

# New Frontiers

For Jerry Gustin, DNA technology represents a powerful tool for smaller-scale producers.

by **Eric Grant**, American Angus Association

Just across the York River from Jerry Gustin's farm, two of America's most important historical landmarks still draw hundreds of thousands of tourists each year.

The first is Yorktown, where the Continental Army defeated the British and ended the Revolutionary War. The second is Jamestown, where English settlers established their country's first permanent colony in America.

For Gustin, who runs a small, registered Angus herd near Gloucester, Va., it's the latter that holds the greatest appeal. It was Jamestown, after all, that once marked the beginning of westward expansion — and the edge of the frontier.

"It was really quite remarkable what those people were able to endure," reflects Gustin, who spent 20 years in the Army and received the Bronze Star while serving in Vietnam. "It puts the challenges we face today into perspective."

While the American frontier ended more than a century ago, Gustin believes the cattle industry has entered a new one in recent times.

## The DNA frontier

The mapping of the bovine genome — and subsequent advancements in DNA technologies — have changed animal breeding forever, equipping producers like him with powerful new selection tools.



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"I slept through genetics in college, knowing that I would never need it," Gustin quips. "Now I wish that I would have stayed awake!"

Gustin is wide awake now. In fact, the 2010 Virginia Angus Association president was an early adopter of DNA technology, collecting DNA samples on his cow herd and benefiting from having this information incorporated into his expected progeny differences (EPDs). "This is one of the ways small producers like myself can make a contribution," Gustin says.

Because Gustin makes extensive use of embryo transplant — a procedure that requires a large investment in time and money — the use of DNA has helped him not only reduce financial risk, but also target cattle that best match his breeding objectives.

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On the other hand, with DNA testing, Gustin can get the same amount of information on his cows that a large herd can get.

"I can study it and make informed mating decisions, perhaps even more so than the manager of a large herd could," he says. "It is objective and quantifiable marketing information, regardless of the size of the herd."

DNA technology has played a central role in helping Gustin advance his cow herd. For instance, at the time of this writing, one of the cows ranked 19th for weaning weight (WW) and 13th for yearling weight (YW) EPDs.

## New insight

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about the same genetically, with some minor variation,” Gustin reflects. “Of the seven calves we got from a recent joint-venture flush, we DNA-tested the two bulls. There was a major difference between these two bulls for calving ease direct (CED), carcass and \$B (dollar beef value). The one that gained the best didn’t come out nearly as well as the other one for the traits that I consider important. This is why the DNA technology is so important — and how it can really help producers like me zero in on which cattle truly possess the greatest genetic merit.”

Another way that DNA testing has helped advance Gustin’s herd is feed efficiency through RADG, the residual average daily gain EPD.

“Until the test came along, I had no way of obtaining any feedback as to how my cattle measured up for feed efficiency,” Gustin explains. “In my opinion, efficiency is critical to the long-term sustainability of the cattle industry. I didn’t have the sophisticated equipment necessary to gather this data, but with the profile I have the data and can make informed breeding decisions that will enhance my cattle’s performance in this area.”

### Genetic conditions

Advances in the DNA frontier have also provided cattle producers like Gustin with tools to identify cattle in their cow herds with genetic conditions. Most recently, the American Angus Association announced the discovery of a simple recessive condition called developmental duplication, or DD. In rare cases, animals affected with the condition can be born with an extra limb or part of an extra limb (a condition known as polymelia).

For the phenotype to be expressed, an animal must inherit the recessive form of a gene from both parents. The only way to have an affected calf is to breed carrier (animals possessing one copy of the recessive gene; designated “DDC”) or affected (animals possessing two copies of the recessive gene; designated “DDA”) parents.

“I think that the fact we are discussing a genetic condition as opposed to a genetic defect is indicative of the fact that we have come a long way in our thinking since 2008,” says Gustin. “This is a manageable condition, and we need to do just that — manage around it and move on.”

Gustin points out that it’s the job of seedstock producers to improve the weaknesses of specific cattle in their herds by breeding them to other animals that can improve those weaknesses — and that



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breeding away from genetic conditions is really no different.

“For instance, everyone has owned a cow with a high birth weight EPD,” he says. “What do they do? They breed her to low-birth-weight bulls. She calves just fine, and the cattle are highly marketable. DD should be managed just the same. If you have DD-carrier cows in your herd, simply breed them to bulls that are tested free of the condition. That’s it. Enough said.”

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“When we market cattle down the road,

we will test and publish the results,” he says.

“We are working a regional sale now, and the test results will be published in the update sheet passed out on the sale date. The same procedure will be followed for our December Beef Cattle Improvement Association (BCIA) sale, except that the status will be published in the catalog.

“I’ve seen this approach used on some of the large ranch sales on Superior Televised Sales on RFD-TV. I haven’t done an analysis on any of these results, but it appears that the DD-carrier cattle seem to command about the same prices as the DD-free counterparts. That tells me people are using the information that the Association is making available to them, and know how to work around this condition.”



**Editor’s Note:** Eric Grant is the director of public relations for the American Angus Association.