U.S. Meat Animal Research Center
Meat Safety and Quality Research Unit

Scientists in the Meat Safety and Quality Research Unit are working on high priority issues of the meat and livestock industries in the U.S. such as:

- *Pathogen Reduction*
- *Protecting the Environment*
- *Improved Pathogen Tests*
- *Emerging Pathogens*
- *Instrument Grading*

Pathogen Reduction

Scientists in the MSQRU established that meat contamination originates from pathogen contaminated hides during carcass dressing. They subsequently developed a hide-on carcass wash technology that a majority of the beef processing industry has implemented, which greatly reduces the risk of carcass contamination. Scientists are currently developing less complicated and less expensive versions for small processors.

Improved Pathogen Tests

More rapid, sensitive, and specific tests are needed to improve the detection of pathogens on meat and reduce the risk of foodborne illness. Scientists in the MSQRU provided industry with third-party, unbiased evaluations of the accuracy and sensitivity of rapid, DNA-based *E. coli* O157:H7 tests so companies could make informed decisions about which ones to use. They also have collaborated with companies like Dupont Qualicon to provide improved DNA targets which were used to develop an improved *E. coli* O157:H7 test that was released commercially last summer.
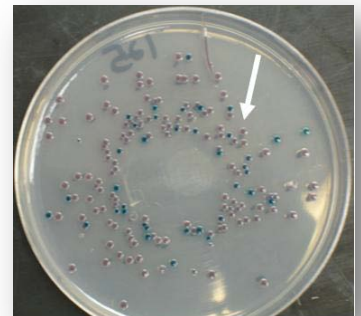
Emerging Pathogens

Recognizing and understanding emerging food safety risks are critical for reducing foodborne illness. Scientists in the MSQRU were among the first to investigate the risk of emerging pathogens such as multi-drug resistant (MDR) *Salmonella* and non-O157 Shiga-toxin producing *E. coli* in various stages of meat production. They also are developing DNA-based tests and typing methods to assist regulatory agencies in developing reasonable and effective strategies for regulating these pathogens in meat products. Scientists in the MSQRU provided the first comprehensive baseline study in beef processing indicating the risk of *Mycobacterium paratuberculosis* in beef was very low.

Protecting the Environment

Livestock are a source of pathogens for the contamination of food crops, water, and additional animals in the production system. They are identifying critical control points and developing approaches for reducing pathogen shedding by cattle and swine, as a means of reducing risk of foodborne illness. In addition, MSQRU scientists are developing procedures for reducing pathogens from animal manure, the production environment, and runoff, thereby minimizing the risk of pathogen contamination of the environment.

Instrument Grading Technologies

The beef industry has needed an instrument grading technology for many years to eliminate the inconsistency in human grading that has been historically used to value beef. Scientists developed a technology for yield and quality grading beef carcasses that has been implemented by virtually all major beef processors. They also have recently developed a technology for determining the tenderness of beef at the time of grading and are currently developing tenderness models for use on pork.