

# Speed gene spread by Canadian studs

Scientists trace racer DNA back to Northern Dancer and his father Nearctic

BY RANDY BOSWELL

Two of Canada's most decorated racehorses and legendary super-studs — Nearctic and his son Northern Dancer — have been largely responsible for spreading a so-called "speed gene" among the world's top thoroughbreds, according to a study published Tuesday in the journal *Nature Communications*.

The gene has been identified in the DNA of many of the world's finest racehorses and traced to a single British mare from about 300 years ago, an international team of 16 researchers from Britain, Ireland, Sweden and Russia has found.

And while the speed gene was found only rarely in racehorses until the 20th century, the two famous Canadian stallions — both highly successful racers



Northern Dancer won the 1964 Kentucky Derby and Preakness Stakes, and sired scores of racers.

and even more successful sires — have been the driving force behind the gene's worldwide proliferation in the past half-century, the scientists have concluded.

"Selective breeding for speed in the race horse has resulted in an unusually high frequency of [the gene] in cohorts of the thoroughbred horse population

that are best suited to sprint racing," the authors state in the journal article.

Their analysis of hundreds of individual animals from 22 Eurasian and North American horse populations included living horses and museum specimens — among them, 12 "historically important" champion racehorses from between 1764 and 1930, whose preserved bones and teeth were tapped for genetic sampling.

Pedigree records for leading racehorses over the years were also examined, and DNA samples from donkeys and zebras were even studied to reconstruct the historical pathway of the speed gene — formally identified by the researchers as the C-allele 66493737. What they learned was that the gene can be traced to "the foundation stages" of thoroughbred breeding in the early 1700s from a single "British-native mare."

"Furthermore," the scientists state, "we show that although the C-allele was rare among the celebrated racehorses of the 18th and 19th centuries, it has proliferated recently in the population via the stallion Nearctic (born in 1954), the sire of the most influential stallion of modern time, Northern Dancer (born in 1961)."

Study co-author Emmeline Hill, a genomic scientist at Ireland's University College Dublin, said on Tuesday that the researchers used "pedigree analysis" to chart the huge influence of Nearctic and Northern Dancer on modern thoroughbred genetics and "did not test material from these horses directly."

Nearctic, owned by the renowned Canadian industrialist and horseman E.P. Taylor, won nine races in 1958 and was named Canada's top race horse of that year.

Sired by Nearctic, Northern Dancer was the Ontario-born winner of the 1964 Kentucky Derby and Preakness Stakes — two-thirds of the U.S. Triple Crown — as well as the Queen's Plate, Canada's top thoroughbred race.

Northern Dancer went on to an unrivalled career as a stud horse, siring scores of champion racers before his death in 1990 and burial at his Windfields Farms birthplace in Oshawa, Ont., west of Toronto.

During the 1980s, the stud fee for Northern Dancer topped a record-setting \$1 million.

Hill said that "it may be that the 'speed gene' itself was the key" to the Northern Dancer's success on and off the track, "enabling his sons to more consistently produce faster horses."