

How Trans Ova builds better cows

SIoux CENTER, IA. — David Faber grew up on a farm and graduated from veterinary school at the University of Illinois with clear plans to start a genetics business, but he figured he should be a veterinarian first, if only for a year.

So he moved to Sioux County, where cows and pigs outnumber humans 44 to 1. He never left, started transferring cow embryos for farmers on nights and weekends, and in 1980 founded Trans Ova Genetics, a national genetics business with 160 employees, most of them working at what looks like a very large family farm a mile west of Sioux Center.

Trans Ova is a cornerstone company in Sioux County, spinning off joint ventures with Exemplar Genetics and Hematech Inc. But Faber said the foundation for Sioux County's success was laid before his time.

"There's been leadership within our city, there's been leadership within the banking community that's stepped up and encouraged an entrepreneurial spirit," he said. "It builds on itself. As we bring in more good people, we're apt to create more of these opportunities."

Faber's firm offers farmers embryo transfer, in-vitro fertilization, semen sorting, genetic preservation via liquid nitrogen, and cloning. (A cloned steer

shown by Faber's son Tyler won the 2010 4-H Blue Ribbon at the Iowa State Fair.)

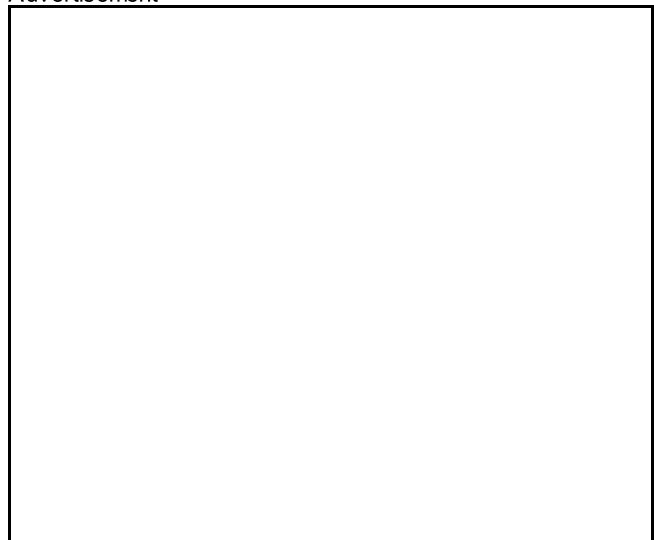
The cloning is done in a joint venture called Bovance with ViaGen, a company in Austin, Texas. The firms clone cows for beef and dairy producers and ranchers across the country — mostly for breeding purposes. Cloned animals aren't sold for beef or milked at dairies because of an agreement with the USDA.

The point is to duplicate the animals that contribute the most value in a herd and use them to breed animals with the same genes. A farmer might pay for the service if one of his best animals stopped breeding early in its life.

But Trans Ova has been artificially inseminating cows and transferring embryos over the past 30 years, and the processes are fascinating.

In a plain metal building across a gravel parking lot from the company's main office, veterinarian Paul Van Roekel watches an

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ultrasound monitor and reaches deep into a cow with a white plastic vacuum tube to suck out eggs for fertilization. The eggs are the result of a “super-ovulation” procedure and are sucked through a tube into a cup before being taken to a room where young women in white lab coats sort them under a microscope, selecting the highest quality eggs and discarding the dubious.

Meanwhile, in another lab, a machine sorts millions of sperm cells per minute. That’s after vets collect the sperm from bulls in what can only be described as a touchy last-second intervention moments before ejaculation.

The machine can tell the difference in size between an X and Y chromosome and puts an electrical charge on the female X chromosome sperm cells. When the semen shoots out a tiny spigot, an electromagnet pulls the charged sperm sideways into a separate cup. The final product is marketed to dairy farmers who gladly pay for semen that promises a 93 percent chance of producing females.

“We’re much more efficient with this process than Mother Nature,” Faber said, as sperm raced through the machine 37,000 cells per second.

Some semen is frozen in misty vats of liquid nitrogen; some is used to fertilize eggs. Embryos are stowed in incubators for transfer to what Faber calls “recipient” cows. They are the genetically less desirable animals, and they live on feedlots next to the labs by the thousands, waiting to bear the offspring of more desirable

females.

Farther down the road, the cows with prized genes live in more posh surroundings. Their genetic characteristics — their milk production, beef quality, longevity, health, hooves and legs — are so highly prized they can cost as much as \$1 million each, Faber said.

Behind the mothers’ barns are the quarters of their progeny, and this is where you can hear the pride in Faber’s voice. If there were a world cow genetics ranking, these calves might be in the top 3, he said. They are curious little guys with white and black coats, tottering around on flawless legs and hooves.

“These would be coming from the most genetically elite females in the world,” Faber said.

Each day, cows arrive at Trans Ova, and trucks full of calves or FedEx shipments packed with embryos leave for farms around the United States.

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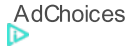
The job of keeping all this organized — the cows, the sperm, the eggs and the offspring — is not simple. “There’s a lot of details, and a lot of people throughout,” Faber said.

The company is now 32 years old, and employs people in Sioux Center not only from northwest Iowa and around the U.S., but also scientists who have come from India, China, Sri Lanka and Venezuela.

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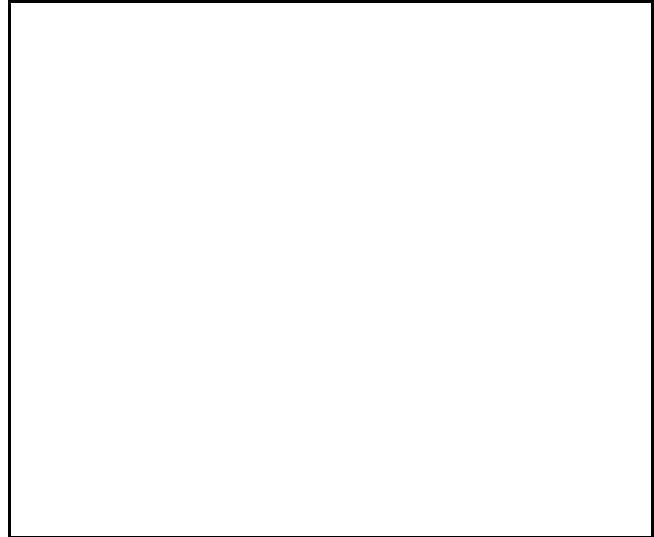
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