

Orhan Sahin, DVM, MS, PhD, Dip ACVM

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EDUCATION

Doctor of Philosophy (Veterinary Microbiology)

The Ohio State University, Wooster, Ohio. 3/2003

Master of Science (Veterinary Microbiology)

The Ohio State University, Columbus, Ohio. 1/1998

Doctor of Veterinary Medicine (DVM)

University of Ankara, Ankara, Turkey. 6/1993

Diplomate of The American College of Veterinary Microbiologists (2008)

PROFESSIONAL ADVANCEMENT

2021 – Pre, Associate Professor, Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, IA.
Bacteriology Section Leader, Veterinary Diagnostic Lab (2017 to present)

2016 – 2021, Assistant Professor, Department of Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, IA.
Bacteriology Section Leader, Veterinary Diagnostic Lab

2009 – 2015, Research Assistant Professor, Dept. Veterinary Microbiology and Preventive Medicine, Iowa State University, Ames, IA.

2005 – 2009, Postdoctoral Fellow / Assistant Scientist, Dept. Veterinary Microbiology and Preventive Medicine, Iowa State University, Ames, IA.

2003 – 2005, Assistant Professor, Veterinary Faculty, Microbiology, Mustafa Kemal University, Hatay, Turkey.

1996 – 2003, Graduate Research Assistant (MS + PhD), Departments of Veterinary Clinical Sciences, and Veterinary Preventive Medicine, The Ohio State University, Columbus/Wooster, OH.

1988 – 1993, Veterinary Medicine Student, University of Ankara, College of Veterinary Medicine, Ankara, Turkey.

HONORS AND AWARDS

- Promotion to associate professorship with tenure, 2021
- Diplomate of The American College of Veterinary Microbiologists (ACVM), certified in Bacteriology/Mycology specialty (2008).
- Recipient of a scholarship award from Ministry of Education of Turkey for master and Ph.D. studies in the United States. (1995-2003)
- Ohio Agricultural Research and Development Center (OARDC) Annual Conference Poster Award, second place. 2001
- Conference of Research Workers in Animal Diseases (CRWAD), Poster Award in Comparative Gastroenterology, first place. 1999.

PROFESSIONAL MEMBERSHIPS

- Member of American Society for Microbiology (ASM), 2001-present.
- Member of Conference of Research Workers in Animal Diseases (CRWAD), 1999-present.
- Member of The American Association of Veterinary Laboratory Diagnosticians (AAVLD), 2010-present.
- Iowa Veterinary Medical Association (IVMA), Member, since 2018
- Iowa State University (ISU) Antimicrobial Resistance Consortium, Member, since 2017.
 - Representative, Diagnostic Core Unit.
 - Scientist, National Institute of Antimicrobial Resistance Research & Education (NIAMRRE), since October 2020.
- Member of The International Organization for Mycoplasma (IOM), 2015- 2020.
- Member of Delta Chapter of the Phi Zeta, the international honor society of veterinary medicine, 2003-present

SERVICE ON GRANTS AND PUBLICATION

- Served as ad-hoc peer reviewer for research proposals submitted to:
 - The U.S. Civilian Research and Development Foundation for the Independent States of the Former Soviet Union (CRDF), 2007
 - OARDC SEEDS Grants (The Ohio State University), 2008, 2009, 2014, 2015.
 - BARD, The United States-Israel Binational Agricultural Research and Development Fund, 2013, 2015, 2018.
 - Wellcome Trust Postdoctoral Fellowship (2015).
 - Iowa State University-ILHAC Grants, 2010-2017.

- ISU CVM SEED Grant (2016, 2017, 2018, 2020)
 - ISU Bailey Research Career Development Award (2016)
 - Canadian Poultry Research Council (2016, 2017)
 - Swiss National Science Foundation (2017).
 - Biotechnology and Biological Sciences Research Council (BBSRC) of the U.K. (2017, 2018).
 - Natural Environment Research Council (NERC) of the U.K. (2019)
 - American University of Beirut (2019, 2020)
 - Centre for Interdisciplinary Research in Animal Health (CIISA), Faculty of Veterinary Medicine, University of Lisbon, Portugal (2019)
 - Minnesota Pork Board (2020).
 - USDA ARS Office of Scientific Quality Review, NP 103 Animal Production and Protection National Program, Panel 3: Antimicrobial Resistance. Panel member for ARS Project Plans, (reviewed 4 projects in 2021).
- Serve on the Editorial Board for the following journals:
 - Avian Diseases, 2013-present
 - Frontiers in Microbiology (review editor; since 2015).
 - Frontiers in Veterinary Science (review editor; since 2017)
- Served as peer reviewer for the following scientific journals:
 - Human Vaccines and Immunotherapeutics (2013)
 - Bioscience, Biotechnology, and Biochemistry (2013)
 - Epidemiology and Infection (2013-present)
 - Bioinformatics (2010); PLoS ONE (2011-present)
 - Foodborne Pathogens and Disease (2012-present)
 - Avian Diseases (2009-present)
 - BMC Microbiology (2012 to present)
 - International Journal of Food Microbiology (2013, 2020)
 - Revue de Médecine Vétérinaire (2014)
 - PLoS ONE (2014 - present)
 - Veterinary Immunology and Immunopathology (2015-present)
 - Microbial Pathogenesis (2015)
 - Food Microbiology (2016)
 - Scientific Reports (2017 - present)
 - Frontiers in Microbiology (2015-present).
 - Veterinary Microbiology (2019, 2020)
 - Zoonoses and Public Health (2019, 2020)
 - Transboundary and Emerging Diseases (2019)
 - Applied and Environmental Microbiology (2019, 2020)
 - Journal of Veterinary Diagnostic Investigation (2020)

PROFESSIONAL ACTIVITIES AND SERVICES

Public Service

- Conference of Research Workers in Animal Diseases (CRWAD).

- Moderator, Bacterial Pathogenesis, 2008-2010, 2017 -2018. Moderated one of the Keynote presentations/panels at 2020 virtual meeting.
 - Member, Program Committee, 2018 to present.
- Member of The American Association of Veterinary Laboratory Diagnosticians (AAVLD).
 - Moderator, Immunology, 2017; Epidemiology, 2019; Bacteriology 2020 virtual meeting.
 - General Meeting Abstract Reviewer, 2021
 - Member, Bacteriology/Mycology, and Antimicrobial Susceptibility subcommittees, since 2017.
 - Co-chair, Bacteriology and Mycology Subcommittee, 2019; IBQAS proficiency testing volunteer, 2020.
 - Member USAHA/AAVLD Committee on Food and Feed safety, since 2018.
- FDA Vet-LIRN, faculty representative of ISU Vet Med, since 2016.
- NC-1192 (An integrated approach to control of bovine respiratory diseases). NCRA (The North Central Regional Association), Iowa Agriculture and Home Economics Experiment Station, Multistate Research Project, member since 2016.
- NC-1202 (Enteric Diseases of Food Animals: Enhanced Prevention, Control and Food Safety). NCRA (The North Central Regional Association), Iowa Agriculture and Home Economics Experiment Station, Multistate Research Project, member since 2016.
 - Iowa State University (ISU) representative since 2017.
 - Secretary-elect (2019), 2020.
- American College of Veterinary Microbiologists (ACVM)
 - Graduate Students Awards Committee, member since 2016.
 - Graduate Students Awards Committee, chair, 2021
- Clinical and Laboratory Standards Institute (CLSI)
 - Member, Document Development Committee on Antimicrobial Susceptibility Testing for Fastidious Bacteria (M45), 2021

University Service

- ISU Interdepartmental Micro (IM) graduate program: Joined as a faculty member February 2016. Admission Committee member, 2016 to 2020.
- Veterinary Diagnostic and Production Animal Medicine (VDPAM) IT Committee member, 2016 to 2018.
- VDPAM Faculty Searches:
 - Search Committee member for Research Assistant Professor position in Bacteriology Section during April-May 2016.
 - Search Committee Chair for Clinical Assistant Professor position in Bacteriology Section of ISU VDL during September 2019.
- College of Veterinary Medicine (CVM) Summer Scholar Research Day. Served as judge for poster presentations presented by veterinary and graduate students, since 2014, 2017, 2019. Panelist, Meet the Experts (to provide career advice to students on research programs focusing on pathogens and vaccines), 2021.

- Host for Ramsey Seminar Speaker. Nominated and hosted Dr. Albert Osterhaus for the Ramsey seminar held in October 23, 2019. Made all the arrangements for his visit including arranging his schedule with meetings with faculty, staff, and students at ISU and with National Veterinary Services Laboratory (NVSL) scientists during his 2-day visit to ISU. Dr. Osterhaus is a world-renowned virologist and One Health scientist. The title of his seminar talk was “Combating Emerging Infections in A One Health Approach”.
- ISU Institutional Biosafety Committee (IBC), accepted to serve as an Alternate member, 2019. Appointed to be a Primary member, 2021.

Diagnostic Service

- As the Section leader and a faculty member of the Bacteriology Section of the Veterinary Diagnostic Laboratory (VDL) of ISU, I oversee the daily and long-term technical/scientific/professional activities within the labs, routinely coordinate diagnostic cases (on bacteriology/mycology) and communicate results with the clients, develop new and improve existing testing methods, manage personnel affairs, and guide and lead decisions on laboratory supplies and equipment. The Bacteriology Section at ISU VDL provides clinical bacteriology and mycology diagnostic services to the state of Iowa and nationally/internationally as well as ISU CVM veterinary hospital in diverse and wide commodities. The Section is also heavily involved in research services to and teaching of many different stakeholders. I regularly attend the ISU VDL wide Section Leaders meetings and Bacteriology Section wide Supervisors meeting. I also host visitors of diverse backgrounds and tour them the labs and provide scientific and operational information on a regular basis.

TRAINING AND RECOGNITIONS

- Routinely assessed the quality of food and water samples using microbiological isolation and identification methods during military service at the Army Veterinary Services Laboratory, Turkey, 2004.
- Attended and received certification for 'A Field Guide to GenBank® and NCBI Molecular Biology Resources' at Iowa State University, Ames, IA (2006).
- Attended Grant Writing Workshops on multiple occasions at Iowa State University, Ames, IA (2008-2015).
- Received specific recognition (interview by the reporters, broadcasting on the radio, multiple news articles) and coverage by news media including NPR and ISU daily newspaper for contributions to animal health and food safety (2007 and 2013).
- Participated in a day-long workshop on mucosal immunity which covered basic and advanced concepts in mucosal immunology presented by prominent keynote speaker, followed by an interactive panel discussion on the practical aspects with participants. The workshop was organized by ISU Health Research Initiative on March 28, 2013.
- Attended MALDI-TOF-MS Biotyper Advanced Training (provided by Bruker Daltonics) held in Fremont, CA from March 8 through March 10, 2016.

- Attended a workshop on “Mentoring Graduate Students” held by Graduate College on ISU Memorial Union on March 7, 2017. The workshop lasted 1.5 hr.
- Attended a workshop on antimicrobial resistance organized by ISU AMR Consortium on May 10, 2018, at Iowa State University. Led the discussion for the Diagnostic Core unit of this workshop.

RESEARCH AND SCHOLARSHIP

PEER REVIEWED PUBLICATIONS since appointed to current position in 2016

* denotes publications for which Dr. Sahin was corresponding author.

& denotes trainees (graduate students and postdocs) for whom Dr. Sahin was involved in mentoring.

44. Mehmet Cemal Adiguzel, Debora Brito Goulart, Lei Dai, Zuowei Wu, Jinji Pang, Seyda Cengiz, Qijing Zhang, and **Orhan Sahin***. 2021. Distribution of CRISPR types in fluoroquinolone resistant *Campylobacter jejuni* isolates. *Pathogens* **2021**, *10*(3), 345; <https://doi.org/10.3390/pathogens10030345>.
43. Atsushi Hinenoya, Xing-Ping Li, Ximin Zheng, **Orhan Sahin**, Rodney A. Moxley, Catherine M. Logue, Erin M. Patrick, Barbara Gilliespie, Shinji Yamasaki, Jun Lin. 2021. Chicken and raccoon are important reservoirs of the emerging human enteric pathogen *Escherichia albertii* in the United States. *Zoonoses Public Health*. 2021;00:1–13. Role: Provided help in experimental conduct, data analysis and manuscript revision.
42. Brandon Ruddell&, Alan Hassall, **Orhan Sahin**, Qijing Zhang, Paul J. Plummer, Amanda J. Kreuder. 2021. Role of *metAB* in methionine metabolism and optimal chicken colonization in *Campylobacter jejuni*. *Infection and Immunity*. 15;89(1):e00542-20. Role: Helped in design and conduct of the experiments and data analysis, revised manuscript, serve on the POS committee of the lead author.
41. Olgica Ceric; Jake Guag; Sarah Nemsler; Stacey Borenstein; Durda Slavic; Sarah Lippert; Rebeccah McDowell; Aparna Krishnamurthy; Shannon Korosec; Cheryl Friday; Neil Pople; Matthew E Saab; Julie-Helene Fairbrother; Isabelle Janelle; Deanna McMillan; Yugendar R Bommineni; David Simon; Shipra D Mohan; Susan Sanchez; Ashley Phillips; Paula Bartlett; Hemant Naikare; Cynthia Watson; **Orhan Sahin**; Chloe Stinman; Leyi Wang; Carol Maddox; Vanessa DeShambo; Kenitra Hendrix; Debra Lubelski; Amy Burklund; Brian Lubbers; Debbie Reed; Tracie Jenkins; Erdal Erol; Mukeshbhai Patel; Stephan Locke; Jordan Fortner; Laura Peak; Udeni Balasuriya; Rinosh Mani; Niesa Kettler; Karen Olsen; Shuping Zhang; Zhenyu Shen; Martha Pulido Landinez; Jay Kay Thornton; Anil Thachil; Melissa Byrd; Megan Jacob; Darlene Krogh; Brett Webb; Lynn Schaan; Amar Patil; Sarmila Dasgupta; Shannon Mann; Laura B Goodman; Rebecca J Franklin-Guild; Renee R Anderson; Patrick K Mitchell; Brittany D Cronk; Missy Aprea; Jing Cui; Dominika Jurkovic; Melanie Prarat; Yan Zhang; Katherine Shiplett; Dubra Diaz Campos; Joany Van Balen Rubio; Akhilesh Ramachandran; Scott Talent; Deepanker Tewari; Nagaraja Thirumalapura; Donna Kelly; Denise Barnhart; Lacey Hall; Shelley Rankin;

Jaclyn Dietrich; Stephen Cole; Joy Scaria; Linto Antony; Sara D Lawhon; Jing Wu; Christine McCoy; Kelly Dietz; Rebecca Wolking; Trevor Alexander; Claire Burbick; Renate Reimschuessel. 2021. Genomics accurately predicts antimicrobial resistance in *Staphylococcus pseudintermedius* collected as a part of Vet-LIRN AMR Monitoring. Published 2021. Veterinary Microbiology. 254 (2021):109006.

Role: ISU faculty representative of the Vet-LIRN antimicrobial resistance surveillance program run by the FDA, assistance in data collection and analysis, manuscript review

40. Zuowei Wu, **Orhan Sahin**, Qijing Zhang. 2021. Complete Genome Sequence of *Campylobacter hepaticus* USA52, Associated with Chicken Spotty Liver Disease. Microbiol Resour Announc. 0(8):e01266-20. doi: 10.1128/MRA.01266-20.
39. Zuowei Wu, Michael J. Yaeger, **Orhan Sahin**, Changyun Xu, Ashenafi Beyi, Paul J. Plummer, Melda Meral Ocal, Qijing Zhang. 2020. A homologous bacterin protects sheep against abortion induced by a hyper-virulent *Campylobacter jejuni* clone. Vaccines 2020, 8, 662; doi:10.3390/vaccines8040662.
Role: Extensively involved in study design, conception, experimental conduct and data analysis, revised manuscript
38. Meghan Wymore Brand, **Orhan Sahin**, Jesse M Hostetter, Julian M Trachsel, Qijing Zhang, Michael J. Wannemuehler. 2020. *Campylobacter jejuni* persistently colonizes gnotobiotic ASF C3H/HeN mice and induces mild colitis. FEMS Microbiology Letters, 367, 2020, fnaa163.
Role: Trained the graduate student/lead author in experimental methods, provided help in data analysis, revised manuscript
37. Dominic Gentile, Rachel Allbaugh, Mehmet Adiguzel, Danielle Kenne, **Orhan Sahin**, and Lionel Sebbag. 2020. Bacterial Cross-Contamination in a Veterinary Ophthalmology Setting. 2020. Front. Vet. Sci. doi: 10.3389/fvets.2020.571503.
Role: Helped with selection of materials for experimental design, data analysis, manuscript revision.
36. Mehmet Cemal Adiguzel[&], Alper Baran, Zuowei Wu, Seyda Cengiz, Lei Dai, Cihan Oz, Esma Ozmenli, Debora Goulart, **Orhan Sahin***. 2020. Prevalence of colistin resistance in *Escherichia coli* in eastern Turkey and genomic characterization of an *mcr-I* positive strain from retail chicken meat. *Microbial Drug Resistance*. DOI: 10.1089/mdr.2020.0209.
Role: Supervision of the international visiting scholar/postdoc for about a year, data analysis, extensive revision of manuscript, corresponding author.
35. Spenser L. Becker, Qingyun Li, Eric R. Burrough, Danielle Kenne, **Orhan Sahin**, S.A. Gould, John. F. Patience. 2020. Effects of an F18 enterotoxigenic *Escherichia coli* challenge on growth performance, immunological status, and gastrointestinal structure of weaned pigs and the potential protective effect of direct-fed microbial blends. *J Anim Sci*. 98(5): skaa113. doi: 10.1093/jas/skaa113.
Role: Provided expertise for experimental design and conduct, revised manuscript.

34. Michael J Yaeger, Zuowei Wu, Paul J Plummer, **Orhan Sahin**, Melda Meral Ocal. 2020. Experimental evaluation of Tulathromycin as a treatment for *Campylobacter jejuni* abortion in pregnant ewes. *Am J Vet Res.* 81(3):205-209.
Role: Provided assistance in experimental design and conduct, and data analysis, revised manuscript.
33. Samantha A. Naberhaus[&], Adam C. Krull, Bailey L. Arruda, Paulo Arruda, **Orhan Sahin**, Kent J. Schwartz, Eric R Burrough, Drew R. Magstadt, Franco Matias Ferreyra, Igor Renan Honorato Gatto, Henrique Meiroz de Sousa Almeida, Chong Wang, Amanda Jo Kreuder. 2020. Pathogenicity and Competitive Fitness of *Salmonella enterica* Serovar 4,[5],12:i:- Compared to *Salmonella* Typhimurium and *Salmonella* Derby in Swine. *Front Vet Sci.* 30;6:502. doi: 10.3389/fvets.2019.00502.
Role: Provided assistance in experimental design and conduct, helped in data analysis, revised manuscript, served on the POS committee of graduate student (SAB).
32. Panchan Sitthicharoenchai, Rachel Derscheid, Kent Schwartz, Nubia Macedo, **Orhan Sahin**, Xuhua Chen, Ganwu Li, Rodger Main, Eric Burrough. 2020. Cases of high mortality in cull sows and feeder pigs associated with *Streptococcus equi* subsp. *zooeidemicus* septicemia. *J. Vet. Diagn. Invest.* June 12;1040638720927669.
Role: Provided expertise in experimental design and conduct, helped with the experiment and data analysis, revised manuscript.
31. Xuhua Chen, Nubia Resende-De-Macedo, Panchan Sitthicharoenchai, **Orhan Sahin**, Eric Burrough, Maria Clavijo, Rachel Derscheid, Kent Schwartz, Kristina Lantz, Suelee Robbe-Austerman, Rodger Main, Ganwu Li. 2020. Genetic characterization of *Streptococcus equi* subspecies *zooeidemicus* associated with high swine mortality in United States. *Transboundary and Emerging Diseases.* 2020 May 27. doi: 10.1111/tbed.13645.
Role: Provided help with experimental design and conduct, helped with data analysis, revised manuscript.
30. Mianzhi Wang, Zhenling Zeng, Nubia Macedo, Yongxue Sun, **Orhan Sahin**, Ganwu Li. 2020. Role of enterotoxigenic *Escherichia coli* (ETEC) prophage in spreading antibiotic resistance in a porcine-derived environment. *Environmental Microbiology.* May 17. doi: 10.1111/1462-2920.150842020.
Role: Provided help with experimental design, helped with data analysis, revised manuscript.
29. Katarina Simunovic[&], **Orhan Sahin**, Jasna Kovac, Zhangqi Shen, Anja Klančnik, Qijing Zhang, Sonja Smole Mozina. 2020. Reduction of broiler colonization and disruption of *Campylobacter jejuni* quorum sensing by (-)- α -pinene. *PLoS One.* 15(4): e0230423.
Role: Provided expertise and help with experimental design and conduct, helped with data analysis, revised manuscript, co-mentored international visiting student.
28. Le Dai, **Orhan Sahin**, Madhusudan Grover, Qijing Zhang. 2020. New and alternative strategies for the prevention, control, and treatment of antibiotic-resistant *Campylobacter*.

Invited Review Article. *Translational Research*. 2020. May 11;S1931-5244(20)30072-4. doi: 10.1016/j.trsl.2020.04.009.

Role: Reviewed literature and wrote part of manuscript, revised the entire manuscript

27. Qingyun Li, Xiyu Peng, Eric R. Burrough, **Orhan Sahin**, Stacie A. Gould, Nicholas K. Gabler, Crystal L. Loving, Karin S. Dorman, and John F. Patience. 2020. Dietary soluble and insoluble fiber with or without enzymes altered the intestinal microbiota in weaned pigs challenged with F18 Enterotoxigenic *E. coli*. *Front Microbiol.* 11:1110. doi: 10.3389/fmicb.2020.01110.
Role: Provided help with experimental design and data analysis, revised the manuscript.
26. Fuat Aydin, Murat Abay, **Orhan Sahin**, Secil Abay, Emre Karakaya, Inci Mustak, Kaan Mustak, Kadir Gumussoy, Tuba Kayman. 2020. Species distribution, genetic diversity and antimicrobial susceptibility of *Campylobacter* isolates recovered from the preputial cavity of healthy rams in Turkey. *J. Applied Microbiol.* May 16. doi: 10.1111 / jam.14703.
Role: Data analysis, and extensive revision of the manuscript from the beginning until its publication.
25. Anja Klančnik, Jasna Kovač, Katarina Šimunović, **Orhan Sahin**, Zuowei Wu, Darinka Vučković, Maja Abram; Qijing Zhang; Sonja Smole Možina. 2019. The Anti-*Campylobacter* Activity and Mechanisms of Pinocembrin Action. *Microorganisms* 7(12), 675; <https://doi.org/10.3390/microorganisms7120675>.
Role: Provided help with experimental design and data analysis, revised the manuscript.
24. Lei Dai, Zuowei Wu, Changyu Xu C, **Orhan Sahin**, Michael Yaeger, Paul J Plummer, Qijing Zhang. 2019. The Rho-independent transcription terminator for the *porA* gene enhances expression of the major outer membrane protein and *Campylobacter jejuni* virulence in abortion induction. *Infect Immun.* 87(12). pii: e00687-19.
Role: Provided help with experimental design and conduct, helped in data analysis, revised the manuscript.
23. Samantha A. Naberhaus[&], Adam C. Krull, Laura K. Bradner, Karen M. Harmon, Paulo Arruda, Bailey L. Arruda, **Orhan Sahin**, Eric R. Burrough, Kent J. Schwartz, Amanda J. Kreuder. 2019. Emergence of *Salmonella* 4,[5],12:i:- as the primary serovar identified from swine clinical samples and development of a multiplex real time PCR for improved *Salmonella* serovar-level identification. *J Vet Diagn Invest.* 31(6):818-827.
Role: Provided help with experimental design and conduct, helped in data analysis, revised the manuscript, served on the POS committee of graduate student (SAB).
22. Olgica Ceric, Gregory Tyson, Laura Goodman, Patrick Mitchell, Yang Zhang, Melanie Prarat, Jing Cui, Laura Peak, Joy Scaria, Linto Antony, Milton Thomas, Sarah Nemser, Renee Anderson, Anil Thachil, Rebecca Franklin-Guild, Durda Slavic Yugendar Bommineni, Shipra Mohan, Susan Sanchez, Rebecca Wilkes, **Orhan Sahin**, Kenitra Hendrix, Brian Lubbers, Deborah Reed, Tracie Jenkins, Alma Roy, Daniel Paulsen, Rinosh Mani, Karen Olsen, Lanny Pace, Martha Pulido, Megan Jacob, Brett Webb, Sarmila Dasgupta, Amar Patil, Akhilesh Ramanchandran, Deepanker Tewari, Nagaraja

- Thirumalapura, Donna Kelly, Shelley Ranking, Sara Lawhon, Jing Wu, Claire Burbick, and Renate Reimschuessel. 2019. Enhancing the one health initiative by using whole genome sequencing to monitor antimicrobial resistance of animal pathogens: Vet-LIRN collaborative project with veterinary diagnostic laboratories in United States and Canada. *BMC Vet. Res.* 15:130.
Role: Provided help with experimental material, helped in data analysis, revised the manuscript. I represent ISU for Vet-LIRN.
21. Qingyun Li, Eric R. Burrough, Nicholas K. Gabler, Crystal L. Loving, C. K. Tuggle, **Orhan Sahin**, Stacie A. Gould, and John F. Patience. 2019. A soluble and highly fermentable dietary fiber with carbohydrases improved gut barrier integrity markers and growth performance in F18 ETEC challenged pigs. *J. Animal Sci.* 97(5):2139-2153.
Role: Provided help with experimental material, helped in data analysis, revised the manuscript.
20. Lei Dai, Jing Xia, **Orhan Sahin**, Qijing Zhang. 2019. Identification of a nth-like Gene encoding an Endonuclease III in *Campylobacter jejuni*. *Front Microbiol.* 10: 698. <https://doi.org/10.3389/fmicb.2019.00698>.
Role: Helped with experimental design and conduct, helped in data analysis, revised the manuscript.
19. Jing Xia, Jinji Pang[&], Yizhi Tang, Zuowei Wu, Lei Dai, Kritika Singh, Changyun Xu, Brandan Ruddell, Amanda Kreuder, Lining Xia, Xiaoping Ma, Kelly Still-Brooks, Melda M. Ocal, **Orhan Sahin**, Paul Plummer, Yahong Liu, Qijing Zhang. 2019. High prevalence of fluoroquinolone-resistant *Campylobacter* in sheep and increased *Campylobacter* counts in the bile and gallbladder of sheep medicated with tetracycline in feed. *Appl. Environ. Microbiol.* 85(11). pii: e00008-19.
Role: Helped with experimental design and conduct, helped in data analysis, revised the manuscript; co-mentor to co-lead author.
18. Fengwei Jiang, Zuowei Wu, Ying Zheng, Timothy Frana, **Orhan Sahin**, Qijing Zhang, and Ganwu Li. 2019. Genotypes and antimicrobial susceptibility profiles of hemolytic *Escherichia coli* from diarrheic piglets. *Foodborne Pathog Dis.* 16(2):94:103
Role: Provided expertise and helped in data analysis, revised the manuscript.
17. Victoria Lashley, Michael Yaeger, Ju Ji, **Orhan Sahin**, and Zuowei Wu. 2019. Investigating the suitability of a laboratory mouse model to study the pathogenesis of abortifacient *Campylobacter jejuni*. *Vet. Pathol.* 56(4):555-564.
Role: Provided expertise and help with experimental design and conduct, helped in data analysis, revised the manuscript.
16. Kayman T, Abay S, Aydin F, **Sahin O**. Antibiotic Resistance of *Campylobacter jejuni* Isolates Recovered from Humans with Diarrhoea in Turkey. *J. Med. Microbiol.* 2019 68(2):136-142.
Role: Provided expertise in the experimental performance, extensive revision of the manuscript from the beginning until its publication.

15. Clair R. Henthorn[&], F. Chris Minion, **Orhan Sahin**^{*}. 2018. Utilization of Macrophage Extracellular Trap Nucleotides by *Mycoplasma hyopneumoniae*. *Microbiology*, 164:1394-1404.
Role: Conception and design of experiments, Major Professor of the graduate student (CRH), revision of manuscript, corresponding author.

14. Smith AB, David G. Renter, Xiaorong Shi, Natalia Cernicchiaro, **Orhan Sahin**, and T.G. Nagaraja. 2018. *Campylobacter* prevalence and quinolone susceptibility in feces of pre-harvest feedlot cattle exposed to enrofloxacin for the treatment of bovine respiratory disease. *Foodborne Pathog Dis*. 15(6):377-385.
Role: Training of the lead author in experimental procedures, revision of manuscript.

13. Gregory M, Brianna Klein, **Orhan Sahin**, and George Girgis. 2018. Isolation and Characterization of *Campylobacter hepaticus* from Layer Chickens with Spotty Liver Disease in the United States. *Avian Dis*. 62(1):79-85.
Role: Designed and performed experiments, analyzed data, revised manuscript.

12. Christie C. Balcomb, John A. Angelos, Munashe Chigerwe, Barbara A. Byrne, V. Michael Lane, Scott E. Wetzlich, **Orhan Sahin**, Larry Holler, Shuping Zhang, and Lisa A. Tell. 2018. Comparative pharmacokinetics of two florfenicol formulations following extravascular administration in sheep. *Am J Vet Res*. 79(1):107-114.
Role: Provided expertise and relevant data, revised the manuscript.

11. Dai L, **Sahin O**, Tang Y, and Zhang Q. 2017. A mutator phenotype promoting the emergence of spontaneous oxidative stress resistant mutants in *Campylobacter jejuni*. *Appl. Environ. Microbiol*. 83(24). pii: e01685-17.
Role: Provided expertise in experimental design and conduct, revised manuscript.

10. Kassem II, Helmy YA, Kathayat D, Candelero-Rueda R, Kumar A, Deblais L, Huang HC, **Sahin O**, Zhang Q, Rajashekara, G. 2017. Non-culturability might underestimate the occurrence of *Campylobacter* in broiler litter. *Foodborne Pathog Dis*. 14(8):472-477.
Role: Provided assistance in the design of experiments and provision of research materials, revised manuscript.

9. Tang Y[&], Dai L, **Sahin O**, Wu Z, Liu M, and Zhang Q. 2017. Emergence of a plasmid-borne multidrug resistance gene *cftr(C)* in foodborne pathogen *Campylobacter*. *J Antimicrob Chemother*. 72 (6): 1581-1588.
Role: Close training and supervision of the lead author, assistance in experimental conduct, extensive revision of the manuscript.

8. Tang Y[&], **Sahin O**^{*}, Pavlovic N, LeJeune J, Carlson J, Wu Z, Dai L, and Zhang Q^{*}. 2017. Rising fluoroquinolone resistance in *Campylobacter* isolated from feedlot cattle in the United States. *Sci Rep*. 29:7 (1).
Role: Close training and supervision of the lead author, assistance in experimental conduct, extensive revision of the manuscript, co-corresponding author.

7. Tang Y[&], Meinersmann RJ, **Sahin O**, Wu Z, Dai L, Plumlee J, Genzlinger L, Carlson J, LeJeune J, Zhang Q. 2017. Wide but variable distribution of a hypervirulent *Campylobacter jejuni* clone in beef and dairy cattle in the United States. *Appl Environ Microbiol.* pii: AEM.01425-17.
Role: Close training and supervision of the lead author, assistance in experimental conduct, extensive revision of the manuscript.
6. **Sahin O**, Samantha A[&]. Terhorst, Eric R. Burrough, Zhangqi Shen, Zuowei Wu, Lei Dai, Paul J. Plummer, Michael J. Yaeger, and Qijing Zhang. 2017. Key role of capsular polysaccharide in the induction of systemic infection and abortion by hypervirulent *Campylobacter jejuni*. *Infect Immun.* 85 (6): e00001-17. Equally contributed (by SA and SAT).
Role: Designed and performed experiments, supervised/trained co-lead author (SAT), analyzed data, wrote manuscript.
5. **Sahin O**, Yaeger M, Wu Z, and Zhang Q. *Campylobacter*-associated diseases in animals. 2017. *Annu Rev Anim Biosci.* 8(5): 21-42. (Invited review article).
Role: Wrote the manuscript based on extensive literature review.
4. Wu Z., P. Periaswamy, **O. Sahin**, M. Yaeger, P. Plummer, W. Zhai, Z. Shen, L. Dai, S. L. Chen, and **Q. Zhang**. 2016. Point mutations in the major outer membrane protein drive hypervirulence of a rapidly expanding clone of *Campylobacter jejuni*. *Proc. Natl. Acad. Sci. U.S.A.* 113 (38):10690-95.
Role: Provided substantial help, training and supervision for design and conduct of experiments from the beginning of the study, revised manuscript.
3. Wu Z, Mou K, **Sahin O**, and Zhang Q. 2016. Genomic insights into *Campylobacter jejuni* virulence and Population Genetics. *Inf. Dis. Trans. Med.* 2(3):109-119.
Role: Provided expertise for the content, revised manuscript.
2. Zhangqi Shen[&], Rocky D. Patil, **Orhan Sahin**, Zuowei Wu, Xiao-Ying Pu, Lei Dai, Paul J. Plummer, Michael J. Yaeger, and Qijing Zhang. 2016. Identification and functional analysis of two toxin-antitoxin systems in *Campylobacter jejuni*. *Mol. Micro.* 101:909-23.
Role: Trained and supervised the lead author, helped with experiments, extensively revised the manuscript.
1. **Orhan Sahin**, Zhangqi Shen, and Qijing Zhang. 2017. Methods to study antimicrobial resistance in *Campylobacter jejuni*. *Methods Mol Biol.* 1512:29-42. (invited article).
Role: Wrote the manuscript based on extensive literature review.

PEER REVIEWED PUBLICATIONS prior to appointment to the current position

38. **Orhan Sahin**, Issmat I. Kassem, Zhangqi Shen, Jun Lin, Gireesh Rajashekara, and Qijing Zhang. 2015. *Campylobacter* in Poultry: Ecology and Potential Interventions. *Avian Dis.*

59:185-200. (Invited Critical Review article). This was one of the most accessed articles by BioOne users in 2016 as acknowledged by Editor in Chief, Dr. Mo Saif.

37. Dai L, Muraoka W, Wu Z, **Sahin O**, and Zhang Q. 2015. A single nucleotide change in *mutY* increases the emergence of antibiotic-resistant *Campylobacter jejuni* strains. *J Antimicrob Chemother*, 70:2739-2748.
36. **Orhan Sahin**, Eric R. Burrough, Nada Pavlovic, Tim S. Frana, Darin M. Madson, and Qijing Zhang. 2014. *Campylobacter jejuni* as the cause of canine abortions in the Midwest United States. *J Vet Diagn Invest*, 26:699-704.
35. Zuowei Wu, Rachel Sippy, **Orhan Sahin***, Paul Plummer, Ana Vidal, Diane Newell, and Qijing Zhang. 2014. Genetic diversity and antimicrobial susceptibility of *Campylobacter jejuni* isolates associated with sheep abortion in the United States and the Great Britain. *J Clin Micro*. 52:1853-61. (I am the corresponding author).
34. Zuowei Wu, **Orhan Sahin**, Fei Wang, Qijing Zhang. 2014. Proteomic identification of immunodominant membrane-related antigens in *Campylobacter jejuni* associated with sheep abortion. *J Proteomics*, 99:111-122.
33. Zuowei Wu, **Orhan Sahin**, Zhangqi Shen, Peng Liu, William G. Miller, Qijing Zhang. 2013. Multi-omics approaches to deciphering a hypervirulent strain of *Campylobacter jejuni*. *Genome Biol Evol*. 5:2217-30 (I am the co-lead author).
32. Burrough E, Terhorst S, **Sahin O**, Zhang Q. 2013. Prevalence of *Campylobacter* spp. in grow-finish pigs with diarrhea. *Anaerobe*.1-4.
31. Xia Q, Wayne T Muraoka, Zhangqi Shen, **Sahin O**, Hongning Wang, Zuowei Wu, Peng Liu, Qijing Zhang. 2013. Adaptive mechanisms of *Campylobacter jejuni* to erythromycin treatment. *BMC Microbiology*. 13:133.
30. Shen Z, Han J, Wang Y, **Sahin O**, Zhang Q. 2013. The Contribution of ArsB to Arsenic Resistance in *Campylobacter jejuni*. *PLoS ONE*. 8(3):e58894.
29. Hao H, Yuan Z, Shen Z, Han J, **Sahin O**, Liu P, Zhang Q.2013. Mutational and transcriptomic changes involved in the development of macrolide resistance in *Campylobacter jejuni*. *Antimicrob. Agents Chemother*. 57:1369-78.
28. **Sahin O**, Fitzgerald C, Stroika S, Zhao S, Sippy RJ, Kwan P, Plummer PJ, Han J, Yaeger MJ, Zhang Q. 2012. Molecular Evidence for Zoonotic Transmission of an Emergent Highly Pathogenic *Campylobacter jejuni* Clone in the United States. *J. Clin. Microbiol*. 50:680-687.
27. Plummer P, **Sahin O**, Burrough E, Sippy R, Mou K, Rabenold J, Yaeger M, Zhang Q. 2012. Critical Role of LuxS in the Virulence of *Campylobacter jejuni* in a Guinea Pig Model of Abortion. *Infect Immun*. 80:585-93.

26. Luangtongkum T, Shen Z, Seng VW, **Sahin O**, Jeon B, Liu P, Zhang Q. 2012. Impaired fitness and transmission of macrolide-resistant *Campylobacter jejuni* in its natural host. *Antimicrob. Agents Chemother.* 56:1300-1308.
25. Jing Han, Yang Wang, **Orhan Sahin**, Zhangqi Shen, Baoqing Guo, Jianzhong Shen, Qijing Zhang. 2012. A fluoroquinolone resistance associated mutation in *gyrA* affects DNA supercoiling in *Campylobacter jejuni*. *Front. Cell Infect. Microbiol.* 2:21.
24. Sippy R, Sandoval-Green CM, **Sahin O**, Plummer P, Fairbanks WS, Zhang Q, Blanchong JA. 2012. Occurrence and molecular analysis of *Campylobacter* in wildlife on livestock farms. *Vet. Micro.* 157:369-75.
23. Luo Y, **Sahin O***, Dai L, Sippy R, Wu Z, Zhang Q. 2012. Development of a Loop-Mediated Isothermal Amplification Assay for Rapid, Sensitive and Specific Detection of a *Campylobacter jejuni* Clone. *J Vet Med Sci.* 74:591–596. (I am the corresponding author).
22. Eric R Burrough, Zuowei Wu, **Orhan Sahin**, Zhang Qijing, Mike J. Yaeger. 2012. Spatial Distribution of Putative Growth Factors in the Guinea Pig Placenta and the Effects of These Factors, Plasma, and Bile on the Growth and Chemotaxis of *Campylobacter jejuni*. *Vet. Pathol.* 49(3) 470-481.
21. Mayumi Oakland , Byeonghwa Jeon, **Orhan Sahin**, Zhangqi Shen, and Qijing Zhang. 2011. Functional characterization of a lipoprotein-encoding operon in *Campylobacter jejuni*. *PLoS One.* 6(5):e20084.
20. Eric R. Burrough, **Orhan Sahin**, Paul J. Plummer, Kevin DiVerde, Qijing Zhang, Michael J. Yaeger. 2011. Comparison of two commercial ovine *Campylobacter* vaccines and an experimental bacterin in a guinea pig model. *Am J Vet Res.* 72:799-805.
19. Burrough ER, Diverde KD, **Sahin O**, Plummer PJ, Zhang Q, Yaeger MJ. 2010. Expression of Toll-like Receptors 2 and 4 in Subplacental Trophoblasts From Guinea Pigs (*Cavia porcellus*) Following Infection With *Campylobacter jejuni*. *Vet Pathol.* 48:381-8.
18. Wang L, Jeon B, **Sahin O**, and Zhang Q. 2009. Identification of an arsenic resistance and arsenic-sensing system in *Campylobacter jejuni*. *Appl Environ Microbiol.* 75:5064-73.
17. Eric R. Burrough, **Orhan Sahin**, Paul J. Plummer, Qijing Zhang, Michael J. Yaeger. 2009. Pathogenicity of an emergent, ovine abortifacient *Campylobacter jejuni* clone following oral inoculation in a pregnant guinea pig model. *Am J Vet Res* 70, 1269-76.
16. **Orhan Sahin**, Paul J. Plummer, Kapllan Sulaj, Sonia Pereira, Suelee Robbe-Austerman, Dianna M. Jordan, Liping Wang, Michael J. Yaeger, Lorraine J. Hoffman and Qijing Zhang (2008). Emergence of a Tetracycline-resistant *Campylobacter jejuni* Clone Associated with Outbreaks of Ovine Abortion in the United States. *J Clin Microbiol.* 46, 1663-1671.

15. Taradon Luangtongkum, Teresa Morishita, Lori Martin, Irene Choi, **Orhan Sahin**, and Qijing Zhang (2008). Prevalence of tetracycline-resistant *Campylobacter* in organic broilers during a production cycle. *Avian Diseases* 52, 487-490.
14. Byeonghwa Jeon, Wayne Muraoka, **Orhan Sahin**, and Qijing Zhang (2008). Role of Cj1211 in natural transformation and transfer of antibiotic resistance determinants in *Campylobacter jejuni*. *Antimicrob. Agents Chemother* 52, 2699-2708.
13. Jing Han, **Orhan Sahin**, Yi-Wen Barton, and Qijing Zhang (2008). Key Role of Mfd in the Development of Fluoroquinolone Resistance in *Campylobacter jejuni*. *PLoS Pathogens* 4(6): e1000083. doi:10.1371/journal.ppat.1000083.
12. Shouxiong Huang, **Orhan Sahin**, and Qijing Zhang (2007). Infection-induced antibodies against the major outer membrane protein of *Campylobacter jejuni* mainly recognize conformational epitopes. *FEMS Microbiol. Lett.* 272, 137-143.
11. Jun Lin, Meguan Yan, **Orhan Sahin**, Sonia Pereira, Yun-Juang Chang, and Qijing Zhang (2007). Effect of Macrolide Usage on Emergence of Erythromycin-Resistant *Campylobacter* isolates in Chickens. *Antimicrob Agents and Chemother* 51, 1678-86.
10. Meiguan Yan, **Orhan Sahin**, Jun Lin, Qijing Zhang (2006). Role of the CmeABC efflux pump in the emergence of fluoroquinolone-resistant *Campylobacter* under selection pressure. *J Antimicrobial Chemother* 58, 1154-9.
9. Qijing Zhang, **Orhan Sahin**, Patrick F. McDermott, Sophie Payot (2006). Fitness of antimicrobial-resistant *Campylobacter* and *Salmonella*. *Microb Infect* 8, 1972-1978 (review article).
8. Jun Lin, Masato Akiba, **Orhan Sahin**, and Qijing Zhang (2005). CmeR functions as a local transcriptional repressor for multidrug efflux pump CmeABC in *Campylobacter jejuni*. *Antimicrob Agents Chemother* 49, 1067-1075.
7. Naidan Luo, Sonia Pereira, **Orhan Sahin**, Shouxiong Huang, Jun Lin, Teresa Morishita, and Qijing Zhang (2005). Enhanced in vivo fitness of fluoroquinolone-resistant *Campylobacter jejuni* in the absence of antibiotic selection pressure. *Proceedings of the National Academy of Sciences of the United States of America* 102, 541-546.
6. **Orhan Sahin**, Peter Kobalka, Qijing Zhang (2003). Detection and survival of *Campylobacter* in chicken eggs. *J Appl Microbiol* 95, 1070-1079.
5. **Orhan Sahin**, Naidan Luo, Shouxiong Huang, and Qijing Zhang (2003). Effect of *Campylobacter*-specific maternal antibodies on *Campylobacter jejuni* colonization in young chickens. *Appl Environ Microbiol* 69, 5372-5379.

4. Jun Lin, **Orhan Sahin**, Linda Michel, and Qijing Zhang (2003). Critical role of CmeABC in bile resistance and in vivo colonization of *Campylobacter jejuni*. *Infect Immun* 71, 4250-4259.
3. Naidan Luo, **Orhan Sahin**, Jun Lin, Linda.O Michel, and Qijing Zhang (2003). In Vivo Selection of *Campylobacter* Isolates with High Levels of Fluoroquinolone Resistance Associated with *gyrA* Mutations and the Function of the CmeABC Efflux Pump. *Antimicrob Agents Chemother* 47, 390-394.
2. **Orhan Sahin**, Morishita, T. and Zhang, Q. (2002). *Campylobacter* colonization in poultry: sources of infection and modes of transmission. *Anim Health Res Rev* 3, 95-105 (review article).
1. **Orhan Sahin** , Zhang Q, Meitzler JC, Harr BS, Morishita TY, Mohan R. (2001). Prevalence, antigenic specificity, and bactericidal activity of poultry anti-*Campylobacter* maternal antibodies. *Appl Environ Microbiol* 9, 3951-7.

PEER REVEIWD PUBLICATIONS SUBMITTED

& denotes trainees (graduate students and postdocs) for whom Dr. Sahin was involved in mentoring.

1. Michael Yaeger, **Orhan Sahin**, Paul Plummer, Zuowei Wu, Judith Stasko, Qijing Zhang. The pathology of natural and experimentally-induced *Campylobacter jejuni* abortion in sheep. 2021. *J Vet Diagn Invest*. **In press, 2021.**
2. Michael J Yaeger, Jonathan P Mochel, Zuowei Wu, Paul J Plummer, **Orhan Sahin**, Joseph Smith, Melda Ocal, Ashenafi Beyi, Changyun Xu, Qijing Zhang and Ronald Griffith. Pharmacokinetics of Tulathromycin in Pregnant Ewes (*Ovis aries*) Challenged with *Campylobacter jejuni*. 2021. Submitted to PLoS ONE.
Role: Provided help in experimental design and conduct, data analysis, manuscript revision.
3. Latife Bayram, Secil Abay, Fuat Aydin, Tolga Guvenc, Gorkem Ekebas, **Orhan Sahin**. 2021. Description of five Antarctic putative novel bacteria recovered from a Gentoo penguin (*Pygoscelis papua*) with panophthalmitis and evaluation of pathological findings together with the microbiological outcome. Submitted to Scientific Reports.
Role: Analyzed data and revised manuscript.

MANUSCRIPTS IN PREPARATION

& denotes trainees (students and postdocs) for whom Dr. Sahin was involved in mentoring.

1. **Orhan Sahin**, Nada Pavlovic, Yizhi Tang, Melda M. Ocal, Chaohui Yuan, Annette M. O'Connor, Catherine M. Logue, Qijing Zhang. A longitudinal study on *Campylobacter* in

commercial broiler flocks in the United States: Prevalence, genetic diversity, and associated risk factors.

Role: Played significant role from study design, conception, experimental conduct, data analysis and presentations, writing the manuscript.

2. **Orhan Sahin**, Swanand Sathe, Yue Yin, Nada Pavlovic, Zuowei Wu, Megin Nichols, Dawn Sievert Paul Plummer, Qijing Zhang. Species distribution, antimicrobial susceptibility, and genomics of *Campylobacter* from seven commercial dog breeders in the Midwestern United States.
Role: Provided expertise in experimental design and conduct, supervised the work, writing the manuscript.
3. Prevalence, genetic diversity and mechanism of methicillin resistance in *Staphylococcus* species from companion animals. Mehmet Adiguzel[&], Kayla Shaffer[&], Trevor Rodriguez[&], Jessica Ortiz[&], and **Orhan Sahin**. Designed and conceived the study, mentored the lead author and veterinary students, will review manuscript extensively.
4. Zuowei Wu, **Orhan Sahin**, Qijing Zhang. *Campylobacter*. In “Pathogenesis of Bacterial Infections in Animals, 5th edition”. Book chapter. 2021.

Book Chapters (peer reviewed)

4. Zhang Q, and **Sahin O**. 2019. Chapter 17: Campylobacteriosis. Diseases of Poultry, 14th Edition. Edited by David E. Swayne, Martine Boulianne, Larry R. McDougald, Venugopal Nair, Catherine M. Logue, and David L. Suarez. Published in January, 2020.
3. Qijing Zhang and **Orhan Sahin**. 2013. Campylobacteriosis. Book Chapter. *In Diseases of Poultry*, 13th edition, Edited by David E. Swayne, J.R. Glisson, L.R. McDougald, Venugopal Nair, L. Nolan, and D.L. Suarez. John Wiley and Sons Ltd.
2. **Orhan Sahin**, and Qijing Zhang (2010). Prevalence and Antimicrobial Resistance of Foodborne Pathogens in Conventional and Organic Livestock Operations, p235-246, (Book Chapter). *In Perspectives on Food Safety Issues of Animal Derived Foods*, ed. Ricke S and Jones F. The University of Arkansas Press.
1. **Orhan Sahin**, Qijing Zhang, and Teresa Y. Morishita. (2003). Detection of *Campylobacter*, p.183-193. *In Microbial Food Safety in Animal Agriculture: Current Topics*, edited by M.E. Torrence, and R.E. Isaacson. Iowa State Press.

Others

1. **Sahin O**. *Campylobacter* in poultry: an elusive pathogen. Expert Advice, Poultry Health Today, March 2017. (invited news article).

POSTERS AND PRESENTATIONS

Since appointment to the current position

& denotes trainees for whom Dr. Sahin was involved in mentoring.

76. Jayaram, J., Jepsen, I., Anilkumar Vinithakumari, A., Hernandez, B., **Sahin, O.**, Li, G., Mooyottu, S. Characterization of a canine origin and fluoroquinolone-resistant *Clostridium hiranonis* isolate with anti-*C. difficile* activity. 2020. Abstract accepted and selected for poster presentation to the 2020 Annual Meeting of the American Society of Microbiology (virtual).
75. Anilkumar Vinithakumari, A., Jayaram, J., Ordonez Jones, E., Gatica, D., Hernandez, B., **Sahin, O.**, Li, G., Ramirez, A., Mooyottu, S. Fecal Microbiome Transplantation Prevents Gut Dysbiosis and Post-weaning Diarrhea in Piglets 2020. Abstract accepted and selected for oral presentation, 2020 Annual Meeting of the American Society of Microbiology (virtual).
74. Hernandez, B.G., Anilkumar, A.V., Jayaram, J., **Sahin, O.**, Li, G., Mooyottu, S. Dogs and Cats as Potential Reservoirs for *Clostridium difficile* Infection. (2020) Abstract accepted and selected for poster presentation to the 2020 Annual Meeting of the American Society of Microbiology (virtual).
73. Mehmet Adiguzel[&], Debora Goulart, Zuwei Wu, Jinji Pang, Seyda Cengiz, Qijing Zhang, **Orhan Sahin**. Distribution of CRISPR Types in Fluoroquinolone Resistant *Campylobacter jejuni* Isolates. Virtual poster/online presentation, remote ASM meeting on June 19, 2020.
72. Poeta Silva AP, Schwartz, K, Arruda, B, Santos, J, Macedo, N, **Sahin, O**, Burrough, E, Harmon, K, Sieper C, Gauger, P, Sitthicharoenchai, P, Rahe, M, Magstadt, D, Michael, A, Pineyro, P, Derscheid, R, Main, R, Fano, E, Clavijo, M. Diagnostic trends of five swine endemic bacterial pathogens using data from the Iowa State University Veterinary Diagnostic Laboratory (2010-2019). Virtual poster at remote AAVLD meeting on October 15, 2020.
71. Beyi A.F., T. Hawbecker, A. Hassall, R. Dewell, G. Dewell, **O. Sahin**, Q. Zhang, P.J. Plummer. A single dose of enrofloxacin alters gut microbial diversities irrespective of its dose in beef calves. Virtual poster/online presentation at remote CRWAD meeting on December 7, 2020.
70. Debora Goulart[&], Wilson, A. Schroeder, M. Ocal, M. Adiguzel, Z. Wu, K. Singh, R. Dewell, G. Dewell, P.J. Plummer, Qijing Zhang, **Orhan Sahin**. The influence of enrofloxacin and danofloxacin on fluoroquinolone resistance in *Campylobacter jejuni* in calves. Virtual poster/online presentation at remote CRWAD meeting on December 7, 2020.
69. Jinji Pang[&], Qijing Zhang, **Orhan Sahin**. Protection against *Campylobacter* by fecal microbiota transplantation in newly hatched broiler chickens. Virtual poster/online presentation at remote CRWAD meeting on December 7, 2020.
68. **Orhan Sahin**. Highly pathogenic *Streptococcus equi* subsp. *zooepidemicus* strain associated with outbreaks of acute fatal septicemia in swine. Recorded video presentation at remote AAVLD meeting on October 8, 2020.
67. **Orhan Sahin**, Tynea Gerbo, Kelly Kilbride, Michelle Hayes, Curt Thompson. How to make a local MALDI-TOF MS library and maintain it. Custom MSP and Library creation. Recorded video presentation at remote AAVLD meeting on October 8, 2020.
66. **Orhan Sahin**, Swanand Sathe, Yue Yin, Nada Pavlovic, Zuwei Wu, Megin Nichols, Dawn Sievert, Paul Plummer, Qijing Zhang. Species distribution, antimicrobial susceptibility, and

- genomics of *Campylobacter* from seven commercial dog breeders in the Midwestern United States. Virtual poster at remote AAVLD meeting on October 16, 2020.
65. Nubia Macedo, Panchan Siththicharoenchai, Eric Burrough, **Orhan Sahin**, Karen Harmon, Ganwu Li, Maria Jose Clavijo, Jessica Goncalves, Ana Paula Silva, Chelsea Ruston, Susan Brockmeier, Suelee Austerman, Samantha Hau, Kristina Lantz, Rodger Main, Rachel Derscheid. Development of an experimental challenge model for *Streptococcus equi* subsp. *zooepidemicus* in pig. Virtual poster at remote AAVLD meeting on October 15, 2020.
 64. Pang Jinji[&], Qijing Zhang, and **Orhan Sahin**. Evaluation of microbiota-based interventions as a preharvest control strategy for *Campylobacter* in poultry. Virtual poster/online presentation, ASM remote meeting on June 19, 2020; ISU Midwest AMR Consortium remote meeting in May 29, 2020. ^{*}Co-major Professor to the graduate student (PJ), and PD of the project funded by USDA NIFA.
 63. Debora Goulart[&], Ashenafi Beyi, Renee Dewell, Grant Dewell, Cemal Adiguzel, Paul Plummer, Zuowei Wu, Qijing Zhang, and **Orhan Sahin**. Effect of different fluoroquinolone (FQ) treatments and health status on the development of FQ resistance in calves colonized with either FQ-resistant or FQ-susceptible *Campylobacter jejuni*. iPoster at ISU NIAMRRE Knowledge Exchange, A virtual poster session, July 27-31, 2020. [&]Major-professor to the graduate student (DG) and Co-PD/Project Manager of the project grant funded by USDA NIFA.
 62. Jessica LeGrand[&], Nada Pavlovic, Yue Yin, Mehmet Adiguzel, Qijing Zhang, **Orhan Sahin**. Prevalence and antimicrobial resistance of enteric bacteria in retail meat from Iowa grocery stores. iPoster, virtual ISU CVM Summer Research Day (August 7, 2020) and national virtual AAVMC/Veterinary Summer Scholars Symposium (August 4-6, 2020). [&]Mentor to the veterinary summer scholar (JL) and PD of the cooperative agreement project awarded by the FDA NARMS program.
 61. Denusha Shrestha[&], Sanjana Mahadev Bhat, Nyzil Massey, **Orhan Sahin**, Qijing Zhang, Chandrashekhar Charavaryamath. Repeated Exposure to H₂S and Organic Dust Increases Susceptibility to *Klebsiella pneumoniae* Infection of the Airway Epithelium. ISU NIAMRRE Knowledge Exchange, A virtual poster session, July 27-31, 2020. [&]Serve on the POS committee of the graduate student (lead author).
 60. Maria Clavijo, Ganwu Li, Bailey Arruda, A.W. Tucker, Marcelo Gottschalk, **Orhan Sahin**, Beatriz Martinez-Lopez, Nubia Macedo, Jean Paul Cano, Rodger Main. Are we there yet? The future of bacterial pathogen surveillance. Invited Oral Presentation at the annual meeting of American Association of Swine Veterinarians, March 7-10, 2020, Atlanta, GA.
 59. Maria Clavijo, Ganwu Li, Panchan Siththicharoenchai, Kent Schwartz, Rachel Derscheid, Eric Burrough, Orhan Sahin, Nubia Macedo, Rodger Main. 2019. *Streptococcus equi* subsp. *zooepidemicus* recently identified as a cause of high mortality of swine. Published in IVMA Update 27(12):6-7.
 58. **Orhan Sahin**, Victoria Lashley, Michael Yaeger, Zuowei Wu, Melda Ocal, Paul Plummer, Qijing Zhang. 2019. Development of an experimental challenge model for *Campylobacter jejuni* induced abortion in sheep. Oral presentation at CHRO Conference Meeting, September 8-11, 2019, Belfast, Northern Ireland.
 57. Zuowei Wu, Changyun Xu, Michael Yaeger, **Orhan Sahin**, Ashenafi Beyi, Paul Plummer, Qijing Zhang. Dual RNA-seq reveals metabolic shifts in bacteria and upregulation of host immune defense mechanisms in sheep placenta infected by *Campylobacter jejuni*. Oral presentation at CHRO Conference Meeting, September 8-11, 2019, Belfast, Northern Ireland.

56. **Orhan Sahin**, Lei Dai, Curt Thompson, Zuowei Wu, Nubia Macedo, Ganwu Li, Rodger Main. Whole-genome sequencing for predicting toxinotypes and antimicrobial resistance in *Clostridium perfringens*. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 24-28, 2019, Providence, Rhode Island.
55. Nubia Macedo, Rodger Main, Ganwu Li, **Orhan Sahin**. Whole-genome sequencing to predict genotype and antimicrobial resistance in *Escherichia coli* isolated from pigs. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 24-28, 2019, Providence, Rhode Island.
54. Nubia Macedo, Rodger Main, Ganwu Li, **Orhan Sahin**. Whole genome sequencing for detecting serotypes and virulence genes in *Haemophilus parasuis*. Poster presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 24-28, 2019, Providence, Rhode Island.
53. Debora Goulart[&], Ashenafi Beyi, Samantha Wilson, Renee Dewell, Grant Dewell, Paul Plummer, Melda Ocal, Zuowei Wu, Kritika Singh, Lei Dai, Changyun Xu, Jing Xia, Brandon Ruddell, Qijing Zhang, and **Orhan Sahin**. Effect of danofloxacin treatment on the development of fluoroquinolone resistance in *Campylobacter jejuni* in cattle. Oral presentation at Conference of Research Workers in Animal Diseases (CRWAD) Meeting, November 2-5, 2019, Chicago, IL. ([&]Major professor of the graduate student, DG). Received both travel award and best oral presentation award from ACVM.
52. Ashenafi F Beyi, Tyler Hawbecker, Clare Slagel, Brandon Ruddell, Alan Hassall, Renee Dewell, Grant Dewell, **Orhan Sahin**, Qijing Zhang, Paul J Plummer. Alteration of gut microbiota following treatment of bovine respiratory disease with Danofloxacin in beef calves. Oral presentation at Conference of Research Workers in Animal Diseases (CRWAD) Meeting, November 2-5, 2019, Chicago, IL.
51. Xing-Ping Li, Atsushi Hinenoya, Ximin Zeng, **Orhan Sahin**, Rodney A. Moxley, Catherine Logue, Shinji Yamasaki, and Jun Lin. *Escherichia albertii* is an emerging zoonotic human pathogen in the United States. Oral presentation at Conference of Research Workers in Animal Diseases (CRWAD) Meeting, November 2-5, 2019, Chicago, IL.
50. Ganwu Li, Xuhua Chen, Nubia Macedo, **Orhan Sahin**, Maria Clavijo, Panchan Siththicharoenchai, Rachel Derscheid, Eric Burrough, Kent Schwartz, Rodger Main. Genetic characterization of *Streptococcus equi* subsp. *zooeconomicus* associated with high mortality in swine. Oral presentation at Conference of Research Workers in Animal Diseases (CRWAD) Meeting, November 2-5, 2019, Chicago, IL.
49. Zuowei Wu, Changyun Xu, **Orhan Sahin**, Michael Yaeger, Paul Plummer, Qijing Zhang. Vaccination and Host-Pathogen Responses for *Campylobacter*-Induced Sheep Abortion Using an Experimental Challenge Model. Oral presentation at NC-1202 Meeting: Enteric Diseases of Food Animals: Enhanced Prevention, Control and Food Safety, held in conjunction with CRWAD meeting, November 2, 2019, Chicago, IL.
48. Lauren Burrough[&], Yue Yin, **Orhan Sahin**. Susceptibility testing of *Salmonella* isolates to Zinc Oxide nanoparticles. Poster Presentation at 2019 ISU Summer Undergraduate Research Day, Iowa State University, Ames, IA. [&]Co-mentor to undergraduate student (LB).
47. Jessica Ortiz[&], Mehmet Cemal Adiguzel, Debora Brito-Goulart, Qijing Zhang, Paul Plummer, Grant Dewell and **Orhan Sahin**. Genetic Diversity and mechanism of methicillin resistance in *Staphylococcus* species from companion animals. Poster presentation at CVM Summer Scholars Research Day, Iowa State University, August 9, 2019, Ames, IA. ^{*}Mentor for CVM Summer Scholar (JO).

46. Samantha Wilson, Debora Goulart, Ashenafi Beyi, Mehmet Adiguzel, Renee Dewell, Grant Dewell, **Orhan Sahin**, Paul Plummer, and Qijing Zhang. Effect of danofloxacin treatment on development of fluoroquinolone resistant *Campylobacter jejuni* in cattle. Poster presentation at CVM Summer Scholars Research Day, Iowa State University, August 9, 2019, Ames, IA.
45. Tyler J. Hawbecker, Ashenafi F. Beyi, Clare Slagel, Brandon Ruddell, Alan J. Hassall, Renee Dewell, Grant Dewell, **Orhan Sahin**, Qijing Zhang, and Paul J. Plummer. Impact of fluoroquinolone treatment on the gastrointestinal microbiome and antibiotic resistance in calves. Poster presentation at CVM Summer Scholars Research Day, Iowa State University, August 9, 2019, Ames, IA.
44. Zuowei Wu, **Orhan Sahin**, Changyun Xu, Ashenafi Beyi, Michael Yaeger, Paul Plummer, Melda Meral Ocal, Qijing Zhang. Efficacy of commercial *Campylobacter* vaccines and experimental bacterin in protecting sheep from *Campylobacter jejuni* induced abortion. Poster Presentation at ASM Microbe conference meeting, June 20-24, 2019, San Francisco, CA.
43. Lei Dai, **Orhan Sahin**, Qijing Zhang. Identification of an *nth*-like gene involved in DNA repair in *Campylobacter jejuni*. Poster Presentation at ASM Microbe conference meeting, June 20-24, 2019, San Francisco, CA
42. Debora Goulart[&], Ashenafi Beyi, Paul Plummer, Grant Dewell, Renee Dewell, Qijing Zhang, and **Orhan Sahin**. Effect of enrofloxacin treatment on the development of fluoroquinolone resistant *Campylobacter* in cattle. Oral presentation at Great Plains Emerging Infectious Diseases Conference, April 4-5, 2019, Iowa City, IA. [&]Major Professor of the graduate student (D Goulart).
41. Jessica dos Santos[&], Nubia Macedo, **Orhan Sahin**, Bailey Arruda. Genotypic and phenotypic characterization of *Streptococcus suis* strains isolated from healthy and diseased pigs. Poster presentation at the annual meeting of American Association of Swine Veterinarians, March 9-12, 2019, Orlando, FL. [&]Co-major professor to graduate student (J Santos).
40. Qingyun Li, Eric R. Burrough, Nicholas K. Gabler, Crystal L. Loving, C. K. Tuggle, **Orhan Sahin**, Stacie A. Gould, and John F. Patience. Impact of dietary fiber and carbohydrases on intestinal gene transcription in enterotoxigenic *E. coli* challenged pigs [580058]. Abstract submitted to American Society of Animal Science Midwest Section, Omaha, NE, US (Mar. 11-13, 2019).
39. **Orhan Sahin**. Emergence and Fitness of a hypervirulent *Campylobacter jejuni* clone associated with sheep abortion and human disease in the United States. November 22, 2018. Oral presentation at College of Veterinary Medicine Biomedical Sciences, Sokoine University of Agriculture, Morogoro, Tanzania. As part of USDA Faculty Exchange Program project (PI: Paul Plummer), I visited Tanzania for being a research mentor to a scholar (Athumani Lupindu) while his stay at ISU.
38. Debora Goulart[&], Anastasia Schroeder, Ashenafi Beyi, Melda Ocal, Zuowei Wu, Kritika Singh, **Orhan Sahin**, Paul Plummer, Grant Dewell, Renee Dewell, and Qijing Zhang. Effect of enrofloxacin treatment on the prevalence of fluoroquinolone resistant *Campylobacter* in cattle. Poster presentation at Conference of Research Workers in Animal Diseases (CRWAD) Meeting, December 2-4, 2018, Chicago, IL. [&]Major Professor of the graduate student (DG).
37. **Orhan Sahin**, Trevor Rodriguez, Melda Meral Ocal, Kritika Singh, Adam Krull, Qijing Zhang. Mechanism and cross-resistance patterns of methicillin resistance in *Staphylococcus*

- from companion animals. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 18-22, 2018, Kansas City, Missouri.
36. **Orhan Sahin**, Danielle Kenne, Aric McDaniel, Curt Thompson, Zuowei Wu, Ganwu Liu, Adam Krull. A bite wound infection in a lion associated with *Mycoplasma simbae*, a commensal of the feline oral cavity. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 18-22, 2018, Kansas City, Missouri.
 35. Nubia Macedo, Marcelo Gottschalk, Bailey Arruda, Adam Krull, **Orhan Sahin**, Karen Harmon, Laura Bradner, Maria Jose Clavijo. Molecular characterization of *Streptococcus suis* isolated from healthy and diseased pigs by multiplex serotyping PCR and virulence genotyping. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 18-22, 2018, Kansas City, Missouri.
 34. Guillermo Salazar, Amanda Kreuder, **Orhan Sahin**, Adam Krull. Significance of antibiotic resistance genes in *Salmonella enterica* isolated from cattle and swine. Poster presentation at CVM Summer Scholars Research Day, Iowa State University, August 10, 2018, Ames, IA.
 33. Trevor Rodriguez[&], Melda Meral Ocal, Kritika Singh, Adam Krull, Qijing Zhang, and **Orhan Sahin**. Mechanism and cross-resistance patterns of methicillin resistance in *Staphylococcus* from companion animals. Poster presentation at CVM Summer Scholars Research Day, Iowa State University, August 10, 2018, Ames, IA. [&]Mentor for CVM Summer Scholar (Rodriguez).
 32. Anastasia Schroeder, Debora Brito-Goulart, Ashenafi Beyi, Zuowei Wu, Kritika Singh, **Orhan Sahin**, Paul Plummer, Grant Dewell, Renee Dewell, Qijing Zhang. Effect of Enrofloxacin treatment on the prevalence of fluoroquinolone resistant *Campylobacter* in cattle. Poster presentation at CVM Summer Scholars Research Day, Iowa State University, August 10, 2018, Ames, IA.
 31. **Orhan Sahin**, Yuko Sato, Mohamed El-Gazzar, Glenda Dvorak, Sanja Ilic, Lydia Medeiros, Gireesh Rajashekara, Manpreet Singh, James Roth, and Qijing Zhang. Extension and Educational Outreach Programs for Mitigation of *Campylobacter* in Poultry. Poster presentation at USDA National Institute of Food and Agriculture (NIFA) Project Directors Meeting, July 7, 2018, Salt Lake City, UT.
 30. **Orhan Sahin**, Zuowei Wu, Adam Krull, and Tim Frana. Application of Whole-Genome Sequencing for Investigation of Epidemiology, Virulence, and Antimicrobial Resistance of *Salmonella* Enteritidis. Poster Presentation at ASM Microbe conference meeting, June 7-11, 2018, Atlanta, GA.
 29. Atsushi Hinenoya, Ximin Zeng, Barbara Gillespie, **Orhan Sahin**, Catherine Logue, Shinji Yamasaki, Jun Lin. Retrospective surveillance of *Escherichia albertii* in the *E. coli* isolates from pet animals and poultry in the United States. Poster Presentation at ASM Microbe conference meeting, June 7-11, 2018, Atlanta, GA.
 28. Jing Xia, Jinji Pang, Yizhi Tang, Zuowei Wu, Lei Dai, Kritika Singh, Changyun Xu, Lining Xia, Xiaoping Ma, Kelly Still Brooks, **Orhan Sahin**, Paul Plummer, and Qijing Zhang. High prevalence of tetracycline resistance and emergence of fluoroquinolone resistance in *Campylobacter* isolates from sheep. Poster Presentation at ASM Microbe conference meeting, June 7-11, 2018, Atlanta, GA.
 27. Zuowei Wu, Tizhi Tang, Sarah Muirhead, **Orhan Sahin**, Nada Pavlovic, Qijing Zhang. The Predominance of *Campylobacter coli* ST1068 in cattle in the United States. Poster Presentation at ASM Microbe conference meeting, June 7-11, 2018, Atlanta, GA.

26. Changyun Xu, Zuowei Wu, **Orhan Sahin**, Qijing Zhang. Invasion of cell cultures doesn't predict the hypervirulence of *Campylobacter jejuni* in abortion induction. Poster Presentation at ASM Microbe conference meeting, June 7-11, 2018, Atlanta, GA.
25. **Orhan Sahin**. Preharvest control strategies for *Campylobacter* in poultry. Campylobacter workshop: Managing the performance standards for poultry. Department of Poultry Science, University of Georgia, June 5-7, 2018, Athens, Georgia. Invited speaker.
24. Athumani Lupindu[&] and **Orhan Sahin**. Detection of CTX-M cephalosporinase producing *Escherichia coli* from cattle with enteric disease in Iowa, USA. Poster presentation at College of Veterinary Medicine and Biomedical Sciences, Sokoine University of Agriculture, January 1, 2017, Morogoro, Tanzania. [&]Mentor to the African Scholar (AL) with USDA Faculty Exchange Program.
23. **Orhan Sahin**^{*}. Epidemiology and risk factors of *Campylobacter* in commercial broiler production. Oral presentation at "National Symposium on *Campylobacter* Intervention"^{*}, December 3, 2017, held in conjunction with Conference of Research Workers in Animal Diseases Meeting, December 3-5, 2017, Chicago, IL. ^{*}Co-organizer of the symposium.
22. Jinji Pang[&], Yizhi Tang, Jing Xia, Zuowei Wu, Lei Dai, Kritika Singh, Changyun Xu, Lining Xia, Xiaoping Ma, **Orhan Sahin**, Paul Plummer, and Qijing Zhang. Prevalence and antimicrobial susceptibility of *Campylobacter* in sheep. Poster presentation at Conference of Research Workers in Animal Diseases (CRWAD) Meeting, December 3-5, 2017, Chicago, IL. [&]Co-mentor of the international visiting student (JP).
21. Tang Y[&], Sarah Muirhead, Zuowei Wu, **Orhan Sahin**, Nada Pavlovic, and Qijing Zhang. Identification of a predominant *Campylobacter coli* clone in feedlot cattle in the United States. Poster presentation at Conference of Research Workers in Animal Diseases (CRWAD) Meeting, December 3-5, 2017, Chicago, IL. [&]presenting author and co-mentor of the graduate student (Tang).
20. Kayla Schaefer[&], Lei Dai, Adam Krull, Eric Burrough, Qijing Zhang, and **Orhan Sahin**. Prevalence, species distribution, and mechanism of methicillin resistance in *Staphylococcus* from companion animals in the Midwest U.S. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 12-18, 2017, San Diego, California. [&]Mentor for CVM Summer Scholar (Schaefer), and the presenter.
19. Samantha Naberhaus, Adam Krull, Bailey Arruda, Paulo Arruda, Drew Magstadt, Franco Matias Ferreyra, Igor-Renan Honorato-Gatto, Henrique Meiroz-De-Souza-Almeida, **Orhan Sahin**, Amanda Kreuder. Comparison of pathogenic *Salmonella* detection from porcine oral fluids, over-the-shoe booties, and fecal samples. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 12-18, 2017, San Diego, California.
18. Samantha Naberhaus, Adam Krull, Laura Bradner, Karen Harmon, Paulo Arruda, Bailey Arruda, **Orhan Sahin**, Amanda Kreuder. Validation of a multiplex quantitative PCR for differentiation of *Salmonella* Typhimurium and I 4,[5],12:i:- from porcine samples. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 12-18, 2017, San Diego, California.
17. Krull AC, **Sahin O**. Systemic Disease Caused by Rapid Growing *Mycobacterium* in a Canine. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Annual Conference, October 2017 San Diego, CA.

16. **Sahin O**, Yuan C, O'Connor A, Logue C, Zhang Q. 2017. On-farm risk factors associated with *Campylobacter* prevalence in conventional broiler flocks in the United States. Poster presentation at CHRO Conference Meeting, September 10-14, 2017, Nantes, France.
15. Henthorn C[&], **Sahin O**, Minion C. 2017. Utilization of THP-1 Extracellular Traps as a Source of Nucleic Acid Precursors by *Mycoplasma hyopneumoniae*. Poster presentation at the 4th Biennial Meeting of United States Organization of Mycoplasma, July 6-8, 2017, Birmingham, AL. [&]Major professor of the graduate student (C. Henthorn).
14. **Sahin O**, Pavlovic N, O'Connor A, Logue C, and Zhang Q. A longitudinal study on *Campylobacter* in commercial broiler flocks in the United States: Prevalence, genetic diversity, and associated risk factors. Oral Presentation at USDA National Institute of Food and Agriculture (NIFA) Project Directors Meeting, July 8, 2017, Tampa, FL.
13. **Sahin O**, Looft T, Shen Z, Singh K, Zhang Q. Effect of the Intestinal Microbiota on *Campylobacter jejuni* Colonization in Broiler Chickens. Poster presentation at ASM Microbe conference meeting, June 1-5, 2017, New Orleans, LA.
12. **Sahin, O**. Evolution and virulence of an emergent hypervirulent *Campylobacter jejuni* clone in the United States. Seminar series in Veterinary Biomedical Sciences, Iowa State University. January 12, 2017 (invited oral presentation).
11. **Sahin, O**. Antimicrobial resistance in *Campylobacter* and other bacterial organisms. Oral presentation at Iowa State University College of Veterinary Medicine Faculty Research Symposium, January 4, 2017.
10. **Sahin O**, Thompson C, Dai L, Krull A, and Burrough E. Antimicrobial susceptibility of *Streptococcus suis* isolated from diseased pigs from a veterinary diagnostic laboratory in the Midwest United States: Association between isolation site, serotype and resistance. Oral presentation at the American Association of Veterinary Laboratory Diagnosticians (AAVLD), 59th Annual Conference. October 14-19, 2016, Greensboro, North Carolina.
9. **Sahin O**, Krull A, and Pineyro P. Sudden death due to necrosuppurative pneumonia associated with *Acinetobacter baumannii* in a Greyhound dog following racing. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 14-17, 2016, Greensboro, North Carolina.
8. Krull A, **Sahin O**, and Derscheid R. *Yersinia pseudotuberculosis*-associated enteritis in Iowa beef cattle. Oral presentation at American Association of Veterinary Laboratory Diagnosticians (AAVLD) Meeting, October 14-17, 2016, Greensboro, North Carolina.
7. **Sahin O**, Plummer P, Wu Z, Yaeger M, and Zhang Q. Emergence and predominance of a hypervirulent, tetracycline-resistant *Campylobacter jejuni* clone as a major cause of sheep abortion in the United States. Oral presentation at the 120th United States Animal Health Association (USAHA) Meeting, October 13-19, 2016, Greensboro, North Carolina. (Invited talk for the Committee on Sheep and Goats).
6. Krull A, Arruda B, Schwartz K, Burrough E, **Sahin O**, and Kreuder A. Increased frequency of isolation of multi-drug resistant Salmonella I 4,[5],12:i:- from swine with histologic lesions consistent with salmonellosis. Oral presentation the American Association of Veterinary Laboratory Diagnosticians (AAVLD), 59th Annual Conference. October 14-19, 2016, Greensboro, North Carolina.
5. Tang Y[&], **Sahin O**, Pavlovic N, Lejeune J, Carlson J, and Zhang Q. Rising fluoroquinolone resistance in *Campylobacter jejuni* isolated from feedlot cattle in the United States. Poster presentation at USDA National Institute of Food and Agriculture (NIFA) Project Directors'

Meeting, July 30, 2016, St. Louis, Missouri. (&Co mentor to the graduate student (Tang) and the Presenting author).

4. **Sahin O.** Antimicrobial resistance in *Campylobacter*. Oral presentation at Association of Veterinary Microbiologist (AVM) Heartland Chapter Conference, April 29-31, 2016, Ames, Iowa. (invited talk).
3. Tang Y, Dai L, **Sahin O**, and Zhang Q. Identification of a novel plasmid-borne multidrug resistance gene, *cfr(C)*, in *Campylobacter jejuni*. Poster Presentation at ASM Microbe conference meeting, June 16-20, 2016, Boston, MA.
2. Plummer P, **Sahin O**, Mullin K, Beal M, Barbieri L, Li G, Zhang Q, Logue C, and Nolan L. Development and Validation of a Novel Ovine Model of Catheter Associated Urinary Tract Infections caused by Uropathogenic *E. coli* (UPEC). Poster Presentation at ASM Microbe conference meeting, June 16-20, 2016, Boston, MA.
1. Wu Z, Periaswamy B, **Sahin O**, Chen S, Zhang Q. Population genomics of *Campylobacter jejuni* associated with sheep abortion. Poster Presentation at ASM Microbe conference meeting, June 16-20, 2016, Boston, MA.

Prior to appointment to the current position (n= 34)

34. **Sahin O**, Terhorst S, Burrough E, Shen Z, Wu Z, Plummer P, Yaeger M, and Zhang Q. Key role of capsular polysaccharide in the induction of systemic infection and abortion by *Campylobacter jejuni*. Poster presentation at CHRO Conference Meeting, November 1-5, 2015, Rotorua, New Zealand.
33. Tang Y, **Sahin O**, Pavlovic N, Lejeune J, Carlson J, and Zhang Q. Rising fluoroquinolone resistance in *Campylobacter jejuni* isolated from feedlot cattle in the United States. Poster presentation at CHRO Conference Meeting, November 1-5, 2015, Rotorua, New Zealand.
32. Wu Z, **Sahin O**, Yaeger M, Make B, Chen S, Lashley V, Plummer P, Shen Z, and Zhang Q. Mutations in an outer membrane protein enhances the virulence of *Campylobacter jejuni*. Poster presentation at CHRO Conference Meeting, November 1-5, 2015, Rotorua, New Zealand.
31. Tang Y, Wu Z, **Sahin O**, and Zhang Q. 2015. In vivo Role of *typA* in the Virulence of *Campylobacter* induced abortion. Poster. In Abstracts of 115th General Meeting of American Society for Microbiology, May 30 – June 2, 2015, New Orleans. Louisiana, USA.
30. **Sahin O**, N. Pavlovic, A. O'Connor, C. Logue, and Zhang, Q. A Longitudinal Study on *Campylobacter* Prevalence in Conventionally-Raised Commercial Broiler Flocks in the United States. USDA National Institute of Food and Agriculture (NIFA) and Institute of Food Safety and Nutrition (IFSN) Project Director Meeting, July 24, 2015, Oregon, Portland.
29. Yizhi Tang, **Orhan Sahin**, Nada Pavlovic, Jeff Lejeune, James Carlson, and Qijing Zhang. Prevalence of a highly virulent *Campylobacter jejuni* clone associated with sheep abortion in feedlot cattle in the United States. In Proceedings of the 95th Annual Meeting of the CRWAD, December 7-9, 2014. Chicago, IL.
28. Zhangqi Shen, **Orhan Sahin**, Zuowei Wu, Qijing Zhang. 2014. Identification of a type I toxin-antitoxin system in the pVir plasmid of *Campylobacter jejuni*. P-1685. In Abstracts of 114th General Meeting of American Society for Microbiology, Boston. MA, USA.
27. **Sahin O**, N. Pavlovic, A. O'Connor, D. Trampel, C. Logue, and Zhang, Q. 2014. A Longitudinal Study on *Campylobacter* Prevalence in Conventionally-Raised Commercial

- Broiler Flocks in the United States. P-1453. Poster presentation at 114th General Meeting of American Society for Microbiology, Boston, MA, USA.
26. **Orhan Sahin**, Zhangqi Shen, Zuowei Wu, Eric Burrough, Sam Terhorst, Michael Yaeger, Qijing Zhang. 2013. Involvement of CJSA_0033 in the emergence and pathogenesis of a hypervirulent *Campylobacter jejuni* clone in sheep abortion in the USA. Poster presentation at CHRO Conference Meeting, September 22-26, 2013, Aberdeen, Scotland.
 25. **Orhan Sahin**, Zuowei Wu, Swaine Chen, and Qijing Zhang. 2013. Whole-genome sequencing for elucidation of evolution and fitness of an emergent *Campylobacter jejuni* clone associated with sheep abortion in the USA. Poster presentation at CHRO Conference Meeting, September 22-26, 2013, Aberdeen, Scotland.
 24. **Sahin O**, Zhang, Q. 2012. *Campylobacter jejuni*: Pathogenic mechanisms and antimicrobial resistance. Oral Presentation. ISU Health Research Initiative: Initial Strategy Meeting, Ames, IA, USA.
 23. **Orhan Sahin**, Zuowei Wu, Rachel Sippy, and Qijing Zhang. 2011. Pathogenic mechanism of a highly virulent *Campylobacter jejuni* clone associated with sheep abortions in the United States. Oral Presentation. Fourth International Rushmore Conference on Enteric Diseases, Chicago, IL, USA.
 22. Sippy, R, **Sahin, O.**, Plummer, P., Vidal, A., Newell D., and Zhang, Q. 2011. Genetic Diversity of *Campylobacter* Isolates Associated with Sheep Abortion in the United States and the United Kingdom, P-Z1490. In Abstracts of 111th General Meeting of American Society for Microbiology, New Orleans. LA, USA.
 21. Rachel Sippy, **Orhan Sahin**, Paul Plummer, and Qijing Zhang. Genetic Diversity of *Campylobacter jejuni* in healthy sheep. In Abstracts of American Society for Microbiology, 110th General Meeting. 2010. San Diego, CA, USA.
 20. **Orhan Sahin**, Rachel Sippy, Rocky Patil, Paul Plummer, and Qijing Zhang. Genomics of a highly virulent *Campylobacter jejuni* clone associated with sheep abortion in the United States. In Abstracts of Plant Animal & Genome XVIII International Conference Meeting. 2010. San Diego, CA, USA.
 19. **Orhan Sahin**, Paul Plummer, Shaohua Zhao, Collette Fitzgerald, Rachel Sippy, Rocky Patil, Jing Han, and Qijing Zhang. Association of a highly virulent *Campylobacter jejuni* clone with human *Campylobacter* infections and its wide distribution in animal reservoirs. In Abstracts of American Society for Microbiology, 109th General Meeting. 2009. Philadelphia, PA, USA.
 18. **Orhan Sahin**, Rocky Patil and Q. Zhang. Genome sequence of a unique *Campylobacter jejuni* strain associated with sheep abortion in the United States. In Proceedings of the 89th Annual Meeting of the CRWAD.2008. Chicago, IL.
 17. M. Fukuda, B. Jeon, **O. Sahin***, and Q. Zhang. Cj0091, an immunogenic lipoprotein of *Campylobacter jejuni*, is required for the adherence to host epithelial cells and colonization of the intestinal tract of chickens. In Abstracts of American Society for Microbiology, 108th General Meeting. 2008. Boston, MA, USA. (*Presenting author).
 16. Eva Barton, **Orhan Sahin**, Paul Plummer, Lynn A. Joens, Michael E. Konkel, Bryan A. White, and Qijing Zhang. Transcriptional and functional analysis of *Campylobacter* genes involved in chicken colonization. In Proceedings of the 88th Annual Meeting of the CRWAD.2007. Chicago, IL. (1st Place Award Winning).
 15. **Orhan Sahin**, S. Pereira, S. Behm, C. Dow, M. Miller, W. Muraoka, I. Wesley, and Q. Zhang. Prevalence, Dynamics, and Molecular Mechanisms of Antimicrobial Resistance in

- Campylobacter* from Conventional Midwest Swine Farms. Oral presentation at the 88th Annual Meeting of the CRWAD.2007. Chicago, IL.
14. **Orhan Sahin**, Paul J. Plummer, Kapllan Sulaj, Sonia Pereira, Suelee Robbe-Austerman, Dianna M. Jordan, Liping Wang, Michael J. Yaeger, Lorraine J. Hoffman and Qijing Zhang. *Campylobacter jejuni*-Associated Abortion in Sheep from Midwest States in the United States. Poster, Z-010. In Abstracts of American Society for Microbiology, 107th General Meeting. 2007. Toronto, ON, Canada.
 13. Cameron Dow, **Orhan Sahin**, Wayne Muraoka, Irene Wesley, and Qijing Zhang. Prevalence of antimicrobial resistant *Campylobacter* isolates from swine during the course of production cycle. Poster, 61. 2006 Merck/Merial National Veterinary Scholar Symposium: Creating the Gumbo of Progress. August, 2006. Baton Rouge, Louisiana.
 12. Meiguan Yan, **Orhan Sahin**, Sonia Pereira, and Qijing Zhang. Macrolide resistance in *Campylobacter*: emerging frequency and resistance mechanism. Poster, FS102. In Proceedings of the 1st Annual Symposium presented by the Institute for Food Safety & Security at Iowa State University. April 2006. Ames, IA.
 11. Lin J, M. Akiba, **O. Sahin**, and Q. Zhang. 2003. Regulatory mechanisms of multidrug efflux pump CmeABC in *Campylobacter jejuni*. Abstract of the 12th International Workshop on *Campylobacter*, *Helicobacter*, and Related Organisms, September, Aarhus, Denmark.
 10. Naidan Luo, Shouxiong Huang, **Orhan Sahin***, Jun Lin, Teresa Morishita, and Qijing Zhang. Enhanced in vivo fitness of fluoroquinolone-resistant *Campylobacter jejuni* in the absence of antibiotic selection pressure. Poster, 46P. In Proceedings of the 83rd Annual Meeting of the CRWAD. 2002. St. Louis, Missouri (*Presenting author).
 9. Jun Lin, **Orhan Sahin**, Linda Michel, and Qijing Zhang. Critical role of CmeABC in bile resistance and in vivo colonization of *Campylobacter jejuni*. Oral Presentation. In Proceedings of the 83rd Annual Meeting of the CRWAD. 2002.St. Louis, Missouri.
 8. **Orhan Sahin**, Q. Zhang, and TY Morishita. Contributing factors for the lack of colonization of young chickens by *Campylobacter jejuni*. Poster, Z-13. In Abstracts of American Society for Microbiology, 102nd General Meeting. 2002. Salt Lake City, Utah.
 7. Naidan Luo, **Orhan Sahin**, Jun Lin, Linda Michel, and Qijing Zhang. Emergence of quinolone-resistant *Campylobacter* in poultry. Poster, 37P. In Proceedings of the 82nd Annual Meeting of the CRWAD. 2001.St. Louis, Missouri. (Award winning).
 6. **Orhan Sahin**, and Joseph J. Kowalski. Development of a Selective Medium for *Rhodococcus equi*. Poster, 105P. In Proceedings of the 82nd Annual Meeting of the CRWAD. 2001.St. Louis, Missouri.
 5. **Orhan Sahin**, P. Kobalka, and Q. Zhang. Detection and Survivability of *Campylobacter jejuni* in chicken eggs. Poster, 47P. In Proceedings of the 82nd Annual Meeting of the CRWAD. 2001.St. Louis, Missouri. (Award winning).
 4. **Orhan Sahin**, , Q. Zhang, and J.C. Meitzler. Effects of Anti-*Campylobacter* Maternal Antibody on the Colonization of *Campylobacter jejuni* in Poultry. Poster, Z-21. In Abstracts of American Society for Microbiology (ASM), 101st General Meeting. 2001. Orlando, FL.
 3. **Orhan Sahin**, J.C. Meitzler, Q. Zhang, B. Harr, and T.Y. Morishita, R. Mohan. Prevalence of maternal antibodies to *Campylobacter jejuni* in poultry. Oral Presentation (p. 37). In Proceedings from the 51st North Central Avian Disease Conference and Symposium on Emerging and Re-emerging Diseases. 2000. Columbus, OH.

2. **Orhan Sahin**, J.C. Meitzler, Q. Zhang, , B. Harr, and T.Y. Morishita, R. Mohan. Prevalence of *Campylobacter jejuni*-specific antibodies in chicken flocks. Poster, 29. In OARDC Annual Conference. 2000. Wooster, OH. (Award winning).
1. **Orhan Sahin**, J.C. Meitzler, Q. Zhang, R. Mohan, B. Harr, and T.Y. Morishita. Prevalence of antibodies to *Campylobacter jejuni* in chicken flocks. Poster, 45P. In Proceedings of the 80th Annual Meeting of the CRWAD. 1999. Chicago, IL.

Invited oral presentations-national

2. **Sahin O**. Preharvest control strategies for *Campylobacter* in poultry. *Campylobacter* workshop: Managing the performance standards for poultry. Department of Poultry Science, University of Georgia, June 5-7, 2018, Athens, Georgia.
1. **Sahin O**, Plummer P, Wu Z, Yaeger M, and Zhang Q. Emergence and predominance of a hypervirulent, tetracycline-resistant *Campylobacter jejuni* clone as a major cause of sheep abortion in the United States. Oral presentation at the 120th United States Animal Health Association (USAHA) Meeting, Committee on Sheep and Goats, October 13-19, 2016, Greensboro, North Carolina.

Invited presentations-international

3. **Orhan Sahin**. Epidemiology and virulence of a highly pathogenic emergent *Campylobacter jejuni* clone associated with sheep abortion outbreaks in the United States. October 6-8, 2020. Remotely recorded video presentation at "Animal Intestinal Health and Disease Summit Forum", Jilin Agricultural Science and Technology University, China. I was invited as to give a remote presentation as a keynote speaker by the organizing committee. I was given an honorarium as well.
2. **Orhan Sahin**. Emergence and Fitness of a hypervirulent *Campylobacter jejuni* clone associated with sheep abortion and human disease in the United States. November 22, 2018. Oral presentation at College of Veterinary Medicine Biomedical Sciences, Sokoine University of Agriculture, Morogoro, Tanzania. As part of USDA Faculty Exchange Program project (PI: Paul Plummer), I visited Tanzania for being a research mentor to a scholar (Athumani Lupindu) while his stay at ISU.
1. **Orhan Sahin**. Role of maternal antibodies in lack of *Campylobacter* colonization in young chickens. Oral presentation at a seminar workshop on "Immunity to and Vaccination against *Campylobacter jejuni* in chickens" at Veterinary Laboratories Agency in Surrey, U.K. organized by Med-Vet-Net of European Union, April 2009.

RESEARCH PROJECTS, COOPERATIVE AGREEMENTS, AND FUNDING

Active:

- 13. Sahin O.** Next generation instrumentation for advancing antimicrobial resistance research and diagnostic capabilities. Funded. Roy J Carver Charitable Trust. \$243,585. November, 2020.
This is an equipment grant received from Carver Trust via Iowa State University Foundation.
Role: Principal Investigator and overall coordination of the activities.
- 12. a) Sahin O,** and Zhang Q. Antimicrobial resistance in enteric bacteria from retail meat in Iowa: A NARMS Retail Food Surveillance Project. Funded. U.S. FDA. \$130,000/year. 11/2016 - 9/2020 (\$520,000 total for 4 years).
This competitive award is a cooperative agreement / service contract.
Role: Principal Investigator, overall coordination of the project.

b) Sahin O, and Zhang Q. Detection and surveillance of antimicrobial resistance among enteric bacteria from raw retail meat and seafood in Iowa: A NARMS Retail Food Surveillance Project. FDA. \$155,000 for first year and then \$200,000/year. 9/2020 – 9/2025 (\$955,000 total for 5 years).
- 11. Sahin O,** Looft T, Zhang Q. Microbiota-based intervention for preharvest control of *Campylobacter* in poultry. \$469,997. USDA NIFA. 5/1/18 – 4/30/21 (NCE till 4/30/22)
Role: Principal Investigator, overall coordination of the project.
- 10.** Zhang Q, Yu E, **Sahin O,** Shin YK. Emerging multidrug resistance mechanisms in *Campylobacter*. \$641,884/year (\$3,159,371 total for 5 years). NIH NIAID. 03/17/2020 - 03/16/2025.
Role: Development of the research proposal, assist in writing and coordination of research activities
- 9.** Zhang Q, Yu E, **Sahin O,** Shin YK. Emerging multidrug resistance mechanisms in *Campylobacter*. \$617,308 (NIH bridge award). 08/01/2018-07/31/2020.
Role: Development of the research proposal, assist in writing and coordination of research activities.
- 8.** Macedo N, **Sahin O,** Li G, Clavijo MJ, Main R, Harmon K, Burrough E. Characterization of *Streptococcus equi* subsp. *zooepidemicus* strains causing high pig mortality. \$69,537. Swine Health Information Center. 11/15/19 – 5/14/20.
Role: Assistance if project development and writing, coordination of activities and performance of experiments.
- 7.** Mansell T, Schmitz-Esser, **Sahin O.** Characterization and rapid detection of quorum sensing in the foodborne pathogen *Listeria monocytogenes*. \$49,570. ISU Presidential Interdisciplinary Research Seed Grant Program. 3/1/19 - 2/28/21
Role: Help with the proposal development including concept, design and specific aims.

6. Karriker L, **Sahin O**, Skoland K, Gorden P, Plummer P. Does knowledge of testing procedures or the format of culture and susceptibility reports from veterinary diagnostic laboratories (VDLs) influence antimicrobial selection decisions? \$30,000. American Association of Swine Veterinarians. 5/1/19 – 4/30/20.
Role: Assist in concept and writing of research proposal, analyzing and reporting results.
5. Wu Z, **Sahin O**. Functional genomics of *Campylobacter hepaticus* associated with chicken spotty liver disease. \$25,000. ISU ILHAC. 7/1/19 – 6/30/20. This project will seek for another year of funding in the same amount.
Role: Assistance in the development and writing of research proposal, performing experiments, analyzing data.
4. Wu Z, **Sahin O**. Pathogenic mechanisms of *Campylobacter*-induced sheep abortion: role of the major outer membrane protein in translocation of *Campylobacter jejuni* across the intestinal epithelium. \$20,000. ISU CVM SEED. 01/01/20 – 12/31/20.
Role: Assistance in the development and writing of research proposal, and in coordination of research activities.
3. Clavijo MJ, Gottschalk M, Tucker AW, Arruda B, Wells J, Li G, Rademacher C, **Sahin O**. Investigation into the epidemiology of disease-associated *S. suis* strains. \$95,532. National Pork Board. 8/1/2019 – 7/31/2021.
Role: Development of the proposal's concept and specific aims, assist in writing and project conduct and analysis of results.
3. Kreuder A, Zhang Q, Lu M, **Sahin O**. Rapid detection of AMR and simple integration of genotypic and phenotypic AMR data into veterinary AST diagnostics. \$60,000. 5/1/2020 - 9/1/2021. Antimicrobial Resistance Consortium, ISU PIRI.
Role: Development of the research proposal, aid in writing the proposal, assistance in execution of the project.
2. Wilson R, **Sahin O**. ISU Vet-LIRN Infrastructure Grant Proposal. \$199,735,000. 8/2017 – 6/2021. \$19,500 was allocated to Sahin for budgeting antimicrobial susceptibility testing supplies in ISU VLD Bacteriology Section in the first year; thereafter \$10,000/year is budgeted for the same purpose. Renewed in 2021 for with Phil Gauger as the PI.
Role: ISU institutional representative for the project.
1. Zhang Q, **Sahin O**, Plummer P, Coetzee J, Dewell G, Tarpoff A. Mitigation of fluoroquinolone-resistant *Campylobacter* in cattle. Funded. USDA NIFA. \$1,199,994. 06/2017 – 05/2020. No cost extension received till 05/2021.
Role: Development of the research proposal, assist in writing and coordination of research activities, reporting of results, animal studies, managing day-to-day activities.

Completed:

18. Zhang Q, Sathe S, Plummer P, and **Sahin O**. *Campylobacter* burden in dogs. \$272,698. U.S. Centers for Disease Control and Prevention (CDC). Funded. 9/17/18 – 9/16/19.

Role: Development of the research proposal, assist in writing and coordination of research activities, reporting of results.

17. Zhang Q, and **Sahin O**. Animal Product Trial - Effect of Zinpro nutritional feed additives on reducing *Campylobacter* colonization in chickens. \$21,579. Zinpro Corporation. 7/1/18 – 9/3/18. Extended to include additional trials. \$101,557. 01/01/19 – 12/31/19.
Role: Development of the research proposal, assist in writing and coordination of research activities, reporting of results.
16. Krull A, Sato Y, Li G, Arruda B, **Sahin O**, Plummer P, Zimmerman J, Ji J, and Cornick N. Turkey cellulitis research. Iowa Turkey Federation and VDPAM, \$50,000. 2016-2018.
Role: Development of the research proposal coordination of research activities.
15. Ackerman M, **Sahin O** et al. T35 Summer Scholars Research Program. December 2016, 2017, and 2018.
Role: Provide support as requested, active participant of the program.
14. Minion C, and **Sahin O**. Site specific mutants in *Mycoplasma bovis*. Zoetis. \$278,252. 12/21/16 – 12/20/19.
Role: Development of the research proposal, assist with the coordination of research activities.
13. Zhang Q, **Sahin O**, Trampel D, Brown M, Louge C, O'Conner A, Cordray J, Sebranek J, Lin J, Rajashekara G, and Medeiros L. Novel and practical approaches for mitigation of *Campylobacter* in poultry. USDA-NIFA. \$2,499,543. 2012-2018.
Role: Project Manager, development of the research proposal, assist in writing and coordination of research activities, reporting of results and preparation of manuscript.
12. Zhang Q, Yaeger M, Plummer M, Chen S. Abortifacient *Campylobacter jejuni* as a zoonotic pathogen. NIH/USDA (Dual Purpose with Dual Benefit, RO1). \$1,250,000. 2013-2018.
Role: Although I am not listed as a Co-PI in this project, I have played a significant role in the design, preparation, submission, implementation and completion.
11. Kreuder A, Krull A, Arruda B, Schwartz K, **Sahin O**, Burrough E. Investigation of pathogenicity, competitive fitness, and novel methods for rapid diagnosis of *Salmonella* I 4,[5],12:i:- in swine. \$88,000. National Pork Board. 2016-2017.
Role: Development of the research proposal, assist in writing and coordination of research activities.
10. Minion C, **Sahin O**, Derscheid R. Delivery of *Mycoplasma hyopneumoniae* antigens to swine by alternative vectors, *Mycoplasma hyosynoviae*. Funded. ISU-ILHAC. \$25,000. 2017.
Role: Development of the research proposal, assist in writing.
9. Philips G, Plummer P, Lyte M, and **Sahin O**. Development of a novel method of DNA sequence capture to characterize complex microbiomes. \$20,000. CVM SEED Program. 2016. Funded by the NIFA Formula Funds.
Role: Development of the research proposal.

8. Plummer P, **Sahin O**, and Li G. Development of a novel sheep model of human sepsis. Funded. ISU CVM Seed Grants. \$20,000. 2015-2016.
Role: Coordination of research activities and animal studies.
7. **Sahin O**, Burrough E, Plummer P, and Yaeger M. Development of Subunit Vaccines Against *Campylobacter*-associated Sheep Abortion. Funded. ISU-ILHAC. \$50,000. 2014-2016.
Role: Principal Investigator, overall coordination of all aspects of the project.
6. Zhang Q, Plummer P, Scott M, and **Sahin O**. Foodborne hazard associated with an emerging *Campylobacter jejuni* clone in ruminants. USDA-NIFA. \$500,000. 2012-2016.
Role: Project Manager, development of the research proposal, assist in writing and coordination of research activities, reporting and presenting results.
5. **Sahin O**, Yaeger M, Plummer P, Zhang Q. Genome-wide identification of *Campylobacter* genes associated with Sheep abortion using a mouse infection model. ISU-ILHAC. \$25,000. 2011-2012.
Role: Principal Investigator, overall coordination of the project.
4. **Sahin O**, Qijing Zhang, Mike Yaeger, and Paul Plummer. A mouse infection model for assessment of pathogenic mechanism of a highly virulent *Campylobacter jejuni* clone associated with sheep abortion. ISU-ILHAC. \$24,000. 2010-2011.
Role: Principal Investigator, overall coordination of the project.
3. Zhang Q, P. Lui, M. Yaeger, and **Sahin O**. Functional genomics of a highly virulent *Campylobacter jejuni* clone causing sheep abortion. USDA-CSREES. Microbial Genomics: Functional Genomics of Microorganisms Program. \$998,000. 2009-2012.
Role: Assist with the formulation of concept and design, assist with the writing of the proposal, experimental conduct, analysis of results, presentation of results.
2. Zhang Q and **Sahin O**. Molecular mechanisms and detection of antibiotic resistance in *Campylobacter* from swine and turkey. ISU Food Safety Consortium. \$58,500. 2007-2009.
Role: Assist with preparation of the proposal and writing, conduct of research activities, supervision of other staff.
1. Zhang, **Sahin O**, Plummer P., *et al.* *Campylobacter*-associated abortion in sheep. Iowa Livestock Health Advisory Council. \$75,000. 2006-2009.
Role: Development of research goals, assist with writing of the proposal, performed research experiments.

Pending:

- Wu Z, **Sahin O**, Zhang Q. Virulence Mechanism and Vaccine-based Control of Chicken Spotty Liver Disease. \$650,000. Submitted to USDA NIFA. 01/01/22 – 12/31/24.

Submitted but not funded:

1. Wu Z, **Sahin O**, Sato Y, El-Gazzar M, Zhang Q. Genomic Etiology and Vaccine-based Control of Chicken Spotty Liver Disease. \$500,000. Submitted to USDA NIFA. 01/01/20 – 12/31/22.
2. Plummer P, Zhang Q, **Sahin O**, Sheppard S, Baker K, Swell D, Mumma J, and Hadush B. *Campylobacter* spp. Transmission Dynamics in Low- and Middle-Income Countries \$2,145,000. Gates Foundation. Submitted on May 2018.
3. Clavijo MJ, Gottschalk M, Tucker AW, Arruda B, Wells J, **Sahin O**. Investigation into the epidemiology of disease-associated *S. suis* strains. \$68,479. Submitted to Iowa Pork Producers Association. 2016.
4. Zhang Q, **Sahin O** et al. DOMAIN 6: Whole Genome Sequencing for Transmission of Healthcare-Associated Pathogens Studies; Domain 8: Antibiotic Use, Resistance, And Stewardship in Veterinary Practice. Submitted to HHS-Centers for Disease Control and Prevention - Influenza Reagent Resource (IRR). September 2016.
5. Clavijo MJ, Gottschalk M, Tucker AW, **Sahin O**, Arruda B, Krull A, and Culbertson M. Characterization of disease-associated *Streptococcus suis* strains in the United States. \$91,954. Submitted to National Pork Board on November 15, 2016.
6. Burrough E, **Sahin O**, and Krull A. Prevalence and genetic diversity of livestock-associated methicillin resistant *Staphylococcus aureus* in diagnostic submissions to the ISU VDL. \$23,500. Submitted to ILHAC. 2016.
7. Minion C, and **Sahin O**. Development of a site-specific mutagenesis genetic system for *Mycoplasma hyopneumoniae*. \$52,000. Submitted to Iowa Pork Producers Association. 2016.
8. **Sahin O**, Zhang Q, and John M. Development Of Broadly Protective Vaccines Against *Campylobacter*-Induced Ruminant Abortion. Submitted to USDA NIFA. \$500,000. 2016.

PATENT APPLICATIONS

1. Zhang Q, Wu Z, **Sahin O**, Yaeger M, Plummer PJ. A bacterin vaccine for protecting sheep from *Campylobacter* induced abortion. Intellectual Property Disclosure and Report (IPDR) form submitted to ISU Office of Sponsored Research Administration in July 2020.

TEACHING/EDUCATIONAL ACTIVITIES

Mentorship while at ISU

| I. Graduate students / degree sought | Role | Remarks |
|---|-----------------|--|
| 1. Clair Mitzelfeldt, MS | Major Professor | VDPAM and Interdepartmental Micro (IM), graduated with an MS degree in veterinary microbiology (<i>Mycoplasma pathogenesis</i> in swine) in Spring 2018 (started in Spring 2016); worked as a scientist at Promega about a year; currently pursuing a PhD at University of Wisconsin. Recipient of the 2017 CVM |

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|----------------------------------|--------------------|---|
| | | Livestock Respiratory Diseases Graduate Scholarship (\$820); 2017 CVM Graduate Student Travel Award Program (\$500). |
| 2. Debora Goulart, PhD | Major Professor | Veterinary Microbiology and Preventive Medicine (VMPPM), current, started in Spring 2018, anticipated completion date Spring 2022. Recipient of 2018 and 2019 CVM Graduate Student Travel Award (\$500 each); 2018 and 2020 Professional Development Grant (PAG) from the ISU Graduate and Professional Student Senate (\$200 each), 2019 CRWAD Brenda Love Travel Award (\$1000), and ACVM best oral presentation award at CRWAD. Enrolled in Preparing Future Faculty (PFF) program in Summer 2019; finished successfully in 2020. Passed the prelims in Fall 2020. |
| 3. Jessica Santos, PhD | Co-major Professor | VMPPM, current, started in Summer 2018 as MS, switched to PhD in Spring 2020, anticipated completion date Summer 2023. |
| 4. Jinji Pang, PhD | Co-major Professor | VMPPM, current, started Spring 2019, anticipated completion date Spring 2023. |
| 5. Maria Hakimi, MS | Co-major Professor | VMPPM, current, started Summer 2020, anticipated completion date Summer 2022. |
| 6. Brandon Ruddell, PhD | POS member; | IM/VMPPM, current. I became his Faculty mentor for Preparing Future Faculty (PFF) program at ISU in Fall 2020. |
| 7. Maria Merodio, MS | POS member | VDPAM, current |
| 8. Denusha Shrestha, PhD | POS member | Veterinary Biomedical Sciences (BMS), current |
| 9. Zhiyi Zheng, PhD | POS member | VMPPM, current |
| 10. Moises Contreras, PhD | POS member | Chemical and Biological Engineering, current |
| 11. Kritika Singh, PhD | POS member | VMPPM, graduated in Spring 2020, currently a postdoc at Notre Dame Univ. |
| 12. Samantha Naberhaus, MS | POS member | VMPPM, graduated in Summer 2019, currently a VM4 student at ISU |
| 13. Patrick Gorden, PhD | POS member | VMPPM, graduated in 2018, currently Associate Professor in VDPAM |
| 14. Fei Wang, MS | POS member | VMPPM, graduated in 2014, finished her PhD at Iowa State in 2019. |
| 15. Samantha Terhorst, MS | POS member | Toxicology/VMPPM, graduated in 2012, currently work as research associate at The Ohio State. |
| II. Professional students | | |

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|----------------------------------|-----------|--|
| 1. Lawrance Chandra | Mentor | He was a Clinical year student doing the Program for the Assessment of Veterinary Education Equivalence (PAVE) at Oklahoma State University to gain a certificate to be able to practice in the United States and Canada. I remotely mentored him about 5-weeks on a research project on antimicrobial resistance data analysis from ISU VDL. August-September 2020. |
| 1. Jessica LeGrand, DVM | Mentor | ISU CVM Summer Scholars Research Program, 2020 |
| 2. Jessica Ortiz, DVM | Mentor | ISU CVM Summer Scholars Research Program, 2019 |
| 3. Trevor Rodriguez, DVM | Mentor | ISU CVM Summer Scholars Research Program, 2018 |
| 4. Kayla Schaefer, DVM | Mentor | ISU CVM Summer Scholars Research Program, 2017 |
| 5. Matt Miller, DVM | Co-mentor | ISU CVM Summer Scholars Research Program, 2007 |
| 6. Cameron Dow, DVM | Co-mentor | ISU CVM Summer Scholars Research Program, 2006 |
| III. Postdoctoral fellows | | |
| 1. Mehmet Adiguzel | Co-mentor | Visiting scholar/postdoc from Turkey. I supported his application for fellowship from Turkish government and recruited him to ISU June 2019. We wrote a research article (I am the senior author). Left in June 2020. |
| 2. Melda Ocal | Co-mentor | Visiting scholar/postdoc from Turkey. June 2018-June 2019. |
| 3. Cassidy Klima | Mentor | VDPAM, started in September 2018. Left in 2019 October after 1 year stay. |
| IV. Undergrad students | | |
| 1. Kyle Anderegg | Co-mentor | VMPM, 2014, now at Novozymes, Iowa. |
| 2. Garrett Bates | Co-mentor | VMPM, 2016, now at Univ. of Kansas MPH. |
| 3. Marit Bakken | Mentor | VDPAM, 2016, now at Univ. of Madison DVM program |
| 4. Logan Ott | Mentor | VDL, 2017, currently in PhD program at ISU |
| 5. Marie Bennett | Mentor | VMPM, 2017, currently at ISU |
| 6. Scarlett Eagle | Mentor | VMPM, 2017, currently at ISU |
| 7. Honor Foss | Mentor | VMPM, 2017, currently at ISU |
| 8. Mary Ommaid | Mentor | VMPM, 2017, currently at ISU |
| 9. Megan Rogers | Mentor | VMPM, 2018, currently at ISU |
| 10. Allison Rowe | Mentor | VMPM, 2018, currently at the lab; hired as RA in 2020 in VMPM. |
| V. Others | | |

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|---------------------------|------------|---|
| 1. Middle school students | Supervisor | Science projects of two students, 2015 (~10 hr) |
| 2. African Scholars | Mentor | Research projects of two scholars, 2017 and 2018 (~ 4 months each year) |

Invited lectures at ISU

- 1. Orhan Sahin.** Antimicrobial-resistant and hypervirulent *Campylobacter jejuni* clone as an emergent pathogen in the United States. 2013. Oral presentation for SIAM (Society for Industrial and Applied Mathematics) Student Chapter at Iowa State University, December 4, 2013, Carver Hall, ISU, Ames, IA (~15 people).
- 2. Orhan Sahin.** Emergence and fitness of a hypervirulent *Campylobacter jejuni* clone in the United States. Oral presentation to graduate students (~10) taking Micro 604 on September 22, 2016. I was invited by the instructor of the course (Dr. Iddo Friedberg).
- 3. Orhan Sahin.** Evolution and virulence of an emergent hypervirulent *Campylobacter jejuni* clone in the United States. Oral presentation for Seminars at Veterinary Biomedical Sciences, ISU, Ames, IA, January 12, 2017 (~80 people; mostly MS students).
- 4. Orhan Sahin.** Delivered a lecture to graduate students taking VMPM 625 (Bacterial Pathogenesis) for about 2 hr on *Campylobacter* epidemiology and pathogenesis. The instructor in charge (Dr. Chris Minion) invited me to give the lecture. March 6, 2017 (~10 students), and April 1, 2019 (~8 students).
- 5. Orhan Sahin.** A hypervirulent *Campylobacter jejuni* clone in the US: emergence, pathogenesis and control strategies in the animal host. Remote oral presentation for Seminars at Veterinary Biomedical Sciences and MS students taking BMS 698, ISU, Ames, IA, September 10, 2020 (~60 people; mostly MS students).
- 6. Orhan Sahin.** Delivered two lectures (~1 hrs each) remotely to graduate students (n=6) taking VDPAM 562X (Diagnostic Medicine-Laboratory Methods) veterinary diagnostic bacteriology protocols and techniques. The instructor in charge (Dr. KJ Yoon) invited me to give the lectures. September 16 and 18, 2020.
- 7. Orhan Sahin.** Delivered a lecture (two times, one hour each) to a group of US Army Veterinary Corps Reserve Unit members (~30) on food safety and diagnostic microbiology. May 14, 2021.

Veterinary professional students

- VDPAM 488 Clinical Microbiology Rotation course. Co-instructor. This class trains 6-8 4th year veterinary medicine students in two-week rotations, i.e., it repeats with different students every other week. Since April, 2016, I have delivered 1-3 “student unit” lectures per rotation, each about 2 hr in length, with a focus on real cases submitted to the ISU VDL. My responsibilities and participation with the class have increased over time and have included diagnostic case setups from beginning through reporting of results. Since Spring 2018, I have also begun to provide a more classic lecture on clinical diagnostic

microbiology (principles and practical aspects of conventional, molecular and advanced diagnostic microbiology techniques). I deliver this lecture (~1 hr long) to each rotation. As the Section Leader of Bacteriology, I am now also involved in the organization of this rotation course since the course is mainly taught by the faculty and staff of the Section.

Others

Mustafa Kemal University, Hatay, Turkey

- Taught veterinary microbiology, immunology and epidemiology courses to 35 veterinary medicine students between 2004 and 2005.
- Assumed to be the academic coordinator for the second-year veterinary students. Visited Veterinary Department of the University of Evora, Portugal, within the framework of SOCRATES/ERASMUS program to develop potential collaborations between the universities in 2005.