



THE SLICK GENE IN HOLSTEIN CATTLE IMPROVES THERMOTOLERANCE

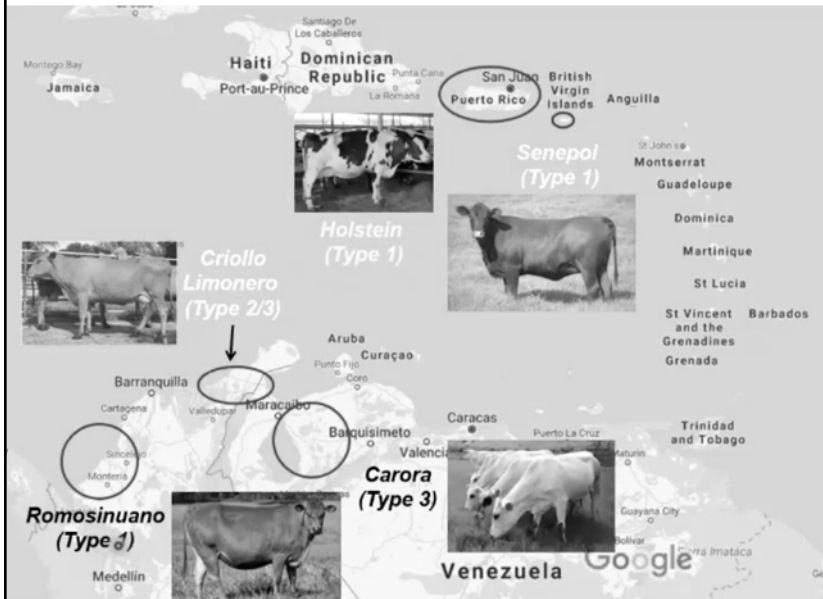
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UNIVERSITY of FLORIDA

1

WHERE DID IT COME FROM?



1st identified in Senepol (a composite)

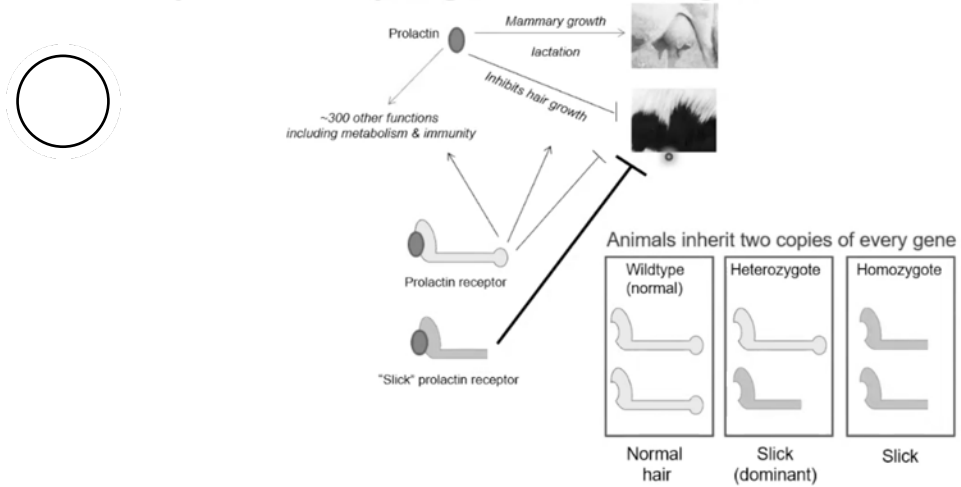
There are now 6 different types of mutated prolactin receptors that cause shorter hair

Holstein cattle in Puerto Rico have type 1, it is not known how that gene was introduced or persisted

2

WHAT IS IT?

The SLICK1 mutation is a mutation in the prolactin receptor gene that causes growth of short hair



3

HOW DID IT GET IN HOLSTEINS?



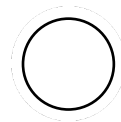
Freda Pirkle-Carey
born on Pine Valley Dairy, Plant City



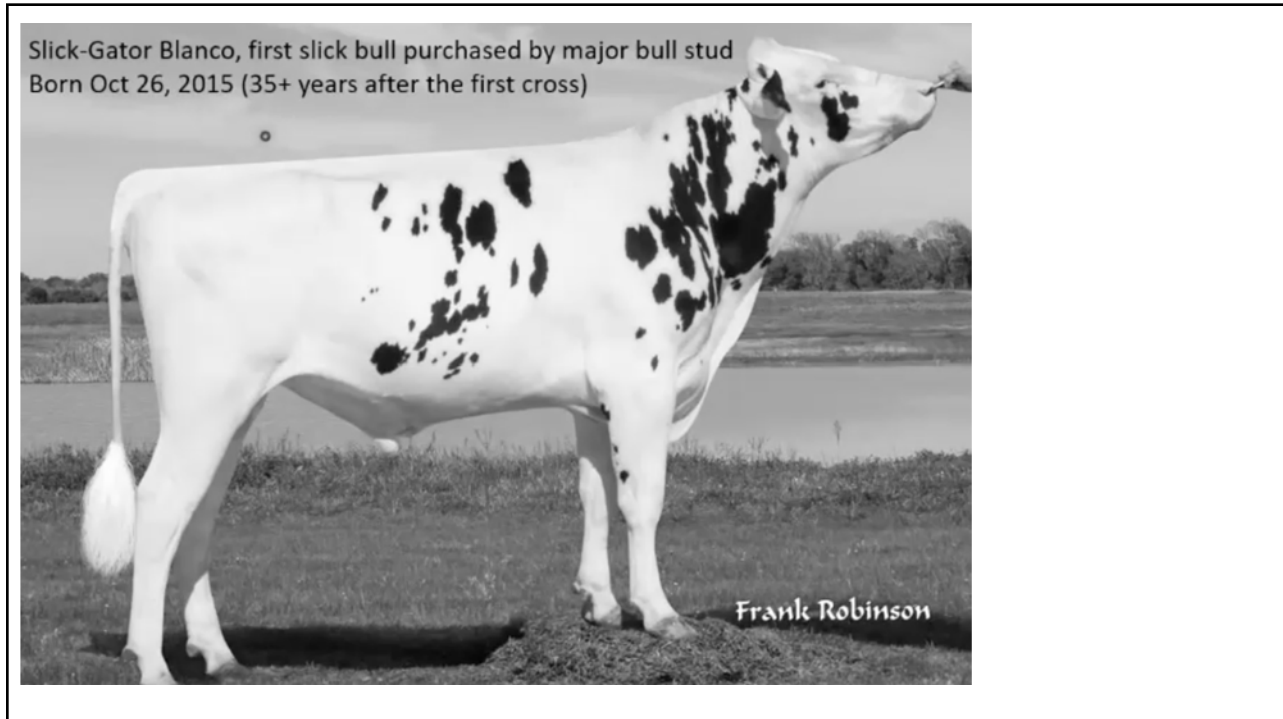
Late 1980s – Pine Valley Dairy obtained a tank of semen with some free Senepol semen as a bonus



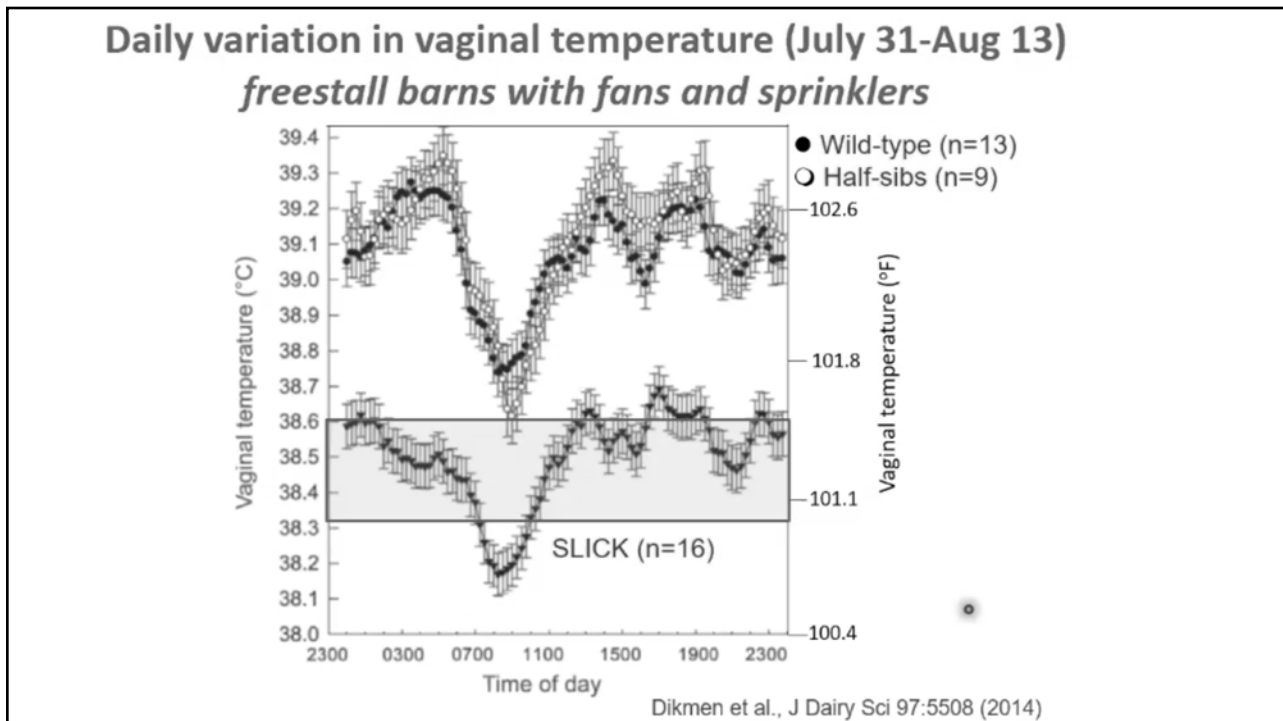
Tim Olson, Professor Emeritus of Genetics, University of Florida



4

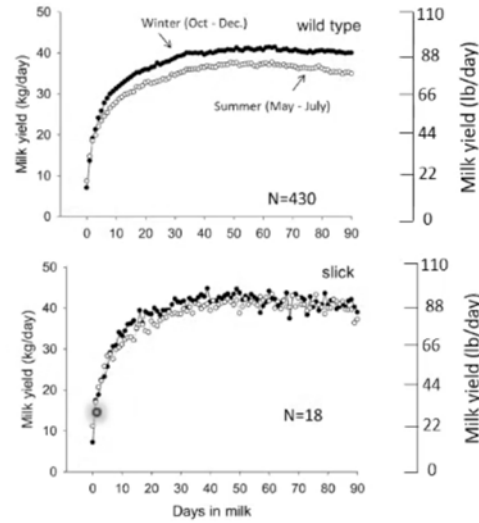


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6

The SLICK haplotype reduces seasonal variation in milk yield for cows in freestall barns

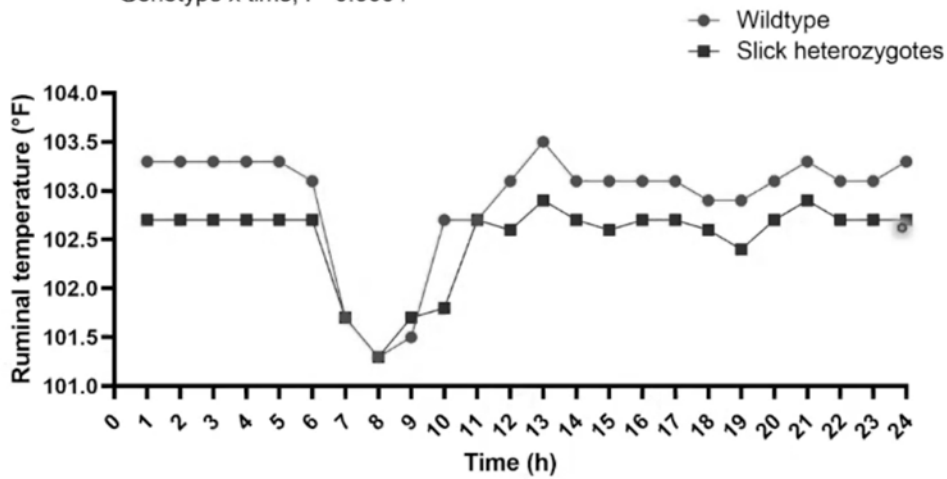


Dikmen et al., J Dairy Sci 97:5508 (2014)

7

Ruminal temperatures throughout the day in slick and wildtype Holstein heifers

Genotype, $P=0.0791$
 Time, $P<0.0001$
 Genotype x time, $P=0.0004$



8



Phenotype: Shorter hair, especially on the head, poll, neck and withers.
 Wrinkles on the head (similar to a Senepol).
 Gene is dominant, so physical characteristics are the same for homozygous and heterozygous animals.

9

WHERE IS IT MOST EFFECTIVE?

Multi-state, multi-farm experiment to test the effects of the presence of the SLICK1 allele in Holsteins from birth to lactation

California: four dairy farms located in the San Joaquin Valley (Central Valley)

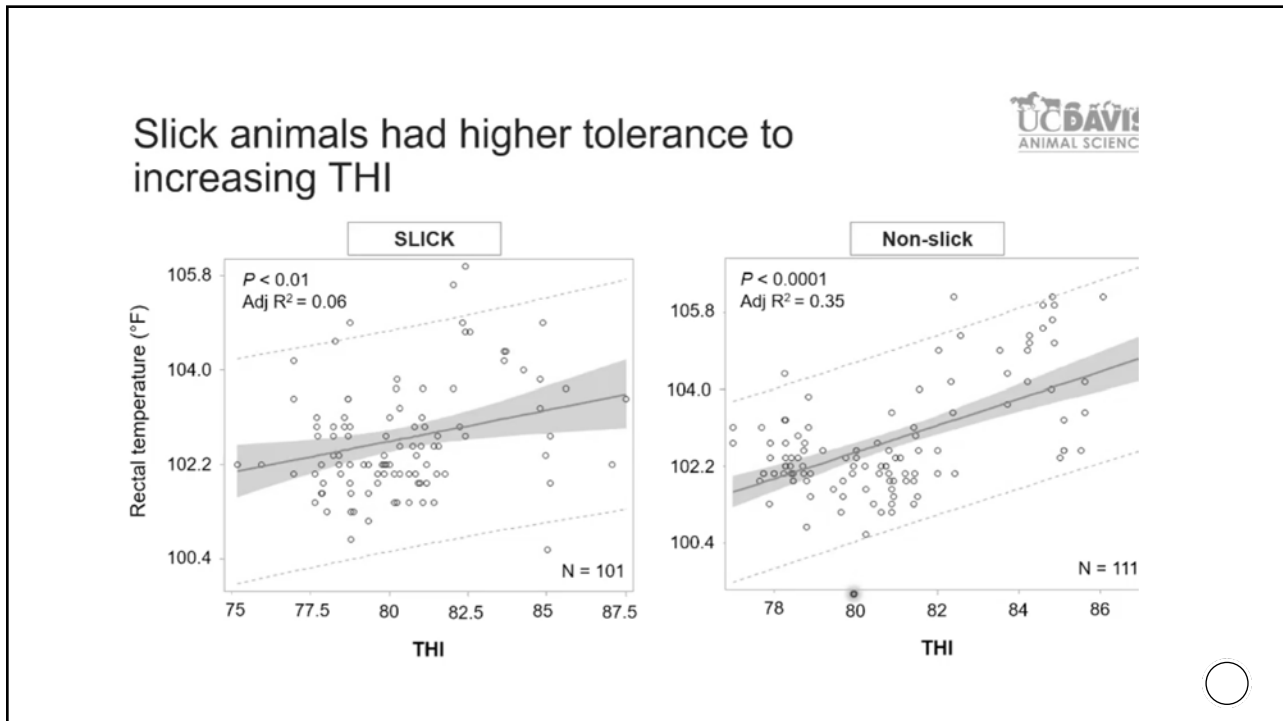
Florida: three dairy farms located in South Florida (Okeechobee county)

Lactating Holsteins were inseminated with semen from two sires heterozygous for the SLICK1 mutation

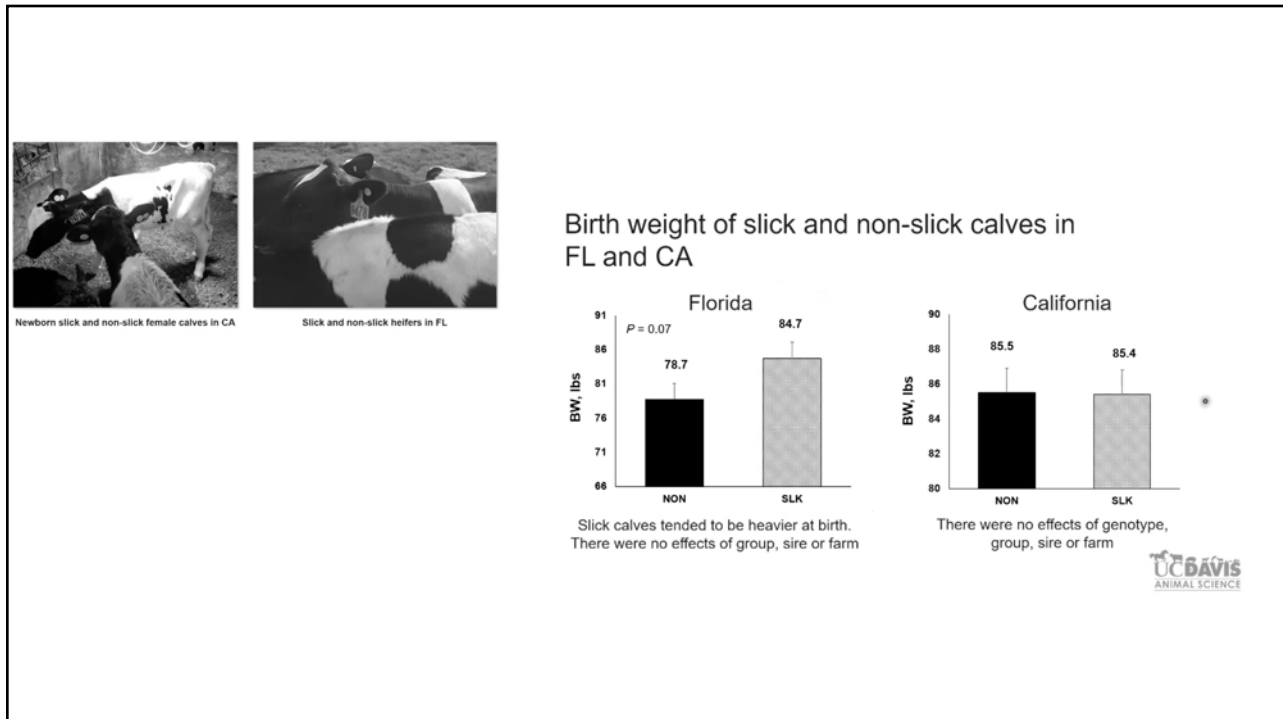
Group 1: Calves born between Nov 2019 - Mar 2020

Group 2: Calves born between June - July 2020

10

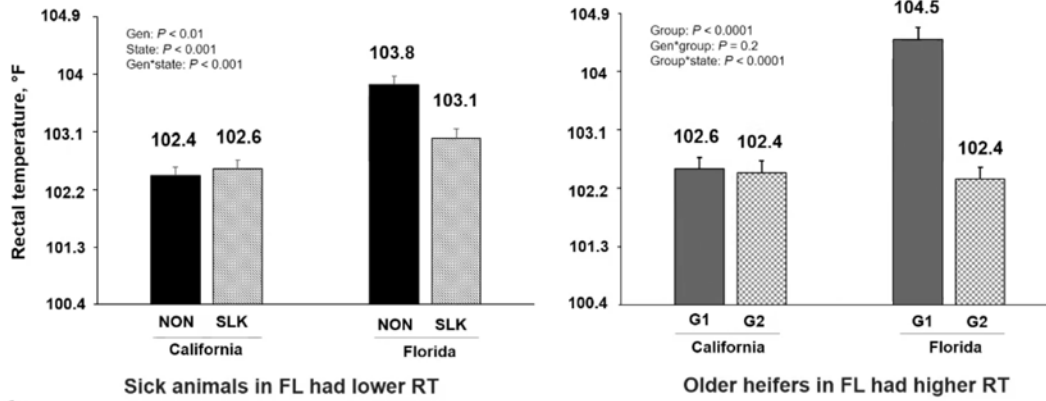


11



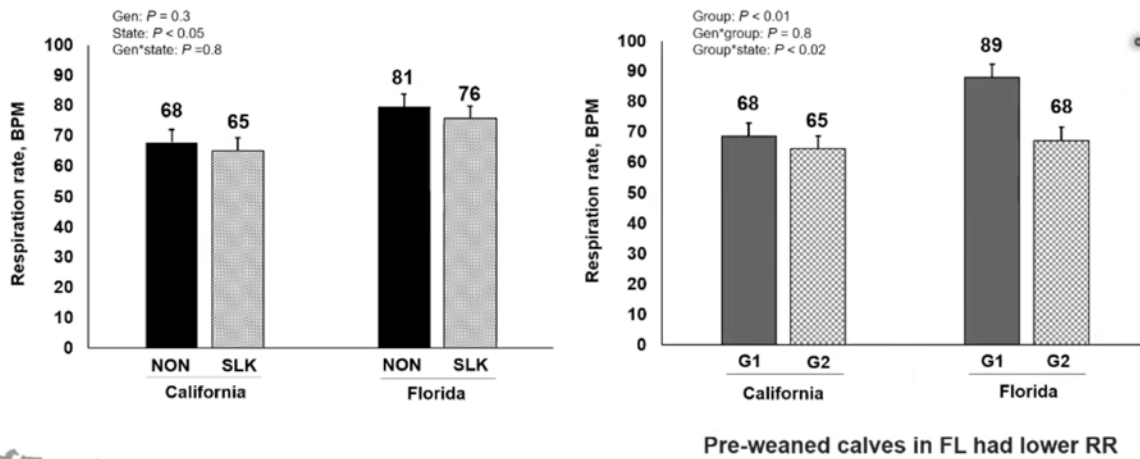
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Slick heifers had lower rectal temperature in FL but not in CA



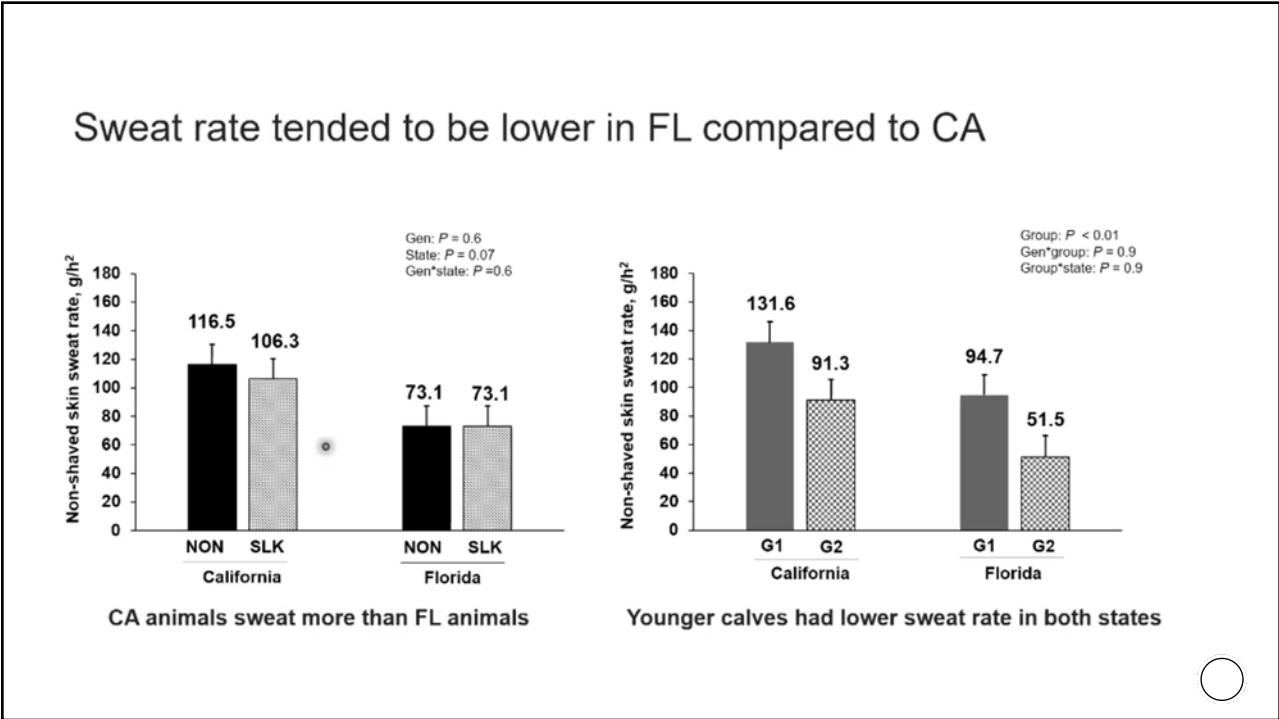
13

Respiration rate was similar in both groups



14





15

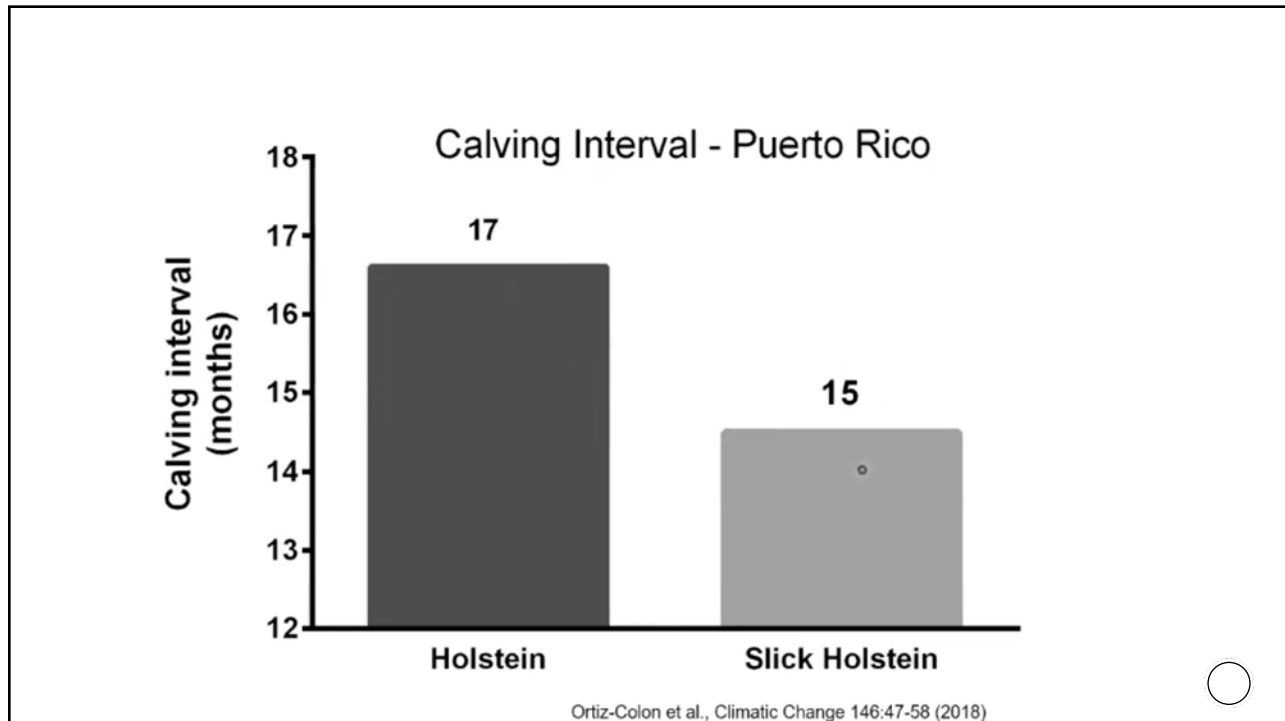
WHAT'S NEXT?

Milk Production

Reproduction

Improve Bulls

16



17


Slick Holstein bulls with semen currently available

Company	Bull	Slick Gene	NM\$	TPI	Milk	DPR
Select Sires	Melarry SSI Sedona Slick-ET	Heterozygote	723	2516	504	1.4
CRV	Iceblue Doctor Heersche-SI	Heterozygote	614	2472	1038	0
Select Sires	Badger SSI Slick Solar-P-ET	Heterozygote	599	2479	338	2.5
Select Sires	Badger SSE Sonoma Slick-ET	Heterozygote	597	2511	-166	4.1
Select Sires	Melarry Ssi Seneca Slick-ET	Heterozygote	567	2360	1177	-1.7
ST Genetics	Stgen Rolly-ET	Heterozygote	520	2344	-19	2.6
Thermoregulatory Genetics	Slick-Gator Eliab ET	Heterozygote	469	2443	122	2
University of Florida	Slick-Gator Lone Ranger	Heterozygote	460	2224	13	2.7
Thermoregulatory Genetics	TTM Iceblue George SLICK-ET	Heterozygote	375	2334	1061	-0.8
Thermoregulatory Genetics	C-HAVEN Iceblue Kentucky-ET	Heterozygote	368	2384	34	2.2
ST Genetics	Slick-Gator Blanco	Heterozygote	107	2028	-193	1.1
A Legacy Genetics	EI-Remanso Sinba-Pln-Red	Homozygote	-208	-1082	-1082	1.9


These bulls are the result of 35+ years of breeding. Genetic insertion will speed up this process and allow bulls to be produced that can compete with today's net merit standards.

18


Acknowledgements




Serdal Dikmen



Tim Olson	UF Anim Sci
Froylan Sosa	UF Anim Sci
Thiago Amaral	UF Anim Sci
Sofia Ortega	UF Anim Sci
Elizabeth Jannaman	UF Anim Sci
Jose Santos	UF Anim Sci
Geoff Dahl	UF Anim Sci
Owen Rae	UF Vet School
Daniel Ornan Martinez	UF Vet School
João Bittar	UF Vet School
Colleen Larson	UF/IFAS Extension
Miguel Torrado	UF Dairy Unit
Serdal Dikmen	Uludag University
Anna Denicol	UC-Davis
Tad Sonstegard	Acceligen
Patrick Blondin	Semex




Froylan Sosa and Colleen Larson




Acknowledgments


MS student Allie Carmickle



- Collaborating dairies
- Co-PI: Peter Hansen – UF
- Collaborator: Colleen Larson – UF/IFAS
- Froylan Sosa – UF
- McKenzie Halmon - UF
- Laura Jensen – UF
- Fernanda Ferreira – UC Davis
- Jessica Pereira – UC Davis
- Daniela Bruno – UCCE ANR




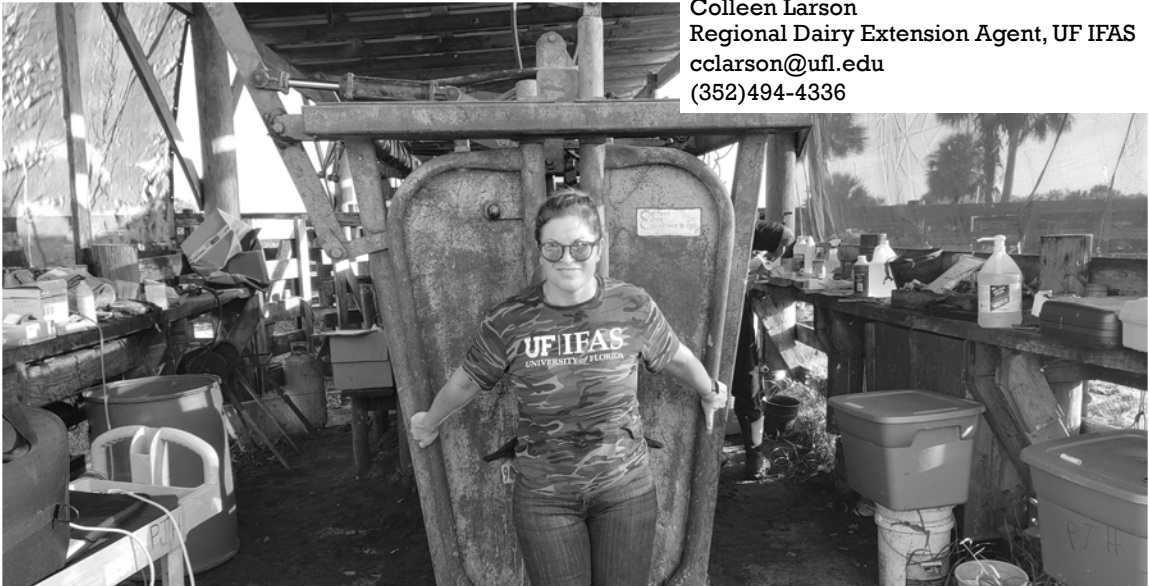
L.E. "Red" Larson Endowment



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