



Pinpointing the Racing Gene?

Company Markets a DNA Test for Thoroughbred Breeding

By MARK LONG

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THE SCIENCE OF BREEDING Thoroughbreds has been inexact, at best, since it began nearly 300 years ago.

But geneticist Stephen Harrison and the company he founded, Thoroughbred Genetics Co. in Kent, England, say they have identified the genetic details that make for faster racehorses. The closely held company sells its genetic tests, at £400 (€653) a piece, to horse owners looking for an edge in the race to breed a winner.

Though the company doesn't guarantee the tests will predict a Derby winner, hundreds of Thoroughbred owners sent vials of their horses' blood for testing last autumn, when preparations for the late-January breeding season were coming down to the wire. The lab advises breeders on optimal pairings and purchases based on the genetic data.

"You can't look at a horse and see what's under the bonnet," says Mr. Harrison, the 40-year-old former amateur jockey.

The two-year-old company tests for the level of inbreeding in a thoroughbred, as well as a particular kind of DNA that Thoroughbred Genetics says is related to how the horse's cells release energy. After studying more than 1,000 horses, Mr. Harrison says it is clear that less inbred animals are often healthier and tend to perform better. But they are less likely to pass desirable traits on to the next generation. Finding the right balance between inbred horses that can pass on the proper racing traits but not be so inbred as to be unhealthy is the key to successful breeding.

Owners eager to maximize their chances of breeding a winner could pay as much as £200,000 to mate a brood mare with a premier stallion, so owners say the genetic test is worth the price.

U.K. breeder John Sunley, who has used Thoroughbred Genetics's tests for 12 of his horses, says the results appear to have merit. He used the test to help determine which horses to buy and is delighted that several have already won races. He says the cost of the test is "a very minor consideration to have additional verification and another opinion." Breeders and buyers traditionally base their decisions on a keenly developed eye for horse flesh and on the study of arcane genealogical charts.

Mr. Harrison says two major breeding opera-

tions with roughly 250 mares each, 10 midsize farms with around 50 mares each, and hundreds of very small operations with one or two mares have used his services. Citing confidentiality agreements, he declines to identify these breeders.

To be sure, in the tradition-laden industry of horse breeding, many owners would rather bet on a certain name or lineage, no matter what a laboratory might recommend. Also, some scientists say there isn't any proof yet that the genetic tests can help predict a horse's performance. The fact that Mr. Harrison hasn't published his findings and opened them to peer review makes other geneticists leery of his claims.

"I am skeptical" that looking at inbreeding through genetic testing is an effective method to analyze performance says Matthew Binns, head of genetics of the U.K.'s Animal Health Trust, a veterinary-research organization. "But without seeing data one can't prove it either way."

Ernest Bailey, a University of Kentucky geneticist and a coordinator of the Horse Genome Project, a global effort to map the equine genome, says he is unaware of any published data regarding the identification of genetic parameters associated with horses' overall performance or health.

Mr. Harrison, who has a doctorate in genetics from the University of Wales, has published several papers on equine genetics in specialty publications in the past decade. He says he plans to publish his recent work in peer-reviewed journals once patents and other commercial considerations are locked down. He says his work is based on a study of 1,000 horses showing a correlation between the level of inbreeding and performance.

Meanwhile, Thoroughbred Genetics, which has about £1 million in annual revenue, is developing 10 other genetic tests, including one Mr. Harrison says appears to predict a horse's trainability. The company currently has losses of about £100,000 a year, and Mr. Harrison is seeking venture capital so he can sustain further losses as he builds the business. The company predicts it will have revenue of £50 million in 10 years.

Statistically, it wouldn't take much for the company's test results to stand out. On the basis of selecting two good horses out of 100, says Mr. Harrison, "you can make your career, you can make your reputation with that."