Animal Breeding Systems
Dairy and Beef

Jay Weiker
President
National Association of Animal Breeders
Certified Semen Services

CSS® CERTIFIED SEMEN SERVICES

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Breeding Companies

www.absglobal.com

www.accelgen.com

www.altagenetics.com

www.crinet.com

www.selectsires.com

plus many other smaller companies

Dairy

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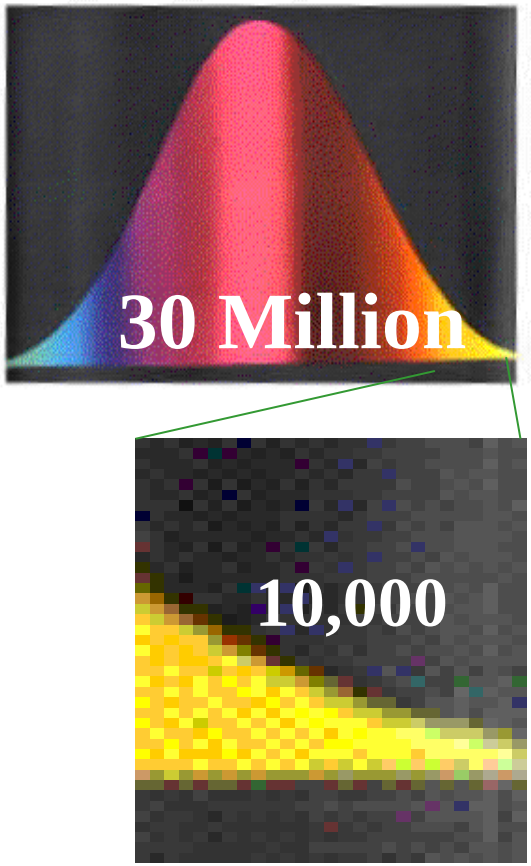
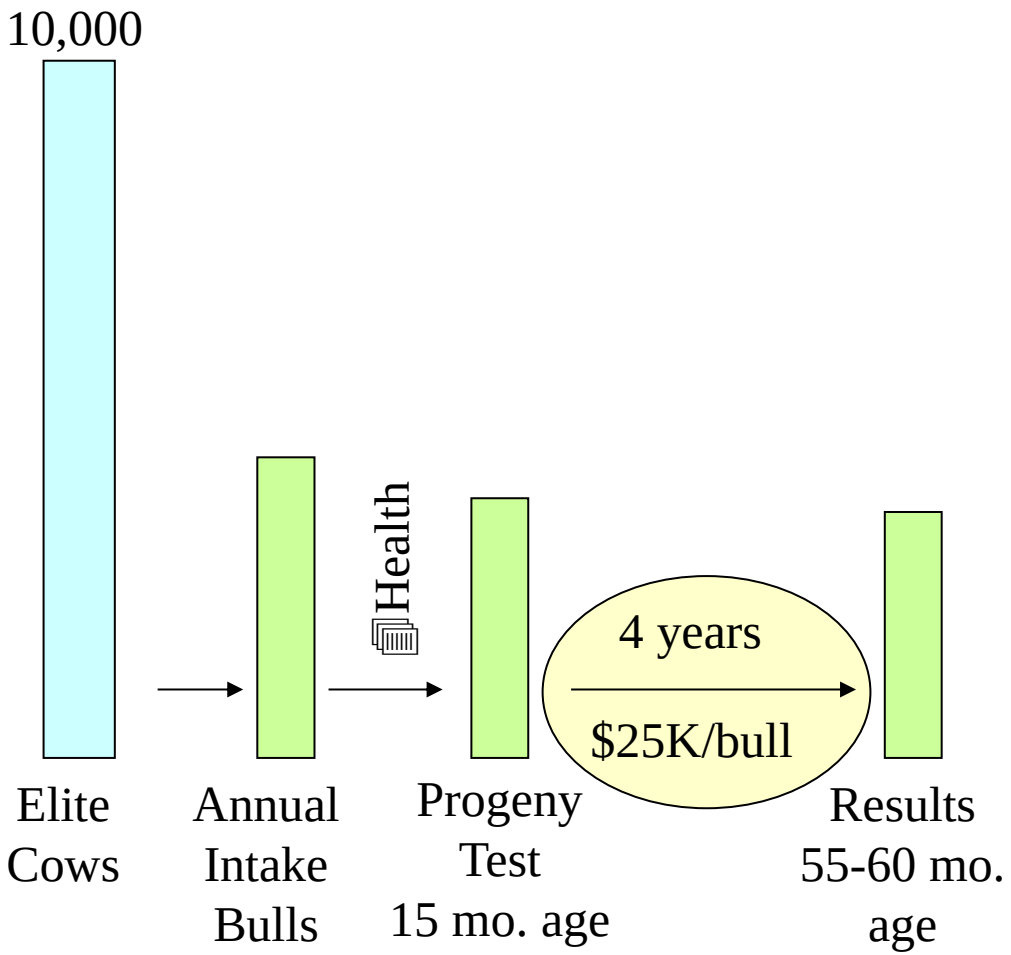
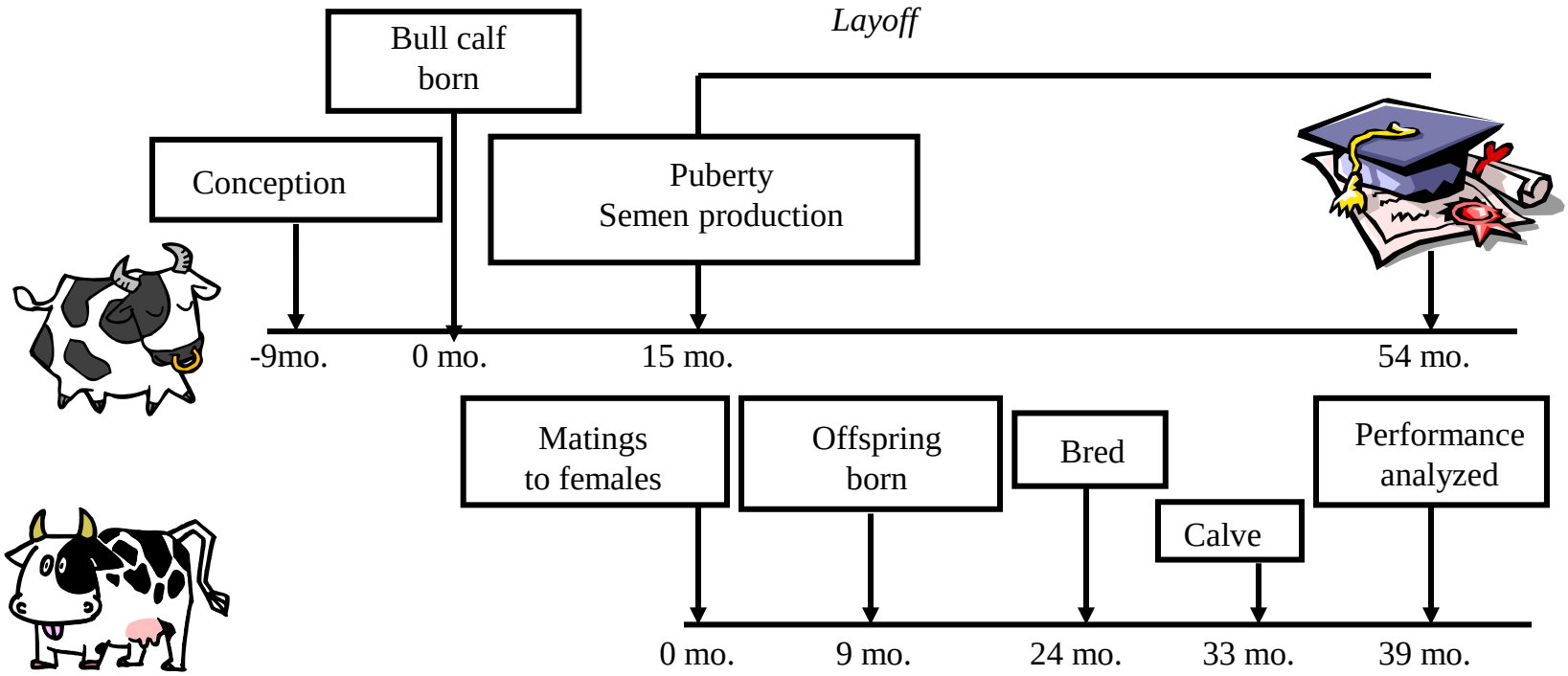
Finding the Best Genetics

Cows, US & Europe

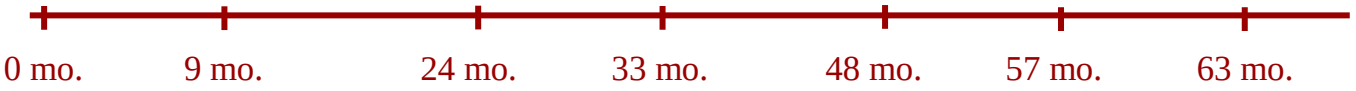




The Genetic Time Line for AI Companies



Cumulative Time Line



Growth of markers and animals

Year	Markers	Animals	Research partners
1991-2004	367	1,415	USDA, Illinois, Israel (DNA from USA, CAN)
2007-2009	38,416	16,646	USDA, Missouri, Canada, Illumina
2011-2013	636,967	161,341	Added Italy, United Kingdom, high density
2012-2015	61,013	1,000,000	Added Interbull (BSW) and Denmark (JER)
2015-future	39,700,000	1,577	Worldwide exchange in Australia

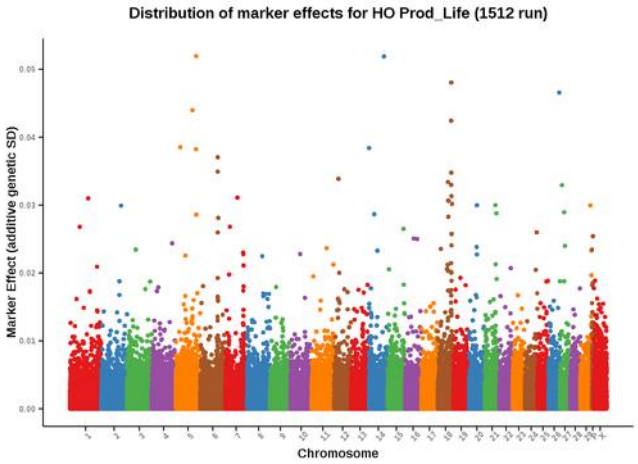
Genotypes by continent

Continent	Genotypes	Countries
N. America	776,473	USA, CAN
W. Europe	86,678	AUT, BEL, CHE, DEU, DNK, ESP, FIN, FRA, GBR, IRL, ITA, LUX, NLD, NOR, SWE
E. Europe	2,169	BLR, CZE, HUN, POL, ROU, RUS, SRB, SVK, SVN
Oceania	6,282	AUS, NZL
L. America	8,130	ARG, BRA, CHL, COL, CRI, ECU, GTM, MEX, PER, URY
Asia	772	CHN, IND, IRN, JPN, KAZ, SAU, THA, TWN
Africa	303	ZAF, ZWE

Genomic Evaluation Process

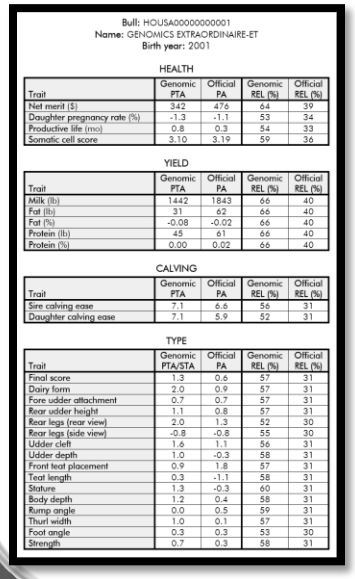
Build a Reference Population
30,000 AI Bulls
250,000 Cows w/records

Estimate 60,000 SNP Effects



DNA Test Young Animals

Compute Genomic Evaluations then Make Selection Decisions



Bull: HOUSA000000000001
Name: GENOMICS EXTRAORDINAIRE-ET
Birth year: 2001

HEALTH

Trait	Genomic PTA	Official PA	Genomic REL (%)	Official REL (%)
Net merit ($)	342	476	64	39
Daughter pregnancy rate (%)	-1.3	-1.1	53	34
Productive life (mo)	0.8	0.3	54	33
Somatic cell score	3.10	3.19	59	36

YIELD

Trait	Genomic PTA	Official PA	Genomic REL (%)	Official REL (%)
Milk (lb)	1442	1843	66	40
Fat (lb)	31	62	66	40
Fat (%)	-0.08	-0.02	66	40
Protein (lb)	45	61	66	40
Protein (%)	0.00	0.02	66	40

CALVING

Trait	Genomic PTA	Official PA	Genomic REL (%)	Official REL (%)
Sire calving ease	7.1	6.6	56	31
Daughter calving ease	7.1	5.9	52	31

TYPE

Trait	Genomic PTA/STA	Official PA	Genomic REL (%)	Official REL (%)
Final score	1.3	0.6	57	31
Dairy form	2.0	0.9	57	31
Fore udder attachment	0.7	0.7	57	31
Rear udder height	1.1	0.8	57	31
Rear legs (rear view)	2.0	1.3	52	30
Rear legs (side view)	-0.8	-0.8	55	30
Udder cleft	1.6	1.1	56	31
Udder depth	1.0	-0.3	58	31
Front teat placement	0.9	1.8	57	31
Teat length	0.3	-1.1	58	31
Stature	1.3	-0.3	60	31
Body depth	1.2	0.4	58	31
Rump angle	0.0	0.5	59	31
Thurl width	1.0	0.1	57	31
Foot angle	0.3	0.3	53	30
Strength	0.7	0.3	58	31

Select Sires Sire Development Model

Partnership of Breeders and ART

XX%

Contract and screen many bull calves on farms in North America

Contract Herds for Elite Genomic Animals
North American Herds

YY%

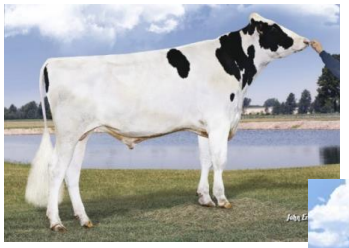
Embryos purchased(genomic tested dams)
North American & European Breeders

ART Program in US
Select Sires Ownership of Female Lines

Six Generations of AI Sires

7HO8081 PLANET
Born **March 2003**
+2092 TPI Dtr Proven Sire

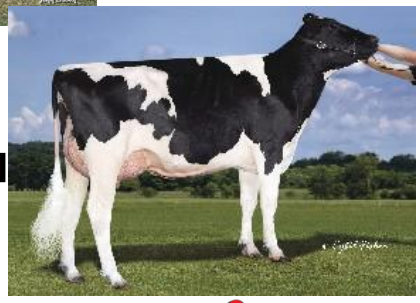
7HO10721 BOOKEM
Born **Feb. 2009**
5 yr. 11 mo. younger than sire
+2341 TPI Dtr Proven Sire



7HO11477 MCCUTCHEN
Born **Nov. 2010**
1 yr. 9 mo. younger than sire
+2486TPI Dtr Proven Sire

7HO12198 KINGBOY
Born **Oct. 2012**
+2527 GTPI

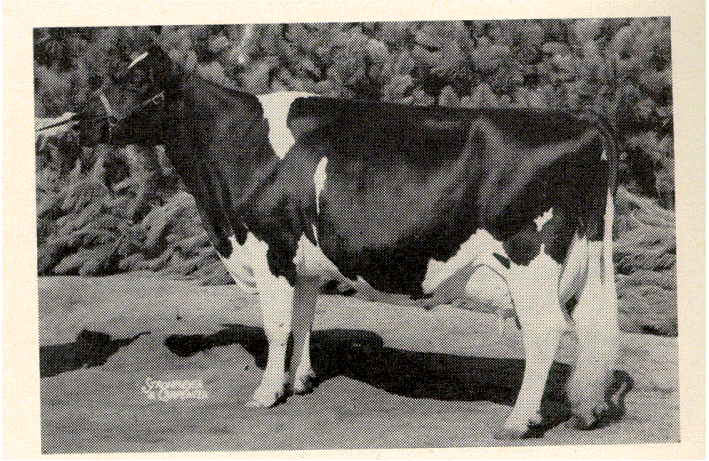
7HO13660 SSI 7450
Born Apr. 16, 2016
+2615 GTPI
Malibu x Yoder



Dam of
7HO13273 MALIBU
Born **Jul. 2014**
+2530 GTPI

The US Holstein Cow

100 years ago



50 years ago

Modern Cow

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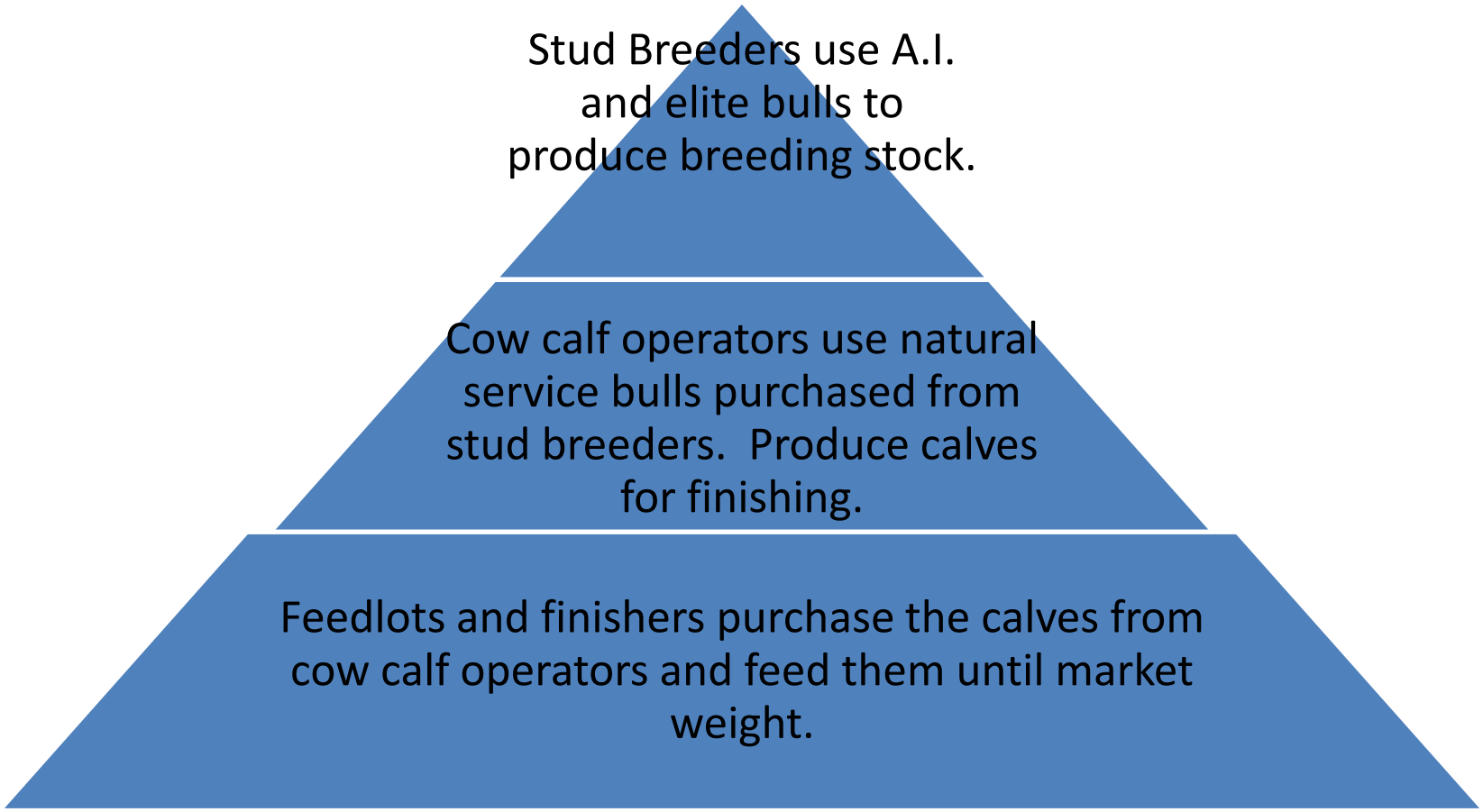
Jerseys are changing the color of the U.S. dairy industry.

NAAB NATIONAL ASSOCIATION OF ANIMAL BREEDERS Know Your Semen Supplier

Beef Breeding Programs



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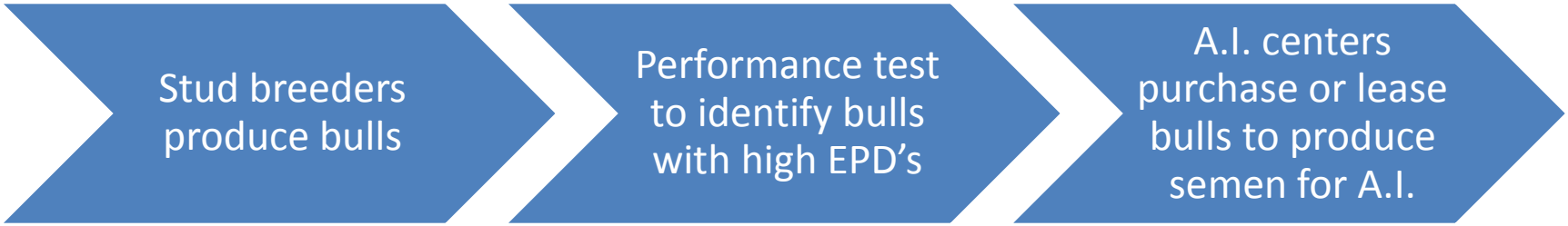
Beef Bulls for A.I.



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Beef Bulls for A.I.

- The vast majority of beef bulls for A.I. are supplied from breeders.
- Some A.I. centers are starting to own females to produce their own bulls.
- Low percentage of cows in the USA are bred A.I.
- Europe uses higher rate of A.I. due to smaller herd size.
- Japan and Korea have a traditional beef breeds (Wagyu beef or Korean Yellow Beef) and A.I. would be used more extensively.

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Commercial Beef Producers

- Large commercial beef operations in USA, Canada, Brazil, Australia etc. still utilize natural service for the majority of their breeding.
- Synchronization programs enable commercial producers to breed a portion of their herd to A.I.

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Acknowledgement on slides and material provided:

Select Sires

ABS Global

Accelerated Genetics

CDCB

AIPL

Jersey Association of America

Holstein Association of America

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