

Suzanne D. Johanningsmeier
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a. Professional Preparation

Purdue University	Food Science	B.S., 1995
North Carolina State University	Food Science	M.S., 1999
North Carolina State University	Food Science	Ph.D., 2011

b. Appointments

2011-present Research Food Technologist, USDA-ARS Food Science Research Unit (FSRU)
2011- present Assistant Professor, Food Science, North Carolina State University
2005-11 Food Technologist Student Trainee, USDA-ARS, FSRU, Raleigh, NC
2002-05 Biological Sciences Laboratory Technician, USDA-ARS FSRU, Raleigh, NC
2000-02 Research Technician, Food Science, North Carolina State University

c. Professional Scholarly Activities

Conducted translational research to facilitate the implementation of ARS-developed preservation technologies in commercial scale cucumber fermentation using a 1.1% CaCl₂ brine for reduced environmental impact, 2011-2015.

Serves as technical advisor to the Pickle Packer's International Manufacturing and Technology Committee, 2011-present.

Invited lecturer in the Acidified Foods GMP School, 2012-2014.

Course development and Instructor, FS 495 Research Experience in Food and Bioprocessing Sciences, Department of Food, Bioprocessing and Nutrition Sciences, NC State, Raleigh, NC, 2012-2014.

Supervised the completion of M.S. thesis programs for 3 students; current advisor for one M.S. student; co-advisor for two M.S. students and one Ph.D. student; and serves on 8 graduate student committees, 2011-present.

Discovered that a specific lactic acid bacterium, *Lactobacillus buchneri*, and a closely related species, *L. parafarraginis* were key players in the initiation of spoilage of fermented cucumbers under anaerobic conditions.

Developed a nontargeted, comprehensive 2-dimensional gas chromatography-time-of-flight mass spectrometry (GC×GC-TOFMS) method for analysis of fermented cucumber volatiles during anaerobic spoilage, resulting in the identification of 137 components, many of which were reported for the first time in fermented cucumbers.

Developed and conducted a series of lectures and group activities in experimental design and data analysis for FS/BBS 475 Problems and Design in Food and Bioprocessing Science, 2009-present.

Invited lecturer in food metabolomics, 2009-2013.

Redefined the basic understanding of the chemical stimulus that elicits sour taste in foods and solutions by demonstrating that regardless of other structural features, organic acid molecules are equally sour provided they have at least one undissociated carboxyl group in solution.

Demonstrated that reduced salt sauerkraut fermentation is viable through appropriate application of a robust starter culture to improve texture and flavor quality.

Conducted research related to chemical and sensory properties of fermented, acidified, and minimally processed vegetables including sour taste chemistry, reduction of salt used for sauerkraut fermentation, fresh-cut sweet potato processing and storage, and process-ready fermented cucumber products 2000-2011.

Investigated the occurrence and impact of the malolactic reaction in cabbage fermentations for sauerkraut production, 1995-1999.

Developed and Documented a HACCP Plan for Fresh Cut Fruits and Vegetables, 1995, Indianapolis Fruit, Indianapolis, IN

d. Honors and awards

Institute of Food Technologists LEAD 360 cohort, 2014.

USDA-ARS SAA Technology Transfer Award: Food Science Research Unit-Mt. Olive Pickle Company-B&G Foods, Raleigh, NC; Citation: For commercial scale inception of the newly developed sodium chloride free cucumber fermentation technology, 2014.

Member, Phi Tau Sigma, The Honor Society of Food Science and Technology, Phi Beta Kappa, and Gamma Sigma Delta

Honored by the Food Science Club at North Carolina State University for outstanding service to the club, 2012.

Outstanding Graduate Teaching Assistant, North Carolina State University Graduate Student Association, 2009

Extra Effort Award for contributions to successful NRI grant proposal to study sour taste perception of organic acids, USDA-ARS, 2004

e. Collaborators & Grants

Pickle Packer's International, Inc.: Johanningsmeier SD, Pérez-Díaz IM, and Breidt F. Biochemical and microbiological analyses of pickled vegetable samples to facilitate technology transfer and address stakeholders' troubleshooting and processing needs. \$121,978, 2014-2019.

Chicago Pickle Company: Pérez-Díaz IM, Johanningsmeier SD, and Breidt F. Incorporation of Probiotic Cultures in Commercial Refrigerated Cucumber Products. \$12,240, 2014.

Mt. Olive Pickle Company: Johanningsmeier SD. Impact of Commercial Processing variables on Texture Quality of Pickles Produced using Environmentally-Friendly Calcium Chloride Fermentation. \$75,900, 2013-2015.

University of Delaware: Johanningsmeier SD. Influence of starter cultures on the volatile profiles of fermented vegetative matter. \$6,000, 2013-2014.

Pickle Packer's International, Inc.: Breidt F, Johanningsmeier SD, and Pérez-Díaz IM (Co-PI's) Research relevant to the improvement of pickling technologies, and the quality and safety of finished products. \$35,000 annually, 2011-2014.

f). Publications

Johanningsmeier, S.D. and McFeeters, R.F. Metabolic footprinting of *Lactobacillus buchneri* during anaerobic spoilage of fermented cucumbers using a nontargeted, GCxGC-ToFMS platform. International Journal of Food Microbiology. *Submitted.*

Wilson E.M., **Johanningsmeier S.D.**, Osborne J.A. Consumer Acceptability of Cucumber Pickles Produced Using an Environmentally-Friendly Fermentation in Calcium Chloride Brine. J Food Sci. *In revision.*

Pérez-Díaz, I.M., McFeeters R.F., Moeller L., Fornea D.S., Hayes J., **Johanningsmeier S.D.**, Gilbert C., Custis N., Beene K., Bass D. Commercial scale cucumber fermentations brined with calcium chloride instead of sodium chloride. J Food Sci. *In revision.*

Pérez-Díaz, I.M., **Johanningsmeier, S.D.**, Anekella, K., Price, R., Daughtry, K.V., Borges, M., Bream, C., Connelly, L., Dieck, S.E., Levi, M.T., McMurtrie, E.K., Smith, R.E., Theora, J.C., Wendland, P. and Arellano, C. Selection of starter culture(s) for commercial cucumber preservation using a screening design for fermentation potential and antimicrobial activity assays. *In revision.*

Wolter, E.M. and **Johanningsmeier, S.D.** The taste of calcium salts in foods: Implications for sodium-free cucumber fermentations. Trends in Food Science and Technology. *In revision.*

Pérez-Díaz, I.M., Breidt, F., Buescher, R.W., Arroyo-López, F.N., Jiménez-Díaz, R., Fernández, A.G., Gallego, J.B., Yoon, S.S. and **Johanningsmeier, S.D.** 2014. Chapter 51: Fermented and Acidified Vegetables in Compendium of Methods for the Microbiological Examination of Foods, 5th edition. (Book Chapter)

Johanningsmeier, S.D. and McFeeters, R.F. 2013. Metabolism of lactic acid in fermented cucumbers by *Lactobacillus buchneri* and related species, potential spoilage organisms in reduced salt fermentations. Food Microbiology. 35(2):129-135.

Breidt, F., Medina, E., Huang, H.-Y., Wafa, D., Franco, W., Pérez-Díaz, I.M., **Johanningsmeier, S.D.** and Kim, J.H. 2013. Characterization of cucumber fermentation spoilage bacteria by enrichment culture and 16S rDNA cloning. J Food Sci. 78(3):M470-M476.

Franco, W., Pérez-Díaz, I.M., **Johanningsmeier, S.D.** and McFeeters, R.F. 2012. Characteristics of spoilage-associated secondary cucumber fermentation. Applied and Environmental Microbiology. 78(4):1273-1284.

Johanningsmeier, S.D., Franco, W., Pérez-Díaz, I.M. and McFeeters, R.F. 2012. Influence of sodium chloride, pH, and lactic acid bacteria on anaerobic lactic acid utilization during fermented cucumber spoilage. J Food Sci. 77(7):M397-M404.

Johanningsmeier, S.D. and Harris, G.K. 2011. Pomegranate as a functional food and nutraceutical source. *Annual Review of Food Science and Technology* 2:181-201. (Review)

Johanningsmeier, S.D. and McFeeters, R.F. 2011. Detection of volatile spoilage metabolites in fermented cucumbers using nontargeted, comprehensive 2-dimensional gas chromatography-time-of-flight mass spectrometry (GC×GC-TOFMS). *J Food Sci.* 76(1):C168-C177.

Neta, E.R.D., **Johanningsmeier, S.D.**, Drake, M.A. and McFeeters, R.F. 2009. Effects of pH adjustment and sodium ions on sour taste intensity of organic acids. *Journal of Food Science.* 74(4):S165-S169.

Johanningsmeier, S.D., McFeeters, R.F., Fleming, H.P. and Thompson, R.L. 2007. Effects of *Leuconostoc mesenteroides* starter culture on fermentation of cabbage with reduced salt concentrations. *J Food Sci.* 72(5):M166-M172.

Da Conceicao Neta, E.R., **Johanningsmeier, S.D.**, Drake, M.A. and McFeeters, R.F. 2007. A chemical basis for sour taste perception of acid solutions and fresh-pack dill pickles. *J Food Sci.* 72(6):S352-S359.

Da Conceicao Neta, E.R., **Johanningsmeier, S.D.** and McFeeters, R.F. 2007. The chemistry and physiology of sour taste - A review. *J Food Sci.* 72(2):R33-R38. (Review).