

CURRICULUM VITAE

Orhan Sahin

DVM, MS, PhD, Dip ACVM

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EDUCATION

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

Doctor of Philosophy (Veterinary Microbiology)

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

Master of Science (Veterinary Microbiology)

University of Ankara, Ankara, Turkey. 6/1993

Doctor of Veterinary Medicine (DVM)

Diplomate of The American College of Veterinary Microbiologists (2008).

PROFESSIONAL ADVANCEMENT

- 2016 – Pre, Assistant Professor, Dept. Veterinary Diagnostic and Production Animal Medicine, Iowa State University, Ames, IA.
- 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), Dept. Preventive Medicine, and Veterinary Clinical Sciences, The Ohio State University, Wooster, OH.
- 1988 – 1993, Veterinary Medicine Student, University of Ankara, College of Veterinary Medicine, Turkey.

RESEARCH SUMMARY AND SCIENTIFIC INTERESTS

- Bacterial pathogens and other zoonotic infectious diseases that affect animal health, food safety and public health, and environmental health.
- Development and optimization of rapid and novel diagnostic methods (both culture-based and culture independent molecular/immunological assays) for detection and characterization of bacterial pathogens in animals and humans, and in/on foods.
- Surveillance for bacterial pathogens to identify emerging/re-emerging infections that threaten the well-being of animals and humans as well as to detect the emergence of new pathogenic variants and hypervirulent clones with novel traits.
- Safe, effective and feasible prevention and control strategies including development of novel and practical vaccines, antimicrobials and other means to protect animal and public health and to ensure the safety of our food supplies.
- Ecology, epidemiology, transmission, and antimicrobial resistance of foodborne bacterial pathogens along the food production and processing chain.
- Comparative and functional genomics, evolution, and molecular biology of bacterial pathogens of importance to animal health, food safety and human health.
- Host responses (immunity) to infectious diseases and host-pathogen-environment interactions that may be involved in disease progression and clinical outcome.
- Metagenomic and population genomics analysis of microbiomes and resistomes of foods and food animals, and its potential applications in the formulation of novel and effective control methods for foodborne pathogens.

EXPERIENCE

Iowa State University, Ames, IA - 09/2005 - Present.

Research Assistant Professor - present

Assistant Scientist III, 06/2008 - 10/2009

Postdoctoral Research Associate, 09/2005 - 6/2008

- Conducted multidisciplinary research projects on a leading bacterial foodborne pathogen, *Campylobacter*, in broad range of scientific disciplines including its epidemiology in poultry and livestock production and food chain, antimicrobial resistance mechanisms and development, molecular biology and pathogenesis, genomics and evolution, and animal disease models.
- Leading the research efforts on comparative and functional genomics studies of a highly virulent *Campylobacter jejuni* strain: Complete genome of a virulent *C. jejuni* strain

causing abortion in sheep and gastroenteritis in humans has been obtained and fully annotated. Comparative genomics is utilized to reveal the unique genes in this genome. Several genes are mutated and their effects in pathogenesis are tested in animal models. DNA microarrays are developed to perform comparative and functional genomics. Immuno-proteomics approaches are used to determine immunogenic proteins and vaccine candidates. Next-Gen sequencing is employed to study emergence, evolution, spread, and fitness the epidemic *C. jejuni* population.

- Collaborated, designed and performed in vivo studies on *Campylobacter* pathogenesis: Pregnant guinea pigs have been used to establish the abortifacient ability of a highly virulent *C. jejuni* clone. Similarly, these animals were used to determine the efficacy of several commercially available vaccines in protection. Mice infection models are used for pathogenesis and vaccine studies.
- Determined the association of sheep abortion clone with human infections due to *C. jejuni*: Molecular typing methods (PFGE, MLST) are used to determine the strain relatedness between the highly virulent *C. jejuni* clone causing abortion in sheep and gastroenteritis in humans. Collaborated with CDC and FDA on this project.
- Lead the research projects funded by Iowa Livestock Health Advisory Council to better understand the involvement of *Campylobacter* spp. in sheep abortion for the development of new treatment and prevention strategies.
- Co-PI of a 3-year-long (2012-2015) research project funded by USDA-NIFA for the assessment of a foodborne hazard associated with an emerging *Campylobacter* clone in ruminants: In order to ascertain the extent and risk associated with presence of highly pathogenic sheep abortion clone in cattle and dairy, epidemiological studies are started to assess the prevalence of this clone (in addition to all other *Campylobacter* strains) in cattle in a nationwide study. In addition, contamination of milk (obtained from both healthy and mastitis udders) by this clone are being investigated
- Co-PI and the Manager of a multi-institutional, 5-year-long (2012-2017), integrated project funded by USDA-NIFA for development of novel and practical approaches to control *Campylobacter* in poultry: As a first step to determine the farm-based risk factors for *Campylobacter* presence in poultry and to develop effective intervention strategies, a large-scale surveillance study is initiated in collaboration with one of the largest poultry producers in the United States. Prevalence of *Campylobacter* at the farm/flock and postharvest level is currently being assessed.
- Collaborated actively in epidemiological, molecular, and pathogenesis studies including antimicrobial resistance, bacterial genetics, and gene expression in *Campylobacter jejuni*.
- Assisted and/or lead the efforts in development and validation of multiple animal models (chickens, guinea pig, mouse, sheep, and cattle) of *Campylobacter* infection, and used them successfully in various research projects.
- Supervised and assisted professional, graduate, undergraduate, and high school students in their research projects; served on the Program of Studies (POS) committee of graduate students
- Collaborated, participated, and involved in writing research proposals to seek funding from both internal and external grant sources.
- Served as scientific reviewer/editor for various peer-review journals; assisted the supervisor substantially in peer reviewing manuscripts for various scientific journals.
- Presented key research findings at local, national, and international conference meetings.

- Prepared manuscripts for publication in various peer-reviewed journals.
- Managed the research lab in daily and long-term activities, implementing procedures and safety, maintaining inventory, equipment and appropriate regulatory documents, budgeting and purchasing to sustain a pleasant work environment.

Mustafa Kemal University, Hatay, Turkey. 8/2003 - 8/2005.

Assistant Professor/Assistant Scientist

- Taught veterinary microbiology, immunology and epidemiology courses to 35 veterinary medicine students.
- 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.
- Assessed routinely the quality of food and water samples using microbiological isolation and identification methods during the military service at the Army's Veterinary Services Laboratory.

The Ohio State University, Columbus/Wooster, OH. 1/1996-3/2003.

Graduate Research Associate

- Developed an agar medium for isolation and identification of *Rhodococcus equi*, an important pathogen of foals, and investigated its distribution in horse farms
- Assisted in developing an ELISA test for detecting anti-*Campylobacter* antibodies.
- Investigated on prevalence, antimicrobial resistance, and epidemiology of *Campylobacter* in poultry and chicken eggs.
- Developed and performed in vivo chicken experiments to examine the role of maternal antibodies in protection against *Campylobacter*.
- Performed laboratory and field studies to identify the sources of flock infection (vertical vs. horizontal transmission) by *Campylobacter* in poultry.
- Supervised and helped undergraduate students in their summer research projects.
- Collaborated in research projects involving many different aspects of *Campylobacter* biology using such techniques as PCR, DNA sequencing, PFGE, recombinant protein production, antimicrobial susceptibility tests, SDS-PAGE, and Western blot.
- Presented significant research findings at different level scientific meetings.
- Prepared manuscripts for publication in peer-reviewed journals.
- Assisted the advisor in manuscript reviews and preparation of grant proposals.

HONORS/AWARDS AND TRAININGS

- 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.
- Attended and received certification for 'A Field Guide to GenBank and NCBI Molecular Biology Resources' at Iowa State University, Ames, IA (2006).
- Attended several Grant Writing Workshops on multiple occasions at Iowa State University, Ames, IA (2008-2012).
- 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 contribution 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.

PROFESSIONAL ACTIVITIES AND SERVICES

- Member of American Society for Microbiology (ASM), 2001-present.
- Member of Conference of Research Workers in Animal Diseases (CRWAD), 1999-present.
 - Presider, Bacterial Pathogenesis, 2008-2010
- Member of The American Association of Veterinary Laboratory Diagnosticians (AAVLD), 2010-present
- Member of Delta Chapter of the Phi Zeta, the international honor society of veterinary medicine, 2003-present
- Serve on the Editorial Board for the following journals:
 - Avian Diseases, 2013-present
 - Frontiers in Microbiology (review editor; 2015).
- Served as peer reviewer for the following scientific journals: (since 2008)
 - 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)
 - International Journal of Food Microbiology (2013)
 - Revue de Médecine Vétérinaire (2014)
- Served as peer reviewer for research proposals submitted to: (since 2007)
 - 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 and 2014.
 - BARD, The United States-Israel Binational Agricultural Research and Development Fund, 2013
 - Iowa State University-ILHAC Grants, 2010-2015

- Invited speaker 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 in April 2009.
- Invited speaker: Antimicrobial-resistant and hypervirulent *Campylobacter jejuni* clone as an emergent pathogen in the United States. 2013. SIAM (Society for Industrial and Applied Mathematics) Student Chapter at Iowa State University, December 4, 2013, Carver Hall, ISU, Ames, IA.
- Served as a judge for poster presentations presented by 2nd Year Veterinary Summer Scholars on CVM Research day, Iowa State University, Ames, IA; August 8, 2014.

PUBLICATIONS

1. **Orhan Sahin**, Issmat I. Kassem, Zhangqi Shen, Jun Lin, Gireesh Rajashekara, and Qijing Zhang. 2015. *Campylobacter* in Poultry: Ecology and Potential Interventions. *Avian Diseases*, 59:185-200. (Invited Critical Review article).
2. **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.
3. 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. (*Corresponding author).
4. Zuowei Wu, **Orhan Sahin**, Fei Wang, Qijing Zhang. 2014. Proteomic identification of immunodominant membrane-related antigens in *Campylobacter jejuni* associated with sheep abortion. *Journal of Proteomics*, 99:111-122.
5. 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 (*equally contributed).
6. Burrough E, Terhorst S, **Sahin O**, Zhang Q. 2013. Prevalence of *Campylobacter* spp. in grow-finish pigs with diarrhea. *Anaerobe*.1-4.
7. 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.
8. 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.

9. 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.
10. **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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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. (*corresponding author).
16. Eric R Burrough, Zuwei 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.
17. 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.
18. 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.

20. 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.
21. 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 of Vet Res* 70, 1269-76.
22. **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. *Journal of Clinical Microbiology.* 46, 1663-1671.
23. 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.
24. 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*. *Antimicrobial Agents and Chemotherapy* 52, 2699-2708.
25. 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.
26. 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.
27. 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. *Antimicrobial Agents and Chemotherapy* 51, 1678-86.
28. 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. *Journal of Antimicrobial Chemotherapy* 58, 1154-9.
29. Qijing Zhang, **Orhan Sahin**, Patrick F. McDermott, Sophie Payot (2006). Fitness of antimicrobial-resistant *Campylobacter* and *Salmonella*. *Microbes and Infection* 8, 1972-1978 (review article).
30. 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*. *Antimicrobial Agents and Chemotherapy* 49, 1067-1075.

31. 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.
32. **Orhan Sahin**, Peter Kobalka, Qijing Zhang (2003). Detection and survival of *Campylobacter* in chicken eggs. *Journal of Applied Microbiology* 95, 1070-1079.
33. **Orhan Sahin**, Naidan Luo, Shouxiong Huang, and Qijing Zhang (2003). Effect of *Campylobacter*-specific maternal antibodies on *Campylobacter jejuni* colonization in young chickens. *Applied and Environmental Microbiology* 69, 5372-5379.
34. Jun Lin, **Orhan Sahin**, Linda Michel, and Qijing Zhang (2003). Critical role of CmeABC in bile resistance and in vivo colonization of *Campylobacter jejuni*. *Infection and Immunity* 71, 4250-4259.
35. 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. *Antimicrobial Agents and Chemotherapy* 47, 390-394.
36. **Orhan Sahin**, Morishita, T. and Zhang, Q. (2002). *Campylobacter* colonization in poultry: sources of infection and modes of transmission. *Animal Health Research Reviews* 3, 95-105 (review article).
37. **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. *Applied and Environmental Microbiology* 9, 3951-7.

Book Chapters:

1. **Orhan Sahin**, Zhangqi Shen, and Qijing Zhang. Methods to study antimicrobial resistance in *Campylobacter jejuni*. *Methods in Molecular Biology*. Springer. In Preparation (invited article).
2. 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. Wiley-Blackwell.
3. **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.

4. **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 (Book chapter).

POSTERS AND PRESENTATIONS

1. **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.
2. 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.
3. 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.
4. **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
5. 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.
6. **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. In Abstracts of 114th General Meeting of American Society for Microbiology, Boston. MA, USA.
7. **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.
8. **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.
9. **Sahin O**, Zhang, Q. 2012. *Campylobacter jejuni*: Pathogenic mechanisms and antimicrobial resistance. Oral Presentation. ISU Health Research Initiative: Initial Strategy Meeting, Ames, IA, USA.
10. **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.
11. 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.
12. 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.
 13. **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.
 14. **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.
 15. **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.
 16. 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).
 17. 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).
 18. **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. In Proceedings of the 88th Annual Meeting of the CRWAD.2007. Chicago, IL.
 19. **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.
 20. 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.
 21. 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.
 22. 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.

23. 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).
24. 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.
25. **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.
26. 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).
27. **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.
28. **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).
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RESEARCH PROJECTS AND FUNDING

1. Qijing Zhang, **Orhan Sahin**, Paul Plummer et al. *Campylobacter*-associated abortion in sheep. Iowa Livestock Health Advisory Council. \$75,000. 2006-2009.
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3. Q. Zhang, P. Lui, M. Yaeger, and **O. Sahin**. 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.

4. **Orhan Sahin**, 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.
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.
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9. **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.
10. 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
11. Zhang Q, John M, **Sahin O**. Development Of Broadly Protective Vaccines Against *Campylobacter*-Induced Ruminant Abortion. Pending. Submitted to USDA NIFA. \$500,000. 2015-2018
12. Zhang Q, **Sahin O**, Plummer P, Coetzee J, and Irsik M. Mitigation of fluoroquinolone-resistant *Campylobacter* in cattle. Pending Submitted to USDA NIFA. \$1,000,000. 2015-2018.

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