

Building Better Beef
The Building Blocks Behind Wagyu
By: Tracy Schohr

The tenderness, richly marbled, and unmatched flavor of Wagyu beef is a historic delicacy in Japan. More recently Americans have gotten a taste for the delicious beef with a buttery texture and documented health benefits. The foodie craze that has swept America has chefs featuring specialty Wagyu beef that's every move can be traced from birth, and soccer moms are attempting their latest Pinterest recipe with Wagyu beef from a local specialty market.

Beef consumers today are much more complex than ever, not only concerned with just price and quality. Consumers today have a growing awareness of their diet and long term health consequences, having a focused interest on the nutritional value of the foods they eat. Whether you are in Tokyo, Japan or Washington, D.C. a patron in a restaurant can also fulfill their quest to have a connection to the production of their food. The Wagyu beef industry is matching the needs of the 21st century health conscious, farm to fork, culturally diverse consumer!

"There is incredibly important research for Wagyu breeders that allow them to get high quality meat consistently from genetic testing," states Nick Bell, with Silver Wind Ranch, Ewart, MI. "A lot of full blood Wagyu don't have the genes necessary to produce offspring with high marbling or low melting point fats."

The ability for Wagyu beef to meet consumer demands by providing consistently prime meat with preferred health benefits is important for the future of the breed. Research has found Wagyu meat to be high in oleic acid, providing similar health benefits to almonds and olive oil. Scientific studies have found diets high in oleic acid, typical of a Mediterranean diet, can prevent heart disease and certain cancers.

Oleic acid makes the fat of Wagyu beef soft, with a low melting point. Conventional beef is typically higher in stearic acid, saturated fatty acid, making fat in the meat harder with a higher melting point. The soft fat marbling in Wagyu beef is also linked to the culinary preference of the meat because it's tendency to cook uniformly. The difference in fat profiling between Wagyu and conventional beef is linked to different DNA sequences of the Stearoyl CA desaturase (SCD) gene. Not all Wagyu cattle contain DNA for the gene expression which changes stearic acid into oleic acid.

Kobe University research published in the Mammalian Genome journal found the SCD gene with an amino acid mutation from valine (type V) to alanine (type A) to be linked to the lower melting point of fat in Japanese Black steers. Wagyu genetic testing of SCD is preferred to have dominant AA results. The SCD genotype is not the only genetic factor contributing to fatty acid composition, but the research did find the SCD genotype responsible for the Wagyu difference of oleic acid in comparison to conventional beef's stearic acid.

As a producer it would take years to determine the fat profile of your cattle by testing your final product and then implementing that knowledge into your breeding program. Today, Wagyu producers can utilize genetic profiling from a DNA test to determine the probability of healthy fats in their herd. By analyzing the SCD gene, cattle selection can be based a dominant genotype that is oleic acid rich. This alternative strategy for selective breeding is being used by producers to determine full blood Wagyu that results in consistently tasty, tender, and healthy beef for consumers.

Bell says, "We have been testing our Wagyu bulls for about a decade to have the SCD gene and Exon 5 marker gene that is a Wagyu trait that continues marbling at 24-28 months. We

want our Wagyu bulls to have a double copy of the gene so 100% of the offspring from Angus cows will carry the Wagyu traits.”

Dr. Tadayoshi Mitsuhashi with the National Institute of Agrobiological Sciences in Japan notes there is public opinion in the Japanese market that there is a growing percentage of Wagyu beef that is not as palatable, despite high marbling. By using the SCD gene test Mitsuhashi states Wagyu producers can select the cattle that can deposit a soft and oleic acid rich fat that is delicious and healthy.

SCD genetic testing is one of the many tools offered to producers to improve the palatability and marketability of their product. Granted, having a your SCD test return a dominate AA can be an important factor, it is part of a broader set of criteria used to produce high quality Wagyu meat. Bell stated they rely on multiple genetic tests as part of selection criterion for their herd.

“We have only had a minimal number of American Wagyu producers send in hair and blood samples for SCD testing,” said Alisa Bringham with Zoetis (previously Pfizer). “We work with our colleagues in Australia to submit testing samples for breeders to the Prescribe Genomics laboratory in Japan. This testing is a service we provide to Waygu breeds in addition to Exon 5 genetic testing that determines growth rate and marbling genetic potential.”

As an industry it is important for Wagyu breeders to consistently provide beef that melts in your mouth, while simultaneously enhancing consumer health. According to a survey commissioned by Meat & Livestock Australia (MLA) of 500 foodservice professionals and about 2,000 consumers, beef remains a popular protein and restaurant consumption has been increasing. Most importantly, the attitudes of survey participants highlighted a consumer preference for healthy menu options and unique dishes.

Wagyu producer’s utilization of SCD genetic testing to identify cattle with dominant genetic markers for the economically important carcass characteristics will allow the Wagyu industry to build consumer demand for their unrivalled cuisine.