



# IN SEARCH OF BETTER BEEF

BY TERRI QUECK-MATZIE



*Research project seeks to identify genetic markers that will help enhance beef's nutritional value.*

What if U.S. dietary guidelines were to suggest eating beef every day? ¶ What if that juicy steak on your plate could supply you with the Omega-3 fatty acids, iron and other nutrients required for good health? ¶ A research study at Iowa State University is headed toward just that. The “Healthfulness of Beef” project seeks to identify the genetic markers that will allow beef producers to make their product healthier by enhancing the nutritional value of the meat. ¶ “It’s a whole new way of looking at beef,” says lead researcher Jim Reecy, ISU associate professor of animal science. Beef has long been touted as

a tasty source of nutrition, supplying an array of micronutrients and rich in protein. But with a high concentration of saturated fats, an increasingly health-conscious public has perceived beef as a food to eat sparingly. The American Meat Institute reports red meat consumption decreased 15 percent from 1980 to 2000, while poultry consumption increased 102 percent. With cardiovascular disease on the rise, Americans have been advised to eat less saturated fat and, therefore, less beef.

But not all fat is “bad” saturated fat. Reecy and his team have found a majority of beef tested contains Omega-3 fatty acids. Essential to human health but not manufactured by the human body, Omega-3 fatty acids have been shown to provide a wide range of health benefits, particularly in improving cardiovascular function.

What’s more, the research has revealed that the dietary element is heritable, and a genetic marker has been identified. That puts beef on

the same playing field as fatty fish oils, like those in salmon, in supplying a component for basic health. And it puts beef producers in a position to improve the healthfulness, and marketing potential, of their product.

#### MAKING BEEF HEALTHIER

The research began nearly a decade ago, when ISU was compiling a research herd. On a hunch, they tested a one-quarter-inch facing from the rib eye of more than 900 head of cattle for fatty acid content. When they evaluated the heritability of fatty acid composition, they found 45 percent of the observed variation was inherited.

Since then, Reecy and associates have worked to identify the genetic markers for fatty acid composition and other nutritional elements. Iron, for instance, is also heritable, but iron content in beef samples varies greatly. For example, one-half pound of beef with average iron content would supply a person with the daily requirement. However, 25 percent of beef contains only half that iron concentration, while 10 percent contains twice that amount. Through proper breeding, the iron content of beef could be made more consistent, helping to alleviate iron deficiency, a malady that the World Health Organization names as the No. 1 nutritional disorder in the world, affecting nearly 80 percent of the world's population.

There are other nutrients that could be enhanced, as well. CLA, zinc, magnesium, creatinine, creatine, carnitine, and vitamins E, B6 and B12 are all found in beef.

"While beef is already a wonderful source of nutrients, there is a huge potential to further enhance beef so that it is an even better nutrient source," Reecy says. "The beef cattle industry can address this issue by selection of genetically superior animals, if it has the tools (EPDs and DNA markers) to do so."

According to the National Beef Cattle Evaluation Consortium board chairman, Dr. John Pollack, of Cornell University, that's why the NBCEC has backed the project from the beginning. "Our prospectus states we will aim to identify new tools and traits for selection," Pollack explains, "and that's exactly what this research attempts to do."

#### A PRODUCTIVE PARTNERSHIP

The NBCEC was conceived as a network of research universities, with the goal of minimizing research duplication. Producer input has focused efforts on reproduction and health, making the "Healthfulness of Beef" project a perfect fit. In the early days, the NBCEC provided funding assistance from its federal grant to keep the research alive, but as the price tag approached \$1 million, it became evident that it was out of its financial reach. Realizing the scope of the project was also too large for competitive grants, board members tried the National Cattlemen's Beef Association for funding, but the dollars were not

available, so they went looking for other sources.

The solution was a partnership with private industry. "This was a big step for us," Pollack says. "There were a lot of issues to address."

The project was put up for bids, with stipulations. The NBCEC Advisory Board required all research results be made available to all producers, without specifying form or price. And the data would remain the property of the lead university, in this case ISU, with all results made available for independent validation.

The NBCEC received multiple bids, with Pfizer Animal Health walking away with the contract.

"This gives us a dream team of renowned scientists, prestigious academic institutions, elite seedstock breeders and a socially responsible corporation working together to add healthy non-GMO genetic inputs to beef," says NBCEC Advisory Board chairman J. David Nichols, "and realizing the ultimate winner will be the health and well-being of beef consumers."

It's a team Pfizer is glad to be on.

"The prospect of identifying animals whose meat naturally contains higher concentrations of beneficial vitamins and minerals, and lower levels of cholesterol and saturated fat, is particularly exciting and very much in keeping with Pfizer's corporate mission to improve human health," says Nigel Evans, Pfizer vice president of animal genetics. "As a company, we are always looking for products that are unique and demonstrate clear competitive advantage. There is a strong desire among modern-day consumers for healthier food, so the ability to use DNA markers to select cattle with desirable health traits should satisfy an important and growing customer need."

The result is a win-win scenario for the consumer and the beef producer.

Consumers get a high-quality, tasty source of nutrition.

The producer gets an opportunity to improve his product and an increased market for his beef.

"We believe people will buy and eat more beef if it tastes good and they believe it will improve their health," Reecy says, "and that will help ensure continued growth of the beef industry." ✓



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