

Curriculum Vitae for Changqing Wu

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Education

B. S. 1997	Agricultural Product Processing	Zhejiang Agricultural University
M. S. 2000	Food Science	Zhejiang University
Ph. D. 2005	Food Technology	Clemson University

Professional Experience

Associate Professor, Department of Animal and Food Sciences, University of Delaware, 2015-present,
Assistant Professor, Department of Animal and Food Sciences, University of Delaware, 2008-2015,
Research Specialist II, Department of Animal & Veterinary Science, Clemson University, 2006- 2008,
Postdoctoral Fellow, Department of Food Science and Human Nutrition, Clemson University, 2005- 2006,
Research Assistant, Department of Food Science and Human Nutrition, Clemson University, 2002- 2005,
Assistant Professor, Department of Food Science and Technology Zhejiang University of Technology, Hangzhou, Zhejiang, P.R. China, 2000-2002,

Publications in Refereed Journals (corresponding author followed by an asterisk*)

1. Xu, W., Chen, H., **Wu, C***. (2015) Application of Pulsed Light (PL)-Surfactant Combination on Inactivation of Salmonella and Apparent Quality of Green Onions. *LWT - Food Science and Technology* 61, 596–601.
2. Sims-Mourtada, J., Opdenaker, L.M., Davis, J., **Wu, C.** (2015) Long Term, Low Dose Genistein decreases Stem Cell Populations and Sensitizes Inflammatory Breast Cancer Cell Lines to Radiation. *Cancer Studies and Molecular Medicine Open Journal* 2, 60-65.
3. Xu, W., **Wu, C***. (2014) Decontamination of *Salmonella enterica* Typhimurium on green onions using new formula of sanitizer washing and pulsed UV light (PL). *Food Research International* 62, 280-285.
4. Xu, W., **Wu, C***. (2014) Different Efficiency of Ozonated Water Washing to Inactivate *Salmonella enterica* Typhimurium on Green Onions, Grape Tomatoes, and Green Leaf Lett uces. *Journal of Food Science*, 79, M378-M383.
5. Lu, Y, Joerger, R., **Wu, C***. (2014). Similar reduction of *Salmonella enterica* Typhimurium on grape tomatoes and its cross-contamination in wash water by washing with natural antimicrobials as compared with chlorine treatment. *Food and Bioprocess Technology*, 7, 661-670.
6. Dong, X., Sikes, R., **Wu, C***. (2013) Combination of low dose of genistein and daidzein has synergistic preventive effects on isogenic human prostate cancer cells when compared

- with individual soy isoflavone. *Food Chemistry*, 141, 1923-1933.
7. Lu, L., Lu, H., **Wu, C.**, Fang, W., Yu, C., Ye, C., Shi, Y., Yu, T., Zheng, X. (2013) *Rhodosporidium paludigenum* induces resistance and defense-related responses against *Penicillium digitatum* in citrus fruit. *Postharvest Biology and Technology*, 85, 196-202.
 8. Wang, Y. Landman, B., **Wu, C.**, Gelb, J, Golovan, S. (2013). Comparison of vRNA and cRNA based reporters for detection of influenza replication. *Antiviral Research*, 98, 76-84.
 9. **Xu, W.**, Chen, H., Huang, Y., **Wu, C.***. (2013) Decontamination of *Escherichia coli* O157:H7 on Green Onions Using Pulsed Light (PL) and PL-Surfactant-Sanitizer Combinations. *International Journal of Food Microbiology*, 166, 102-108
 10. Li Y, **Wu, C.***. (2013) Enhanced removal of *Salmonella* Typhimurium from blueberries by combinations of sodium dodecyl sulfate with organic acids or hydrogen peroxide. *Food Research International*, 54, 1553-1559.
 11. Dong, X., Xu, W., Sikes, R. A. **Wu, C.***. (2012) Apoptotic Effects of Cooked and in vitro Digested Soy on Human Prostate Cancer Cells. *Food Chemistry*, 135, 1643-52.
 12. Neetoo, H., Lu, Y., **Wu, C.**, Chen, H. (2012) Use of high hydrostatic pressure to inactivate *E. coli* O157:H7 and *Salmonella enterica* internalized within and adhered to pre-harvest contaminated green onion. *Applied and Environmental Microbiology*, 78, 2063-2065.
 13. Lu, Y., **Wu, C.***. (2012). Reductions of *Salmonella enterica* on chicken breast by thymol, acetic acid, sodium dodecyl sulfate or hydrogen peroxide combinations as compared to chlorine wash. *International Journal of Food Microbiology* 152, 31-34.
 14. Lu, Y., Joerger, R., **Wu, C.***. (2011). Study of the Chemical Composition and Antimicrobial Activities of Ethanolic Extracts from Roots of *Scutellaria baicalensis* Georgi. *Journal of Agricultural and Food Chemistry*, 59, 10934-10942.
 15. Lu, Y., Turley, A., Dong, X., **Wu, C.***. (2011). Reduction of *Salmonella enterica* on Grape Tomatoes using Microwave Heating. *International Journal of Food Microbiology* 145, 349-352
 16. Dong, X., Dong, M., Turley, A., Lu, Y., Jin, T., **Wu, C.***. (2011). Antimicrobial and Antioxidant Activities of Lignin from Residue of Corn Stover to Ethanol Production. *Industrial Crops & Products*. 34, 1629-1634.
 17. Lu, Y., **Wu, C.***. (2010). Reduction of *Salmonella enterica* Contamination on Grape Tomatoes by Washing with Thyme oil, Thymol, and Carvacrol as compared with Chlorine Treatment. *Journal of Food Protection*, 73, 2270-2275.
 18. Hoffman-Pennesi, D., **Wu, C.***. (2010). The Effect of Thymol and Thyme Oil Feed Supplementation on Growth Performance, Serum Antioxidant Levels, and Cecal *Salmonella* Population in Broilers. *Journal of Applied Poultry Research*, 19, 432-443.
 19. **Wu, C.**, Duckett, S., Neel, P. S., Fontenot, J. P., Clapham, W.M. (2008). Influence of Finishing Systems on Hydrophilic and Lipophilic Oxygen Radical Absorbance Capacity (ORAC) in Beef. *Meat Science*, 80, 662-667.
 20. Li, X., He Y., **Wu, C.** (2008) Least Square Support Vector Machine Analysis for the Classification of Paddy Seeds by Harvest Year. *Information & Electrical Technologies Division of ASABE*, 51, 1793-1799.
 21. Shao, Y., He, Y., **Wu, C.** (2008). Dose Detection of Radiated Rice by Infrared Spectroscopy and Chemometrics. *Journal of Agricultural and Food Chemistry*, 56, 3960-

- 3965.
22. Li, X., He, Y., **Wu, C.** (2008). Non-destructive Discrimination of the Paddy Seeds of Different Storage Periods based on Vis/NIR Spectroscopy. *Journal of Stored Product*, 44, 264-268.
 23. **Wu, C.**, Chen, F., Wang, X., Wu, Y., Dong, M., He, G., Galyean, R., He, L., Huang, G. (2007). Identification of Antioxidant Phenolic Compounds in Feverfew (*Tanacetum parthenium*) by HPLC-ESI-MS/MS and NMR. *Phytochemical Analysis*, 18, 401-410.
 24. Li, X., He, Y., **Wu, C.**, Sun, D. (2007). Nondestructive Measurement and Fingerprint Analysis of Soluble Solid Content of Tea Soft Drink based on Vis/NIR Spectroscopy. *Food Engineering*, 82, 316-323.
 25. **Wu, C.**, Chen, F., Wang, X., Kim, H-J., He, G., Haley-Zitlin, V., Huang, G. (2006). Antioxidant Constituents in Feverfew (*Tanacetum parthenium*) Extract and Their Chromatographic Quantification. *Food Chemistry*, 96, 220-227.
 26. **Wu, C.**, Chen, F., Rushing, J., Wang, X., Kim, H-J., Huang, G., Haley-Zitlin, V., He, G. (2006). Antiproliferative Activities of Parthenolide and Golden Feverfew Extract against Three Human Cancer Cell Lines. *Journal of Medicinal Food*, 9, 55-61.
 27. Kim, H-J., Chen, F., **Wu, C.**, Wang, X., Chuang, H-Y., Jin, Z. (2004). Evaluation of Antioxidant Activity of Australian Tea Tree (*Melaleuca alternifolia*) Oil and Its Components. *Journal of Agricultural and Food Chemistry*, 52, 2849-2854.
 28. Feng, D., Zhou, J., Sun, P., **Wu, C.** (2003). Study on Postponing the Crystal of Honey. *Food Science and Technology*, 4, 34-36.
 29. **Wu, C.** (2001). Research Progress of Cellulase Production by Submerged Culture Method. *Food and Fermentation Industries*, 27, 60-64.
 30. **Wu, C.**, He, G. (2001). Effect of Chitosan in Post Processing of the Orange Dry Wine. *Acta Agriculturae Zhejiangensis*, 13, 165-168.
 31. **Wu, C.** (2001). Application of Chitosan to Technology for Clarification of Fruit Juices. *Beverage Industry*, 4, 9-11.
 32. **Wu, C.** (2001). Study on Functional Ingredients of Royal Jelly. *Journal of Bee*, 11, 32-33.
 33. **Wu, C.**, He, G. (2000). Removal of Bitterness in Orange Juice. *China Commercial Owned Industry*, 2, 53-54.
 34. He, G., Wang, Y., **Wu, C.** (2000). Study on Feasibility of the Orange Juice Fermentation. *Food Science and Technology*, 6, 45-46.
 35. He, G., **Wu, C.** (1999). Extrusion Technology in the Fermentation Industry. *China Commercial Owned Industry*, 12, 31-32.

Invited Presentations since 2008

- 1) **Wu, C.** Characterization and Application of Plant Phenolic Compounds: Lignin From Corn Stover to Ethanol Production Residues. Symposium talk presented at IFT Annual Meeting. July, 2015. Chicago, IL.
- 2) **Wu.** Characterization and Application of Plant Phenolic Compounds. Seminar talk presented at Zhejiang University. June, 2015. Hangzhou, China.
- 3) **Wu, C.**, Lu, Y., Xu, W. Antimicrobial activities of plant essential oils and their applications to improve food safety of fresh produce and meat products. August, 2012. Symposium talk presented at American Chemical Society (ACS) Annual Meeting, Philadelphia, PA, USA.

- 4) **Wu, C.** Dong, X. Potential Application of Lignin from Bio-Ethanol Production in Sustainable Antimicrobial Packaging. Symposium talk presented at IFT Annual Meeting. June, 2012, Las Vegas, NV.
- 5) **Wu, C.** Identification of Biologically Active Compounds from Medicinal Plants. January 2012, Center of Research and Discovery, Chen Shan Botanical Garden, Shanghai, China.
- 6) **Wu, C.** Research and Techniques at UD to Study Meat Quality-for future collaboration with Perdue Company. November 2011. Department of Animal and Food Sciences, University of Delaware, Newark, DE.
- 7) **Wu, C.** Super Food for Prevention of Prostate Cancer? May 2011. American Cancer Society, New Castle, DE.
- 8) **Wu, C.** Identification of Biologically Active Compounds from Chinese Traditional Medicines and Vegetables. January 2011, Department of Chemistry and Biochemistry, University of Delaware, Newark, DE.
- 9) **Wu, C.** Pre-harvest and Post-harvest Food Safety Research Update from University of Delaware. S-1033 Multi State Project Meeting. October 2010. Estes Park, Colorado.
- 10) **Wu, C.** Antimicrobial Packaging. International Conference on Food, Environment, and Public Health. June 2009, Xi'an City, Shanxi Province, China.
- 11) **Wu, C.** Study on Dietary Antioxidants. June 2009, Zhejiang University of Technology, Hangzhou, China.
- 12) **Wu, C.** Antioxidants and Antioxidant Assays. June 2009, China Agricultural University, Beijing, China.
- 13) **Wu, C.** Dietary Antioxidants and Antimicrobials. May 2009, Novus International Inc., St. Charles, MO.
- 14) **Wu, C.** Pre-harvest and Post-harvest Food Safety Research Update from University of Delaware. S-1033 Multi State Project Meeting. November 2008, Baton Rouge, LA.

Grants Awarded

Epps, T, **Wu, C.** NSF (\$480,000) 7/01/2015-6/30/2018. BPA Replacement with Non Toxic Biobased Monomers

Wu, C. NE Sun Grant. (\$46,152) 07/01/2014-06/30/2015. Utilizing Lignocellulose-to-Ethanol Residue for Multifunctional Natural Products. PI.

Wu, C. Chen, H., Hicks, D. Sea Grant. (\$14,170) 02/01/2014-01/31/2016.
Is Tulane Virus a Suitable Viral Surrogate to Study Cooking Impacts on Human Noroviruses Contaminated Oysters. PI.

Wu, C. Center for Produce Safety. (\$49,740) 01/01/2014-06/30/2015. Enhancement of Forced- Air Cooling to Reduce *Listeria monocytogenes*, *Salmonella*, and/or Total Surface Microbiota on Cantaloupes. PI.

Wu, C. Sims Mourtada J. United Soybean Board Soy Health Research Program incentive award (\$10,000). The Effect of Soy Isoflavones on Cross-talk Between Cancer Stem Cells and Immune Cells. PI.

Wu, C., Sikes, R. Schmidt, C. UDRF-Strategic Initiative. (\$45,000) 12/01/2012-06/30/2015. Is Soy Food Good for the Prevention of Prostate Cancer? PI.

Cao, H., **Wu, C.** EPA (\$14,999). 8/15/13-5/14/15. Environmentally Friendly Leather Tanning using Enzymes. Co-PI.

Wu, C. Teaching Grant (\$1,000) 2012. Flipped Class, **UD IT.** PI

Chen, H, Niemira, B., **Wu, C.,** Ozbay, G., Jiang, J., Li, J., Gurtler, J., Lee, K., Pivarnik, L., Worobo, R., Su, Y. USDA AFRI (total funding \$4,999,000, and my funding \$450,000) 2011-2016. Inactivation of enteric Foodborne Viruses in High Risk Foods by Non-thermal Processing Technologies. Co-PI.

Wu, C. and Parcels, M., Avian Biosciences Center Grant Program (\$25,000). 11/15/2008-6/30/2009. Potential Feed Additives for Poultry: Antioxidant, Antibacterial and Antiviral Effects of Plant-derived Compounds. PI

Sims, T., Jin, Y., Sparks, D., Chen, H., Kniel, K.E., Saylor, W., **Wu, C.,** Dou, Z., Ferguson, J., Galligan, D., Wu, Z., Wang, F., Zhang, F. University of Delaware Center for International Studies Global Partnerships and Initiatives Program. (\$20,000) 2009-2010. Building Research- based Collaborations with China Agricultural University in the Animal, Food, and Environmental Sciences. Co-PI.

Wu, C. UD College of Agricultural and Natural Resources International Graduate Education Travel Grant (\$1,000) 2009. PI.

Wu, C. Contractual Agreements to Dr. Samuel Besong at Delaware State University, USDA AFRI.(\$760) 9/10-12/15/2010. Evaluation of the Health Benefits of Njangsa Oil Seed through its Effect on Expression Genes involved in Lipid Biosynthesis in Hens.

Published Research Abstracts since 2008 (studies conducted at the University of Delaware)

- 1) Xu, W., Chen, H., Wu, C. Application of Pulsed Light (PL) and Sanitizer Washing to Decontaminate *Escherichia coli* O157:H7 and *Salmonella*, and Preserve Quality of Frozen Raspberries. IFT Program and Abstract Book Annual Meeting. Chicago, IN, USA. July, 2015.
- 2) Xu, W., Chen, H., Wu, C. Attachment of E. coli O157:H7 on Produce and Damage of Bacterial Cell Envelope by Dry Pulsed Light (PL), Wet PL and PL-Surfactant Combinations. IAAP Program and Abstract Book Annual Meeting. Portland, OR, USA. July, 2015.
- 3) Jang, C., Schmidt, C., Wu, C. Transcriptome Profiling of Human Prostate Cancer Cell Line LNCaP Treated with Individual Soy Isoflavones or Their Combination. EB Annual Meeting. Boston, MA, USA, March 2015.
- 4) Xu, W., Chen, H., **Wu, C.** Application of Pulsed Light (PL) to Decontaminate *Escherichia coli* O157:H7 and *Salmonella* and Preserve Quality on Raw Raspberries. IAAP Program and Abstract Book Annual Meeting. Indianapolis, IN, USA. August, 2014.

- 5) Xu, W., Chen, H., **Wu, C.** Application of Pulsed Light (PL)-Surfactant Combination on Inactivation of *Salmonella* on Green Onions. IFT Program and Abstract Book Annual Meeting. New Orleans, LA, USA. June, 2014.
- 6) Cao, H., Scudder, C., Xu, W., Siron, L., **Wu, C.** Environmentally Friendly Leather Tanning using Enzymes, accepted as Oral Presentation in the 2014 ITAA Annual Conference, Charlotte, NC, USA. November 12-16, 2014.
- 7) Xu, W., Li, Y., Chen, H., **Wu, C.** Decontamination of *Escherichia coli* O157:H7 on Green Onions Using Pulsed Light (PL) and PL-Surfactant-Sanitizer Combinations. IFT Program and Abstract Book Annual Meeting. Chicago, IL. July, 2013.
- 8) Xu, W., **Wu, C.** Inactivation of *Salmonella* on Cantaloupe and Green onion Using Pulsed Light (PL) and PL-SDS Combination. IAFP Program and Abstract Book Annual Meeting. Charlotte, NC, USA. July, 2013.
- 9) Li, Y., Xu, W., **Wu, C.** Ehrich M. Decontamination of *Salmonella enterica* on blueberries by washing with organic acid, ozone, and mild Heat. IFT Program and Abstract Book Annual Meeting. Las Vegas, NV, June, 2012.
- 10) Xu, W., **Wu, C.** Chen, H. Effect of sanitizers and ozone combinations against *Salmonella enterica* Typhimurium on green onions. IAFP Program and Abstract Book Annual Meeting. Providence, RI, USA. July, 2012
- 11) Xu, W., **Wu, C.** Influence of Time, Temperature and pH on Efficiency of Bubbling Ozone Treatment to Inactivate *Salmonella enterica* Typhimurium on Green Onions, Grape Tomatoes, and Green Leaf Lettuces. Oral Presentation at American Chemical Society (ACS) Annual Meeting, Philadelphia, PA, USA, August, 2012.
- 12) Xu, W., **Wu, C.** Antioxidant and Anticancer Effects of *Taxillus nigrans* (Hance) Danser Extract-a Chinese Parasitic Plant. Poster Presentation at American Chemical Society (ACS) Annual Meeting, Philadelphia, PA, USA, August, 2012.
- 13) Jang, C., **Wu, C.** Induction of Apoptosis and Inhibition of Proliferation on Prostate Cancer Cells by Bitter Melon Extract. Poster Presentation at American Chemical Society (ACS) Annual Meeting, Philadelphia, PA, USA, August, 2012.
- 14) Dong, X., Xu, W., **Wu, C.** Influence of Cooking and *in vitro* Digestion on Antioxidant, Isoflavone Content, Antiproliferative and Apoptotic Effects on Human Prostate Cancer Cells of the Soy Extract. Poster presentation presented at AICR Annual Research Conference, Washington D.C, November, 2011.
- 15) Dong, X., **Wu, C.** Antiproliferative and Apoptotic Effects of Genistein and Daidzein on Human Prostate Cancer Cells. Poster presentation presented at IFT annual meeting, New Orleans, LA, June, 2011.
- 16) Lu, Y., **Wu, C.** Reduction of *Salmonella enterica* on Grape Tomatoes using Microwave Heating. Poster presentation presented at IFT annual meeting, New Orleans, LA, June, 2011.
- 17) Hoffman-Pennesi, D., Xu, W., Lu, Y., **Wu, C.** Histopathology of broilers fed thymol and thyme oil supplemented feed and simultaneous determination of B vitamins in the breast meat by HPLC. Poster presentation presented at IFT annual meeting, New Orleans, LA, June, 2011.
- 18) Dong, X., **Wu, C.** Antiproliferative and apoptotic effects of daidzein, genistein and their combination on human prostate cancer cells. Poster presentation presented at Northeastern Functional Food Forum. Beltsville, Maryland, May, 2010
- 19) Nemeč, L.M., **Wu, C.**, S. Cordova, K. Davison, and T. F. Gressley. The effect of

thymol on intracellular and extracellular reactive oxygen species production by bovine neutrophils. Poster presentation presented at ADSA National Meeting, Denver, CO, July, 2010.

- 20) Lu, Y., **Wu, C.** Efficacy of thymol, carvacrol, and thyme essential oil against *Salmonella enterica* serovars on grape tomato. Poster presentation presented at IFT annual meeting, Chicago, IL, July, 2010.
- 21) Lu, Y., **Wu, C.** Bioactive chemical composition, antioxidant activity and antibacterial properties of ethanol extracts from *Scutellaria baicalensis* Georgi. Poster presentation presented at IFT annual meeting, Chicago, IL, July, 2010.
- 22) Hoffman-Pennesi, D., **Wu, C.** The effect of thymol and thyme oil feed supplementation on growth performance and serum antioxidant levels in broilers. Poster presentation presented at IFT annual meeting, Chicago, IL, July, 2010.
- 23) Hoffman-Pennesi, D., **Wu, C.** Antioxidant and antibacterial activities of cinnamon bark oil, thyme oil, and their major components as compared to caffeic acid. Poster presentation presented at ACS Fall national meeting. Washington D.C., August, 2009.

Professional Society Memberships

Institute of Food Technologists (IFT)	2003-present
American Chemical Society (ACS)	2008-present
International Association of Food Protection (IAFP)	2010-present
American Association for the Advancement of Science (AAAS)	2010-2012
American Institute of Cancer Research (AICR)	2012-2013

Awards and Honors

EPA P3 Competition and National Sustainable Design Honorable Mention	2014
Wade Stackhouse Graduate Fellowship, Clemson, SC	2003
Wade Stackhouse Graduate Fellowship, Clemson, SC	2004
Semifinalist in Graduate Research Paper Competition of IFT	2004
Fourth Place in Graduate Student Research Paper Competition of Dixie IFT	2003
Outstanding Young Scholar, Zhejiang University of Technology, China	2001
Outstanding Graduate of Zhejiang University, Hangzhou, China	2000
Outstanding Student Volunteer, Zhejiang University, China,	1998,1999
Scholarship for Excellent Student, Zhejiang University, China	1997-1999
Nongxue Scholarship for Excellent Graduate Student, Zhejiang University, China	1998
Excellent Graduate of Zhejiang Province, Hangzhou, China	1997
Excellent Graduate of Zhejiang Agricultural University, Hangzhou, China	1997
Zhu Kezhen Scholarship, Zhejiang Agricultural University, China	1996
Scholarship for Excellent Student, Zhejiang Agricultural University, China	1995-1997
Outstanding Student Leader, Zhejiang Agricultural University, China	1996, 1998

Current Graduate Students

Chan Ho Jang, Ph.D student, started in September 2011

Lingxiao Shao, M.S. student, started in July 2014

Past Graduate Students

Wenqing Xu	PhD (Winter 2014)
Yingying Li	M.S. (Summer 2013)
Yingjian Lu	M.S. (Spring 2011)
Xin Dong	M.S. (Summer 2011)
Dana Hoffman-Pennesi	M.S. (Summer 2010)

Committee Member of Current and Past Graduate Students

Robert Sido	M.S. (expect Fall 2014)
Yaoping Huang	M.S. (Spring 2011)
Zheng Jiang	M.S. (Spring 2010)

Undergraduate Student Researchers

Taloy Jaffe, June 2014-August 2014
Yuchen Tu, June 2014- August 2014
Melissa Ehrich, June 2011-May 2012
Alex Turley, June 2009-December 2010
Sarah Cordova, June 2009-May 2010, co-advisor with Dr. Tanya Gressley

Visiting Scholars

Yihong Jiang, 2010-2011
Li Li, 2012-2013

Student Awards and Honors

Chan Ho Jang, University of Delaware Professional Development Award 2015
Wenqing Xu, University of Delaware Professional Development Award 2011–2013