
SUMMARY OF ACCOMPLISHMENTS

RESEARCH GRANTS

Total funding received: \$6,681,697; Total funding as PI: \$2,802,122; Currently active grants: \$1,745,000 (including 4 USDA and one OCAST grant); Total grant number: 42; Major funding agencies: USDA, 10 grants; NIH, 2 grants; OCAST (Oklahoma Center for the Advancement of Science and Technology), 7 grants; OSU, 18 grants; Industry: 5 grants

PUBLICATIONS

Total peer-reviewed publications: 76; Total citations: 7,907 (as of 5/15/2020 by Google Scholar); h-index = 39; i₁₀-index = 60; Book chapters: 6; Notes: h-index = h publications with at least h citations; i₁₀-index = number of publications with at least 10 citations

PATENTS AND TECHNOLOGY LICENSING

One patent issued (“*Antimicrobial defensin-related peptide and methods of use*”, 4/21/09); One patent filed, but not pursued (“*Fowlicidins and methods of use*”, 12/1/06); One patent pending (“*Immune boosting dietary supplements for disease control and prevention*”); A startup company (AltBiotics LLC) was founded in June 2014 to commercialize my antibiotic alternative technology

HONORS AND AWARDS

Regents Distinguished Research Award, OSU (2018); Ralph F. and Leila W. Boulware Endowed Chair in Animal Science, OSU (2016); Sigma Xi Chapter Lecturer Award, OSU (2015); Whatley Award for Meritorious Research in Agricultural Sciences, OSU (2014); Tyler Award, Department of Animal and Food Sciences, OSU (2014); National Academy of Inventors (2012); Sigma Xi Young Investigator Award, OSU (2008); Junior Faculty Travel Award, American Association of Immunologists (2004)

PROFESSIONAL SERVICES

Research Coordinator and Research Committee Chair (2016–2019), Department of Animal and Food Sciences, OSU; Chair, Biological Science Group, Graduate Faculty Council, OSU (2014–2015); Treasurer (2014–Present) and Nominating Committee Member (2012–2015), American Association of Veterinary Immunologists; Editorial board for 4 international journals; Grant reviewer for the USDA, NIH, NSF, US Army, Agriculture and Agri-Food Canada, and Chinese NSF; 61 invited talks in the US, Europe and China

TEACHING

Instructor of record for two courses each year (ANSI 4843–“*Applications of Biotechnology in Animal Science*” and ANSI 5573–“*Techniques in Animal Molecular biology*”); Average student evaluation in last 18 years: Instructor overall = 3.45; Course overall = 3.51 (on a scale of 4)

STUDENT MENTORING

Current: 2 MS, 4 PhD students, and 4 undergraduate research scholars; Students/fellows graduated or trained: 7 MS, 7 PhD, and 17 postdoctoral fellows or visiting scholars; Major awards to mentees: 1 USDA Predoctoral Fellowship, 1 Goldwater Scholarship, 1 Fulbright Student Award, 1 NACTA Graduate Student Teaching Award, 1 3MT University Final Competition Winner, 1 Animal Science Outstanding Ph.D. Student, 1 CASNR Outstanding Senior; 4 Niblack Scholarships, 11 Wentz Scholarships, and multiple 1st place presentation awards from professional societies

GUOLONG “GLENN” ZHANG, Ph.D.

Professor of Molecular Immunology and Boulware Endowed Chair
Department of Animal and Food Sciences, Oklahoma State University

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Homepage: http://www.afs.okstate.edu/about/people/faculty/pages/glenn_zhang

Google Scholar Profile: <http://scholar.google.com/citations?user=LifzU7gAAAAJ&hl>

ResearchGate Profile: http://www.researchgate.net/profile/Guolong_Zhang

ORCID Profile: <https://orcid.org/0000-0003-4781-5816>

EDUCATION

- Jan. 2000–Dec. 2001 Postdoctoral Fellow in Molecular Immunology, Howard Hughes Medical Institute (HHMI) and Department of Immunobiology, Yale University School of Medicine, New Haven, CT
- Jan. 1996–Dec. 1999 Ph.D. in Immunophysiology, Department of Anatomy & Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS
- Sep. 1993–Dec. 1995 M.S. in Nutritional Immunology, Department of Animal Science, China Agricultural University, Beijing, China
- Sep. 1989–July 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 and Food Sciences, Oklahoma State University, Stillwater, OK
- Oct. 2009–Present Adjunct Professor, Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK
- Dec. 2007–Present Adjunct Professor, Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University, 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 & Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS

CAREER SUMMARY

My appointment at OSU is 80% research and 20% teaching. My research has focused on the development of next-generation alternatives to antibiotics by modulating intestinal immunity and microbiota of livestock animals to achieve optimal health and production efficiency. My primary instructional responsibilities include teaching *ANSI 4843 – Applications of Biotechnology in Animal Science* for undergraduate students and *ANSI 5573 – Techniques in Animal Molecular Biology* for graduate students.

PROFESSIONAL MEMBERSHIPS

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

2018	Regents Distinguished Research Award, 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, OSU, Stillwater, OK
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 and Food Sciences, 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
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)

- 2020 2nd Place, Technical Abstract Writing Contest, Graduate College, OSU (Qing Yang)
- 2019 Outstanding Ph.D. Student Award, Department of Animal and Food Sciences, OSU (Kelsy Robinson)
- 2019 Graduate Student Teaching Award, North American Colleges and Teachers of Agriculture (NACTA) (Kelsy Robinson)
- 2019 Joint Ph.D. Scholarship from China Scholarship Council, Ministry of Education, China (2019–2011) (Jinshan Ran)
- 2018 USDA Predoctoral Fellowship (2018–2020) (Kelsy Robinson)
- 2018 Two Sitlington Enriched Graduate Scholarships, College of Agricultural Sciences and Natural Resources, OSU (2018–2021) (Melanie Whitmore and Sydney Stewart)
- 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 Two Top-Tier Graduate Fellowships, Graduate College, OSU (Judy Deng and 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)

UNDERGRAD STUDENTS' HONORS AND AWARDS (AS RESEARCH ADVISOR)

- 2020 Institutional Nominee for the Goldwater Scholarship, OSU (Ashley Gin)
- 2019 Louis and Betty Gardner Outstanding Senior, College of Agricultural Sciences and Natural Resources, OSU (Sage Becker)
- 2019 Dean's Award of Excellence, College of Agricultural Sciences and Natural Resources, OSU (Sage Becker)
- 2019 Seniors of Distinction, College of Agricultural Sciences and Natural Resources, OSU (Sage Becker and Jordan Cowger)
- 2019 Wentz Undergraduate Research Scholarship, OSU (Ashley Gin)
- 2019 University Freshman Research Scholarship, OSU (Natalee Richardson)

- 2018 Goldwater Scholarship, The Barry Goldwater Scholarship Foundation (Sage Becker)
- 2018 Seniors of Significance, OSU Alumni Association (Sage Becker and Jordan Cowger)
- 2018 Wentz Undergraduate Research Scholarships, OSU (Sage Becker, Jordan Cowger, Dawson Haworth, and Sarah Vue)
- 2018 University Freshman Research Scholarship, OSU (Ashley Gin)
- 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 Top Freshman, College of Agricultural Sciences and Natural Resources, OSU (Jordan Cowger)
- 2017 Mortar Board Top 20 Freshmen Women, Oklahoma State University (Jordan Cowger)
- 2017 Two University Freshman Research Scholarships, OSU (Mckenzie Franklin and Dawson Haworth)
- 2016 University Freshman Research Scholarship, OSU (Jordan Cowger)
- 2016 Two Wentz Undergraduate Research Scholarships, OSU (Sage Becker and 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 Becker)
- 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)

PROFESSIONAL SERVICES

Editorial Board:

- 2011–Present Journal of Animal Science and Biotechnology
- 2012–Present International Journal of Antibiotics
- 2015–Present Pathogens
- 2009–2017 World Journal of Biological Chemistry

“Pathogens” Special Issue Guest Editor:

“Alternatives to Antibiotics: Current Strategies and Future Prospects”
 (http://www.mdpi.com/journal/pathogens/special_issues/Alternatives-antibiotics)

“Frontiers in Microbiology” Research Topic Co-Guest Editor:

“Targeted Modulation of Gut Microbiota for the Development of Novel Alternatives to Antibiotics in Animal Agriculture”

(<https://www.frontiersin.org/research-topics/8670/targeted-modulation-of-gut-microbiota-for-the-development-of-novel-alternatives-to-antibiotics-in-an>)

Ad-hoc reviewer for scientific journals:

2001–Present Journal of Immunology; FASEB Journal; Trends in Biotechnology; Infection & Immunity; Journal of Leukocyte Biology; Molecular Immunology; Developmental & Comparative Immunology; Veterinary Immunology & Immunopathology; Genome Research; BMC Genomics; Gene; Genes and Immunity; Animal Genetics; American Journal of Physiology: Lung Cellular and Molecular Physiology; Peptides; PLoS ONE; DNA and Cell Biology; Current Medicinal Chemistry; Protein and Peptide Letters; Journal of Applied Microbiology; Journal of Dairy Science; Journal of Animal Science; Canadian Journal of Animal Science; Journal of Animal Science & Biotechnology; BMC Complementary and Alternative Medicine; Poultry Science; British Journal of Nutrition; Scientific Reports; Advances in Nutrition; Frontiers in Microbiology

Grant reviewer for funding agencies:

2003, 2007 Ad hoc reviewer for US Army Medical Research and Material Command (USAMRMC)

2005 Reviewer of the internal grants for the Office of Vice President for Research, Auburn University

2005 Panel member on the NIH Special Emphasis Review Panel on “Topics in Host Defense and Innate Immunity” (ZRG1 IMM-F 03, April 15, 2005)

2005, 2006 Panel member on the NIH “Innate Immunity and Inflammation” Study Section (ZRG1 III-F 01, Nov. 9–10, 2005 and Feb. 16–17, 2006)

2006 Ad hoc reviewer on the USDA “Food and Agricultural Sciences National Needs Graduate Fellowship Grants Program” (July 10–12, 2006)

2007 Panel member on the NSF “Symbiosis, Defense, and Self-recognition” Program in the Division of Integrative Organismal Systems (Oct. 17–19)

2009 Ad hoc reviewer for Canadian Foundation for Innovation “Leaders Opportunity Fund”

2009 Panel member on the NIH “Innate Immunity and Inflammation” Study Section (October 15-16, 2009)

2010 Ad hoc reviewer for internal grants supported by the Integrated Genomics Facility, Kansas State University, Manhattan, KS

2011 Ad hoc reviewer for Qatar National Research Fund (QNRF) National Priorities Research Program

2012–Present Ad hoc reviewer for the National Science Foundation of China (NSFC) Key Program on Host-Pathogen Interactions

2016 Ad hoc reviewer for Agriculture and Agri-Food Canada (AAFC) Science and Technology Branch Project Program

2016 Ad hoc reviewer for the USDA Small Business Innovation Research (SBIR) Animal Production and Protection Program (Feb. 23–25, 2016)

- 2016 Ad hoc reviewer for the Panel on the NSF “Symbiosis, Defense, and Self-recognition” Program in the Division of Integrative Organismal Systems (Oct. 17–19, 2016)
- 2017 Panel member on the USDA/NIFA “Understanding Antimicrobial Resistance (A1362)” Program (Feb 21–23, 2017)
- 2018 Ad hoc reviewer for Canadian Poultry Research Council (January 10, 2018)
- 2018 Ad hoc member on the USDA/NIFA “Exploratory Research” Program (May 2018)

Departmental service:

- 2003–2006 Strategic Planning Committee
- 2008 Search Committee for a faculty position in Animal Biotechnology
- 2011 Departmental Faculty Retreat Committee
- Spring 2013 Coordinator, Departmental Seminar Series
- 2015 Search Committee member for a Monogastric Animal Nutrition Faculty
- 2015 Search Committee Chair for a Poultry Extension Specialist Faculty
- 2017 Search Committee member for Departmental Research Lab Coordinator
- 2017 Search Committee member for Senior Administrative Support Specialist
- 2017 Search Committee member for an Animal Genomics Faculty
- 2016–2019 Research Committee, Chair
- 2016–2019 Research Coordinator
- 2014–2019 Reappointment, Promotion and Tenure (RPT) Committee (as Chair in 2019)
- 2002–Present Research Committee
- 2003–Present Research Report Committee
- 2006–Present Graduate Programs Committee
- 2015–Present Research Building Committee

University/college service:

- 2002–2005 Research Committee Member, University Faculty Council to formulate and recommend policies concerning research activities at OSU
- 2002–2006 Associate Member, Graduate Faculty at OSU
- 2006–Present Full Member, Graduate Faculty at OSU
- 2009–2010 Secretary, Asian American Faculty and Staff Association at OSU
- 2010–2011 Young Investigator Award Selection Committee, Sigma Xi Chapter, OSU
- 2011–2012 Membership Committee, Sigma Xi Chapter, OSU.
- 2011–2012 Vice President, Asian American Faculty and Staff Association at OSU
- 2012–2013 President, Asian American Faculty and Staff Association at OSU
- 2013–2014 Principal, Stillwater Chinese School, Stillwater, OK
- 2013–2015 Vice Chair (2013–2014) and Chair (2014–2015), Group 1 Biological Sciences Graduate Faculty (representing nine departments), Graduate Council, OSU
- 2016–2017 Faculty Advisor, Chinese Students and Scholars Association at OSU
- 2017–2018 Vice President, Chinese Faculty and Staff Association at OSU
- 2018–Present President, Chinese Faculty and Staff Association at OSU
- 2015–2019 James A. Whatley Award Selection Committee, Division of Agricultural Sciences and Natural Resources, OSU

National service:

2002–2007	Oklahoma representative on the NC1004 multistate project, “ <i>Genetic and functional genomic approaches to improve production and quality of pork</i> ”.
2006–2010	Oklahoma representative on the NC1027 multistate project, “ <i>An integrated approach to control of bovine respiratory diseases</i> ”.
2012	Session Co-chair, Immunology Oral Session, the 93th Annual Conference of Research Workers in Animal Diseases (CRWAD), Chicago, IL, December 2–4, 2012
2012–2015	Nominating Committee, American Association of Veterinary Immunologists (elected by the membership)
2016	Moderator and Judge, student oral presentation competition in the Immunology, Health, and Disease Session, the Annual Meeting of Poultry Science Association, New Orleans, LA. July 10–15, 2016.
2014–2018	Treasurer, American Association of Veterinary Immunologists (elected by the membership)
2006–Present	Judge, student oral and poster presentation competitions for the American Association of Veterinary Immunologists at the Annual CRWAD Conference, Chicago, IL
2017–Present	Oklahoma representative on the NC1202 multistate project, “ <i>Enteric diseases of food animals: enhanced prevention, control and food safety</i> ”.

PATENTS

1. **Zhang, G.** and A.A. Patil. Antimicrobial Defensin-Related Peptide and Methods of Use. *US Utility Patent No. 7,521,535*. Rattusin is a novel defensin-related antimicrobial peptide in rats discovered by my group with highly potent activity against a wide range of bacteria. Therefore, it can be potentially explored as novel antibiotics for both pharmaceutical and agricultural use. A utility patent was filed by OSU on September 18, 2007 and issued by the US Patent and Trademark Office on April 21, 2009.
2. **Zhang, G.**, and Y. Xiao. Fowlicidins and Methods of Use. *US Utility Patent Application No. 11/566,086* and *International No. PCT/US2006/046022*. Fowlicidins are a group of novel antimicrobial peptides discovered in chickens by my group at OSU. They are highly active against a broad spectrum of bacteria with promising potential as a new generation of antibiotics for both pharmaceutical and agricultural applications. A utility patent was filed by OSU on December 1, 2006 and was not further pursued.
3. **Zhang, G.** Immune Boosting Dietary Compounds for Disease Control and Prevention. A group of dietary compounds were identified with strong capacity to enhance antimicrobial peptide gene expression and host immunity, with potential for further development as antibiotic alternatives for disease control and prevention in both food animals and humans. A provisional utility patent was filed to the US Patent and Trademark Office by OSU on March 8, 2016 (*Application no. 62/305,242*) and converted to a formal utility patent on August 24, 2018 (*Application no. 16/079,730*).

TECHNOLOGY LICENSING

A startup company named “AltBiotics, LLC” – short for “Alternatives to Antibiotics” – was registered in the State of Oklahoma on June 12, 2014 for commercialization of our antibiotic alternative technologies. Oklahoma Center for the Advancement of Science and Technology (OCAST) and Cowboy Technologies LLC have been sponsoring product development. Product commercialization is currently being funded by a USDA SBIR grant.

INTERNATIONAL OUTREACH

- 2012 Co-organizer, Summer Institute in Animal Science, a three-week camp for 21 undergraduate students from Beijing University of Agriculture, China from July 11 – August 1, 2012. I was responsible for student recruitment, program planning, and coordination of academic studies of the program. Besides English and American culture studies, lectures and laboratory sessions on different subjects of animal sciences as well as tours to all major animal and core research facilities were provided, with over 20 OSU faculty, staff, and graduate students involved.
- 2013 Coordinator, bilateral corporation in Animal Science and Veterinary Medicine between OSU and three prominent Chinese agricultural institutions (China Agricultural University, Northwest Agriculture & Forestry University, and Beijing University of Agriculture). I led an OSU delegation to have visited the Chinese institutions for a 2-week visit in May 2013. I am currently coordinating the efforts on developing the corporative programs in the undergraduate and graduate research and education as well faculty training and exchanges.
- 2015–Present Visited annually China Agricultural University, Wuhan Polytechnic University, South China Agricultural University, Beijing University of Agriculture, Zhejiang Academy of Agricultural Sciences, and Guangdong Academy of Agricultural Sciences in China to develop and maintain research collaboration and joint training of graduate students.
- 2016–Present Led an effort in establishing corporation between OSU and Beijing Academy of Agricultural and Forestry Sciences (BAAFS) in China. A Memorandum of Understanding was signed between OSU and BAAFS in November 2017. A Memorandum of Agreement was signed between DASNR and the Institute of Animal Husbandry and Veterinary Medicine at BAAFS on June 19, 2019. A joint research lab on Animal Nutrition and Reproductive Science was officially established in June 2019 as a result.

STUDENT ADVISING

Current graduate students (as Major Professor):

PhD students:

Qing Yang	MS (China Agricultural University)	Aug. 2016 – Present
Melanie Whitmore	BS (University of Wyoming)	Aug. 2018 – Present
Jing Liu	MS (Nanjing Agricultural University)	May 2019 – Present

MS students:

Sydney Stewart	BS (Oklahoma State University)	Aug. 2018 – Present
Ethan Barrett	BS (Oklahoma State University)	Aug. 2019 – Present

Joint graduate students from Chinese universities (as Host and Research Advisor):***MS students:***

Xiaonan Yin	BS (China Agricultural University)	Sep. 2015 – July 2016
Xiao Ma	BS (Beijing University of Agriculture)	June 2016 – June 2017

PhD students:

Long Zhang	MS (Sichuan Agricultural University)	Sep. 2014 – Sep. 2016
Hong Li	MS (Henan Agricultural University)	May 2015 – May 2016
Kan Xiao	MS (Zhejiang University)	Oct. 2016 – Oct. 2017
Binlong Chen	MS (Sichuan Agricultural University)	Sep. 2016 – Oct. 2018
Jinshan Ran	MS (Sichuan Agricultural University)	Oct. 2019 – Present

Graduate students graduated (7 MS and 7 PhD as Major Professor):***M.S. students:***

- Anthony Luyai, MS Aug. 2002 – Aug. 2004
Thesis: *Effect of lactic acid bacteria – probiotics on local and systemic immune responses in cattle.*
Entry Position: Ph.D. Program in the Dept. of Biochemistry, Emory University, Atlanta, GA.
Current Position: Assistant Professor of Chemistry, Department of Natural Sciences, Shorter University, Rome, GA.
- Yibin Cai, MS Jan. 2004 – Aug. 2006
Thesis: *Identification of immune responsive genes in the bovine airway using suppression subtractive hybridization.*
Entry Position: Ph.D. Program in the Department of Veterinary Science, University of Maryland, College Park, MD.
- Mallika Achanta, BVSc. Aug. 2008 – July 2010
Thesis: *Chicken cathelicidins: tissue expression, developmental regulation, and mass spectrometric quantification*
Entry Position: Ph.D. program in the Center for Veterinary Health Sciences, Oklahoma State University, OK.
- Weiyu Jiang, BS, MS Aug. 2009 – July 2013
Thesis: *Differential regulation of human cathelicidin LL-37 by free fatty acids and their analogs*
Entry Position: Lab Manager in the Lester and Sue Smith Breast Cancer Center, Baylor College of Medicine, Houston, TX.
- Amanda Curtis, BS June 2012 – Dec. 2014
Thesis: *Regulation of chicken β -defensin 9 expression by cyclooxygenase-2 inhibitors*

Entry Position: MBA in Entrepreneurship Program, Price College of Business, University of Oklahoma, Norman, OK.

Li-An Fong, BS Aug. 2013 – May 2015

Thesis: *Synergistic induction of chicken host defense peptide expression by sugars and butyrate*

Nicole Fansler, BS Aug. 2018 – May 2019

Non-Thesis Report: *Transcriptional regulation of endogenous antimicrobial peptides as an alternative approach to antibiotics*

Entry Position: DVM Program, College of Veterinary Medicine, Oklahoma State University, Stillwater, OK.

PhD students:

Yanjing Xiao, MD, PhD June 2003 – Aug. 2006

Dissertation: *Chicken antimicrobial peptides: genome-wide identification and functional and structural analysis*

Entry Position: Postdoctoral Research Associate in the Department of Pharmacology, University of Texas Southwestern Medical Center, Dallas, TX.

Amar Patil, BVSc, PhD Jan. 2003 – Dec. 2006

Dissertation: *Genome-wide identification of mammalian defensins and functional analysis of a novel defensin-related peptide*

Entry Position: Postdoctoral Research Associate in the Department of Animal Science, Oklahoma State University, Stillwater, OK.

Current Position: Director, Animal Health Diagnostic Laboratory, Division of Animal Health, New Jersey State Department of Agriculture, Trenton, NJ.

Yugendar Bommineni, BVSc., Ph.D. Aug. 2004 – Aug. 2008

Dissertation: *Evaluation of chicken cathelicidins as novel antimicrobials*

Entry Position: Residency in Comparative Pathology, Tulane National Primate Research Center, Tulane University, Covington, LA.

Current Position: Bureau Chief, Bureau of Diagnostic Laboratories, Florida State Department of Agriculture and Consumer Services, Kissimmee, FL.

Lakshmi T. Sunkara, BVSc, MS Jan. 2008 – Dec. 2011

Dissertation: *Enhancing chicken innate immunity and disease resistance by boosting host defense peptide synthesis*

Entry Position: Postdoctoral Research Associate, Department of Animal Science, Oklahoma State University, Stillwater, OK.

Current Position: Molecular Geneticist, Center for Human Genetics, Clemson University, Greenwood, SC.

Zhuo “Judy” Deng, M.S. June 2013 – Dec. 2017

Dissertation: *High throughput screening for small-molecule compounds that induce host defense peptide expression*

Entry Position: Postdoctoral Research Fellow, Center of Excellence in Hip Disorders, Texas Scottish Rite Hospital for Children, Dallas, TX.

Wentao Lyu, MS May 2014 – December 2018

Dissertation: *Identification of host defense peptide-inducing compounds as alternatives to antibiotics using a cell-based high throughput screening assay*

Entry Position: Assistant Professor, Institute of Quality and Standards for Agro-products, Zhejiang Academy of Agricultural Sciences, Zhejiang, China.

Kelsy Robinson, BS

June 2014 – December 2019

Dissertation: *Chicken intestinal mycobiome: biogeography, succession, and response to in-feed antibiotics*

Entry Position: Postdoctoral Researcher, Poultry Production and Product Safety Research Unit, USDA–Agricultural Research Service (ARS), Fayetteville, AR.

Postdoctoral fellows (as Mentor):

Jingliang Su, DVM, PhD

Feb. 2005 – June 2005

Associate Professor from the College of Veterinary Medicine, China Agricultural University, Beijing, China.

Current Position: Professor, College of Veterinary Medicine, China Agricultural University, Beijing, China.

Amar Patil, BVSci, M.S., PhD

Jan. 2007 – June 2007

PhD from my lab at Oklahoma State University, Stillwater, OK.

Current Position: Head of the Virology Section and Molecular Diagnostics, Animal Health Diagnostic Laboratory, Division of Animal Health, New Jersey State Department of Agriculture, Trenton, NJ.

Fang Zou, PhD

July 2007 – Feb. 2008

PhD from the National Key Laboratory for Virology, College of Life Sciences, Wuhan University, China.

Entry Position: Children Nutrition Research Center, Baylor College of Medicine, Houston, TX.

Giang H. Pham, Ph.D.

Feb. 2009 – June 2010

Postdoctoral Fellow from Department of Immunology, Institute of Infectious Diseases & Molecular Medicine, Medical School, University of Cape Town, South Africa.

Entry Position: Postdoctoral Fellow, Center for Immunology and Microbial Disease, Albany Medical College, Albany, NY

Xiangfang Zeng, M.S., Ph.D.

Feb. 2012 – May 2013

PhD from Ministry of Agriculture Feed Industry Center, National Key Laboratory of Animal Nutrition, College of Animal Science and Technology, China Agricultural University, Beijing, China.

Current position: Associate Professor, College of Animal Science and Technology, China Agricultural University, Beijing, China.

Lakshmi T. Sunkara, BVSc, MS, Ph.D. Jan. 2012 – Dec. 2013

PhD from the Zhang lab in the Department of Animal Science at Oklahoma State University, Stillwater, OK.

Entry Position: Research Assistant Professor (started Jan. 2, 2014), Department of Animal Science, Oklahoma State University, Stillwater, OK.

Visiting scholars (as Mentor):

- Nancy Oguiura, PhD Dec. 2008 – April 2009
Investigator on leave from Instituto Butantan, São Paulo, Brazil (Funded by the FAPESP Foundation in Brazil).
Current Position: Investigator, Instituto Butantan, São Paulo, Brazil.
- Gan Dai, MD, PhD Dec. 2008 – June 2010
Associate Professor on leave from Department of Microbiology, Xiangya College of Medicine, Central South University, Hunan, China (Funded by Chinese Scholarship Council).
Entry Position: Associate Professor, Department of Microbiology, Xiangya College of Medicine, Central South University, Hunan, China.
- Yingping Xiao, M.S., Ph.D. July 2015 – Oct. 2015
Assistant Professor on leave from Zhejiang Academy of Agricultural Sciences, Zhejiang, China (Funded by Zhejiang Academy of Agricultural Sciences).
Current Position: Associate Investigator, Zhejiang Academy of Agricultural Sciences, Zhejiang, China
- Huiling Zhu, DVM, M.S., Ph.D. Jan. 2016 – July 2016
Associate Professor on leave from College of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Hubei, China (Funded by Hubei Provincial Government).
Current Position: Associate Professor, College of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Hubei, China
- Jing Wang, M.S., Ph.D. June 2016 – May 2017
Associate Professor on leave from Institute of Animal Husbandry and Veterinary Medicine, Beijing Academy of Agricultural and Forestry Sciences, Beijing, China (Funded by China Scholarship Council, Ministry of Education, China).
Current Position: Associate Professor, Institute of Animal Husbandry and Veterinary Medicine, Beijing Academy of Agricultural and Forestry Sciences, Beijing, China
- Xiangbing Mao, M.S., Ph.D. Dec. 2016 – Dec. 2017
Associate Professor on leave from Institute of Animal Nutrition, Sichuan Agricultural University, Chengdu, China (Funded by China Scholarship Council, Ministry of Education, China).
Current Position: Associate Professor, Institute of Animal Nutrition, Sichuan Agricultural University, Chengdu, China
- Jing Wang, M.S., Ph.D. Aug. 2018 – Dec. 2018
Associate Professor on leave from Institute of Animal Husbandry and Veterinary Medicine, Beijing Academy of Agricultural and Forestry Sciences, Beijing, China (Funded by Beijing Academy of Agricultural and Forestry Sciences, China).
Current Position: Associate Professor, Institute of Animal Husbandry and Veterinary Medicine, Beijing Academy of Agricultural and Forestry Sciences, Beijing, China

Graduate students (as advisory committee member):***MS Advisory Committee***

Rayaprolu Subrahmanyam, BS	Entomology & Plant Path	Jan. 2005 – Dec. 2007
Shashidhara Marulappa, BS	Animal Science	Aug. 2006 – Dec. 2008
Nicole Fry, BS	Animal Science	Aug. 2008 – Dec. 2010
Katie Hilton, BS	Animal Science	Aug. 2010 – Aug. 2013
Lingna Zhang, DVM	Animal Science	Dec. 2013 – May 2016
Breanne Morrell, B.S.	Animal Science	Aug. 2015 – May 2017
Morgan Totty, B.S.	Animal Science	Aug. 2013 – May 2017
Maria Chiara Perego	Animal Science	Aug. 2016 – Aug. 2018

PhD Advisory Committee

Nili Jin, MD	Veterinary Biomed Sciences	Aug. 2001 – Dec. 2005
Pengcheng Wang, MD	Veterinary Biomed Sciences	Aug. 2002 – July 2007
Pauline Aad, BS, MS	Animal Science	Jan. 2006 – July 2008
Tingting Weng, BS	Veterinary Biomed Sciences	Aug. 2005 – July 2010
Amarjit Mishra, MS	Veterinary Biomed Sciences	Jan. 2008 – Sep. 2010
Duraisamy Ponnusamy, MS	Veterinary Biomed Sciences	Jan. 2008 – Sep. 2010
Maha A.A. ElTurki, M.S.	Environmental Sciences	Aug. 2013 – May 2015
Belinda Castanon, MS	Animal Science	Aug. 2013 – Dec. 2015
Hung-King Tiong, MS	Food Science	Sep. 2009 – July 2016
Sunil More, BVSci, MS	Veterinary Biomed Sciences	Sep. 2010 – May 2016
Luis F. Schutz, MS	Animal Science	Aug. 2013 – July 2016
Xiaolong Cao, BS	Biochemistry & Mol Biology	Aug. 2014 – May 2017
Sharmily Khanam, MS	Microbiol. & Mol. Genetics	July 2012 – July 2017
Excel Rio Maylem	Animal Science	Aug. 2018 – Present
Tarosha Salpadoru, MS	Microbiol. & Mol. Genetics	May 2019 – Present
Mego Terhuja	Veterinary Biomed Sciences	May 2019 – Present
Laximan Sawant	Veterinary Biomed Sciences	Aug. 2019 – Present

Undergraduate students (as research mentor):***Niblack Research Scholars (\$8,000/year)***

Grace Hale	Animal Science	Aug. 2004 – Aug. 2005
Justin Alexander	Zoology	Aug. 2006 – Aug. 2007
Hannah Paradis	Entomology & Plant Pathology	Aug. 2015 – July 2016
Sage Becker	Animal Science	Aug. 2017 – Aug. 2018

Wentz Research Scholars (\$4,500/year)

Laura Townley	Animal Science	Aug. 2004 – May 2005
Sarah Myers	Animal Science	Aug. 2012 – May 2013
Hannah Paradis	Entomology & Plant Pathology	Aug. 2014 – May 2015
Sydney Stewart	Animal Science	Aug. 2015 – May 2016
Sage Becker	Animal Science	Aug. 2016 – May 2017
Sydney Stewart	Animal Science	Aug. 2016 – May 2017
Sage Becker	Animal Science	Aug. 2018 – May 2019
Jordan Cowger	Animal Science	Aug. 2018 – May 2019

Sarah Vue	Animal Science	Aug. 2018 – May 2019
Dawson Haworth	Biochemistry	Aug. 2018 – May 2019
Ashley Gin	Biochemistry	Aug. 2019 – Present

University Freshman Research Scholars (\$1,000/year)

Kelsey Conley	Animal Science	Aug. 2009 – Dec. 2009
Desiree Wright	Animal Science	Dec. 2012 – May 2013
Hannah Paradis	Entomology & Plant Pathology	Nov. 2013 – May 2014
Sage Becker	Animal Science	Aug. 2015 – May 2016
Jordan Cowger	Animal Science	Aug. 2016 – May 2017
Mckenzie Franklin	Nutritional Science	Aug. 2017 – May 2018
Dawson Haworth	Biochemistry	Aug. 2017 – May 2018
Ashley Gin	Biochemistry	Aug. 2018 – May 2019
Natalee Richardson	Animal Science	Aug. 2019 – Present

Animal Science Research Scholars (Up to \$500/semester)

Grace Hale	Animal Science	Aug. 2002 – Aug. 2004
Laura Townley	Animal Science	Aug. 2005 – May 2006
Meredith Wyatt	Animal Science	Aug. 2005 – May 2006
Emily Derfelt	Animal Science	Jan. 2008 – May 2009
Sarah Myers	Animal Science	Sep. 2011 – May 2012
Sara Morris	Animal Science	Feb. 2012 – Dec. 2013
Christine Hedden	Animal Science	Feb. 2012 – May 2013
Beata Mackenroth	Animal Science	Jan. 2014 – June 2014
Audra Solis	Animal Science	Aug. 2014 – Dec. 2014
Sydney Stewart	Animal Science	Sep. 2014 – May 2015
Courtney Lester	Animal Science	Sep. 2015 – Dec. 2016
Jordan Cowger	Animal Science	Aug. 2017 – May 2018
Sarah Vue	Animal Science	Jan. 2018 – May 2018
Ty Montgomery	Animal Science	Aug. 2018 – May 2019
Carrie Meeks	Animal Science	Jan. 2020 – Present
Josh Swain	Animal Science	Jan. 2020 – Present

HHMI Research Scholars (\$1,000/year)

Justin Alexander	Zoology	Aug. 2005 – May 2006
Janell Root	Biochemistry	Aug. 2007 – May 2008

Summer Research Training Program for Veterinary Students

Jonathan Paa	Veterinary Medicine	May 2009 – Aug. 2009
Morgan Thompson	Veterinary Medicine	May 2011 – Aug. 2011
Shannon Lynch	Veterinary Medicine	May 2012 – Aug. 2012
Sarah Keller	Veterinary Medicine	May 2013 – Aug. 2013

Senior Honors Thesis

Laura Townley	Animal Science	Jan. 2006 – May 2006
Matilda Davis	Animal Science	Jan. 2013 – May 2013
Sage Becker	Animal Science	Aug. 2018 – Dec 2018

Jordan Cowger	Biochemistry	Jan. 2019 – May 2019
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Senior Special Problems

Samuel Ng	Biochemistry	Jan. 2003 – June 2003
Paowei Yeap	Biochemistry	Jan. 2006 – June 2006
Justin Alexander	Zoology	Jan. 2007 – July 2007
Kumil Al Jumaia	Microbiology & Mol. Genetics	Aug. 2014 – May 2015

TEACHING ACTIVITIES**Courses taught as instructor of record:**

- Spring 2003 ***ANSI 5010 – Topics in Molecular Biology***, 3 credit hours at the graduate level. This is an advanced molecular biology course that I developed and taught, covering the theories and applications of latest technologies in genomics, proteomics, and bioinformatics. Topics included real-time PCR, SAGE, RNA interference, microarray, 2-D PAGE, and mass spectrometry. This course consisted primarily of lectures
- 2005–2008 ANSI 5010 – Basic Molecular Biology Techniques, 3 credit hours at the graduate level. This is the course that I developed. Major topics includes DNA/RNA isolation, PCR, real-time PCR, DNA microarray, plasmid isolation, DNA digestion/ ligation/transformation, SDS-PAGE, and Western blotting. This course consists of 50% lectures and 50% lab sessions
- Spring 2015 ***ANSI 3423 – Animal Genetics***, 3 credit hours at the undergraduate level required for all students in the Department of Animal Science. Responsible for the teaching of the entire course
- Spring 2017 ***ANSI 3423 – Animal Genetics***, 3 credit hours at the undergraduate level required for all students in the Department of Animal Science. Responsible for the teaching of the entire course
- 2008–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 once a year
- 2009–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. Responsible for the teaching of the entire course

Course taught as co-instructor:

- 2002–2004 ***ANSI 4843 – Applications of Biotechnology in Animal Science***, 3 credit hours at the undergraduate level. Responsible for approximately 15% of materials, including lecture and lab sessions on agarose gel electrophoresis, plasmid isolation and digestion, and Northern/South blotting

Guest lectures:

- Fall 2004 ***VMED 6282 – Advanced Cell Biology***, 3 credit hours at the graduate level offered by the Center for Vet. Health Sciences. Delivered two guest lectures on signal transduction with 1.5 hours each, covering all major pathways in cell communication, survival, death, proliferation, and activation
- Fall 2007 ***MICR 6133 – Cellular Microbiology***, 3 credit hours at the graduate level offered by the Department of Microbiology and Molecular Genetics, College of Arts and Sciences, OSU. Delivered two guest lectures on Innate Immunity with 2 hours each, covering host innate immune mechanisms and bacterial/viral strategies to evade innate immunity
- 2011–2015 ***VBSC 5013 – Cellular and Molecular Biology***, 3 credit hours at the graduate level offered in the fall semester by the Veterinary Biomedical Sciences Graduate Program, Center for Veterinary Health Sciences, OSU. I delivered two lectures on DNA to Protein with 1.5 hours each, covering the molecular mechanisms of gene transcription and translation. An exam to cover my topics was also given and graded

Self-improvement activities on instruction:

- 2002 A series of training programs organized by the Human Resources Department at OSU, including Instructional Effectiveness, Performance Appraisal, Leadership Development, and University Policies Training, Spring 2002
- 2003 Training programs organized by the Faculty Support Center at OSU on Blackboard and WebCT, two major course management systems to create, publish, and maintain course contents online
- 2003 New Faculty Development Workshop – “*The Art and Science of Teaching and Assessment*”, organized by the OSU College of Agricultural Sciences and Natural Resources, August 12–13, 2003
- 2004 Instructional Effectiveness Workshop – “*Learning-Based Teaching*”, organized by the OSU College of Agricultural Sciences and Natural Resources, August 12–13
- 2006 Teaching Effectiveness Workshop – “*Mini Teaching Conference*”, organized by the OSU College of Agricultural Sciences and Natural Resources, August 17, 2006
- 2007 Teaching Enhancement Workshop – “*Postmodern Pedagogy: What Works on Generation NeXi?*”, organized by the OSU College of Agricultural Sciences and Natural Resources, August 9, 2007
- 2011 Workshop on “*Balancing Work and Family on the Way to Tenure and Full Professor*”, organized by the OSU Institute of Teaching and Learning Excellence, October 25, 2011
- 2011 Workshop on “*Review, Promotion, and Tenure within OSU STEM Departments*”, organized by the OSU Institute of Teaching and Learning Excellence, November 15

- 2012 Workshop on “*Tenured Faculty Engagement Series: Leaping into Leadership: What Are the Next Steps?*”, organized by the OSU Institute of Teaching and Learning Excellence, March 27, 2012
- 2012 Workshop on “*Engaging Your Students and Increasing Class Participation*”, organized by the OSU Institute of Teaching and Learning Excellence, September 5
- 2012 Workshop on “*Interactive Syllabus: Flipping Your Class*”, organized by the OSU Institute of Teaching and Learning Excellence, September 5, 2012
- 2013 Three workshops on “How to Use D2L”, organized by the OSU Institute of Teaching and Learning Excellence, August 20, August 27, and September 3, 2013
- 2013 Workshop on “Student Engagement, Student Success: Active Learning Strategies that Engage Students in the Classroom”, organized by the OSU Institute of Teaching and Learning Excellence, Nov. 19, 2013
- 2014–Present Annual participation of 1–2 teaching workshops organized by the Institute of Teaching and Learning Excellence and/or Ferguson College of Agriculture at OSU

Class evaluation results*:

Course Number and Title **	Semester Taught	Credits	Instructor Overall	Course Overall
ANSI 4843 – Applications of Biotechnology in Animal Science	Spring 2002	3	3.69	3.75
	Spring 2003	3	3.62	3.79
	Spring 2004	3	3.80	3.40
	Spring 2008	3	2.60	2.89
	Spring 2009	3	3.18	3.33
	Spring 2010	3	4.00	3.60
	Spring 2012	3	2.78	2.78
	Spring 2013	3	3.00	3.14
	Spring 2014	3	3.19	3.19
Class Average			3.33	3.33
ANSI 5010 – Basic Molecular Biology Techniques	Spring 2003	3	3.20	3.30
	Summer 2005	3	3.71	3.71
	Summer 2006	3	3.89	3.89
	Summer 2007	3	4.00	4.00
Class Average			3.70	3.73

ANSI 5573 – Techniques in Animal Molecular biology	Spring 2009	3	3.18	3.33
	Spring 2010	3	3.13	3.43
	Spring 2012	3	3.25	3.50
	Spring 2013	3	3.67	3.75
	Spring 2014	3	3.36	3.36
Class Average			3.32	3.47
OVERALL AVERAGE			3.45	3.51

* The classes were evaluated formally and anonymously on a scale of 4.0 by students at the end of each semester coordinated by the Registrar's Office.

** Class evaluation scores have been maintained around 3.50 beyond 2014; and therefore, were not updated for the sake of simplicity.

RESEARCH GRANTS, CONTRACTS, AND DONATIONS

(Total funding received: \$6,681,697; Total funding as PI: \$2,802,122; Total external funding as PI: \$2,251,424; Total internal funding as PI: \$550,698; Total grant number: 42; Major agencies: USDA, 10 grants; OCAST, 7 grants; NIH, 2 grants; OSU, 18 grants; Industry: 5 grants)

Currently Active (Total funding = \$1,745,000):

1. *USDA–NIFA Foundational and Applied Science Program. Epigenetic Regulation of Host Defense Peptide Synthesis. G. Zhang. 07/01/2020 – 06/30/2022. \$200,000. Role: PI*
2. *USDA–NIFA Food Safety Challenge Program. Novel Non-Antibiotic Approaches for Mitigation of Antimicrobial Resistance in Poultry. J. Lin, Q. Zhong, G. Zhang, T. Tabler, and W. Zhai. 01/15/2018 – 01/14/2021. \$1,200,000 (with \$290,419 to OSU). Role: Co-PI*
3. *USDA-NIFA Small Business Innovation Research (SBIR) Program. Natural Immune Boosting Compounds as Alternatives to Antibiotics. A. Curtis and G. Zhang. 09/01/2018 – 02/28/2022. \$100,000. Role: Co-PI (to commercialize my antibiotic alternative technology)*
4. *USDA–NIFA Education and Literacy Initiative Program (Predoctoral Fellowship). Fecal Microbiota Transplantation to Enhance Production Efficiency. K. Robinson (My PhD student) and G. Zhang. 04/01/2018 – 03/31/2020. \$95,000. Role: Primary Mentor*
5. *Oklahoma Center for Advancement of Science & Technology (OCAST) Applied Research Program. Small-Molecule Compounds as Novel Antibiotic Alternatives. G. Zhang and S. More. 07/01/2019 – 06/30/2021. \$90,000. Role: PI*
6. *Vitech Bio-Chem Corporation. Impact of New Peptiva on Growth Performance and Prevention of Necrotic Enteritis and Coccidiosis in Broiler Chickens. G. Zhang. 02/18/2020. \$30,000 (as unrestricted gift to OSU Foundation). Role: PI.*
7. *OSU Ferguson College of Agriculture Sitlington Enriched Graduate Scholarship Program. Sitlington Enriched Graduate Scholarship to Supplement the Stipends of Two Incoming Doctoral Students. G. Zhang. 08/01/2018 – 07/31/2021. \$30,000. Role: PI*

Completed (Total funding = \$4,936,697):

8. *Elanco Animal Health*. Effect of Heat Stress on Broiler Chickens Medicated with Different Concentrations of Nicarbazin. **G. Zhang** and A. Pezeshki. 09/01/2017 – 08/31/2019. \$52,973. Role: **PI**
9. *OSU Renovation of Critical Research Facilities Program*. Replacement of a steam sterilizer in the core research laboratory of the Department of Animal and Food Sciences. **G. Zhang** and all departmental research faculty. 2018 – 2019. \$34,433 (funded directly by Oklahoma Agricultural Experiment Station). Role: **PI**
10. *Oklahoma Center for Advancement of Science & Technology (OCAST) Applied Research Program*. Development of Next-Generation Antibiotic Alternatives. **G. Zhang**, J. Ritchey, and S. Carter. 08/01/2015 – 08/31/2018. \$300,000. Role: **PI**
11. *USDA–NIFA National Needs Fellowships Grant Program*. Graduate Training for the Next Generation of Scholars in Application of Genomic and Computational Biology for Animal Production. **G. Zhang**, J. Hernandez Gifford, R. Mateescu, P. Hoyt, and M. Payton. **PI**. 02/01/2013 – 01/31/2018. \$238,500. Role: **Co-PI**
12. *OSU CASNR Sitlington Enriched Graduate Scholarship Program*. Sitlington Enriched Graduate Scholarship to Supplement the Stipends of an Incoming Doctoral Student. **G. Zhang**. 05/01/2014 – 04/30/2017. \$15,000. Role: **PI**
13. *Cowboy Technologies, OSU*. Natural Immune Boosting Feed Additives as Alternatives to Antibiotics (Seed funding for technology commercialization). **G. Zhang**. 01/01/2014 – 03/31/2017. \$110,000. Role: **PI**
14. *OSU CASNR Sitlington Enriched Graduate Scholarship Program*. Sitlington Enriched Graduate Scholarship to Supplement the Stipends of an Incoming Doctoral Student. **G. Zhang**. 05/01/2013 – 04/30/2016. \$15,000. Role: **PI**
15. *OCAST Health Research Program*. Antimicrobial Therapy Using Immunomodulatory Peptides. **G. Zhang** and J. Ritchey. 07/01/2012 – 06/30/2015. \$135,000. Role: **PI**
16. *Innovad, Inc., Belgium (<http://www.innovad-global.be>)*. Impact of Butyrate-Based Products on Growth Promotion, Antimicrobial Peptide Expression, and Intestinal Microflora Balance in Broiler Chickens. **G. Zhang**. 03/01/2014 – 06/30/2015. \$46,008. Role: **PI**
17. *OSU Research Facility Renovation and/or Development Program*. Acquisition of a BD FACSAria Cell Sorter to Expand the Capabilities of OSU's Flow Cytometry Core Facility. P. Lloyd, **G. Zhang**, et al. 11/20/2013 – 12/31/ 2014. \$316,776. Role: **Co-PI**
18. *OCAST Applied Research Support Program*. Development of Immune Boosting Feed Additives. **G. Zhang**, J. Ritchey, and R. Teeter. 09/01/2012 – 08/31/2014. \$90,000. Role: **PI**
19. *USDA–NIFA Foundational Program*. Enhancing Disease Resistance by Boosting Innate Immunity. **G. Zhang**, J. Ritchey, and R. Teeter. 09/01/2008 – 08/31/2013. \$365,300. Role: **PI**
20. *OSU Technology Business Development Program*. Commercialization of Natural Alternatives to Antibiotics. **G. Zhang**. 09/01/2012 – 08/31/2013. \$20,000. Role: **PI**

21. *NIH–National Institute of Allergy and Infectious Diseases (NIAID)*. Antimicrobial Peptide Resistance in *Campylobacter jejuni*. J. Lin and **G. Zhang**. 08/15/2009 – 07/31/2012. \$199,355. Role: **Co-PI**
22. *University of Washington Institute of Translational Health Sciences Ignition Award Program*. Identification of Molecular Signature of Successful Influenza Vaccinations (Sabbatical Project). **G. Zhang**. 06/01/2010 – 09/23/2011. \$67,500. Role: **PI**
23. *OCAST Applied Research Support Program*. Novel Antimicrobial Peptides as Anti-Sepsis Drugs. **G. Zhang** and J. Ritchey. 09/01/2007 – 06/31/2010. \$90,000. Role: **PI**
24. *OCAST Health Research Program*. Enteric Defensins and Inflammatory Bowel Disease. **G. Zhang** and J. Ritchey. 08/01/2007 – 07/31/2009. \$90,000. Role: **PI**
25. *OSU CASNR Sitlington Enriched Graduate Scholarship Program*. Sitlington Enriched Graduate Scholarship to Supplement the Stipends of Two Incoming Doctoral Students. **G. Zhang**. 01/01/2008 – 12/31/2010. \$30,000. Role: **PI**
26. *OSU DASNR Team Initiative Program*. Enhancing Animal Disease Resistance by Boosting Animal Innate Immunity. **G. Zhang**, C. Krehbiel, et al. 02/01/2008 – 12/31/2009. \$81,000. Role: **PI**
27. *OSU DASNR Centennial Scholars Program*. Recruitment of a Graduate Research Assistant. **G. Zhang**, C. Krehbiel, U. DeSilva, and J. Malayer. 01/01/2007 – 12/31/2009. \$60,000. Role: **PI**
28. *OSU CASNR Sitlington Enriched Graduate Scholarship Program*. Sitlington Enriched Graduate Scholarship for an Incoming Doctoral Student. **G. Zhang**. 01/01/2007 – 12/31/2009. \$15,000. Role: **PI**
29. *OSU Technology Business Assessment Group Seed Funding Program*. Preclinical Assessment of Fowlicidins as Antimicrobial and Anti-Sepsis Drugs. **G. Zhang**. 01/01/2007 – 12/31/2007. \$20,000. Role: **PI**
30. *Oklahoma Agriculture Experiment Station (OAES) Animal Health-1433 Formula Funds*. Enhancing Preharvest Food Safety Using Natural Alternatives to Antibiotics. **G. Zhang**, J. Ritchey, and J. Deng. 01/01/2007 – 12/31/2007. \$25,000. Role: **PI**
31. *OSU Research Facility Renovation and/or Development Program*. Development of a Shared In Situ Hybridization Facility. **G. Zhang** and C. Krehbiel. 12/01/2006 – 11/30/2007. \$66,000. Role: **PI**
32. *OSU DASNR Team Initiative Program*. Functional Genomic Approaches to the Bovine Respiratory Disease Complex. **G. Zhang**, C. Krehbiel, A. Confer, U. DeSilva, et al. 10/01/2006 – 9/31/2008. \$51,765. Role: **PI**
33. *OAES Animal Health-1433 Formula Funds*. Development of a Specialized Microarray for Bovine Infectious Disease Research. **G. Zhang** and A. Confer. 11/01/2004 – 10/30/2006. \$31,500. Role: **PI**
34. *USDA–CSREES Special Grant Program*. Food Safety: Farm to Table. S.E. Gilliland, P. Muriana, **G. Zhang**, et al. 07/01/2005 – 06/30/2007. \$514,849. Role: **Co-PI**

35. *USDA–CSREES Special Grant Program*. Food Safety: Farm to Table. S.E. Gilliland, P. Muriana, **G. Zhang**, et al. 07/01/2004 – 06/30/2006. \$519,105. Role: **Co-PI**
36. *NIH–National Center for Research Resources (NCRR) Centers of Biomedical Research Excellence (COBRE) Program*. Host Defense Responses to Influenza Viruses” (Junior Investigator Award under a larger COBRE grant at University of Oklahoma Health Sciences Center). **G. Zhang**. 06/01/2004 – 05/31/2005. \$171,039. Role: **PI**
37. *Oklahoma Center for Advancement of Science & Technology (OCAST) Health Research Program*. Antimicrobial Peptides as a New Class of Antibiotics. **G. Zhang** and J. Ritchey. 07/01/03 – 06/30/06. \$135,000. Role: **PI**
38. *USDA–CSREES Special Grant Program*. Food Safety: Farm to Table. S.E. Gilliland, P. Muriana, **G. Zhang**, et al. 07/01/2003 – 06/30/2005. \$580,449. Role: **Co-PI**
39. *National Pork Board*. Production of Recombinant Porcine Antimicrobial Peptides as Antibiotic Alternatives. **G. Zhang** and S. Carter. 06/01/2003 – 05/31/2004. \$35,000. Role: **PI**
40. *OAES Animal Health–1433 Formula Funds*. Efficiency of Chicken Antimicrobial Peptides in Killing Bacteria. **G. Zhang**. 11/01/2003 – 12/31/2004. \$15,000. Role: **PI**
41. *OAES Animal Health–1433 Formula Funds*. Cloning, Expression and Analysis of Bovine β -Defensins. **G. Zhang**. 10/01/2002 – 12/31/2004. \$26,000. Role: **PI**
42. *USDA–CSREES Special Grant Program*. Food Safety: Farm to Table. S.E. Gilliland, P. Muriana, **G. Zhang**, et al. 07/01/2002 – 06/30/2004. \$374,145. Role: **Co-PI**

PEER-REVIEWED PUBLICATIONS

(Total refereed publications: 76; Total Citations = 7,907 (as of 5/15/2020 by Google Scholar); h-index* = 39; i_{10} -index** = 60. **Note:** *h-index = h publications with at least h citations; ** I_{10} -Index = Number of publications with at least 10 citations)

1. **Zhang, G.**, C.R. Ross, S.S. Dritz, J.C. Nietfeld, and F. Blecha. 1997. *Salmonella* infection increases porcine antibacterial peptide concentrations in serum. *Clinical and Diagnostic Laboratory Immunology* 4: 774-777.
2. **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.
3. Wu, H., **G. Zhang**, C.R. Ross, and F. Blecha. 1999. Cathelicidin expression in porcine tissues: roles in ontogeny and tissue specificity. *Infection and Immunity* 67: 439-442.
4. He, X.-Y., **G. Zhang**, F. Blecha, and S.-Y. Yang. 1999. Identity of heart and liver L-3-hydroxyacyl coenzyme A dehydrogenase. *Biochimica et Biophysica Acta* 1437: 119-123.
5. Shi, J., **G. Zhang**, H. Wu, C.R. Ross, F. Blecha, and T. Ganz. 1999. Porcine epithelial β -defensin 1 is expressed in the dorsal tongue at antimicrobial concentrations. *Infection and Immunity* 67: 3121-3127.
6. **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.
7. **Zhang, G.**, C.R. Ross, and F. Blecha. 2000. Porcine antimicrobial peptides: new prospects for ancient molecules of host defense. *Veterinary Research* 31: 277-296.
 8. **Zhang, G.**, H. Wu, C.R. Ross, J.E. Minton, and F. Blecha. 2000. Cloning of porcine *NRAMP1* and its induction by lipopolysaccharide, TNF- α , and IL-1 β : role of CD14 and mitogen-activated protein kinases. *Infection and Immunity* 68: 1086-1093.
 9. Wu, H., **G. Zhang**, C.R. Ross, J.E. Minton, and F. Blecha. 2000. Regulation of cathelicidin gene expression: induction by lipopolysaccharide, interleukin-6, retinoic acid, and *Salmonella enterica* serovar typhimurium infection. *Infection and Immunity* 68: 5552-5558.
 10. **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.
 11. **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.
 12. **Zhang, G.**, and S. Ghosh. 2002. Negative regulation of Toll-like receptor-mediated signaling by Tollip. *Journal of Biological Chemistry* 277: 7059-7065.
 13. Krehbiel, C.R., S.R. Rust, **G. Zhang**, and S.E. Gilliland. 2003. Bacterial direct-fed microbials in ruminant diets: performance response and mode of action. *Journal of Animal Science* 81: E120-E132.
 14. 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.
 15. 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.
 16. 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.
 17. 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.
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ABSTRACTS (a total of 62)

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37. Sunkara, L.T., and **G. Zhang**. 2011. Short-chain fatty acids enhance disease resistance of chickens by inducing antimicrobial host defense peptide gene expression. *Annual BMBGSA Graduate Research Symposium*, OSU, Stillwater, OK.
38. Sunkara, L.T., W. Jiang, M. Achanta, and **G. Zhang**. 2011. modulation of antimicrobial host defense peptide gene expression by free fatty acids. *Proceedings of the 92nd Annual CRWAD Conference*, Abst. #65P, Chicago, IL.
39. Lynch, S., L.T. Sunkara, and **G. Zhang**. 2012. Augmentation of host defense peptide gene expression and disease resistance of chickens by intestinal microbial metabolites. *13th Annual Research Symposium of Summer Student Research Training Program*, Center for Veterinary Health Sciences, OSU, Stillwater, OK.
40. **Zhang, G.**, L.T. Sunkara, X. Zeng, W. Jiang, and A. Curtis. 2012. Development of Immune Boosting Dietary Supplements as Alternatives to Antibiotics. *International Symposium on Alternatives to Antibiotics*, Sep 25-28, 2012. Paris, France.
41. Jiang, W., L.T. Sunkara, and **G. Zhang**. 2013. Differential regulation of human cathelicidin LL-37 by free fatty acids and their analogs. *24th Annual Research Symposium*, OSU, Feb 20-22, 2013. Stillwater, OK.
42. Sunkara L.T., W. Jiang, and **G. Zhang**. 2013. Role of histone acetylation, cAMP signaling, and mitogen-activated protein kinases in butyrate-induced host defense peptide gene expression in chicken HD11 macrophage cells. *Annual Meeting of the American Association of Immunologists*, Abstract #P1283, May 3-7, 2013, Honolulu, HI.
43. Keller, S.L., L.T. Sunkara, **G. Zhang**. 2013. Synergistic induction of chicken host defense peptides between butyrate and sugars. *14th Annual Research Symposium of Summer Student Research Training Program*, Center for Veterinary Health Sciences, Oklahoma State University, Stillwater, OK.
44. **Zhang, G.**, L.T. Sunkara, and A. Curtis. 2014. Boosting innate immunity and disease resistance by modulating antimicrobial host defense peptide synthesis. *Avian Immunology Research Group Meeting (AIRG 2014)*, July 16-19, 2014, Guelph, Canada.
45. Robinson, K., L.T. Sunkara, and **G. Zhang**. 2015. Avian β -defensin 10 expression is synergistically induced by butyrate and forskolin in chickens. *Poultry Science Association Annual Meeting*, July 27-30, 2015, Louisville, KY.
46. **Zhang, G.** 2015. Dietary modulation of intestinal epithelial defense in chickens. *Symposium on Gut Health in Production of Food Animals*, November 9-11, 2015, Kansas City, MO.
47. Lyu, W., Z. Deng, R.L. Matts, and **G. Zhang**. 2016. Identification of natural host defense peptide-inducing compounds using a cell-based high throughput screening assay. *Poultry Science Association Annual Meeting*, July 11-14, 2016, New Orleans, LA.
48. Zhang, L., Y. Xiao, Y. Liu, and **G. Zhang**. 2016. 1,25-Dihydroxyvitamin D3 synergizes with butyrate in inducing host defense peptide gene expression in chickens. *Poultry Science Association Annual Meeting*, July 11-14, 2016, New Orleans, LA.

49. Robinson, K., L.T. Sunkara, and **G. Zhang**. 2016. Regulation of host defense peptide expression and barrier function by butyrate and FSK in broiler chicks. *Poultry Science Association Annual Meeting*, July 11-14, 2016, New Orleans, LA.
50. **Zhang, G.**, L.-A. Fong, and L.T. Sunkara. 2016. Synergistic induction of chicken host defense peptide gene expression by sugars and butyrate. *Symposium on Gut Health in Production of Food Animals*, November 14-16, 2016, St. Louis, MO.
51. Stewart, S., K. Robinson, and **G. Zhang**. 2017. Tissue and developmental expression patterns of claudin-1 and claudin-2, two major tight junction proteins, in chickens. *4th Annual Research Retreat of the Oklahoma Center for Respiratory and Infectious Diseases*, April 4, 2017, Stillwater, OK.
52. Robinson, K., H. Li, L. Zhang, B. Aylward, R.J. Arsenault, L. Sunkara, B. Couger, and **G. Zhang**. 2017. Molecular mechanisms of synergistic enhancement of chicken innate immunity and barrier function by butyrate and forskolin. *Poultry Science Association Annual Meeting*, July 17-20, 2017, Orlando, FL.
53. Deng, Z., W. Lyu, and **G. Zhang**. 2017. High throughput screening of histone deacetylase inhibitors that induce host defense peptide expression. *Poultry Science Association Annual Meeting*, July 17-20, 2017, Orlando, FL.
54. Lyu, W., Z. Deng, and **G. Zhang**. 2017. Identification of natural host defense peptide-inducing compounds using a cell-based high throughput screening assay. *Poultry Science Association Annual Meeting*, July 17-20, 2017, Orlando, FL.
55. Yang, Q., K. Robinson, B. Chen, R. Arsenault, and **G. Zhang**. 2017. Forskolin and butyrate act synergistically to protect chickens from necrotic enteritis by inducing host defense peptide synthesis. *Symposium on Gut Health in Production of Food Animals*, November 13-15, 2017, St. Louis, MO.
56. Chen, B., W. Lyu, Q. Yang, and **G. Zhang**. 2018. Histone methyltransferase inhibitors synergizes with butyrate in promoting host defense peptide gene expression in chickens. *Poultry Science Association Annual Meeting*, July 23-26, 2018, San Antonio, TX.
57. 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. *Poultry Science Association Annual Meeting*, July 23-26, 2018, San Antonio, TX.
58. Yang, Q., B. Chen, K. Robinson, and **G. Zhang**. 2018. Forskolin and butyrate act synergistically in protecting chickens from necrotic enteritis. *Poultry Science Association Annual Meeting*, July 23-26, 2018, San Antonio, TX.
59. Robinson, K. Y. Xiao, J. Zhao, H. Yang, and **G. Zhang**. 2018. Association of the jejunal microbiome and transcriptome with growth in broiler chickens. *Poultry Science Association Annual Meeting*, July 23-26, 2018, San Antonio, TX.
60. Yang, Q., B. Chen, K. Robinson, T. Belem, R. Ramanathan, and **G. Zhang**. 2019. Butyrate and forskolin act synergistically in protecting chickens from necrotic enteritis. *Poultry Science Association Annual Meeting*, July 15-18, 2019, Montréal, Québec, Canada.

61. Robinson, K. T.J. Johnson, and **G. Zhang**. 2019. Chicken intestinal mycobiome: initial characterization and its response to bacitracin methylene disalicylate. *Symposium on Gut Health in Production of Food Animals*, November 4-6, 2019, St. Louis, MO.
62. Lyu, W., Z. Deng, L.T. Sunkara, and **G. Zhang**. 2019. High-throughput screening for host defense peptide-inducing compounds as natural alternatives to antibiotics. *Symposium on Gut Health in Production of Food Animals*, November 4-6, 2019, St. Louis, MO.

INVITED TALKS (a total of 61)

1. Innate immunity, a phylogenetically conserved system of host defense. Wistar Institute, University of Pennsylvania School of Medicine, Philadelphia, PA. July 1999.
2. Innate immunity, a phylogenetically conserved system of host defense. Sloan-Kettering Institute, Memorial Sloan-Kettering Cancer Center, New York City, NY. July 1999.
3. Innate immunity, a phylogenetically conserved system of host defense. Section of Immunobiology, Yale University School of Medicine, New Haven, CT. August 1999.
4. Molecular mechanisms of host defense: avenues for nutritional modulation. Department of Animal Science, Iowa State University, Ames, IA. March 2001.
5. Molecular mechanisms of host defense: toward disease-resistant animals and beyond. Department of Animal Science, Rutgers, the State University of New Jersey, New Brunswick, NJ. May 14, 2001.
6. Molecular mechanisms of host defense: toward disease-resistant animals and beyond. Department of Animal Science, Oklahoma State University, Stillwater, OK. June 2001.
7. Potential applications of mammalian antimicrobial peptides in preharvest food safety. 2nd Annual Food Science Research Symposium, Oklahoma Food and Agricultural Products Research and Technology Center, Oklahoma State University, Stillwater, OK. April 11, 2002.
8. Exploring the molecular mechanisms of innate host defense. Department of Pathobiology, Texas A&M University, College Station, TX. March 2, 2005.
9. Structure-activity relationship studies of novel antimicrobial peptides. Department of Biochemistry, Kansas State University, Manhattan, KS. November 2, 2005.
10. Cationic host defense peptides: a new class of antimicrobial drugs. Veterinary Biomedical Sciences Seminar Series, Center for Veterinary Health Sciences, Oklahoma State University, Stillwater, OK. September 14, 2006.
11. Structure-activity relationship studies of novel host defense peptides. Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK. November 11, 2006.
12. Small peptides, big promises. 1st Annual Food Animal Health and Performance Meeting, ConocoPhillips Alumni Center, Center for Veterinary Health Sciences, Oklahoma State University, Stillwater, OK. October 2, 2007.
13. **Sigma Xi Young Investigator Award Lecture** – Can innate immunity be boosted to combat infections? Oklahoma State University, Stillwater, OK. February 13, 2009.

14. Potential of host defense peptides in disease control and prevention. Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK. August 28, 2009.
15. Immunomodulation: toward antibiotic-free feeding strategies. College of Animal Science and Technology, China Agricultural University, Beijing, China. June 21, 2010.
16. Boosting innate immunity to combat infectious diseases. College of Animal Science and Technology. China Agricultural University, Beijing, China. June 22, 2010.
17. Immunomodulation: toward antibiotic-free feeding strategies. Da Bei Nong Group Co., Beijing, China. June 23, 2010.
18. **Keynote Lecture** – Host defense peptides: boosting innate immunity to combat infectious diseases, 3rd Annual European Symposium on Host Defense Peptides. Utrecht, The Netherlands. September 22, 2010.
19. Enhancing host immunity and disease resistance by modulating antimicrobial peptide synthesis. 1st Annual International Symposium of Antimicrobial Research by BIT Life Sciences, Beijing, China. December 3, 2011.
20. Research progresses on antibiotic-free feeding strategies. Nutritional Immunology and Advanced Feeding Technology Symposium by Blooming Biotech Co., Beijing, China. December 4, 2011.
21. Molecular mechanisms of antimicrobial peptide induction by short-chain fatty acids. College of Animal Science and Technology. China Agricultural University, Beijing, China. December 6, 2011.
22. Research progresses on antibiotic-free feeding strategies. Nutritional Immunology and Advanced Feeding Technology Symposium by Blooming Biotech Co., Kunming, China. December 9, 2011.
23. Natural alternatives to antibiotics: are we there yet? Department of Animal Science, University of Tennessee, Knoxville, UT. March 8, 2012.
24. Control and prevention of antibiotic-resistant infections by a host defense peptide through modulation of innate immunity. International Symposium on Alternatives to Antibiotics, Paris, France. September 26, 2012 (I also served on the expert panel in roundtable discussions).
25. Toward the development of immune-boosting feed additives. College of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Wuhan, Hubei, China. June 8, 2013.
26. Infectious disease control and prevention by modulation of host innate immunity. Department of Microbiology and Molecular Genetics, Oklahoma State University, Stillwater, OK. February 10, 2014.
27. Boosting innate immunity and disease resistance by modulating antimicrobial host defense peptide synthesis. Avian Immunology Research Group Meeting (AIRG 2014), Guelph, Canada. July 17, 2014.
28. Disease control and prevention by modulating innate immunity. College of Animal Science and Technology, China Agricultural University, Beijing, China. December 23, 2014.

29. Dietary modulation of animal immunity. College of Animal Science and Technology, Beijing University of Agriculture, Beijing, China. December 24, 2014.
30. Nutritional modulation of innate immunity: implications for the development of antibiotic-free diets. College of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Hubei, China. December 29, 2014.
31. How to write a scientific paper? College of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Hubei, China. December 30, 2014.
32. The art of writing a scientifically effective paper. College of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Hubei, China. June 12, 2015.
33. **Sigma Xi Chapter Lecturer Award Lecture** – Development of next-generation antibiotic alternatives. Oklahoma State University, Stillwater, OK. October 2, 2015.
34. **Keynote Lecture** – Dietary modulation of intestinal epithelial defense in chickens. Symposium on Gut Health in Production of Food Animals, Kansas City, MO. November 9, 2015
35. **Keynote Lecture** – Host defense peptide-inducing compounds as a new generation of antibiotic alternatives. Mini-symposium on Microbiome and Animal Health, Chicago, IL. December 7, 2015
36. Dietary regulation of enteric mucosal defense. College of Animal Science and Nutritional Engineering, Wuhan Polytechnic University, Hubei, China. December 14, 2015.
37. The agricultural use of antibiotics in the U.S. Zhejiang Academy of Agricultural Sciences, Zhejiang, China. December 17, 2015.
38. Dietary modulation of intestinal defense. College of Animal Science and Technology, China Agricultural University, Beijing, China. December 21, 2015.
39. Antimicrobial peptides as alternatives to antibiotics: boom or bust? Alternatives to Antibiotics (ATA) Research Gap Analysis Workshop, Ames, IA. April 6, 2016
40. Five secrets of becoming a productive graduate student. Cowboy Graduate Student Research Gala, Graduate College, Oklahoma State University, April 14, 2016.
41. Mechanisms of intestinal epithelial defense. Kemin Technical Service Managers Training Meeting, Chicago, IL. November 9, 2016
42. Synergistic induction of chicken host defense peptide gene expression by sugars and butyrate. Symposium on Gut Health in Production of Food Animals, Kansas City, MO. November 15, 2016
43. Innate immunity of the intestinal tract. College of Animal Science and Technology, Beijing University of Agriculture, Beijing, China. November 24, 2016.
44. From animal nutrition to molecular immunology: 21 years of my research journey in the U.S. College of Animal Science and Technology, China Agricultural University, Beijing, China. November 26, 2016.
45. Immune mechanisms on intestinal mucosal surface. College of Animal Sci. & Nutritional Engineering, Wuhan Polytechnic University, Hubei, China. November 28, 2016.

46. Dietary modulation of intestinal epithelial defense. College of Animal Science, South China Agricultural University, Guangzhou, China. December 1, 2016.
47. Development of novel antibiotic alternatives. Institute of Veterinary Medicine, Guangdong Academy of Agricultural Sciences, Guangzhou, China. December 2, 2016.
48. Natural alternatives to antibiotics. Zhejiang Academy of Agricultural Sciences, Hangzhou, China. December 5, 2016.
49. Development of immune boosting alternatives to antibiotics. College of Anim. Sci. & Vet. Med., Henan Agricultural University, Zhengzhou, China. December 8, 2016.
50. Developing antibiotic alternatives: immune modulation or microbiome manipulation? Department of Microbiology and Molecular Genetics, Oklahoma State University, Stillwater, OK. April 17, 2017.
51. Development of next-generation antibiotic alternatives. College of Animal Sci. & Nutr. Engineering, Wuhan Polytechnic University, Hubei, China. December 13, 2017.
52. A new class of antibiotic alternatives for poultry use. Zhejiang Academy of Agricultural Sciences, Hangzhou, China. December 15, 2017.
53. Novel approaches to development of alternatives to antibiotics. College of Animal Science and Technology, China Agricultural University, Beijing, China. December 21, 2017.
54. Mechanisms of synergistic regulation of intestinal host defense peptides and mucosa development by forskolin and *Clostridium butyricum*. National Science Foundation of China, Beijing, China. May 12, 2018.
55. Development of next-generation natural alternatives to antibiotics. Eastman Chemical Company, Kingsport, TN. September 13, 2018.
56. Development of antibiotic alternatives by manipulation gut microbiome. Plant and Animal Genome Conference XXVII, San Diego, CA. January 13, 2019.
57. Screening of host intestinal defense mechanisms for compounds as possible alternatives to antibiotics. Health and Stress Advisory Board Meeting, Land O'Lakes, Gray Summit, MO. January 22 – 23, 2019.
58. Development of antibiotic alternatives by modulating animal innate immunity. International Conference on Green Feeds and Animal Product Safety, Wuhan, China. August 4-6, 2019.
59. Immunomodulatory antibiotic alternatives. Zhejiang Academy of Agricultural Sciences, Hangzhou, China. August 8, 2019.
60. High-throughput screening for host defense peptide-inducing compounds as natural alternatives to antibiotics. *Symposium on Gut Health in Production of Food Animals*, November 4-6, 2019, St. Louis, MO.
61. High-throughput screening for host defense peptide-inducing compounds as alternatives to antibiotics. *3rd International Symposium on Alternatives to Antibiotics, Challenges and Solutions in Animal Health and Production*. December 16 -18, 2019, Bangkok, Thailand.