Unlocking the genetic secrets of legendary bulls

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Australian Brahman bulls are adapted to harsh tropical and sub-tropical conditions. Credit: UQ

The genes of 50 top bulls have been sequenced in an effort to understand how genes from temperate cattle have influenced important production traits in the modern Brahman breed.

The Sequencing the Legends project is led by Professor Steve Moore Centre for Animal Sciences Director at the Queensland Alliance for

Agriculture and Food Innovation (QAAFI), a combined University of Queensland and Queensland Government research institute.

"We are unpacking the entire DNA sequences of 50 influential animals then honing in on the genes associated with specific traits in order to capture the best genetics in the Brahman breed," he said.

"Understanding the genetics underlying production traits in Australian tropically adapted cattle is essential for further breed development and crossbreeding strategies," Professor Moore said.

"Brahmans are adapted to tropical climates and there have been more than 300,000 years of separation between Bos indicus cattle such as Brahman and the *Bos taurus* cattle breeds that are important to temperate production systems."

Queensland is home to almost half of Australia's beef cattle - with a mostly Brahman influence.

But the Brahman genome has been found to contain around seven to 10 per cent *Bos taurus* genes, a legacy of the breed formation.

Professor Steve Moore leads a project to sequence the genomes of 50 top Brahman bulls. Credit: UQ

"We were not sure how *Bos taurus* genes in the Brahman genome might affect the animals performance," Professor Moore said.

"Is it just a random mix or have specific taurine genes been retained in Brahmans because they were associated with desirable production traits?"

Professor Moore, his QAAFI colleague Professor Ben Hayes, and Dr Brian Burns from the Department of Agriculture and Fisheries (DAF) lead the research team that is sequencing the DNA from Brahman sires -

some dating as far back as the mid-1950s.

DAF and the Australian Brahman Breeders Association were instrumental in selecting and locating the most influential sires for the project.

Results from the Sequencing the Legends project are still being processed but indicate that the *Bos taurus* genes lurking in the Brahman genome may have been selected for important production traits associated with fertility, growth and temperament.

"This data will help us to better direct breeding decisions and thus boost the productivity and profitability of the northern beef industry," Professor Moore said.

Provided by University of Queensland