

NATIONAL GENETICS CONFERENCE

The evolving role of breeders in the
genomics era

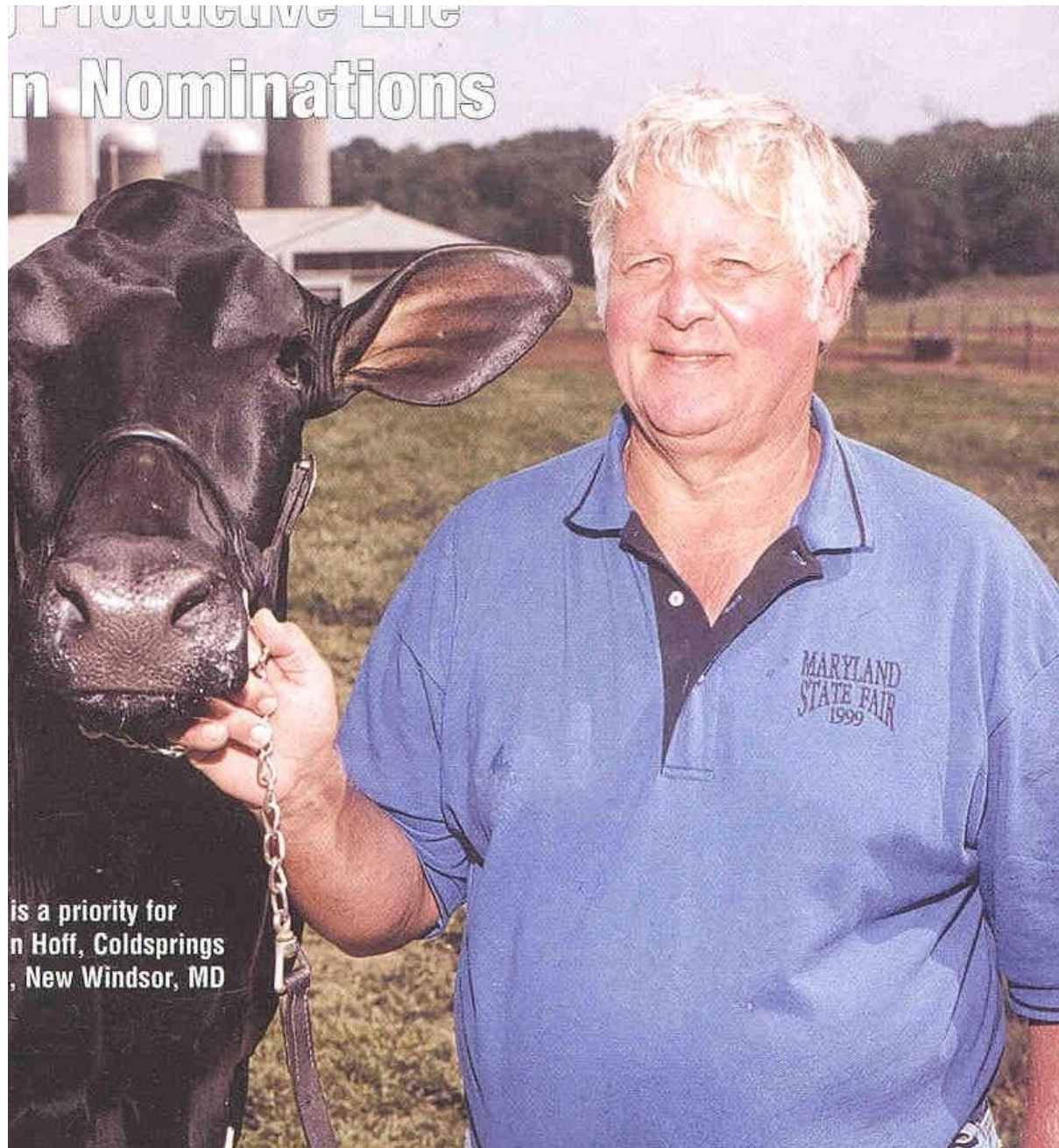
Dr. Tom Lawlor
Holstein Association USA



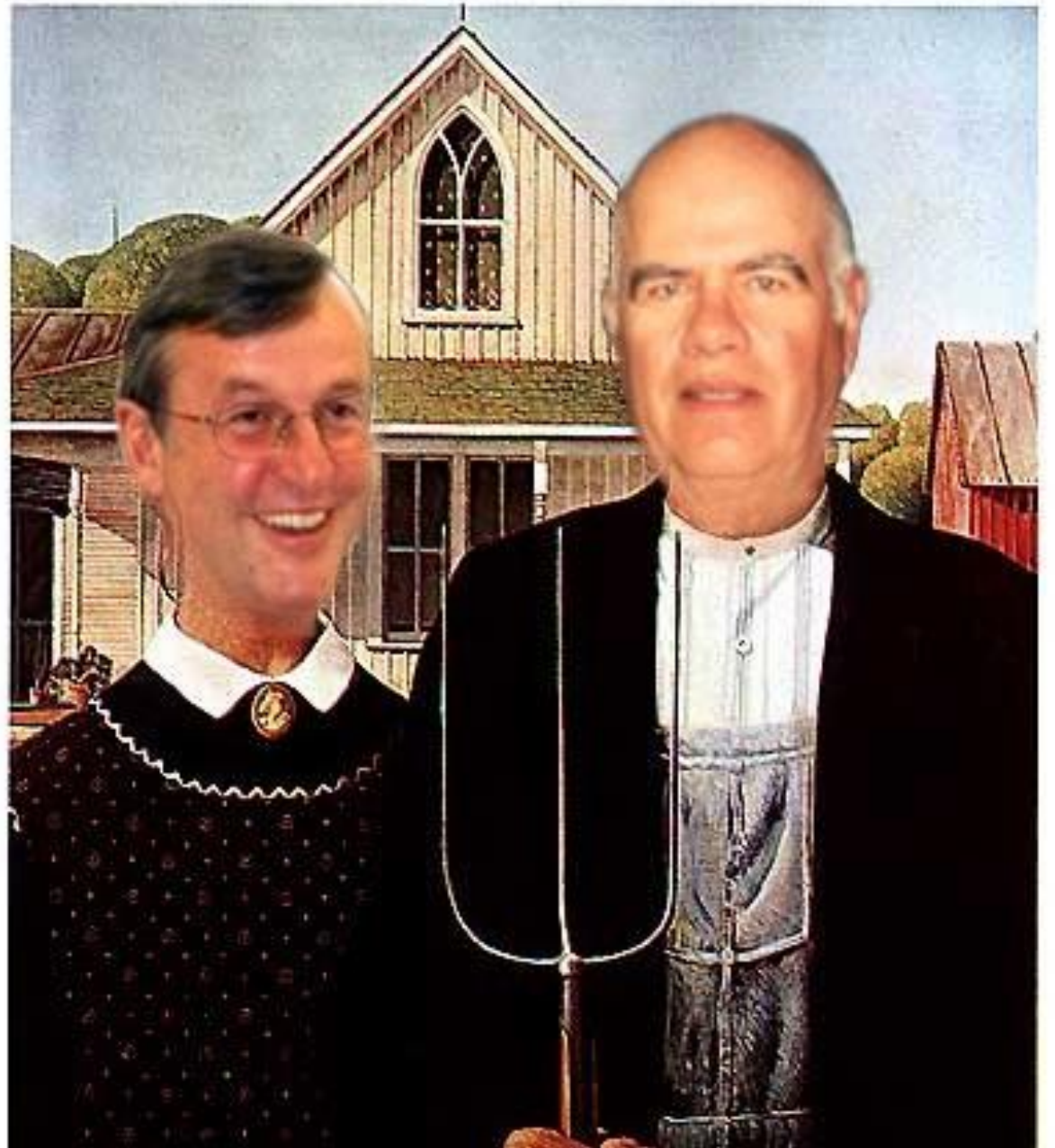


What's the difference between a grade cow and a Registered cow?

Productive Life in Nominations



is a priority for
n Hoff, Coldsprings
, New Windsor, MD







The eye of the breeder and the feeling of success from breeding a “good one”





Long History

International, 1934

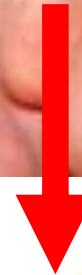


Wild ancestor



Today's Commercial carrots

Ancestral parents of peanuts



I think these breeders were happy.

These breeders felt successful.



I think breeding a good herd of cows
can make you feel happy

Admiration of the success of others



John Cole's pilgrimage to
Mendel's garden

Czech Republic

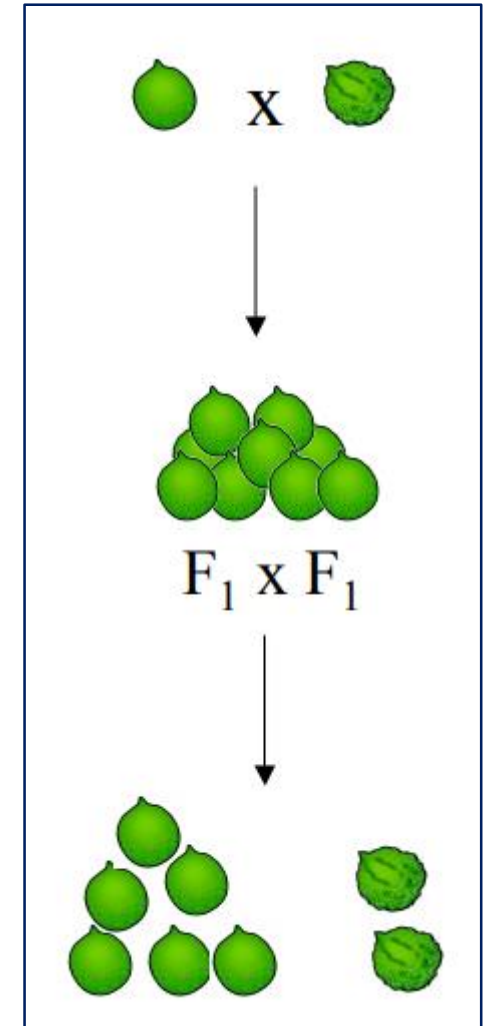
Mendel discovered how alleles are transmitted



3 Yellow vs 1 Green

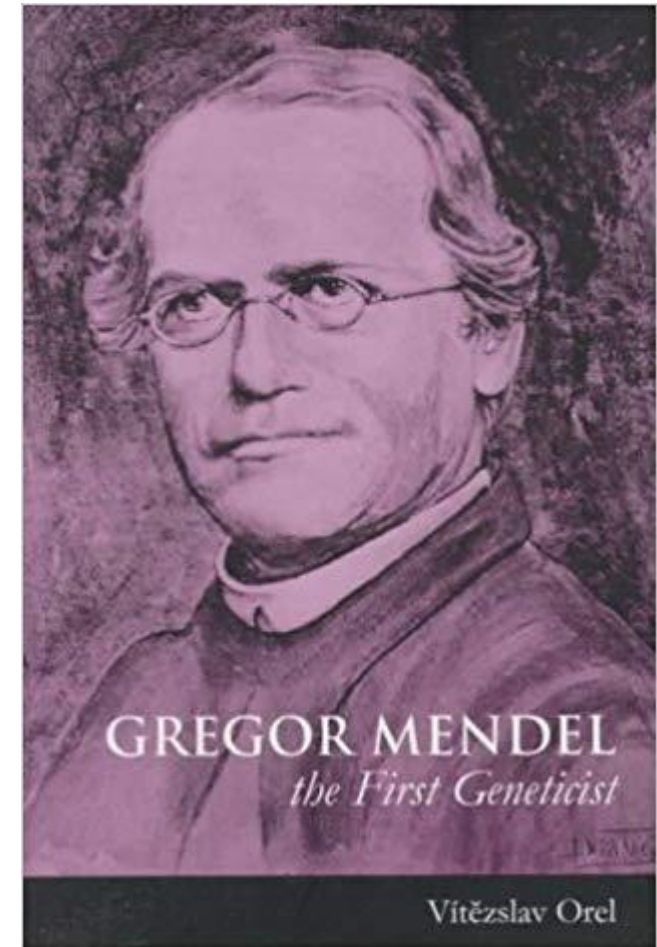


3 Wrinkled vs 1 Round



Mendel published ONE scientific paper and then stopped

His second experiment was with
Hawkweed
Hieracium pilosella





This plant reproduces asexually.

The offspring are a CLONE of its parent.

All crosses
are identical





A variety of
Fuchsia is
named after
him

Mendel went on to be a beloved and
respected religious leader.

And remained a Judge of Flower Shows for
many years.

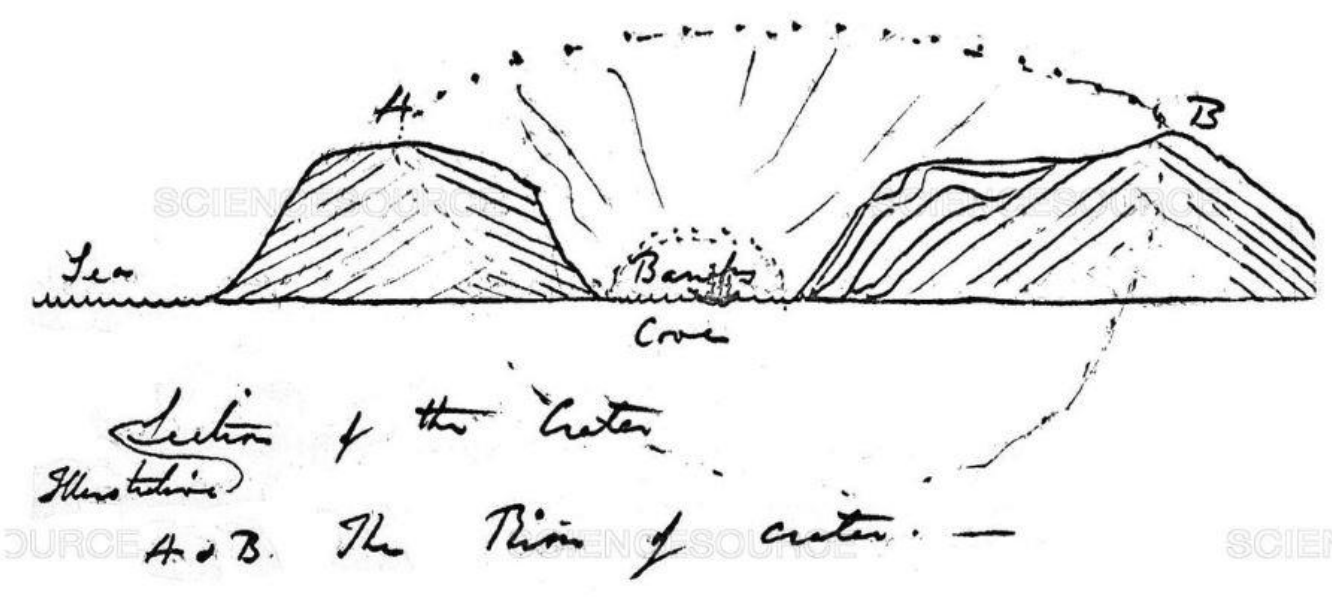


I recently went on my own pilgrimage to the Galapagos.

I wanted to see – what Darwin saw.

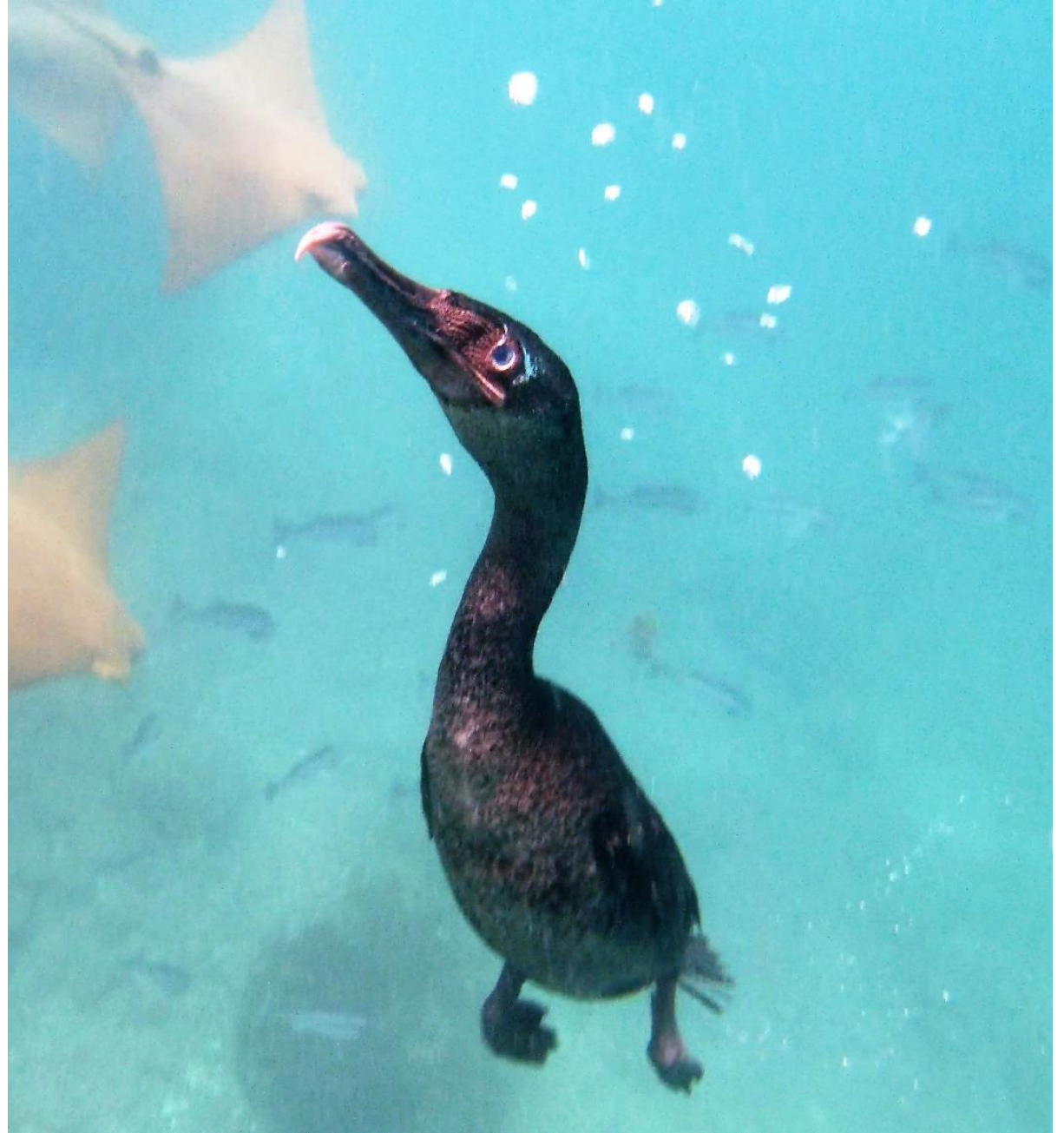
I wanted to think and feel what Darwin thought and felt.

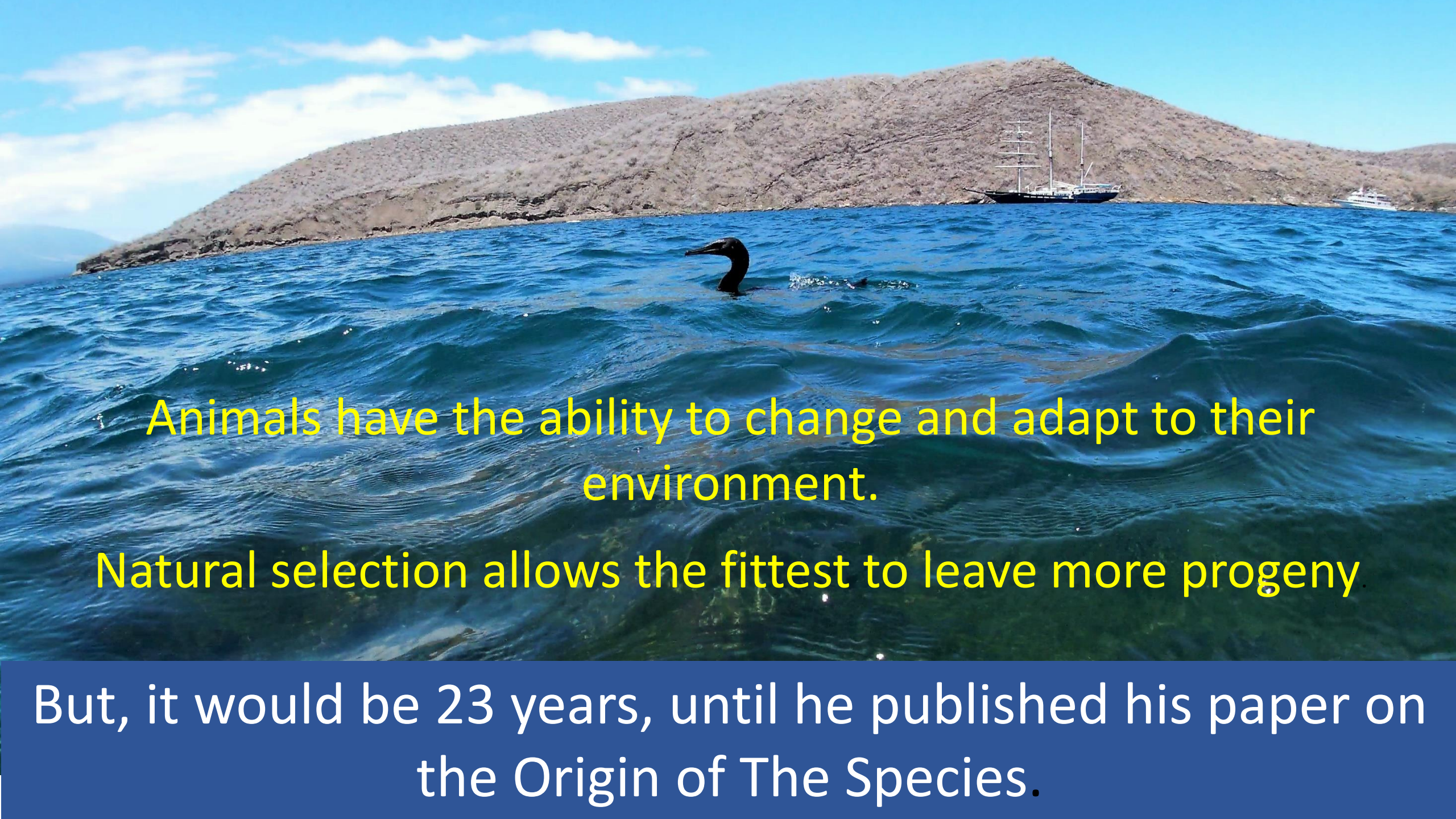




Drawing of Tagus Cove from the Darwin's notebook on the Voyage of the Beagle







Animals have the ability to change and adapt to their environment.

Natural selection allows the fittest to leave more progeny

But, it would be 23 years, until he published his paper on the Origin of The Species.

Both scientists are viewed as highly successful

Admired for their ability and willingness to pursue lofty goals.

They're **LEGENDS** in Genetics!

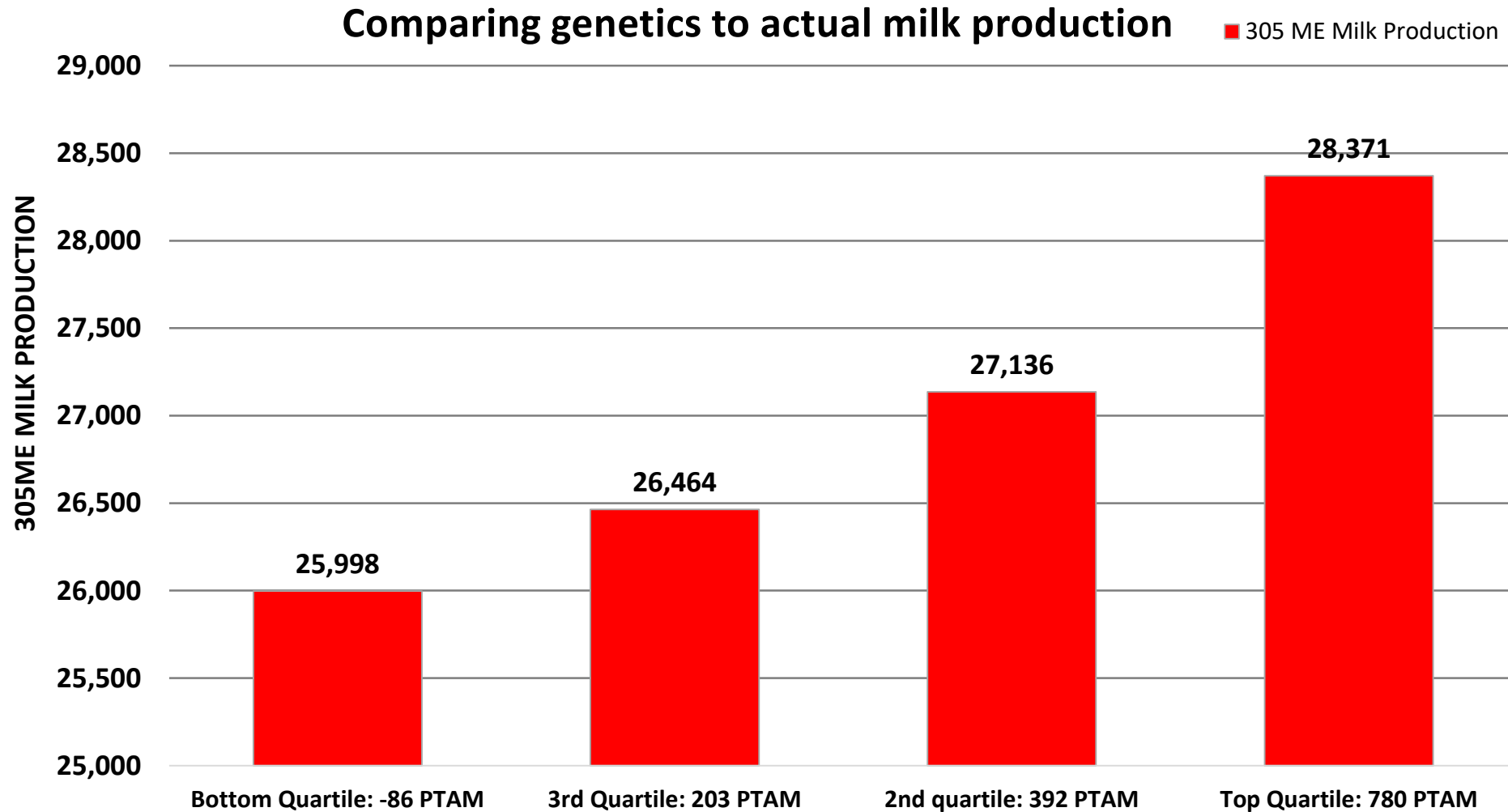
We have an advantage over Mendel and Darwin.

We live in the genomic era.

We're living in a time when we know more about genetics than ever before!

“Never in my lifetime have I seen more interest in genetics than now.”

Mark Kerndt, Holstein Board member



1,000 cow dairy in Minnesota, Genetic Analysis Report



YOUR SUCCESS *Our Passion.*

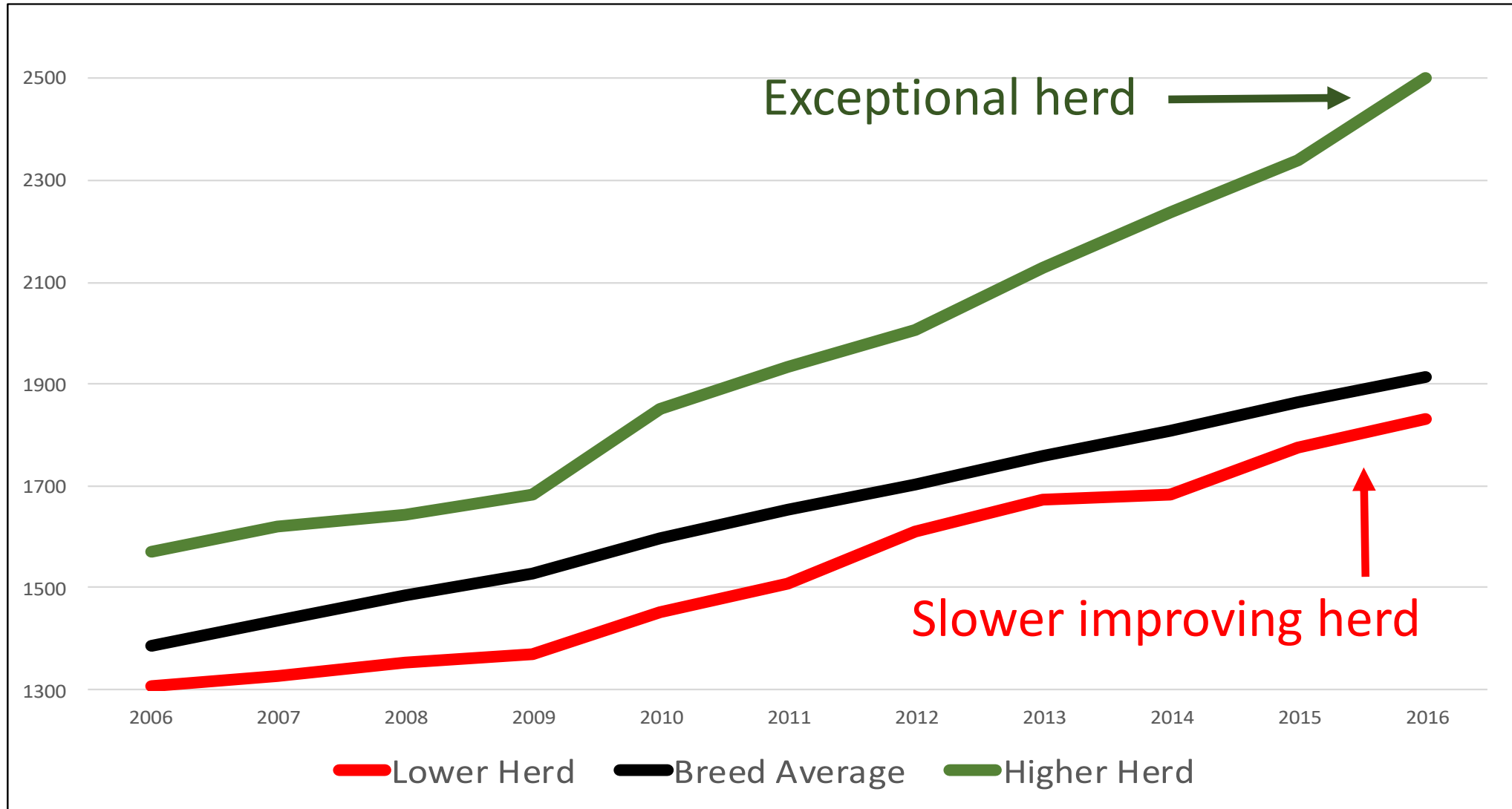
Individual farmers are taking control of their breeding programs

“We have to continually ask ourselves, ‘How can we become more efficient?’ ‘How can we maximize profits?’ and ‘How can we improve the quality of our animals?’”

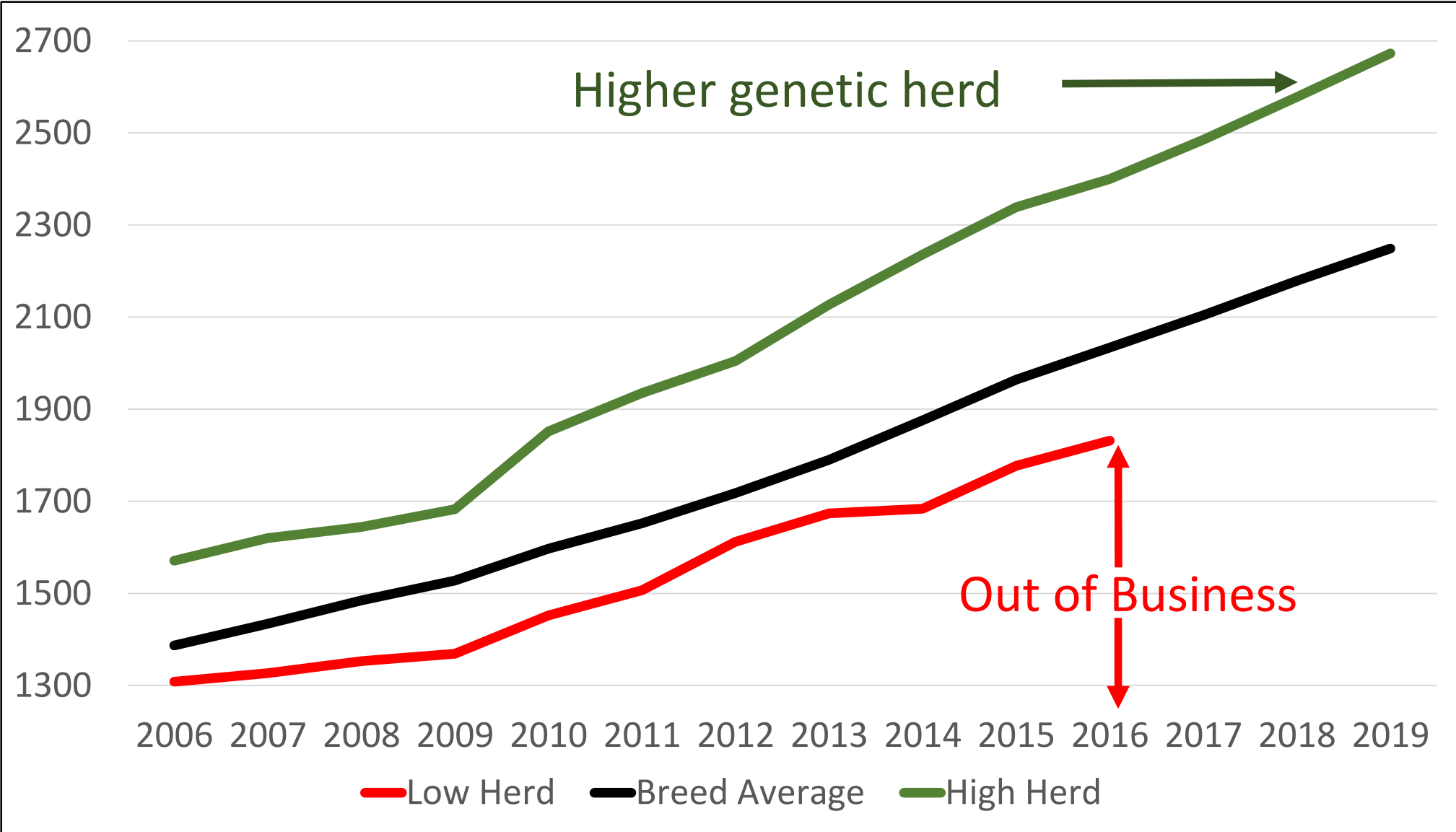


Chaput Family Farms, North Troy, Vt.

More opportunity for herds to separate themselves. Cows in higher herd return more lifetime profit



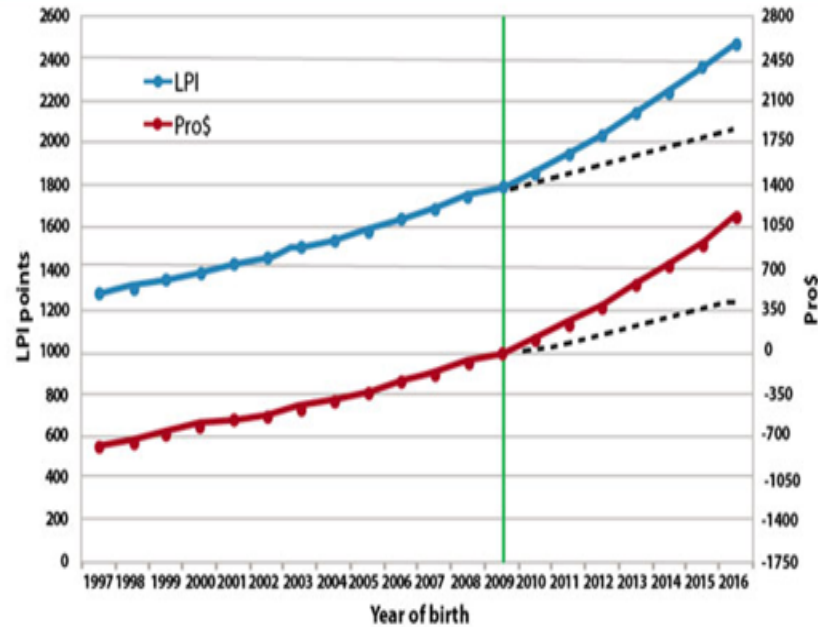
Lower genetic herds struggle to survive



Genomics has more than doubled and may soon triple the rate of genetic progress in LPI and Pro\$, as well as improve other traits like fertility and longevity.

Canada

FIGURE 1 Genetic trend realized for LPI and Pro\$ in Canadian Holsteins before and after genomics



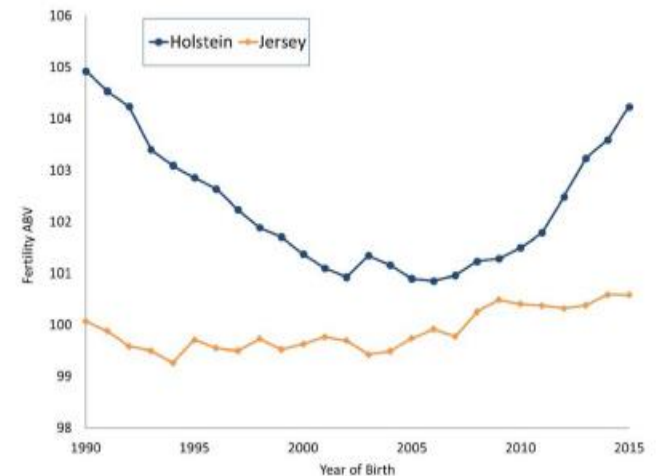
Source: Proceedings of the 2018 Western Canadian Dairy Seminar, Volume 30.

The Bellvine
INFORMATIVE AND THOUGHT PROVOKING NEWS AND ARTICLES FOR THE DAIRY INDUSTRY

Genomics revolution lifts dairy farm production
Monday, May 20th, 2019

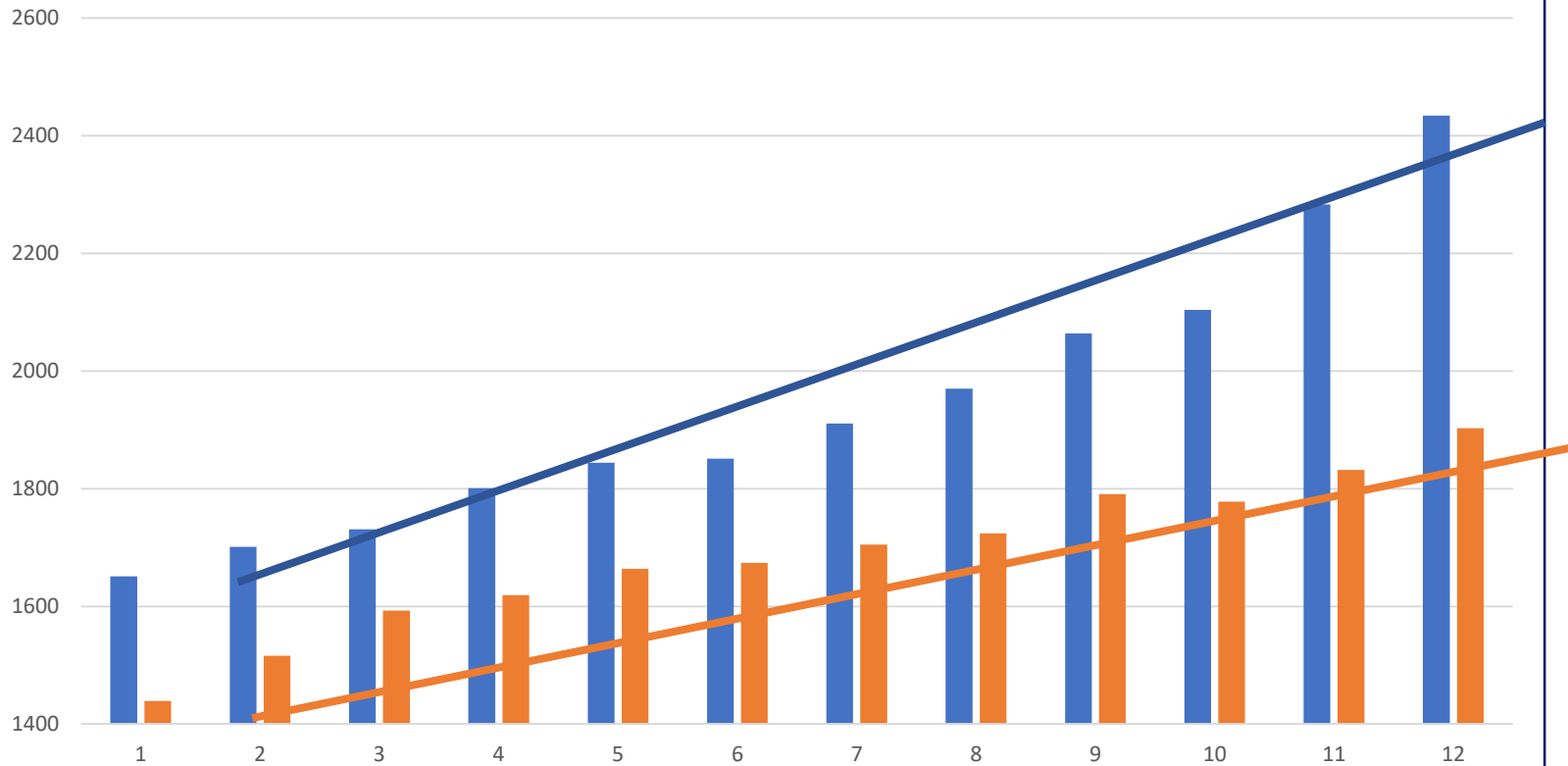
Australia

Genomic selection – genetic gain daughter fertility



It's not good enough to just improve your herd.

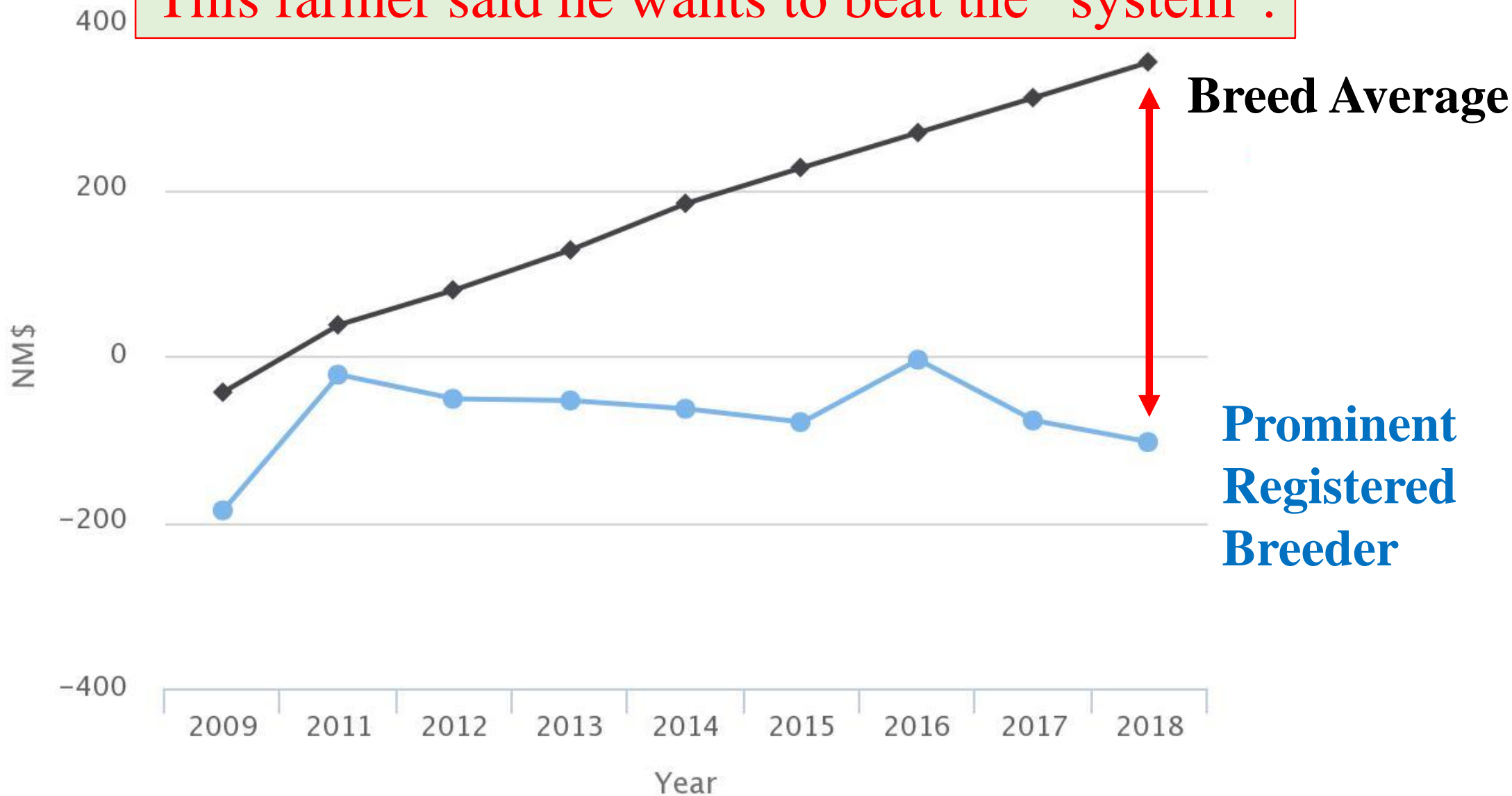
TPI Trend in Two Herds



Your genetic trend
has to keep pace
or exceed the
**rate of genetic
improvement**
of the other herds
looking to stay in
business

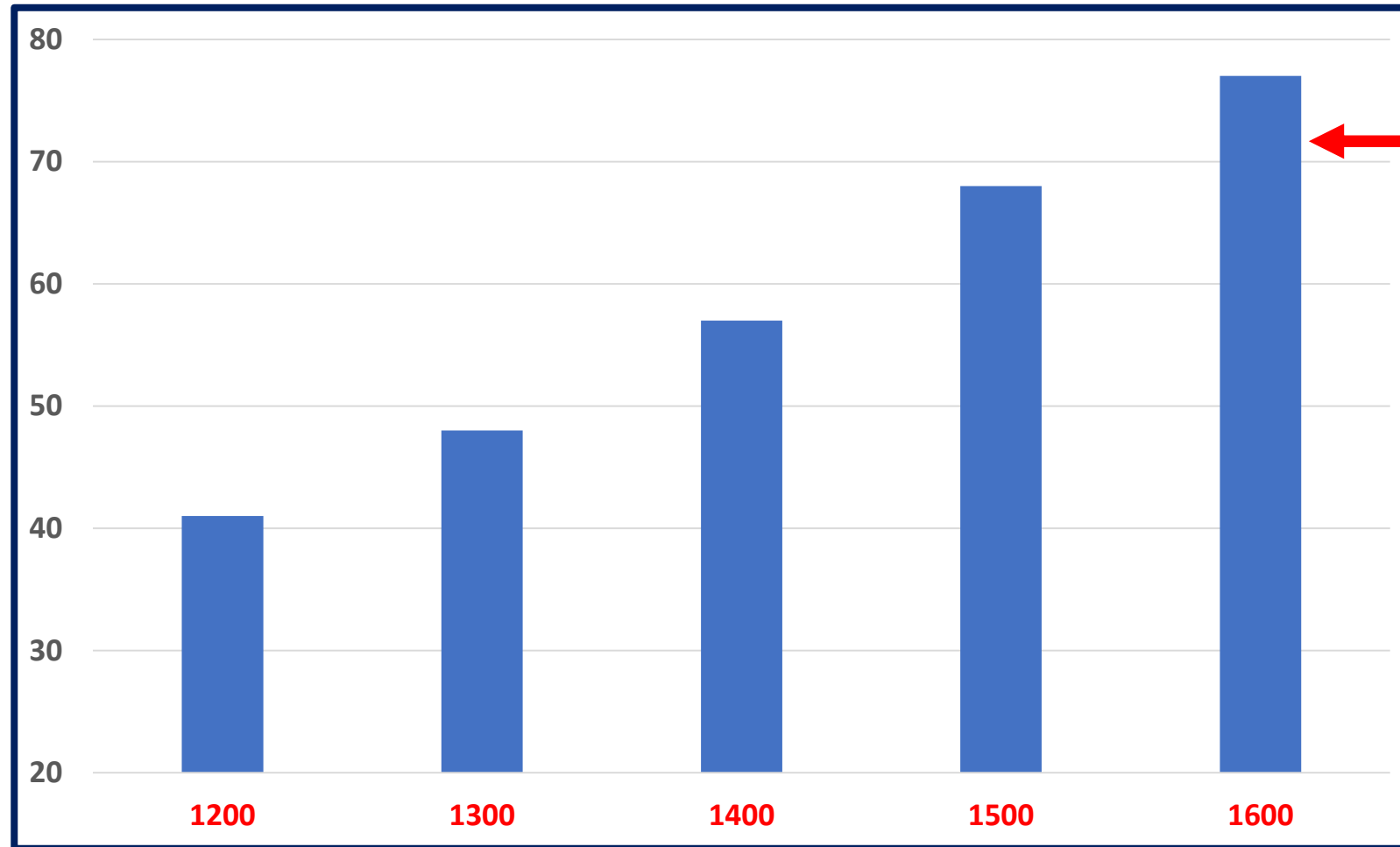
Not all herds are keeping up!

This farmer said he wants to beat the “system”.



Herds with better genetics – more likely to stay in business

Percent
of herds
still in
business
in **2018**



Herds with a **higher TPI** level back in **2010** were almost twice as likely to still be in business in **2018**

Average TPI value of the animals in the herd in **2010**

Our definition of success has changed

From selling a bull to AI or selling a group of heifers
to

Making milk more efficiently – lowering our cost of production

Having a financially viable farm!

What top breeders are now saying

“The first goal in my mind is to improve the quality for the whole milking herd.”

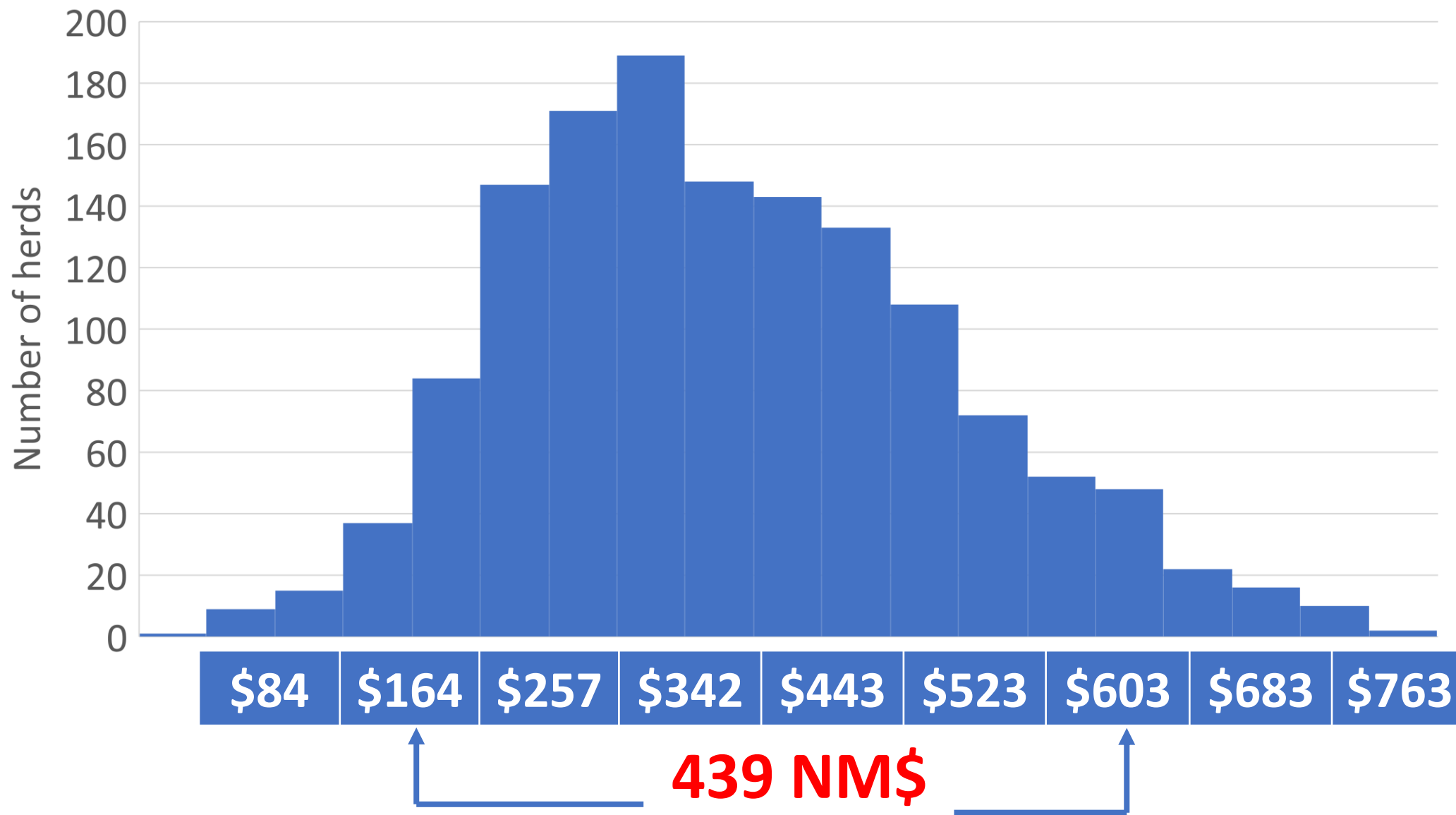
“The second goal is to produce elite genetics for the world, especially in the Holstein breed.”



The opportunity to design your own “genomics program” is greater now than ever before.

- Genomic young sires
- Sexed semen
- Beef on dairy
- Genomic testing
- Embryo Transfer
- On-farm IVF
- Semen contract with an AI company

We have **MORE spread** between herds than ever before.
Average PTA NM\$ of cows in different herds



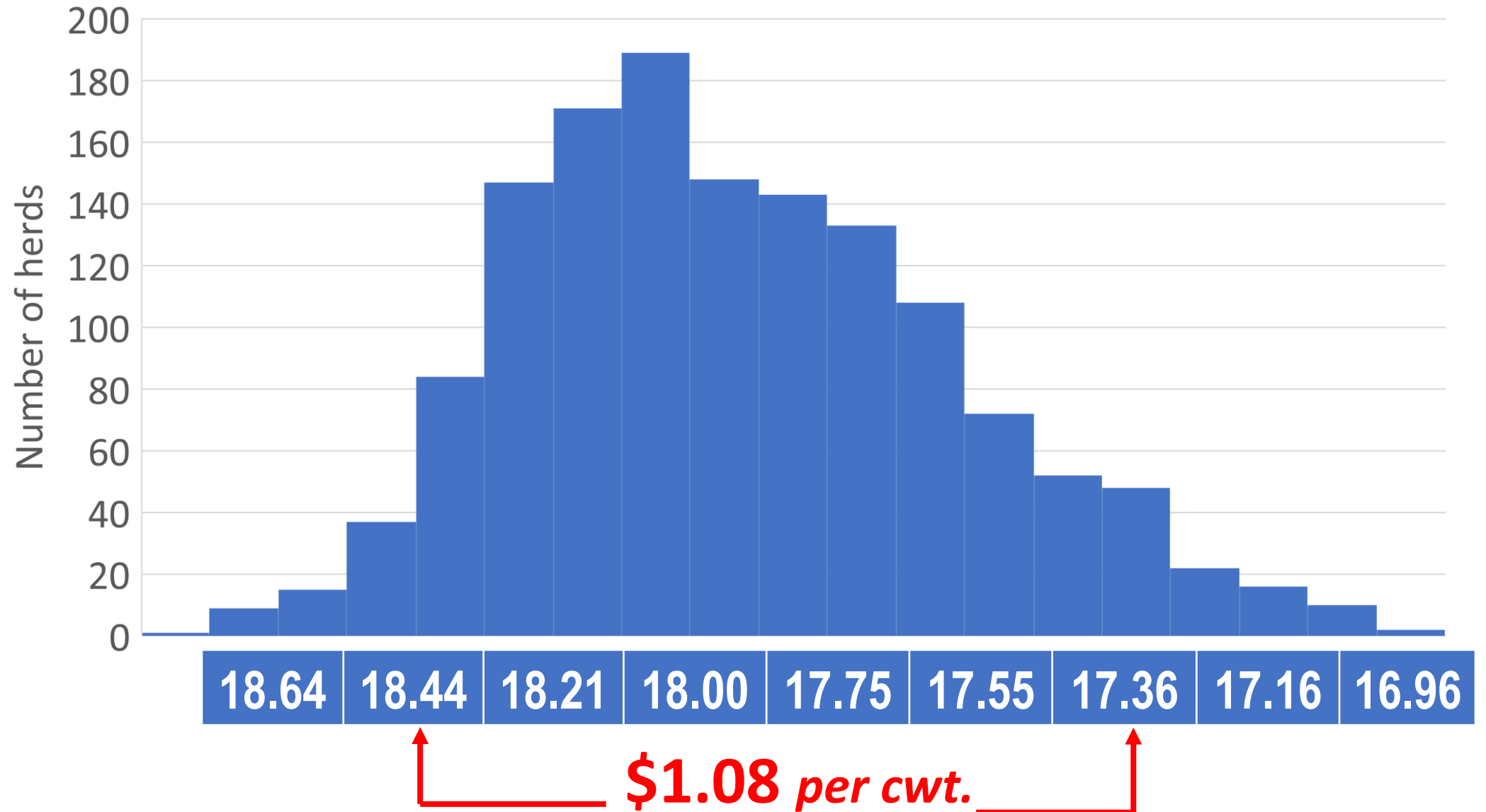
Good genetics lowers the cost of production

***A herd with an \$439 advantage
in the average genetic merit of their cows
can produce milk at more than a \$1 LESS per cwt.***

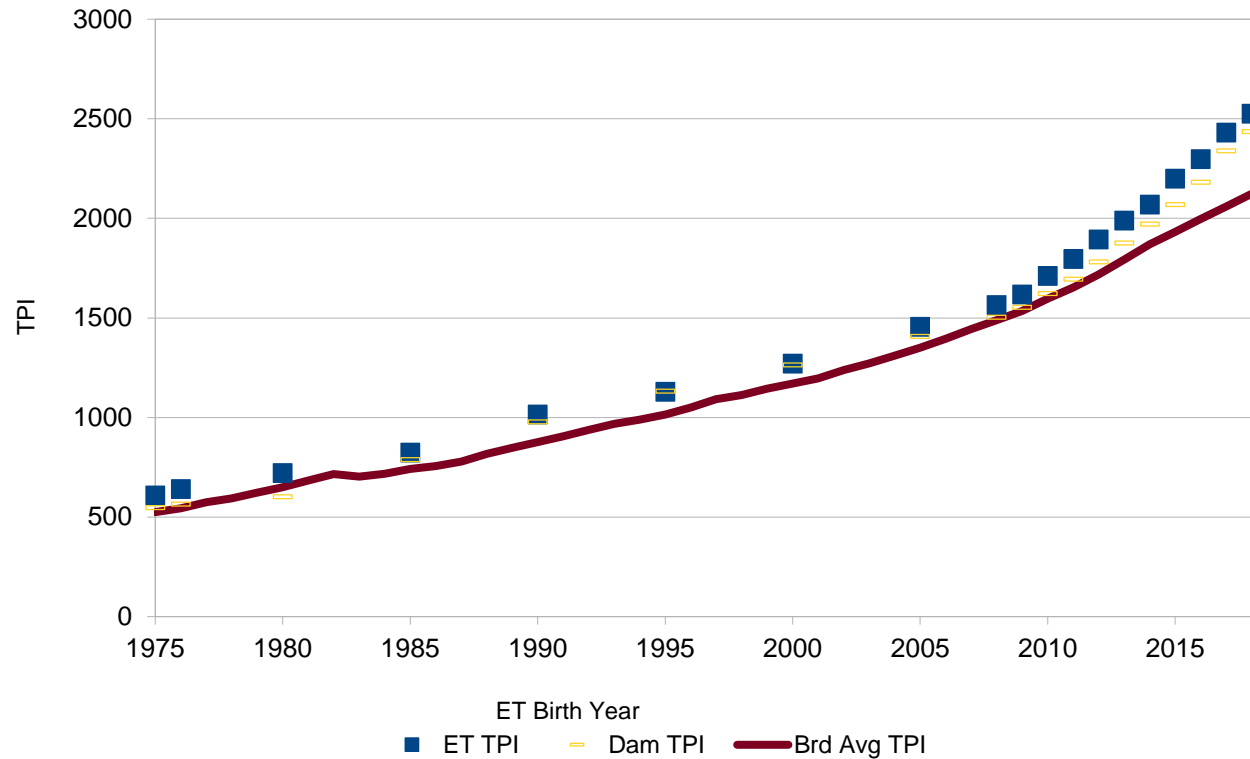
Based upon
USDA's calculations of the Holstein base at:
27,000 lbs. 305-ME, milking for **3 lactations**,
using **\$18.00** as the average cost of production per cwt

Cost of production per cwt.

Based upon the genetics of the cows in the herds



People who believe in good cows breed good cows



Genetic merit of ET dams is much higher!



Contribution of individual cows has greatly increased

Genomic testing

Technology is NOT size neutral

Larger farms have a higher rate of adopting this technology.

Herd size	Percent of the genomic tests
> 1000 cows	57%
250 - 999	30%
100 - 249	7%
20 - 99	6%

What's the best way to improve the genetics in your herd?

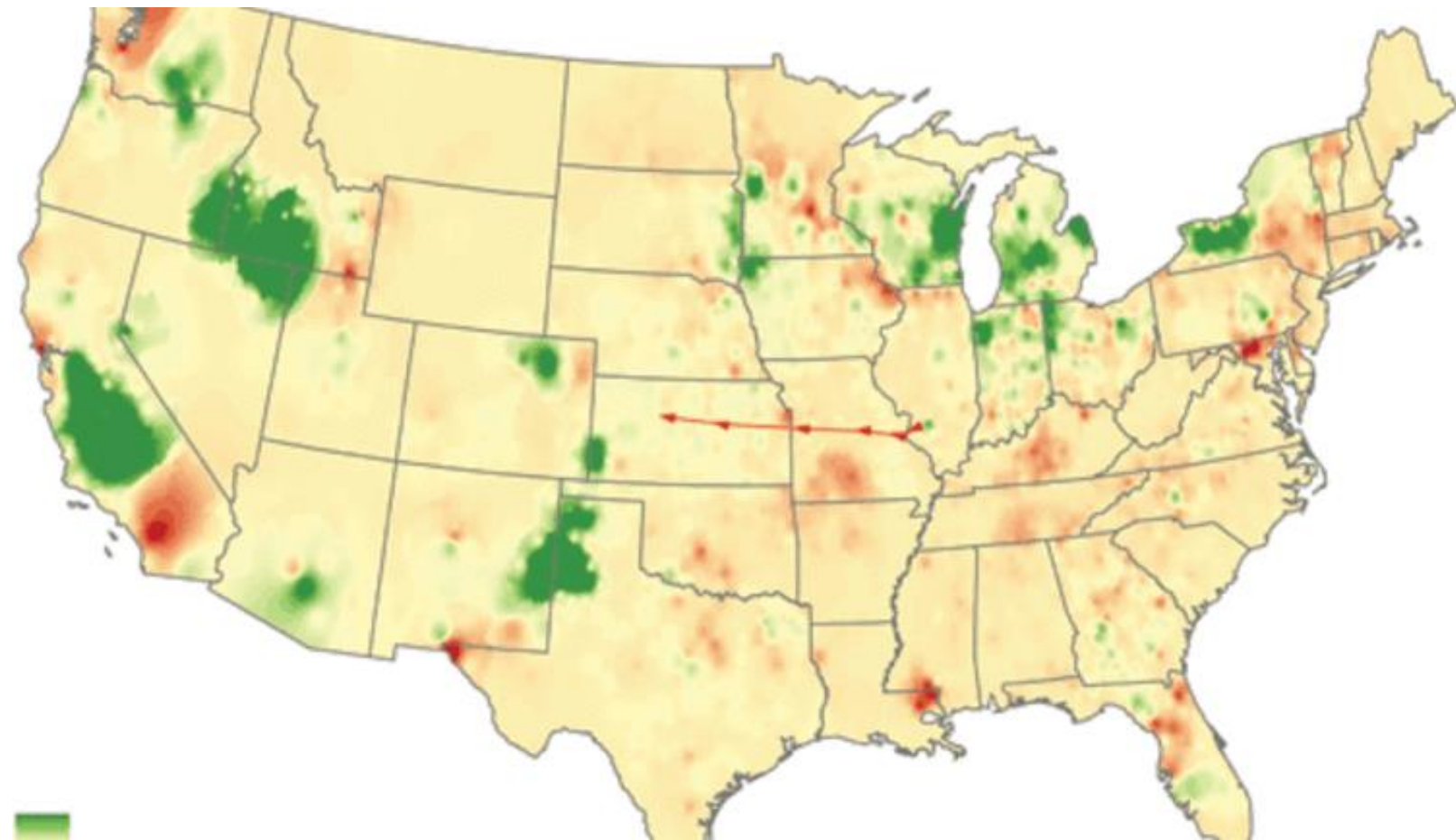


How you do it, and which road you take, is a personal choice.

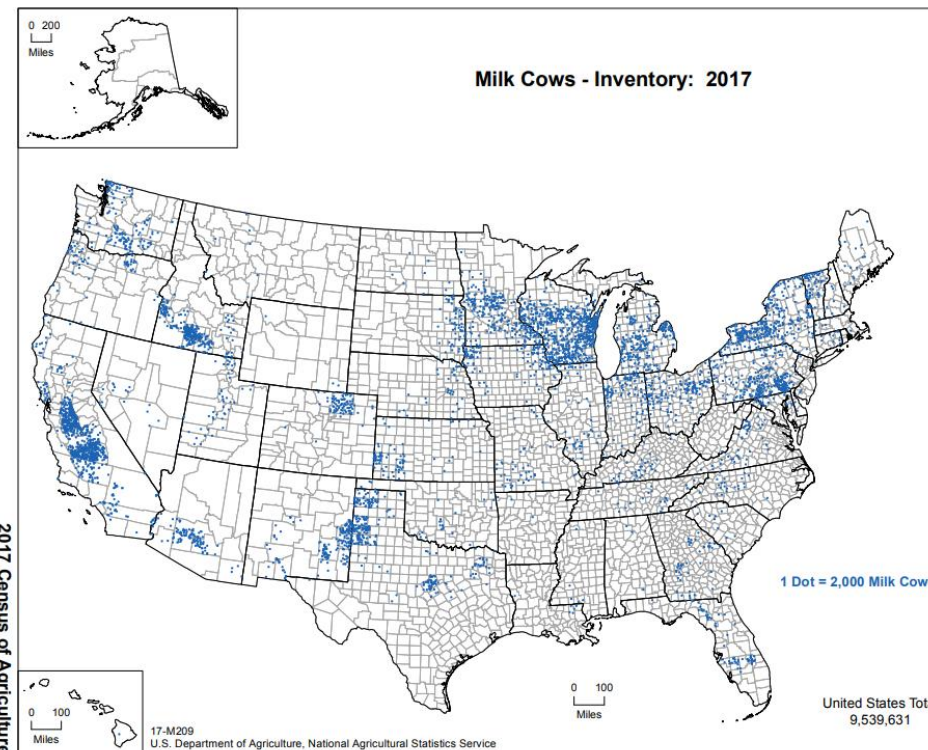
The primary role of today's breeders is to keep the herd moving in the right direction.



In 2013, Hoard's described this map of U.S. dairy herds as Cow Islands



2017



“Genomics – has brought us the tools to move the Holstein breed in any direction faster than ever before.”

Boyd Schaufelberger, Holstein President



Genetic audits are now common, offered through AI companies and

Enlight™



Dairy Cattle Breeding

*Dairy is one of the few agricultural businesses where the
Individual Breeder
is still a major contributor*

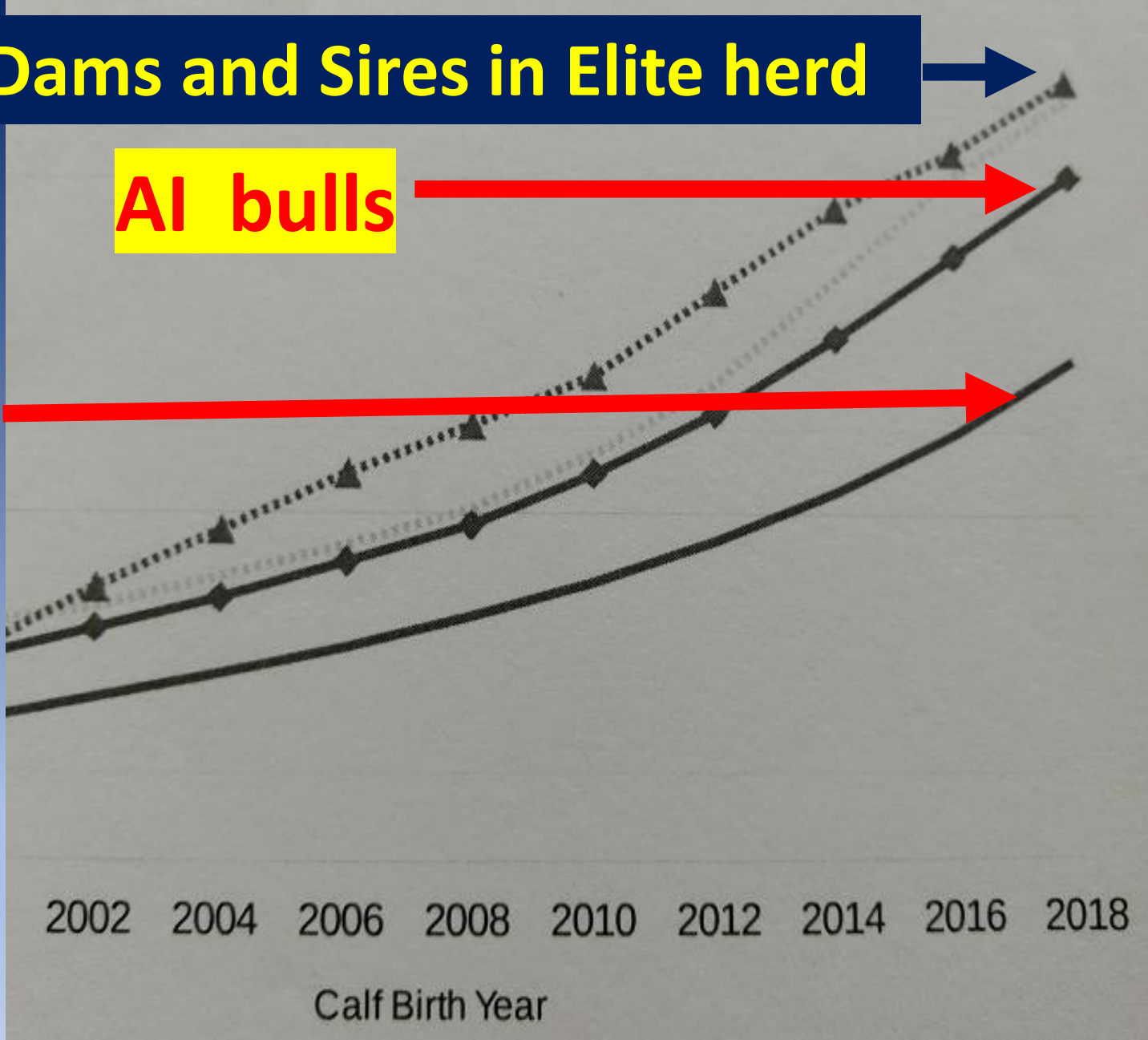


Genetic level
of elite herd

Dams and Sires in Elite herd

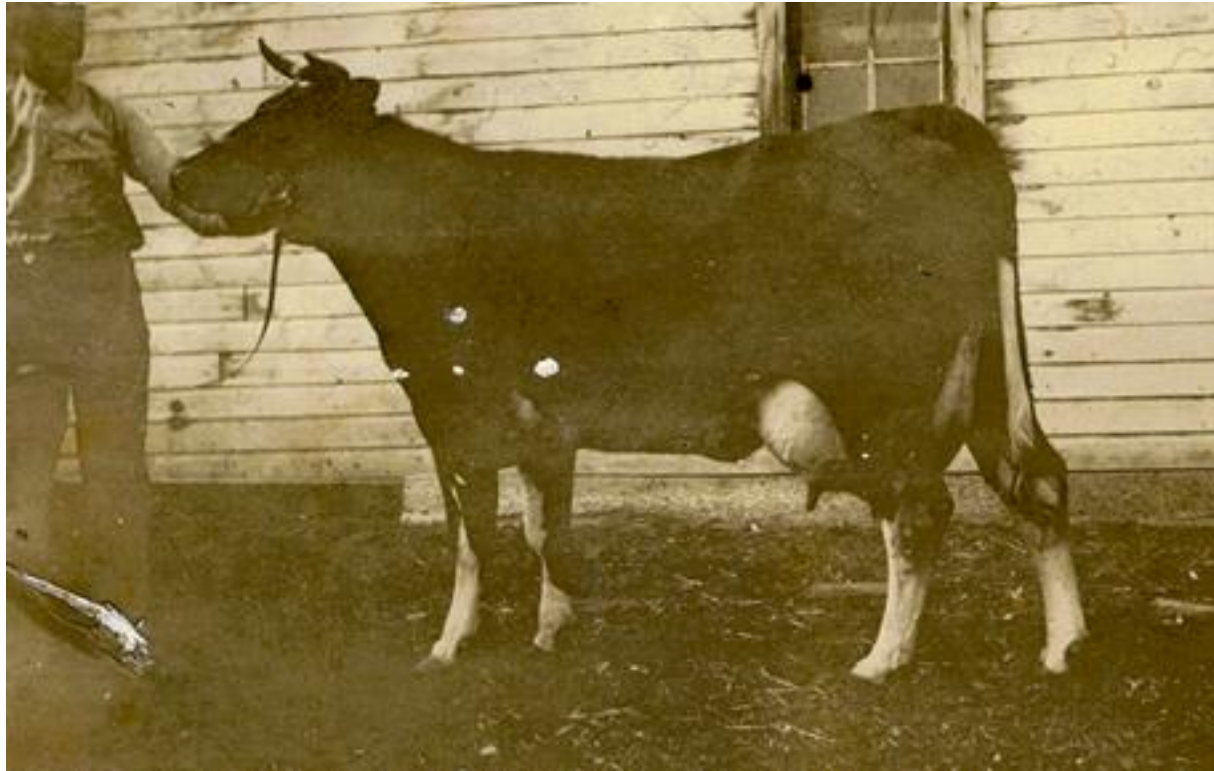
AI bulls

Average Holstein Cow



We're all part of making the Holstein breed better.

We need to take joy in the success of others.



Everyone doesn't need to be an elite herd

- The elite breeding programs are expensive and require a lot of extensive attention to detail.
- It may not be the road you choose to take.
- Today's measure of success is keeping your herd afloat.
- **GENETICS** is one of the tools that is making a big difference.

Good genetics
in a herd
means.....

Better cows.

Higher revenue.

Lower cost of production.



Darwin might say to
today's Holstein
breeders.

Hang in there. It's a
heck of a ride

The role of today's breeder is
still much the same as
always.

Make genetics work for you.

