

GUOLONG “GLENN” ZHANG, Ph.D.

Professor and Boulware Endowed Chair

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Phone: (405) 744-8867; E-mail: glenn.zhang@okstate.eduHomepage: http://www.afs.okstate.edu/about/people/faculty/pages/glenn_zhangGoogle Scholar Profile: <http://scholar.google.com/citations?user=LifzU7gAAAAJ&hl>ResearchGate Profile: http://www.researchgate.net/profile/Guolong_ZhangORCID Profile: <https://orcid.org/0000-0003-4781-5816>**EDUCATION**

- Dec. 2001 Howard Hughes Medical Institute (HHMI) Postdoctoral Fellow in Molecular Immunology, Department of Immunobiology, Yale University School of Medicine, New Haven, CT.
- Dec. 1999 Ph.D. in Immunophysiology, Department of Anatomy and Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS.
- Dec. 1995 M.S. in Nutritional Immunology, Department of Animal Science, China Agricultural University, Beijing, China.
- Sept. 1993 B.S. (with honors) in Animal Genetics, Department of Animal Science, China Agricultural University, Beijing, China.

PROFESSIONAL EXPERIENCE

- July 2016–Present Ralph F. and Leila W. Boulware Endowed Chair in Animal Science, Oklahoma State University, Stillwater, OK.
- Jan. 2002–Present Assistant Professor (Jan. 2002–June 2007), Associate Professor (July 2007–June 2014), and Professor (July 2014–Present), Department of Animal Science, Oklahoma State University, Stillwater, OK.
- Oct. 2009–Present Adjunct Associate Professor, Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK.
- Dec. 2007–Present Adjunct Associate Professor, Department of Physiological Sciences, Center for Veterinary Health Sciences, OSU, Stillwater, OK.
- Sep. 2010–Feb. 2011 Visiting Associate Professor, Department of Microbiology, University of Washington School of Medicine, Seattle, WA (on sabbatical leave).
- Jan. 2000–Dec. 2001 Postdoctoral Fellow, HHMI and Department of Immunobiology, Yale University School of Medicine, New Haven, CT.
- Jan. 1996–Dec. 1999 Graduate Research Assistant, Department of Anatomy and Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS.
- Sep. 1993–Dec. 1995 Graduate Research Assistant, Department of Animal Science and Ministry of Agriculture Feed Industry Center, China Agricultural University, Beijing, China.

PROFESSIONAL MEMBERSHIPS

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| 1998–1999 | Society for Experimental Biology and Medicine |
| 2002–2007 | American Association of Immunologists |
| 2011–2015 | American Society for Microbiology |
| 1998–Present | American Association of Veterinary Immunologists |
| 2005–Present | Conference of Research Workers in Animal Diseases |
| 2015–Present | Poultry Science Association |

HONORS AND AWARDS

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| 2018 | Regents Distinguished Research Award, Division of Agricultural Sciences and Natural Resources, Oklahoma State University, Stillwater, OK |
| 2016 | Ralph F. and Leila W. Boulware Endowed Chair in Animal Science, Oklahoma State University, Stillwater, OK |
| 2015 | Sigma Xi Chapter Lecturer Award, Oklahoma State University, Stillwater, OK |
| 2015 | Outstanding Overseas Young Investigator Award, Natural Science Foundation of China |
| 2014 | James A. Whatley Award for Meritorious Research in Agricultural Sciences, Division of Agricultural Sciences and Natural Resources, Oklahoma State University, Stillwater, OK |
| 2014 | Don M. Tyler Award for Outstanding Professional Achievements, Department of Animal Science, Oklahoma State University |
| 2014 | Chutian Endowed Visiting Professorship, School of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Wuhan, China |
| 2012 | National Academy of Inventors |
| 2009 | Gamma Sigma Delta (Honor Society of Agriculture) |
| 2008 | Sigma Xi Young Investigator Award, Oklahoma State University |
| 2007–Present | Who's Who in America |
| 2007 | Who's Who among American Teachers & Educators |
| 2005 | Big XII Faculty Fellowship Award, Oklahoma State University |
| 2004 | Junior Faculty Travel Award, American Association of Immunologists |
| 2003 | Sigma Xi, a National Research Society |
| 2000–2001 | HHMI Postdoctoral Fellowship for two years, Department of Immunobiology, Yale University School of Medicine, New Haven, CT |
| 1999 | Second Place Award in Basic Science, the Sigma Chapter of the Society of Phi Zeta, College of Vet Med, Kansas State University, Manhattan, KS |
| 1998 | Young Investigator Travel Fellowship Award, Society for Experimental Biology and Medicine |
| 1995 | Outstanding Graduate Student Award, Department of Animal Science, China Agricultural University, Beijing, China |
| 1994 | Guo Zhaoming Scholarship for Outstanding Graduate Students, Dept. of Animal Science, China Agricultural University, Beijing, China |
| 1992 | President's Award, China Agricultural University, Beijing, China (The most prestigious award for undergraduate students at CAU) |
| 1991 | Outstanding Undergraduate Student Award in Science and Engineering among Universities and Colleges in Beijing, China |

1990–1992 Academic Scholarship, First Place Award for three consecutive years, Dept. of Animal Science, China Agricultural University, Beijing, China

GRADUATE STUDENTS' HONORS AND AWARDS (AS MAJOR PROFESSOR)

- 2018 USDA Predoctoral Fellowship (2018–2020) (Kelsy Robinson)
- 2018 2nd Place in Oral Presentation, 15th Annual Research Symposium in Biological Sciences OSU (Wentao Lyu)
- 2018 3rd Place in Oral Presentation, 15th Annual Research Symposium in Biological Sciences OSU (Kelsy Robinson)
- 2017 3rd Place, 3-Minute Thesis (3MT) Competition, College of Agricultural Sciences and Natural Resources, OSU (Kelsy Robinson)
- 2017 Graduate Student Research Paper Certificate of Excellence in recognition of students who have presented high-quality research papers at the annual meeting, Poultry Science Association (Kelsy Robinson)
- 2017 2nd Place, Whiteman Research Presentation Competition, Department of Animal Science, OSU (Kelsy Robinson)
- 2016 People's Choice Award and 3rd Place, 3-Minute Thesis (3MT) Competition, College of Agricultural Sciences and Natural Resources, OSU (Kelsy Robinson)
- 2016 Graduate Student Research Paper Certificate of Excellence, Poultry Science Association (Kelsy Robinson)
- 2016 Joint Ph.D. Scholarship from China Scholarship Council, Ministry of Education, China (2016–2018) (Binlong Chen)
- 2016 Joint Ph.D. Scholarship from Zhejiang University, China (2016–2017) (Kan Xiao)
- 2015 People's Choice Award, Southern Graduate School's Three Minute Thesis (3MT) Regional Competition (Amanda Curtis)
- 2015 Joint Ph.D. Scholarship from Henan Agricultural University, China (2015–2016) (Hong Li)
- 2014 Honorary Graduate Commencement Marshal, Graduate College, OSU (Amanda Curtis)
- 2014 First Place, 3-Minute Thesis (3MT) Final Competition, OSU (Amanda Curtis)
- 2014 First Place, 3-Minute Thesis (3MT) Competition, College of Agricultural Sciences and Natural Resources, OSU (Amanda Curtis)
- 2014 Sitlington Enriched Graduate Scholarship, College of Agricultural Sciences and Natural Resources, OSU (2014–2017) (Wentao Lyu)
- 2014 Top-Tier Graduate Fellowship, Graduate College, OSU (Wentao Lyu)
- 2014 USDA National Needs Graduate Fellowship (2014–2017) (Kelsy Robinson)
- 2014 Joint Ph.D. Scholarship from China Scholarship Council, Ministry of Education, China (2014–2016) (Long Zhang)
- 2013 Second Place Award for Poster Presentation in Biological Sciences, 24th Annual Research Symposium, OSU (Weiyu Jiang)
- 2013 Sitlington Enriched Graduate Scholarship, College of Agricultural Sciences and Natural Resources, OSU (2013–2016) (Judy Deng)
- 2013 Junior Scientist Travel Award to attend the Annual Meeting of American Association of Immunologists, American Association of Veterinary Immunologists (AAVI) (Lakshmi Sunkara)
- 2013 Top-Tier Graduate Fellowship, Graduate College, OSU (Judy Deng)

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- 2013 Top-Tier Graduate Fellowship, Graduate College, OSU (Xuwen Sheng)
 - 2011 First Place Award for Poster Presentation, American Association of Veterinary Immunologists at the 92nd Annual CRWAD Conference, Chicago, IL (Lakshmi Sunkara)
 - 2011 Travel Award, Graduate and Professional Student Government Association (GPSGA), OSU to attend the CRWAD Conference, Chicago, IL (Lakshmi Sunkara)
 - 2008 Sitlington Enriched Graduate Scholarships, College of Agricultural Sciences and Natural Resources, OSU (2008–2011) (Lakshmi Sunkara)
 - 2008 Travel Award, Graduate and Professional Student Government Association (GPSGA), OSU to attend the CRWAD Conference, Chicago, IL (Lakshmi Sunkara)
 - 2007 Graduate Research Excellence Award, Graduate College, OSU (Amar Patil)
 - 2007 Graduate/Resident Travel Award, American College of Veterinary Pathologists at the 2007 Annual Meeting, Savannah, GA (Yugendar Bommineni)
 - 2006 Third Place Award for Poster Presentation, Biochemistry and Molecular Biology Graduate Student Association (BMBGSA) Research Symposium, OSU (Yugendar Bommineni)
 - 2005 First Place Award for Poster Presentation, American Association of Veterinary Immunologists at the 86th Annual CRWAD Conference, St. Louis, MO (Yanjing Xiao)
 - 2003 First Place Award for Poster Presentation, American Association of Veterinary Immunologists at the 84th Annual CRWAD Conference, Chicago, IL (Yanjing Xiao)

UNDERGRADUATE STUDENTS' AWARDS (AS RESEARCH ADVISOR)

- 2018 Goldwater Scholarship, The Barry Goldwater Scholarship Foundation (Sage Beker)
- 2018 Top Freshman, College of Agricultural Sciences and Natural Resources, OSU (Jordan Cowger)
- 2018 Wentz Undergraduate Research Scholarship, OSU (Sage Becker)
- 2018 Wentz Undergraduate Research Scholarship, OSU (Jordan Cowger)
- 2018 Wentz Undergraduate Research Scholarship, OSU (Dawson Haworth)
- 2018 Wentz Undergraduate Research Scholarship, OSU (Sarah Vue)
- 2017 Fulbright US Student Award to study/research in Germany, U.S. Department of State (Sydney Stewart)
- 2017 Niblack Undergraduate Research Scholarship, OSU (Sage Becker)
- 2017 Mortar Board Top 20 Freshmen Women, Oklahoma State University (Jordan Cowger)
- 2017 University Freshman Research Scholarship, OSU (Mckenzie Franklin)
- 2017 University Freshman Research Scholarship, OSU (Dawson Haworth)
- 2016 University Freshman Research Scholarship, OSU (Jordan Cowger)
- 2016 Wentz Undergraduate Research Scholarship, OSU (Sage Becker)
- 2016 Wentz Undergraduate Research Scholarship, OSU (Sydney Stewart)
- 2015 Wentz Undergraduate Research Scholarship, OSU (Sydney Stewart)
- 2015 Niblack Undergraduate Research Scholarship, OSU (Hannah Paradis)
- 2015 University Freshman Research Scholarship, OSU (Sage Beker)
- 2014 Wentz Undergraduate Research Scholarship, OSU (Hannah Paradis)
- 2013 University Freshman Research Scholarship, OSU (Hannah Paradis)
- 2012 Wentz Undergraduate Research Scholarship, OSU (Sarah Myers)
- 2012 University Freshman Research Scholarship, OSU (Desiree Wright)

- 2009 University Freshman Research Scholarship, OSU (Kelsey Conley)
 2007 HHMI Undergraduate Research Scholarship, OSU (Janell Root)
 2006 Top 10 Seniors, College of Agricultural Sciences and Natural Resources, OSU (Grace Hale and Laura Townley)
 2006 Niblack Undergraduate Research Scholarship, OSU (Justin Alexander)
 2005 HHMI Undergraduate Research Scholarship, OSU (Justin Alexander)
 2004 Wentz Undergraduate Research Scholarship, OSU (Laura Townley)
 2004 Niblack Undergraduate Research Scholarship, OSU (Grace Hale)

CURRENT GRADUATE STUDENTS (AS MAJOR PROFESSOR):

PhD Students:

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| Wentao Lyu | MS (China Agricultural University) | May 2014 – Present |
| Kelsy Robinson | BS (University of Arkansas) | June 2014 – Present |
| Qing Yang | MS (China Agricultural University) | Aug. 2016 – Present |
| Sydney Stewart | BS (Oklahoma State University) | Aug. 2018 – Present |
| Melanie Whitmore | BS (University of Wyoming) | Aug. 2018 – Present |

MS Student:

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| Nicole Fansler | BS (Oklahoma State University) | Aug. 2017 – Present |
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CURRENT TEACHING ACTIVITIES

- 2002–Present *ANSI 4843 – Applications of Biotechnology in Animal Science*, 3 credit hours at the undergraduate level required for all students in the Biotechnology Option. Responsible for the teaching of the entire course from spring 2008.
- 2005–Present *ANSI 5573 – Techniques in Animal Molecular Biology*, 3 credit hours at the graduate level. It was converted from “*ANSI 5010 – Basic Molecular Biology Techniques*” and is being taught once a year from spring 2009. Responsible for the teaching of the entire course.

CURRENT RESEARCH GRANTS AND CONTRACTS

(Total funding received: \$6,568,521; Total funding as PI: \$2,688,946; Total external funding as PI: \$2,181,681; Total internal funding as PI: \$507,265; International funding: \$868,000; Total grants number: 39; Major funding agencies: USDA, 9 grants; OCAST, 7 grants; NIH, 2 grants; OSU, 17 grants; Industry: 4 grants)

1. *USDA–NIFA Food Safety Challenge Program*: “Novel Non-Antibiotic Approaches for Mitigation of Antimicrobial Resistance in Poultry”. **Co-PI** (with Dr. J. Lin as PI). 01/15/2018 – 01/14/2021.
2. *USDA–NIFA Education and Literacy Initiative Program (Predoctoral Fellowship)*: “Fecal Microbiota Transplantation to Enhance Production Efficiency”. **Primary Mentor** (with K. Robinson as PI). 03/15/2018 – 03/14/2020.
3. *USDA-NIFA Small Business Innovation Research (SBIR) Program*: “Natural Immune Boosting Compounds as Alternatives to Antibiotics”. **Co-PI** (with A. Curtis as PI to commercialize my antibiotic alternative technology). 09/01/2018 – 04/30/2019.

4. *Elanco Animal Health*: “Effect of Heat Stress on Broiler Chickens Medicated with Different Concentrations of Nicarbazin”. **PI.** 09/01/2017 – 12/31/2018.
5. *OSU Division of Agricultural Sciences and Natural Resources (DASNR) Sitlington Enriched Graduate Scholarship Program*: “Sitlington Enriched Graduate Scholarship to Supplement the Stipends of Two Incoming Doctoral Students”. **PI.** 08/01/2018 – 07/31/2021.

REPRESENTATIVE PUBLICATIONS

(Total refereed publications: 65; Total Citations = 6593 (as of 11/01/2018 by Google Scholar); h-index* = 35; i₁₀-index** = 48. **Note:** *h-index = h publications with at least h citations; **I₁₀-Index = Number of publications with at least 10 citations)

1. **Zhang, G.**, H. Wu, J. Shi, T. Ganz, C.R. Ross, and F. Blecha. 1998. Molecular cloning and tissue expression of porcine β -defensin-1. *FEBS Letters* 424: 37-40.
2. **Zhang, G.**, H. Hiraiwa, H. Yasue, H. Wu, C.R. Ross, D. Troyer, and F. Blecha. 1999. Cloning and characterization of the gene for a new epithelial β -defensin: genomic structure, chromosomal localization, and evidence for its constitutive expression. *Journal of Biological Chemistry* 274: 24031-24037.
3. **Zhang, G.**, and S. Ghosh. 2000. Molecular mechanisms of NF- κ B activation induced by lipopolysaccharide through Toll-like receptors. *Journal of Endotoxin Research* 6: 453-457.
4. **Zhang, G.**, and S. Ghosh. 2001. Toll-like receptor-mediated NF- κ B activation: a phylogenetically conserved paradigm in innate immunity. *Journal of Clinical Investigation* 107: 13-19.
5. **Zhang, G.**, and S. Ghosh. 2002. Negative regulation of Toll-like receptor-mediated signaling by Tollip. *Journal of Biological Chemistry* 277: 7059-7065.
6. Zhang, D., **G. Zhang**, M.S. Hayden, M.S. Greenblatt, C. Bussey, R.A. Flavell, and S. Ghosh. 2004. A Toll-like receptor that prevents infection by uropathogenic bacteria. *Science* 303: 1522-1526.
7. Xiao, Y., A.L. Hughes, J. Ando, Y. Matsuda, J.F. Cheng, D. Skinner-Noble, and **G. Zhang***. 2004. A genome-wide screen identifies a single β -defensin gene cluster in the chicken: implications for the origin and evolution of mammalian defensins. *BMC Genomics* 5: 56.
8. Patil, A.A., A.L. Hughes, and **G. Zhang***. 2004. Rapid evolution and diversification of mammalian α -defensins as revealed by comparative analysis of rodent and primate genes. *Physiological Genomics* 20: 1-11.
9. Patil, A.A., Y. Cai, Y. Sang, F. Blecha, and **G. Zhang***. 2005. Cross-species analysis of the mammalian β -defensin gene family: presence of syntenic gene clusters and preferential expression in the male reproductive tract. *Physiological Genomics* 23: 5-17.
10. Xiao, Y., Y. Cai, Y.R. Bommineni, S.C. Fernando, O. Prakash, S.E. Gilliland, and **G. Zhang***. 2006. Identification and functional characterization of three chicken cathelicidins with potent antimicrobial activity. *Journal of Biological Chemistry* 281: 2858-2867.

11. Xiao, Y., H. Dai, Y.R. Bommineni, J. Soulages, Y.-X. Gong, O. Prakash*, and **G. Zhang***. 2006. Structure-activity relationships of fowlicidin-1, a chicken cathelicidin antimicrobial peptide. *FEBS Journal* 273: 2581-2593.
12. Bommineni, Y.R., H. Dai, Y.-X. Gong, J.L. Soulages, S.C. Fernando, U. DeSilva, O. Prakash*, and **G. Zhang***. 2007. Fowlicidin-3 is an α -helical cationic host defense peptide with potent antibacterial and lipopolysaccharide-neutralizing activities. *FEBS Journal* 274: 418-428.
13. Xiao, Y., A. Herrera, Y.R. Bommineni, J.L. Soulages, O. Prakash, and **G. Zhang***. 2009. The central kink region of α -helical fowlicidin-2 is critically involved in bacterial killing and endotoxin neutralization. *Journal of Innate Immunity* 1: 268-280.
14. Bommineni, Y.R., M. Achanta, J. Alexander, L.T. Sunkara, J.W. Ritchey, and **G. Zhang***. 2010. A fowlicidin-1 analog protects mice from lethal infections induced by methicillin-resistant *Staphylococcus aureus*. *Peptides* 31: 1225-1230.
15. Sunkara, L.T., M. Achanta, N.B. Schreiber, Y.R. Bommineni, D. Gan, W. Jiang, S. Lamont, H. Lillehoj, and **G. Zhang***. 2011. Butyrate enhances disease resistance of chickens by inducing antimicrobial host defense peptide expression. *PLoS One* 6: e27225.
16. Patil, A., A.J. Ouellette, W. Lu, and **G. Zhang***. 2013. Rattusin, an intestinal α -defensin-related peptide in rats with a unique cysteine spacing pattern and salt-insensitive antibacterial activities. *Antimicrobial Agents and Chemotherapy* 57: 1823-1831.
17. Zeng, X., L.T. Sunkara, W. Jiang, M. Bible, S. Carter, X. Ma, S. Qiao, and **G. Zhang***. 2013. Induction of porcine host defense peptide gene expression by short-chain fatty acids and their analogs. *PLoS One* 8: e72922.
18. Jiang, W., L.T. Sunkara, X. Zeng, Z. Deng, S.M. Myers, and **G. Zhang***. 2013. Differential regulation of human cathelicidin LL-37 by free fatty acids and their analogs. *Peptides* 50: 129-138.
19. Sunkara, L.T., X. Zeng, W. Jiang, A.R. Curtis, and **G. Zhang***. 2014. Cyclic AMP synergizes with butyrate in promoting β -defensin 9 gene expression in chickens. *Molecular Immunology* 57: 171-180.
20. Bommineni, Y.R., G.H. Pham, L.T. Sunkara, M. Achanta, and **G. Zhang***. 2014. Immune regulatory activities of fowlicidin-1, a cathelicidin host defense peptide. *Molecular Immunology* 59: 55-63.
21. Robinson, K., X. Ma, Y. Liu, S. Qiao, Y. Hou, and **G. Zhang***. 2018. Dietary modulation of endogenous host defense peptide synthesis as an alternative approach to in-feed antibiotics. *Animal Nutrition*. 4: 160-169.
22. Lyu, W., Z. Deng, L.T. Sunkara, S. Becker, K. Robinson, R. Matts, and **G. Zhang***. 2018. High throughput screening for natural host defense peptide-inducing compounds as novel alternatives to antibiotics. *Frontiers in Cellular and Infection Microbiology* 8: 191.

(* denotes Dr. Zhang's corresponding authorship)