Jay Shannon, Semex Global Dairy Solutions Manager

Immunity+™ Evidence Growing

New technologies are always coming along that claim a host of benefits. Seldom, however, do such technologies deliver on or surpass their original claims. Immunity+ appears to be one of those special innovations that does indeed meet or exceed original expectations.

There is a lot of on-going research in the immune response field, and in each case, the findings further validate many benefits of this outstanding new technology:

- Starting with the expectation of 4-8% reduction in disease, an analysis of three large dairies has shown a disease reduction in daughters by Immunity+ sires that is at least 8% or more with most notable reductions in mastitis and pneumonia
- Using Semex bulls and daughters tested for immune response, a study by Emam et al (August 2014) validated the transmission of immune response to the progeny from their sires
- Crispi-Thompson et al (August 2014) did an association study between the genomic markers on the 50K panel and immune response for a group of Semex bulls. A significant peak on chromosome 23 was found confirming previous results from the association studies using cows
- The same research project calculated immune response heritability and indicated the actual heritability could be even higher than the original estimate of 25%
- Preliminary findings by Cartwright et al (May 2014) suggest high immune responders have significantly less digital dermatitis (footwarts or hairy heel warts) than average. A relationship was previously hypothesized, however it had not been demonstrated until recently
- Fleming et al (August 2014) showed how high immune cows have significantly more total immunoglobulin and betalactoglobulin in their colostrum. These cows are expected to provide superior passive immunity to their calves through this enhanced colostrum. The paper suggests the future possibility of innovative ingredients for functional foods, enhancing both human and animal health

High immune response technology has shown the potential to be one of the more significant innovations in the genetics industry, having a profound effect on each dairy's selection strategy to improve overall animal health.

PATENTED TECHNOLOGY EXCLUSIVE TO SEMEX

Immunity+™

High immunity passed from parent to progeny at rates exceeding all health/fitness traits

25% heritable

48%

of Immunity+ sired sons also qualify as Immunity+
(Compared to only 11% of sons from other bulls)

Only the top **10%** bulls tested qualify

Immunity+ daughters produce better quality colostrum

Immunity+ daughters have greater response to commercial vaccines

Immunity+ sires have higher semen fertility (+0.9 higher SCR than other bulls)

Immunity+ sired daughters have higher fertility (3.7% higher 56-day non-return rates as cows)

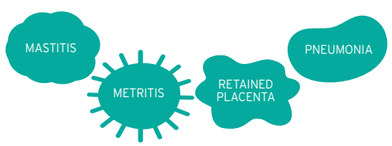
DAIRY HERD MANAGEMENT INNOVATION AWARDS 2013 WORLD DAIRY EXPO EDITION

Immunity+
2013 DHM Innovation Award recipient

One mating to an Immunity+ sire provides at least

4-8%

reduction in disease



Preliminary studies indicate resistance to other important diseases

Genetic correlation between immune response and health traits

0.50 - 0.70

J. Chesnais, August 2014.

BULLS THAT WERE IMMUNE RESPONSE TESTED FROM JULY 2013 - JUNE 2014

Trait	Immunity+ (67 bulls)	Non-Immunity+ (560 bulls)	Difference
PL	+4.8	+3.0	+1.8
DPR	+1.0	+0.1	+0.9
SCS	2.72	2.82	-0.10 (favourable)
DCE	5.4%	6.0%	-0.6% (favourable)

IMMUNITY+ IS GENETICS FOR LIFE