



## Genetic Marker for Improved Longevity and Milk Production in Cattle

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**WARF: P08094US**

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a genetic marker associated with productive life and milk yield in dairy cattle.**

### Overview

Traditional breeding techniques in dairy cattle take many years and do not efficiently take into account all sources of genetic variability. Marker-assisted selection is an alternative that could lower the high cost of progeny testing used in traditional breeding methods; however, marker-assisted selection requires genetic markers for superior milk production traits.

*POU1F1* may provide one such genetic marker. *POU1F1* is a transcription factor that controls the expression of the genes for growth hormone and prolactin, which are important in mammary gland development and milk production and secretion. In addition, genes that are downstream of the *POU1F1* signaling pathway may be associated with milk production and health traits.

### The Invention

UW-Madison researchers studied the effects of *POU1F1* on health and milk production traits in two independent North American Holstein populations. They identified a single nucleotide polymorphism (SNP) in exon 3 of *POU1F1* that changes the amino acid proline to histidine.

This SNP is significantly associated with milk yield and productive life (a measure of longevity), making *POU1F1* a strong candidate for marker-assisted selection in dairy cattle breeding programs. Dairy cattle could be screened for the presence of this SNP, and animals with the beneficial allele could be selectively bred.

### Applications

- Marker-assisted selection in dairy cattle breeding programs
- Identifying cattle with superior longevity and milk production traits

### Key Benefits

- Enables selection decisions to be made very early—as soon as an animal is born or even earlier if embryos are tested
- Speeds up cattle breeding by shortening the generation interval
- Could reduce the high cost of progeny testing
- DNA markers are easy to measure, unambiguous and co-dominant.

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Stage of Development

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This polymorphism was shown to be associated with productive life and milk yield in a group of more than 2,000 individuals from two independent Holstein populations.

## Additional Information

### For More Information About the Inventors

- [Hasan Khatib](#)

### Related Technologies

- [See WARF reference number P05142US for another SNP associated with longevity in dairy cattle.](#)

### Publications

- Huang W., Maltecca C. and Khatib H. 2008. A Proline-to-Histidine Mutation in POU1F1 Is Associated with Production Traits in Dairy Cattle. Anim. Genet. 39, 554-557.

### Tech Fields

- [Animals, Agriculture & Food : Animal biotech](#)

For current licensing status, please contact Emily Bauer at [emily@warf.org](mailto:emily@warf.org) or 608-960-9842

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