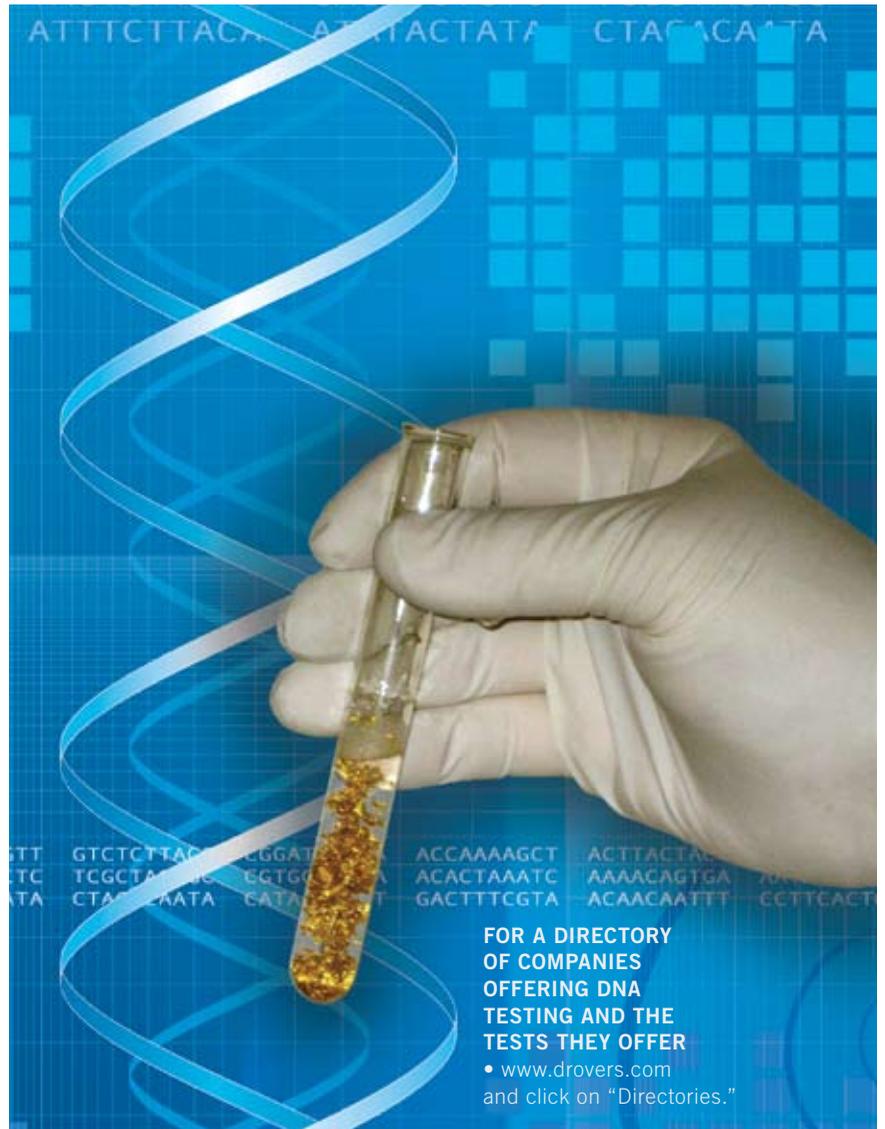


# GOLD IN THEM GENES

*Some producers are betting on the long-term potential of marker-assisted selection.*

BY JOHN MADAY



FOR A DIRECTORY OF COMPANIES OFFERING DNA TESTING AND THE TESTS THEY OFFER

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REMEMBER THE FIRST "MOBILE PHONES" — the big, heavy, expensive ones? It seems it took just a few years for mobile phones to evolve from a status symbol or toy for the wealthy to the item most likely found in the pocket or purse of any American teenager. ¶ The rapid advance of technology continues to change the way we live and do business, including on the ranch and in the feedyard. DNA testing for marker-assisted selection, for example, has been available for beef producers for a relatively

short time, and the technology remains a long way from achieving its full potential. Increasingly though, seedstock and commercial producers are finding ways to apply DNA information toward genetic progress and value-added marketing.

Bob Weaber, an animal scientist and beef cattle genetics specialist at the University of Missouri, works with producers in determining how, when and why

to use DNA testing in their herds. He says the technology has valuable applications and great potential, but also that DNA markers today are not substitutes for Expected Progeny Differences when making sire selection decisions.

Weaber says the potential benefits in terms of genetic progress from marker-assisted selection vary depending on the type of trait. Citing other research sources,

he lists the following in the order of greatest to least expected benefit.

1. Simply inherited traits such as coat color, horn status or genetic defects.
2. Carcass quality and palatability attributes.
3. Fertility and reproductive efficiency.
4. Carcass quantity and yield.
5. Milk production and maternal ability.
6. Growth traits.

There are two main limitations today to widespread adoption of marker-assisted selection, he says. The first is that the currently available marker panels account for a relatively small amount of the genetic variation in any given trait. Secondly, the price of selection tools naturally increases in line with their power to generate a response. Visual appraisal, he explains, is virtually free but relatively ineffective as a selection tool. Moving up the scale, using weights, adjusted

Karen Parker, Eddie Parker and daughter Ruslyn Ramsey, of Parker Ranch in Oklahoma, offer DNA profiles on bulls and help their customers pay for testing their females.



Leddy Lewis, Covered S Ranch, Snyder, Texas, DNA-tested all his heifer calves last year as he works to build a fully tested breeding herd.



ranch, in the feedyard, and meets the expectations of packers and consumers.

#### COMMERCIAL APPLICATION

Chapman says the deficiency in the system is on the female side. His ultimate goal, he says, is to test all replacement heifers, eventually building a cow herd with every animal rated for tenderness and marbling. For now though, he says the technology is too expensive for wider use. "If we could get the price down to where commercial producers could use it in their herds, we could make some rapid changes," he says.

One seedstock operation that is working to help commercial producers incorporate genetic markers into their selection process is Parker Ranch, a registered Angus operation in southwest Oklahoma. Last year, the Parkers tested their herd sires, donor cows and all the bulls they sold in their Oct. 8 production sale, using the Igenity profile, which includes genetic markers for tenderness, marbling, quality grade, back fat, yield grade, ribeye area, hot carcass weight and coat color.

"We feel an obligation to provide customers with as much information as possible," Eddie Parker says, "and that led to the decision to offer the DNA testing. We have used ultrasound to evaluate carcass traits for years, along with EPDs, so this is just one more tool."

Parker believes genetic improvement toward more consistently tender beef represents a great opportunity for the beef industry. Parker Ranch now lists Igenity tenderness scores in its sale catalog, and 60 percent of the bulls rank 7 or better on the 10-point scale.

Along with providing the information to their customers, the Parkers intro-

duced a cost-sharing program for commercial producers, offering to cover 20 percent of the cost of profiling up to 25 females for each bull a customer purchased at their fall sale.

At this stage, Parker says the market has not fully recognized the added value of calves from tested herds, but he believes that will change. His customers who buy tested bulls today tend to believe that by the time the progeny of those bulls reach the market, premiums will be there.

One such customer, Leddy Lewis, Covered S Ranch, Snyder, Texas, purchased 13 bulls at this year's sale, using their DNA profiles as part of the selection process. Lewis uses Angus and Hereford in his crossbred herd and raises his own heifers for replacements. So he also worked with the Parkers and Igenity to test all 300 of his heifer calves.

"I have the outside of my cows just the way I want," he says. "They're the right size, good keepers, good mothers, good legs. But I can't tell by looking at them how good the inside is."

Carcass information on calves has been hard to come by through feeders and packers, he says, so DNA testing is a way to get at least a peek under the skin. Lewis says he has a great deal of trust in the Parkers and the EPDs they provide on their bulls, and he sees the additional DNA information as a tool to help stay in step with the industry.

Lewis says generations of selection for production traits have built a cow herd that produces a 98 percent calf crop with excellent maternal abilities. That uniformity, though, makes it difficult to select replacement heifers. Lewis believes virtually any of his heifer calves would make good cows, so DNA testing gives him one more selection tool.

Based on the DNA profile last year, he kept the heifers with the best scores for tenderness, marbling and yield grade. He says having the DNA profiles also helped him sell the remaining 200 heifers at a premium price, and the buyer plans to raise them as replacements rather than feeder cattle.

By testing half his calf crop, Lewis says he also gets a better idea of the genetic makeup of his steers. He eventually plans to begin retaining ownership of his steer calves through feeding, and hopes to sell them into a market that rewards carcass merit. "It's not many years from now," he says, "when a good carcass will be worth a lot more money." ✓

weights, ratios, EPDs and eventually DNA testing, the tools become more effective and more expensive.

Barney Chapman, of Chapman Family Ranches, Clarksville, Texas, is one commercial producer who recognizes the potential of DNA testing while also struggling with the challenges.

When the Chapman family began building their Brangus-based herd for their Clarksville ranch, they made the decision to purchase bulls from a supplier who tested them for the tenderness markers available at the time. They eventually began including marbling markers, and today, Chapman says, he looks for bulls that also test high for Bovigen's feed efficiency marker.

The Chapmans' seedstock supplier, Camp Cooley Ranch, Franklin, Texas, uses Bovigen's tests for tenderness, marbling and feed efficiency on about the top third of their bulls. The family uses AI on their heifers, which Chapman says allows them to afford to use top DNA-tested sires.

Chapman stresses that he does not base selection entirely on DNA markers. "We use EPDs, ultrasound and DNA tests," he says, as the family works to build a herd that performs well on the