

"Integrating DNA information into beef cattle production systems"

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United States
Department of
Agriculture

National Institute
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Agriculture



Objectives:

“Integrating DNA information into beef cattle production systems”

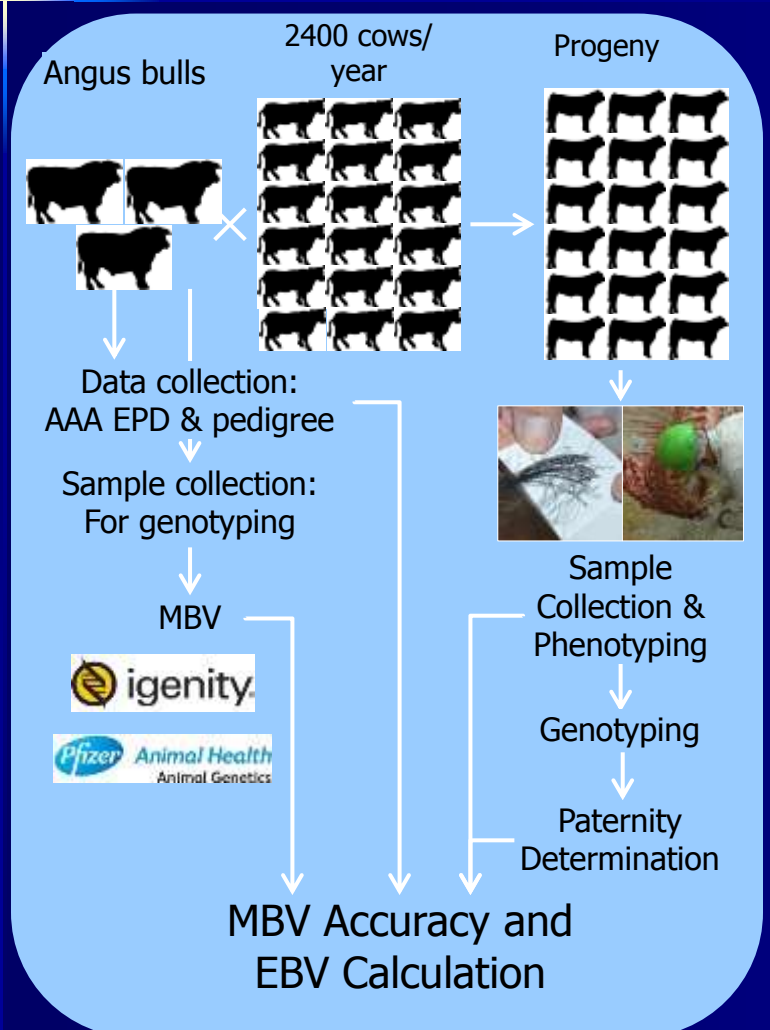
- The overall objective of this project is to develop a genotyped, phenotyped population to enable the evaluation and/or assessment of different DNA-enabled approaches for predicting the genetic merit of herd sires on commercial beef ranches.
- The research objective is to compare the current means of genetic prediction of commercial ranch bulls (i.e. breed-based expected progeny differences) with DNA-assisted genetic predictions, and "commercial ranch" genetic evaluations based on the performance of their offspring under field conditions.
- An additional objective is to determine the costs and benefits associated with the application of DNA-based technologies on commercial beef operations



California Commercial Ranch Project

National Research Initiative competitive grant no. 2009-55205-05057

“Integrating DNA information into beef cattle production systems”
from the USDA National Institute of Food and Agriculture.



Four ranches:

- Cowley (900 cows)
- Kuck (500 cows)
- Mole-Richardson (700 cows)
- UC Davis (300 cows)

By 2013, 7000 progeny records of over 125 bulls will have been collected for conducting independent assessment of genomic predictions derived by a variety of commercial and research entities





Work flow and collaborators



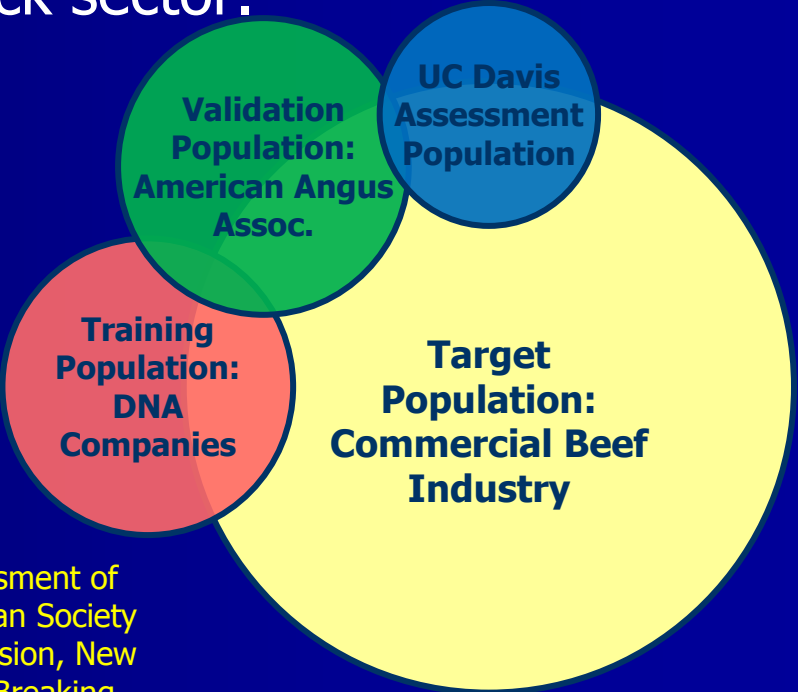
- DNA on all bulls goes for 50K whole genome scan – collaboration with **Jerry Taylor (MO)** and **John Pollak (Meat Animal Research Center (NE))**
- Molecular breeding value (MBV) prediction of genetic merit based on MARC training data set – collaboration with **Dorian Garrick (IA)** and **Mark Thallman, U.S. Meat Animal Research Center (NE)**
- Ranch data including sire groupings, birth dates and weaning weights on all calves, all EIDed, and “DNAed” for parentage determination – collaboration with **Dan Drake and producers (CA)**
- Steer feedlot in weights, treatments, and carcass traits (Hot weight, grading information and meat sample collected in the processing plant – collaboration with **Harris Ranch (CA)**
- Compile data and compare three sources of genetic estimates: breed EPDs (bEPDs), commercial ranch EPDs (rEPDs), and MBVs, **Kristina Weber, UC Davis, PhD student**

Independent Assessment of Commercial Tests for Beef Cattle Production Traits



The objective of this study was to estimate the genetic correlation between commercial genomic predictions and target traits based on ranch genetic evaluations of herd bulls sourced from the Angus seedstock sector.

	Trait				
	WW	ADG	HCW	RE	MS
# bulls	114	114	114	114	114
# progeny	1734	341	455	455	455
Avg # progeny per bull	60	12	16	16	16



Weber, KL, and A.L. Van Eenennaam. Independent assessment of commercial DNA tests for beef cattle production traits. American Society of Animal Science Annual Meeting Late Breaking Abstracts Session, New Orleans, LA, 7/11/11 American Society of Animal Science Late Breaking Abstract, July 11, 2011, New Orleans, LA



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