

---

# Project Listings

**Beef Safety Research**  
**Product Enhancement**  
**Research**  
**Nutrition Research**  
**Market Research**

---

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>A Proteomic Approach for Specific Detections of <i>Listeria monocytogenes</i></b>	A.K. Bhunia, Ph.D. Purdue University	2002-2003 Completed	\$48,359
<b>An Evaluation of Beef Splitting Saw Operational Sanitation Standard Operating Procedures Ability to Remove Glial Fibrillary Acidic Protein (GFAP)</b>	J.A. Scanga, Ph.D. Colorado State University	2005 Completed	\$69,600
<b>An Evaluation of Central Nervous System (CNS) Cross- Contamination Due to Carcass Splitting in Commercial Beef Packing Plants using Glial Fibrillary Acidic Protein (GFAP)</b>	K.E. Belk, Ph.D. Colorado State University	2004 Completed	\$42,665
<b>An Evaluation of the Ability of Commercial Carcass Washing Cabinets to Remove Glial Fibrillary Acidic Protein (GFAP) from Beef Carcasses</b>	J.A. Scanga, Ph.D. Colorado State University	2005 Completed	\$38,375
<b>Application of Antimicrobial Treatments in a Commercial Simulation to Reduce <i>E. coli</i> O157:H7 and <i>Salmonella spp</i> in Beef Trim and in Ground Beef</b>	M.F. Miller, Ph.D. Texas Tech University	2004-2005 Completed	\$80,285
<b>Assessing the Ruminal and Gastrointestinal Metabolism of 2- nitroethane, a Potential Cost Recoverable Feed Supplement to Reduce <i>Escherichia coli</i> O157:H7, <i>Salmonella</i> and <i>Campylobacter</i> in Fed Cattle *</b>	R.C. Anderson, Ph.D. USDA, ARS	2004-2005 Completed	\$37,130
<b>At Risk Populations for Salmonella Contamination and the Effects of Pre-slaughter Wash/Contamination</b>	T.E. Besser, Ph.D. Washington State University	2005-2006 Completed	\$59,936
<b>Best Practices for Removal and Disposition of Specified Risk Materials Associated with the Transmission of Bovine Spongiform Encephalopathy (BSE) Guidance Document</b>	T.L. Frederick Food Safety Net Services, Ltd.	2004 Completed	\$10,425

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Best Practices for Removal and Disposition of Specified Risk Materials Associated with the Transmission of Bovine Spongiform Encephalopathy (BSE)</b>	T.L. Frederick Food Safety Net Services, Ltd.	2004-2005 Completed	\$6,000
<b>Can Prp<sup>cwd</sup> be Detected in Muscle of Deer, Elk or Cattle?</b>	E.S. Williams, Ph.D. University of Wyoming	2002-2003 Completed	\$46,100
<b>Characterization of the Relationship between Rumen Protozoa and Enhanced <i>Salmonella</i> Virulence *</b>	S. Carlson, Ph.D. USDA, ARS	2004-2005 Completed	\$24,870
<b>Chronic Wasting Disease in White-Tailed Deer in Wyoming: Interaction with Livestock, Movement Patterns and Evaluation of Ante-Mortem Diagnostic Tests</b>	W.E. Cook, DVM University of Wyoming	2002-2003 Completed	\$42,850
<b>Comparison of Rapid and Immunomagnetic Separation Methods for Detection and Quantification of <i>E. coli</i> O157 in Fecal, Hide, Carcass and Ground Beef Samples</b>	M. Brashears, Ph.D. Texas Tech University	2005 Completed	\$84,132
<b>Competitive Fitness of Multi Drug-resistance Pathogenic <i>Salmonella</i> enterica serotype Newport Isolates from Cattle</b>	T.L. Poole, Ph.D. USDA, ARS, SPA	2005-2006 Completed	\$29,995
<b>Decontamination of Beef Cuts, Intended for Blade/Needle or Moisture-Enhancement Tenderization, by Surface Trimming vs. Rinsing with Solutions of Hot Water, Warm Lactic Acid or Activated Lactoferrin Plus Warm Lactic Acid *</b>	G.C. Smith, Ph.D. Colorado State University	2004-2005 Completed	\$77,255
<b>Demonstrate the Technical Feasibility of Co-firing Animal-Tissue Biomass (SRMs and Carcasses) with Coal in a Pilot-Scale Bubbling Fluidized-Bed Combustor</b>	B.G. Miller, Ph.D. Pennsylvania State University	2005 Completed	\$99,754

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Determination of the Most Effective Intervention Strategy for Microbiological Reduction on Cattle Hides Prior to Removal</b>	G. Bellinger, M.S. Food Safety Net Services, Ltd.	2005 Completed	\$42,190
<b>Determination of a Sodium Chlorate Dose that Results in Safe C concentrations of Tissue Residues in Beef Cattle *</b>	D.J. Smith, Ph.D. USDA, ARS	2004-2005 Completed	\$42,200
<b>Determination of the Incidence of <i>E. coli</i> O157:H7 and <i>Salmonella</i> Contamination on Hides and Carcasses at Cow/Bull Packing Plants *</b>	M. Koochmaraie, Ph.D. USDA/ARS	2003-2004 Completed	\$190,000
<b>Development of a Diagnostic Assay for Chronic Wasting Disease</b>	R. Rubenstein, Ph.D. New York Institute for Basic Research	2002-2003 Completed	\$122,147
<b>Development of Pre-harvest Nutritional Management Strategies to Reduce <i>E. Coli</i> O157:H7 and <i>Salmonella spp.</i> Gastrointestinal Survival and Shedding</b>	H.N. Zerby, Ph.D. The Ohio State University	2005-2006 Completed	\$84,346
<b>Development of Ultra-Sensitive Assays for Prion Phenotypes in Biofluids and Tissues *</b>	I.S. Krull, Ph.D. N. Chiu, Ph.D. Northeastern University	2002-2003 Completed	\$199,855
<b><i>E. coli</i> O157:H7 Survival and/or Potential Introduction on Beef Carcass Surfaces During Initial Chilling and Characterization of Hotbox Best Practices</b>	J.A. Scanga, Ph.D. Colorado State University	2003-2004 Completed	\$148,300
<b><i>E. coli</i> O157:H7 Survival on Cattle Hides</b>	M. Koochmaraie, Ph.D. USDA/ARS	2005-2006 Completed	\$80,000
<b>Effect of Vaccinating against Type III Secretory Proteins of <i>Escherichia coli</i> O157:H7 on the Occurrence of <i>E. coli</i> O157:H7 on Hides Pre- and Post-harvest</b>	T.J. Klopfenstein, Ph.D. University of Nebraska, Lincoln	2005 Completed	\$42,525
<b>Effects of Dust Cloud Cross-contamination on <i>E. coli</i> O157 and <i>Salmonella</i> during Cattle Transport</b>	M.F. Miller, Ph.D. Texas Tech University	2005 Completed	\$68,725

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Efficacy of De-hairing and Cetylpyridinium Chloride to Reduce <i>E. coli</i> O157:H7 in Commercial Beef Processing Plants *</b>	M. Koohmaraie, Ph.D. USDA/ARS	2002-2003 Completed	\$81,500
<b>Efficacy of the Brovac System for Decontamination of Retail Beef Trimmings: Process Validation against Pathogens and Commercial Shelf-Life Study</b>	R.K. Phebus, Ph.D. Kansas State University	2003-2004 Completed	\$47,916 (Washington State Beef Commission)
<b>Enhancing the Heat Sensitivity of <i>Escherichia coli</i> O157:H7 in Ground Beef by Monocaprylin *</b>	K. Venkitanarayanan, Ph.D. University of Connecticut	2004-2005 Completed	\$41,666
<b><i>Escherichia coli</i> O157:H7 Indicator Organism *</b>	M. Koohmaraie, Ph.D. USDA/ARS	2002-2003 Completed	\$59,500
<b>Cocktail to Reduce <i>Escherichia coli</i> O157:H7 Shedding in Beef Cattle</b>	L.D. Goodridge, Ph.D. University of Wyoming	2005-2006 Completed	\$75,000
<b>Evaluation of Efficacy of Treatment of Cattle Hides with 1% Cetylpyridinium Chloride (CPC) in Reducing <i>E. coli</i> O157:H7 Incidence on Beef Carcasses</b>	G. Bellinger, M.S. Food Safety Net Services, Ltd.	2003 Completed	\$46,390
<b>Evaluation of Interventions to Reduce Microbial Contamination in the Manufacture of Blade Tenderized Beef</b>	J.E. Kennedy, Ph.D. ABC Research	2003 Completed	\$104,870
<b>Evaluation of Peroxyacetic Acid (Inspexx 200) as a Potential Post-Chilling Treatment for Control of <i>Escherichia coli</i> O157:H7 and <i>Salmonella typhimurium</i></b>	J.W. Savell, Ph.D. Texas Agricultural Exp. Station	2002-2003 Completed	\$72,700
<b>Evaluation of Peroxyacetic Acid (Inspexx 200) as a Potential Pre-Grinding Treatment for Control of <i>Escherichia coli</i> O157:H7 and <i>Salmonella typhimurium</i> on Beef Trimmings *</b>	J.W. Savell, Ph.D. Texas Agricultural Exp. Station	2003-2004 Completed	\$28,720
<b>Evaluation of the Effectiveness of Acidified Sodium Chlorite (Sanovaâ) for Decontaminating Commercial Beef Carcasses Post-</b>	J.L. Marsden, Ph.D. Kansas State University	2003-2004 Completed	\$79,700 (Kansas Beef Council)

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Evaluation of the Relationship between Stress Response and Fecal Shedding of <i>Escherichia coli</i> O157:H7 *</b>	J.W. Savell, Ph.D. Texas Agricultural Exp. Station	2004-2005 Completed	\$139,550
<b>Examination of the Seasonal Variation of <i>E. coli</i> O157:H7 in Beef Cattle: Effect of Day Length and Subsequent Changes in Hormone Concentrations and Immune Function *</b>	T.S. Edrington, Ph.D. USDA/ARS/SPA	2003-2004 Completed	\$20,000
<b>Further Study of Hide-on Carcass Washing to Identify Alternative Chemiocals/Conditions for Lowering Microbial Indicator Counts and Incidence of <i>E. coli</i> O157:H7 on Incoming Slaughter Cattle</b>	J.A. Scanga, Ph.D. Colorado State University	2004 Completed	\$72,006
<b>Genetic Characterization of <i>Salmonella enterica</i> serova Newport Isolated from Cattle Using a DNA Microarray to Identify Genes Conveying Multi Drug-resistance, Increased Virulence and Conjugative Ability</b>	N. Ramlachan, Ph.D. USDA, ARS, SPA	2005-2006 Completed	\$44,175
<b>Genetic Profiles of Bovine-origin <i>Salmonellae</i></b>	J.T. LeJeune, Ph.D. The Ohio State University Research and Development Center	2005-2006 Completed	\$47,163
<b>Hide-on Decontamination System using Sandia National Laboratories DF-200 Foam</b>	J.L. Marsden, Ph.D. Kansas State University	2003-2004 Completed	\$44,800
<b>High Pressure/Temperature Inactivation of TSE Agents in SRMs and Beef Products</b>	R. Meyer, Ph.D. Meyer and Associates	2004-2005 Completed	\$123,840
<b>High Pressure/Temperature Inactivation of TSE Infectivity</b>	R. Meyer, Ph.D. Meyer and Associates	2003 Completed	\$9,200
<b>Identification and Evaluation of Cattle Persistently Shedding vs. Cattle Non-Persistently Shedding <i>E. coli</i> O157:H7</b>	K.E. Belk, Ph.D. Colorado State University	2005-2006 Ongoing	\$117,425

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Identification of Humane Cattle Stunning Systems that Minimize the Likelihood of Central Nervous System Tissue Entering the Circulatory System</b>	J.A. Scanga, Ph.D. Colorado State University	2005-2006 Completed	\$79,675
<b>Identification of the At-risk Population(s) for Shedding Multi Drug-resistant <i>Salmonella</i> in Harvest-ready Cattle</b>	G.H. Loneragan, Ph.D. West Texas A&M University	2005-2006 Completed	\$98,128
<b>Impact of Feeding Neomycin on the Emergence of Antimicrobial Drug Resistance in <i>E. coli</i> O157, <i>Salmonella</i> spp. And Commensal Organisms in Cattle</b>	M. Brashears, Ph.D. Texas Tech University	2004 Completed	\$67,450
<b>Improving Sensitivity, Precision, and Repeatability of the GFAP-ELISA for Detecting CNS Contamination in AMR-Generated Tissues Compared to the Immunohistochemical Protocol</b>	K.E. Belk, Ph.D. Colorado State University	2003 Completed	\$196,500
<b>Investigating On-Farm Management Practices as Pre-Harvest Beef Microbiological Interventions *</b>	K.E. Belk, Ph.D. Colorado State University	2002-2003 Completed	\$80,285
<b>Isolation and Use of Bacteriophage to Reduce <i>E. coli</i> O157:H7 Populations in Ruminants *</b>	T.R. Callaway, Ph.D. USDA, ARS	2004-2005 Completed	\$71,148
<b>Literature Review: Current Research Leaders, Findings, Priorities, and Testing Methods for <i>Mycobacterium avium subspecies</i> Method Development fo</b>	W. Warren, Ph.D. Food Safety Net Services, Ltd.	2003 Completed	\$4,000
<b>Enumeration of <i>E. coli</i> O157:H7 for Ground Beef and Hides, Carcasses, and Feces of Cattle</b>	M. Koohmaraie, Ph.D. USDA/ARS	2005-2006 Completed	\$100,000
<b>Microbiological Safety of Needle-Tenderized Beef Steaks, Cook and Uncooked, Surface Inoculated with <i>Escherichia coli</i> O157:H7 *</b>	J.B. Luchansky, Ph.D. USDA/ARS,NAA	2003-2004 Completed	\$117,000
<b>Mobility of Infectious Prion Proteins in Soil *</b>	J.A. Pedersen, Ph.D. University of Wisconsin	2003-2004 Completed	\$118,603.00

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Molecular Characterization of <i>Escherichia coli</i> O157:H7 Hide Contamination Routes-Feedlot to Harvest Floor</b>	W. Warren, Ph.D. Food Safety Net Services, Ltd.	2004-2005 Completed	\$158,550
<b>NAMP/KSU Survey for Blade Tenderization</b>	Ann Rasor, Ph.D. North American Meat Processors Association	2003-2004 Completed	\$75,000
<b>Phage Encoded Dissemination of <i>Shiga</i> Toxin Genes Among Bovine <i>E. coli</i></b>	J.T. LeJeune, Ph.D. The Ohio State University Research and Development Center	2005-2006 Completed	\$89,787
<b>Preharvest Pathogen Reduction Practices: Reduction of Prevalence of <i>E. coli</i> O157:H7 in Feeder Cattle During the 45-day Preconditioning Period</b>	J.A. Paterson, Ph.D. Montana State University	2003-2004 Completed	\$74,600
<b>Prevalence and Growth of <i>E. coli</i> O157:H7 in the Bovine Gall Bladder</b>	C.W. Kaspar, Ph.D. University of Wisconsin	2004-2005 Completed	\$10,000
<b>Prevalence of <i>E. coli</i> O157:H7 on Hides and in Feces of Feedlot Cattle Over Time *</b>	M. Koohmaraie, Ph.D. USDA/ARS	2004 Completed	\$200,000
<b>PrP Genetics and Expression in White-Tail Deer</b>	J.M. Aiken, Ph.D. University of Wisconsin	2002-2003 Completed	\$74,876
<b>A New Technique to Identify Long-term <i>E. coli</i> O157:H7 Colonized Cattle</b>	C.H. Bohach, Ph.D. Washington State University	2004-2005 Completed	\$101,354
<b>Reduction of <i>E. coli</i> O157:H7 in Beef Feedlot Cattle using Varying Doses of a Direct-Fed Microbial</b>	M. Brashears, Ph.D. Texas Tech University	2003-2004 Completed	\$77,495
<b>Regional Variation in the Incidence of <i>E. coli</i> O157:H7 on Hides and Carcasses of Feedlot-Finished Cattle *</b>	M. Koohmaraie, Ph.D. USDA/ARS	2003-2004 Completed	\$20,000
<b>Regulation of Shiga Toxin Production in <i>E. coli</i> from Bovine and Human Sources</b>	J.T. LeJeune, Ph.D. The Ohio State University Research Foundation	2002-2003 Completed	\$69,653
<b>Role of Curli Fimbriae in Attachment of Shiga Toxin Producing and Enterohemorrhagic <i>Escherichia coli</i> (STEC and EHEC) on Raw and Ready-to-Eat Beef</b>	J. Chen, Ph.D. University of Georgia	2002-2004 Completed	\$67,740

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Role of Deer Behavior in the Transmission of Chronic Wasting Disease across a South Central Wisconsin Landscape</b>	N.E. Matthews, Ph.D. University of Wisconsin	2002-2003 Completed	\$83,088
<b>Role of Recto-Anal Junction <i>E. coli</i> O157:H7 Intestinal Colonization in Influencing Feedlot Cattle <i>E. coli</i> O157:H7 Dynamics *</b>	R.N. Cobbold, Ph.D. Washington State University	2003-2005 Completed	\$149,909
<b>Role of Super-shedders in Determining Feedlot Pen Prevalence of <i>E. coli</i> O157:H7</b>	R.N. Cobbold, Ph.D. Washington State University	2005-2006	\$60,001
<b>Seasonal Effects on Multi Drug-resistant <i>Salmonella spp.</i>, and <i>Listeria monocytogenes</i> Prevalence and <i>Salmonella</i> Load on Hides and Carcasses at Cow/Bull Packing Plants</b>	M. Koochmaraie, Ph.D. USDA/ARS	2005-2006 Completed	\$199,302
<b>Sensory Testing of Beef Products after a Prion (BSE or Chronic Wasting Disease) Inactivation, High Pressure Treatment</b>	R. Meyer, Ph.D. Meyer and Associates	2003 Completed	\$18,700
<b>Resistant <i>Salmonella</i> in Dairy Cattle</b>	T.S. Edrington, Ph.D. USDA/ARS/SPA	2005-2006	\$49,750
<b>Supplementation of Feedlot Cattle with Octanoic Acid for Three Days Pre-harvest to Reduce Risk of Contamination with <i>E. coli</i></b>	K.E. Belk, Ph.D. Colorado State University	2005-2006 Completed	\$94,670
<b>Survey of Prevalence of <i>Escherichia coli</i> O157:H7 on Surface of Subprimal Cuts of Beef During Winter Months (Phase I) *</b>	J.E. Kennedy, Ph.D. ABC Research	2004 Completed	\$40,530
<b>Susceptibility of <i>E. coli</i> O157:H7, <i>Salmonella spp.</i>, and <i>Listeria monocytogenes</i>, Inoculated onto Beef Tissues, Steaks and TRE Products to Activated Lactoferrin vs. Lactoferrin B</b>	G.C. Smith, Ph.D. Colorado State University	2002-2003 Completed	\$88,124
<b>Therapeutic Use of Ceftiofur Crystalline Free Acid (EXCEDE) and its Impact on Numbers and Susceptibility of Generic <i>E. coli</i> in Feedlot Cattle</b>	G.H. Loneragan, Ph.D. West Texas A&M University	2005-2006 Completed	\$75,493

<b>BEEF SAFETY RESEARCH</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Update on the Scientific Literature Review on Cause and Transmission of Transmission Spongiform Encephalopathies, with Particular Reference to Bovine Spongiform Encephalopathy</b>	R. Weiss, Ph.D. University of Wisconsin	2003-2004 Completed	\$2,000
<b>Use of an Experimental Vaccine in Gestating Beef Cows to Reduce the Shedding of <i>E. coli</i> O157:H7 in the Newborn Calf</b>	J.A. Paterson, Ph.D. Montana State University	2004 Completed	\$32,375
<b>Use of Genomic Approaches to Identify <i>Escherichia coli</i> O157:H7 Genes important for Growth and Survival in Cattle</b>	G.J. Phillips, Ph.D. Iowa State University	2004-2005 Completed	\$63,780
<b>Validation of Antimicrobial Treatments to reduce <i>E. coli</i> and <i>Salmonella</i> spp. in Beef Trim and Ground Beef</b>	M. Brashears, Ph.D. Texas Tech University	2002-2003 Completed	\$66,398
<b>Validation of Sampling Methods to Determine the Prevalence of <i>E. coli</i> O157:H7 in Beef Feedlot Cattle</b>	G. Loneragan, Ph.D. West Texas A&M University	2004-2005 Completed	\$21,875
<b>Validation of Texas Beef Jerky Processing</b>	J.W. Savell, Ph.D. Texas Agricultural Exp. Station	2005-2006 Completed	\$24,750
<b>Validation of Trichloromelamine as an Effective Hide Wash Technology</b>	J. Blanton, Ph.D. Texas Tech University	2005-2006 Completed	\$30,631

<b>PRODUCT ENHANCEMENT RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION /STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Accelerated Chilling Improves Pump Retention and Packaging in High Oxygen and Ultra-low Oxygen Atmosphere Improves Color, Oxidative Stability, Microbiological Profiles and Yield of Beef Round Muscles</b>	M. Hunt, Ph.D. Kansas State University	2002-2003 Completed	\$85,800
<b>An Investigation of Factors that Impact Premium Browning in Ground Beef</b>	C. Faustman, Ph.D. University of Connecticut	2002-2003 Completed	\$32,721
<b>Antioxidant-impregnated Packaging Films to Extend the Shelf-Life of Fresh Beef</b>	P. Dawson, Ph.D. Clemson University	2002-2003 Completed	\$16,120
<b>Beef Carcass Fabrication Strategies in Mexico and South/Central America</b>	C.R. Calkins, Ph.D. University of Nebraska-Lincoln	2005-2006 Completed	\$20,026
<b>Biochemical and Physical Properties Associated with Meat Color of Beef Muscles Targeted for Future Market Penetration</b>	J.R. Claus, Ph.D. University of Wisconsin	2004-2005 Completed	\$33,001
<b>Blade Tenderization and Vacuum-Tumbling to Improve the Visual and Palatability Characteristics of Enhanced Spuraspinatus, Triceps brachii and Biceps femorus Muscles</b>	R. Miller, Ph.D. Texas A&M University	2002-2003 Completed	\$32,430
<b>Bovine Myology Manual</b>	S.J. Jones, Ph.D. University of Nebraska-Lincoln	2004 Completed	\$23,250
<b>Bovine Myology Version II - Phase I and II</b>	S.J. Jones, Ph.D. University of Nebraska-Lincoln	2002-2003 Completed	\$122,875
<b>Carcass Merit Traits: Development of EPDs and Genetic Marker Validation</b>	M. Dikeman, Ph.D. Kansas State University C.A. Gill, Ph.D. Texas Ag. Exp. Station S.R. Koontz, Ph.D. Colorado State University J. Pollak, Ph.D. Cornell University	1998-2003 Completed	\$557,813
<b>Cataloging Beef Muscles - Will they Perform for Customers. A Comprehensive Review of Muscle Specific Research from both Fed and Non-Fed Cattle</b>	J.A. Scanga, Ph.D. Colorado State University	2002-2003 Completed	\$31,407
<b>Characterization of Intramuscular Adipogenesis in Cattle</b>	J.B. Morgan, Ph.D. Oklahoma State University	2000-2006 Ongoing	\$295,597

<b>PRODUCT ENHANCEMENT RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION /STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Color Characteristics of Bovine Muscles in Oxygen Permeable and Modified Atmosphere Packages</b>	J.W. Savell, Ph.D. Texas A&M University	2002-2003 Completed	\$59,147
<b>Consumer and Shear Force Evaluation of Steaks from the M. serratus Ventralis</b>	J.W. Savell, Ph.D. Texas A&M University	2005-2006 Completed	\$48,500
<b>Determine the Genetic and Phenotypic Variances of Meat Quality Traits and their Interrelationships with Economically Important Traits in Bos Indicus Type Cattle</b>	G.E. Carstens, Ph.D. Texas A&M University	2004-2005 Completed	\$40,830
<b>Determining the Proper Use of Beef Chuck and Round Muscles by Sorting into Muscle Families</b>	R.J. Maddock, Ph.D. South Dakota State University	2004-2005 Completed	\$54,000
<b>Development of a Beef Muscle "Aging Index" for Purposes of Managing Beef Palatability at the Consumption Level</b>	K.E. Belk, Ph.D. Colorado State University	2003-2004 Completed	\$60,800
<b>Development of a Beef Muscle "Aging Index" for Purposes of Managing Beef Palatability at the Consumption Level - Short-Term Muscles *</b>	K.E. Belk, Ph.D. Colorado State University	2003-2004 Completed	\$82,570
<b>Do Heifer Finishing Implants Affect Beef Tenderness?</b>	J.D. Tatum, Ph.D. Colorado State University	2005-2006 Completed	\$92,100
<b>Does Pressurized Pretreatment with Carbon Monoxide © Improve Fresh Beef Shelf-Life Characteristics in Case-Ready Packaging Systems?</b>	J.B. Morgan, Ph.D. Oklahoma State University	2005-2006 Completed	\$43,875
<b>Effect of Fresh and Frozen Storage on Palatability, Oxidative Rancidity and Color of Packaged Beef Steaks</b>	J.B. Morgan, Ph.D. Oklahoma State University	2003-2004 Completed	\$31,800
<b>Effect of Moisture Enhancement on Sensory Attributes and Shear-force of Choice and Select Grade Beef Cuts from the Chuck and Round</b>	P.S. Kuber, Ph.D. Ohio State University	2004-2005 Completed	\$88,984
<b>Effect of Steak Location and Postmortem Aging Time on Top Sirloin and Shoulder Clod Tenderness *</b>	M. Koohmaraie, Ph.D. USDA/ARS	2005-2006 Completed	\$90,140

<b>PRODUCT ENHANCEMENT RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION /STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Effects of Feeding Regime and Enhancement on Quality Characteristics of Muscles from Cull Cows</b>	J. Killefer, Ph.D. University of Illinois	2004-2005 Completed	\$101,800
<b>Effects of Muscle Type, Enhancement and Cooking Technique on Selected under Utilized Beef Muscles</b>	J.M. Martin, Ph.D. Mississippi State University	2004-2005 Completed	\$10,960
<b>Engineering Optical Biosensors to Detect Calpastatin, a Meat Tenderness Indicator</b>	C.L. Lorenzen, Ph.D. University of Missouri-Columbia	2005-2006 Completed	\$50,380
<b>Enhancement of Beef Subprimals prior to Aging and Retail Display</b>	J.B. Morgan, Ph.D. Oklahoma State University	2002-2003 Completed	\$33,750.00
<b>Evaluation of Factors Causing the 'Black Bone' Condition in Packaged Beef Retail Cuts and Ways to Decrease the Incidence</b>	M.E. Dikeman, Ph.D. Kansas State University	2003-2004 Completed	\$47,430.00
<b>Evaluation of Hyperspectral NIR Spectroscopy and Imaging for Tenderness Determination in Cattle</b>	S. Coleman, Ph.D. USDA/ARS/SPA	2003-2004 Completed	\$28,770
<b>Evaluation of the Relationship between Stress Response and Muscle Tenderness in Feedlot Cattle</b>	J.W. Savell, Ph.D. Texas A&M University	2004-2005 Completed	\$66,000.00
<b>Factors Affecting Myoglobin Color Reversion in Cooked Ground Beef Patties</b>	J.R. Claus, Ph.D. University of Wisconsin	2005-2006 Completed	\$7,305.00
<b>Fiber-Optic Characterization of the Tenderness of Low Marbled Beef Steaks *</b>	G. Yao, Ph.D. University of Missouri-Columbia	2005-2006 Completed	\$54,000.00
<b>Flavor Profile and Volatiles, Color and Warner-Bratzler Shear Changes of Five Beef Muscles Enhanced Prior to Aging - Long-Term Muscles</b>	S. Brewer, Ph.D. University of Illinois	2003-2004 Completed	\$98,000.00
<b>Flavor Profile and Volatiles, Color and Warner-Bratzler Shear Changes of Five Beef Muscles Enhanced Prior to Aging - Short-Term Muscles</b>	S. Brewer, Ph.D. University of Illinois	2003-2004 Completed	\$98,000.00
<b>Identification of Cattle Production/Management Practices to Minimize Variation in Beef Tenderness</b>	J.D. Tatum, Ph.D. Colorado State University	2003-2004 Completed	\$16,410.00

<b>PRODUCT ENHANCEMENT RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION /STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Identifying Beef Muscles and Processing Treatments Suitable for Use in Fajita Applications</b>	J.W. Savell, Ph.D. Texas A&M University	2005-2006 Completed	\$21,510.00
<b>Impact of Feeding 2,500, 50,000, or 100,000 IU of Vitamin D<sup>3</sup> Daily on Beef Tenderness and on Performance of Feedlot Cattle</b>	J.B. Morgan, Ph.D. Oklahoma State University	2003-2004 Completed	\$63,307 (Oklahoma Beef Council)
<b>Improving the Accuracy of Tenderness Categorization of Beef Carcasses</b>	J.B. Morgan, Ph.D. Oklahoma State University	2004-2005 Completed	\$81,750.00
<b>In Home Consumer Evaluation of Individual Muscles from Beef Rounds Subjected to Tenderization Treatments</b>	J.W. Savell, Ph.D. Texas A&M University	2004-2005 Completed	\$21,235.00
<b>Influence of Case-Ready Packaging on Premature Browning of Ground Beef and Top Sirloin Butts *</b>	C. Carpenter, Ph.D. Utah State University	2002-2003 Completed	\$55,050.00
<b>Influence of Enhancement and Blade Tenderization on Beef Subprimals (Short Term Muscles) of Beef of Known Categories of Tenderness</b>	J.B. Morgan, Ph.D. Oklahoma State University	2004-2005 Completed	\$63,000.00
<b>Is the Difference in Tenderness Commonly Observed between Heifers and Steers Attributable to Differences in Temperament and Reaction to Pre-Harvest Stress?</b>	J.D. Tatum, Ph.D. Colorado State University	2005-2006 Completed	\$56,300.00
<b>Mapping the Muscle Fiber Orientation and Adapting Slice Shear Force for Major Beef Muscles</b>	M. Koohmaraie, Ph.D. USDA/ARS	2003-2004 Completed	\$80,300.00
<b>Mitigation of Off-Flavors in Beef Muscle</b>	C.R. Calkins, Ph.D. University of Nebraska-Lincoln	2005-2006 Completed	\$46,166.00
<b>National Beef Market Basket Survey - 2005</b>	J.W. Savell, Ph.D. Texas A&M University	2005-2006 Completed	\$52,800.00
<b>National Beef Tenderness Survey - 2005</b>	J.W. Savell, Ph.D. Texas A&M University	2005-2006 Completed	\$115,000.00
<b>Novel Strategies to Improve Tenderness of Underutilized Round Muscles from Cows</b>	D.C. Beitz, Ph.D. Iowa State University	2004-2005 Completed	\$45,552
<b>On-Line Classification of U.S. Select Beef Carcasses for Longissimus Tenderness Using Near-Infrared Reflectance Spectroscopy</b>	M. Koohmaraie, Ph.D. USDA/ARS	2004-2005 Completed	\$49,700

<b>PRODUCT ENHANCEMENT RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION /STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Optimization Guide for Value-Added Beef Cuts *</b>	J.C. Brooks, Ph.D. Texas Tech University	2004 Completed	\$25,000
<b>Optimize the Quality, Consistency and Shelf-Life of Marinated Fresh Beef Products</b>	J. Marsden, Ph.D. Kansas State University	2002-2003 Completed	\$108,900 (Kansas State Beef Council)
<b>Packaging and Product Effects on Sensory, Shelf-Life and Color of Beef</b>	C.R. Calkins, Ph.D. University of Nebraska-Lincoln	2002-2003 Completed	\$34,090
<b>Prediction of Beef Carcass Cut-out Yields using the MARC Beef Image Analysis System</b>	M. Koohmaraie, Ph.D. USDA/ARS	2003-2004 Completed	\$172,792
<b>Prediction of Beef Tenderness from Spectral Reflectance</b>	J.B. Morgan, Ph.D. Oklahoma State University	2002-2003 Completed	\$79,500
<b>Properties of Cow and Beef Muscles - Benchmarking the Differences and Documenting the Similarities</b>	C.R. Calkins, Ph.D. University of Nebraska-Lincoln	2003-2004 Completed	\$66,510
<b>Properties of Cow and Beef Muscles - Benchmarking the Differences and Documenting the Similarities</b>	D.D. Johnson, Ph.D. University of Florida	2003-2004 Completed	\$52,695
<b>Quality Attribute Characterization of Beef-Long Term Muscles *</b>	A.L. Alderton, Ph.D. University of Kentucky	2004-2005 Completed	\$50,109
<b>Standardization of Slice Shear Force Measurements Across Research Institutions and Evaluation of Repeatability of Silce Shear Force Measurement at Multiple Institutions</b>	M. Koohmaraie, Ph.D. USDA/ARS	2003-2004 Completed	\$9,200
<b>Supplementation of Fed Steers with an Anionic Compound to Improve Beef Tenderness</b>	K.E. Belk, Ph.D. Colorado State University	2004-2005 Completed	\$30,200
<b>Translation of Bovine Myology; Muscle Profiling CD</b>	S.J. Jones, Ph.D. University of Nebraska-Lincoln	2002-2003 Completed	\$34,200
<b>Use of a Carbon Monoxide Packaging System in Improving Retail Characteristics of "Compromised" Beef Cuts</b>	J.B. Morgan, Ph.D. Oklahoma State University	2002-2003 Completed	\$35,750
<b>Use of Citrate in Enhancement Solutions to Improve Quality of Muscles from the Chuck and Round in Fed and Non-Fed Cull Cows</b>	F. McKeith, Ph.D. University of Illinois	2005-2006 Completed	\$75,000

<b>PRODUCT ENHANCEMENT RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION /STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Using a Combination of 25-hydroxyvitamin D3 and Vitamin E to Improve Beef Tenderness - Phase I</b>	D.C. Beitz, Ph.D. Iowa State University	2003-2004 Completed	\$10,000
<b>Using a Combination of 25-hydroxyvitamin D<sup>3</sup> and Vitamin E to Improve Beef Tenderness - Phase II</b>	D.C. Beitz, Ph.D. Iowa State University	2003-2004 Completed	\$12,863 (Iowa Beef Industry Council)
<b>Using Serum Chemistry Profiles to Predict Beef Tenderness for the Purpose of On-line Instrument Grading *</b>	D.M. Wulf, Ph.D. South Dakota State University	2004-2005 Completed	\$58,500
<b>Using the OSU Near-Infrared (NIR) System to Sort Various Beef "Middle and End Muscle Cuts" into Tenderness Categories</b>	J.B. Morgan, Ph.D. Oklahoma State University	2004-2005 Completed	\$103,000
<b>Volatile Compounds in Beef and Their Contribution fo Off-Flavors</b>	C.R. Calkins, Ph.D. University of Nebraska-Lincoln	2005-2006 Completed	\$50,988

<b>NUTRITION RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Assessment of Vitamin B12 Bioavailability from Beef</b>	J.W. Miller, Ph.D. University of California-Davis	2005-2007 Ongoing	\$117,358
<b>Beef as a Source of Vitamin B-12, Iron and Zinc to Improve Development of Infants Fed Low Amounts of Animal Products</b>	L.H. Allen, Ph.D. University of California-Davis	2002-2005 Completed	\$450,000 (South Dakota Beef Council)
<b>Beef in a Balanced Diet and Cancer Inhibition</b>	M. Lipkin, M.D. Strang Cancer Prevention Center	2002-2004 Completed	\$150,727
<b>Beef Ingestion and Muscle Metabolism *</b>	D. Paddon-Jones, Ph.D. University of Texas Medical Branch	2005 Completed	\$96,466
<b>Beef Intake in the Framingham Children's Study: Development of an Analytic Data Set</b>	L.L. Moore, Ph.D. Boston University School of Medicine	2005 Completed	\$194,816
<b>Beef Intake, Weight Loss and Bone Mineral Density in Postmenopausal Women *</b>	W.W. Campbell, Ph.D. Purdue University	2004-2005 Completed	\$39,050
<b>Changing the Nutritional Composition of Beef: Can We Mitigate the Risk of Colon Cancer?</b>	J.W. Finley, Ph.D. USDA/ARS	2002-2004 Completed	\$102,490
<b>Composition of Grass-Fed Beef in the U.S. - Part 1</b>	M.F. Miller, Ph.D. Texas Tech University	2004-2005 Completed	\$26,500
<b>Composition of Grass-Fed Beef in the U.S. - Part 2</b>	M.F. Miller, Ph.D. Texas Tech University	2005-2006 Ongoing	\$21,700
<b>Contribution of Beef Products to the Overall Nutritional Quality, Adequacy of Dietary Intakes, and Health Outcomes in Children and Young Adults</b>	T.A. Nicklas, Ph.D. Baylor College of Medicine	2004-2005 Completed	\$184,371
<b>Determination of the Nutrient Content of Beef Value Cuts</b>	W.C. Ellefson Covance Laboratories, Inc. D.R. Buege, Ph.D. University of Wisconsin	2003 Complete	\$67,158
<b>Developing Data for Comments on the Food Guide Pyramid</b>	V. Fulgoni, III, Ph.D. Nutrition Impact, LLC	2003-2004 Completed	\$25,280
<b>Diet Quality and Improvement in Child Health and Survival</b>	C.G. Neumann, M.D., MPH University of California-Los Angeles	2002-2003 Completed	\$35,941
<b>Effect of Beef and Heme Iron on Zinc Absorption in Children (The) *</b>	I. Griffin, M.D. Baylor College of Medicine	2002-2004 Completed	\$83,160
<b>Effect of Dietary Beef on Weight-loss Induced Changes in Immune Function, Indicators of Zinc and Iron Status, and Body Composition, in Older Women *</b>	W.W. Campbell, Ph.D. University of Arkansas	2001-2003 Completed	\$190,000

<b>NUTRITION RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Effect of Dose and Composition of Dietary Beef on Muscle Protein Anabolism in the Young and Elderly *</b>	D. Paddon-Jones, Ph.D. University of Texas Medical Branch	2005-2007 Ongoing	\$244,132
<b>Health Impact of Beef from Cattle Fed Flaxseed</b>	D.M. Medeiros, Ph.D. Kansas State University	2005 Completed	\$33,543
<b>In Vivo Enrichment of Beef with [<sup>14</sup>C] Vitamin B-12 for Bioavailability Studies in Humans</b>	J.W. Miller, Ph.D. Regents of the University of California/Davis	2003-2004 Completed	\$26,333
<b>Increasing Dietary Protein Improves Long-Term Weight Management</b>	D.K. Layman, Ph.D. University of Illinois	2003-2005 Completed	\$597,543
<b>Improving Children's Responses to Increases in Portion Size: Promoting Self-regulation of Energy Intake</b>	S.L. Johnson, Ph.D. University of Colorado Health Sciences Center	2005-2006 Ongoing	\$72,072
<b>Manipulation of Beef Fatty Acides to Tailor Ground Beef Products to Individual Consumer Needs</b>	S.B. Smith, Ph.D. Texas Agricultural Exp. Station	2005-2007 Ongoing	\$166,262
<b>Meat Protein and Calcium: Do they Interact Synergistically or Antagonistically?</b>	Z.K. Roughead, Ph.D. USDA/ARS	2003-2005 Completed	\$153,228
<b>Protection Against Atherosclerosis by Dietary Zinc *</b>	B. Hennig, Ph.D. University of Kentucky	2003-2005 Completed	\$38,948
<b>Reduced Conjugated Linoleic Acid Requirement for Altered Mammary Tumorigenesis by Fatty Acids Found in Beef *</b>	K.L. Erickson, Ph.D. University of California/Davis	2003-2005 Completed	\$121,318
<b>Relationship between Beef Intake and Nutrient Status with Homosysteine Levels in Young Women</b>	L.B. Bailey, Ph.D. University of Florida	2004-2005 Completed	\$149,900
<b>Relationship of Zn Intake and Zn Status to Insulin Levels in Severely Obese Adolescents Enrolled in a Weight Loss Intervention Trial *</b>	N.F. Krebs, M.D., M.S. University of Colorado School of Medicine	2002-2004 Completed	\$98,561
<b>Role of Beef in Meeting Iron Needs</b>	R.W. Lambrecht, Ph.D. University of Connecticut Health Center	2005 Completed	\$60,000
<b>Role of Beef in Reduced Calorie Diets: Mechanisms for Regulation of Skeletal Muscle Protein Metabolism</b>	N.R. Rodriguez, Ph.D. University of Connecticut	2005-2007 Ongoing	\$149,946

<b>NUTRITION RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2003, 2004, 2005</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION/ STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
<b>Suppressive Effect of Conjugated Linoleic Acid on Mammary Gland Preneoplastic Lesions</b>	C.Ip, Ph.D. Roswell Park Cancer Institute	2001-2003 Completed	\$144,838

<b>MARKET RESEARCH PROJECT LISTINGS</b>			
<b>Completed and Ongoing Projects 2004, 2005, 2006</b>			
<b>PROJECT</b>	<b>RESEARCHER/INSTITUTION</b>	<b>DURATION /STATUS</b>	<b>TOTAL GRANT COOPERATORS</b>
Advertising/Brand Tracking	Hall & Partners	2004 Completed	\$49,000
Advertising/Brand Tracking	Hall & Partners	2005 Completed	\$55,000
Advertising/Brand Tracking	Hall & Partners	2006 Completed	\$60,000
Ahead of the Curve	Technomic, Inc.	2005 Completed	\$25,000
Assessment of School Nutrition Education/Foodservice	Market Decisions Corp.	2006 Ongoing	\$200,000
Beef Competitive Assessment	Harris-Wirthlin	2006 Completed	\$120,000
Brand Enhancement Opportunity Research	Harris-Wirthlin	2006 Completed	\$193,000
CREST Away from Home Eating Trends	NPD FoodWorld	2004 Completed	\$91,267
CREST Away from Home Eating Trends	NPD FoodWorld	2005 Completed	\$94,700
CREST Youth Initiative Data Tables	NPD FoodWorld	2005 Completed	\$9,500
CREST Away from Home Eating Trends	NPD FoodWorld	2006 Completed	\$98,125
Foodservice Beef Volumetric Study	Technomic, Inc.	2004 Completed	\$92,000
Foodservice Volumetric Research	Technomic, Inc.	2005 Completed	\$109,000
Foodservice Volumetric Research	Technomic, Inc.	2006 Completed	\$127,500
Health professional influence on beef nutrition	Technomic, Inc.	2006 Completed	\$85,000
Meat Case of the Future	Texas Tech University	2006 Ongoing	\$100,000
NET In Home Eating Trends	The NPD Group	2004 Completed	\$58,500
NET In Home Eating Trends	The NPD Group	2005 Completed	\$62,000
NET In Home Eating Trends	The NPD Group	2006 Completed	\$66,000
Nutrition Advertising Creative Testing	Hall & Partners	2005 Completed	\$35,000
On-Pack Labeling	Shugoll Research	2006 Completed	\$58,793
Retail Meat Purchase Research	AC Nielsen, Inc.	2004 Completed	\$30,552
Retail Meat Purchase Research	AC Nielsen, Inc.	2005 Completed	\$33,312

Retail Meat Purchase Research	AC Nielsen, Inc.	2006 Completed	\$40,372
-------------------------------	------------------	-------------------	----------