

Meat Science Section

Department of Animal Science

Texas A&M University

FACULTY

Jeff W. Savell, Professor, E.M. Rosenthal Chairholder, and Section Leader — carcass composition; packaging and shelf-life; meat quality, nutrition and safety.

H. Russell Cross, Director, Institute of Food Science and Engineering — safety and quality.

Davey B. Griffin, Assistant Professor and Extension Meat Specialist — food safety; carcass composition; value-based marketing; packaging and shelf-life.

Dan S. Hale, Professor and Extension Meat Specialist — carcass composition; food safety and nutrition.

Kerri B. Harris, Coordinator of International Meat and Poultry HACCP Alliance.

Jimmy T. Keeton, Professor — processed meats; meat chemistry, safety, nutrition and quality.

Rhonda K. Miller, Associate Professor — carcass composition; growth and development; sensory analysis; meat safety and quality.

Ki Soon Rhee, Professor — meat flavor chemistry; control of meat flavor deterioration; nutritional quality improvement and evaluation of meat products.

Stephen B. Smith, Professor — molecular biology of muscle and adipose tissue differentiation.

ADJUNCT FACULTY

H. Kenneth Johnson, Adjunct Lecturer, National Cattlemen's Beef Association, Chicago, Illinois — retail merchandising and training, labeling and scanning.

Mohammad Koohmaraie, Adjunct Assistant Professor and Visiting Member of Graduate Faculty, Texas A&M University; Supervisory Research Physiologist and Leader, Meats Unit, United States Department of Agriculture, Agricultural Research Service, Roman L. Hruska U.S. Meat Animal Research Center, Clay Center, Nebraska — meat tenderness.

Jonathan Ophir, Adjunct Professor and Visiting Member of Graduate Faculty, Texas A&M University; Professor, Department of Radiology, Ultrasonics Laboratory, University of Texas Health Science Center at Houston, Texas — ultrasound and elastography.

Wilson G. Pond, Adjunct Professor and Visiting Member of Graduate Faculty, Texas A&M University; Research Animal Scientist, United States Department of Agriculture, Agriculture Research Service, Children's Nutrition Research Center, Baylor College of Medicine, Houston, Texas — nutrition.

Tommy L. Wheeler, Adjunct Assistant Professor and Visiting Member of Graduate Faculty, Texas A&M University; Research Food Technologist, United States Department of Agriculture, Agricultural Research Service, Roman L. Hruska U.S. Meat Animal Research Center, Clay Center, Nebraska — meat tenderness.

STAFF

Kim Britain, Research Technician

Jennifer Maca, Research Technician

Pam McConal, Administrative Secretary

Doug Miller, Research Technician

Ray R. Riley, Manager, Rosenthal Meat Science and Technology Center

Ali Stephen, Secretary

Camy Sturdivant, Research Technician

Helene Weber, Senior Secretary

Yolanda Ziprin, Research Technician

MISSION

The mission of the Meat Science Section is to conduct programs in teaching, research and extension that deal with the animal, food and nutrition sciences related to meat and meat products.

RESEARCH AREAS

Faculty in the Meat Science Section are members of the Department of Animal Science. The teaching and research faculty also are members of the Faculty of Food Science and Technology and the Graduate Faculty of Nutrition. Broad research areas can be categorized within each of these department/faculty areas:

Animal Science

- Evaluation of livestock as related to their carcass merit
- Carcass composition and grading
- Genetic regulation of muscle and adipose tissue differentiation and composition
- Instrument grading of livestock and carcasses
- Value-based marketing

Food Science and Technology

- Palatability of meat and meat products
- Packaging and shelf-life for retail and export markets
- New-product development
- New process technologies
- Cookery procedures
- Food safety and hazard assessment
- Mechanisms and control of quality deteriorations in meat and meat products
- Biochemical factors related to food safety and nutritive value

Nutrition

- Cholesterol, fat and fatty acid composition of meat and meat products
- Iron nutritional values of meat products
- Modifying fatty acids in livestock and meat products
- Impact of dietary fat on cholesterol homeostasis in animal models

GRADUATE PROGRAM

Thirty-five graduate students are involved in teaching, research and extension programs related to the research areas mentioned above. The Master of Agriculture (with internship), Master of Science and Doctor of Philosophy degrees are offered in Animal Science, Food Science and Technology, and Nutrition, depending on the academic specialty chosen by the student.

JOBS AFTER GRADUATION

Below is a list of jobs and titles of recent graduates:

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| Quality control specialist for meat company | Sales coordinator, meat company |
| Director, retail division, national branded beef program | Corporate research, project director, major meat company |
| Professor of animal science, major university | Research biologist, U.S. Department of Agriculture |
| Research scientist, major U.S. chemical company | Sensory specialist, large meat processing company |
| Hospital nutritionist/dietitian | Export director, major international marketing |
| Foodservice director | Management trainee, large beef and pork company |
| Export sales, national pork company | International marketing specialist, U.S. Department of Agriculture |

RECENT AWARDS RECEIVED BY GRADUATE STUDENTS

Lisa Hoelscher, Association of Former Student's Distinguished Graduate Student Research Award, Master's Level, 1989
Joe Harris, Association of Former Student's Distinguished Graduate Student Research Award, Master's Level, 1991
Brad Morgan, Association of Former Student's Distinguished Graduate Student Teaching Award, 1991
Tommy L. Wheeler, 1st Place, Institute of Food Technologists Paper Competition, 1989
James Stalder, 1st Place, Institute of Food Technologists Paper Competition, 1990
Wes Osburn, 1st Place, Master's Division, Reciprocal Meat Conference Poster Competition, 1992
Keith E. Belk, 1st Place, Ph.D. Division, Reciprocal Meat Conference Poster Competition, 1992
Craig A. Morris, 1st Place, Poultry Science Graduate Poster Competition, Atlanta, Georgia, 1993

COURSES TAUGHT BY SECTION FACULTY

Animal Science 307: Meats* — Integrated studies of the meat animal processing sequence regarding the production of meat-type animals and the science and technology of their conversion to human food. Taught by Savell. Honors section taught yearly in the fall semester.

Animal Science 317: Meat Selection, Evaluation and Grading — Selection and grading of carcasses and wholesale cuts of beef, pork and lamb. Principles of evaluation included in carcass contests and progeny testing. Taught by graduate lecturer and coach of meat judging team.

Animal Science 407: Meat Science and Technology* — Basic and applied studies of the science and/or technology of meat associated with its production, processing, packaging, distribution and preparation. Taught by Miller.

Animal Science 467: Processed Meat Food Operations* — Application of scientific and business principles to manufacturing and process flow of commercial meat food products. Taught by Keeton.

Nutrition 470: Nutrition and Physiological Chemistry — Fundamentals of physiology, biochemistry and nutrition and their relationship to the organismic and cellular metabolism of animals; biochemical basis of hormonal action. Team taught by Smith.

Animal Science 489: Special Topics in HACCP Systems* — In-depth study of HACCP (Hazard Analysis Critical Control Point) principles specifically related to meat and poultry; microbiological and process overviews; good manufacturing practices and standard operating procedures development. Team taught by Savell.

Animal Science 607: Physiology and Biochemistry of Muscle as a Food* ** — Biochemical, histological, anatomical and physical factors associated with transformation of muscle into meat. Taught by Smith.

Animal Science 617: Experimental Techniques in Meat Science** — Methods used in separating and identifying muscle proteins and fats; techniques for determining postmortem changes of muscle tissue as a result of antemortem treatments. Taught by Smith.

Animal Science 618: Lipids and Lipid Metabolism** — Chemical nature of various classes of lipids and lipid-derived hormones; absorption and metabolism of fatty-acids and lipids; regulation of lipid biosynthesis and obesity; relationship between lipid metabolism and cholesterol homeostasis; lipids as hormones. Taught by Smith.

Animal Science 627: Carcass Composition and Quality — Survey of scientific literature regarding carcass composition; quality and palatability of meat animals; factors that affect differences among animals of the same specie; the impact on value and usefulness. Taught by Savell.

Animal Science 647: Technology of Meat Processing and Distribution* — Quantitative and qualitative characteristics of meat and meat products as related to food technology processing operations; manufacturing, preservation, packaging and merchandising. Taught by Miller.

Animal Science 667: Industrial Processed Meat Operations — Application of scientific principles and business practices to manufactured meat products; interrelationships among marketing, manufacturing, product development, regulatory compliance and quality assurance in commercial processed meat operations. Taught by Keeton.

Animal Science 689: Hazard Analysis and Critical Control Point System* — Examination of the Hazard Analysis and Critical Control Point (HACCP) principles specifically related to meat and poultry; microbiological and process overviews; good manufacturing practices (GMP) and standard operating procedures (SOP) development; team-building and implementation into industry operations.

* Cross-listed with Food Science and Technology.

** Cross-listed with Nutrition.

EXTENSION MEAT SCIENCE ACTIVITIES:

Dan Hale and Davey Griffin coordinate the extension meat science activities conducted by the section. Here is a list of some of their programs:

Seminars, Shortcourses, and Workshops

Meat Industry Seminar

Beef 101 and Beef 202

Beef Excellence in Texas 706

Texas A&M University Barrow Futurity

Texas Beef Cattle Short Course

Training Programs

Texas FoodSafe Team

County Food Safety Agent Trainings

USDA Lean Meat Agent Trainings

County Consumer Programs

Foodservice Distributor Training Program Script Development and Program

Japanese U.S. Meat Export Federation (MEF) Study Groups

MEF Mexican Foodservice and Retailer Seminars

MEF Foreign Directors "Beef Update Seminar"

Other Activities

"Meat in the Diet" Seminars

4-H, FFA, and Intercollegiate Meat Judging Training Programs and Contests

4-H Meat Demonstration

American Meat Science Association Youth Project

Spectra Intensive Meat Training

Texas Pork Producers Association Junior Leadership Conference & Tour