Carl A. Batt

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EDUCATION:

October 1981 - Ph.D. Rutgers University, Department of Food Science
October 1979 - M.S. Rutgers University, Department of Food Science
December 1975 - B.S. Kansas State University, Microbiology

ACADEMIC EXPERIENCE:

1998-present **Professor,** *Department of Food Science*
Cornell University

1991-1998 **Associate Professor**, *Department of Food Science*
Cornell University

1985-1991 **Assistant Professor**, *Department of Food Science*
Cornell University

1984-1985 **Research Scientist**, *Department of Applied Biological Sciences*
Massachusetts Institute of Technology

1982-1984 **Postdoctoral Research Associate,** *Department of Nutrition and Food Science*
Massachusetts Institute of Technology

OTHER EXPERIENCE:

2021-present **Managing Partner, Empire Syrups**

Empire Syrups is restarting cultivation of sweet sorghum in New York State and establishing an eco-friendly process to produce a unique and versatile sweetener.

2021-present **Managing Partner, Modern Miso**

Started a new miso/fermentation company with the goal of producing a unique line of fermentation products that have their roots in traditional fermentations but take advantage of modern science.

2020-2021 **Food Safety Expert, *Ample Hills Creamery***

Food safety expert for the largest ice cream plant in New York City. Served as interim food safety manager and hired permanent food safety manager. Member of the food safety team

2018-present **Managing Partner, *Salvatore BKLYN, Brooklyn, NY***

Created business plan and product pipeline for line extensions of the fresh cheese business. Interfaced with all customers on sales, quality and safety of products. Acquired production and distribution rights to Tin Foods LLC. Established a vinegar production process and product line to expand Tin Foods LLC

2018-present **Food Safety and Quality Assurance Manager, *Salvatore BKLYN, Brooklyn, NY***

Established HACCP and GMP program for fresh cheese operation. Developed a new cream cheese product that has no stabilizers.

2010-present **Adjunct Senior Scientist, *MOTE Marine Laboratory*, Sarasota, FL**

The appointment was for a sabbatical year and continued on as a consultant to the current President of the MOTE.

2000-present **Principal consultant, *Stone Fence Collaborative. Groton, NY***

An organization that is focused on strategic advising and presubmission grant development advice for colleges and universities.

1999-2011 **Director, *Cornell University/Ludwig Institute for Cancer Research Partnership Cornell University.***

The Partnership was a multiyear $20M+ enterprise funded by the LICR that included the design, construction and operation of Good Manufacturing Practice facility on the Cornell Ithaca campus. The CU/LICR Partnership produced Phase I recombinant proteins that were used in clinical trials in the US and throughout the world.

2005-2009 **Founder and President, *Illuminaria LLC*, Ithaca, NY.**

Illuminaria was an early stage start- up company that sought to commercialize microfluidic technology developed in the Batt Laboratory. Early-stage funding was obtained via the SBIR program.

2004-2010 **Co-Founder, *Main Street Science Inc. (not for profit)* Ithaca, NY**

Main Street Science was a not-for-profit established to help develop and distribute learning materials for K-12 with an emphasis on STEM.

2001-2004 **Founder, Project Leader, *Alliance for Nanomedical Technologies* Cornell University**

The Alliance for Nanomedical Technology was a NYS Center for Advanced Technology. The $3M in funding represented the highest level of support given by the NYS CAT at the time. Its membership included 26 NYS companies and supported collaborative research efforts between the Cornell faculty and these member companies.

1999-2004 ***Co-Director, Co-Founder Nanobiotechnology Center Cornell University***

The NBTC was a National Science Foundation supported Science and Technology Center which is one of the largest center-funding mechanisms of the NSF with annual funding of $4M. The NBTC was also supported by a grant from NYS on the order of approximately $7M for the 10 years the center held its STC status.

1999-2016 **Co-Founder and Science Advisor, Agave BioSystems, Ithaca NY**

Agave BioSystems is a research and development organization that has conducted research for a number of federal agencies including DOD, NASA, and DOE. Its core activities are in the area of nanofabrication and molecular biology.

1996-2001 **Founder and Director, *Laboratory for Molecular Typing,* Cornell University**

The Laboratory for Molecular Typing was established as a fee-for-service operation offering customers molecular typing based upon the Dupont Riboprinter. The LMT has as it clients a number of large food, pharmaceutical and specialty chemical companies.

PROFESSIONAL ACTIVITIES:

Graduate Fields:	Food Science, Microbiology, Biomedical and Biological Sciences, Biomedical Engineering, Materials Science, Electrical Engineering
2005-	**Editor,** Nanooze (www.nanooze.org)
2015-2016	**Subject-Editor**, Food Microbiology, Food Science Reference Module
2009-2015	**Chief-Editor**, Encyclopedia of Food Microbiology (2nd Edition)
2007-2009	**Editorial Advisory Board**, Wiley Encyclopedia of Chemical Biology
2003-2008	**Advisory Board**, Sciencenter (Ithaca, NY)
2001-2004	**Editorial Board**, Protein Expression and Purification
2001-2005	**Editorial Board,** Journal of Food Science
1987-2000	**Chief-Editor**, Food Microbiology
1996-1999	**Editor**, Encyclopedia of Food Microbiology
1987-1992	**Editorial Board**, Food Biotechnology

1987-1991	**Consultant** USAID -NIAB, Faisalabad, Pakistan
1988-1989	**Chairman**, Central New York IFT

AWARDS:

1988	Yoplait Institute Research Award
1990	Samuel Cate Prescott Award (Institute of Food Technologists)
1997	Teaching Excellence Award (Department of Food Science)
2000	Liberty Hyde Bailey Professor (College of Agriculture and Life Sciences)
2001	Faculty Fellows in Service (Cornell University)
2003	Kaplan Family Distinguished Faculty Fellowship in Service-Learning (Cornell University)
2005	Rutgers Alumni Research Award
2007	NSF Discovery Corps Fellow
2008	CALS Promoting Diversity Award (College of Agriculture and Life Sciences)

ACTIVITIES:

Public engagement media

It's a Nanoworld. Traveling museum exhibition (2003) co-developer. Served as co-PI, developer on tour in the US, 1M+ visitors, supported by the National Science Foundation. On permanent tour in the US.

Too Small to See. Traveling museum exhibition (2008) co-developer. Served as PI, developer, on tour in the US, 1M+ visitors, supported by the National Science Foundation. On permanent tour in the US.

Nanooze. Web-site, print magazine (2005-present). Founder and editor. Each edition is distributed to more than 100,000 students in the U.S., supported by the National Science Foundation.

Nanooze radio series. (2009) Co-developer. Produced in collaboration with Earth Sky, a series of six radio episodes aired 2009 with a total listener audience in excess of 12M. Supported by the USDA.

Science Chronicles. (2009) Co-developer. A series of six pod-casts that tracked the activities of a postdoctoral associate over the course of a year. Produced as a podcast series in collaboration with Earth Sky.

Take a Nanooze Break. (2010-2020). Permanent exhibition at Walt Disney World, Lake Buena Vista, FL. Developer, 3M+ visitors each year, supported by the National Science Foundation.

Nanooze Labs. (2011-2014) A long-term exhibition at Disneyland, Anaheim CA. Developer, 5M+ visitors each year, supported by the National Science Foundation

Technical advisor "Mysteries of the Unseen World" an IMAX film produced by Day's End Pictures Inc. and National Geographic. 2012

University committees

Undergraduate Honors Program, CALS-1990-1991

NIH Biotechnology Training Program Grant Executive Committee 1990-1995

Life Safety, Food Science Department, 1992-present

Planning, A Food Science Department committee that serves to advise the department chairperson, 1993-present

Scientific Administrative Board Cornell Biotechnology Program, Center for Advanced Technology, 1993-1996.

Graduate Admissions-Graduate Field of Food Science and Technology, 1993-1995.

The Future of the Geneva Food Science and Technology Department CALS committee initiated at the request of Dean David Call to help chart the future of the Food Science and Technology Department at the Agricultural Experiment Station in Geneva. 1995

Graduate Admissions-Graduate Field of Microbiology, 1996-2005.

Laboratory for Molecular Typing. Founder and managing director. A facility associated with Biotechnology Institute BioResource Center dedicated to providing genetic typing of bacteria. 1995-2000

Nanotechnology: Frontiers in Biology, Chairman. A workshop sponsored by NSF, National Nanofabrication Users Network and the Cornell Nanofabrication Facility November 20-21, 1996.

Nanofabrication Committee. A committee initiated at the Dean's request on future directions for the College of Engineering in nanotechnology. December 1, 1996-1997

Office of Economic Development. A university committee whose mission is to foster economic development in the community. 1997-1999

Stocking Hall Renovation Committee, 1997-1999

Cornell University Genomics Taskforce. A university committee to explore our future directions in genomics. 1998-2003

Executive Committee Nanobiotechnology Center -Advisory committee to Nanobiotechnology Center. 2000-2004

Life Sciences Building Committee. A university committee to design a new building which will be the cornerstone for genomics at Cornell University. 2000-2002

Life Sciences Advisory Council. A Provost-appointed committee to provide guidance to the Provost in the area of Cornell's investment in the Life Sciences. 2000-2002

Johnson Graduate School of Management Nanotech Club. Faculty advisor 2004-2009

Cornell Nanofabrication Facility User Committee. 2008-2013

IGEM Cornell University Chapter. Faculty advisor 2008-2010

Outside committees

Board of Directors- Ithaca Montessori School. 1998-2002; President 1999-2002, Interim Director, summer 1999

Business Innovation Center. A Tompkins County-Cornell joint venture in business assistance. 1998-2001

Advisory Board. Department of the Army, Research and Technology Directorate. 2000-2002

Bacteriology Advisory Board. American Type Culture Collection 2000-2002

Advisory Board. Sciencenter, Ithaca NY 2003-2007

User Proposal Review Committee Center for Integrative Nanotechnologies, 2008- present (Chair 2012-2019)

External Advisory Board. Center for Catalytic Bioscavenger Medical Defense Research Center of Excellence (U-54), NIH 2009- present (Chair 2012-2019)

Advisory Committee. Active Polymer Center for Pattern Integration. ERC, MEST, Korea 2009-present

WV EPSCoR RII External Technical Advisory Board 2009-2015

Monitoring and Assessment Panel-University of Hawaii IMUAIII NSF EPSCoR 2010-2013

External Advisory Board United Tribes Technical College, NSF TCUP 2017-Present

External Advisory Board Intertribal Research & Resource Center NSF 2019-Present (https://uttc.edu/irrc/)

Assignments

Scientific Advisory Committee-University of Minnesota-Symposium on Application of Biotechnology in the Food Processing Industry. October 8, 1984. St. Paul, MN.

Biotechnology: Microbial principles and processes for fuels, chemicals and biologicals Lecturer-Summer course Massachusetts Institute of Technology, Cambridge, MA. 1984-1994.

Zone supervisor-Environmental Health, Radioisotopes, Stocking Hall 1987-1999

Safety Issues of Transgenic Plants Invited-Rapporteur, Boyce Thompson Institute, Cornell University, Ithaca, NY, May 1-2, 1989

Second Symposium on the Genetic Engineering of Animals Organizing committee-, Cornell University, July 25-28, 1989

Safety of foods of animal origin: Charting the course Invited Participant. College of Veterinary Medicine, Texas A&M University, College Station, TX June 25-28, 1991 (see Acuff, G.R., Albanese, R.A., Batt, C.A. et al. [1991]).
NSF panel member-NSF ERC review team September 29, 1999.
Committee on Science witness-US House of Representatives H.R. 766 Nanotechnology Research and Development Act of 2003. March 19, 2003
NIH-NIAID panel member-SBIR Infectious Diseases and Microbiology 2000-2008.
NIH panel member-SBIR Biodefense Bacterial Agents 2004-2009
NCI Centers of Cancer Nanotechnology Excellence (CCNEs) Review Panel 2005, 2014
Earth and Sky Nanotechnology Advisor 2005-present
DEPSCoR review panel 2007- present
NIH-nano review panel 2007- 2009
Air Force Research Laboratory-Wright Patterson, Advisory Panel- Nano-Bio Institute for Aerospace. 2008
NSF-CREST review panel 2009-present
NSF-SBIR review panel 2008-present
Canadian grant review panel 2007- present
Austrian Science Fund grant review panel 2007- present
Israel Science Foundation grant review panel 2007- present
Republic of Georgia Shota Rustaveli National Science Foundation review panel 2009-present
Singapore National Research Foundation 2009-present
NIH F31 Fellowship review panel 2009-2019
NIH RC review panel 2009
Research Corporation for Science Advancement review panel 2009-present
American Chemical Society-Petroleum Research Fund reviewer 2009-present
Department of Energy reviewer 2010-present
NIH SEPA review panel 2010
USDA-Nanotechnology for Agricultural and Food Systems- Panel manager 2011-2012
International Review Committee for the Biotechnology and Food Engineering Faculty, Technion, Haifa Israel 2011
Reviewer, North Dakota EPSCoR 2011-present
DOE- Center for Integrated Nanotechnology-review panel chair 2011-
NSF ERC review panel 2011
Reviewer, Rhode Island EPSCoR 2011-present
Sitting Bull College, advisor/evaluator Research Experience for Undergraduates Summer program, 2011
Science Foundation Ireland review panel 2011-present
Reviewer, South Dakota EPSCoR 2011-present
Israeli Council for Higher Education International Assessment Committee for Biotechnology and Biotechnology Engineering. Chair, 2012.
Reviewer, North Dakota EPSCoR 2011-present
Strategic advisor, Rochester Institute of Technology 2012-present
Science Foundation Ireland site visit review panel-Trinity College, Dublin. Chair, 2012
Strategic advisor, George Mason University, 2012-2018
MITACS Canada reviewer 2013-present
Reviewer, Guam EPSCoR 2011-2015
Reviewer, West Virginia EPSCoR 2011-present
Technical advisor "Unseen Worlds" an IMAX film produced by Day's End Pictures Inc. 2012-2014.
NSF NanoBio Hub site visit review team, 2013-2016
Technical reviewer, National Geographic, 2013-2018

NSF I/UCRC review panel 2014
Strategic advisor, George Washington University, 2014-present
Reviewer, Alaska EPSCoR 2011-present
NSF SEES CBET review panel 2014
NCI Small Grants Program for Cancer Research (R03/R21) 2014
United Tribes Technical College, advisor/program evaluator Research Experience for Undergraduates Summer program, 2014-
Reviewer, New Hampshire EPSCoR 2011-present
Reviewer, Nevada EPSCoR 2013-presebt
Advisor, cGMP facility planning, National Institutes of Health 2015-
Strategic Advisor, Missouri EPSCoR program 2016-2019
NSF CBET Career review panel 2016
Reviewer, New Zealand MBIE fund 2018-present
NIH NCI panel 2018

Extension

(I have just begun to account for extension activities that I have not captured since 1985, some activities are reflected in 'Public engagement media')
Advisor, Crown Finish Caves, 2017-present. Helped to navigate challenges in supply chain and preventative controls for Listeria contamination.
Advisor, Ample Hill Creamery, 2018-present. Assisted production manager in evaluating safety concerns and mitigating risk. Helped students network to gain internships.
Advisor, Shaker and Spoon. 2020-present. Assisted in food science and food safety challenges in the subscription-box business.
Advisor, Brooklyn Larder. Provided advice on food safety plans and expansion of current product lines.

PUBLICATIONS

Peer reviewed publications:

1. Batt, C. and Solberg, M. (1982) Asexual developmental markers in an aflatoxigenic strain of *Aspergillus parasiticus*. Can. J. Microbiol 28:1206-1209.
2. Batt, C. and Solberg, M. (1983) Effect of volatile components of carrot seed oil in growth and aflatoxin production by *Aspergillus parasiticus*. J. Food Sci. 48:762-764.
3. Batt, C. and Solberg, M. (1985) Association of lactase activity with conidiation in an aflatoxigenic strain of *Aspergillus parasiticus*. FEMS Letters 27:277-280.
4. Batt, C.A., Claps, M.C., Bodis, M.S., Jamas, S. and Sinskey, A.J. (1985) Analysis of xylose operon regulation by Mud-lac fusion: Trans effect of plasmid coded xylose operon. Can. J. Microbiol. 31:930-933.
5. Batt, C.A., Carvallo, S., Easson, D.D., Akedo, M. and Sinskey, A.J. (1985) Evidence for a xylose metabolic pathway in *Saccharomyces cerevisiae*. Biotechnol. Bioeng. 28:549-543.
6. Batt, C.A., Shanabruch, W. and Sinskey, A.J. (1985) Expression of pAMβl tetracycline resistance in *Corynebacterium glutamicum*: Segregation of antibiotic resistance due to intramolecular recombination. Biotech. Lett. 7:717-722.
7. Batt, C.A., Novak, S.R., O'Neill, E.O., Ko, J. and Sinskey, A.J. (1986) Hyperexpression of *Escherichia coli* xylose isomerase. Biotechnol. Prog. 2:140-144.
8. Jamieson, A.C., Vandeyar, M.A., Kang, Y.C., Kinsella, J.E. and Batt, C.A. (1987) Cloning and nucleotide sequence of the bovine β-lactoglobulin gene. Gene 61: 85-88.
9. Chow, J.J., Batt, C.A. and Sinskey, A.J. (1988) Characterization of *Lactobacillus bulgaricus* bacteriophage ch2. Appl. Environ. Microbiol. 54: 1138-42.
10. Hahm, Y.T. and Batt, C.A. (1988) Genetic transformation of an *argB*$^-$ strain of *Aspergillus oryzae*. Appl. Environ. Microbiol. 54, 1610-1611.

11. Vandeyar, M.A., Weiner, M.P., Hutton, C.J. and Batt, C.A. (1988) A simple and rapid method for the selection of oligonucleotide-directed mutants. Gene 65, 129-133.
12. Kim, S.G. and Batt, C.A. (1988) Heterologous expression of the *Escherichia coli* β-galactosidase gene in *Streptococcus lactis* by translational fusion. Food Microbiol. 5, 59-73
13. Wong, D.W.S., Yee, L.N.H. and Batt, C.A. (1989) Thermal inducible expression of xylose isomerase and its performance in a hollow fiber bioreactor. J. Ind. Microbiol. 4, 1-5.
14. Wong, D.W.S., Batt, C.A. and Kinsella, J.E. (1990) Purification and characterization of rat liver transglutaminase. Inter. J. Biochem. 22, 53-59.
15. Batt, C.A., Jamieson, A.J. and Vandeyar, M.A. (1990) Identification of essential histidine residues in the active site of the *Escherichia coli* xylose (glucose) isomerase. Proc. Natl. Acad. Sci. USA 87, 618-622
16. Batt, C.A. (1990) A simple procedure for the *in vitro* selection of oligonucleotide primed site-directed mutations. DNA Prot. Eng. Tech. 2, 48-50.
17. Batt, C.A., Rabson, L.D., Wong, D.W.S. and Kinsella, J.E. (1990) Expression of recombinant bovine β-lactoglobulin in *Escherichia coli*. Agr. Biol. Chem. 54, 949-955.
18. Silva, M, Wong, D.W.S. and Batt, C.A. (1990) Cloning and sequencing of the genomic bovine β-lactoglobulin gene. Nucl. Acid. Res. 18, 3051.
19. Hahm, Y.T. and Batt, C.A. (1990) Expression and secretion of thaumatin from *Aspergillus oryzae*. Agr. Biol. Chem. 54, 2513-2520.
20. Batt, C.A., Webb, J., Oren, P. and Flick, P. (1990) An improved method for oligonucleotide mediated site-directed mutagenesis. Biotechniques 9, 555-556.
21. Kim, J.H. and Batt, C.A. (1991) Molecular characterization of a *Lactococcus lactis* bacteriophage F4-1. Food Microbiol. 8, 15-26.
22. Kim, J.H. and Batt, C.A. (1991) Nucleotide sequence and deletion analysis of a gene coding for a structural protein of *Lactococcus lactis* bacteriophage F4-1. Food Microbiol. 8, 27-32.
23. Kim, S.G. and Batt, C.A. (1991) Identification of a nucleotide sequence conserved in *Lactococcus lactis* bacteriophages. Gene 98, 95-100.
24. Kim, S.G. and Batt, C.A. (1991) Antisense mRNA mediated bacteriophage resistance in *Lactococcus lactis*. Appl. Environ. Micro. 57, 1109-1113.
25. Wong, D.W.S., Batt, C.A. and Kinsella, J.E. (1991) Expression of the transglutaminase gene in *Escherichia coli*. Inter. J. Biochem. 23, 947-953.
26. Chung, D.K., Kim, J.H. and Batt, C.A. (1991) Molecular cloning and nucleotide sequence of the major capsid protein of *Lactococcus lactis* ssp. *cremoris* bacteriophage F4-1. Gene 101, 121-125.
27. Tortorello, M.L., Billota, S., Woolf, H.D., Bender, J. and Batt, C.A. (1991) Extending the shelf-life of cottage cheese: Identification of spoilage flora and their control using food grade preservatives Amer. Cult. Dairy Prod. J. 26:8-12.
28. Whitaker, R.D. and Batt, C.A. (1991) Characterization of the heat shock response in *Lactococcus lactis* ssp. *lactis*. Appl. Environ. Micro. 57:1408-1412.
29. Gavalchin, J., Tortorello, M.L., Malek, R., Landers, M. and Batt, C.A. (1991) Isolation of monoclonal antibodies that react preferentially with *Listeria monocytogenes*. Food Microbiol. 8, 325-330.
30. Winters, D.A. and Batt, C.A. (1991) Irreversible denaturation of *Lactobacillus bulgaricus* b-galactosidase. Milchwissenschaft **46**, 753-757.
31. Bor, Y-C., Moraes, C., Lee, S-P., Crosby, W., Sinskey, A.J. and Batt, C.A. (1992) Cloning and nucleotide sequence of the *Lactobacillus brevis* xylose isomerase. Gene **114**, 127-131
32. Kim, J.K., Kim, S.G., Chung, D.K., Bor Y.C. and Batt, C.A. (1992) Use of antisense mRNA to engineer a bacteriophage resistant lactic acid starter culture. J. Ind. Microbiol **10**, 71-78.
33. Chung, D.C. Chung, S.K. and Batt, C.A. (1992) Antisense RNA directed against the major capsid protein of *Lactococcus lactis* subsp. *cremoris* confers resistance to the host strain. Appl. Microbiol. Biotechnol. **37**, 235-240.

34. Jamieson, A.C. and Batt, C.A. (1992) Fluorescent properties of the *Escherichia coli* D-xylose isomerase active site. Prot. Eng. 5, 235-240.
35. Kim, S.G., Bor, Y-C. and Batt, C.A. (1992) Bacteriophage resistance engineered into a strain of *Lactococcus lactis* subsp. *lactis* using antisense ribonucleic acid. J. Dairy Sci. **75**, 1761-1767.
36. Wiedmann, M., Czajka, J., Barany, F. and Batt, C.A. (1992) Discrimination of *Listeria monocytogenes* from other *Listeria* species by ligase chain reaction. Appl. Environ. Microbiol. **58**, 3443-3447.
37. Batt, C.A., Cho, Y. and Jamieson, A.C. (1993) A simple and rapid method for the selection of oligodeoxynucleotide-directed mutants. Meth. Enzymol. **217**, 280-286.
38. Czajka, J., Bsat, N., Piani, M., Russ, W., Sultana, K., Wiedmann, M., Whitaker, R. and Batt, C.A. (1993) Differentiation of *Listeria monocytogenes* and *Listeria innocua* by 16S rDNA and intraspecies discrimination of *Listeria monocytogenes* strains by random amplified polymorphic DNA polymorphisms. Appl. Environ. Microbiol. **59**, 304-308.
39. Herrick, J.B., Madsen, E.J., Batt, C.A. and Ghiorse, W.C. (1993) Polymerase chain reaction amplification of naphthalene catabolic and 16S rRNA gene sequences from indigenous sediment bacteria. Appl. Environ. Microbiol. **59**, 687-694.
40. Kim, S. G. and Batt, C. A. (1993) Cloning and sequencing the *Lactococcus lactis* subsp. *lactis groESL* operon. Gene **127**, 121-126
41. Lee, S.P. and Batt, C.A. (1993) A micro-scale method for measuring the hardness of heat induced protein gels. Food Texture **24**, 73-79.
42. Winn-Deen, E., Batt, C.A. and Wiedmann, M. (1993) Non-radioactive detection of *Mycobacterium tuberculosis* LCR products in a microtitreplate format. Mol. Cell Probes **7**, 179-186.
43. Bsat, N. and Batt, C.A. (1993) A combined modified reverse dot blot and nested PCR assay for the specific nonradioactive detection of *Listeria monocytogenes* Mol. Cell. Probes **7**, 199-207.
44. Lee, S.P., Cho, Y. and Batt, C.A. (1993) Enhancing the gelation of β-lactoglobulin. J. Agr. Food Chem. **41**, 1343-1348.
45. Wiedmann, M., Barany, F. and Batt, C.A. (1993) Detection of *Listeria monocytogenes* using a nonisotopic polymerase chain reaction (PCR)-couple ligase chain reaction (LCR) assay. Appl. Environ. Microbiol. **59**, 2743-2745.
46. Wiedmann, M., Brandon, R., Wagner, P., Dubovi, E. and Batt, C.A. (1993) Detection of Bovine Herpesvirus-1 in bovine semen by a nested PCR assay. J. Virol. Method. **44**, 129-140
47. Lee, S.P., Kim, D.S., Watkins, S. and C.A. Batt. (1994) Reducing whey syneresis in yogurt by the addition of a thermolabile variant of β-lactoglobulin. Biosci. Biotechnol. Biochem. **58**, 309-313.
48. Cho, Y., Batt, C.A. and Sawyer, L. (1994) Probing the retinol binding site of bovine β-lactoglobulin. J. Biol. Chem. **269**, 11102-11107.
49. Cho, Y. Gu, W., Watkins, S., Lee, S.P., Brady, J.W. and Batt, C.A. (1994) Thermostable variants of bovine β-lactoglobulin. Prot. Eng. **7**, 263-270.
50. Wilson, W.J., Wiedmann, M., Dillard, H.R. and Batt, C.A. (1994) Identification of *Erwinia stewartii* by a ligase chain reaction. Appl. Environ. Microbiol. **60**, 278-284
51. Batt, C.A., Wagner, P., Wiedmann, M., Luo, J., Gilbert, R. (1994) Detection of bovine leukocyte adhesion deficiency by nonisotopic ligase chain reaction. Anim. Genet. **25**, 95-98
52. Cha, J., Cho, Y., Whitaker, R.D., Carrell, H.L., Glusker, J.P., Karplus, P.A., and Batt, C.A. (1994) Perturbing the metal site in D-xylose isomerase: The effect of mutation of His-220 on enzyme stability. J. Biol. Chem. **269**, 2687-2694.
53. Barril, M.J.S., Kim, S.G. and Batt, C.A. (1994) Cloning and sequencing of the *Lactococcus lactis* subsp. *lactis* LM0230 *dnaK* gene using a PCR-based approach. Gene **142**, 91-96.
54. Czajka, J. and Batt, C.A. (1994) Verification of causal relationships between *Listeria monocytogenes* isolates implicated in food-borne outbreaks of listeriosis by randomly amplified polymorphic DNA patterns. J. Clin. Microbiol. **32**, 1280-1287

55. Wiedmann, M., Czajka, J., Bsat, N., Bodis, M., Smith, M.C. Divers, T.J. and Batt, C.A. (1994) Diagnosis and epidemiological association of *Listeria monocytogenes* strains in two outbreaks of listerial encephalitis in small ruminants. J. Clin. Microbiol. **32**, 991-996.
56. Silva, M.C., Moré, M.I. and Batt, C.A. (1995) Development of a molecular detection method for naphthalene degrading *Pseudomonads*. FEMS Microbiol. Ecol. **18**: 225-235
57. Silva, M.C. and Batt, C.A. (1995) Effect of cellular physiology on PCR amplification efficiency. Molecular Ecology **4**, 11-16.
58. Wiedmann, M., Stolle, A. and Batt, C.A. (1995) Detection of *Listeria monocytogenes* in surface swabs using a nonisotopic polymerase chain reaction-coupled ligase chain reaction assay. Food Microbiol. **12**, 151-157.
59. Bassler, H.A., Flood, S., Livak, K., Marmaro, J., Knorr, R. and Batt, C.A. (1995) The use of a fluorogenic probe in a PCR-based assay for the detection of *Listeria monocytogenes*. Appl. Environ. Microbiol. **61**, 3724-3728
60. Whitaker, R.W., Cho, Y., Cha, J., Carrell, H.L., Glusker, J.P., Karplus, P.A. and Batt, C.A. 1995. Probing the roles of active site residues in D-xylose isomerase. J. Biol. Chem. 270, 22895-22906.
61. Wiedmann, M., Bruce, J.L. Knorr, R., Bodis, M., Cole, E., McDowell, C.I., McDonough, P.L., Hubner, R.J., Webster, J.A. and Batt, C.A. (1996) Ribotype diversity of *Listeria monocytogenes* strains associated with outbreaks of listeriosis in ruminants. J. Clin. Microbiol. **34**, 1086-1090
62. Witham, P., Livak, K., Yamashiro, C. and Batt, C.A. (1996). A PCR-based assay for the detection of *Escherichia coli* shiga-like toxin (SLT) genes in ground beef. Appl. Environ. Microbiol. **62**, 1347-1353.
63. Czajka, J. and Batt, C.A. (1996) Development of a solid phase fluorescent immunoassay for the detection of *Salmonella*. J. Food Prot. **59,** 922-927
64. Welker, C., Faiola, N., Davis, S., Maffatore, I. and Batt, C.A. (1996) Bacterial retention and cleanability of plastic and wood cutting boards using commercial foodservice maintenance practice. J. Food Prot. **60**, 407-413.
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Clinical trials:

The following clinical trials have been carried out using material produced by the Cornell University/Ludwig Institute for Cancer Research Partnership.
NCT01154049- Study to Evaluate the Safety of the Vaccine Prepared SM14 Against Schistosomiasis
NCT00112957 Vaccine Therapy in Treating Patients With Stage II, Stage III, or Stage IV Ovarian Epithelial, Fallopian Tube, or Peritoneal Cancer
NCT00299728 NY-ESO-1 Protein with Montanide and CpG 7909 as Cancer Vaccine in Several Tumors

Patents:

Monoclonal antibody-based assay for *Listeria monocytogenes* U.S. Pat. #5,294,537 issued March 15, 1994.
Methods of detecting bovine Herpesvirus 1 (BHV-1) in semen by nucleic acid amplification. U.S. Pat. #5,545,523 issued August 15, 1996.
Enhanced on-chip SERS based biomolecular detection using electrokinetically active microwells. U.S. Pat. # 9,057,099 issued June 16, 2015.

Expert witness work (served as a consult for party that is underlined):

Applera Corp. v. Bio-Rad Lab. Inc., et al., No. 3:04-cv-01881-RNC (D. Conn.)

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