linked to energy expenditure will help elucidate the physiological basis for variations in energetic efficiency.

Key Words: Endocrines/Genes, Energy Metabolism, Ruminants

57 Cellular energy expenditure and the importance of uncoupling. M-E. Harper*[1], A. Antoniou[1], V. Bezaire[1], and S. Monemdjou[1], [1]*University of Ottawa*.

Just as total body energy expenditure in animals can be classified into that which supports resting energy metabolism, work, growth, etc., cellular energy expenditure can similarly be classified. Our overall objective is to examine the metabolic origins of cellular energy expenditure, differentiating between metabolic states where cells are at relative rest, and where cellular energy expenditure is high. In most situations when energy expenditure is high, mitochondrial ATP production (oxidative phosphorylation) is coupled and efficient. Uncoupling refers to the dissociation of the oxidation of energy substrates, such as fatty acids, from the synthesis of ATP by mitochondria. Uncoupling can occur during states of high energy expenditure or during states of metabolic rest. In brown adipocytes, uncoupling protein 1 (UCP1) activity can cause very high rates of energy expenditure for the purpose of thermogenesis (heat production). UCP1 is found exclusively in brown adipocytes. While uncoupling also occurs in other cells of the body, it is of greatest importance during periods of relative metabolic rest. The latter form of uncoupling is referred to as mitochondrial proton leak, and accounts for roughly one quarter of the resting metabolic rate of the rat. The mechanisms of mitochondrial proton leak are not well understood. The recently identified uncoupling proteins may play some role, but may also have some other physiological functions. Our recent findings from transgenic mice with altered expression of UCPs will be reviewed. Proton leak activity scales roughly in proportion with metabolic rate in mammals of different body size, and is related to thyroid hormone status. Proposed functions for mitochondrial uncoupling include thermogenesis, control of oxidative phosphorylation efficiency and protection from reactive oxygen species. Support: NSERC of Canada.

Key Words: thermogenesis, proton leak, uncoupling

Meat Science in an International Marketplace

58 Global meat research initiatives. R.B. Sleeth*[1], [1]*Consultant*.

The International Congress of Meat Science and Technology (ICoMST) is a very extraordinary and dynamic organization. A brief review will highlight the history, structure, and function to enable participants to better understand and appreciate its uniqueness as a scientific entity.
It is imperative that we foster worldwide cooperation in meat science and technology research to be better informed and to minimize duplication. Within the USA, scientists access the Current Research Information System (CRIS) to determine the status of ongoing research. One purpose of the ICoMST is to provide a global forum for discussing research concepts and accomplishments but proceedings are not available for the majority of the scientific community. The presentation will briefly highlight related meat research programs from several countries which hopefully will provide the impetus to develop an implementation plan to foster greater worldwide exchange of meat science and technology.

59 U.S. Pork Products in the International Marketplace. J.W. Cravens*, *National Pork Producers Council, Des Moines, Iowa*.

In 2000, the United States exported 1.25 billion pounds of pork and pork variety meats, worth 1.316 billion dollars, an increase of 213 percent by volume and 224 percent in value since 1991. Exports now represent 6.8 percent of domestic production. According to the USDA Foreign Agriculture Service, pork represented 41 percent of global meat protein consumption in 1999. Global prok trade is projected to continue increasing as global populations and per capita incomes increase and trade barriers fall.
Although the United States is one of the world's lowest cost producers of pork, to maintain rapid growth in exports, the United States industry must continue to supply safe,high quality pork that meets the needs of varied customers around the globe. The demands of the export market can very significantly from those of the U.S. market. The United States exported pork or pork variety meats to 85 different countries in 2000. Frequently the demand for various pork cuts or byproducts are unique to these individual markets. And just as frequently, unique requirements or standards exist in areas such as processing, carcass fabrication, labeling, food safety, sanitation and hygiene. This presentation will look at the demands of the export market for U.S. Pork and explore a number of these issues. It will contrast the specifications and customer requirements in the domestic market with those of the export market in an attempt to present both the opportunities that exist for increasing exports and the barriers that must be overcome. It will also explore some of the advantages our competitors have over the U.S. industry.

Key Words: Pork, Exports, Trade, Variety meats, Offals

60 Poultry products and processing in the international marketplace. S.F. Bilgili*[1], [1]*Auburn University*.

Globally, consumption of poultry meat products has increased dramatically during the last decade. As a result, production of young meat chickens (broilers), turkeys and other poultry (spent layers, ducks, geese, guinea-fowl, pheasants, ratites, etc.) continues to grow and expand in many parts of the world. Nutritional profile, taste, versatility, convenience, availability and relative value are the major reasons why consumers prefer poultry meat products. Adoption of new production and processing systems and technologies, and development of new and novel products have enabled the poultry industry to continually innovate and respond to market demands. Although poultry products vary greatly in many countries, ranging from live poultry markets to consumer packaged, ready-to-eat entrees, there has been a clear trend of diversification in the marketplace. The most obvious change has been the steady shift in product forms, from a primarily "homogenous, generic commodity" to a "well differentiated, name-branded, value-added" products. Value-adding by cut-up and further-processing not only meets the changing needs of the consumers, but also improves the net returns and profitability. Given this trend, the future challenge in product development will be preservation and/or incorporation of unique cuisine and preferences of diverse cultures.

ASAS/ADSA Animal Behavior and Well Being

61 Effect of genetic selection for loin-eye area on belly-nosing and plasma cortisol in weanling Landrace pigs. S. Torrey*[1], E. Pajor[1], S. Weaver[2], D. Kuhlers[3], and T. Stewart[1], [1]*Purdue University,* [2]*USDA-ARS Livestock Behavior Research Unit,* [3]*Auburn University*.

Two genetic lines of Landrace gilts, selected for differences in loin-eye area, were studied for behavioral and physiological differences during Segregated Early Weaning (SEW). The select line, selected for increased loin-eye area (n = 30), differed from the contemporary random control line (n = 32) by 10.6 cm^2. The gilts were weaned at an average age of 15 d and transported from Auburn University to Purdue University. Litters were blocked by farrowing date to minimize age differences and transported on two dates, 2 wk apart. Litters were videotaped continuously while in nursery to record frequency of belly-nosing. Individual blood samples were collected in late afternoon 9, 20 and 30 d after arrival into the SEW facility to measure plasma cortisol levels. Frequency of belly-nosing was examined on d 2, 3 and 4 post-weaning using scan sampling. Significant differences in frequency of belly-nosing were seen only on d 4 between the two lines (select 2.43 0.44% of time; control 0.61 0.43% of time; $p < .02$). This is in agreement with previous literature that found differences in belly-nosing occurring several days after weaning. Blood samples were assayed for cortisol levels using GammaCoat RIA. Cortisol concentrations in the select pigs (29.34 3.12 ng/ml) were significantly higher ($p < .02$) than in the control pigs (23.11 3.00 ng/mL). Previous results showed that the select pigs spent more time active and