

Kun Yan Zhu, Ph.D.

University Distinguished Professor

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(Updated 05/09/2017)

I. Education and Training

- 1992- 1994 **Postdoctoral Research Associate** (Specialty: Insect Molecular Toxicology), University of Massachusetts at Amherst, MA
1989- 1992 **Ph.D. in Biology** (Specialty: Insect Toxicology), Utah State University, Logan, UT
1987- 1989 **M.S. in Biology** (Specialty: Insect Toxicology), Utah State University, Logan, UT
1978- 1982 **B.S. in Plant Protection** (Specialty: Entomology), Zhejiang University (formerly Zhejiang Agricultural University), Hangzhou, China

II. Professional Positions Held

- 2017-Present **University Distinguished Professor**, Department of Entomology, Kansas State University, Manhattan, KS
2007- 2017 **Professor**, Department of Entomology, Kansas State University
2002- 2007 **Associate Professor**, Department of Entomology, Kansas State University
1996- 2002 **Assistant Professor**, Department of Entomology, Kansas State University
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 appointment)**, Teaching and Research Group of Entomology, Department of Plant Protection, Zhejiang Agricultural University, China

III. Professional Membership

- 2001- Present American Association for the Advancement of Science (AAAS)
2000- Present Gamma Sigma Delta, Honor Society of Agriculture
1998- Present Sigma Xi, Scientific Research Society
1998- Present Overseas Chinese Entomologist Association (*Treasurer 2008, Vice President 2009, and President 2010*)
1996- Present American Chemical Society
1989- Present Entomological Society of America

IV. Awards and Honors

- 2017 University Distinguished Professor, Kansas State University
2016 College of Agriculture Excellence in Graduate Teaching Award, Kansas State University

- 2014 Commerce Bank and WT Kemper Foundation Distinguished Graduate Faculty Award, Kansas State University
- 2014 Fellow, Entomological Society of America (ESA)
- 2013 Award of Excellence for Multi-State Research Project, Western Association of Agricultural Experiment Station Directors, USA
- 2012 Fellow, American Association for the Advancement of Science (AAAS)
- 2011 Entomology Recognition Award, North Central Branch of the Entomological Society of America
- 2009 C.V. Riley Achievement Award, North Central Branch of the Entomological Society of America
- 2004 Summer Faculty Fellowship awarded by 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

V. Editor and Editorial Board Member

- 2016- Present Academic editor, Section of Biochemistry, Molecular Biology and Biophysics, *International Journal of Molecular Sciences*, Basel, Switzerland
- 2015- Present Associate editor, *Pesticide Biochemistry and Physiology*, Elsevier
- 2013- 2017 Academic editor, *PLoS ONE* (<http://www.plosone.org/>)
- 2010- Present Associate editor, *Pest Management Science*, Wiley InterScience
- 2001- Present Subject editor, *Journal of Economic Entomology*, Entomological Society of America
- 2017-Present Editorial board member, *Journal of Zhejiang University: Agriculture and Life Sciences*, Zhejiang University, Hangzhou, China
- 2013- Present Editorial board member, *Journal of Plant Protection*, Chinese Society of Plant Protection and China Agricultural University
- 2012- Present Editorial board member, *Journal of Integrative Agriculture*, Elsevier B.V.
- 2012- Present Editorial board member, *Psyche: A Journal of Entomology*, Hindawi Publishing Corporation
- 2011- 2017 Editorial board member, *Scientific Reports*, Nature Publishing Group
- 2011- Present Editorial board member, *Pesticide Biochemistry and Physiology*, Elsevier
- 2009- Present Editorial board member, *Archives of Insect Biochemistry and Physiology*, Wiley InterScience
- 2005- Present Editorial board member, *Acta Entomologica Sinica*, Entomological Society of China
- 2001- Present Editorial board member, *Insect Science*, Wiley-Blackwell Publishing
- 2016 Guest co-editor, special issue on “*Insecticide Toxicology in China*” published in *Pesticide Biochemistry and Physiology* by Elsevier (vol. 132, pp. 1-132, Sep. 2016, <http://www.sciencedirect.com/science/journal/00483575>)
- 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>)
- 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>)

VI. Symposium Organizer and Conference Moderator

- 2016 Symposium co-organizer, *Mechanisms Affecting the Efficiency of RNA Interference in Insects* for the XXV International Congress of Entomology held in Orlando, FL (Sep. 25-30, 2016)
- 2016 Co-moderator, *RNAi and Gene Expression Control in Insects: Pest Management* (contributed papers) for the XXV International Congress of Entomology held in Orlando, FL (Sep. 25-30, 2016)
- 2015 Co-moderator, 10-minute papers in the PBT Section: *Chemical Ecology, Behavior Physiology and Biotic Interaction*, the 63rd National Annual Meeting of the Entomological Society of America, Minneapolis, MN (Nov. 15-18, 2015).
- 2014 Co-moderator, Section 3, Natural Products and New Therapeutics. Yangling International Agri-Science Forum. Yangling, Shaanxi Province, China. Nov. 5-7, 2015.
- 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)

VII. Patent Received

- 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)

VIII. Scholarly Publications

Refereed Journal Publications

1. Yao J., Zhu Y.-C., Lu N., Buschman L. L. & Zhu K. Y. 2017. Comparisons of transcriptional profiles of gut genes between Cry1Ab-resistant and susceptible strains of *Ostrinia nubilalis* revealed genes possibly related to the adaptation of resistant larvae to transgenic Cry1Ab corn. *Int. J. Mol. Sci.* 18: 301.
2. Yu R., Liu W., Li D., Zhao X., Ding G., Zhang M., Ma E., Zhu K. Y., Li S., Moussian B. & Zhang J. 2016. Helicoidal organization of chitin in the cuticle of the migratory locust requires the function of the chitin deacetylase LmCDA2. *J. Biol. Chem.* 291: 24352-24363.
3. Guo Y., Wu H., Zhang X., Ma E., Guo Y., Zhu K.Y. & Zhang J. 2016. RNA interference of cytochrome P450 CYP6F subfamily genes affects susceptibility to different insecticides in *Locusta migratoria*. *Pest Manag. Sci.* 72: 2,154-2,165.
4. Zhu K.Y. 2016. Preface to the special issue: Insecticide toxicology in China. *Pestic. Biochem. Physiol.* 132: 1-2.
5. Zhu W., Yu R., Wu H., Zhang X., Liu Y., Zhu K. Y., Zhang J. & Ma E. 2016. Identification and characterization of two *CYP9A* genes associated with pyrethroid detoxification in *Locusta migratoria*. *Pestic. Biochem. Physiol.* 132: 65-71.
6. Yu Z., Zhang X., Wang Y., Moussian B., Zhu K. Y., Li S., Ma E. & Zhang J. 2016. LmCYP4G102: An oenocyte-specific cytochrome P450 gene required for cuticular waterproofing in the migratory locust, *Locusta migratoria*. *Sci. Rep.* 6: 29980.
7. Zhu K.Y., Merzendorfer H., Zhang W., Zhang J. & Muthukrishnan S. 2016. Biosynthesis, turnover and function of chitin in insects. *Annu. Rev. Entomol.* 61: 177-196.
8. Oppert B., Guedes R.N.C., Aikins M. J., Phillips T.W., Chen Z., Zhu K. Y., Opit G. P., Hoon K., Sun Y., Meredith G., Bramlett K., Supunpong Hernandez N., Sanderson B., Taylor M., Dhingra D., Blakey B., Lorenzen M., Fallis L. & Arthur F. 2015. Genes related to mitochondrial functions are differentially expressed in phosphine-resistant and -susceptible *Tribolium castaneum*. *BMC Genomics* 16: 968.
9. 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.
10. 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.
11. 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**).
12. 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.
13. 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**).

14. 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>).
15. 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.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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 Sci.* 87: 295-300.
22. 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.
23. 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.
24. 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.
25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. 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).

31. 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.
32. 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.
33. 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.
34. 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.
35. 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.
36. 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.
37. Rong S., Li D., Zhang X., Li S., 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.
38. 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**).
39. 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.
40. 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.
41. 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.
42. 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.
43. 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.
44. 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.
45. 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.
46. 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.
47. 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.
48. 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.

49. 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.
50. 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.
51. 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.
52. 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.
53. 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.
54. 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.
55. 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.
56. 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.
57. 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.
58. 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.
59. 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.
60. 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.
61. 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**).
62. 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.
63. 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.

64. 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.
65. 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).
66. 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.
67. 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**).
68. 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**).
69. 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.
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