigation" as a team member, awarded by the Western Association of Agricultural Experiment Station Directors, USA
2012 Elected as Fellow of the American Association for the Advancement of Science (AAAS)
2011 Entomology Recognition Award, the North Central Branch of the Entomological Society of America

- 2009 C.V. Riley Achievement Award, the North Central Branch of the Entomological Society of America
- 2004 Summer Faculty Fellowship awarded by the National Research Council/US Environmental Protection Agency
- 2000 USDA Agricultural Research Service Award for Superior Effort in the Area of Technology Transfer on the Area-Wide Corn Rootworm Project
- 2000 Elected to Gamma Sigma Delta, Honor Society of Agriculture
- 1998 Elected to Sigma Xi, Scientific Research Society

PROFESSIONAL ACTIVITIES AND AFFILIATIONS

Appointments of Adjunct and Guest Professorship

- 2009- Adjunct professor, China Agricultural University, Beijing, China
- 2005- Guest professor, Institute of Zoology, Chinese Academy of Sciences, Beijing, China
- 2003- Guest professor, Zhejiang University, Hangzhou, China
- 2003- Guest professor, Shanxi University, Taiyuan, China

Editor and Editorial Board Member of Scientific Journals

- 2015 Guest co-editor, special issue on *Insecticide Toxicology Research in China* to be published in *Pesticide Biochemistry and Physiology* by Elsevier in early 2016.
- 2012 Guest editor, special section on *Insect Molecular Toxicology and Chitin Metabolism* published in *Insect Science* by Wiley-Blackwell Publishing (vol. 20, issue 2, Apr. 2013, <http://onlinelibrary.wiley.com/doi/10.1111/ins.2013.20.issue-2/issuetoc>)
- 2012 Guest editor, special issue on *Insect RNA Interference* published in *Insect Science* by Wiley-Blackwell Publishing (vol. 20, issue 1, Feb. 2013, <http://onlinelibrary.wiley.com/doi/10.1111/ins.2013.20.issue-1/issuetoc>)
- 2015- Associate editor, *Pesticide Biochemistry and Physiology*, Elsevier
- 2013- Academic editor, *PLoS ONE* (<http://www.plosone.org/>)
- 2010- Associate editor, *Pest Management Science*, Wiley InterScience
- 2001- Subject editor, *Journal of Economic Entomology*, Entomological Society of America
- 2013- Editorial board member, *Journal of Plant Protection*, Chinese Society of Plant Protection and China Agricultural University
- 2012- Editorial board member, *Conference Papers in Biology*, Hindawi Publishing Corporation
- 2012- Editorial board member, *Journal of Integrative Agriculture*, Elsevier B.V.
- 2012- Editorial board member, *Psyche: A Journal of Entomology*, Hindawi Publishing Corporation
- 2011- Editorial board member, *Scientific Reports*, Nature Publishing Group
- 2011- 2015 Editorial board member, *Pesticide Biochemistry and Physiology*, Elsevier
- 2009- Editorial board member, *Archives of Insect Biochemistry and Physiology*, Wiley InterScience
- 2008- 2010 Editorial board member, *The Open Toxicology Journal*, Bentham Science Publishers Ltd.
- 2005- Editorial board member, *Acta Entomologica Sinica*, Entomological Society of China
- 2001- Editorial board member, *Insect Science*, Wiley-Blackwell Publishing

Symposium Organizing and Conference Moderator

- 2015 Symposium co-organizer, *Mechanisms Affecting the Efficiency of RNA Interference in Insects* for the XXV International Congress of Entomology to be held in Orlando, FL (Sep. 25-30, 2016)

- 2014 Vice Chair of the Academic Committee, *the First International Symposium on Insecticide Toxicology*, Guangzhou, China (Aug. 5-7, 2014)
- 2013 Chair of Branch Session III (Insect Molecular Toxicology/Insect Molecular Pharmacology) at the 4th International Conference of Insect Physiology, Biochemistry and Molecular Biology (IPMB 2013), Nanjing, China (June 15-19, 2013)
- 2013 Organizing Committee member and Academic Committee member, *The Fourth International Conference of Insect Physiology, Biochemistry and Molecular Biology*, Nanjing, China (June 15-19, 2013)
- 2012 Co-moderator, 10-minute papers in the PBT Section: *RNAi and Immunology*, the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN (Nov. 11-14, 2012)
- 2012 Co-organizer and co-moderator, Physiology, Biochemistry, and Toxicology (PBT) Section Symposium: *RNAi: The Power, The Promise and The Frustration*, the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN (Nov. 11-14, 2012)
- 2012 International Organizing Committee member, *the Second International Symposium on Insect Midgut Biology*, Guangzhou, China (Sep. 24-28, 2012)
- 2012 Symposium moderator, *Research Progress and Exchange of Project "973"*, Institute of Zoology, Chinese Academy of Sciences, and Institute of Applied Biology, Shanxi University, Taiyuan, Shanxi, China (June 15-19, 2012)
- 2011 Academic Committee member, *the Third International Symposium on Insect Physiology, Biochemistry and Molecular Biology*, Shanghai, China (July 2-5, 2011)
- 2011 Co-organizer, *Symposium on Insect Molecular Toxicology and Chitin Metabolism*, Shanxi University, Taiyuan, China (June 26-28, 2011)
- 2010 Co-organizer, *Member Symposium: Overseas Chinese Entomologists Association (OCEA): Opportunities and Challenges of Globalization in Entomology*, the 58th National Annual Meeting of the Entomological Society of America, San Diego, CA (Dec. 12-15, 2010)
- 2009 Section chair, *the International Insect Science Symposium/Advanced Summer Training Course of Entomological Theories and Methods*, Institute of Zoology, Beijing, China (July 25-30, 2009)
- 2009 Section chair, *the Second International Symposium on Insect Physiology, Biochemistry and Molecular Biology*, Chengde, Hebei Province, China (July 19-22, 2009)
- 2009 Co-organizer, *Member Symposium: Overseas Chinese Entomologists Association (OCEA): Looking Into the Future*, the 57th National Annual Meeting of the Entomological Society of America, Indianapolis, IN (Dec. 13-16, 2009)

Review and Judging Panels

- 2014 Review panels (key project and regular project programs), the Natural Science Foundation of China, Beijing, China (July 8-17, 2014)
- 2013 Judge for 2013 Research and the State graduate student poster session, Kansas State University (Oct. 29, 2013)
- 2013 Review panels (key project and regular project programs), the Natural Science Foundation of China, Beijing, China (July 8-18, 2013)
- 2013 Judge for Student Oral Presentation Competition in Branch Session III (Insect Molecular Toxicology/Insect Molecular Pharmacology) at the 4th International Conference of Insect Physiology, Biochemistry and Molecular Biology (IPMB 2013), Nanjing, China (June 15-19, 2013)
- 2012 Judge for Section PBT-3 Student Poster Competition at the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN (Nov. 11-14, 2012)

- 2012 Judge for OCEA Student Oral and Poster Competition for the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN (Nov. 11-14, 2012)
- 2011- 2013 Judge for the International Congress on Insect Neurochemistry and Neurophysiology (ICINN) Student Recognition Award in Insect Physiology, Biochemistry, Toxicology, and Molecular Biology (Foundation)
- 2011 Judge for Section PBT-2 Student 10-Minute Paper Competition at the ESA Annual Meeting, Reno, NV (Nov. 13-16, 2011)
- 2011 Judge for OCEA Student Oral and Poster Competition for the ESA Annual Meeting, Reno, NV (Nov. 13-16, 2011)
- 2010 Judge for OCEA Student Oral and Poster Competition for the ESA Annual Meeting, San Diego, CA (Dec. 12-15, 2010)
- 2008 Judge for student poster competition at the 13th Annual K-State Research Forum, Kansas State University (Mar. 7, 2008)
- 2005 Review panel, the National Natural Science Foundation of China
- 2001 Judge for Section B Student Poster Competition at the ESA Annual Meeting, San Diego (Dec. 9-12, 2001)
- 2000 Judge for Section B Student Poster Competition at the Joint Annual Meeting of the SEQ, ESC and ESA, Montreal, Canada (Dec. 3-6, 2000)

Memberships in Professional Societies

American Association for the Advancement of Science (AAAS)

American Chemical Society

Entomological Society of America

Gamma Sigma Delta, Honor Society of Agriculture

Sigma Xi, Scientific Research Society

Overseas Chinese Entomologist Association (*Treasurer 2008, Vice President 2009, and President 2010*)

PATENT

- 2014 Zhu K. Y., Zhang X. & Zhang J. Double-stranded RNA-based nanoparticles for insect gene silencing (U.S. Patent No. 8,841,272 B2)

REFEREED JOURNAL PUBLICATIONS

1. Zhu K. Y., Merzendorfer H., Zhang W., Zhang J. & Muthukrishnan S. Biosynthesis, turnover and function of chitin in insects. *Annu. Rev. Entomol.* (in press for 2016).
2. Liu Y., Wu H., Yu Z., Guo Y., Zhang J., Zhu K. Y. & Ma E. 2015. Transcriptional response of two metallothionein genes (*OcMT1* and *OcMT2*) and histological changes in *Oxya chinensis* (Orthoptera: Acridoidea) exposed to three trace metals. *Chemosphere* 139: 310-317.
3. Guo Y., Zhang X., Wu H., Yu R., Zhang J., Zhu K. Y., Guo Y. & Ma E. 2015. Identification and functional analysis of a cytochrome P450 gene *CYP9AQ2* involved in deltamethrin detoxification from *Locusta migratoria*. *Pestic. Biochem. Physiol.* 122: 1-7.
4. Kim Y. H., Soumaila Issa M., Cooper A. M. W. & Zhu K. Y. 2015. RNA interference: Applications and advances in insect toxicology and insect pest management. *Pestic. Biochem. Physiol.* 120: 109-117 (**No. 4 Most Downloaded Articles from ScienceDirect in the Last 90 Days as of 07/09/2015**).
5. Zhang J., Ge P., Li D., Guo Y., Zhu K. Y., Ma E. & Zhang J. 2015. Two homologous carboxylesterase genes from *Locusta migratoria* with different tissue expression patterns and roles in insecticide detoxification. *J. Insect Physiol.* 77: 1-8.
6. Xiao D., Gao X., Xu J., Liang X., Li Q., Yao J. & Zhu K. Y. 2015. Clathrin-dependent endocytosis plays a predominant role in cellular uptake of double-stranded RNA in the red flour beetle. *Insect*

Biochem. Mol. Biol. 60: 68-77 (No. 19 Most Downloaded Articles from *ScienceDirect* in the Last 90 Days as of 07/30/2015).

7. Zhang X., Mysore K., Flannery E., Michel K., Severson D. W., Zhu K. Y. & Duman-Scheel M. 2015. Chitosan/interfering RNA nanoparticle mediated gene silencing in disease vector mosquito larvae. *J. Vis. Exp.* 97: e52523 (<https://www.jove.com/video/52523/chitosaninterfering-rna-nanoparticle-mediated-gene-silencing-disease>).
8. Li D., Zhang J., Wang Y., Liu X., Ma E., Sun Y., Li S., Zhu K. Y. & Zhang J. 2015. Two chitinase 5 genes from *Locusta migratoria*: Molecular characteristics and functional differentiation. *Insect Biochem. Mol. Biol.* 58: 46-54.
9. Liang X., Xiao D., He Y., Yao J., Zhu G., Zhu K. Y. 2015. Insecticide-mediated up-regulation of cytochrome P450 genes in the red flour beetle (*Tribolium castaneum*). *Int. J. Mol. Sci.* 16: 2078-2098.
10. Kharel K., Arthur F. H., Zhu K. Y., Campbell J. F. & Subramanyam B. 2015. Influence of temperature and artificially-created physical barriers on the efficacy of synergized pyrethrin aerosol. *J. Stored Prod. Res.* 60: 36-42.
11. Zhang X., Wang J., Zhang M., Qin G., Li D., Zhu K. Y., Ma E. & Zhang J. 2014. Molecular cloning, characterization and positively selected sites of the glutathione S-transferase family from *Locusta migratoria*. *PLOS ONE* 9(12): e114776.
12. Chen H., Zhang H., Throne J. & Zhu K. Y. 2014. Transcript analysis and expression profiling of three heat shock protein 70 genes in the ectoparasitoid *Habrobracon hebetor* (Hymenoptera: Braconidae). *Insect Sci.* 21: 415-428.
13. Tucker A. M., Campbell J. F., Arthur F. H. & Zhu K. Y. 2014. Efficacy of aerosol applications of methoprene and synergized pyrethrin against *Tribolium castaneum* (Herbst) adults and eggs. *J. Econ. Entomol.* 107: 1284-1291.
14. Kharel K., Arthur F. H., Zhu K. Y., Campbell J. F. & Subramanyam B. 2014. Susceptibility of different life stages of *Tribolium confusum* to pyrethrin aerosol: Effects of flour source on insecticidal efficacy. *J. Pest Science* 87: 295-300.
15. Xiao D., Liang X., Gao X., Yao J. & Zhu K. Y. 2014. The *lethal giant larvae* gene in *Tribolium castaneum*: Molecular properties and roles in larval and pupal development as revealed by RNA interference. *Int. J. Mol. Sci.* 15: 6880-6896.
16. Zhang J., Li D., Ge P., Guo Y., Zhu K. Y., Ma E., Zhang J. 2014. Molecular and functional characterization of cDNAs putatively encoding carboxylesterases from the migratory locust, *Locusta migratoria*. *PLOS ONE* 9(4): e94809.
17. Yao J., Buschman L. L., Lu N., Khajuria C. & Zhu K. Y. 2014. Changes in gene expression in the larval gut of *Ostrinia nubilalis* in response to *Bacillus thuringiensis* Cry1Ab protoxin ingestion. *Toxins* 6: 1274-1294.
18. Tucker A. M., Campbell J. F., Arthur F. H. & Zhu K. Y. 2014. Horizontal transfer of methoprene by *Tribolium castaneum* (Herbst) and *T. confusum* Jacquelin du Val. *J. Stored Prod. Res.* 57: 73-79.
19. Ananthakrishnan R., Sinha D. K., Murugan M., Zhu K. Y., Chen M.-S., Zhu Y. C., & Smith C. M. 2014. Comparative gut transcriptome analysis reveals differences between virulent and avirulent biotypes of the Russian wheat aphid, *Diuraphis noxia*. *Arthropod-Plant Inte.* 8: 79-88.
20. Tucker A. M., Campbell J. F., Arthur F. H. & Zhu K. Y. 2014. Mechanisms for horizontal transfer of methoprene from treated to untreated *Tribolium castaneum* (Herbst). *J. Stored Prod. Res.* 57: 36-42.
21. Kharel K., Arthur F. H., Zhu K. Y., Campbell J. F. & Subramanyam B. 2014. Evaluation of synergized pyrethrin aerosol for control of *Tribolium castaneum* and *Tribolium confusum* (Coleoptera: Tenebrionidae). *J. Econ. Entomol.* 107: 462-468.
22. Campbell J. F., Arthur F. H. & Zhu K. Y. 2014. Spatial pattern in aerosol insecticide deposition inside a flour mill. *J. Econ. Entomol.* 107: 440-454.

23. Scott J. G., Michel K., Bartholomay L., Siegfried B. D., Hunter W. B., Smagghe G., Zhu K. Y., Douglas A. E. 2013. Towards the elements of successful insect RNAi. *J. Insect Physiol.* 59: 1212-1221 (**No. 3 Most Downloaded Paper from ScienceDirect in the Last 90 Days of 04/25/2014**).
24. Zhang J., Li D., Ge P., Yang M., Guo Y., Zhu K. Y., Ma E. & Zhang J. 2013. RNA interference revealed the roles of two carboxylesterase genes in insecticide detoxification in *Locusta migratoria*. *Chemosphere* 93: 1207-1215.
25. Liu X., Li F., Li D., Ma E., Zhang W., Zhu K. Y. & Zhang J. 2013. Molecular and functional analysis of UDP-*N*-acetylglucosamine pyrophosphorylases from the migratory locust, *Locusta migratoria*. *PLOS ONE* 8(8): e71970.
26. Zhang X. & Zhu K. Y. 2013. Biochemical characterization of chitin synthase activity and inhibition in the African malaria mosquito, *Anopheles gambiae*. *Insect Sci.* 20: 158-166.
27. Chen H., Zhang H., Zhu K. Y. & Throne J. E. 2013. Performance of diapausing parasitoid wasps, *Habrobracon hebetor*, after cold storage. *Biol. Control* 64: 186-194.
28. Qin G., Jia M., Liu T., Zhang X., Guo Y., Zhu K. Y., Ma E. & Zhang J. 2013. Characterization and functional analysis of four glutathione *S*-transferases from the migratory locust, *Locusta migratoria*. *PLOS ONE* 8(3): e58410. doi:10.1371/journal.pone.0058410.
29. Willmott A. L., Cloyd R. A. & Zhu K. Y. 2013. Efficacy of pesticide mixtures against the western flower thrips, *Frankliniella occidentalis* (Thysanoptera: Thripidae) under laboratory and greenhouse conditions. *J. Econ. Entomol.* 106: 247-256.
30. Rong S., Zhang X., Zhu K. Y., Guo Y., Ma E. & Zhang J. 2013. RNA interference to reveal roles of β -*N*-acetylglucosaminidase gene during molting process in *Locusta migratoria*. *Insect Sci.* 20: 109-119.
31. Zhu K.Y. 2013. RNA interference: A powerful tool in entomological research and a novel approach for insect pest management. *Insect Sci.* 20: 1-3 (**No. 3 Most Downloaded Paper in 2013**).
32. Liu X., Zhang H., Li S., Zhu K. Y., Ma E. & Zhang J. 2012. Characterization of a midgut-specific chitin synthase gene (*LmCHS2*) responsible for biosynthesis of chitin of peritrophic matrix in *Locusta migratoria*. *Insect Biochem. Mol. Biol.* 42: 902-910.
33. Yao J., Buschman L. L., Oppert B., Khajuria C. & Zhu K. Y. 2012. Characterization of cDNAs encoding serine proteases and their transcriptional responses to Cry1Ab protoxin in the gut of *Ostrinia nubilalis* larvae. *PLOS ONE* 7(8): e44090. doi:10.1371/journal.pone.0044090.
34. Zhang X., Zhang J., Park Y. & Zhu K. Y. 2012. Identification and characterization of two chitin synthase genes in African malaria mosquito, *Anopheles gambiae*. *Insect Biochem. Mol. Biol.* 42: 674-682.
35. Zhang X., Li T., Zhang J., Li D., Guo Y., Qin G., Zhu K. Y., Ma E. & Zhang J. 2012. Structural and catalytic role of two conserved tyrosines in Delta class glutathione *S*-transferase from *Locusta migratoria*. *Arch. Insect Biochem. Physiol.* 80: 77-91.
36. Chen H., Zhang H., Zhu K. Y. & Throne J. E. 2012. Induction of reproductive diapause in *Habrobracon hebetor* (Hymenoptera: Braconidae) when reared at different photoperiods at low temperatures. *Environ. Entomol.* 41: 697-705.
37. Guo Y., Zhang J., Yu R., Zhu K. Y., Guo Y. & Ma E. 2012. Identification and characterization of two new cytochrome P450 genes from the oriental migratory locust, *Locusta migratoria manilensis* (Meyen). *Chemosphere* 87: 709-717.
38. Lang G.-J., Zhu K. Y. & Zhang C.-X. 2012. Can acetylcholinesterase serve as a target for developing more selective insecticides? *Curr. Drug Targets* 13: 495-501.
39. Pang Y.-P., Brimijoin S, Ragsdale D. W., Zhu K. Y. & Suranyi R. 2012. Novel and viable acetylcholinesterase target site for developing effective and environmentally safe insecticides. *Curr. Drug Targets* 13: 471-482.
40. Lu Y., Park Y., Gao X., Zhang X., Yao J., Pang Y.-P., Jiang H. & Zhu K. Y. 2012. Cholinergic and non-cholinergic functions of two acetylcholinesterase genes revealed by gene-silencing in *Tribolium castaneum*. *Sci. Rep.* 2: 288. doi:10.1038/srep00288.

41. Lu Y., Pang Y.-P., Park Y., Gao X., Yao J., Zhang X. & Zhu K. Y. 2012. Genome organization, phylogenies, expression patterns and three-dimensional protein models of two acetylcholinesterase genes from the red flour beetle. *PLOS ONE* 7(2): e32288. doi:10.1371/journal.pone.0032288.
42. Prasain K., Nguyen T. D. T., Gorman M. J., Barrigan L., Peng Z., Kanost M. R., Syed L. U., Li J., Zhu K. Y. & Hua D. H. 2012. Redox potentials, laccase oxidation, and antilarval activities of substituted phenols. *Bioorg. Med. Chem.* 20: 1679-1689.
43. Guo Y., Zhang J., Yang M., Yan L., Zhu K. Y., Guo Y. & Ma E. 2012. Comparative analysis of cytochrome P450-like genes from *Locusta migratoria manilensis* (Meyen): Expression profiling and response to insecticide exposure. *Insect Sci.* 19: 75-85.
44. Qin G., Jia M., Liu T., Zhang X., Guo Y., Zhu K. Y., Ma E. & Zhang J. 2012. Heterologous expression and characterization of a sigma glutathione S-transferase involved in carbaryl detoxification from oriental migratory locust, *Locusta migratoria manilensis* (Meyen). *J. Insect Physiol.* 58: 220-227.
45. Sutton A. E., Arthur F. H., Zhu K. Y., Campbell J. F. & Murray L. W. 2011. Residual efficacy of synergized pyrethrin + methoprene aerosol against larvae of *Tribolium castaneum* and *Tribolium confusum* (Coleoptera: Tenebrionidae). *J. Stored Prod. Res.* 47: 399-406.
46. Jia M., Qin G. H., Liu T., Zhang J. Z., Zhang X. Y., Zhu K. Y., Guo Y. P., & Ma E. B. 2011. Expression and characterization of a sigma-class glutathione S-transferase of the oriental migratory locust, *Locusta migratoria manilensis* (Meyen). *Agric. Sci. China* 10: 1570-1576.
47. Khajuria C., Buschman L. L., Chen M.-S., Siegfried B. D. & Zhu K. Y. 2011. Identification of a novel aminopeptidase P-like gene (*OnAPP*) possibly involved in Bt toxicity and resistance in a major corn pest (*Ostrinia nubilalis*). *PLOS ONE* 6(8): e23983. doi:10.1371/journal.pone.0023983.
48. Zhang J., Zhang X., Arakane Y., Muthukrishnan S., Kramer K. J., Ma E. & Zhu K. Y. 2011. Identification and characterization of a novel chitinase-like gene cluster (*AgCht5*) possibly derived from tandem duplications in the African malaria mosquito, *Anopheles gambiae*. *Insect Biochem. Mol. Biol.* 41: 521-528.
49. Zhang J., Zhang X., Arakane Y., Muthukrishnan S., Kramer K. J., Ma E. & Zhu K. Y. 2011. Comparative genomic analysis of chitinase and chitinase-like genes in the African malaria mosquito (*Anopheles gambiae*). *PLOS ONE* 6(5): e19899. doi:10.1371/journal.pone.0019899.
50. Qin G., Jia M., Liu T., Xuan T., Zhu K. Y., Guo Y., Ma E. & Zhang J. 2011. Identification and characterization of ten glutathione S-transferase genes from oriental migratory locust, *Locusta migratoria manilensis* (Meyen). *Pest Manag. Sci.* 67: 697-704.
51. Khajuria C. Buschman L. L., Chen M.-S., Zurek L. & Zhu K. Y. 2011. Characterization of six antibacterial response genes from the European corn borer (*Ostrinia nubilalis*) larval gut and their expression in response to bacterial challenge. *J. Insect Physiol.* 57: 345-355.
52. Zhu Y. C., Guo Z., Chen M.-S., Zhu K. Y., Liu X. F. & Scheffler B. 2011. Major putative pesticide receptors, detoxification enzymes, and transcriptional profile of the midgut of the tobacco budworm, *Heliothis virescens* (Lepidoptera: Noctuidae). *J. Invertebr. Pathol.* 106: 296-307.
53. Zhang J., Zhang J., Yang M., Jia Q.-D., Ma E., Guo Y. & Zhu K. Y. 2011. Genomics-based approaches to screening carboxylesterase-like genes potentially involved in malathion resistance in oriental migratory locust (*Locusta migratoria manilensis*). *Pest Manag. Sci.* 67: 183-190.
54. Zhang J., Liu X., Zhang J., Li D., Sun Y., Guo Y., Ma E. & Zhu K. Y. 2010. Silencing of two alternative splicing-derived mRNA variants of chitin synthase 1 gene by RNAi is lethal to the oriental migratory locust, *Locusta migratoria manilensis* (Meyen). *Insect Biochem. Mol. Biol.* 40: 824-833 (**No. 3 Most Downloaded Paper 2011**).
55. Zhang X., Zhang J. & Zhu K. Y. 2010. Chitosan/double-stranded RNA nanoparticle-mediated RNA interference to silence chitin synthase genes through larval feeding in the African malaria mosquito (*Anopheles gambiae*). *Insect Mol. Biol.* 19: 683-693.

56. Khajuria C., Buschman L. L., Chen M.-S., Muthukrishnan S. & Zhu K. Y. 2010. A gut-specific chitinase gene essential for regulation of chitin content of peritrophic membrane and growth of *Ostrinia nubilalis* larvae. *Insect Biochem. Mol. Biol.* 40: 621-629.
57. Zhang D.-D., Zhu K. Y. & Wang C.-Z. 2010. Sequencing and characterization of six cDNAs putatively encoding three pairs of pheromone receptors in two sibling species, *Helicoverpa armigera* and *Helicoverpa assulta*. *J. Insect Physiol.* 56: 586-593.
58. Li X., Zhang X. & Zhu K. Y. 2010. Studies on insecticidal activity and effect of *Tripterygium wilfordii* total alkaloids on glutathione *S*-transferase activity and gene expression in the aquatic midge *Chironomus tentans* (Diptera: Culicidae). *J. Northwest A&F Univ. (Nat. Sci. Ed.)* 38: 151-157 (Chinese with English abstract).
59. Zhao P., Zhu K. Y. & Jiang H. 2010. Heterologous expression, purification, and biochemical characterization of a greenbug (*Schizaphis graminum*) acetylcholinesterase encoded by a paralogous gene (*ace-1*). *J. Biochem. Mol. Toxicol.* 24: 51-59.
60. Coutinho-Abreu I. V., Zhu K. Y. & Ramalho-Ortigao M. 2010. Transgenesis and paratransgenesis to control insect-borne diseases: Current status and future challenges. *Parasitol. Int.* 59: 1-8 (**No. 4 Most Downloaded Paper 2011**).
61. Li X., Zhang X., Zhang J., Zhang X., Starkey S. R. & Zhu K. Y. 2009. Identification and characterization of eleven glutathione *S*-transferase genes from the aquatic midge *Chironomus tentans* (Diptera: Chironomidae). *Insect Biochem. Mol. Biol.* 39: 745-754 (**Science Direct TOP25 Hottest Article 2010**).
62. Pang Y.-P., Ekström F., Polsinelli G. A., Gao Y., Rana S., Hua D. H., Andersson B., Andersson P. O., Peng L., Singh S. K., Mishra R. K., Zhu K. Y., Fallon A. M., Ragsdale D. W. & Brimijoin S. 2009. Selective and irreversible inhibitors of mosquito acetylcholinesterases for controlling malaria and other mosquito-borne diseases. *PLOS ONE* 4(8): e6851. doi:10.1371/journal.pone.0006851.
63. Khajuria C., Zhu Y. C., Chen M.-S., Buschman L. L., Higgins R. A., Yao J., Cresop A. L. B., Siegfried B. D., Muthukrishnan S. & Zhu K. Y. 2009. Expressed sequence tags from larval gut of the European corn borer (*Ostrinia nubilalis*): Exploring candidate genes potentially involved in *Bacillus thuringiensis* toxicity and resistance. *BMC Genomics* 10: 286 doi:10.1186/1471-2164-10-286.
64. Yang M. L., Zhang J. Z., Zhu K. Y., Xuan T., Liu X. J., Guo Y. P. & Ma E. B. 2009. Mechanisms of organophosphate resistance in a field population of oriental migratory locust, *Locusta migratoria manilensis* (Meyen). *Arch. Insect Biochem. Physiol.* 71: 3-15.
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BOOKS AND BOOK CHAPTERS

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RESEARCH PRESENTATIONS (LAST FIVE YEARS FROM A TOTAL OF 343)

1. Zhu K. Y. RNA interference-based strategies for insect pest management. School of Life Sciences, Anhui Agricultural University, Hefei, Anhui Province, China. June 23, 2015 (**INVITED**).
2. Zhu K. Y. The path to scientific publication. Institute of Applied Biology, Shanxi University, Taiyuan, Shanxi Province, China. June 22, 2015 (**INVITED**).
3. Zhu K. Y. The path to scientific publication. College of Agriculture, Shanxi Agricultural University, Taigu, Shanxi Province, China. June 19, 2015 (**INVITED**).
4. Zhu K. Y. Clathrin-dependent endocytosis as a major mechanism of cellular uptake of dsRNA in the red flour beetle. *Symposium: Potential of RNAi Technology in Entomology* at the 70th ESA North Central Branch Meeting, Manhattan, KS. May 31-June 3, 2015 (**INVITED**).
5. Yao K., Bhadiraju S., Zhu K. Y., Kingsly A. Efficacy of a synthetic amorphous zeolite against five species of stored-grain insects on wheat and concrete. Presented by KY at the 70th ESA North Central Branch Meeting, Manhattan, KS. May 31-June 3, 2015
6. Zhu K. Y. Mechanisms of double-stranded RNA uptake in major insect pests. USDA/NIFA Project Director Workshop. Washington, DC. Apr. 28-29, 2015.
7. Zhu K. Y. Cellular uptake of dsRNA in the red flour beetle. Faculty Blitz, Department of Entomology, Kansas State University, Manhattan, KS. Feb. 9, 2015.
8. Zhu K. Y., Xiao D. Cellular uptake of double-stranded RNA in *Tribolium castaneum*. Presented by KYZ in *PBT Section Symposium: RNAi: Emerging Technology to Overcome Grand Challenges in Entomology* at the 62nd National Annual Meeting of the Entomological Society of America, Portland, OR. Nov. 16-19, 2014 (**INVITED**).
9. Soumaila Issa M., Park Y., Ramalho-Ortigao M., Zhu K. Y. Functional analysis of cytochrome P450 genes in the yellow fever mosquito *Aedes aegypti* (Diptera: Culicidae). Presented by MSI at the 62nd National Annual Meeting of the Entomological Society of America, Portland, OR. Nov. 16-19, 2014.
10. Zhu K. Y. Developing new strategies for insect pest management in the genomics era. The Commerce Bank Distinguished Graduate Faculty Award Lecture. Kansas State University, Manhattan, KS. Oct. 29, 2014 (**INVITED**).
11. Soumaila Issa M., Park Y., Ramalho-Ortigao M., Zhu K. Y. RNA interference to reveal the role of the nuclear receptor HR96 in up-regulation of cytochrome P450 genes in *Aedes aegypti*. Presented by MSI at the K-State Research Forum, Manhattan, KS. Oct. 28, 2014.
12. Zhu K. Y. RNA interference: Applications in insect toxicology. IUPAC: Fifty Years of Research and Mentoring: Symposium in Honor of the Life and Career of Professor Fumio Matsumura, the 248th ACS National Meeting & Exposition, San Francisco, CA. August 10-14, 2014 (**INVITED**).
13. Zhu K. Y. RNA interference: Applications in insecticide toxicology. The 1st International Symposium on Insecticide Toxicology, Guangzhou, China. Aug. 5-7, 2014 (**INVITED**).
14. Kumari M., Merzendorfer H., Arakane Y., Zhu K. Y., Beeman R., Kramer K., Park Y., Muthukrishnan S. The molecular target and mode of action of the acylura insecticide, diflubenzuron. The 1st International Symposium on Insecticide Toxicology, Guangzhou, China. Aug. 5-7, 2014 (**INVITED**).

15. Zhu K. Y. RNA interference: Applications in entomological research. Shanxi University, Taiyuan, China. Aug. 1, 2014 (**INVITED**).
16. Zhu K. Y. RNA interference: Applications in entomological research. Zhejiang University, Hangzhou, China. July. 30, 2014 (**INVITED**).
17. Campbell J. F., Arthur F. H., Zhu K. Y. Evaluation of aerosol insecticide efficacy. Presented by JFC at the International Association of Operative Millers Annual Meeting, Omaha, NE. May 19-23, 2014.
18. Zhu K. Y. RNA interference: Applications in entomological research. Chemistry Seminar Series, Monsanto Company, Chesterfield, MO. Apr. 10, 2014 (**INVITED**).
19. Soumaila Issa M., Park Y., Ramalho-Ortigao M., Zhu K. Y. Functional analysis of cytochrome P450 genes in the yellow fever mosquito, *Aedes aegypti* (Diptera: Culicidae). Presented by MSI at the K-State Research Forum, Manhattan, KS. Mar. 26, 2014.
20. Arthur F. H., Kharel K., Zhu K. Y., Campbell J. F., Subramanyam B. Susceptibility of flour beetle life stages to pyrethrin aerosol. Presented by FHA at 2013 Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions, San Diego, CA. Nov. 4-6, 2013.
21. Zhu K. Y. Insect pest management in modern agriculture: Challenges and innovative solutions. College of Life Sciences, China Jiliang University, Hangzhou, China. Oct. 10, 2013 (**INVITED**).
22. Yao J., Khajuria C., Buschman L. L., Zhu K. Y. Transcriptional responses to the ingestion of Cry1Ab protoxin and Cry1Ab corn leaves in the gut of *Ostrinia nubilalis* larvae. Presented by KYZ in Biopesticides: State of the Art and Future Opportunities Symposium at 246th American Chemical Society National Meeting & Exposition, Indianapolis, IN. Sep. 8-12, 2013 (**INVITED**).
23. Zhu K. Y. Insect pest management in modern agriculture: Challenges and innovative solutions. The 4th Insect Science Symposium/Advanced Summer Training Course of Entomological Theory and Method, Institute of Zoology, Chinese Academy of Sciences, Beijing, China. July 12-16, 2013 (**INVITED**).
24. Soumaila Issa M., Da X., Zhu K. Y. Genome-wide analysis of cytochrome P450 genes in the yellow fever mosquito *Aedes aegypti* (Diptera: Culicidae). Presented by MSI at the 68th ESA North Central Branch Meeting in Rapid City, SD, June. 16-19, 2013.
25. Zhu K. Y. Chitin biosynthetic pathway: A unique target for chemical and RNAi-based insect pest management. The Fourth International Symposium on Insect Physiology, Biochemistry and Molecular Biology, Nanjing, China, June 15-18, 2013 (**INVITED KEYNOTE SPEECH**).
26. Zhu K. Y. Insect Acetylcholinesterases: Novel functions and prospect as a selective insecticide target. College of Agriculture and Biotechnology, China Agricultural University, Beijing, China. June 1, 2013 (**INVITED**).
27. Zhu K. Y. Career development and successful job hunting strategies in life sciences. Member Symposium: Overseas Chinese Entomologists Association (OCEA): Global Collaboration and Career Development in Entomology, the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN. Nov. 11-14, 2012 (**INVITED**).
28. Xiao D., Gao X., Yao J. & Zhu K. Y. Significance of lethal giant larvae gene in *Tribolium castaneum* revealed by RNA interference. Presented by DX at the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN. Nov. 11-14, 2012.
29. Willmott A. L., Cloyd R. A. & Zhu K. Y. Residual efficacy of systemic insecticides against the citrus mealybug, *Planococcus citri*. Presented by ALW at the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN. Nov. 11-14, 2012.
30. Willmott A. L., Cloyd R. A. & Zhu K. Y. Pesticide mixtures and western flower thrips, *Frankliniella occidentalis*. Presented by ALW at the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN. Nov. 11-14, 2012.

31. Tucker A. M., Arthur F. H., Campbell J. F. & Zhu K. Y. The efficacy of methoprene + pyrethrin aerosols on *Tribolium castaneum* eggs. Presented by AMT at the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN. Nov. 11-14, 2012.
32. Zhu K. Y. Delivery of dsRNA through nanoparticles. Program Symposium- RNAi: From Basic Science toward Global Application, the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN. Nov. 11-14, 2012 (**INVITED**).
33. Kharel K., Arthur F. H., Zhu K. Y. & Campbell J. F. Sanitation increases effectiveness of aerosol insecticides in milling facilities. Presented by KK at the 60th National Annual Meeting of the Entomological Society of America, Knoxville, TN. Nov. 11-14, 2012.
34. Kharel K., Arthur F. H., Zhu K. Y., & Campbell J. F. Sanitation influences the efficacy of aerosol insecticides. Poster presentation at Research and the State: Graduate student poster session by KK, Kansas State University, Manhattan, KS. Nov. 6, 2012.
35. Zhu K. Y. RNA interference and its prospects for insect pest management. College of Life Science, Sun Yat-Sen University, Guangzhou, China. Oct. 29, 2012 (**INVITED**).
36. Willmott A. L., Cloyd R. A. & Zhu K. Y. Efficacy of systemic insecticides against the citrus mealybug, *Planococcus citri* (Hemiptera: Pseudococcidae). Presented by ALW at the 17th K-State Research Forum, Manhattan, KS. Mar. 8, 2012.
37. Liu X., Zhang H., Li S., Zhu K. Y., Ma E. & Zhang J. Characterization of a midgut-specific chitin synthase gene (*LmCHS2*) responsible for biosynthesis of chitin of peritrophic matrix in *Locusta migratoria*. Presented by XL at the Second International Symposium on Insect Midgut Biology, Guangzhou, China. Oct. 24-28, 2012.
38. Khajuria C., Yao J., Buschman L. L. & Zhu K. Y. Transcriptome analysis revealed midgut-specific genes involved in Bt toxicity and larval development in the European corn borer. Presented by KYZ at the Second International Symposium on Insect Midgut Biology, Guangzhou, China. Oct. 24-28, 2012 (**INVITED**).
39. Zhang X., Michel K. & Zhu K. Y. Explore new insecticidal site targeting on chitin synthesis enzymes in *Anopheles gambiae*. Presented by XZ at the 244th American Chemical Society National Meeting, Philadelphia, PA. Aug. 19-23, 2012.
40. Zhu K. Y. RNA interference and its prospects for insect pest management. College of Agriculture and Biotechnology, China Agricultural University, Beijing, China. June 20, 2012 (**INVITED**).
41. Zhu K. Y. Insect pest management in modern agriculture: Challenges and innovative solutions. Institute of Applied Biology, Shanxi University, Taiyuan, China. June 15, 2012 (**INVITED**).
42. Zhu K. Y. Insecticide metabolism. Institute of Applied Biology, Shanxi University, Taiyuan, China. June 11, 2012 (**INVITED**).
43. Willmott A. L., Cloyd R. A. & Zhu K. Y. Efficacy of pesticide mixtures on the western flower thrips, *Frankliniella occidentalis* (Thysanoptera: Thripidae). Poster presented by ALW at the 67th annual meeting of the North Central Branch of the ESA, Lincoln, NE, June 3-6, 2012.
44. Kharel K., Zhu K. Y., Arthur F. H. & Campbell J. Presence of flour can influence the efficacy of pyrethrin aerosol spray against flour beetles. Presented by KK at the 67th annual meeting of the North Central Branch of the ESA, Lincoln, NE, June 3-6, 2012.
45. Zhu K. Y. Insect pest management in modern agriculture: Challenges and innovative solutions. Institute of Insect Sciences, Zhejiang University, Hangzhou, China. May 23, 2012 (**INVITED**).
46. Zhu K. Y. Insect acetylcholinesterases: Novel functions and prospect as a selective insecticide target. College of Life Sciences, China Jiliang University, Hangzhou, China. May 22, 2012 (**INVITED**).
47. Tang G., Zhang X., Yao J. & Zhu K. Y. Identification and functional analysis of cytochrome P450 genes from the aquatic midge *Chironomus tentans* (Diptera: Chironomidae). A poster presented by KYZ at the 59th Annual Meeting of the ESA, Reno, NV. Nov. 13-16, 2011.

48. Willmott A. L., Cloyd R. A. & Zhu K. Y. Efficacy of pesticide mixtures on the western flower thrips (*Frankliniella occidentalis*). Presented by ALM at the 59th Annual Meeting of the ESA, Reno, NV. Nov. 13-16, 2011.
49. Tang G., Zhang X., Yao J. & Zhu K. Y. Identification and functional analysis of cytochrome P450 genes from the aquatic midge *Chironomus tentans* (Diptera: Chironomidae). A poster presented by KYZ at the 9th Ecological Genomics Symposium, Kansas City, MO. Nov. 4-6, 2011.
50. Zhu K. Y. RNA interference of two acetylcholinesterase genes in *Tribolium castaneum* and two chitin synthase genes in *Anopheles gambiae*. Institute of Insect Sciences, Zhejiang University, Hangzhou, China, July 21, 2011 (**INVITED**).
51. Zhu K. Y. Two insect acetylcholinesterases: Insights into novel functions and prospect as selective insecticide target. College of Plant Protection, Northwest A&F University, Yangling, Shaanxi, China, July 16, 2011 (**INVITED**).
52. Zhu K. Y. Comparative genomic analysis of chitinase and chitin synthase gene families from *Anopheles gambiae*. Chinese Center for Disease Control and Prevention (China CDC), Beijing, China. July 12, 2011 (**INVITED**).
53. Zhu K. Y. Two insect acetylcholinesterases: Insights into novel functions and prospect as selective insecticide target. The 3rd International Insect Science Symposium/Advanced Summer Training Course of Entomological Theory and Method, Institute of Zoology, Chinese Academy of Sciences, Beijing, China. July 11-15, 2011 (**INVITED**).
54. Zhu K. Y. Comparative genomic analysis of chitinase and chitin synthase gene families from *Anopheles gambiae*. The 3rd International Insect Science Symposium/Advanced Summer Training Course of Entomological Theory and Method, Institute of Zoology, Chinese Academy of Sciences, Beijing, China. July 11-15, 2011 (**INVITED**).
55. Zhu K. Y., Zhang X. & Zhang J. Nanoparticle-based RNAi to silence chitin synthase genes through larval feeding in *Anopheles gambiae*. Presented by KYZ in the Third International Symposium on Insect Physiology, Biochemistry and Molecular Biology, Shanghai, China, July 2-5, 2011 (**INVITED PLANARY SPEECH**).
56. Guo Y., Zhang J., Yu R., Zhu K. Y., Guo Y. & Ma E. Molecular characterizations of cytochrome P450s in oriental migratory locust, *Locusta migratoria*. Presented by YG in the Symposium on Insect Molecular Toxicology and Chitin Metabolism, Shanxi University, Taiyuan, China, June 26-28, 2011.
57. Zhang J., Zhang J., Yang M., Li D., Guo Y., Ma E. & Zhu K. Y. Genomics-based approaches to screening carboxylesterase-like genes potentially involved in insecticide resistance in *Locusta migratoria*. Presented by JZ in the Symposium on Insect Molecular Toxicology and Chitin Metabolism, Shanxi University, Taiyuan, China, June 26-28, 2011.
58. Qin G., Jia M., Liu T., Zhang J., Zhu K. Y. & Ma E. Characterization and functional analysis of glutathione S-transferases of the migratory locust, *Locusta migratoria*. Presented by GQ in the Symposium on Insect Molecular Toxicology and Chitin Metabolism, Shanxi University, Taiyuan, China, June 26-28, 2011.
59. Zhang J., Zhang J., Yang M., Qin G., Li D., Guo Y., Ma E. & Zhu K. Y. Research progress in understanding insecticide resistance in *Locusta migratoria*. Presented by EM in the Symposium on Insect Molecular Toxicology and Chitin Metabolism, Shanxi University, Taiyuan, China, June 26-28, 2011 (**INVITED KEYNOTE SPEECH**).
60. Lang G.-J., Zhu K. Y. & Zhang C.-X. Can acetylcholinesterase serve as a target for developing more selective insecticides? Presented by CXZ in the Symposium on Insect Molecular Toxicology and Chitin Metabolism, Shanxi University, Taiyuan, China, June 26-28, 2011 (**INVITED KEYNOTE SPEECH**).
61. Zhu K. Y., Lu Y., Pang Y.-P., Park Y., Gao X., Zhang X. & Yao J. Two insect acetylcholinesterases: Insights into novel functions and prospect as selective insecticide target.

Presented by KYZ in the Symposium on Insect Molecular Toxicology and Chitin Metabolism, Shanxi University, Taiyuan, China, June 26-28, 2011 (**INVITED KEYNOTE SPEECH**).

62. Yao J., Buschman L. L., Zhu K. Y. Gene expression profiles of *Bt*-resistant and susceptible European corn borer (*Ostrinia nubilalis*) larvae after ingestion of transgenic Cry1Ab corn leaves. A poster presented by JY at the K-State 5th Annual Arthropod Genomics Symposium, Kansas City, MO. June 9-12, 2011.
63. Lu Y., Park Y., Gao X., Zhang X., Yao J., Pang Y.-P. & Zhu K. Y. Novel functions of two acetylcholinesterase genes in *Tribolium castaneum* revealed by RNA interference. A poster presented by KYZ at the K-State 5th Annual Arthropod Genomics Symposium, Kansas City, MO. June 9-12, 2011.
64. Yao J., Khajuria C., Buschman L. L., Zhu K. Y. Gene expression profiles of *Bt*-resistant and susceptible European corn borer larvae, *Ostrinia nubilalis*, after ingestion of transgenic Cry1Ab corn leaves. Presented by JY at the 66th ESA North Central Branch Meeting in Minneapolis, MN. Mar. 13-16, 2011.
65. Tucker A. M., Campbell J. F., Arthur F. & Zhu K. Y. Efficacy and sub-lethal effects of methoprene and pyrethrin aerosol treatments on *Tribolium castaneum*. Presented by AMT at the 66th ESA North Central Branch Meeting in Minneapolis, MN. Mar. 13-16, 2011.
66. Zhu K. Y. Two insect acetylcholinesterases: Insights into the new functions and prospect as novel insecticide targets. Biochemistry Departmental Seminar, Kansas State University, Manhattan, KS. Feb. 23, 2011 (**INVITED**).