



Comprehensive Igenity® Profile

DNA testing can be a valuable addition to EPDs to improve the selection process.

by Troy Smith

He was barely old enough to take an interest and pay attention to the talk among veteran cattle breeders, but from the time he was a youngster, Doug Steele remembers hearing, repeatedly, about the importance of a bull's contribution to any breeding program.

"They always said, 'A bull is 70% of the herd,'" Steele recalls. "That's not just an old seedstock breeder's sales pitch either. You can change the herd quicker through sire selection than with any other breeding decision."

As it turned out, Steele became a seedstock breeder. He maintains a registered Angus herd near Anita, Iowa, marketing some 125 bulls and 40 females annually. He's a stickler about working to maintain a balance of economically important traits in his breeding herd and the seedstock he sells. Reproductive traits, performance and carcass merit all are important. And it helps to tie it all up in an eye-appealing package.

Steele still views sire selection as fundamental. And while it's still not an easy task, he's grateful to have selection tools that were unavailable when he was a kid. Expected progeny difference (EPD) values are a prime example.

"EPDs are a tremendous asset," Steele states. "I don't know what I'd do without them. But, I'm interested in any selection tool that can help me do a better job. DNA testing offers an unbiased look at the genetic package. It's not absolute, but it's another way of gathering information that can improve the selection process. It gives me information to use in addition to EPDs."

Steele eased into the application of DNA technology at first, utilizing the comprehensive Igenity® profile. With a single tissue sample per individual, the system allowed Steele to test selected animals for DNA markers associated with multiple carcass composition and quality traits. Those traits include yield grade, quality grade, ribeye area, hot carcass weight, external fat thickness, marbling and tenderness.

The profile also offers determination of parentage and genetic information

associated with hair coat color. From the same tissue sample, an additional diagnostic test can reveal whether an animal is persistently infected with bovine viral diarrhea (PI BVD). And, where applicable, the sample can be tested for genes related to the presence of horns (horned vs. polled).

The Igenity profile is reported by assigning a numerical value (1 to 10) for each trait. The scores reflect the relative difference expected in certain animals compared to contemporaries with an Igenity profile score of 1. A higher score means the animal has a higher potential for the trait being considered. However, higher scores are not always better. It depends on the trait and the breeder's own objectives.

Jim Gibb, beef seedstock sales director for Igenity, says the DNA profile's biggest advantage is that it helps breeders evaluate cattle for traits that are difficult and expensive to measure. Beef tenderness certainly falls into that category, but the profile also offers "inside information" for carcass traits. However, Gibb says, DNA testing should not replace other selection tools, like EPDs and ultrasound data. Rather, it should be used to augment existing aids.

"To best use this information for selection, breeders should assign windows of acceptability — just like they would when using EPDs," Gibb advises. "And by providing information on a battery of traits, the DNA profile encourages them to practice multi-trait selection."

With test results, Igenity also provides "p-values" for each trait. P-values indicate the probabilities that the associations between gene markers and respective traits are due to chance. Smaller p-values reflect



PHOTO BY CRYSTAL YOUNG, API CREATIVE MEDIA

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PHOTO BY MATHEW ELLIOTT

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stronger evidence supporting the markers' affect on traits.

Steele says he's committed to DNA testing. Along with every sire used, he has profiled 25% of his cow herd. All calves are tested now. Eventually, through heifer retention, all of the breeding herd will be profiled. As he studies data on calves, he is looking for differences between sire groups.

"One sire we use is homozygous for tenderness, but that sire doesn't seem to transmit a lot of marbling to his calves,

compared to another sire whose calves seem to be stronger for marbling but lack some tenderness," Steele says. "I'm also surprised at how well, so far, the DNA information correlates with our ultrasound data. I'm anxious to watch the correlation as our database grows."

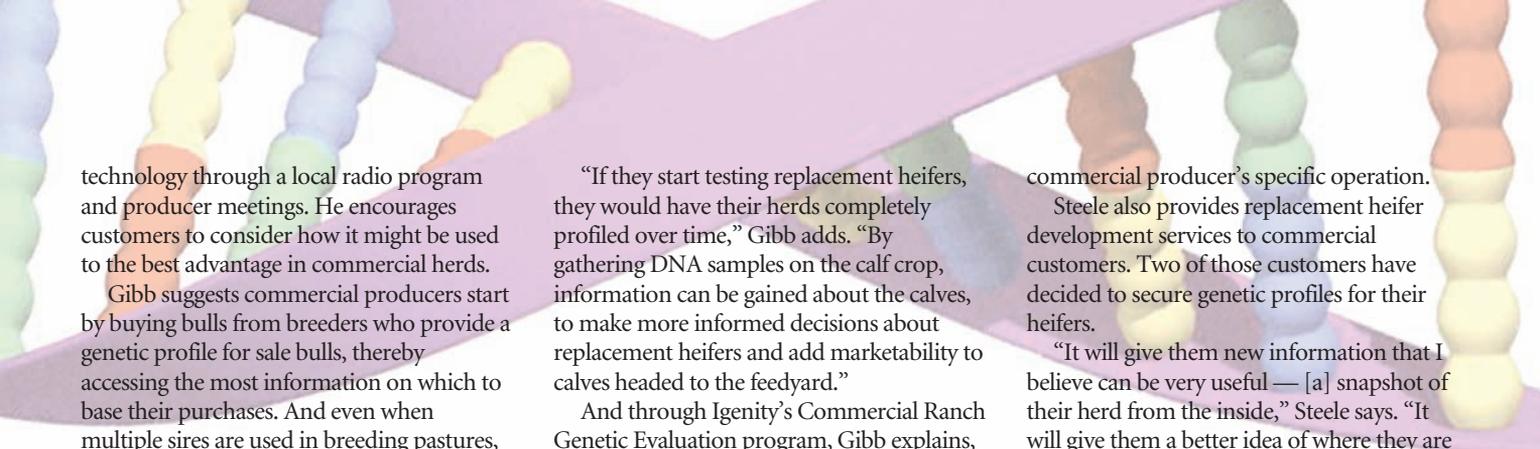
Weapon of choice: DNA profile

According to Steele, adding DNA profiling to his arsenal of selection aids should enhance the results of planned

mating, helping him maximize genetic strengths and minimize the weaknesses.

"I'm not chasing after larger ribeyes, but I want adequate growth with more consistent marbling and tenderness. Efficiency is an important factor, so I'm looking forward to when the DNA profile includes information to help select for greater efficiency," he states.

In his sale book, Steele now includes DNA profiles for sale bulls, along with a tutorial on what the added information means. He also promotes better understanding of the



technology through a local radio program and producer meetings. He encourages customers to consider how it might be used to the best advantage in commercial herds.

Gibb suggests commercial producers start by buying bulls from breeders who provide a genetic profile for sale bulls, thereby accessing the most information on which to base their purchases. And even when multiple sires are used in breeding pastures, genetic testing can determine parentage, so each sire's performance can be evaluated.

“If they start testing replacement heifers, they would have their herds completely profiled over time,” Gibb adds. “By gathering DNA samples on the calf crop, information can be gained about the calves, to make more informed decisions about replacement heifers and add marketability to calves headed to the feedyard.”

And through Igenity's Commercial Ranch Genetic Evaluation program, Gibb explains, within-herd EPDs can be calculated for sires to aid selection for traits of importance to a

commercial producer's specific operation.

Steele also provides replacement heifer development services to commercial customers. Two of those customers have decided to secure genetic profiles for their heifers.

“It will give them new information that I believe can be very useful — [a] snapshot of their herd from the inside,” Steele says. “It will give them a better idea of where they are and where they need to go.”

