

JEFFERY R. BROADBENT, Ph.D.

Associate Vice President for Research and Associate Dean for Graduate Studies

Professor of Dairy Microbiology

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PROFESSIONAL EXPERIENCE

Associate Vice President for Research and Assistant Dean of Graduate Studies, Office of Research and Graduate Studies, July 2011-present.

Associate Vice President for Research Integrity and Support, Office of the Vice President for Research, July 2006-2011.

Professor, USU Department of Nutrition, Dietetics, and Food Sciences, April 2003-present.

Current Appointment: Administration (60%) and Research (40%)

Visiting Scientist, May-December, 2001 (sabbatical), University of Wisconsin Genome Center, Department of Food Science, and Wisconsin Center for Dairy Research, University of Wisconsin, Madison

Associate Professor, Dept. NDFS, April 1998-2003.

Assistant Professor, Dept. NDFS, April 1992-1998.

EDUCATION

<i>Degree</i>	<i>Year</i>	<i>Institution</i>
B.S., cum laude Major: Biology with biochemistry emphasis Minor: Chemistry.	1987	Utah State University, Logan
Ph.D. Major: Nutrition and Food Sciences with focus on genetics and physiology of lactic acid bacteria	1992	Utah State University, Logan

AWARDS AND HONORS

Department of Nutrition and Foods Sciences Researcher of the Year, 2012.

Department of Nutrition, Dietetics and Foods Sciences Winder Professor, 1995, 1997, 2004-2007.

Lactic Acid Bacteria Industrial Platform International Science Award for Outstanding Excellence in Lactic Acid Bacteria Research with an Industrial Relevance, 2005.

American Dairy Science Association DSM Food Specialties Award, 2002.

Department of Nutrition and Foods Sciences Researcher of the Year, 2002.

Department of Nutrition and Foods Sciences Teacher of the Year, 1997.

Utah State University College of Family Life Researcher of the Year, 1996.

Outstanding Paper of the Biological Sciences Division Award at the annual meeting of the Utah Academy of Sciences, Arts, and Letters, 1994.

First-place, American Dairy Science Association Dairy Foods Division graduate student scientific paper presentation competition, Raleigh, NC, 1990.

Utah State University Provost Summer Fellow, 1990.

Food and Agricultural Sciences National Needs Graduate Fellow Award from the United States Department of Agriculture-Agricultural Research Services, 1989-1991.

RESEARCH CONTRIBUTIONS

Interests and emphases: My research interests principally involve systems biology of lactic acid bacteria used in food. As part of that work, my group has been heavily involved in genomic analysis of lactic acid bacteria, including genome sequence determination of *Lactobacillus helveticus* and *Lactobacillus casei*. Other interests and activities include probiotics research with *L. casei* and *Bifidobacterium* spp., and research to control bacterial pathogens in meat foods.

Publications in Peer-Reviewed Journals:

[‡]graduate student for whom I served as committee chair; [†]graduate student for whom I served as committee member; [∞]undergraduate researcher I mentored.

1. Oberg[‡], T. S., R. E. Ward, J. L. Steele, and J. R. Broadbent. 2013. Genetic and physiological responses of *Bifidobacterium animalis* ssp. *lactis* to hydrogen peroxide stress. *J. Bacteriol.* (in press).
2. Broadbent, J. R., C. Brighton, D. J. McMahon, N. Farkye, M. E. Johnson, and J. L. Steele. 2013. Microbiology of Cheddar cheese made with different fat contents using a *Lactococcus lactis* single-strain starter. *J. Dairy Sci.* 96:4212-4222.
3. Cefalo[†], A. D., J. R. Broadbent, and D. L. Welker. 2013. *Streptococcus thermophilus* Wzh functions as a phosphotyrosine phosphatase. *Can. J. Microbiol.* 59:391-398.
4. Steele, J.L., J. R. Broadbent, and J. Kok. 2012. Perspectives on the contribution of lactic acid bacteria to cheese flavor development. *Curr. Opin. Biotechnol.* 24:135-141.
5. Broadbent, J. R., E. C. Neeno-Eckwall, B. Stahl, K. Tandee, H. Cai, W. Morovic, P. Horvath, J. Heidenreich, N. T. Perna, R. Barrangou, and J. L. Steele. 2012. Analysis of the *Lactobacillus casei* supragenome and its influence in species evolution and lifestyle adaptation. *BMC Genomics* 13:533.
6. Tompkins T. A., G. Barreau, and J. R. Broadbent. 2012. A complete genome sequence of *Lactobacillus helveticus* R0052, a commercial probiotic strain. *J. Bacteriol.* 194:6349.
7. Ortakci, F., J. R. Broadbent, W. R. McManus, and D. J. McMahon. 2012. Survival of microencapsulated probiotic *Lactobacillus paracasei* LBC-1e during manufacture of Mozzarella cheese and simulated gastric digestion. *J. Dairy Sci.* 95:6274-6281.
8. Tan, W. S., M. F. Budinich, R. Ward, J. R. Broadbent, and J. L. Steele. 2012. Optimal growth of *Lactobacillus casei* in a Cheddar cheese ripening model system requires exogenous fatty acids. *J. Dairy Sci.* 95:1680–1689.
9. Oberg[‡], T. S., R. E. Ward, J. L. Steele, and J. R. Broadbent. 2012. Identification of plasmalogens in the cytoplasmic membrane of *Bifidobacterium animalis* subsp. *lactis*. *Appl Environ. Microbiol.* 78:880-884.
10. Cefalo[†], A. D., J. R. Broadbent, and D. L. Welker. 2011. Intraspecific and interspecific interactions among proteins regulating exopolysaccharide synthesis in *Streptococcus thermophilus*, *Streptococcus iniae*, and *Lactococcus lactis* ssp. *cremoris* and the assessment of potential lateral gene transfer. *Can. J. Microbiol.* 57:1002-1015.
11. Oberg[‡], T. S., J. L. Steele, S. C. Ingham, V.V. Smeianov, E. P. Briczinski, A. Abdalla, and J. R. Broadbent. 2011. Intrinsic and inducible resistance to hydrogen peroxide in *Bifidobacterium* species. *J. Ind. Microbiol. Biotechnol.* 38:1947–1953.
12. Budinich, M., I. Diaz-Muñiz, H. Cai, S. A. Rankin, J. R. Broadbent and J. L. Steele. 2011. Growth of *Lactobacillus paracasei* ATCC 334 in a cheese model system: a biochemical approach. *J. Dairy Sci.* 94:5263–5277.

13. Broadbent, J. R., H. Cai, R. L. Larsen, J. E. Hughes, D. L. Welker, V. G. De Carvalho, T. A. Tompkins, Y. Ardö, F. Vogensen, A. De Lorentiis, M. Gatti, E. Neviani, and J. L. Steele. 2011. Genetic diversity in proteolytic enzymes and amino acid metabolism among *Lactobacillus helveticus* strains. *J. Dairy Sci.* 94:4313–4328.
14. Carpenter, C. E., J. V. Smith[‡], and J. R. Broadbent. 2011. Decontamination and residual effects against pathogens from washing meat surfaces with 2% levulinic, acetic, and lactic acids. *Meat Sci.* 88:256-260.
15. Cefalo[†], A. D., J. R. Broadbent, and D. L. Welker. 2011. Protein-protein interactions among the components of the biosynthetic machinery responsible for exopolysaccharide production in *Streptococcus thermophilus* MR-1C. *J. Appl. Microbiol.* 110:801-812.
16. Broadbent, J. R., R. L. Larsen, V. Deibel, and J. L. Steele. 2010. Physiological and transcriptional response of *Lactobacillus casei* ATCC 334 to acid stress. *J. Bacteriol.* 192:2445-2458.
17. Cai, H., R. Thompson, J. R. Broadbent, and J. L. Steele. 2009. Genome sequence and comparative genome analysis of *Lactobacillus casei*: insights into their niche-associated evolution. *Genome Biol. Evol.* 1:239-257.
18. Barrangou, R., E. P. Briczinski, L. L. Traeger, J. R. Loquasto, M. Richards, P. Horvath, A.-C. Coûté-Monvoisin, G. Leyer, S. Rendulic, J. L. Steele, J. R. Broadbent, T. Oberg[‡], E. G. Dudley, S. Schuster, D. A. Romero, and R. F. Roberts. 2009. Comparison of the complete genome sequences of *Bifidobacterium animalis* subsp. *lactis* DSM 10140 and BI-04. *J. Bacteriol.* 191:4144-4151.
19. Carpenter, C. E., and J. R. Broadbent. 2009. External concentration of organic acid anions and pH: key independent variables for studying how organic acids inhibit growth of bacteria in mildly acidic foods. *J. Food Sci.* 74:R12-R15.
20. Sharp^o, M., D. J. McMahon, and J. R. Broadbent. 2008. Comparative evaluation of yogurt and low-fat Cheddar cheese as delivery vehicles for probiotic *Lactobacillus casei*. *J. Food Sci.* 73:M375-M377.
21. Thompson[‡], R. L., C. E. Carpenter, S. Martini, and J. R. Broadbent. 2008. Control of *Listeria monocytogenes* in ready-to-eat meats containing sodium levulinate, sodium lactate, or a combination of sodium lactate and sodium diacetate. *J. Food Sci.* 73:M239-M244.
22. Christiansen[‡], J. K., J. E. Hughes, B. T. Rodríguez, D. L. Welker, J. L. Steele, and J. R. Broadbent. 2008. Phenotypic and genotypic analysis of amino acid auxotrophy in *Lactobacillus helveticus* CNRZ 32. *Appl. Environ. Microbiol.* 74:416-423.
23. Cogan, T. M., J. Steele, J. Broadbent, N. P. Shah, and Z. Ustunol. 2007. Advances in starter cultures and cultured foods. *J. Dairy Sci.* 90:4005-4021.
24. Cai, H., B. T. Rodríguez, W. Zhang, J. R. Broadbent, and J. L. Steele. 2007. Genetic and phenotypic characterization of *Lactobacillus casei* isolated from different ecological niches suggests frequent recombination and niche specificity. *Microbiol.* 153:2655-2665.
25. Lee, W.-J., D. S. Banavara, J. E. Hughes, J. K. Christianen[‡], J. L. Steele, J. R. Broadbent, and S. A. Rankin. 2007. Role of cystathionine β -Lyase in amino acid catabolism to sulfur volatiles by genetic variants of *Lactobacillus helveticus* CNRZ 32. *Appl. Environ. Microbiol.* 73:3034-3039.
26. Smeianov, V. V., P. Wechter, J. R. Broadbent, J. E. Hughes, B. Rodriguez, T. K. Christensen, Y. Ardo, and J. L. Steele. 2007. Comparative high-density microarray analysis of gene expression during growth of *Lactobacillus helveticus* in milk versus rich culture medium. *Appl. Environ. Microbiol.* 73:2661-2672.
27. Burne, R. A., D. Bessen, J. Broadbent, and J.-P. Claverys. 2007. The seventh international conference on the genetics of *Streptococci*, *Lactococci* and *Enterococci*. *J. Bacteriol.* 188:1209-1218.

28. Makarova, K., A. Slesarev, Y. Wolf, A. Sorokin, B. Mirkin, E. Koonin, A. Pavlov, N. Pavlova, V. Karamychev, N. Polouchine, V. Shakhova, I. Grigoriev, Y. Lou, D. Rohksar, S. Lucas, K. Huang, D. M. Goodstein, T. Hawkins, V. Plengvidhya, D. Welker, J. Hughes, Y. Goh, A. Benson, K. Baldwin, J.-H. Lee, I. Díaz-Muñiz, B. Dosti, V. Smeianov, W. Wechter, R. Barabote, G. Lorca, E. Altermann, R. Barrangou, B. Ganesan, Y. Xie, H. Rawsthorne, D. Tamir, C. Parker, L. McKay, F. Breidt, J. Broadbent, R. Hutkins, D. O'Sullivan, J. Steele, G. Unlu, M. Saier, T. Klaenhammer, P. Richardson, S. Kozyavkin, B. Weimer, and D. Mills. 2006. Comparative genomics of the lactic acid bacteria. *Proc. Natl. Acad. Sci. USA* 103:15611-15616.
29. Boucher[‡], B., C. Brotherson, and J. R. Broadbent. 2006. Effect of starter and nonstarter lactic acid bacteria on medium redox. *Aust. J. Dairy Technol.* 61:116-118.
30. Steele, J. L., M. F. Budinich, H. Cai, S. C. Curtis[‡], and J. R. Broadbent. 2006. Diversity and metabolic activity of *Lactobacillus casei* in ripening cheddar cheese. *Aust. J. Dairy Technol.* 61:53-60.
31. Carunchia Whetstine, M. E., M. A. Drake, J. R. Broadbent, and D. McMahon. 2006. Enhanced nutty flavor formation in Cheddar cheese made with a malty *Lactococcus lactis* adjunct culture. *J. Dairy Sci.* 89:3277-3284.
32. Ventura, M., C. Canchaya, V. Bernini, E. Altermann, R. Barrangou, S. McGrath, M. J. Claesson, Y. Li, S. Leahy, C. D. Walker, R. Zink, E. Neviani, J. Steele, J. Broadbent, T. R. Klaenhammer, G. F. Fitzgerald, P. O'Toole, and D. van Sinderen. 2006. Comparative genomics and transcriptional analysis of prophages identified in the genomes of *Lactobacillus gasseri*, *Lactobacillus salivarius* and *Lactobacillus casei*. *Appl. Environ. Microbiol.* 72:3130-3146.
33. Broadbent, J. R., B. Rodriguez, P. Joseph[†], E. A. Smith[∞], and J. L. Steele. 2006. Conversion of *Lactococcus lactis* cell envelope proteinase specificity by partial allele exchange. *J. Appl. Microbiol.* 100:1307-1317.
34. Sridhar, V. R., J. E. Hughes, D. L. Welker, J. R. Broadbent, and J. L. Steele. 2005. Identification and functional analysis of endopeptidase genes from the genomic sequence of *Lactobacillus helveticus* CNRZ 32. *Appl. Environ. Microbiol.* 71:3025-3032.
35. Broadbent, J. R., S. Gummalla[‡], J. E. Hughes, M. E. Johnson, S. Rankin, and M. A. Drake. 2004. Overexpression of *Lactobacillus casei* D-hydroxyisocaproate dehydrogenase in Cheddar cheese. *Appl. Environ. Microbiol.* 70:4814-4820.
36. Broadbent, J. R., K. Houck, M. E. Johnson and C. J. Oberg. 2003. Influence of adjunct use and cheese microenvironment on nonstarter lactic acid bacteria populations in Cheddar-type cheese. *J. Dairy Sci.* 86:2773-2782.
37. White[†], S. R., J. R. Broadbent, C. J. Oberg, and D. J. McMahon. 2003. Effect of *Lactobacillus helveticus* and *Propionibacterium freudenrichii* ssp. *Shermani* combinations on propensity for split defect in Swiss cheese. *J. Dairy Sci.* 86:719-727.
38. Chen, Y.-S., J. E. Christensen, J. R. Broadbent, and J. L. Steele. 2003. Identification and characterization of *Lactobacillus helveticus* PepO2, an endopeptidase with post-proline specificity. *Appl. Environ. Microbiol.* 69:1276-1282.
39. Christensen, J. E., J. R. Broadbent, and J. L. Steele. 2003. Hydrolysis of casein derived peptides α_{S1} -CN (f1-9) and β -CN (f193-209) by *Lactobacillus helveticus* peptidase deletion mutants indicates the presence of a previously undetected endopeptidase. *Appl. Environ. Microbiol.* 69:1283-1286.
40. Broadbent, J. R., D. J. McMahon, D. Welker, C. J. Oberg, and S. Moineau. 2003. Biochemistry, genetics, and applications of exopolysaccharide production in *Streptococcus thermophilus*: a review. *J. Dairy Sci.* 86:407-423.

41. Dave, R. I., D. J. McMahon, J. R. Broadbent, and C. J. Oberg. 2003. Influence of coagulant level on proteolysis and functionality of Mozzarella cheese made using direct acidification. *J. Dairy Sci.* 86:114-126.
42. Oommen[†], B.S., D. J. McMahon, C. J. Oberg, J. R. Broadbent, and M. Strickland. 2002. Proteolytic specificity of *Lactobacillus delbrueckii* subsp. *bulgaricus* influences functional properties of Mozzarella cheese. *J. Dairy Sci.* 85:2750-2758.
43. Klaenhammer, T., E. Altermann, F. Arigoni, A. Bolotin, F. Breidt, J. Broadbent, R. Cano, S. Chaillou, J. Deutscher, M. Gasson, M. van de Guchte, J. Guzzo, T. Hawkins, P. Hols, R. Hutkins, M. Kleerebezem, J. Kok, O. Kuipers, M. Lubbers, E. Maguin, L. McKay, D. Mills, A. Nauta, R. Overbeek, H. Pel, D. Pridmore, M. Saier, D. van Sinderen, A. Sorokin, J. Steele, D. O'Sullivan, W. de Vos, B. Weimer, M. Zagorec, and R. Siezen. 2002. Discovering lactic acid bacteria by genomics. *Antonie van Leeuwenhoek* 82:29-58.
44. Broadbent, J. R., C. Brotherson, C. J. Oberg, and M. E. Johnson. 2002. Cheese micro-ecology and the influence of adjunct/wash techniques. *Aust. J. Dairy Technol.* 57:137-142.
45. Oberg, C. J., J. R. Broadbent, M. Strickland and D. J. McMahon. 2002. Diversity in specificity of the extracellular proteinases in *Lactobacillus helveticus* and *Lactobacillus delbrueckii* subsp. *bulgaricus*. *Lett. Appl. Microbiol.* 34:455-460.
46. Broadbent, J. R., M. Barnes, C. Brennand, M. Strickland, K. Houck, M. E. Johnson, and J. L. Steele. 2002. Contribution of *Lactococcus lactis* cell envelope proteinase specificity to peptide accumulation and bitterness in reduced-fat Cheddar cheese. *Appl. Environ. Microbiol.* 68:1778-1785.
47. Dave, R. I., D. J. McMahon, J. R. Broadbent, and C. J. Oberg. 2001. Reversibility of the temperature-dependent opacity of nonfat Mozzarella cheese. *J. Dairy Sci.* 84:2364-2371.
48. Broadbent, J. R., D. J. McMahon, C. J. Oberg, and D. L. Welker. 2001. Use of exopolysaccharide-producing cultures to improve the functionality of low fat cheese. *Int. Dairy J.* 11:433-439.
49. Strickland, M., M. E. Johnson, and J. R. Broadbent. 2001. Qualitative and quantitative analysis of proteins and peptides in milk products by capillary electrophoresis. *Electrophoresis* 22:1510-1517.
50. Gummalla, S. and J. R. Broadbent. 2001. Tyrosine and phenylalanine catabolism by *Lactobacillus* cheese flavor adjuncts. *J. Dairy Sci.* 84:1011-1019.
51. Petersen[‡], B. L., R. I. Dave, D. J. McMahon, C. J. Oberg, and J. R. Broadbent. 2000. Influence of capsular and ropy exopolysaccharide-producing *Streptococcus thermophilus* on Mozzarella cheese and cheese whey. *J. Dairy Sci.* 83:1952-1956.
52. Caldwell[‡], S., D. J. McMahon, C. J. Oberg, and J. R. Broadbent. 1999. Induction and characterization of *Pediococcus acidilactici* temperate bacteriophage. *Syst. Appl. Microbiol.* 22:514-519.
53. Gummalla[‡], S. and J. R. Broadbent. 1999. Tryptophan catabolism by *Lactobacillus casei* and *Lactobacillus helveticus* cheese flavor adjuncts. *J. Dairy Sci.* 82:2070-2077.
54. Broadbent, J. R. and C. Lin[‡]. 1999. Effect of heat shock or cold shock treatment on the resistance of *Lactococcus lactis* to freezing and lyophilization. *Cryobiol.* 39:88-102.
55. Low[‡], D., J. Ahlgren, D. Horne, D. J. McMahon, C. J. Oberg, and J. R. Broadbent. 1998. Role of *Streptococcus thermophilus* MR-1C capsular exopolysaccharide in cheese moisture retention. *Appl. Environ. Microbiol.* 64:2147-2151.
56. Broadbent, J. R., C. J. Oberg, and L. Wei. 1998. Characterization of the *Lactobacillus helveticus* *groESL* operon. *Res. Microbiol.* 149:247-253.

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57. Caldwell[‡], S., R. W. Hutkins, D. J. McMahon, C. J. Oberg, and J. R. Broadbent. 1998. Lactose and galactose uptake by genetically engineered *Pediococcus* species. *Appl. Microbiol. Biotechnol.* 49:315-320.
58. Broadbent, J. R., M. Strickland, B. Weimer, M. E. Johnson, and J. L. Steele. 1998. Peptide accumulation and bitterness in Cheddar cheese made using single-strain *Lactococcus lactis* starters with distinct proteinase specificities. *J. Dairy Sci.* 81:327-337.
59. Johnson, M. E., J. L. Steele, J. Broadbent, and B. C. Weimer. 1998. Manufacture of Gouda and flavor development in reduced-fat Cheddar cheese. *Aust. J. Dairy Technol.* 53:67-69.
60. Oberg, C. J., J. R. Broadbent, and D. J. McMahon. 1998. Developments in thermophilic starter cultures for cheese. *Aust. J. Dairy Technol.* 53:46-48.
61. Gao, S., D-H. Oh, J. R. Broadbent, M. E. Johnson, B. C. Weimer, and J. L. Steele. 1997. Aromatic amino acid catabolism by lactococci. *Lait* 77:371-381.
62. Weimer, B., B. Dias[†], M. Ummadi[†], J. Broadbent, C. Brennand, J. Jaegi, M. Johnson, F. Milani, J. Steele, and D. V. Sisson. 1997. Influence of NaCl and pH on intracellular enzymes that influence Cheddar cheese ripening. *Lait* 77:383-398.
63. Broadbent, J. R., C. J. Oberg, H. Wang, and L. Wei. 1997. Attributes of the heat shock response in three species of dairy *Lactobacillus*. *Syst. Appl. Microbiol.* 20:12-19.
64. Yu, W., K. Gillies, J. K. Kondo, J. R. Broadbent, and L. L. McKay. 1996. Loss of plasmid-mediated oligopeptide transport system in lactococci: another reason for slow milk coagulation. *Plasmid* 35:145-155.
65. Strickland, M., B. C. Weimer, and J. R. Broadbent. 1996. Capillary electrophoresis of Cheddar cheese. *J. Chromatogr. A* 731:305-314.
66. Caldwell[‡], S., D. J. McMahon, C. J. Oberg, and J. R. Broadbent. 1996. Development and characterization of lactose-positive *Pediococcus* species for milk fermentation. *Appl. Environ. Microbiol.* 62:936-941.
67. Broadbent, J. R., W. E. Sandine, and J. K. Kondo. 1995. Characteristics of Tn5307 exchange and intergeneric transfer of genes associated with nisin production. *Appl. Microbiol. Biotechnol.* 44:139-146.
68. Wang, H., J. R. Broadbent, and J. K. Kondo. 1994. Physical and functional characteristics of cell clumping in lactose-positive transconjugants of *Lactococcus lactis* ssp. *lactis* ML3. *J. Dairy Sci.* 77:375-384.
69. Oberg, C. J., and J. R. Broadbent. 1993. Thermophilic starter cultures: another set of problems. *J. Dairy Sci.* 76:2392-2406.
70. Broadbent, J. R., and J. K. Kondo. 1991. Genetic construction of nisin-producing *Lactococcus lactis* subsp. *cremoris* and analysis of a rapid method for conjugation. *Appl. Environ. Microbiol.* 57:517-524.
71. Broadbent, J. R., Y. C. Chou, K. Gillies, and J. K. Kondo. 1989. Nisin inhibits several Gram-positive mastitis-causing pathogens. *J. Dairy Sci.* 72:3342-3345.

Book Chapters:

1. Broadbent, J. R., and J. L. Steele. 2013. Lactocepain: the cell envelope-associated endopeptidase of lactococci, pp. 3188-3195. *In* N. D. Rawlings and G. S. Salvesen (eds.), *Handbook of Proteolytic Enzymes*, 3rd Ed. Elsevier (Amsterdam).
2. Kok, J., E. R. Kunji, J. L. Steele, and J. R. Broadbent. 2011. Protein breakdown by lactic acid bacteria, pp. 133-150. *In* A. Ledebøer, J. Hugenholtz, J. Kok, W. Konings, and J. Wouters (eds.), *Thirty Years of Research on Lactic Acid Bacteria*. 24 Media Labs, Rotterdam, The Netherlands.

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3. Broadbent, J. R., M. F. Budinich, and J. L. Steele. 2011. Cheese: NSLAB, pp. 639-644. *In*, J. Fuquay, P. Fox, and P. McSweeney (eds.), *Encyclopedia of Dairy Science*, 2nd Ed. Academic Press, Burlington, MA.
4. Broadbent, J. R., and J. L. Steele. 2010. *Pediococcus*, pp. 474-478. *In* D. R. Heldman, A. Bridges, D. G. Hoover, and M. B. Wheeler (eds.), *Encyclopedia of Biotechnology in Agriculture and Food*. CRC Press, Boca Raton, FL.
5. Broadbent, J. R., and J. L. Steele. 2007. Biochemistry of cheese flavor development: insight from genomic studies of lactic acid bacteria, pp. 177-192. *In* K. R. Caldwell, M. A. Drake, and R. J. McGorin (eds.), *Flavor of Dairy Products*. Amer. Chem. Soc., Washington, DC.
6. Broadbent, J. R., and J. L. Steele. 2007. Proteolytic enzymes of lactic acid bacteria and their influence on bitterness in bacterial-ripened cheeses, pp. 193-204. *In* K. R. Caldwell, M. A. Drake, and R. J. McGorin (eds.), *Flavor of Dairy Products*. Amer. Chem. Soc., Washington, DC.
7. Rankin, S. A., D. S. Banavara, E. S. Mooberry, J. L. Steele, J. R. Broadbent, and J. E. Hughes. 2007. Volatile sulfur-containing compounds from methionine metabolism in genetically modified *Lactobacillus helveticus* CNRZ 32 strains, pp. 205-213. *In* K. R. Caldwell, M. A. Drake, and R. J. McGorin (eds.), *Flavor of Dairy Products*. Amer. Chem. Soc., Washington, DC.
8. Broadbent, J. R. 2001. Genetics of lactic acid bacteria, pp. 243-299. *In*, J. L. Steele and E. H. Marth (eds.), *Applied Dairy Microbiology*, 2nd ed. Marcel Dekker, Inc., New York.
9. Yu, W., K. Gillies, J. K. Kondo, J. R. Broadbent, and L. L. McKay. 1995. Plasmid-mediated oligopeptide transport system in lactococci, pp. 509-521. *In* J. J. Ferretti, M.S. Gilmore, and T. R. Klaenhammer (eds.), *Genetics of the Streptococci, Enterococci, and Lactococci*. Dev. Biol. Stand., vol. 85, Basel Press, Karger, Sweden.
10. Broadbent, J. R., and J. K. Kondo. 1992. Biotechnology of dairy lactic acid bacteria, pp. 77-104. *In* Y. H. Hui (ed.), *Dairy science and technology*, vol. 3: applications science, technology and engineering. VCH Publishers Inc., New York, NY.

Publications in Trade Journals:

1. Broadbent, J. R., and J. L. Steele. 2005. Lactic acid bacteria genomics and cheese flavor. Invited feature story for *ASM News* 71:121-128.
2. Caldwell, S., D. J. McMahon, C. J. Oberg, and J. R. Broadbent. 1998. An alternative approach to phage control in Italian-type cheese. *Eur. Dairy Mag.* number 4:37-40.
3. Broadbent, J., C. Brennand, M. Johnson, J. Steele, M. Strickland, and B. Weimer. 1997. Starter contribution to reduced fat Cheddar. *Dairy Ind. Int.* 62 (2):35-39.

Submitted Manuscripts Currently Under Review:

Porcellato, D., C. Brighton, D.J. McMahon, C. Oberg, M. Lefevre, J. R. Broadbent and J. L. Steele. Application of ARISA to assess the influence of salt content and cation type on microbiological diversity of Cheddar cheese. *J. Dairy Sci.*

Manuscripts in Final Preparation:

Oberg, T. S., R. E. Ward, J. L. Steele, and J. R. Broadbent. Transcriptional response of *Bifidobacterium longum* to hydrogen peroxide stress.

Broadbent, J. R., H. Cai, J. E. Hughes, R. L. Larsen, D. L. Welker, V. G de Carvalho, T. A. Tompkins, G. Barreau, M. Swiatek, Y. Ardö, F. Vogensen, A. De Lorentiis, M. Gatti, E. Neviani, and James L. Steele. Genome heterogeneity in *Lactobacillus helveticus*: rethinking a niche specialist.

Publications in Conference Proceedings or Short Courses:

1. Broadbent, J. R. 2009. How genomics has advanced our understanding of lactobacilli and their role in dairy foods. Proc. Western Dairy Center Cheese Symposium, Utah State University.
2. Broadbent, J. R. 2006. Helveticus adjuncts for flavor and debittering. Proc. 17th Biennial Cheese Conference, Sun Valley, ID.
3. Broadbent, J. R. 1998-2011. Cheese curing and flavor development. Proc. Ann. Cheese Making Short Course. Utah State University.
4. Broadbent, J. R. 2004. Application of microbial genomics in cheese technology. Proc. 16th Biennial Cheese Conference, Sun Valley, ID.
5. Broadbent, J. R. 2002. Update on lactic acid bacteria genome research. Proc. 15th Biennial Cheese Conference. August 7, Sun Valley, ID.
6. Broadbent, J. R. 2001. Exopolysaccharide production in *Streptococcus thermophilus*: biochemistry, genetics, and applications. Proc. 5th Symposium on Industrial and Fermentation Microbiology sponsored by the University of Wisconsin-La Crosse. La Crosse, WI.
7. Broadbent, J. R. 2000. Role of lactic acid bacteria in cheese flavor development. Proc. Special Workshop on the Basics of Flavor Development in Cheese sponsored by the American Dairy Science Association. Baltimore, MD.
8. Broadbent, J. R. 1999. New cultures. Proc. International Dairy Foods Association Cultured Dairy Products Conference sponsored by Chr. Hansen, Inc. Milwaukee, WI.
9. Steele, J. L., M. E. Johnson, J. R. Broadbent, and B. C. Weimer. 1998. Starter culture attributes which affect cheese flavor development, pp. 157-170. *In*, Proc. LACTIC '97 conference, Which strains? For which products?
10. Broadbent, J. R., C. J. Oberg, and D. J. McMahon. 1998. Practical considerations in the use of exopolysaccharide-producing cultures. Proc. Marschall/Rhodia Italian and Specialty Cheese Conference sponsored by Rhodia, Inc. Madison, WI.
11. Broadbent, J. R. 1998. How starter bacteria direct cheese flavor development. Proc. 13th Biennial Cheese Conference. Utah State University.
12. Broadbent, J. R. 1997. Influence of starter bacteria on peptide accumulation and bitterness in Cheddar cheese, pp. 39-45. *In*, Proc. National Cheese Technology Forum sponsored by Dairy Management, Inc. Rosemont, IL.
13. Broadbent, J. R. 1997. EPS production in *Streptococcus thermophilus*: physiology, biochemistry, and genetics. Proc. Marschall/Rhône-Poulenc Italian and Specialty Cheese Conference sponsored by Rhodia, Inc. Madison, WI.
14. Broadbent, J. 1996. Off-flavor production in lowfat cheese. Proc. 12th Biennial Cheese Conference. Utah State University.
15. Broadbent, J. 1996. Genetic engineering of cultures: where do we go from here? Proc. 12th Biennial Cheese Conference. Utah State University.
16. Broadbent, J. 1996. Bacteriophage control. Proc. 12th Cheese Making Short Course. Utah State University.
17. Broadbent, J. R. 1995. Cultures for low-fat cheese. Proc. 11th Ann. Cheese Management Short Course. Utah State University.
18. Broadbent, J. R. 1994. *Lactobacillus* adjuncts for low fat cheese. Proc. 11th Biennial Cheese Conference. Utah State University.
19. Broadbent, J. R. 1994. Starter cultures for lowfat cheese. Proc. 10th Ann. Cheese Making Short Course. Utah State University.

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20. Broadbent, J. R. 1993. Starter cultures for lowfat cheese manufacturing. Proc. 9th Ann. Cheese Making Short Course. Utah State University.
21. Broadbent, J. R. 1992. Bacteriocins as natural food preservatives. Proc. 10th Biennial Cheese Conference. Utah State University.

Miscellaneous Publications:

1. Broadbent, J. 2005. An accolade to heartland adventures. J. N. Amer. Falconers' Assoc. 44:14-15.
2. Broadbent, J. 1995. Gerald Richards. J. N. Amer. Falconers' Assoc. 34:62-64.
3. Broadbent, J., and L. McMullen. 1994. A holiday in CRP. J. N. Amer. Falconers' Assoc. 33:27-33.

Creative Accomplishments:

- Steele, J. L., and J. R. Broadbent. 2012. Construction of a *Lactobacillus casei* ethanolagen. U.S. patent application 61/682281, filed August 12, 2012 by WARF.
- Bhowmik, T., J. Broadbent, D. Welker, and J. Steele. 2010. Thioesterases and their use. U.S. patent application filed September 24, 2010.
- Steele, J. L., J. R. Broadbent, and V. R. Sridhar. 2010. Methods and compositions involving endopeptidases PepO2 and PepO3. U.S. Patent No. 7,741,438.
- Broadbent, J. R., C. J. Oberg, and S. Caldwell. 1995. Compositions and methods for phage resistance in dairy fermentations. U.S. Patent No. 5,677,166.

Grantsmanship:

1. Ward, R.E., K. Hintze, A. Benninghoff, and J.R. Broadbent. Effects of consuming a bioactive yogurt on endotoxemia and markers of metabolic syndrome. Dairy Management Inc., Funded \$195,133 (Sept. 1, 2012-March 31, 2015).
2. Pfleger, B.F., J.L. Reed, J.L. Steele, and J.R. Broadbent. Integrating systems and synthetic biology for engineering production of biofuels in *L. casei*. US Dept. Energy. \$5,420,155 (Sept. 1, 2012-Dec. 31, 2017). Not Funded.
3. Carpenter, C. and J. Broadbent. Adaptation of meat pathogens in response to organic acid anions. UAES. Funded \$20,000 (July 1, 2011-June 30, 2013).
4. McMahon, D.J., M.A. Drake, J. Broadbent, N. Farkye, B. Ganesan, and J. Steele. A systematic study of cheese microbiology and flavor based on salt cation substitution in lower sodium cheddar cheese. DMI. Funded \$582,000 (Jan 1, 2011-August 31, 2012).
5. Broadbent, J. R., and J. L. Steele. Enhancing the value of biofuels derived from algae and perennial grass feedstocks through integration of a lactic acid fermentation. USDA/NIFA. Funded \$999,875 (Jan 15, 2011-Jan 14, 2016).
6. Broadbent, J. R., and J. L. Steele. Characterization of *Brevibacterium linens* thiol-esterases. Givaudan, Inc. Funded \$100,315 (Dec. 1, 2009-Dec. 15, 2010).
7. Broadbent, J. R. Enhancing the value of agriculturally-important bacteria through genomics. USDA Functional Genomics request for project renewal. Funded \$110,000 (July 1, 2009-June 30, 2010).
8. Broadbent, J. R., and J. L. Steele. Characterization of *Brevibacterium linens* thiol-esterases. Givaudan, Inc. Funded \$86,986 (Nov. 1, 2008-Oct. 31, 2009).
9. Broadbent, J. R. Enhancing the value of agriculturally-important bacteria through genomics. USDA Functional Genomics request for project renewal. Funded \$110,000 (July 1, 2008-June 30, 2009).

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10. Steele, J. L., and J. R. Broadbent. Substantiating the advantages of yogurt as a delivery vehicle for *Bifidobacterium*. Dairy Management, Inc. Funded \$212,619 (Sept. 1, 2007-Dec. 31, 2008)
11. Broadbent, J. R., and J. L. Steele. Characterization of *Brevibacterium linens* thiol-esterases. Givaudan, Inc. Funded \$100,800 (Oct. 1, 2007-Sept. 30, 2008).
12. Steele, J. L., and J. R. Broadbent. Relationship between reduced fat content and non-starter lactic acid bacteria diversity and physiology in Cheddar cheese. Dairy Management, Inc. Funded \$118,655 (Oct. 1, 2007-Sept. 31, 2009).
13. Broadbent, J. R., R. Ward, and J. L. Steele. Relationship between cheese microenvironment changes caused by fat reduction and the metabolic properties of starter lactic acid bacteria in Cheddar cheese. Dairy Management, Inc. Funded \$220,677 (Nov 1, 2007-April 30, 2010).
14. Carpenter, C., and J. Broadbent. Validation of levulinic acid for topical decontamination of meat surface. American Meat Institute Foundation. Funded \$61,263 (July 1, 2007-June 30, 2009).
15. McMahan, D., M. Walsh, and J. Broadbent. A dairy technology and innovations laboratory at the Western Dairy Center. Dairy Management, Inc. Funded \$899,770 (July 1, 2007-Jan. 31, 2009)
16. McMahan, D., M. Johnson, J. Broadbent, M. Drake, N. Farkye, J. Steele, and A. Foegeding. Low fat natural cheese strategic platform study. Dairy Management, Inc. Funded \$670,048 (July 1, 2006-Jan. 31, 2009).
17. Broadbent, J. R., and J. L. Steele. Characterization of *Brevibacterium linens* thiol-esterases. Givaudan, Inc. Funded \$100,800 (Sept. 1, 2006-Aug. 31, 2007).
18. Broadbent, J. R. Enhancing the value of agriculturally-important bacteria through genomics. USDA Functional Genomics request for project renewal. Funded \$124,874 (July 1, 2006-June 30, 2007).
19. Broadbent, J. R., and J. L. Steele. Characterizing stress responses of industrial strains of bifidobacteria and their use for extending the survival of bifidobacteria in foods. USDA/NRICGP. Funded \$347,769 (Jan. 1, 2007-Aug. 31, 2009).
20. Broadbent, J. R. Enhancing the value of agriculturally-important bacteria through genomics. U.S. Congressional Request. Funded \$125,000 (June 1, 2005-May 30, 2006).
21. Broadbent, J. R. Compilation of a whole genome sequence for *Lactobacillus helveticus* CNRZ32. Western Dairy Center. Funded \$10,000 (Jan 1, 2005-June 30, 2006).
22. Carpenter, C., and J. Broadbent. Anti-*Listeria* action of levulinate. American Meat Institute Foundation. Funded \$50,490 (July 1, 2005-June 30, 2008).
23. Broadbent, J. R. Compilation of a complete genome sequence for *Lactobacillus helveticus* CNRZ32. Community/University Research Initiative. Funded \$21,105 (July 1, 2004-June 30, 2006).
24. McMahan, D. J., J. R. Broadbent, and C. J. Oberg. Molecular basis of cheese melting in relation to proteolysis. Dairy Management, Inc. Funded \$195,545 (Jan. 1, 2004-Dec. 31, 2006).
25. Broadbent, J. R. Compilation of a whole genome sequence for *Lactobacillus casei* ATCC 334. Western Dairy Center Seed Grant. Funded \$7,000 (Jan. 1, 2003-Dec. 31, 2003).
26. Broadbent, J. R. Identification of enzymes and metabolic pathways used by *Lactobacillus casei* to intensify and modulate cheese flavor development. Community/University Research Initiative. Funded \$16,000 (July 1, 2002-June 30, 2003).
27. Broadbent, J. R., and D. L. Welker. Analysis of capsule production in *Streptococcus thermophilus* by comparative genomics. Dairy Management, Inc. Funded \$75,990 (Jan. 1, 2003-Dec. 31, 2005).
28. Steele, J. L., S. A. Rankin, and J. R. Broadbent. Systematic identification of enzymes and metabolic pathways used by *Lactobacillus casei* to intensify and modulate cheese flavor development. USDA/NRICGP. Funded \$247,721 (Sept. 1, 2002-Feb. 28, 2004).

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29. Broadbent, J. R., and C. Brotherson. Effect of oxidation-reduction potential on growth of lactic acid bacteria. Dairy Management, Inc. Funded \$75,161 (Jan. 1, 2002-Dec. 31., 2003).
30. Steele, J. L., J. R. Broadbent, and S. A. Rankin. Identifying genes involved in cheese flavor development. Dairy Management, Inc. Funded \$239,220 (July 1, 2002-Dec. 31, 2004).
31. Broadbent, J. R., and D. L. Welker. Genetics and biochemistry of capsule production in *Streptococcus thermophilus* MR-1C (resubmission). USDA/NRICGP. Funded \$160,000 (Dec. 1, 2001-May 31, 2004).
32. Broadbent, J. R., and D. L. Welker. Understanding capsule production in *Streptococcus thermophilus* MR-1C. Western Dairy Center. Funded \$10,000 (July 1, 2000-June 30, 2001).
33. Steele, J. L. and J. R. Broadbent. Mechanisms for intensifying and modulating cheese flavor: a global approach. Dairy Management, Inc. Funded \$247,500 (Jan. 1, 2001-Dec. 31, 2003).
34. Broadbent, J. R., D. J. McMahon, and C. J. Oberg. Effect of microbial exopolysaccharide on functionality in high moisture cheese. Dairy Management, Inc. Funded \$56,333 (Jan. 1, 2000-Dec. 31, 2001).
35. Broadbent, J. R., C. Brennand, J. L. Steele, and M. E. Johnson. New starter systems for accelerated ripened Cheddar cheese. Dairy Management, Inc. Funded \$187,575 (July 1, 2000-Dec. 31, 2002).
36. Steele, J. L., M. E. Johnson, and J. R. Broadbent. Production of intensely flavored Cheddar-type cheeses by adjunct cultures. Dairy Management, Inc. Funded \$184,174 (July 1, 2000-June 31, 2002).
37. Broadbent, J. R., D. J. McMahon, and C. J. Oberg. Application of a genetic switch to improve and control starter proteolysis in Mozzarella cheese. Dairy Management, Inc. Funded \$106,970 (Jan. 1, 1998-Dec. 31, 2000).
38. McMahon, D. J., J. R. Broadbent, and C. J. Oberg. Understand the role of proteolysis on functional properties of Mozzarella cheese. Dairy Management, Inc. Funded \$125,721 (Jan. 1, 1998-Dec. 31, 1999).
39. McMahon, D. J., J. R. Broadbent, and C. J. Oberg. Characterization of proteolytic enzymes from thermophilic lactic acid bacteria and their influence on Mozzarella cheese functionality. Dairy Management, Inc. Funded \$105,652 (Jan. 1, 1998-Dec. 31, 1999).
40. Broadbent, J. R., C. Brennand, J. L. Steele, and M. E. Johnson. Improvement of Cheddar cheese quality through identification and characterization of microbial enzymes responsible for the production or degradation of bitter peptides in cheese. Dairy Management, Inc. Funded \$298,304 (Jan. 1, 1997-Dec. 31, 1999).
41. Broadbent, J. R., B. C. Weimer, J. L. Steele, M. E. Johnson, and S. A. Rankin. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the conversion of aromatic amino acids into off flavor compounds in cheese. Dairy Management, Inc. Funded \$186,242 (Jan. 1, 1997-Dec. 31, 1999).
42. McMahon, D. J., J. R. Broadbent, and C. J. Oberg. Improvement of Mozzarella cheese functionality by understanding exopolysaccharide production in thermophilic starter cultures. Dairy Management, Inc. Funded \$139,080 (Jan. 1, 1997-Dec. 31, 1999).
43. Johnson, M. E., J. L. Steele, and J. R. Broadbent. Growth of nonstarter lactic acid bacteria in reduced fat Cheddar cheese. Dairy Management, Inc. Funded \$215,395 (July 1, 1997-Dec. 31, 1999).
44. McMahon, D. J., J. R. Broadbent, and C. J. Oberg. New starter cultures for lowfat and non-fat Mozzarella cheese. Western Center for Milk Proteins Research and Technology. Request for project renewal. Funded \$40,000 (July 1-Dec. 31, 1996).

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45. Broadbent, J. R., B. C. Weimer, J. L. Steele, and M. E. Johnson. Improvement of low-fat cheese flavor through identification, isolation and analysis of enzymes and metabolites produced by adjunct lactobacilli during accelerated cheese flavor development. Western Center for Milk Proteins Research and Technology. Request for project renewal. Funded \$80,000 (Jan. 1, 1997-Dec. 31, 1997).
46. Broadbent, J. R., D. J. McMahon, C. J. Oberg, and R. W. Hutkins. Influence of alternative starter cocci on the physical properties of lowfat Mozzarella cheese. Western Center for Milk Proteins Research and Technology. Request for project renewal. Funded \$15,000 (Jan. 1, 1997-Dec. 31, 1997).
47. Broadbent, J. R., B. C. Weimer, J. L. Steele, M. E. Johnson, and P.F. Fox. 1994. Bitterness in Cheddar cheese and its amelioration. United States Department of Agriculture Office of International Cooperation and Development/Research and Scientific Exchanges Division. Funded \$60,000 (Feb. 1, 1995-Jan. 31, 1998).
48. Broadbent, J. R., D. J. McMahon, C. J. Oberg, and R. W. Hutkins. 1995. Influence of alternative starter cocci on the physical properties of lowfat Mozzarella cheese. Western Center for Milk Proteins Research and Technology. Funded \$39,000 (July 1, 1994-Dec. 31, 1996).
49. Broadbent, J. R. 1994. Influence of stress-induced proteins on the viability of dairy lactococci during lyophilization. Utah State University New Faculty Grant renewal. Funded \$15,000 (July 1, 1994-June 30, 1995).
50. Broadbent, J. R. 1993. Analysis of cold shock proteins in dairy lactococci to improve the survival of lactic acid bacteria during lyophilization. Utah State University New Faculty Grant. Funded \$15,000 (July 1, 1993-June 30, 1994).
51. Broadbent, J. R., B. C. Weimer, J. L. Steele and M. E. Johnson. 1993. Improvement of low-fat cheese flavor through identification, isolation and analysis of enzymes and metabolites produced by adjunct lactobacilli during accelerated cheese flavor development. Western Center for Milk Proteins Research and Technology. Funded \$619,000 (July 1, 1993-Dec. 31, 1996).
52. Broadbent, J. R., and C. J. Oberg. 1992. Characterization and analysis of stress proteins in dairy lactobacilli for improved ripening of low-fat cheese. National Dairy Promotion and Research Board. Funded \$165,000 (Jan. 1, 1993-Dec. 31, 1995).

TEACHING EXPERIENCE

USU Courses Taught:

- NFS 5110/6110, *Food Microbiology* (1993-2006)
- NFS 6170, *Principles of Food Safety Assurance* (2000, 2003)
- NFS 6620, *Microbiology of Fermented Dairy Foods* (offered biennially) (2006, 2008, 2012)
- NFS 6690, *Genetics of Lactic Acid Bacteria* (offered biennially) (2006, 2008, 2013)
- NFS 7800, *Graduate Seminar* (2004, 2005)

Graduate theses and dissertations directed:

- Smith, J. V. 2011. Evaluation of levulinic acid for topical decontamination of meat surfaces. MS thesis, Utah State University.
- Boucher, B. 2008. Effect of oxidation-reduction potential on growth of lactic acid bacteria. MS thesis, Utah State University.
- Thomson, R. 2007. Control of *Listeria monocytogenes* in ready-to-eat meat containing levulinate, lactate, or lactate and diacetate. MS thesis, Utah State University.
- Curtis, S. 2007. Microbial ecology of an animal waste-fueled induced blanket reactor. MS thesis, Utah State University.
- Christiansen, J. 2007. Phenotypic and genotypic analysis of amino acid metabolism in *Lactobacillus helveticus* CNRZ 32. MS thesis, Utah State University.
- Attaphongse, P. 2004. Methods for detection of *Salmonella* spp. Master of Food Microbiology and Food Safety, Utah State University.
- Gummalla, S. 2002. Aromatic amino acid catabolism by *Lactobacillus* spp.: biochemistry and contribution to cheese flavor development. Ph.D. dissertation, Utah State University.
- Petersen, B. L. 2001. Biochemistry and application of exopolysaccharide production in Mozzarella cheese starter cultures. MS thesis, Utah State University.
- Caldwell, S. 1999. Development of alternative starter cocci for Mozzarella cheese. Ph.D. dissertation, Utah State University.
- Gummalla, S. 1998. Tryptophan catabolism by *Lactobacillus* spp.: biochemistry and implications on flavor development in reduced-fat Cheddar cheese. MS thesis, Utah State University.
- Lin, C. 1998. Influence of stress treatments on the survival of *Lactococcus lactis* during freezing and freeze-drying. MS thesis, Utah State University.
- Low, D. 1998. Influence of *Streptococcus thermophilus* MR-1C capsular exopolysaccharide on moisture level of low-fat Mozzarella cheese. MS thesis, Utah State University.

Student awards and honors:

- Ph.D. student Taylor Oberg was awarded 1st place in the 2010 Society for Industrial Microbiology graduate student oral paper presentation competition at the annual SIM meeting in San Francisco.
- MS student Becky Thompson was awarded 2nd place in the 2007 Food Microbiology Division graduate student paper presentation competition at the annual meeting of the Institute for Food Technologists in Chicago.
- Undergraduate research student Mike Sharp was awarded 2nd place in the 2007 Phi Tao Sigma undergraduate oral paper presentation competition at the annual meeting of the Institute for Food Technologists in Chicago.
- MS student Becky Thompson was awarded 3rd place in the 2007 Scholars Day graduate student poster presentation competition at Utah State University.

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- MS student Becky Boucher received the Outstanding Paper Award in the 2005 graduate student paper presentation competition at the American Society for Microbiology annual regional meeting at Weber State University.
- M.S. student Deborah Low was awarded 1st place in the 1997 American Dairy Science Association Dairy Foods Division graduate student paper presentation competition at Guelph University, Ontario, Canada.
- M.S. student Sanjay Gummalla was awarded 2nd place in the 1996 American Dairy Science Association Dairy Foods Division graduate student paper presentation competition at Oregon State University, and 2nd place in the 1996 graduate student paper presentation competition at the American Society for Microbiology annual regional meeting at Utah State University.
- Ph.D. student Shelby Caldwell was named 1996 USU College of Agriculture Research Assistant of the year.
- Ph.D. student Shelby Caldwell was awarded 2nd place in the 1995 American Dairy Science Association Dairy Foods Division graduate student paper presentation competition at Cornell University.
- Graduate students Shelby Caldwell, Sanjay Gummalla, and Lin Chan were awarded 1st-, 2nd- and 3rd place, respectively, in the 1995 graduate student paper presentation competition at the American Society for Microbiology annual regional meeting at Idaho State University.

Invited Professional Presentations (*speaker)

1. Broadbent*, J.R. 2011. Intrinsic and inducible resistance to hydrogen peroxide among bifidobacteria. Invited oral presentation for the International Conference on Functional Dairy Foods. November 16-19, Karnal, India.
2. Broadbent*, J.R. 2011. Food Science. Invited guest lecture for Biol 1750, Biology Professions Orientation. November 2, Utah State University.
3. Steele*, J.L., and J.R. Broadbent. 2010. Influence of salt-in-moisture on starter and nonstarter lactic acid bacteria. Invited oral presentation for the symposium on “Microbiology and Flavor of Cheese: Impact of Lower Salt-in-Moisture Content of Low Fat and Reduced Sodium Cheeses” at the annual meeting of the American Dairy Science Association. July 11-15, Denver, CO.
4. Broadbent*, J.R. 2010. Proteolysis in *Lactobacillus helveticus*: applications in food and health. Invited oral seminar for the Pennsylvania State University Department of Food Science. February 4, State College, PA.
5. Broadbent, J.R.* 2009. Probiotic impacts on viruses and viral infection. Invited oral presentation for the workshop entitled “How can probiotics and prebiotics impact human pathogens”, sponsored by the International Scientific Association for Probiotics and Prebiotics. November 3-5, Irvine, CA.
6. Broadbent*, J.R. 2009. How genomics has advanced our understanding of lactobacilli and their role in dairy foods. Invited oral presentation for Western Dairy Center Cheese Symposium. May 5, Logan, UT.
7. Broadbent*, J.R. 2009. Data ownership and management. Invited oral presentation for USU Graduate Scholars Forum. March 3, Utah State University.
8. Broadbent*, J., R.L. Thompson, J.E. Hughes, D.L. Welker, J.L. Steele, H. Cai, Y. Ardö, F.K. Vogensen, T.A. Thompkins, K. Hagen, and E. Altermann. 2008. Proteolysis in lactobacilli: applications in food and health. Invited keynote presentation for the 9th International Symposium on Lactic Acid Bacteria: Health, Evolution, and Systems Biology. August 31-September 4, Egmond aan Zee, The Netherlands.

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9. Broadbent*, J.R. 2008. Effect of composition on the microbial ecology of low fat cheese. Invited oral presentation for the symposium on Advances in Low fat Cheese Research at the annual meeting of the American Dairy Science Association. July 7-11, Indianapolis, IN.
10. Broadbent*, J.R. and J.L. Steele*. 2007. Characterization of *Brevibacterium linens* thioesterases. Invited oral presentation for Givaudan, Inc.. October 5, Cincinnati.
11. Broadbent*, J.R. 2007. Application of microbial genomics in cheese flavor research. Invited oral presentation for the Department of Nutrition and Food Sciences/Center for Integrated Biosystems joint seminar series. September 12, Logan.
12. Steele*, J.L., and J.R. Broadbent. 2007. Sequence analysis and comparative genomics of lactobacilli and pediococci. Invited oral presentation for Integrated Genomics, Inc. June 3, Toronto, Canada.
13. Broadbent*, J.R. 2007. Using genomics to understand cheese flavor development. Invited oral presentation for the Dept. Microbiology. Weber State University, Ogden, UT. April 11.
14. Broadbent*, J.R. 2006. Helveticus adjuncts for flavor and debittering. Invited oral presentation for the 17th Biennial Cheese Conference. August 9, Sun Valley, ID.
15. Broadbent*, J.R. 2006. Engineering culture attributes. Invited oral presentation for the symposium on Advances in Cultured Foods at the annual meeting of the American Dairy Science Association. July 9-13, Minneapolis, MN.
16. Broadbent*, J.R. 2006. Application of microbial genomics in cheese flavor research. Invited seminar for the Department of Food Science and Toxicology at University of Idaho. April 20, Moscow.
17. Broadbent*, J.R. and J.L. Steele*. 2006. Culture research – influence on flavor, texture, and other key parameters affecting reduced fat/low-fat cheese manufacture. Invited oral presentation for Dairy Management Inc.'s expert panel on low-fat cheese. March 30-31, Chicago, IL.
18. Steele*, J.L., and J.R. Broadbent*. 2005. Update on *Lactobacillus helveticus* research in the US. Invited oral presentation for the Department of Food Science and Dairy Technology, Royal Veterinary and Agricultural University. September 2, Copenhagen, DK.
19. Broadbent*, J.R., B. Rodriguez, J.E. Hughes, D.L. Welker, D.S. Banavara, M.F. Budinich, I. Diaz-Muñiz, S.A. Rankin, V.V. Smeianov, and J.L. Steele. 2005. Comparing genotype to phenotype in dairy lactobacilli. Invited oral presentation for the 8th International Symposium on Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
20. Broadbent*, J.R. 2005. Genome studies in lactic acid bacteria and their application to cheese flavor research. Invited oral presentation for Givaudan, Inc. July 28, Cincinnati, OH.
21. Broadbent*, J.R. 2005. Cheese microbiology and biochemistry. Invited oral presentation for the symposium on Cheese Ripening at the annual meeting of the American Dairy Science Association. July 24-28, Cincinnati, OH.
22. Broadbent*, J.R. and J.L. Steele. 2005. Sequence analysis and comparative genomics of lactobacilli and pediococci. Invited oral presentation for the Symposium on Genomics of Lactic Acid Bacteria to honor Dr. Larry L. McKay. May 20, University of Minnesota.
23. Steele*, J.L., and J.R. Broadbent. 2005. Functional genomics and microarray studies of *Lactobacillus helveticus*. Invited oral presentation for the Symposium on Genomics of Lactic Acid Bacteria to honor Dr. Larry L. McKay. May 20, University of Minnesota.
24. Broadbent*, J.R. and J.L. Steele. 2005. Biochemistry of cheese flavor development: insights from genome research in lactic acid bacteria. Invited oral presentation for Integrated Genomics, Inc. April 12, Chicago, IL.

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25. Broadbent*, J.R. and J.L. Steele. 2004. Biochemistry of cheese flavor development: New insight from genomic studies of lactic acid bacteria. Invited oral presentation for the annual meeting of the American Chemical Society. August 22-26, Philadelphia, PA.
26. Broadbent*, J.R. 2004. Application of microbial genomics in cheese technology. Invited oral presentation for the Sixteenth Biennial Cheese Conference. August 10-11, Sun Valley, ID.
27. Steele*, J.L., and J.R. Broadbent. 2004. Biochemistry of cheese flavor development: new insights from the genetics and physiology of lactic acid bacteria. Invited keynote lecture for the International Dairy Federation Symposium on Cheese: Ripening, Characterization, and Technology. March 21-25, Prague, Czech Republic.
28. Broadbent*, J.R., and J.L. Steele*. 2004. Recent developments in cheese flavor and functionality. Invited oral presentation for Chr. Hansen, Inc. March 19, Copenhagen, Denmark.
29. McMahon*, D.J., C.J. Oberg, and J.R. Broadbent. 2003. Cultures and functionality of Mozzarella cheese. Invited oral presentation for the 7th Teagasc Dairy Products Research Centre Cheese Symposium. October 20-21, Cork, Ireland.
30. Broadbent*, J.R. 2003. Cheese ripening and flavor development. Invited oral presentation for the Marshall Specialty Cheese Conference. September 17-18, Visalia, CA.
31. Welker*, D.L., and J.R. Broadbent. 2002. Exopolysaccharide production in *Streptococcus thermophilus*. Invited oral presentation for Chr. Hansen, Inc. September 6, Copenhagen, Denmark.
32. Broadbent*, J.R., and J.L. Steele*. 2002. Genome research in lactic acid bacteria. Invited oral presentation for Chr. Hansen, Inc. September 6, Copenhagen, Denmark.
33. Broadbent*, J.R. 2002. Update on lactic acid bacteria genome research. Invited oral presentation for the Fifteenth Biennial Cheese Conference. August 7, Sun Valley, ID.
34. Oberg*, C.J., J.R. Broadbent, and D.J. McMahon. 2002. Applications of EPS production by lactic acid bacteria. Invited oral presentation for the symposium on exopolysaccharide production by lactic acid bacteria at the annual meeting of the American Dairy Science Association. July 21-25, Quebec City, Quebec, Canada.
35. Broadbent*, J.R. 2002. Cheese micro-ecology and use of adjunct/wash techniques. Invited keynote presentation for Cheese Science 2002 symposium, sponsored by the Dairy Industry Association of Australia. July 10-12, Melbourne, Australia.
36. Broadbent*, J.R. Cheese curing and flavor development. 2002. Invited oral presentation for the 18th Cheese Making Short Course. March 5-7, Utah State University.
37. Broadbent*, J.R., and J.L. Steele. 2001. Structural genomics of *Lactobacillus helveticus* CNRZ32. Invited oral presentation for Chr. Hansen, Inc. November 16, Milwaukee, WI.
38. Broadbent*, J.R. 2001. Exopolysaccharide production in *Streptococcus thermophilus*. Invited oral presentation for FS900, graduate seminar. October 30, Department of Food Science, University of Wisconsin, Madison.
39. Brennan*, C.P., and J.R. Broadbent. 2001. Use of sensory methods in a molecular-genetic study of bitterness in Cheddar cheese. Invited oral presentation for the Symposium on Sensory Evaluation of Dairy Flavors at the annual meeting of the Institute for Food Technologists. June 23-27, New Orleans, LA.
40. Broadbent*, J.R. 2001. Exopolysaccharide production in *Streptococcus thermophilus*: biochemistry, genetics, and applications. Invited oral presentation for 5th annual symposium on Industrial and Fermentation Microbiology. April 27, University of Wisconsin, La Crosse.
41. Broadbent*, J.R. 2000. Trends in cheese ripening. Invited oral presentation at Chr. Hansen Labs, September 19, Milwaukee, WI.
42. Broadbent*, J.R. 2000. Role of lactic acid bacteria in cheese flavor development. Invited oral presentation for special ADSA pre-meeting workshop on the basics of flavor development in

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- cheese. Sponsored by the American Dairy Science Association and Rhodia, Inc. July 24, Baltimore, MD.
43. Broadbent*, J.R. 1999. New Cultures. Invited oral presentation for the International Dairy Foods Association Cultured Dairy Products Conference. May 11-12, Milwaukee, WI.
 44. Broadbent, J.R., C.J. Oberg, and D.J. McMahon. 1998. Practical considerations in the use of exopolysaccharide-producing cultures. Invited oral presentation for the Marschall/Rhodia Italian and Specialty Cheese Conference. September 16-17, Madison, WI.
 45. Broadbent*, J.R. 1998. How starter bacteria direct cheese flavor development. Invited oral presentation for the 13th Biennial Cheese Conference. August 10-12, Utah State University.
 46. Broadbent*, J.R. 1998. Commercialization of biotechnology in agriculture: Microbial products. Invited oral presentation for the Symposium on the Commercialization of Biotechnology in Agriculture at the annual meeting of the Institute of Food Technologists. June 20-24, Atlanta, GA.
 47. Broadbent*, J.R. 1998. Role of the *Streptococcus thermophilus* exopolysaccharide in cheese moisture retention. Invited oral presentation for Texel International. April 30, Dange, France.
 48. Broadbent*, J.R. 1998. Influence of *Lactococcus lactis* starter bacteria on peptide accumulation and bitterness in Cheddar cheese. Invited oral presentation for Texel International. April 30, Dange, France.
 49. Broadbent*, J.R. 1997. Influence of starter bacteria on peptide accumulation and bitterness in Cheddar cheese. Invited oral presentation for the National Cheese Technology Forum sponsored by Dairy Management, Inc. December 9-10. Chicago.
 50. Broadbent*, J.R. 1997. EPS production in *Streptococcus thermophilus*: physiology, biochemistry, and genetics. Invited oral presentation for the Marschall/Rhône-Poulenc Italian and Specialty Cheese Conference. September 17-19, Madison, WI.
 51. Steele*, J.L., J.R. Broadbent, M.E. Johnson, and B.C. Weimer. 1997. Influence of starter cultures on Cheddar cheese flavor development. Invited oral presentation for the American Dairy Science Association National Dairy Research Center Symposium on Cheese Flavor: Starters and Starter Adjuncts.
 52. Weimer*, B.C., B. Dias, M. Ummadi, J. Broadbent, M. Johnson, and J. Steele. 1997. Improving Cheddar cheese flavor with the addition of brevibacteria. Invited oral presentation for the American Dairy Science Association National Dairy Research Center Symposium on Cheese Flavor: Starters and Starter Adjuncts.
 53. Broadbent*, J.R. 1996. Contributions by starter and selected adjunct bacteria to flavor development in reduced-fat Cheddar cheese. Invited oral presentation for Texel International Dairy Symposium, November 21, Telford, England.
 54. Broadbent*, J.R., S. Caldwell, D. McMahon, C. Oberg, and R. Hutkins. 1996. Development and characterization of alternative starter cocci for Mozzarella cheese. Invited oral presentation at the 5th Symposium on Lactic Acid Bacteria Genetics, Metabolism, and Applications. September 8-12, Veldhoven, The Netherlands.
 55. Broadbent*, J. 1996. Development and characterization of alternative starter cocci for Mozzarella cheese. Invited oral presentation at University of College, Cork, Ireland. September 4.
 56. Broadbent*, J. 1996. Peptide accumulation in reduced-fat Cheddar cheese manufactured with single-strain *Lactococcus lactis* starters. Invited oral presentation at University of College, Cork, Ireland. September 4.
 57. Broadbent*, J. 1996. Off-flavor production in lowfat cheese. Invited oral presentation for the 12th biennial cheese conference. August 20-22, Utah State University.
 58. Broadbent*, J. 1996. Genetic engineering of cultures: where do we go from here? Invited oral presentation for the 12th biennial cheese conference. August 20-22, Utah State University.

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59. Broadbent*, J.R. 1996. Off-flavor production in reduced-fat Cheddar cheese. Invited oral presentation for Kraft General Foods. June 4, Glenview, IL.
60. Broadbent*, J. 1996. Genetic engineering in the dairy starter industry. Invited oral presentation for the ASM Guest Lecture Series sponsored by the American Society of Microbiology Club at Weber State University. February 1, WSU, Ogden, UT.
61. Broadbent*, J.R. 1995. Flavor adjunct cultures. Invited oral presentation for the low fat cheese research conference sponsored by Dairy Management, Inc. and the Western Center for Milk Proteins Research and Technology. November 17, Snowbird, UT.
62. Broadbent*, J.R. 1995. Off-flavor production. Invited oral presentation for the low fat cheese research conference sponsored by Dairy Management, Inc. and the Western Center for Milk Proteins Research and Technology. November 17, Snowbird, UT.
63. Broadbent*, J.R. 1995. Alternative starter cocci for Mozzarella. Invited oral presentation for the low fat cheese research conference sponsored by Dairy Management, Inc. and the Western Center for Milk Proteins Research and Technology. November 17, Snowbird, UT.
64. Broadbent*, J.R. 1995. Stress adaptation in dairy lactic acid bacteria. Invited oral presentation for a Dannon, Inc. sponsored roundtable discussion on the pros and cons of live bacteria in yogurt. June 12-14, San Antonio, TX.
65. Broadbent*, J.R. 1995. Stress responses in lactic acid bacteria. Invited oral presentation for Australian Starter Culture Research Centre symposium on starters and flavor control in cheese and fermented dairy foods. February 27, Melbourne, Australia.
66. Broadbent*, J.R. 1994. *Lactobacillus* adjuncts for low fat cheese. Invited oral presentation at the 11th Biennial Cheese Conference. August 16-18, Utah State University.
67. Yu, W., K. Gillies, J.K. Kondo, J.R. Broadbent, and L.L. McKay*. 1994. Oligopeptide transport systems in lactococci. Invited oral presentation at IVth International ASM Conference on Streptococcal Genetics. May 15-18, Santa Fe, NM.
68. Broadbent*, J.R. 1992. Bacteriocins as natural food preservatives. Invited oral presentation at the 10th Biennial Cheese Conf. August 18-20, Utah State University.
69. Broadbent*, J.R. 1992. Conjugal transfer of genes for nisin production in lactic acid bacteria. Invited seminar for Marschall Products/Rhône-Poulenc. June 25, Madison, WI.
70. Broadbent*, J.R. 1992. Biotechnology in dairy microbiology and recombinant DNA. Invited seminar for American Society for Microbiology lecture series sponsored by Weber State University. March 5, Ogden, UT.

Professional Workshops:

1. Role of lactic acid bacteria in cheese flavor development. Invited workshop on the basics of flavor development in cheese. Sponsored by the American Dairy Science Association and Rhodia, Inc. Baltimore, MD. July 24, 2000.
2. Molecular biology and the web. Computer training workshop for the Dept. Microbiology, Weber State University, Ogden, UT. May, 26, 1998.
3. The good, the bad, and the ugly: microbiology and food science. GLOBE workshop presented to Native American primary and secondary education students visiting USU. August 5, 1997.
4. Gene transfer systems in bacteria. Dept. Microbiol. Biotechnol. Workshop Series. April 15, 1994, Weber State University, Ogden, UT.
5. Conjugation of plasmid-coded genes for lactose metabolism in *Lactococcus lactis*. Ag. Edu. Week for high school students. August 9, 1993, Utah State University.
6. Plasmid DNA purification. April 19, 1993, Dept. Microbiology, Weber State University, Ogden, UT.
7. Gene transfer systems in lactic acid bacteria. May 1, 1992, Dept. Microbiology, Weber State

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University, Ogden, UT.

8. Plasmid DNA purification. April 28 and May 1, 1992, Dept. of Microbiology, Weber State University, Ogden, UT.

Other Professional Presentations (*speaker)

[‡]graduate student for whom I served as committee chair; [†]graduate student for whom I served as committee member; [∞]undergraduate researcher I mentored. Only indicated for lead author.

1. Oberg*, C.J., M.D. Culumber, T.S. Oberg, J. R. Broadbent, D. J. McMahon, and J. L. Steele. 2013. Comparative genome analysis of *Lactobacillus curvatus* strains isolated from cheese and fermented sausage. Poster presentation at the annual meeting of the American Dairy Science Association. July 8-12, Indianapolis, IN.
2. Oberg*, C.J., M.D. Culumber, T.S. Oberg, F. Ortakci, J. R. Broadbent, and D. J. McMahon. 2013. Genomic analysis of *Lactobacillus* WDC04, a novel species associated with late gas production in cheese. Poster presentation at the annual meeting of the American Dairy Science Association. July 8-12, Indianapolis, IN.
3. Hintze*, K, R. Ward, A. Benninghoff, J. Cox, J. Broadbent, and M. Lefevre. 2013. Broad scope method for creating humanized animal models for animal health and disease research through antibiotic treatment and human fecal transfer. Poster presentation at the conference on Probiotics, Prebiotics, and the Host Microbiome: The Science of Translation, sponsored by the Sackler Institute for Nutrition Science and the International Scientific Association for Probiotics and Prebiotics. June 12, New York City.
4. Heidenreich*, J.M., E. Phrommao, E. Vinay -Lara, J.R. Broadbent and J. L. Steele. 2013. Ethanol production by *Lactobacillus casei* 12A by utilization of plant biomass. Poster presentation at the annual meeting of the American Society for Microbiology. May 18-21, Denver, CO.
5. Overbeck*[‡], T., E. Engelhart, J-H Oh, E. Phrommao, J. L. Steele and J. R. Broadbent. 2013. Fermentation of algal carcass material by *Lactobacillus casei*. Poster presentation at the 35th Symposium on Biotechnology for Fuels and Chemicals. April 29- May 2, Portland, OR.
6. Oberg*[‡], T.S., R.E. Ward, D.L. Welker, J.E. Hughes, J.L. Steele, and J. R. Broadbent. 2012. Role of *Lactobacillus casei* cyclopropane fatty acid synthase (*cfa*) in lactic acid production at low pH. Poster presentation at the annual meeting of the Society for Industrial Microbiology. August 12-16, Washington, D.C.
7. Vinay-Lara*, E., J. Heidenreich, E. Phrommao, P. Wu, J.L. Reed, J. Broadbent, and J.L. Steele. 2012. Screening *Lactobacillus casei* strains for attributes of relevance to the production of advanced biofuels. Poster presentation at the annual meeting of the Society for Industrial Microbiology. August 12-16, Washington, D.C.
8. Phrommao*, E., M. Donath, E. Engelhart, J. Broadbent, and J. Steele. 2012. Redirecting metabolic flux from lactate to ethanol in *Lactobacillus casei* 12A. Poster presentation at the annual meeting of the Society for Industrial Microbiology. August 12-16, Washington, D.C.
9. Oberg*, C.J., M. Culumber¹, T. Oberg, J.R. Broadbent, and D.J. McMahon. 2012. Isolation of an oligotrophic *Lactobacillus* species that may be associated with late gas production and splits in cheese. Poster presentation at the annual meeting of the American Dairy Science Association. July 15-19, Phoenix, AZ.
10. F. Ortakci*, J.R. Broadbent, W.R. McManus, and D.J. McMahon. 2012. Survival of microencapsulated *Lactobacillus paracasei* LBC-1e during manufacture of Mozzarella cheese and simulated gastric digestion. Oral presentation at the annual meeting of the American Dairy Science Association. July 15-19, Phoenix, AZ.
11. Caldeo*, V., J. Broadbent, and P.L.H. McSweeney. 2012. Effect of lactic acid bacteria on oxidation-reduction potential during the simulated pressing stage of Cheddar cheese manufacture.

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- Poster presentation at the International Dairy Federation Cheese Ripening and Technology symposium. May 21-24, Madison, WI.
12. Broadbent*, J.R. 2012. A systematic study of cheese microbiology and flavor based on salt cation substitution in lower sodium Cheddar cheese: predominant bacteria in cheese microflora. Oral presentation for the Ann. Mtg. Western Dairy Center. May 8, Utah State University.
 13. Broadbent*, J.R., R.E. Ward, M.J. Young, C. Brighton, L.J. Ward, T.S. Oberg, and J.L. Steele. 2011. Influence of cheese microenvironment on metabolism of *Lactococcus lactis* M70. Poster presentation at the 10th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
 14. Oberg*[‡], T.S., R.E. Ward, J.L. Steele, J.R. Broadbent. 2011. Transcriptional and physiological response of *Bifidobacterium animalis* subsp. *lactis* strains BL-O4 and DSM10140 to hydrogen peroxide stress. Poster presentation at the 10th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
 15. Oberg*[‡], T.S., J.L. Steele, and J.R. Broadbent. 2011. Transcriptional response to hydrogen peroxide stress by *Bifidobacterium longum* strains NCC2705 and D2957. Poster presentation at the 10th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
 16. Oberg*[‡], T.S., R.E. Ward, J.L. Steele, J.R. Broadbent. 2011. Identification of ether-linked lipids in the cytoplasmic membrane of *Bifidobacterium animalis* subsp. *lactis*. Poster presentation at the 10th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
 17. Steele*, J.L., H. Cai, J. Heidenreich, K. Tandee, E. Neeno-Eckwall, N. Perna, J. Reed, B. Stahl, R. Barrangou, and J. Broadbent. 2011. Comparative genomics reveals extensive genetic diversity within *Lactobacillus casei*. Poster presentation at the 10th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
 18. Tandee*, K., P. Wipperfurth, M. Budinich, B. Walters, T. Crenshaw, J.R. Broadbent, and J.L. Steele. 2011. Evaluation of potential probiotic *Lactobacillus casei* strains in an *in vitro* gastrointestinal model and piglets. Poster presentation at the 10th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
 19. Steele*, J.L., J-H Oh, H. Cai, M. Budinich, M. Drake, R. Miracle, and J. Broadbent. 2011. Evaluation of *Lactobacillus casei* strains in a model cheese ripening system. Poster presentation at the 10th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
 20. Oberg*[‡], T, R.E. Ward, J.L. Steele, and J.R. Broadbent. 2011. Transcriptional and physiological responses of *Bifidobacterium animalis* ssp. *lactis* strains to hydrogen peroxide stress. Oral presentation for the annual meeting of the American Dairy Science Association. July 10-14, New Orleans, LA.
 21. Oh*, J-H, M.F. Budinich, M.A. Drake, R.E. Miracle, J.R. Broadbent and J.L. Steele. 2011. Growth and metabolism of *Lactobacillus casei* in a ripening Cheddar cheese model varying salt, lactate, and lactose concentrations. Oral presentation for the annual meeting of the American Dairy Science Association. July 10-14, New Orleans, LA.
 22. Broadbent*, J.R. 2011. A systematic study of cheese microbiology and flavor based on salt cation substitution in lower sodium Cheddar cheese: identification of the predominant species of lactic acid bacteria present during aging. Oral presentation for the Ann. Mtg. Western Dairy Center. May 10-11, Utah State University.

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23. Broadbent*, J.R. 2011. Effect of fat removal on cheese microenvironment and starter culture metabolism in cheddar cheese. Oral presentation for the Ann. Mtg. Western Dairy Center. May 10-11, Utah State University.
24. Oberg*[‡], T.S., R.E. Ward, J. L. Steele, S.C. Ingham, and J.R. Broadbent. 2010. Differential transcriptional response and physiological differences of *Bifidobacterium animalis* ssp. *lactis* strains to hydrogen peroxide stress. Oral presentation for the 6th International Symposium on Probiotics. October 28-29, Montreal, Canada.
25. Oberg*[‡], T.S., J.L. Steele, S.C. Ingham, R.E. Ward, and J.R. Broadbent. 2010. Differential response of *Bifidobacterium animalis* spp. *lactis* to hydrogen peroxide stress. Oral presentation for the annual meeting of the Society for Industrial Microbiology. August 2-5, San Francisco.
26. Tandee*, K., P. Wipperfurth, M. Budinich, B. Walters, T. Crenshaw, J.R. Broadbent, and J.L. Steele. 2010. Use of *in vitro* and *in vivo* gastrointestinal models to evaluate putative probiotic strains of *Lactobacillus casei*. Oral presentation for the annual meeting of the Institute for Food Technologists. July 17-20, Chicago.
27. Aktas*, B., M. Budinich, L. Hoza, J.R. Broadbent, and J.L. Steele. 2010. Shelf-life studies of putative probiotic *Lactobacillus casei* strains in milk and yogurt. Oral presentation for the annual meeting of the Institute for Food Technologists. July 17-20, Chicago.
28. Oberg*[‡], T.S., J.L. Steele, S.C. Ingham, and J.R. Broadbent. 2010. Transcriptional stress responses to hydrogen peroxide in *Bifidobacterium longum*. Oral presentation for the annual meeting of the American Dairy Science Association. July 11-15, Denver, CO.
29. Broadbent*, J.R. Cheese curing and flavor development. 2010. Oral presentation for the USU Cheese Making Short Courses. February 26, Utah State University.
30. Thompson*, R., V. Deibel, J. Steele, and J. Broadbent. 2009. Physiological and transcriptional response of *Lactobacillus casei* ATCC 334 to acid stress. Oral presentation at the Ann. Mtg. American Dairy Science Association. July 12-16, Montreal, Canada.
31. Oberg*[‡], T. S, S.C. Ingham, J.L. Steele, and J.R. Broadbent. 2009. Intrinsic resistance and stress responses to hydrogen peroxide in bifidobacteria. Oral presentation at the Ann. Mtg. American Dairy Science Association. July 12-16, Montreal, Canada.
32. Tan*, W.S., M.F. Budinich, R. Ward, J.R. Broadbent, and J.L. Steele. 2009. Growth of *Lactobacillus casei* at 8°C in Cheddar cheese extract requires supplementation. Oral presentation at the Ann. Mtg. American Dairy Science Association. July 12-16, Montreal, Canada.
33. Barreau*, G., T.A. Tompkins, M. Swiatek, V. de Carvalho, T. Topaloglou, H. Cai, J.R. Broadbent, and J.L. Steele. 2009. Optical mapping as a means of scaffolding difficult to assemble bacterial genomes: a case study with *Lactobacillus helveticus*. Poster presentation at the annual meeting of the Society for Industrial Microbiology. July 26-30, Toronto, Canada.
34. Broadbent*, J.R. 2009. Effect of fat removal on cheese microenvironment and starter culture metabolism in cheddar cheese. Oral presentation for the annual meeting of the Western Dairy Center. May 6, Utah State University.
35. Broadbent*, J.R. 2009. Low fat cheese strategic platform study; objective 3-cheese microbiology. Oral presentation for the annual meeting of the Western Dairy Center. May 6, Utah State University.
36. Broadbent*, J.R. 2009. Cheese curing and flavor development. Oral presentation for the USU Cheese Making Short Courses. February 13 and 27, Utah State University.
37. Broadbent*, J., R.L. Thompson, J.L. Steele, and V. Deibel. 2008. Physiological and transcriptional response of *Lactobacillus casei* ATCC 334 to acid stress. Poster presentation for the 9th International Symposium on Lactic Acid Bacteria: Health, Evolution, and Systems Biology. August 31-September 4, Egmond aan Zee, The Netherlands.

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38. Broadbent*, J., R.L. Thompson, J.E. Hughes, D.L. Welker, J.L. Steele, H. Cai, Y. Ardö, F.K. Vogensen, T.A. Thompkins, K. Hagen, and E. Altermann. 2008. Comparative genome analysis of the obligately homofermentative lactic acid bacterium *Lactobacillus helveticus*. Poster presentation for the 9th International Symposium on Lactic Acid Bacteria: Health, Evolution, and Systems Biology. August 31-September 4, Egmond aan Zee, The Netherlands.
39. Steele, J.L. M. Budinich*, and J.R. Broadbent. 2008. Growth of *Lactobacillus casei* ATCC 334 on complex energy sources found in ripening Cheddar Cheese in a chemically defined media. Poster presentation for the 9th International Symposium on Lactic Acid Bacteria: Health, Evolution, and Systems Biology. August 31-September 4, Egmond aan Zee, The Netherlands.
40. Cai*, H., R.L. Thompson, J.R. Broadbent, and J.L. Steele. 2008. Complete genome sequence and comparative genome microarray of *Lactobacillus casei* provides evidence for genome expansion and reveals significant intra-species diversity. Poster presentation for the 9th International Symposium on Lactic Acid Bacteria: Health, Evolution, and Systems Biology. August 31-September 4, Egmond aan Zee, The Netherlands.
41. Steele*, J., A.K. Abdalla, M.A. Mohran, S.C. Ingham, T.S. Oberg, and J.R. Broadbent. 2008. Intrinsic resistance and stress responses in bifidobacteria. Poster presentation for the 9th International Symposium on Lactic Acid Bacteria: Health, Evolution, and Systems Biology. August 31-September 4, Egmond aan Zee, The Netherlands.
42. Abdalla*, K. A., M.A. Mohran, S.C. Ingham, J.R. Broadbent, and J.L. Steele. 2008. Characterizing stress responses of bifidobacteria strains of industrial importance. Oral presentation at the annual meeting of the American Dairy Science Association. July 7-11, Indianapolis, IN.
43. Budinich*, M., I. Diaz-Muniz, H. Cai, V. Smeianov, J. Broadbent and J. Steele. 2008. Growth substrates for nonstarter lactic acid bacteria: Biochemistry and transcriptional profile of *Lactobacillus casei* ATCC 334 in a Cheddar cheese model system. Oral presentation at the annual meeting of the American Dairy Science Association. July 7-11, Indianapolis, IN.
44. Cai*, H., J.R. Broadbent, and J.L. Steele. 2008. Complete genome sequence and comparative genome microarray of *Lactobacillus casei* provides evidence for genome expansion and reveals significant intraspecies differences. Oral presentation at the annual meeting of the American Dairy Science Association. July 7-11, Indianapolis, IN.
45. Drake, M.A., D.J. McMahon, C.J. Brighton, and J.R. Broadbent*. 2008. Sensory and microbiological properties of Cheddar cheese made with different fat content. Poster presentation at the annual meeting of the American Dairy Science Association. July 7-11, Indianapolis, IN.
46. Broadbent*, J.R. 2008. New seed grant programs. Oral presentation for USU Research Week. March 31, Logan.
47. Drake, M.A., J.R. Broadbent*, C.J. Brighton, and D.J. McMahon. 2008. Influence of fat reduction on sensory and microbiological properties of Cheddar. Poster presentation for the 5th IDF Symposium on Cheese Ripening. March 9-13, Bern, Switzerland.
48. Miracle*, R.E., M.A. Drake, D.M. Barbano, and J.R. Broadbent. 2008. Characterization of flavour development in raw and pasteurized milk Cheddar. Poster presentation for the 5th IDF Symposium on Cheese Ripening. March 9-13, Bern, Switzerland.
49. Budinich*, M., I. Perez-Diaz, H. Cai, V. Smeianov, J. Broadbent and J Steele. 2008. Growth of *Lactobacillus casei* ATCC 334 in a cheese model system: A genomic approach. Poster presentation for the 5th IDF Symposium on Cheese Ripening. March 9-13, Bern, Switzerland.
50. Budinich*, M., M. Johnson, J. Broadbent, and J. Steele. 2008. Characterization of important microbiological and chemical attributes in full fat, reduced fat and low fat Cheddar cheeses made with a single, defined *Lactococcus lactis* starter culture during 9 month ripening period. Poster presentation for the 5th IDF Symposium on Cheese Ripening. March 9-13, Bern, Switzerland.

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51. Broadbent*, J.R. Cheese curing and flavor development. 2008. Oral presentation for the USU Cheese Making Short Courses. February 9 and 26, Utah State University.
52. Broadbent*, J.R. 2007. 71.1: Improving food quality and value. Oral presentation for USU workshop on USDA grant writing. October 15, Logan.
53. Broadbent*, J.R., and J.L. Steele*. 2007. Updates on the biochemistry of dairy flavors. Invited oral presentation for Givaudan, Inc. October 5, Cincinnati.
54. Broadbent*, J.R. 2007. Collaborative research. Oral presentation for the Utah State University Graduate Scholars Certification Program. August 24, Logan.
55. Cai*, H., J.R. Broadbent, and J.L. Steele. 2007. Genetic and phenotypic characterization of *Lactobacillus casei* isolated from different ecological niches. Oral presentation at the annual IFT meeting. July 28-August 1, Chicago, IL.
56. Thompson*[‡], R., J. Broadbent, C. Carpenter, and S. Martini. 2007. *Listeria monocytogenes* control in ready-to-eat meat. Oral presentation at the annual IFT meeting. July 28-August 1, Chicago, IL.
57. Sharp*[∞], M., and J.R. Broadbent. 2007. Comparison of *Lactobacillus casei* viability in yogurt and low fat Cheddar cheese. Selected as one of six undergraduate research oral presentations for the annual IFT meeting. July 28-August 1, Chicago, IL.
58. Broadbent*, J.R. 2007. Low Fat Natural Cheese Strategic Platform Study. Objective 3. Oral presentation for the annual meeting of the Western Dairy Center. June 26, Utah State University.
59. Broadbent*, J.R. 2007. Cheese curing and flavor development. Oral presentation for the USU Cheese Making Short Courses. February 12 and March 8, Utah State University.
60. Broadbent*, J.R. 2006. Analysis of capsule production in *Streptococcus thermophilus* by comparative genomics. Oral presentation for the annual meeting of the Western Dairy Center. August 8, Sun Valley, ID.
61. Broadbent*, J.R. 2006. Finishing the CNRZ 32 Genome. Oral presentation for the annual meeting of the Western Dairy Center. August 8, Sun Valley, ID.
62. Broadbent*, J.R. 2006. Influence of starter and nonstarter lactic acid bacteria on medium redox. Presentation at Cheese Science 2006 Conference. July 24-25, Sydney, Australia
63. Rasmussen*[†], T.C., D.J. McMahon, J.R. Broadbent, and C.J. Oberg. 2006. Influence of adjunct cultures and accelerated ripening on texture and melting properties of Cheddar cheese. Poster presentation at the annual meeting of the American Dairy Science Association. July 9-13, Minneapolis, MN.
64. Broadbent, J.R., D. Welker, B. Rodríguez, A. Cefalo, F. Gagnon, and M.-R. van Calsteren. 2006. Partial characterization of the capsular exopolysaccharide locus of *Streptococcus thermophilus* MR-1C. Poster presentation at the ASM international conference on Streptococcal Genetics. June 18-21, St. Malo, France.
65. Broadbent*, J.R., B. Rodríguez, P. Joseph, E. Smith, and J. Steele. 2006. Conversion of *Lactococcus lactis* cell envelope proteinase specificity by partial allele exchange. Poster presentation at the ASM international conference on Streptococcal Genetics. June 18-21, St. Malo, France.
66. Broadbent*, J.R. 2006. Cheese curing and flavor development. Oral presentation for the USU Cheese Making Short Courses, February 9 and March 9, Utah State University.
67. Broadbent*, J.R., J.L. Steele, A. Bhattacharyya, H. Burd, V. Kapatral, and S. Richter. 2005. Comparative genomic analysis of two Group II lactobacilli: *Lactobacillus casei* ATCC 334 and *Lactobacillus plantarum* WCFS1. Poster presentation at the 8th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.

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68. Broadbent*, J.R., J.L. Steele, D.A. Mills, A. Bhattacharyya, H. Burd, V. Kapatral, and S. Richter. 2005. Comparative genomic analysis of *Pediococcus pentosaceus* ATCC 25745 and *Lactobacillus casei* ATCC 334. Poster presentation at the 8th International Symposium on Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
69. Broadbent*, J.R., J. Steele, A. Bhattacharyya, T. Walunas, M. van de Guchte, E. Maguin, and G. Yuksel. 2005. Comparative genome analysis of the obligately homofermentative lactic acid bacterium *Lactobacillus delbrueckii* subsp. *bulgaricus*. Poster presentation at the 8th International Symposium on Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
70. Broadbent*, J.R., J.E. Hughes, B. Rodriguez, V.V. Smeianov, and J.L. Steele. 2005. Phenotypic and genotypic analysis of amino acid auxotrophy in *Lactobacillus helveticus* CNRZ 32. Poster presentation at the 8th International Symposium on Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
71. Steele*, J.L., I. Díaz-Muñiz, V.V. Smeianov, and J.R. Broadbent. 2005. Examining growth of *Lactobacillus casei* ATCC 334 in system modeling ripening Cheddar cheese. Poster presentation at the 8th International Symposium on Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
72. Steele*, J.L., V.V. Smeianov, W.P. Wechter, B.T. Rodríguez, J.E. Hughes, and J.R. Broadbent. 2005. Comparative high-density microarray analysis of gene expression during growth of *Lactobacillus helveticus* in milk versus rich culture medium. Poster presentation at the 8th International Symposium on Lactic Acid Bacteria Genetics, Metabolism and Applications. August 28-September 1, Egmond aan Zee, The Netherlands.
73. Drake*, M.A., D.J. McMahon, J.R. Broadbent, S.L. Larsen, C. Brothersen, P. Joseph, and R.L. Boucher. 2005. Impact of accelerated ripening temperatures and times on flavor and texture development of Cheddar cheese. Poster presentation for the annual meeting of the Institute for Food Technologists. July 16-20, New Orleans, LA.
74. Broadbent*, J.R. 2005. Effect of oxidation-reduction potential on growth of lactic acid bacteria. Oral presentation at the annual meeting of the Western Dairy Center. June 14, Utah State University.
75. Broadbent*, J.R. 2005. Analysis of capsule production in *Streptococcus thermophilus* by comparative genomics. Oral presentation at the annual meeting of the Western Dairy Center. June 14, Utah State University.
76. Broadbent*, J.R. 2005. Finishing CNRZ 32 genome. Oral presentation at the annual meeting of the Western Dairy Center. June 14, Utah State University.
77. Broadbent*, J.R. 2005. Microbial bio-transformation: Strategic enhancement of bioprocessing and biomaterials research and technology at USU. Oral presentation for Martin Frey, co-Director of Utah state Department of Community and Economic Development. April 20, Utah State University.
78. Broadbent*, J.R. and J.E. Hughes. 2005. Genetic and phenotypic analysis of amino acid auxotrophy in *Lactobacillus helveticus* CNRZ32. Oral presentation at the annual meeting of the Utah Academy of Sciences, Arts, and Letters. April 15, Utah Valley Community College, Provo.
79. Broadbent*, J.R. 2005. Microbial bio-transformation: Strategic enhancement of bioprocessing and biomaterials research and technology at USU. Invited oral presentation for Dr. Jack Brittain, Vice President for Technology Venture Development at the University of Utah. April 8, Utah State University.

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80. Boucher^{*‡}, B., and J.R. Broadbent. 2005. Bacterial growth and oxidation-reduction potential of different lactic acid bacteria strains. Oral presentation at the American Society for Microbiology annual regional meeting. March 12, Weber State University, Ogden, UT.
81. Broadbent*, J.R. 2005. Cheese curing and flavor development. Oral presentation for the USU Cheese Making Short Courses. February 10, Utah State University.
82. Broadbent*, J.R. and J.L. Steele. 2004. Genomics of flavor development in cheese via lactobacilli. Invited oral presentation for the Symposium on Genomics of Lactic Acid Bacteria at the annual meeting of the American Society for Microbiology. May 23-27, New Orleans.
83. Smeianov*, V.V., P. Wechter, J.R. Broadbent, and J.L. Steele. 2004. Comparative high-density microarray analysis of gene expression during growth of *Lactobacillus helveticus* in milk vs. rich culture medium. Poster presentation at the annual meeting of the American Society for Microbiology. May 23-27, New Orleans.
84. Broadbent*, J.R. 2004. From birds to bugs: aspirations of a developing biologist. Inaugural professor lecture hosted by the USU president and provost. April 21, Utah State University.
85. Broadbent*, J.R. 2004. Cheesy tales for the USU faculty forum. Oral seminar for members of the USU Faculty Forum. April 1, Logan, UT.
86. Broadbent*, J.R., B. T. Rodríguez, P. Joseph, E.A. Smith, and J.L. Steele. 2004. Conversion of *Lactococcus lactis* cell envelope proteinase specificity through partial allele exchange. Poster presentation at the International Dairy Federation Symposium on Cheese: Ripening, Characterization, and Technology. March 21-25, Prague, Czech Republic.
87. Broadbent*, J.R. 2004. Cheese curing and flavor development. Oral presentation for the USU Cheese Making Short Courses. February 5 and February 26, Utah State University.
88. Broadbent*, J.R. 2003. Food science and microbial genomics. Invited oral presentation for NFS 1000, World of Food and Nutrition. September 10, 2003. Utah State University.
89. Sridhar, V.R., J.L. Steele, J. Hughes, D.L. Welker, and J.R. Broadbent*. 2003. Functional analysis of endopeptidase genes identified from the genomic sequence of *Lactobacillus helveticus* CNRZ32. Poster presentation at Functional Genomics of Gram-positive Microorganisms. June 22-27, Baveno, Italy.
90. Broadbent*, J.R. New starter systems for accelerated ripened Cheddar cheese. 2003. Oral presentation at the annual meeting of the Western Dairy Center. May 13, Utah State University.
91. Broadbent*, J.R. 2003. Production of intensely flavored Cheddar-type cheeses by adjunct cultures. Oral presentation at the annual meeting of the Western Dairy Center. May 13, Utah State University.
92. Broadbent*, J.R. 2003. Effect of oxidation-reduction potential on growth of lactic acid bacteria. Oral presentation at the annual meeting of the Western Dairy Center. May 13, Utah State University.
93. Broadbent*, J.R. 2003. Analysis of capsule production in *Streptococcus thermophilus* by comparative genomics. Oral presentation at the annual meeting of the Western Dairy Center. May 13, Utah State University.
94. Broadbent*, J.R. 2003. Compilation of a whole genome sequence for *Lactobacillus casei* ATCC334. Oral presentation at the annual meeting of the Western Dairy Center. May 13, Utah State University.
95. Tunick*, M.H., N. Rynne, T.P. Guinee, D.L. Van Hekken, A.L. Kelly, T.P. Beresford, E.L. Malin, J.R. Broadbent, and D.J. McMahon. 2003. Rheology of low-fat Cheddar cheeses made with exopolysaccharide-producing cultures. Oral presentation at annual meeting of the American Chemical Society. March 23-27, New Orleans, LA.
96. Broadbent*, J.R. 2003. Cheese curing and flavor development. Oral presentation for the 19th Cheese Making Short Course. February 4-6, Utah State University.

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97. Broadbent, J.R. 2002. Genomics research in lactic acid bacteria. Invited lecture for NFS 1000, World of Food and Nutrition. September 18, 2002. Utah State University.
98. Broadbent*, J.R., J.L. Steele, D.L. Welker, and J. Hughes. 2002. Global analysis of the *Lactobacillus helveticus* CNRZ32 proteolytic enzyme system. Poster presentation at the 7th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. September 1-5, Egmond aan Zee, The Netherlands.
99. Broadbent*, J.R., S. Gummalla, J. Hughes, M.E. Johnson, S. Rankin, and M. Drake. 2002. Effect of *Lactobacillus casei* D-hydroxyisocaproic acid dehydrogenase overexpression on cheese volatile chemistry and sensory properties. Poster presentation at the 7th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. September 1-5, Egmond aan Zee, The Netherlands.
100. Welker*, D.L., J.R. Broadbent, A.D. Cefalo, D.J. McMahon, and C.J. Oberg. 2002. Mechanism(s) for loss of exopolysaccharide synthesis phenotype in strains of *Streptococcus thermophilus*. Poster presentation at the 7th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. September 1-5, Egmond aan Zee, The Netherlands. This presentation was also selected for oral presentation in a special session designed to highlight some of the most interesting posters at the meeting.
101. Welker*, D.L., J.R. Broadbent, R. Jensen, D.J. McMahon, C.J. Oberg, and J.A. Ahlgren. 2002. Polymorphisms in closely related exopolysaccharide gene clusters of *Streptococcus thermophilus* may influence polymer type and composition. Poster presentation at the 7th International Symposium of Lactic Acid Bacteria Genetics, Metabolism and Applications. September 1-5, Egmond aan Zee, The Netherlands.
102. Broadbent*, J.R. 2002. New starter systems for accelerated ripened Cheddar cheese. Oral presentation at the annual meeting of the Western Dairy Center. August 6, Sun Valley, ID.
103. Broadbent*, J.R. 2002. Production of intensely flavored Cheddar-type cheeses by adjunct cultures. Oral presentation at the annual meeting of the Western Dairy Center. August 6, Sun Valley, ID.
104. Welker*, D.L. and J.R. Broadbent. 2002. Understanding capsule production in *Streptococcus thermophilus* MR-1C. Oral presentation at the Ann. Mtg. Western Dairy Center. August 6, Sun Valley, ID.
105. Broadbent*, J.R. 2002. Making Aggie ice cream. Invited oral presentation for children in the USU Discovery Science program. August 2, 2002. Utah State University.
106. Broadbent*, J.R. 2002. Genomics studies in food science. Invited oral presentation for former Iranian Ambassador to the US, Ardeshir Zahedi. Organized by the USU College of Agriculture. July 5, Utah State University.
107. Welker, D.L., C.J. Oberg, A.D. Cefalo*, D.J. McMahon, and J.R. Broadbent. 2002. Insight on the mechanism(s) for loss of exopolysaccharide synthesis phenotype in *Streptococcus thermophilus*. Poster presentation at the annual meeting of the American Society for Microbiology. May 19-23, Salt Lake City, UT.
108. Broadbent*, J.R. 2002. Genomics and cheese flavor: evaluating the metabolic potential of *Lactobacillus helveticus* CNRZ32. Invited oral presentation for NFS 7800, graduate seminar. April 24, Utah State University.
109. Broadbent*, J.R. 2002. Genomic research in lactic acid bacteria. Invited oral presentation for the University of Utah genomics exchange visit organized by the USU Vice President for Research. March 1, Utah State University.
110. Steele, J., J. Broadbent*, R. Godiska, T. Schoenfeld, M. Reuter, and D. Mead*. 2002. Transcription-free vectors for cloning AT-rich DNA. Poster presentation at the 2nd ASM and TIGR Conference on Microbial Genomes. February 10-13, Las Vegas, NV.

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111. Mead*, D., R. Godiska, T. Schoenfeld, M. Reuter, J. Broadbent*, and J. Steele. 2002. Construction of genomic libraries From unclonable DNA. Poster presentation at the ASM and TIGR Conference on Microbial Genomes. February 10-13, Las Vegas, NV.
112. Ooman*[‡], B.S., D.J. McMahon, J.R. Broadbent, and C.J. Oberg. 2001. Influence of proteolytic enzymes from thermophilic lactic acid bacteria on the functional properties of Mozzarella cheese. Oral presentation at the annual meeting of the American Dairy Science Association. July 24-28, Indianapolis, IN.
113. Sharma*, P., R.I. Dave, K. Muthukumarappan, D.J. McMahon, and J.R. Broadbent. 2001. Melt and proteolysis of Mozzarella cheese as affected by starter culture and coagulating enzymes. Poster presentation at the annual meeting of the American Dairy Science Association. July 24-28, Indianapolis, IN.
114. Singleton*[‡], T.J., D.J. McMahon and J.R. Broadbent. 2001. Effect of microbial exopolysaccharide on functionality in high moisture cheese. Oral presentation at the annual meeting of the American Dairy Science Association. July 24-28, Indianapolis, IN.
115. Brennan*, C.P., and J.R. Broadbent. 2001. New starter systems for accelerated ripened Cheddar cheese. Oral presentation at the annual meeting of the Western Dairy Center. June 14-15, Utah State University.
116. Singleton*[‡], T., D.J. McMahon, and J.R. Broadbent. 2001. Effects of microbial exopolysaccharide on functionality in high moisture cheese. Oral presentation at the annual meeting of the Western Dairy Center. June 14-15, Utah State University.
117. Welker*, D.L., and J.R. Broadbent. 2001. Understanding capsule production in *Streptococcus thermophilus*. Oral presentation at the annual meeting of the Western Dairy Center. June 14-15, Utah State University.
118. Broadbent*, J.R. 2001. What is food science? Oral presentation to youth of Nuestro Futuro. February 15, Utah State University.
119. Broadbent*, J.R. 2001. Cheese curing and flavor development. Oral presentation for the 17th Cheese Making Short Course. February 6-8, Utah State University.
120. Broadbent*, J.R. 2000. Food biotechnology. Invited oral presentation for NFS 3110. November 16, Utah State University.
121. Broadbent*, J.R. 2000. Improvement of Mozzarella cheese by understanding exopolysaccharide production in thermophilic starter cultures. Oral presentation at annual meeting of the Western Dairy Center. May 17-18, Utah State University.
122. Broadbent*, J.R. 2000. Application of a metabolic control switch to improve and control starter proteolysis in Mozzarella cheese. Oral presentation at annual meeting of the Western Dairy Center. May 17-18, Utah State University.
123. Broadbent*, J.R. 2000. Growth of non-starter lactic acid bacteria in reduced fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. May 17-18, Utah State University.
124. Broadbent*, J.R. 2000. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the conversion of aromatic amino acids into off flavor compounds in cheese. Oral presentation at annual meeting of the Western Dairy Center. May 17-18, Utah State University.
125. Broadbent*, J.R. 2000. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the production and degradation of bitter peptides in cheese. Oral presentation at annual meeting of the Western Dairy Center. May 17-18, Utah State University.

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126. Broadbent, J.R. 2000. Use of exopolysaccharide-producing cultures to improve the functionality of low fat cheese. Oral presentation at International Dairy Federation Symposium on Ripening and Quality of Cheeses. March 12-17, Banff, Canada.
127. Broadbent*, J.R. 2000. Cheese curing and flavor development. Oral presentation for the 16th Cheese Making Short Course. February 9-11, Utah State University.
128. Broadbent*, J.R. 1999. Microbes and agricultural biotechnology: Is it in the genes? Invited oral presentation for Honors 1310, Integrated Science: Microbes and Agriculture, Contemporary Topics of Importance. October 6, Utah State University.
129. Broadbent*, J.R. 1999. Food Science -Um, Um, Good! Invited oral presentation for NFS 1000, World of Food and Nutrition. October 6, Utah State University.
130. Caldwell[‡], S.L., D.J. McMahon, J.R. Broadbent*, and C.J. Oberg. 1999. Characterization of three *Pediococcus acidilactici* temperate bacteriophages. Poster presentation at the 6th International Symposium on Lactic Acid Bacteria Genetics, Metabolism, and Applications. September 19-23, Veldhoven, The Netherlands.
131. Broadbent*, J.R. and S. Gummalla. 1999. Tryptophan Catabolism by *Lactobacillus casei* and *Lactobacillus helveticus* cheese flavor adjuncts. Poster presentation at the 6th International Symposium on Lactic Acid Bacteria Genetics, Metabolism, and Applications. September 19-23, Veldhoven, The Netherlands.
132. Dave*, R.I., D.J. McMahon, C.J. Oberg, and J.R. Broadbent. 1999. Influence of coagulant concentration on proteolysis, meltability and rheology of 0, 10, and 20% fat containing Mozzarella cheeses made using direct acidification. Oral presentation at the annual meeting of the American Dairy Science Association. June 20-23, Memphis, TN.
133. Dave*, R.I., D.J. McMahon, C.J. Oberg, and J.R. Broadbent. 1999. Factors and mechanism involved in temperature-dependent opacity of non-fat Mozzarella cheese. Oral presentation at the annual meeting of the American Dairy Science Association. June 20-23, Memphis, TN.
134. Peterson*[‡], B.L., R.I. Dave, D.J. McMahon, C.J. Oberg, and J.R. Broadbent. 1999. Influence of capsular and ropy exopolysaccharide-producing *Streptococcus thermophilus* on Mozzarella cheese and cheese whey. Oral presentation at the annual meeting of the American Dairy Science Association. June 20-23, Memphis, TN.
135. Oberg*, C.J., J.R. Broadbent, S.L. Caldwell, and D.J. McMahon. 1999. Induction and characterization of temperate bacteriophages harbored by *Pediococcus acidilactici*. Poster presentation at the annual meeting of the American Society for Microbiology. May 30-June 3, Chicago, IL.
136. Broadbent*, J.R. 1999. Application of a metabolic control switch to improve and control starter proteolysis in Mozzarella cheese. Oral presentation at annual meeting of the Western Dairy Center. May 20-21, Newport, OR.
137. Broadbent*, J.R. 1999. Growth of non-starter lactic acid bacteria in reduced fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. May 20-21, Newport, OR.
138. Broadbent*, J.R. 1999. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the conversion of aromatic amino acids into off flavor compounds in cheese. Oral presentation at annual meeting of the Western Dairy Center. May 20-21, Newport, OR.
139. Broadbent*, J.R. 1999. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the production and degradation of bitter peptides in cheese. Oral presentation at annual meeting of the Western Dairy Center. May 20-21, Newport, OR.
140. Broadbent*, J.R. 1999. Cheese curing and flavor development. Oral presentation for the 15th Cheese Making Short Course. February 9-11, Utah State University.

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141. Broadbent*, J.R. 1999. Cheese manufacture and starter cultures. Invited oral presentation for Agricultural Biology. January 21, Mountain Crest High School, Hyrum, UT.
142. Broadbent*, J.R. 1999. Practical considerations in the use of exopolysaccharide-producing cultures. Invited oral presentation for NFS 7800, Graduate Seminar. January 13, Utah State University.
143. Broadbent, J.R. Food fermentation. 1998. Invited oral presentation for NFS 1000, World of Food and Nutrition. November 16, Utah State University.
144. Broadbent, J.R. 1998. Microbes and agricultural biotechnology: Is it in the genes? Invited oral presentation for Honors 1310, Integrated Science. October 15, Utah State University.
145. Broadbent*, J.R., L. Wei, D.J. McMahon, and C.J. Oberg*. 1998. Characterization of the *Lactobacillus helveticus groESL* operon. Poster presentation at the annual meeting of the American Dairy Science Association. July 27-30, Denver, CO.
146. Broadbent*, J.R. 1998. Growth of non-starter lactic acid bacteria in reduced fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. June 10-11, Utah State University.
147. Broadbent*, J.R. 1998. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the conversion of aromatic amino acids into off flavor compounds in cheese. Oral presentation at annual meeting of the Western Dairy Center. June 10-11, Utah State University.
148. Broadbent*, J.R. 1998. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the production and degradation of bitter peptides in cheese. Oral presentation at annual meeting of the Western Dairy Center. June 10-11, Utah State University.
149. Oberg*, C.J., and J.R. Broadbent. 1998. Improvement of Mozzarella cheese functionality by understanding exopolysaccharide production in thermophilic starter cultures. Oral presentation at annual meeting of the Western Dairy Center. June 10-11, Utah State University.
150. Broadbent*, J.R. 1998. Microbial biotechnology in agriculture. Invited oral presentation for NFS 235, Issues in Nutrition and Food Sciences. May 21, Utah State University.
151. Broadbent*, J.R., D. Low, D., D.J. McMahon, C.J. Oberg, and J.A. Ahgren. 1998. Properties of a novel *Streptococcus thermophilus* capsular heteropolysaccharide. Poster presentation at the American Society for Microbiology's Conference on Streptococcal Genetics. April 26-29, Vichy, France.
152. Broadbent*, J.R. 1998. Cheese curing and flavor development. Oral presentation for the 14th Cheese Making Short Course. March 26-28, Utah State University.
153. Broadbent*, J.R., L. Wei, D.J. McMahon, and C.J. Oberg. 1997. Characterization of the *Lactobacillus helveticus groESL* operon by inverse PCR. Poster presentation at the American Society for Microbiology's 5th International *E. coli* and Small Genomes Conference. October 12-15, Snowbird, UT.
154. Broadbent*, J.R. 1997. Improvement of Cheddar cheese quality through identification and characterization of microbial enzymes responsible for the production or degradation of bitter peptides in cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
155. Broadbent*, J. R. 1997. Improvement of low-fat Cheddar cheese through identification and characterization of microbial enzymes responsible for the conversion of aromatic amino acids into off flavor compounds in cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
156. Broadbent*, J.R. 1997. Growth of non-starter lactic acid bacteria in reduced fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.

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157. Broadbent*, J.R. 1997. Peptide characterization and analysis of flavor components from low-fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
158. Broadbent*, J.R. 1997. Indole production by lactobacteria in low-fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
159. Broadbent*, J.R. 1997. Tyrosine metabolism and the formation of para-cresol in low-fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
160. Broadbent*, J.R. 1997. Influence of paired starters and adjunct combinations on the flavor and chemistry of 50% reduced fat Cheddar cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
161. Oberg*, C.J., and J.R. Broadbent. 1997. Improvement of Mozzarella cheese functionality by understanding exopolysaccharide production in thermophilic starter cultures. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
162. Oberg*, C.J., and J.R. Broadbent. 1997. Influence of alternative starter cocci on the physical properties of lowfat Mozzarella cheese. Oral presentation at annual meeting of the Western Dairy Center. August 27-28, Sun Valley, ID.
163. Low*[‡], D., D.J. McMahon, C.J. Oberg, D. Horne, and J.R. Broadbent. 1997. Influence of *Streptococcus thermophilus* 10JC exopolysaccharide on the moisture content of low-fat Mozzarella cheese. Oral presentation at the annual meeting of the American Dairy Science Association. Guelph, Canada.
164. Low*[‡], D., D.J. McMahon, C.J. Oberg, D. Horne, and J.R. Broadbent. 1997. Influence of *Streptococcus thermophilus* 10JC on the moisture content of low-fat Mozzarella cheese. Oral presentation at the annual meeting of the Utah Academy for Arts, Sciences, and Letters. April 11, Weber State University, Ogden, UT.
165. Timpone, D., K. Fensterer, L. Wei, J. Broadbent*, and J. Steele*. 1996. Characterization of a small heat shock protein from *Lactobacillus helveticus* CNRZ32. Poster presentation at the 5th Symposium on Lactic Acid Bacteria Genetics, Metabolism, and Applications. September 8-12, Veldhoven, The Netherlands.
166. Broadbent*, J. 1996. Influence of alternative starter cocci on the physical properties of low-fat Mozzarella cheese. Oral presentation at the annual meeting of the Western Center for Dairy Proteins Research and Technology. August 23, Utah State University.
167. Broadbent*, J. 1996. Improvement of low-fat Cheddar cheese through identification, isolation, and analysis of enzymes and metabolites produced by adjunct cultures during accelerated Cheddar cheese flavor development. Oral presentation at the annual meeting of the Western Center for Dairy Proteins Research and Technology. August 23, Utah State University.
168. Lin*[‡], C., and J.R. Broadbent. 1996. Influence of heat- and cold shock treatments on viability of *Lactococcus lactis* ssp. *lactis* MM210 during freezing and lyophilization. Oral presentation at the annual meeting of the American Dairy Science Association. July 14-17, Oregon State University, Corvallis.
169. Kong*[‡], Y., M. Strickland, and J.R. Broadbent. 1996. Tyrosine and phenylalanine catabolism by *Lactobacillus casei* flavor adjuncts: Biochemistry and implications in cheese flavor. Oral presentation at the annual meeting of the American Dairy Science Association. July 14-17, Oregon State University, Corvallis.
170. Gummalla*[‡], S., and J.R. Broadbent. 1996. Indole production by *Lactobacillus* spp. in cheese: A possible role for tryptophanase. Oral presentation at the annual meeting of the American Dairy Science Association. July 14-17, Oregon State University, Corvallis.

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171. Broadbent*, J.R., B.C. Weimer, and M. Strickland. 1996. Influence of single-strain *Lactococcus lactis* starters on the accumulation of casein-derived peptides in 60% reduced fat Cheddar cheese. Oral presentation at the annual meeting of the American Dairy Science Association. July 14-17, Oregon State University, Corvallis.
172. Gummalla*[‡], S., and J.R. Broadbent. 1996. Evidence for tryptophanase in *Lactobacillus* spp. isolated from unclean-flavored cheese. Oral presentation at the annual meeting for the Intermountain Branch of the American Society for Microbiology. April 20, Utah State University.
173. Kong*[‡], Y., M. Strickland, and J.R. Broadbent. 1996. Tyrosine and phenylalanine catabolism by *Lactobacillus casei*. Oral presentation at the annual meeting for the Intermountain Branch of the American Society for Microbiology. April 20, Utah State University.
174. Broadbent*, J. 1996. Food biotechnology. Invited lecture for NFS 235, Issues in Nutrition and Food Sciences. April 4, Dept. NFS, Utah State University.
175. Broadbent*, J., B. Weimer, M. Strickland, J. Steele, M. Johnson and J. Jaeggi. 1996. Differences in casein-derived peptides which accumulate in 60% reduced fat Cheddar cheese manufactured with various single-strain *Lactococcus lactis* starters. Poster presentation at International Dairy Federation Symposium on Ripening and Quality of Cheeses. February 26-28, Besançon, France.
176. Weimer*, B., J. Broadbent, and M. Strickland. 1996. Use of capillary electrophoresis to monitor diverse compounds during Cheddar cheese ripening. Poster presentation at International Dairy Federation Symposium on Ripening and Quality of Cheeses. February 26-28, Besançon, France.
177. Broadbent*, J. 1996. Bacteriophage control. Oral presentation for 12th Cheese Making Short Course. February 20-22, Utah State University.
178. Caldwell*[‡], S.L., J.R. Broadbent, D.J. McMahon, and C.J. Oberg. 1995. Development of lactose-positive *Pediococcus* species cheese starter cultures. Oral presentation at the annual meeting of the American Dairy Science Association. June 25-28, Cornell University, Ithaca, NY.
179. Broadbent*, J.R. 1995. Cultures for low-fat cheese. Oral presentation for the 11th annual Cheese Management Short Course. May 16-18, Utah State University.
180. Caldwell*[‡], S.L., J.R. Broadbent, D.J. McMahon, and C.J. Oberg. 1995. Heterologous expression of a lactococcal lactose plasmid in *Pediococcus* spp. Oral presentation at the annual meeting of the Utah Academy of Arts, Sciences, and Letters. May 12, Utah State University.
181. Gummalla*[‡], S., and J.R. Broadbent. 1995. Use of DNA amplification with degenerate primers to detect the tryptophanase gene in several species of bacteria. Oral presentation at the annual meeting of the Utah Academy of Arts, Sciences, and Letters. May 12, Utah State University.
182. Lin*[‡], C., and J.R. Broadbent. 1995. Influence of cold shock on cell viability at low temperature in *Lactococcus lactis*. Oral presentation at the annual meeting of the Utah Academy of Arts, Sciences, and Letters. May 12, Utah State University.
183. Broadbent*, J.R., and R. Munger*. 1995. Foodborne hepatitis: biology and epidemiology of a modern epidemic. Invited seminar for College of Agriculture Ag Week. May 1, Utah State University.
184. Caldwell*[‡], S.L., J.R. Broadbent, D.J. McMahon, and C.J. Oberg. 1995. Genetic construction of lactose-positive pediococci. Oral presentation at the annual regional meeting for the American Society for Microbiology. April 22, Idaho State University, Pocatello.
185. Gummalla*[‡], S., and J.R. Broadbent. 1995. Detection of the tryptophanase gene by DNA amplification with degenerate primers. Oral presentation at the annual regional meeting for the American Society for Microbiology. April 22, Idaho State University, Pocatello.
186. Lin*[‡], C., and J.R. Broadbent. 1995. Cold shock affects cell viability in *Lactococcus lactis* at low temperatures. Oral presentation at the annual regional meeting for the American Society for Microbiology. April 22, Idaho State University, Pocatello.

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187. Broadbent*, J.R., and C. Lin. 1995. Cold shock in *Lactococcus lactis* affects cell viability at low temperatures. Oral presentation at the International Dairy Lactic Acid Bacteria Conference. February 19-23, Palmerston North, New Zealand.
188. Broadbent*, J.R., C.J. Oberg, H. Wang, and L. Wei. 1995. Heat shock response in three dairy *Lactobacillus* species. Poster presentation at the International Dairy Lactic Acid Bacteria Conference. February 19-23, Palmerston North, New Zealand.
189. Weimer*, B.C., C. Brennand, J. Broadbent, J. Jaegi, M. Johnson, F. Milani, B. Mistry, G. Reineccius, J. Steele, and M. Strickland. 1995. Chemical and sensory attributes of 50% reduced-fat Cheddar made with various adjunct bacteria. Oral presentation at the International Dairy Lactic Acid Bacteria Conference. February 19-23, Palmerston North, New Zealand
190. Weimer*, B.C., L.-S. Chou, and J.R. Broadbent. 1995. Protein expression in acid-tolerant *Lactobacillus acidophilus* mutants. Poster presentation at the International Dairy Lactic Acid Bacteria Conference. February 19-23, Palmerston North, New Zealand.
191. Broadbent*, J.R., B.C. Weimer, M. Johnson, J. Steele, and G. Reineccius. 1994. Flavor and analytical attributes of 50% reduced-fat Cheddar manufactured with various adjunct bacteria. Oral presentation at the annual meeting of the Western Center for Dairy Proteins Research and Technology. July 28-29, Sun Valley, ID.
192. Broadbent*, J.R., H. Wang, and C.J. Oberg. 1994. Evidence for heat- and acid adaptation responses in *Lactobacillus helveticus* LH212. Oral presentation at the annual meeting of the American Society for Microbiology. May 23-27, Las Vegas, NV.
193. Broadbent*, J.R., K. Gillies, H. Wang, J. K. Kondo, and W.E. Sandine. 1994. Evidence for pAM β 1-mediated conjugal retrotransfer in *Lactococcus lactis* subsp. *lactis*. Poster presentation at IVth International ASM Conference on Streptococcal Genetics. May 15-18, Santa Fe, NM.
194. Broadbent*, J.R., H. Wang, and C.J. Oberg. 1994. Stress responses in *Lactobacillus helveticus* LH212. Oral presentation at the annual meeting of the Utah Academy for Arts, Sciences and Letters. May 13, Weber State University, Ogden, UT
195. Broadbent*, J.R. 1994. Biotechnology in the food industry. Invited lecture for NFS 235, Issues in Nutr. and Food Sci. May 10, Utah State University.
196. Broadbent*, J.R. 1994. Starter cultures for lowfat cheese. Oral presentation at the 10th annual Cheese Making Short Course. February 22-24, Utah State University.
197. Broadbent*, J.R. Nucleic acids and nucleotides. 1993. Invited lecture for NFS 440, Nutr. and Human Metabol. October 22, Utah State University.
198. Broadbent*, J.R., W. E. Sandine, and H. Wycoff. 1993. DNA sequence analysis of genes associated with nisin production. Oral presentation at the annual meeting of the Western Center for Dairy Proteins Research and Technology. July 30, Utah State University.
199. Broadbent*, J.R. 1993. Food safety and new technology. Invited oral presentation at the EFNEP training program. May 5, Utah State University.
200. Broadbent*, J.R. 1993. Biotechnology and food safety. Invited lecture for NFS 235, Issues in Nutr. and Food Sci. April 29, Utah State University.
201. Broadbent*, J.R. 1993. Starter cultures for lowfat cheese manufacturing. Oral presentation at the 9th annual Cheese Making Short Course. February 23-25, Utah State University.
202. Broadbent*, J.R., J.K. Kondo, and W.E. Sandine. 1992. Genetic construction of nisin-producing and nisin-immune dairy starter cultures. Poster presentation at the 10th Biennial Cheese Conference August 18-20, Utah State University.
203. Broadbent*, J.R., W.E. Sandine, and H. Wycoff. 1992. Heterologous expression of genes associated with nisin production. Oral presentation at the annual meeting of the Western Center for Dairy Proteins Research and Technology. July 9-10, Corvallis, OR.

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UNIVERSITY SERVICE

NDFS Department:

- Chair, Promotion and Tenure committee for Dr. Karin Allen.
- Chair, Promotion and Tenure committee for Dr. Robert Ward; awarded tenure in 2012.
- Member, Post-tenure review committee for Dr. Marie Walsh, 2011.
- Member, Post-tenure review committee for Dr. Donald McMahon, 2010.
- Chair, Post-tenure review committee for Dr. Ilka Nemere, 2010.
- Member, Promotion and Tenure committee for Dr. Silvana Martini; awarded tenure in 2011.
- Member, Promotion committee for Dr. Marie Walsh.
- Director, Undergraduate Food Science Program, 1998-2006.
- Member, Ghandi Fellowship Committee, 2003-2006.
- Chair, Search Committee for new Food Science faculty member with expertise in sensory studies, 2004-05 (selected Dr. Silvana Martini).
- Member, Committee on Dairy Products Sales, 2004-05.
- Chair, Search Committee for new Food Science faculty member with expertise in bioactive foods, 2003-2004 (selected Dr. Robert Ward).
- Member, Committee on Research Activities, 2002
- Member, Space Allocation Committee, 1997-98.
- Member, Search Committee for Public Health Nutrition faculty position, 1995-96 (selected Dr. Ilka Nemere).
- Member, Committees to address future Research Focus, Program Coordination, and the 5-10 year Departmental Direction for presentation at the 1995 NFS faculty retreat.
- Chair, Committee to Develop a Departmental Laboratory Policy Statement, 1994.
- Member, Space Allocation Committee, 1994.
- Member, Scholarship Committee, 1994-96.
- Member, Committee on Undergraduate Recruitment, 1992-1997.

College of Agriculture:

- College of Agriculture representative to the USU Professional Responsibilities and Procedures Committee, 2009-2012.
- Member, Promotion and Tenure committee for Dr. Clay Isom, Dept. Animal, Dairy, and Veterinary Sciences.
- Member, Promotion committee for Dr. Tom Baldwin, Dept. Animal, Dairy, and Veterinary Sciences.
- Member, Promotion committee for Dr. Jeanette Norton, Dept. Plants, Soils, and Climate; promoted to professor in 2007.
- Member, College of Agriculture Graduate Fellowship Committee, 2003-2008.
- College of Agriculture representative to the USU Educational Policies Committee, 1999-2000.
- College of Agriculture representative to the USU Academic Standards Subcommittee of the Educational Policies Committee, 1999-2000.
- College of Agriculture representative to the USU Executive Committee, 1999-2001.
- College of Agriculture Faculty Senator, 1998-2001.
- Member, College of Agriculture Teacher-, Advisor-, Scholar-, and Graduate Student of the Year; Service to Students and Faculty Award Committee, 1995-1998.

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Member, College of Agriculture General Education Committee, 1995.

University:

Chair, Search Committee for new Associate VP Research and Associate Dean for Graduate Studies, 2012 (Dr. Richard Innoye hired).

Interim Director for the Sponsored Projects Office, June 1-August 1, 2012.

Member, Search Committee for Graduate Program Coordinator, 2012 (Joan Rudd hired).

Member, Search Committee for Human Resources Coordinator, 2011 (Afi Malek hired).

Member, Promotion committee for Dr. Dennis Welker, Department of Biology.

Chair, USU committee to promote Microbial Transformations USTAR Initiative, 2005-2006.

Member, USU task force to develop High Performance Computing, 2005.

Member, USU ADVANCE committee on review of dual career accommodation policy, 2003-2004.

Member, USU Biotechnology Center Protein Advisory Committee, 1998.

Member, >40 graduate student committees.

Ad-hoc reviewer for the Utah Agricultural Experiment Station CRIS program (1996, 1998, 2000, 2002, 2006, 2011-12).

Ad-hoc reviewer for the USU New Faculty Grant program (1994, 1996).

NATIONAL/INTERNATIONAL ACTIVITY

Invited member, American Dairy Science Association Judges Committee for the International Dairy Foods Association Research Award In Dairy Foods Processing, 2013-present.

Invited judge, U.S. Cheese Championship competition. March 11-14, Green Bay, WI.

Invited external reviewer for promotion of Dr. Ashraf Hassan to the rank of Professor, South Dakota State University Department of Dairy Science, 2012.

Invited external reviewer for promotion of Dr. Ilenys Perez-Dias to the rank of Associate Professor, in the USDA Food Science Research unit at North Carolina State University, 2012.

Invited external reviewer for promotion of Dr. Graciella Lorca to the rank of Associate Professor with tenure, University of Florida Department of Microbiology and Cell Science, 2012.

Invited chair, Session A: Concepts of cheese ripening control: from science to practice. International Dairy Federation 2012 symposium on Cheese Ripening and Technology. Madison, WI

Invited chair, Session B: Microbial ecology of cheese and flavor formation. International Dairy Federation 2012 symposium on Cheese Ripening and Technology. Madison, WI

Invited member, organizational committee for the 2012 International Dairy Federation symposium on Cheese Ripening and Technology. Madison, WI.

Invited external reviewer for promotion of Dr. Edward Dudley to the rank of Associate Professor with tenure, The Pennsylvania State University Department of Food Science, 2012.

Invited external reviewer for promotion of Dr. Dr. Muhammad H. Al-U'datt to the rank of Associate Professor, Jordan University of Science and Technology Department of Nutrition and Food Technology, 2012

Invited member, organizational committee for the 2010 Dairy Industry Association of Australia symposium on Cheese Science. Auckland, New Zealand.

Organizer and chair for the symposium entitled "Towards a Mechanistic Understanding of Probiotic Function in Man and Animals" presented at the 2010 annual meeting of the American Dairy Science Association. Denver, CO.

Invited outside reviewer, USDA-ARS National Program 306: Dairy Products Quality, 2010.

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- Invited participant, Dairy Management, Inc. expert panel on cheese research, 2006-present.
- Invited external reviewer for promotion of Dr. David Mills to the rank of Professor, University of California-Davis Department of Viticulture and Enology, 2007.
- Invited external reviewer for promotion of Dr. Daniel O'Sullivan to the rank of Professor, University of Minnesota Department of Food Science and Nutrition, 2007.
- Invited member, organizational committee for the 2006 American Society for Microbiology International Conference on Streptococcal Genetics. St. Malo, France.
- Invited member, organizational committee for the 2006 Dairy Industry Association of Australia symposium on Cheese Science. Sydney, Australia.
- Invited chair, Session on Molecular Genetics for the 2006 Dairy Industry Association of Australia symposium on Cheese Science. Sydney, Australia.
- Invited member, Faculty of 1000 Biology, an online research tool that highlights the most interesting papers in biology, based on the recommendations of over 1000 leading scientists (www.f1000biology.com/start.asp). 2005-2007.
- Invited member, American Dairy Science Association Judges Committee for the Danisco International Dairy Science Award, 2007.
- Invited member, American Dairy Science Association Judges Committee for the International Dairy Foods Association Award, 2006-2008.
- Invited member, Canadian Networks of Centres of Excellence expert grant review panel for the Canadian Advanced Foods and Biomaterials Network. April 29, 2003, Toronto, Canada.
- Member, American Dairy Science Association Judges Committee for the DSM Food Specialties Award, 2003-2005.
- Member, American Dairy Science Association Judges Committee for the International Association of Food Industry Suppliers Graduate Research Fellowship Award, 2004.
- Invited session organizer and chair, 7th International Symposium on Lactic Acid Bacteria Genetics, Metabolism, and Applications, September 1-5, 2002, Egmond aan Zee, The Netherlands.
- Invited external reviewer for promotion of Dr. Polly D. Courtney to the rank of Associate Professor with tenure, The Ohio State University Department of Food Science and Technology, 2002.
- Invited member, Departmental review committee for the Department of Microbiology, Weber State University, 2002.
- Invited member, Dairy Management, Inc. 2001 Grant Review Panel for Cheese Research.
- Invited participant, National Summit on the Future of Dairy Foods Research, sponsored by Dairy Management, Inc. and the US Department of Agriculture. July 25, 2000, Baltimore, MD.
- Invited member, Dairy Management, Inc. 1999 Grant Review Panel for Cheese Research.
- Invited member, Dairy Management, Inc. 1998 Grant Review Panel for Cheese Research.
- Invited member, 1997 USDA Grant Review Panel for Value-added Foods.
- Invited member, Dairy Management, Inc. 1997 Grant Review Panel for Cheese and Whey Research.
- Chair, Biological Sciences Division, Utah Academy of Sciences, Arts, and Letters, 1996-1998.
- Member, American Dairy Science Association Judges Committee for Dairy Foods Division graduate student paper presentation competition, 1994-1996.
- Member, United States National Committee Group of Experts to the International Dairy Federation on Lactic Acid Bacteria and Starters, 1992-2000.
- Member, United States National Committee Group of Experts to the International Dairy Federation on Genetic Manipulation of Dairy Cultures, 1992-2000.
- Invited Chairperson, Microbiology Session II, 1994 American Dairy Science Association Ann.

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Meeting, Minneapolis, MN.

Invited Chairperson, Microbiology Session II, 1992 American Dairy Science Association Ann. Meeting, Columbus, OH.

Invited Chairperson, Microbiology section, 1991 Western Dairy Foods Research Center Ann. Meeting, Utah State University.

Invited participant, Dannon, Inc. sponsored Conference on the Pros and Cons of Live Bacteria in Yogurt, June 12-14, San Antonio, TX.

Invited participant, Special Conference on Lower-fat Cheese Research Coordination, January 26, 1994 Madison, WI.

Ad-hoc journal reviewer: *Applied Biotechnology, Food Science and Policy* (2003); *Applied and Environmental Microbiology* (1997, 1999, 2001-10, 2012); *Applied Engineering in Agriculture* (1999); *Archives of Microbiology* (2001); *Australian Journal of Dairy Technology* (2006); *Biotechnology Progress* (1996, 1999); *Encyclopedia of Biotechnology in Agriculture and Food* (2006, 2012); *Environmental Microbiology and Environmental Microbiology Reports* (2010); *FEMS Microbiology Letters* (2003, 2008); *Folia Microbiologica* (2011); *Food Chemistry* (2007, 2011); *Gene* (2004); *Genome Announcements* (2013); *International Dairy Journal* (1994, 1996, 2000, 2002-08, 2012); *Journal of Bacteriology* (2003, 2008, 2011); *Journal of Dairy Science* (1993-2004, 2006-07, 2011-13); *Journal of Dairy Research* (1992, 2004); *Journal of Food Microbiology* (1994, 1996, 1998); *Journal of Food Science* (1991, 1996, 2007); *Journal of Industrial Microbiology and Biotechnology* (2003); *Letters in Applied Microbiology* (2004); *Microbial Cell Factories* (2010); *Microbiology* (2005-6); *Molecular Microbiology* (2002); *PLoS ONE* (2013); *Proceeding of the National Academy of Sciences* (2010-11); *Sultan Qaboos University Journal for Scientific Research* (1998); *Trends in Biotechnology* (2003); *Trends in Food Science and Technology* (2005).

Ad-hoc grant reviewer: AAAS Women's International Science Collaboration Program (2002); Alberta (Canada) Ingenuity Fund Institutional Establishment Grant program (2002); California Dairy Research Foundation (2008-09); International Science and Technology Center (2012); Ohio State University Seed Grant Program (2007); USDA-CREES Value-added Foods Program (1993, 1994, 1998-9); USDA-NIFA Biotechnology Risk Assessment Research Grants Program (2013); National Dairy Council (2008); and the Natural Sciences and Engineering Research Council of Canada (1999, 2013).

PROFESSIONAL MEMBERSHIPS

American Dairy Science Association

American Society for Microbiology

Institute of Food Technologists Professional Member and Certified Food Scientist

Society for Industrial Microbiology and Biotechnology

COMMUNITY INVOLVEMENT/LEADERSHIP

Chair, town of Amalga planning and zoning committee, 2003-2008.

Invited member, town of Amalga planning and zoning committee, 2002.

Director-at-large, Utah Falconers' Association, 2005-present.

Member, North American Falconers' Association technical advisory committee, 2002-present.

Member, Board of Directors for the Cache Valley Chapter of *Pheasants Forever*, 1985-2001.

President, Utah Falconers' and Raptor Breeders' Association, 1991-1996.