Public Abstract
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Title: The Relationship between Mitochondria and Residual Feed Intake in Feedlot Cattle

Feed costs represent 50 -70% of the costs required to produce feedlot cattle. There is limited research focusing on reducing feed inputs by selecting animals that require less feed to reach the same endpoint. This is due to the inability to measure individual feed intake in a grouped pen of cattle. Recent technological advances now allow for the cost effective measurement of individual feed intake. Research in poultry has indicated that the mitochondria may affect feed efficiency. We hypothesized, that measures of mitochondrial function would be related to efficiency status in cattle. We observed that the mitochondria from efficient animals respire at a faster rate and produced greater amounts of hydrogen peroxide than those that were less efficient. These measurements were obtained using skeletal muscle as a source of mitochondria. This requires tissue to be collected following the sacrifice of the animal because of the large quantity of tissue required. Therefore, a blood assay was developed in order to measure parameters of mitochondrial function in live animals. The assay was able to predict differences in efficiency between groups of animals, but was not able to predict the efficiency status of individual animals. Further refinement of the assay is needed to predict an individual animal's efficiency status.