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Education

University of Massachusetts, Amherst, Doctor of Philosophy in Food Science and Nutrition, 1985-1989

Washington State University, Master of Science in Food Science and Nutrition, 1983-1985

Pennsylvania State University, Bachelor of Science in Biology, 1978-1982

Professional Experience

September, 2008 to present

Department Head, Department of Food Science, University of Massachusetts, Amherst

September, 2008 to present

Director, Industry Strategic Research Alliance, University of Massachusetts, Amherst

September, 2000 to Present

Professor, Department of Food Science, University of Massachusetts, Amherst

September, 1993 to August, 2000

Associate Professor, Department of Food Science, University of Massachusetts, Amherst

July, 1993 to August, 1993

Associate Professor, Food Science Section, Department of Animal Sciences, University of Kentucky

October, 1988 to June, 1993

Assistant Professor, Food Science Section, Department of Animal Sciences, University of Kentucky

Honors and Awards

- Plenary Lecture, International Conference on Meat Science and Technology (2010)
- Plenary Lecture, 13th Latin American Congress on Fats and Oils (2009)
- Plenary Lecturer, New Zealand Institute of Food Technologist (2009)
- Kansas State University Distinguished University Lecturer (2009)
- Stephan S. Chang Award for Lipid Research, American Oil Chemist Society (2008)
- Appointed to Food and Drug Administration Food Advisory Committee (2007-2010)
- Research and Development Award, Institute of Food Technologists (2006)
- Stephan S. Chang Award for Lipid and Flavor Science, Institute of Food Technologists (2006)
- Appointed to National Academy of Science, Institute of Medicine Committee on Nutrition Standards for Foods in Schools, 2006.
- Named to ISI Most Highly Cited Agricultural Scientists (2005 to present)

- Fergus M. Clydesdale Endowed Chair from 2002-2007
- Malcolm Trout Visiting Scholar, Michigan State University (2003)
- Outstanding Scientific Publication, Phospholipid Division, American Oil Chemist Society (2003)
- Outstanding Advising Award, College of Food and Natural Resources, University of Massachusetts (2002)
- Elected Secretary and Chair, Food Chemistry Division, Institute of Food Technologists (2002-2005)
- Guest Professor, Huazhong Agricultural University, China (2001-2004)
- Elected American Meat Science Association Board of Directors (2000-2002)
- Institute of Food Technologists Distinguished Lecturer (2000-2002)
- Visiting Scientist, Linus Pauling Institute, Oregon State University (2000)
- Outstanding Teaching Award, College of Food and Natural Resources, University of Massachusetts (1998)
- Division Lectureship, Division of Muscle Foods, Institute of Food Technologists (1998)
- Samuel Cate Prescott Award, Institute of Food Technologists (1997)
- Future Leader Award, International Life Science Institute (1996)
- Hokkaido Overseas Guest Researcher Fellowship, Hokkaido Food Processing Research Center, Japan (1995)
- Young Scientist Award, Agriculture and Food Chemistry Division, ACS (1994)
- Achievement Award for Young Scientists, American Meat Science Society (1993)
- Outstanding Paper Presentation Award, American Oil Chemist Society (1993)
- USDA National Needs Fellow, Department of Food Science, Univ. of Massachusetts, Amherst (1985-1988)

Research Interests and Experience

Refereed Journal Articles

1. Bou R.; Chen B.; Guardiola F.; Codony R. and Decker E.A. Determination of lipid and protein hydroperoxides using the fluorescent probe diphenyl-1-pyrenylphosphine. *Food Chem.* **2010**, *123*: 892-900.
2. Decker E.A. and Park, Y. Healthier meat products as functional foods. *Meat Sci.* **2010**. 86:49-55
3. Gray, D.A.; Payne, G.; McClements, D.J.; Decker, E.A. and Lad, M. Oxidative Stability of *Echium plantagineum* seed oil bodies. *Eur. J. Lipid Sci. Technol.* **2010**, *112*:741-749.
4. Chen, B.; Decker, E.A. and McClements, D.J. Stabilization of soybean oil bodies by enzyme (Laccase) cross-linking of adsorbed beet pectin coatings. *J. Agric. Food Chem* **2010**, *58*, 9259-9265.
5. Gudipati, V.; Sandra, S.; McClements, D.J. and Decker, E.A. Oxidative Stability and in Vitro Digestibility of Fish Oil-in-Water Emulsions Containing Multilayered Membranes. *J. Agric. Food Chem.* **2010**, *58*:8093-8099.
6. Laguerre, L.; Decker, E.A.; Lecomte, J. and Villeneuve, P. Methods for evaluating the potency and efficacy of antioxidants. *Curr. Opin. Clin. Nutr. Met. Care* **2010**, *13*:518-525.
7. Decker E.A.; Alamed J. and Castro I.A. Interaction Between Polar Components and the Degree of Unsaturation of Fatty Acids on the Oxidative Stability of Emulsions. *J. Am. Oil Chem. Soc.* **2010**, *87*:771-780.
8. Lesmes U.; Sandra S.; Decker EA and McClements, D.J. Impact of surface deposition of lactoferrin on physical and chemical stability of omega-3 rich lipid droplets stabilised by caseinate. *Food Chem.* **2010**, *123*: 99-106.
9. Matalanis, A.; Lesmes, U.; Decker, E.A. and McClements, D.J. Fabrication and characterization of filled hydrogel particles based on sequential segregative and aggregative biopolymer phase separation. *Food Hydrocolloids* **2010**, *24*: 689-701.

10. Hu, M.; Li, Y.; Decker, E.A. and McClements, D.J. Role of calcium and calcium-binding agents on the lipase digestibility of emulsified lipids using an in vitro digestion model. *Hydrocolloids* **2010**, *24*: 719-725.
11. Cho, Y.H.; Decker, E.A. and McClements, D.J. Formation of Protein-Rich Coatings around Lipid Droplets Using the Electrostatic Deposition Method. *Langmuir* **2010**, *26*: 7937-7945.
12. Boon, C.S.; McClements, D.J.; Weiss, J. and Decker, E.A. Factors Influencing the Chemical Stability of Carotenoids in Foods *Crit. Rev Food Sci. Nutr.* **2010**, *50*:515-532.
13. Panya, A.; Laguerre, M.; Lecomte, J.; Villeneuve, P.; Weiss, J.; McClements, D.J. and Decker, E.A. Effects of Chitosan and Rosmarinate Esters on the Physical and Oxidative Stability of Liposomes. *J. Agric. Food Chem.* **2010**, *58*, 5679-5684.
14. Choi, S.J.; Decker, E.A.; Henson, L.; Popplewell, M.; McClements, D.J. Inhibition of citral degradation in model beverage emulsions using micelles and reverse micelles. *Food Chem.* **2010**, *122*:111-116.
15. Bou R.; Hanquet, N. Codony R.; Guardiola F. and Decker E.A. Effect of heating oxyhemoglobin and methemoglobin on microsomes oxidation. *Meat Sci.* **2010**, *85*:47-53.
16. Salminen, H., Heinonen, M. and Decker, E.A. Antioxidant effects of berry phenolics incorporated in oil-in-water emulsions with continuous phase β -lactoglobulin. *JAOCs.* **2010**, *87*:419-428.
17. Hu, M.; Li, Y.; Decker, E.A.; Xiao, H.; McClements, D.J. Influence of Tripolyphosphate Cross-Linking on the Physical Stability and Lipase Digestibility of Chitosan-Coated Lipid Droplets. *J. Agric. Food Chem.* **2010**, *58*, 1283-1289.
18. Jones, O.G.; Decker, E.A.; McClements, D.J. Thermal analysis of beta-lactoglobulin complexes with pectins or carrageenan for production of stable biopolymer particles. *Food Hydrocoll.* **2010**, *24*, 239-248.
19. Jones, O.G.; Decker, E.A.; McClements, D.J. Comparison of protein-polysaccharide nanoparticle fabrication methods: Impact of biopolymer complexation before or after particle formation. *J. Colloid Interface Sci.* **2010**, *344*, 21-29.
20. Laguerre, M.; Giraldo, L.J.L.; Lecomte, J.; Figueroa-Espinoza, M.; Barea, B.; Weiss, J.; Decker, E.A.; Villeneuve, P. Relationship between Hydrophobicity and Antioxidant Ability of "Phenolipids" in Emulsion: A Parabolic Effect of the Chain Length of Rosmarinate Esters. *J. Agric. Food Chem.* **2010**, *58*, 2869-2876.
21. Mercadante, A.Z.; Capitani, C.D.; Decker, E.A.; Castro, I.A. Effect of natural pigments on the oxidative stability of sausages stored under refrigeration. *Meat Sci.* **2010**, *84*, 718-726.
22. Chen, B.; Decker, E.A. and McClements, D.J. Role of continuous phase anionic polysaccharides on the oxidative stability of Menhaden oil-in-water emulsions. *J. Agric. Food Chem* **2010**, *58*, 3779-3784.
23. Mei, L.; Choi, S.J.; Alamed, J.; Henson, L.; Popplewell, M.; McClements, D.J. and Decker, E.A. Citral stability in oil-in-water emulsions with solid or liquid octadecane. *J. Agric. Food Chem* **2010**, *58*:533-536.
24. Laguerre, M.; Giraldo, L.J.L.; Lecomte, J.; Figueroa-Espinoza, M.C.; Barea, B.; Weiss, J.; Decker, E.A.; Villeneuve, P. Chain Length Affects Antioxidant Properties of Chlorogenate Esters in Emulsion: The Cutoff Theory Behind the Polar Paradox. *J. Agric. Food Chem* **2009**, *57*:11335-11342.
25. Choi, S.J.; Decker, E.A.; Henson, L.; Popplewell, M.; McClements, D.J. Stability of Citral in Oil-in-Water Emulsions Prepared with Medium-Chain Triacylglycerols and Triacetin. *J. Agric. Food Chem* **2009**, *57*:11349-11353.

26. Decker, E.A. Challenges to control rancidity in complex food systems. *Food Sci. Technol.* **2009**, 23 (4):28-29.
27. Bou R.; Codony R.; Tres A.; Decker E.A. and Guardiola F Dietary Strategies to Improve Nutritional Value, Oxidative Stability, and Sensory Properties of Poultry Products. *Crit. Rev Food Sci. Nutr.* **2009**, 49:800-822.
28. Chanasattru, W.; Jones, O.G.; Decker, E.A. and McClements, D.J. Impact of cosolvents on formation and properties of biopolymer nanoparticles formed by heat treatment of beta-lactoglobulin-pectin complexes. *Food Hydrocolloids* **2009**, 23: 2450-2457.
29. Pignoli, G.; Bou R.; Rodriguez-Estrada, M.T.; Decker, E.A Suitability of saturated aldehydes as lipid oxidation markers in washed turkey meat. *Meat Sci.* **2009**, 83:412-416.
30. Sasaki, K.; Alamed, J.; Weiss J.; Villeneuve P.; Giraldo L.J.L.; Lecomte J.; Figueroa- Espinoza M.C.; Decker E.A., Relationship between the physical properties of chlorogenic acid esters and their ability to inhibit lipid oxidation in oil-in-water emulsions. *Food Chem.* **2009**, 118:830-835.
31. Helgason, T.; Awad, T.S.; Kristbergsson, K.; Decker, E.A.; McClements, D.J. and Weiss, J.; Impact of surfactant properties on oxidative stability of beta-carotene encapsulated within solid lipid nanoparticles . *J. Agric. Food Chem* **2009**, 57:8033-8040.
32. Awad, T.S.; Helgason, T.; Weiss, J.; Decker, E.A. and McClements, D.J. Effect of omega-3 fatty acids on crystallization, polymorphic transformation and stability of tripalmitin solid lipid nanoparticle suspensions . *Crystal Growth Design* **2009**, 9:3405-3411.
33. Waraho, T.; Cardenia, V.; Rodriguez-Estrada, M.T.; McClements, D.J. and Decker, E.A. Prooxidant mechanisms of free fatty acids in stripped soybean oil-in-water emulsions. *J. Agric. Food Chem* **2009**, 57: 7112-7117.
34. McClements, D.J.; Decker, E.A; Park, Y. and Weiss, J. Structural Design Principles for Delivery of Bioactive Components in Nutraceuticals and Functional Foods. *Crit. Rev. Food Sci. Nutr.* **2009**, 49:577–606.
35. Jones, O.G.; Decker, E.A. and McClements, D.J. Formation of biopolymer particles by thermal treatment of beta-lactoglobulin-pectin complexes. *Food Hydrocolloids*, **2009**, 23: 1312-1321.
36. Boon, C.S.; McClements, D.J.; Weiss, J. and Decker, E.A. Role of iron and hydroperoxides in the degradation of lycopene in oil-in-water emulsions. *J. Agric..Food Chem.* **2009**, 57:2993-2998.
37. Alamed, J.; McClements, D.J.. and Decker, E.A. Relationships between free radical scavenging and antioxidant activity in foods. *J. Agric..Food Chem.* **2009**, 57:2969-2976.
38. Cho, Y.H.; Decker, E.A. and McClements, D.J. Competitive Adsorption of Mixed Anionic Polysaccharides at the Surfaces of Protein-Coated Lipid Droplets. *Langmuir* **2009**, 25:2654-2660.
39. Choi, S.J.; Decker, E.A. and McClements, D.J. Impact of Iron Encapsulation within the Interior Aqueous Phase of Water-in-Oil-in-Water emulsions on Lipid Oxidation. *Food Chemistry.* **2009**, 116:271-276.
40. Hur, S.J.; Decker, E.A. and McClements, D.J. Influence of initial emulsifier type on microstructural changes occurring in emulsified lipids during in vitro digestion. *Food Chemistry.* **2009**, 116:253-262.
41. Awad, T.S.; Helgason, T.; Kristbergsson, K.; Weiss, J.; Decker, E.A.; McClements, D.J. Temperature

scanning ultrasonic velocity study of complex thermal transformations in solid lipid nanoparticles. *Langmuir* **2009**, 24:12779-12784

42. McClements, D.J.; Decker, E.A and Park, Y. Controlling lipid bioavailability through physicochemical and structural approaches. *Crit. Rev. Food Sci. Nutr.* **2009**, 49: 48-67.
43. López-Giraldo L.J., Laguerre M., Lecomte J., Figueroa- Espinoza M.C., Baréa B., Weiss J., Decker E.A., Villeneuve P. Kinetic and stoichiometry of the reaction of chlorogenic acid and its alkyl esters against DPPH radical. *J. Agric..Food Chem.* **2009**, 57:863-870.
44. Chanasattru, W.; Decker, E.A.; McClements, D.J. Influence of glycerol and sorbitol on thermally induced droplet aggregation in oil-in-water emulsions stabilized by beta-lactoglobulin. *Food Hydrocolloids*, **2009**, 23: 253-261.
45. Ke, S.; Huang, Y.; Decker, E.A. and Hultin, H.O. Impact of citric acid on the tenderness, microstructure and oxidative stability of beef muscle. *Meat Science* **2009**, 82:113-118.
46. Bou, R.; Elias, R.J.; Faustman, C.; Guardiola, F.; Codony, R.; Decker, E.A. Effect of heating oxymyoglobin and metmyoglobin on the oxidation of muscle microsomes. *J. Agric..Food Chem.* **2008**, 56:9612-9620.
47. Sandra, S.; Decker, E.A.; McClements, D.J. Effect of interfacial protein cross-linking on the in vitro digestibility of emulsified corn oil by pancreatic lipase. *J. Agric. Food Chem.* **2008**, 56:7488-7494.
48. Chanasattru, W.; Decker, E.A.; McClements, D.J. Impact of cosolvents (polyols) on globular protein functionality: Ultrasonic velocity, density, surface tension and solubility study. *Food Hydrocolloids*, **2008**, 22: 1475-1484.
49. Decker, E.A. Understanding rancidity in complex foods: The key to developing new antioxidant technologies. *Inform* **2008**. 19:534-536.
50. Katsuda, M.S.; McClements, D.J.; Miglioranza, L.H.S.; Decker, E.A. Physical and oxidative stability of fish oil-in-water emulsions stabilized with beta-lactoglobulin and pectin. *J. Agric. Food Chem.* **2008**, 56:5926-5931.
51. Bonnaire, L.; Sandra, S.; Helgason, T.; Decker, E.A.; Weiss, J.; McClements, D.J. Influence of lipid physical state on the in vitro digestibility of emulsified lipids. *J. Agric. Food Chem.* **2008**, 56:3791-3797.
52. Weiss, J.; Decker, E.A.; McClements, D.J.; Kristbergsson, K.; Helgason, T.; Awad, T. Solid lipid nanoparticles as delivery systems for bioactive food components. *Food Biophysics* **2008**, 3:146-154.
53. Awad, T.S.; Helgason, T.; Kristbergsson, K.; Decker, E.A.; Weiss, J.; McClements, D.J. Effect of cooling and heating rates on polymorphic transformations and gelation of tripalmitin solid lipid nanoparticle (SLN) suspensions. *Food Biophysics* **2008**, 3:155-162.
54. McClements, D.J.; Decker, E.A.; Park, Y.; Weiss, J. Designing food structure to control stability, digestion, release and absorption of lipophilic food components. *Food Biophysics* **2008**, 3:219-228.
55. Bou, R.; Codony, R.; Tres, A; Decker, E.A.; Guardicila, F. Determination of hydroperoxides in foods and biological samples by the ferrous oxidation-xylene orange method: A review of the factors that influence the method's performance. **2008**. *Anal. Biochem.* 377:1-15.
56. Elias, R.J.; Kellerby, S.S.; Decker, E.A. Antioxidant Activity of Proteins and Peptides in Foods. *Crit. Rev.*

Food Sci. Nutr. **2008**. 48:430-441.

57. Boon, C.S.; Xu, Z.; Yue, X.; McClements, D.J.; Weiss, J.; Decker, E.A. Factors impacting lycopene oxidation in oil-in-water emulsions. *J. Agric. Food Chem.* **2008**, 56:1408-1414.
58. Djordjevic, D.; Cercaci, L.; Alamed, J.; McClements, D.J.; Decker, E.A. Chemical and Physical Stability of Protein- and Gum Arabic-Stabilized Oil-in-Water Emulsions Containing Limonene. *J. Food Sci.* **2008**, 73:C167-C172.
59. Iwanga, D.; Gray, D.; Decker, E.A.; Weiss, J. and McClements, D.J. Stabilization of soybean oil bodies using protective pectin coatings formed by electrostatic deposition. *J. Agric. Food Chem.* **2008**, 56:2240-2245.
60. Mun, S.; Cho, Y.; Decker, E.A.; McClements, D.J. Utilization of polysaccharide coatings to improve freeze-thaw and freeze-dry stability of protein-coated lipid droplets. *J. Food Eng.* **2008**. 86:508-518.
61. Chaiyasit, W.; McClements, D.J.; Weiss, J.; Decker, E.A. Impact of Surface Active Compounds on Physicochemical and Oxidative Properties of Edible Oil. *J. Agric. Food Chem.* **2008**, 56:550-556.
62. Thanonkaew, A.; Benjakul, S.; Visessanguan, W.; Decker, E.A. The effect of antioxidants on the quality changes of cuttlefish (*Sepia pharaonis*) muscle during frozen storage. *LWT-Food Sci Technol* **2008**, 41 (1): 161-169.
63. Djordjevic, D.; Cercaci, L.; Alamed, J.; McClements, D.J.; Decker, E.A. Stability of Citral in Protein- and Gum Arabic-Stabilized Oil-in-Water Emulsions. *Food Chem.* **2008**, 106:698-705.
64. Yuji, H.; Weiss, J.; Villeneuve, P.; López Giraldo, L.J.; Figueroa-Espinoza, M.C.; Decker, E.A. Ability of surface active antioxidants to inhibit lipid oxidation in oil-in-water emulsions. *J. Agric. Food Chem.* **2007**, 55(26); 11052-11056.
65. McClements, D.J.; Decker, E.A. and Weiss, J. Emulsion-Based Delivery Systems for Lipophilic Bioactive Components. *J. Food Sci* **2007**, 72(8): R109-R124.
66. Paliandre, S.; Decker, E.A. and McClements, D.J. Improvement of stability of oil-in-water emulsions containing caseinate-coated droplets by addition of sodium alginate. *J. Food Sci.* **2007**, 72:E518-E524.
67. Iwanga, D.; Gray, D.; Fisk, I.D.; Decker, E.A.; Weiss, J. and McClements, D.J. Extraction and Characterization of Oil Bodies from Soy Beans: A Natural Source of Pre-Emulsified Soybean Oil. *J. Agric. Food Chem* **2007**, 55:8711-8716.
68. Chaiyasit, W.; Stanley, C.B.; Strey, H.H.; McClements, D.J.; Decker, E.A. Impact of surface active compounds on iron catalyzed oxidation of methyl linolenate in AOT-water-hexadecane Systems. *Food Biophysics* **2007**, 2:57-66.
69. Chanasattru, W.; Decker, E.A.; McClements, D.J. Inhibition of droplet flocculation in globular-protein stabilized oil-in-water emulsions by polyols. *Food Res Intl.* **2007**, 40:1161-1169.
70. Mun, S.; Decker, E.A.; McClements, D.J. Influence of emulsifier type on *in vitro* digestibility of lipid droplets by pancreatic lipase. *Food Res Intl.* **2007**, 40:770-781.
71. Chaiyasit, W.; Elias, R.J.; McClements, D.J. and Decker, E.A. Role of Physical Structures in Bulk Oils on Lipid Oxidation. *Crit. Rev. Food Sci. Nutr.* **2007**. 47:299-317.

72. Park, G.Y.; Mun, S.; Park, Y.; Rhee, S.; Decker, E.A.; Weiss, J.; McClements, D.J.; Park, Y. Influence of Encapsulation of Emulsified Lipids with Chitosan on their *In Vivo* Digestibility. *Food Chem.* **2007**, 104:761-767.
73. Chanasattru, W.; Decker, E.A.; McClements, D.J. Modulation of thermal stability and heat-induced gelation of β -lactoglobulin by high glycerol and sorbitol levels. *Food Chem.* **2007**, 103:512-520.
74. Djordjevic, D.; Cercaci, L.; Alamed, J.; McClements, D.J.; Decker, E.A. Chemical and Physical Stability of Citral and Limonene in SDS-chitosan and Gum Arabic Stabilized Oil-in-Water Emulsions. *J. Agric. Food Chem* **2007**, 55(9): 3585-3591.
75. Elias, R.J.; McClements, D.J.; Decker, E.A. Impact of Thermal Processing on the Antioxidant Mechanisms of Continuous Phase β -Lactoglobulin in Oil-in-Water Emulsions. **2007**, *Food Chem* 104:1402-1409.
76. Shaw, L. A. McClements, D.J.; Decker, E.A. Spray dried multilayered emulsions as a delivery method for omega-3 fatty acids into food systems. **2007**, *J. Agric. Food Chem* 55(8): 3112-3119.
77. Gu, Y. S.; Decker, E. A.; McClements, D. J. Application of multi-component biopolymer layers to improve the freeze-thaw stability of oil-in-water emulsions: beta-lactoglobulin-iota-carrageenan-gelatin. *J. Food Engineering*, **2007**, 80: 1246-1254.
78. Gu, Y.S.; Decker, E.A.; McClements, D.J. Formation of colloidosomes by adsorption of small charged oil droplets onto the surface of large oppositely charged oil droplets. *Food Hydrocolloids*, **2007**, 21: 516-526.
79. Thanonkaew, A.; Benjakul, S.; Visessanguan, W.; Decker, E.A. Yellow discoloration of cuttlefish liposome system as influenced by lipid oxidation. *Food Chem* **2007**, 102: 219-224.
80. Chee, C. P.; Djordjevic, D.; Faraji, H.; Decker, E.A.; Hollender, R.; McClements, D. J.; Peterson, D. G.; Roberts, R. F. and Coupland, J. N. Sensory Properties of Vanilla and Strawberry Flavored Ice cream Supplemented with Omega-3 Fatty Acids. *Milchwissenschaft* **2007**. 62(1): 66-69
81. Cercaci, L.; Rodriguez-Estrada, M.T.; Lercker, G.; Decker, E.A. Phytosterol oxidation in oil-in-water emulsions and bulk oil. *Food Chemistry*, **2007**, 102: 161-167.
82. Kellerby, S.S.; Gu, Y.S.; McClements, D.J.; Decker, E.A. Lipid oxidation in a menhaden oil-in-water emulsion stabilized by sodium caseinate cross-linked with transglutaminase. *J. Agric. Food Chem.* **2006**, 54: 10222-10227.
83. Elias, R.J.; Bridgewater, J.D.; Vachet, R.W.; Waraho, T.; McClements, D.J.; Decker, E.A. Antioxidant Mechanisms of Enzymatic Hydrolysates of β -Lactoglobulin in Food Lipid Dispersions. *J. Agric Food Chem.* **2006**, 54: 9565-9572.
84. Beysseriat, M.; Decker, E.A.; McClements, D.J. Influence of Dietary Fiber on Properties of Oil-in-Water Emulsions Passed Through an In Vitro Human Digestion Model. *Food Hydrocolloids*, **2006**, 20: 800-809.
85. Gu, Y.S.; Decker, E.A.; McClements, D.J. Irreversible thermal denaturation of beta-lactoglobulin retards adsorption of carrageenan onto beta-lactoglobulin-coated droplets. *Langmuir*, **2006**, 22: 7480-7486.
86. Mun, S.; Decker, E.A.; Park, Y.; Weiss, J.; McClements, D.J. Influence of Interfacial Composition on *in Vitro* Digestibility of Emulsified Lipids: Potential Mechanism for Chitosan's Ability to Inhibit Fat Digestion. *Food Biophysics*, **2006**, 1: 21-29.

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88. Lee, S.; Hernandez, P.; Djordjevic, D.; Faraji, H.; Hollender, R.; Faustman, C. and Decker, E.A. Effect of Antioxidants and Cooking on Stability of n-3 Fatty Acids in Fortified Meat Products. *J. Food Sci.*, 2006, 71 (3): C233-C238.
89. Mun, S.; Decker, E.A.; McClements, D.J. Effect of Molecular Weight and Degree of Deacetylation of Chitosan on the Formation of Oil-in-Water Emulsions Stabilized by Surfactant-Chitosan Membranes. *J. Colloid and Interface Sci.*, **2006**, 296: 581-590.
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92. Surh J., Decker E.A., McClements D.J. Properties and stability of oil-in-water emulsions stabilized by fish gelatin. *Food Hydrocolloids*. **2006**, 20: 596-606.
93. Surh J., Decker E.A., McClements D.J. Influence of pH and pectin type on properties and stability of sodium-caseinate stabilized oil-in-water emulsions. *Food Hydrocolloids*. **2006**, 20: 607-618.
94. Thanonkaew, A.; Benjakul, S.; Visessanguan, W.; Decker, E.A. Development of yellow pigmentation in squid (*Loligo peali*) as a result of lipid oxidation. *J. Agric. Food Chem*, **2006**, 54:956-962.
95. Lee, S.; Djordjevic, D.; Faraji, H.; Decker, E.A.; Faustman, C. Effects of antioxidant on stabilization of meat products with n-3 fatty acids. *Meat Science*, **2006**, 72:18-24.
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97. Thanonkaew, A; Benjakul, S.; Visessanguan, W. and Decker, E.A. The effect of metal ions on lipid oxidation, colour and physicochemical properties of cuttlefish (*Sepia pharaonis*) subjected to multiple freeze-thaw cycles. *Food Chem.*, **2006**, 95:591-599.
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100. Klinkesorn, U.; Sophanodora, P.; Chinachoti, P.; McClements, D.J.; Decker, E.A. Stability of Spray Dried Tuna Oil Emulsions Encapsulated with Two-Layered Interfacial Membranes. *J. Agric. Food Chem*, **2005**, 53:8365-8371.
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Books: Co-Editor

1. Decker, E.A., Elias, R. J. and McClements, D.J. (Eds.) *Oxidation in foods and beverages and antioxidant applications, Volume 1. Understanding mechanisms of oxidation and antioxidant activity.* **2010**, Woodhead Publishing, London, UK.
2. Decker, E.A., Elias, R. J. and McClements, D.J. (Eds.) *Oxidation in foods and beverages and antioxidant applications, Volume . Management in different industry sectors.* **2010**, Woodhead Publishing, London, UK.
3. McClements, D.J. and Decker E.A. (Eds.) *Designing Functional Foods: Understanding, measuring and controlling food structure breakdown and nutrient absorption.* **2009**, Woodhead Publishing, London, UK.
4. Wrolstad, R. (Editor-in-Chief), Acree, T.A., Penner, M.H., Schwartz, S.J., Shoemaker, C.F., Smith D.M. Sporns, P. and Decker, E.A. (Co-Editors), *Handbook of Food Analytical Chemistry: Water, Protein, Enzymes, Lipids and Carbohydrates.* **2005**, John Wiley & Sons, NY.
5. Wrolstad, R. (Editor-in-Chief), Acree, T.A., Penner, M.H., Schwartz, S.J., Shoemaker, C.F., Smith D.M. Sporns, P. and Decker, E.A. (Co-Editors), *Handbook of Food Analytical Chemistry: Pigments, colorants, Flavors, Texture and Bioactive Food Components.* **2005**, John Wiley & Sons, NY
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Book Chapters

1. Decker, E.A., Chen, B., Panya, A. and Elias, R.J. **2010**. Antioxidant Mechanisms. In. *Oxidation in foods and beverages and antioxidant applications, Volume 1. Understanding mechanisms of oxidation and antioxidant activity.* **2010**, Woodhead Publishing, London, UK.
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 12. Faraji, H., Djordjevic, D., Boon, C.S., McClements, D.J. and Decker, E.A. 2007. Emulsion-based Omega-3 Fatty Acid Delivery Systems for use in Functional Foods. In. VI Congresso Nazionale of Chimica Degli Alimenti (submitted).
 13. Hu, M., McClements, D.J. and Decker, E.A. 2004. Emulsion Technologies to Produce Oxidative Stable Emulsions Containing Omega-3 Fatty Acids. In *Healthful Lipids*, Ed.C.C. Akoh and O. Lai, **2005** AOCS Press, Champaign, IL,
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21. Decker, E.A., Livisay, S.A. and Zhou, S. Mechanisms of Endogenous Skeletal Muscle Antioxidants: Chemical and Physical Factors. In. Antioxidants in Muscle Foods. Ed. C. Faustman and E.A. Decker. **2000**. John Wiley & Sons, NY.
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Patents

1. Decker, E.A. and McClements, D.J. 2004. Utilization of Emulsion Interface Engineering to Produce Oxidatively Stable Lipid Delivery Systems. USSN 10/651,783
2. McClements, D.J. & Decker, E.A. 2005. Composition and Procedure for Preparing Stable Acidic Beverage Emulsions.
3. McClements, D.J. & Decker, E.A. 2005. Coated Food Compositions and Related Methods of Preparation.
4. McClements, D.J. & Decker, E.A. 2005. Novel Procedure for Improving Encapsulation of Particulate Materials.
5. Weiss, J., McClements, D.J. & Decker, E.A. 2006. Stabilized antimicrobial compositions and related methods of preparation.
6. McClements, D.J. & Decker, E.A. 2006. Biopolymer-encapsulation and stabilization of lipid systems and methods for utilization thereof.
7. Weiss, J., McClements, D.J. & Decker, E.A. 2007. Production of Reduced Fat Foods Using Gelled Biopolymer Particle Double Emulsions.
8. McClements, D.J. & Decker, E.A. 2007. Enzymatically cross-linked biopolymer interfacial complexes for improved lipid particle stability.

9. Weiss, J., McClements, D.J. & Decker, E.A. 2007. Novel Procedure to Stabilize Liposomes By Electrostatic Deposition

Symposia and Workshops Organized

3rd Workshop on Omega-3 Fatty Acids in Functional Foods Workshop, Shanghai, China 2007.

2nd Workshop on Omega-3 Fatty Acids in Functional Foods Workshop, Copenhagen, Denmark, 2006.

Lipid Oxidation in Heterogeneous Foods, Annual Meeting of the AOCS, St. Louis, MO, 2006.

Developing functional foods with omega-3 fatty acids. University of Massachusetts, Amherst, 2005.

Measuring Antioxidant Activity in Food Systems at the Second International Congress on Antioxidant Methods, Orlando, FL 2005.

Challenges in the development of functional foods with omega-3 fatty acids, Institute of Food Technologist, Las Vegas, NV, 2004.

Measuring Antioxidant Activity in Food Systems at the First International Congress on Antioxidant Methods, Orlando, FL 2004.

Lipid Oxidation in Complex Systems. Co-Organizer Toshiaki Ohshima, Annual Meeting of American Oil Chemist Society, Kansas City, MO, 2003.

Food Supplements to Achieve Micronutrient Adequacy in Complementary Feeding, Co-Organizers P. Nestel, A. Briand and A. Micardi, USAID/WHO Workshop, Paris, France, 2002.

Oxidation in Heterogenous Foods and Biological Tissues: Impact on Food Quality and Health, Institute of Food Technologist, New Orleans, LA, 2001

Are Nutritional Claim Appropriate for Muscle Foods, Reciprocal Meat Conference, Stillwater, OK, 1999.

Antioxidants and Oxidative Processes in Food and Health, University of Massachusetts, Amherst, MA, 1998

Dietary Strategies for Improving Muscle-Based Food Products, Madrid, Spain, Sept. 7-8, 1998.

Capitalizing on the Benefits of Natural Antioxidants in Nutrition, Health and Food, Dallas, Texas, 1997.

Special Forum on Bovine Spongiform Encephalopathy, Institute of Food Technologists, New Orleans, 1995.

Convergences in the Science of Meat, Poultry and Fish Protein Functionality, Institute of Food Technologist, Atlanta, GA 1994

The Role of Muscle Foods In Health and the Molecular Basis of Disease, Institute of Food Technologist, Atlanta, GA, 1994

Selected Invited Presentations

Rethinking oxidation in bulk oils: Role of physical structures. American Oil Chemist Society Lipid Oxidation and Quality Division Guest Lecture. 2010.

Taking trans fat out of the food supply: What are the alternatives? American Dietetic Association Webinar, 2010

Healthier meat products as functional foods. Plenary Lecture, International Conference on Meat Science and Technology, Jeju Island, South Korea, 2010.

Foods for Health and Wellness, The Future of Grains in Schools, University of Minnesota, 2010.

Lipid oxidation in foods, Plenary lecture, Latin American Conference for Fats and Oils, Rosario, Argentina, 2009

The evolution of processed foods and opportunities for improving health, Kansas State University Distinguished Lecturer, Manhattan, KS, 2009.

Fats in foods: Why they are there and what are our choices. American Dietetic's Association, Denver, Colorado, 2009.

Use of nanotechnology to deliver bioactive lipids into functional foods. Graduate Institute of Food Science and Technology of National Taiwan University. Taipei, Taiwan, 2008.

Colloidal systems for delivery of bioactive lipids into functional foods. International Conference on Nutraceuticals and Functional Foods. Taichung, Taiwan, 2008.

The Evolution of Processed Foods: Implications for the Food Scientist. IFT Annual Meeting, Anaheim, CA.

Delivery systems for integrating oxidatively stable omega 3's into foods. Long Chain Omega-3 Conference, OmegaPure, Houston, TX. 2008.

Decker, E.A. Understanding Rancidity in Complex Foods: How Physical Properties Impact Lipid Oxidation Chemistry. American Chemical Society Stephan Chang Award. Seattle, WA, 2008.

Understanding the Chemistry of Lipid Oxidation in Emulsions. A Key to Developing Technologies for the Incorporation of Omega-3 Fatty Acids into Functional Foods. Plenary Lecture, VI Italian National Congress of Food Chemistry, Alba, Italy. 2007

Stabilization and Delivery of Bioactive Lipids (ω -3 Fatty Acids) Using Emulsion Technology. Emulsions Workshop, UMass Amherst. 2006

Omega-3 Fatty Acid Delivery Systems for Foods. Coca-Cola Co., Atlanta, GA.

Oxidation in Emulsions: Critical Issues and Current Challenges, Nestle', San Sepolco, Italy

Inhibition of Lipid Oxidation by Coating Oil-in-Water Emulsions with Multiple Layers of Emulsifiers, International Society of Fat Research, Prague, Czech Republic.

Oxidation in Food Emulsions 1st International Congress of Antioxidant Methods, Orlando, FL.

Ability of Proteins and Peptides to Impact the Oxidation Kinetics of Omega-3 Fatty Acids in Oil-in-Water Emulsions, European Lipid Federation, Edinburgh, Scotland.

Control of Prooxidants to Increase the Oxidative Stability of Food Emulsions. IFT Short Course on Lipid

Oxidation in Foods

Strategies for Producing Oxidatively Stable ω -3 Fatty Acids for Use in Functional Foods, International Society of Fat Research, Bordeaux, France

Impact of Fat on Human Health and Food Quality. IFT Annual Meeting

Control of Prooxidants to Increase the Oxidative Stability of Food Emulsions, Martek Biosciences

Strategies for Producing Oxidatively Stable ω -3 Fatty Acids for Use in Functional Foods, Kasetsart University, Bangkok, Thailand

Lipid Chemistry in Foods: Impact on Human Health and Food Quality, American Chemical Society Midwest Regional Meeting

The Biology and Chemistry of Omega-3 Fatty Acids: Challenges in Obtaining Our Nutritional Needs, Biology Department, Northeastern University, 2003.

Obtaining Dietary Omega-3 Fatty Acids through the Development of Functional Foods, Department of Agricultural, Food and Nutritional Sciences, University of Alberta, 2003.

Development of an ω -3 Fatty Acid Nutritional Delivery System for Use in Functional Foods, Center of Nutritional Sciences, University of Kentucky, 2003

Impact of Nutrient Supplementation on Stability of Endogenous Food Components, New Food Based Approaches to Achieve Micronutrient Adequacy in Complementary Foods: Technological Aspects. USAID/WHO, Paris, France, 2002

Dietary Antioxidants: Our Key to Preventing Death by Oxidation? San Joaquin and Chicago Sections of IFT, 2001-2002

Prooxidative metals: Why where they are can dictate their reactivity. Institute of Food Technologists Annual Meeting, New Orleans, LA, 2001.

Impact of surfactant solubilization of phenolic antioxidants on lipid oxidation in oil-in-water emulsions. American Oil Chemist Society, Minneapolis, MN, 2001.

Lipid oxidation in emulsions and muscle foods. Huzhong Agricultural University, Wuhan, China, 2001.

Influence of Physical Environment on the Activity of Phenolic Antioxidants. FASEB Summer Conference, 2001.

Where do meat and dairy products fit into a healthy diet. The secret of zoochemicals. Northern California, Magnolia and Bonnierville Sections of IFT, 2000-2001

Whole Grain Breakfast Cereals: A Potential Source of Dietary Antioxidants. American Dietetics Association, 2000.

Impact of Interfacial Membrane Properties of Oil-in-Water Emulsions on Lipid Oxidation Reactions. Danish Institute of Agricultural Science. 2000.

Antioxidant Properties of Carnosine. Linus Pauling Institute, Oregon State University, 2000.

The Relationship between the Properties of the Interfacial Region of Oil-in-Water Emulsions and Lipid Oxidation.

Kraft Foods, Glenview, IL, 2000.

Antioxidants in Whole-Grain Ready-to-Eat Breakfast Cereals, Annual Meeting of the American Association of Cereal Chemists, Seattle, WA, 2000

Interactions between Muscle Components and Aldehydic Lipid Oxidation Products, Annual Meeting of the American Oil Chemists Society, Orlando, FL, 1999.

Iron-Catalyzed Lipid Oxidation in Dispersed Lipid Systems, Department of Food Science, Penn State University, University Park, PA, 1999.

Unique Fats and Fat Substitutes, Functional Food Strategies for the Food Industry, American Association of Cereal Chemists, Newport Beach, CA, 1999.

Functional Properties of Antioxidants in Foods, Best Foods, Englewood Cliffs, NJ, 1999.

Influence of the Emulsion Interface on Lipid Oxidation, Cultor Food Science, Ardsely, NY, 1999.

Impact of Emulsifiers on the Oxidative Stability of Lipid Dispersions High in Omega-3 Fatty Acids, Division of Agriculture and Food Chemistry, American Chemical Society, Anaheim, CA, 1999.

Dietary Strategies for Improving the Quality of Pork, National Pork Producers Council, Champaign, IL, 1999.

Endogenous Skeletal Muscle Antioxidants, Dietary Strategies for Improving Muscle-Based Food Products, Madrid Spain, 1998.

Manipulating the Prooxidative/Antioxidative Balance of Muscle Foods to Minimize Rancidity, Muscle Food Division Lectureship, Institute of Food Technologists, Atlanta, GA, 1998.

Mechanisms of Lipid Oxidation in Skeletal Muscle, Dept. of Food Science and Applied Microbiology, University of Saskatchewan, 1998.

TBA as an Indices of Rancidity in Muscle Foods, Reciprocal Meat Conference, Storrs, CT, 1998.

Antioxidants and Health, Functional Foods Workshop, Cultor Food Science, Nice, France, 1998.

Exercise and the Oxidative Stability of Skeletal Muscle, International Life Science Inst. St. Petersburg, FL, 1998

Antioxidant Activities of Whey, International Whey Conference, Chicago, IL, 1997.

Conjugated Linoleic Acid: Chemistry and Antioxidant Activity. CLA Forum, Madison, WI, 1997.

Mechanisms of Proteinaceous Antioxidants, Natural Antioxidants Symposium, American Chemical Society, San Francisco, CA, 1997.

Antioxidants for Meat and Fish, Workshop on Food Lipid Stability, American Oil Chemists Society, Seattle, WA, 1997.

Lipid Oxidation and Antioxidant Protection, Kalsec/Nutrasweet Co., San Diego, CA, 1997

Emerging Antioxidants, Capitalizing on the Benefits of Natural Antioxidants in Nutrition, Health and Food, Dallas,

Texas, 1997.

Factors Influencing the Oxidative Deterioration of Muscle Foods. Dept. Food Science, Cornell University, Ithaca, NY, 1996.

Lipids in Food Systems, Dept. Foods and Nutrition, Kansas State University, Manhattan, KA, 1996.

Antioxidant Mechanisms and Applications in Muscle Foods, Reciprocal Meat Conference, American Meat Science Association, Provo, UT, 1996.

Bioactivity of Carnosine, a Skeletal Muscle Dipeptide, Dept. of Nutrition, University of Massachusetts, 1996.

Conjugated Linoleic Acid in Dairy Products, Dairy Management Inc., Chicago, IL, 1996.

Factors Influencing Conjugated Linoleic Acid Concentrations in Foods, Harvard School of Public Health, Boston, MA, 1996.

Conjugated Linoleic Acid in Dairy and Meat Products, Hokkaido Bio-Industry Association, Sapporo, Japan, 1995.

Carnosine as a Natural Antioxidant in Foods, Department of Agricultural Chemistry, Kyoto University, Japan, 1995.

Factors Influencing Oxidative Reactions in Fish Skeletal Muscle, Department of Food Science, Tokyo Fisheries University, Japan, 1995.

New Food Ingredients and Pharmaceutical Foods, Nutrient Databank Conference, Buffalo, NY, 1995

Oxidative Processes in Mackerel Muscle, Atlantic Mackerel Workshop, National Marine Fisheries Service, Gloucester, MA, 1995.

Determination of Pyrroloquinoline Quinone in Dairy Foods, Dairyman Inc., Chicago, IL, 1994.

Altering the Nutritional Composition of Muscle Foods, Symposium on "The role of Muscle Foods in Health and the Molecular Basis of Disease", Institute of Food Technologist, Atlanta, GA, 1994.

The Physiological Role of Carnosine in Fish Muscle, National Marine Fisheries Lab, Gloucester, MA, 1994.

The Role of Carnosine in the Oxidative Stability of Skeletal Muscle, Dept. of Animal Science, University of Connecticut, 1994.

Water and Lipid-Soluble Antioxidants, International Life Science Institute, Nassau, Bahamas, 1994.

Nonnutritive Antioxidants, International Life Science Institute, Washington D.C., 1993.

Antioxidants in Oats and Other Grains, Opta Food Ingredients, Inc., Bedford, MA, 1993.

Control of Lipid Oxidation and Warmed-Over Flavor in Poultry, Kentucky Fried Chicken, Louisville, KY, 1993.

Extending the Shelf-life of Meat. Kentucky, Tennessee Meat Processors Association, Lexington, KY 1992.

Antioxidant Mechanism of Carnosine. Seminar Series for the University of Kentucky Multidisciplinary PhD Program in Nutritional Sciences. Lexington, KY, 1992.

Carnosine and Other Water-Soluble Proteinaceous Antioxidants. Dept. Food Science, University College, Cork, Ireland, 1991.

Formation of Conjugated Linoleic Acid in Processed Cheese. CLA in Dairy Foods and Their Nutritional Implications, National Dairy Council, Baltimore, MD, 1991.

Lipid Oxidation as it Relates to Heart Disease. Kentucky Heart Institute. Multidisciplinary Cardiovascular Research Forum, Lexington, KY, 1991.

Identification and Characterization of Water Soluble Antioxidants for Use as Food Additives. University of Kentucky Membrane Science Center Colloquium, 1990.

Popular Press Publications

Role of Antioxidant Enzymes in the Development of Oxidative Rancidity in Cooked and Salted Muscle Foods, Meat Focus International 5(9):50

Nonessential Dietary Antioxidants, Health Media Communications, 13(11):73.

Concentrations of the Anticarcinogen, Conjugated Linoleic Acid, in Processed Beef Products, Meat Focus International 3(2):61

Antioxidant Potential of Carnosine and Anserine, Meat Focus International 1(5):224.

Use of the Natural Dipeptide Carnosine to Prevent Lipid Oxidation in Pork, 1992, A Look to the Future, Where Marketing and Research Meet, National Livestock & Meat Board.

Natural Antioxidants, Research for a Difference, UK College of Agriculture, Co-Author Ellen Brightwell.

MSG: Friend or Foe, UK College of Agriculture News, Co-Author Ellen Brightwell.

Grants Funded, PRIMARY INVESTIGATOR:

Strategies for Retarding Citral Degradation in Beverage Emulsions, International Flavors and Fragrances, \$47,100 (2007-2008). D.J. McClements (Co-PI) & E.A. Decker (Co-PI).

Encapsulation technologies for the stabilization of Omega-3 oils Eric Decker (co-PI), & D.J. McClements (co-PI), Wesfolk, \$158,570, University of Massachusetts, Amherst (2008-2009).

Role of Physical Structures in Food Oils on Lipid Oxidation, USDA National Research Initiative Competitive Grants Program, 9/1/07-8/31/10, \$278,538.

Decreasing *trans* Fatty Acids in Soybean Oil Emulsions, Bunge Foods, \$72,000, 2006

Oxidative Stability of Emulsified Omega-3 Fatty Acids. Cargill, \$100,000, 2005.

Utilization of Emulsion Interface Engineering to Improve the Oxidative Stability of Food Emulsions: The Role of Antioxidant Proteins, USDA National Research Initiative Competitive Grants Program, 9/1/04-8/31/08, \$304,000.

Oxidative deterioration of squid leading to discoloration during prolonged storage, Thailand Ministry of Education, \$16,400, 9/1/04-3/31/06.

Stabilization of Citrus Flavors in Emulsions Systems, Kraft Foods, \$40,000, 2003

Light Induced Discoloration of Beverages, Pepsi-Cola Company, \$40,000, 2002.

Producing stable, value-added fish oil emulsions for use in functional foods. SK-NOAA, \$105,899.

Efficacy of producing stable omega-3 fatty acid enhanced foods to improve human health, USDA-IFAFS, 9/15/01-9/14-05, \$1,722,000.

The Role of Nitric Oxide Synthase and Peroxynitrite on the Oxidative Stability of Muscle Foods, USDA National Research Initiative Competitive Grants Program, 10/15/01-8/31/04, \$185,000

Spectrophotometers for Food Science Laboratories, CFNR Instructional Development Grant, 2001, \$1,900.

Impact of Emulsifiers on the Oxidative Stability of Lipid Dispersions, USDA National Research Initiative Competitive Grants Program, 9/1/99-8/31/02, \$140,000

Antioxidant Potential of Carnosine, a Beef Dipeptide, National Cattlemen's Beef Association, 9/1/99-8/31/01, \$46,272.

Mechanisms of Lipid Oxidation in Cooked Meats Containing Antioxidants, Cultor Food Science, 6/1/98-5/31/00, \$6,000.

Production of a Carnosine and Anserine-Containing Antioxidant Extract from Surimi Wash Water, National Marine Fisheries Service/NOAA, 6/1/97-5/31/99, \$82,151.

Development of Model Systems to Evaluate Carnosine-Myoglobin Interactions. USDA National Needs Graduate Grant Programs, 1997, \$3,000

Evaluation of Factors Influencing the Antioxidant Activity of Carnosine and Related Peptides, USDA National Research Initiative Competitive Grants Program, 11/1/96-3/30/99, \$116,767.

Assessing the Relationship Between Antioxidants and Exercise by Studying Oxidative Processes in Muscle Biopsies, International Life Science Institute Future Leader Award, 6/1/96-5/31/98, \$30,000.

Production of a Carnosine-Containing Antioxidant Extract from Mechanically Separated Pork, National Livestock and Meat Board, 9/1/95-8/31/97, \$35,300

Isolation and Characterization of Water-Soluble Antioxidants in Milk, Dairyman Inc. 9/1/95-3/30/97, \$80,000.

Identification of Oxidation Products of the Skeletal Muscle Antioxidants, Anserine and Carnosine, Healy Endowment Grant, University of Massachusetts, 9/1/95-8/31/96, \$4,800

Development of Methodology to Measure the Oxidative Status of Skeletal Muscle Biopsies, Roche Vitamins &

Fine Chemicals, 6/1/95-5/31/96, \$12,000

Development of Training Workshops for Teachers of Food and Health Science, Massachusetts Agriculture in the Classroom, 1/1/95-12/31/95, \$3,500

Development of Food Antioxidant Screening Tests, Pfizer Food Science Group, 6/1/94-5/31/95, \$11,000

Sodium Electrode System for Food Science Laboratories, CFNR Instructional Development Grant, 1995, \$500.

Identification and Characterization of Whey Antioxidants, University of Massachusetts Faculty Research Grant, 2/1/94-1/31/95, \$4,700

Evaluation of Pfizer Antioxidants, Pfizer Food Science Group, 10/93-9/94, \$39,064

Increasing Endogenous Carnosine Concentrations in the Skeletal Muscle of Pork by Dietary Supplementation, National Pork Producers Council, 10/1/93-9/31/94, \$16,200

Antioxidant Activity of Modified Soybean Lecithin, Kentucky Soybean Association, 9/1/93-8/31/94, \$12,000
Modification of Beef Tallow to Decrease the Concentration of Saturated Fatty Acids, Kentucky Beef Cattle Association, 11/1/92-10/31/93, \$10,000

Evaluation of Conjugated Linoleic Acid Content in Milk Fat and Dairy Products, National Dairy Council 6/1/92-5/31/94, \$76,780

Modification of Beef Fat to Increase the Concentration of the Anticarcinogen, Conjugated Linoleic Acid, National Livestock and Meat Board, 3/1/92-8/30/93, \$21,334

Preservation of the Fresh Flavor of Pork Using Carnosine in Combination with Other Natural Antioxidants, National Livestock and Meat Board, 3/1/92-8/30/93, \$17,500

Isolation and Characterization of an Antioxidant Peptide From Acid Whey Permeate, University of Kentucky Graduate School, 1991, \$2,993

Extraction of Anserine & Carnosine From Beef for Use as a Food Additive, Kentucky Beef Cattle Association, 3/1/91-2/28/92, \$15,000

Characterization and Identification of Toxic Lipids and Lipid Oxidation Products in Foods and Biological Tissue, University of Kentucky, 1991, \$32,230

Identification of Protein-Bound Fe in Muscle Foods Which Promotes Lipid Oxidation, USDA, USA-Ireland Cooperative Research Program, 1991, \$4,000

Determination of the Antioxidant Mechanism of Carnosine, Biomedical Research Support Grant, 1/1/90-12/31/90, \$5,000

Effect of Processing Conditions and Food Additives on the Formation of Conjugated Linoleic Acid in Processed Cheese, National Dairy Research and Promotion Board, 1/1/90- 2/31/90, \$32,200

Use of the Natural Dipeptide, Carnosine, to Prevent Lipid Oxidation in Pork, National Livestock and Meat Board, 1/1/90-12/31/90, \$16,000

Use of the Dipeptides, Anserine and Carnosine, as Food Antioxidants, University of Kentucky Research

Committee, 1989, \$1,800

Use of Natural Antioxidants in Blood Plasma to Control Lipid Oxidation in Food, University of Kentucky Graduate School, 11/1/88-10/31/89, \$3,270

Use of Natural Antioxidants From Beef Plasma to Control Lipid Oxidation in Food, American Meat Protein Corporation, 1/1/90-12/31/90, \$12,400

Total Funds Awarded as a PI: \$3,955,168

Grants Funded, CO-INVESTIGATOR

Food Science Graduate Training in Food and Health with Emphasis on Ingredient Delivery Systems and Food Policy, H. Xiao (PI), Y. Park D.J. McClements and E.A. Decker (Co-PIs). USDA National Needs Program. \$234,000, 1/02/2010 - 12/31/2014.

Is Smaller Better? Structure and Phase Behavior Effects on the Efficacy of Emulsion-Based Delivery Systems J. Coupland (PI), R. Elias, D. J. McClements, E.A. Decker (CoPIs). Agriculture and Food Research Initiative, USDA, \$449,367, 1/02/2010 - 12/31/2014

Designing novel food functionality through controlled biopolymer phase separation. D.J. McClements (PI), E.A. Decker (Co-PI), J. Weiss (Co-PI). National Research Initiative Competitive Grants Program. United States Department of Agriculture, \$362,424 (9/1/08-8/31/12).

Design of Nano-laminated coatings to control bioavailability of lipophilic food components. D.J. McClements (PI), E.A. Decker (Co-PI), J. Weiss (Co-PI). National Research Initiative Competitive Grants Program. United States Department of Agriculture, \$355,000 (9/1/08-8/31/12).

Encapsulation of food colorants in liposomes to improve stability and modulate their interactions with light. Weiss (PI), D.J. McClements (Co-PI), E.A. Decker (Co-PI), J. Sensient Technologies, \$55,045 2008-2009.

New Technology for Encapsulation of Emulsified Lipids in Food Beverages. McClements, D.J. (PI), Decker, E.A. and Weiss, J. UMass Commercial Ventures and Intellectual Properties Technology Development Fund. \$30,000, 2007

Food-Based Solutions to Health and Wellness Proposal for Academic-Industry Strategic Alliance. Weiss, J. (PI), McClements, D.J., Decker E.A. and Park, Y. University of Massachusetts Science and Technology Initiatives Fund. \$100,000, 2005.

Utilization of Interfacial Engineering to Improve Emulsion Stability. D.J. McClements (PI) and Decker E.A. USDA-National Research Initiative, Competitive Grants Program, \$335,000 (2005-2009).

Seafood Safety and Health, PI: R.E. Levin, Dept. of Food Science, UMass, USDA, 2002-2005, \$1,175,358.

Distribution of Lipid-soluble Antioxidants in Muscle Lipids and Effect on Stability. PI. H.O. Hultin, Dept. Food Sci, UMass, USDA-NRI, 2000-2003, \$151,000.

Improvement of Oxidative Stability of Encapsulated Fish Oil in Food Powders, PI. Pavinee Chinachoti, Dept. Food Science, UMass, NOAA-SK, 2000-2002, \$92,073

Acquisition of High Performance Liquid Chromatograph (HPLC) for Mass Spectrometer Sample Introduction. PI:

Uden, P.C., Chemistry Dept., Faculty Research Grant, UMass, 1999, \$10,000.

International Symposium on Dietary Strategies for Improving Animal-Based Food Products, Co-PI, Cameron Faustman, University of Connecticut, OCED Cooperative Research Program, 1998, \$20,000.

Stabilization of Spray-Dried Dairy-Based Creamers, Dairyman Inc., PI: Pavinee Chinachoti, Dept. Food Science, UMass (PI), 1/1/96-12/31/99, \$120,000.

Commercialization of an Ultrasonic Device for Measuring the Fat Content of Mackerel, National Marine Fisheries Service/NOAA, David J. McClements, Dept. Food Science, UMass (PI), 6/1/97-12/31/98, \$68,758

Development of a Rapid Nondestructive Technique to Measure the Fat Content of Mackerel, National Marine Fisheries Service/NOAA, David J. McClements, Dept. Food Science, UMass (PI), 9/1/95-2/28/97, \$52,000

National Needs Fellowships in Food Science, USDA, Robert Levin, Dept. Food Science, UMass (PI), 9/1/95-8/31/98, \$108,000

Fat-Mediated Endothelial Injury: Implications in Atherosclerosis, National Dairy Council, 5/1/94-4/30/95, Bernhard Hennig, Dept. of Nutr. and Food Science (PI), \$37,099

Nutritional Requirements and Production of Hybrid Striped Bass in Kentucky, United States Department of Agriculture, 5/93-12/95, Carl Webster, Kentucky State University (PI), \$105,320

Analysis of Glycoproteins in Cultured Endothelial Cells with HPLC, University of Kentucky Research Equipment Competition, 1992, Bernhard Hennig, Dept. of Nutrition and Food Science (PI), \$31,515

Measurement of Food Texture with an Instron Universal Testing Instrument, University of Kentucky Research Equipment Competition, 1992, Youling Xiong, Dept. of Animal Sciences (PI), \$37,678

Toxicity of Lipids and Lipid Oxidation Products, University of Kentucky Research Equipment Competition 1992, Gilbert Boissonneault, Dept. of Clinical Sciences (PI), \$8,845

Improving Beef Heart Surimi Functionality through Control of Oxidation, Kentucky Beef Cattle Association, 6/1/92-5/31-93, Youling Xiong, Dept. of Animal Sciences (PI), \$17,050

Anti-Atherogenic Potential of Conjugated Linoleic Acid, University of Kentucky Multidisciplinary Nutrition Program, 1992, Gilbert A. Boissonneault, Dept. of Clinical Sciences (PI), \$4,000

Influence of Cu on Inflammation and Antioxidant Activity in the Bovine Udder, United States Department of Agriculture, 1/1/92-6/30/94, Robert Harmon, Dept. of Animal Sciences (PI), \$123,608

Fat-Mediated Endothelial Injury: Implications in Atherosclerosis, National Dairy Council, 1/1/91-12/31/92, Bernhard Hennig, Dept. of Nutrition and Food Science, \$84,836

Dietary Carnosine and Breast Cancer Risk: Protection by Red Meats?, National Livestock and Meat Board, 3/1/91-2/28/92, Gilbert A. Boissonneault, Dept. of Clinical Sciences (PI), \$29,000

Type of Fat as Related to Endothelial Injury: Implications in Atherosclerosis, National Livestock and Meat Board 6/1/89-6/30/91, Bernard Hennig, Dept. of Nutrition and Food Science (PI), \$48,554

Lipid Mediated Endothelial Injury, National Institutes of Health, 9/30/90-9/29/95, Bernard Hennig, Dept. of Nutrition and Food Science (PI), \$448,074

Selected Professional Recognitions and National Committee Assignments:

- Member, Food and Drug Administration Food Advisory Committee (2007-2010)
- Member, Institute of Medicine of the National Academy of Science Food Forum (2007-2009)
- Committee Member, National Academy of Science, Nutritional Standards for Foods in Schools
- Secretary/Chair-Elect/Chair, Food Chemistry Division, Institute of Food Technologists (2002-2005).
- Chair, Peer-Review Journal Sub-Committee, Institute of Food Technologists (2003-2005)
- Member, USDA-CSREES Review Team for Dept. of Food Science, Louisiana State University (2003)
- Member, Communication Management Committee, Institute of Food Technologists (2003-2005)
- Research Committee, Institute of Food Technologists (1999-2002)
- Panel Leader, USDA-NRI Food Characterization Grant Review Panel (2002-2003)
- Contributing Editor, Nutrition Reviews (1994-Present)
- Panel Member, USDA-NRI Food Characterization Grant Review Panel (2001-2002)
- Associate Editor, Current Protocols in Food Analytical Chemistry, John Wiley & Sons (1998-Present)
- Program Committee, American Meat Science Association (1998-2000)
- Advisory Panel Member for TSE in Food Lipids, Food and Drug Administration (1998)
- Advisory Board for International Collaborative Doctoral Degree Program, Thailand (1999-present)
- Advisory Panel Member for TSE in Gelatin, Food and Drug Administration (1997-1998)
- Grant Review Committee for Conjugated Linoleic Acid in Beef, National Cattlemen Association (1997-1999)
- Judge, Student Paper Competition, Phi Tau Sigma (1997)
- Member, Sustaining Member Committee, American Meat Science Association (1997-present)
- Member, Distinguished Research Award Committee, American Meat Science Association (1997)
- Chairman, Muscle Food Division, IFT (1994-1995)
- Member and Chair, Committee Sections and Divisions, IFT (1995-1998)
- Judge, Graduate Research Poster Competition, IFT (1996)
- Member, American Meat Science Assoc. Biochemistry Program Committee (1995)
- Chairman for Graduate Poster Competition, American Meat Science Assoc. (1995)
- Member, EPA Dioxin Reassessment Working Group, IFT (1994-1995)
- Judge, Graduate Poster Competition, American Meat Science Assoc. (1994)
- Member, Reciprocation Fair Program Committee, American Meat Science Assoc. (1994)
- Chair-Elect, Muscle Food Division, IFT (1993-1994)
- Session Chairman, Muscle Food Processing, Institute of Food Technologist (1992)
- Co-Chairman, Local Arrangement Committee, N. American Membrane Society Fifth Annual Meeting (1992)
- Member, Supelco Research Award Committee, American Oil Chemist Society (1992-1993)
- Member, Annual Meeting Program Committee, Institute of Food Technologist (1992-1995)
- Chairman, Bluegrass Section, Institute of Food Technologist (1991-1993)
- Member, Muscle Biochemistry Committee, American Meat Science Assoc. (1991)
- Secretary, Bluegrass Section Institute of Food Technologist (1989-1990)

Membership in Professional Organizations

Institute of Food Technologists
American Chemical Society
American Oil Chemist Society

Phi Tau Sigma
Sigma Xi