



Protecting Purity

DNA-typing preserves Angus lineage, provides a service to Association members.

by Brooke Byrd

The Angus breed stands firm on a pedigreed foundation, and it is the job of the American Angus Association to keep that foundation sturdy, says John Crouch, Association chief executive officer. “Parent verification is our primary reason for existence,” he affirms. “Our charter and bylaws clearly specify that we are to preserve the lineage of Angus cattle and protect the pedigrees and purity of our breed.

“Parent verification, in its most scientific form, is important to ensure that we do preserve the purity of the breed,” he continues.

Bryce Schumann, Association director of member services and office management, says, “Pedigree is the cornerstone of anything with purebred livestock, and that’s why it’s such a high priority.” Keeping the pedigree accurate is especially important with the incredible growth of the breed, he notes.

Breeding technologies such as artificial insemination (AI), embryo transfer (ET) and cloning allow an animal to have more

progeny than it could naturally, Schumann says. “If you do have a pedigree mistake, you have the ability to propagate it much more widely.

“Popular AI sires have a huge impact on the breed,” he continues. With one bull registering nearly 10,000 progeny in 2007 and many donor cows having more than 100 registered progeny, one mistake could be far-reaching.

A better way

The Association switched from blood-typing to DNA parent verification Jan. 1, 2001. “DNA is a more powerful technology to verify parentage,” Schumann says. With a higher exclusionary power than blood-typing, meaning a better ability to exclude improper parentage, Schumann says the Association switched from blood to DNA parent verification technology to more efficiently assist producers.

It’s also less expensive, he says. A DNA test costs only \$18, while a blood test costs \$35.

DNA-typing also offers a greater level of convenience. Only a few drops of blood on a provided card are necessary with DNA, while an entire tube of blood must be drawn for blood-typing. The necessary forms for DNA parent



verification are available through AAA Login and will be automatically filled out if a registration number is provided.

A straw of semen may be used for DNA-typing bulls, but Schumann warns producers to protect it from being crushed in the mail. While some people may prefer to use tail hairs, at least 30 tail hairs, with the roots intact, must be provided. The only time tail hair is necessary for verification, Schumann says, is if the animal is a twin. He also notes that for animals being used abroad, only blood-typing is recognized in some other countries, especially those in South America.

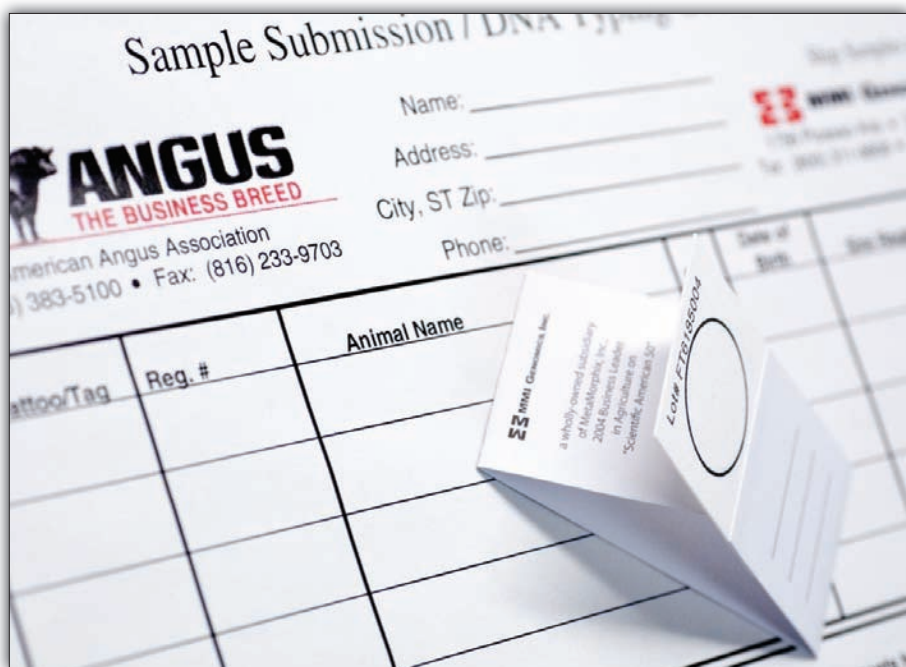
“It’s just a better way of doing business,” Crouch says of DNA-typing. “It’s progress.” A method that is less expensive and more accurate, DNA parent verification helps keep the Angus breed at the forefront of the industry, he explains.

“It’s also in the universal language that science uses today in describing parenthood and describing the likelihood of an animal being a parent or offspring,” Crouch notes. “DNA seems to be the wave of the future from a scientific standpoint right now.

“We want to be on the forefront of DNA technology, and we want to be able to apply it effectively,” Crouch continues.

Practical DNA

While DNA parent verification is usually seen as a preventative measure to keep the



► Only a drop of blood on an FTA card and a submission form are needed for DNA parent verification.

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Angus pedigree pure, Minnie Lou Bradley, Association past president, uses it as a tool in her day-to-day operation.

At her Memphis, Texas, Bradley 3 Ranch, she manages cattle in large, brushy, rough pastures, most of which are in two sections.

Even though she raises purebred Angus cattle, she tries to manage her herd like a commercial operation. A while ago, she was faced with an extended breeding season because she had one bull in a two-section pasture with 40 cows.

“If he would have been in a 20-acre pasture, he probably could have handled those 40 cows, but when you’re talking about a pasture 2 miles long and 1 mile wide, you get them scattered,” she says. Allowing all females was not a realistic option, Bradley explains, because “there aren’t enough cowboys left in Texas to handle the labor situation.”

With calving dates scattered too far and a calving percentage too low, Bradley knew she had a problem. When DNA parent verification became an option, she gladly took advantage of it.

These days, Bradley verifies parentage of all animals on her operation with DNA. She places multiple bulls in her large pastures, and is able to put a clean-up bull right behind her AI-bred, first-calf heifers and ET recipient females.

“We don’t leave any space in between,” she says. “Because we’re going to do DNA-typing, we don’t have to. We don’t want to lose any time on our calving.”

The cost of parent verification (\$18 per head) and the labor involved don’t stop her, she says. “There’s no extra time involved,” she says, as they collect the few drops of blood necessary when working the animal as normal.

As for the fee, she thinks in terms of additional pounds gained each day from a tightened calving season. “We’ve increased our calving percentage,” she says, in addition to decreasing her calving interval to fewer than 60 days. “On a 60-day calving season, I’m going to have at least 120 pounds difference in my first calf born and my last calf born.” Shortening that season means more pounds on which to make a profit.

Bradley also sees DNA parent verification as an important marketing strategy that pays for itself. “Out here, a man might buy 10 bulls from me and 25 from somebody else and throw them all together,” she notes. Since every bull she sells has a DNA sample on file, any complaints about too-large calves can easily be verified, and she can prevent her animals from getting undue blame for problems. “I think it gives confidence to my buyers,” Bradley says.



Editor’s Note: This article has been updated from an original article published in December 2005.

Association requirements

The American Angus Association requires the parentage of animals to be verified through DNA-marker-typing in three cases (according to rules 500 and 700):

- ▶ When collecting semen from bulls for use in artificial insemination (AI), the bull must be tested using a DNA sample (drop of blood) or a semen sample.
- ▶ When flushing cows for embryo transfer (ET), the cow must be tested using a DNA sample or tail hairs (if a twin).
- ▶ When cloning animals, the cell clone donor and cloned offspring must be tested using a DNA sample or tail hairs (if a twin).

In addition, Bryce Schumann, Association director of member services and office management, says, “The rules allow the Association to gather DNA on any animal in the registry — and any animal with an application for registration — any time there is a question as to whether the pedigree is correct or not.”

In past years, all winners at the National Junior Angus Show (NJAS) were DNA-verified, he explains. Association personnel will also verify the parentage of animals with faded or illegible tattoos to ensure permanent identity is preserved.

“The vast majority of people DNA-typing animals are either trying to answer their own parentage questions, or trying to get sires or dams qualified as AI sires or ET donors,” Schumann says. “I really encourage people to test animals before you start to flush them or before you start artificially inseminating your cows to a bull, because mistakes can happen.”