

## BETA-CASEIN GENE INFLUENCES PRODUCTION OF MILK PROTEIN CASEIN WHICH HAS A1 & A2 VARIANTS

A2 MILK IS POTENTIALLY LINKED TO HEALTH BENEFITS ASSOCIATED WITH:



Autoimmune Disease



Heart Disease



Type 1 Diabetes



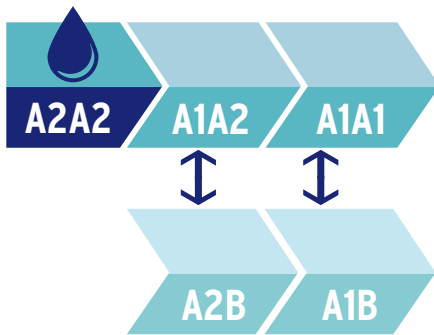
Dairy Intolerance

Laugesen and Elliott 2003, McLachlan 2001, Woodford 2006.

		A2A2 SIRE	
DAM	A2A2	100% A2A2	Produce 100% of A2 milk
	A1A2	50% A2A2 50% A1A2	
	A1A1	100% A1A2	Produce 50% A1 milk & 50% A2 milk

Holstein Canada, 2015

Herds can convert to 100% A2 milk within 4 years using intensive selection.



## A SINGLE GENE CONTROLS BETA-CASEIN PRODUCTION

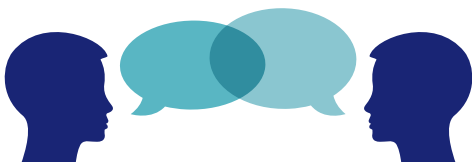
\* B is a variant within the gene that can be inherited along with A1. For simplicity sake, it can be considered the same as A1.

S. Kaminski 2007 Journal of Applied Genetics.



## A2 MILK IS SELLING AT A PREMIUM

## HEALTH BENEFITS ARE STILL BEING DEBATED IN THE RESEARCH COMMUNITY



A2 variant is becoming more common in Holstein sires  
68 SEMEX A2A2 SIRES

# > 2500 GTPI

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## Homozygous A2A2 Carrier Sires

## THE SEMEX DIFFERENCE