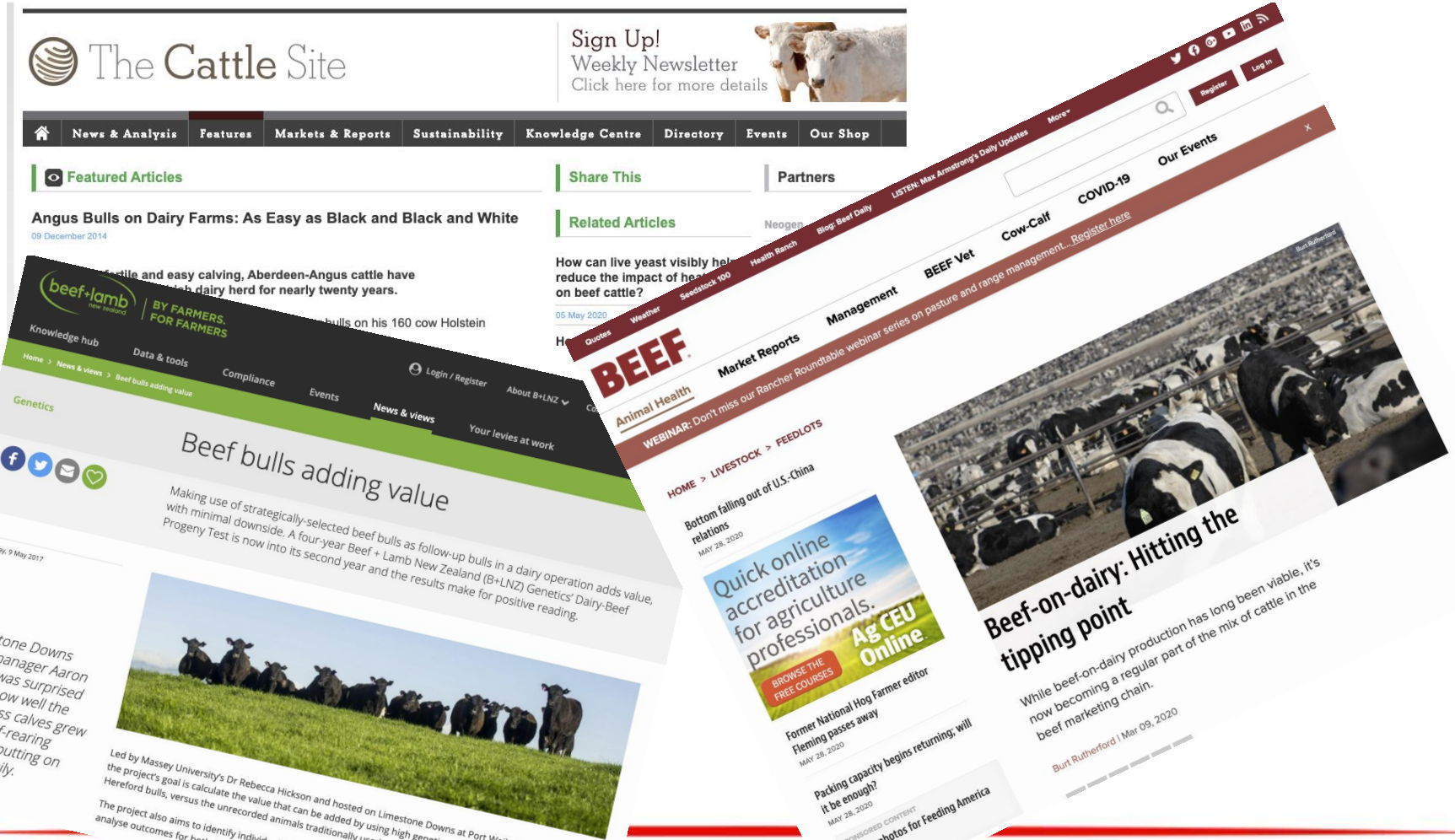
Indexes to select Angus sires for use on dairy cows

Stephen Miller – Angus Genetics Inc.
Jason Archer – AbacusBio Ltd

ANGUS
THE BUSINESS BREED

abacusbio.
BRIDGING SCIENCE & BUSINESS

Beef on dairy – a growing market



ANGUS
THE BUSINESS BREED

abacusbio.
BRIDGING SCIENCE & BUSINESS

Understanding the US beef x dairy system and issues

Study tour in December

- Packers
- Feeders
- Dairy operations
- Calf ranches
- USDA dairy genetic evaluation scientists

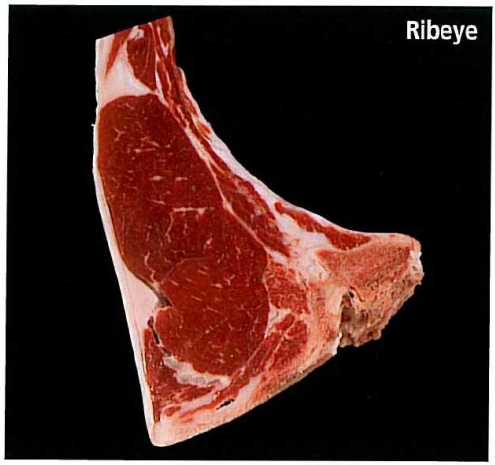
Key messages

Dairy sector

- Calving ease a priority for dairy sector

Feed yard

- Growth and conversion in feed yard is an issue for Angus x Jersey
  - Longer on feed, finished at lighter weights
- Need to look like beef animals
  - Tall and narrow don't fit



Dairy Type

Processor

- Carcass length can be a problem in Angus x Holstein
- Sunken strips can be a problem – more-so in Angus x Jersey
- Quality grade is generally acceptable

Wish-lists

- Calving ease a priority
- Avoid bulls which are too tall (height penalty)
- Extra muscle desirable

"Moderate framed, easy calving, muscular bull, with marbling prioritized over growth"

- Calving ease a priority
- Need additional growth
- Need additional muscle
- Height not an issue

"High growth, easy calving, very muscular bull, with growth prioritized over marbling"

$Value – birth to carcase

	$M	$B
Calving Ease	✔	
Growth to weaning	✔	
Milk	✔	
Mature weight	✔	
Fertility	✔	
Docility	✔	
Foot score	✔	
Post-weaning growth		✔
Post-weaning intake		✔
Carcase weight		✔
Yield Grade		✔
Quality Grade		✔

$Value – birth to carcase

	$M	$B	$AxH	$AxJ
Calving Ease	✓		✓	✓
Growth to weaning	✓		✓	✓
Milk	✓			
Mature weight	✓			
Fertility	✓			
Docility	✓			
Foot score	✓			
Post-weaning growth		✓	✓	✓
Post-weaning intake		✓	✓	✓
Carcase weight		✓	✓	✓
Yield Grade		✓	✓	✓
Quality Grade		✓	✓	✓

$Value – birth to carcase

	$M	$B	$AxH	$AxJ
Calving Ease	✓		✓	✓
Growth to weaning	✓		✓	✓
Milk	✓			
Mature weight	✓			
Fertility	✓			
Docility	✓			
Foot score	✓			
Post-weaning growth		✓	✓	✓
Post-weaning intake		✓	✓	✓
Carcase weight		✓	✓	✓
Yield Grade		✓	✓	✓
Quality Grade		✓	✓	✓

Utilises economics from USA Net Merit assumptions

$Value – birth to carcase

	$M	$B	$AxH	$AxJ
Calving Ease	✓		✓	✓
Growth to weaning	✓		✓	✓
Milk	✓			
Mature weight	✓			
Fertility	✓			
Docility	✓			
Foot score	✓			
Post-weaning growth		✓	✓	✓
Post-weaning intake		✓	✓	✓
Carcase weight		✓	✓	✓
Yield Grade		✓	✓	✓
Quality Grade		✓	✓	✓

Growth from birth to slaughter

$Value – birth to carcase

	$M	$B	$AxH	$AxJ
Calving Ease	✓		✓	✓
Growth to weaning	✓		✓	✓
Milk	✓			
Mature weight	✓			
Fertility	✓			
Docility	✓			
Foot score	✓			
Post-weaning growth		✓	✓	✓
Post-weaning intake		✓	✓	✓
Carcase weight		✓	✓	✓
Yield Grade		✓	✓	✓
Quality Grade		✓	✓	✓

Re-parameterized for dairy beef system
- Slower growth
- Poorer conversion
- Less fat cover
- Fed for longer
- Slaughtered lighter

$Value – birth to carcase

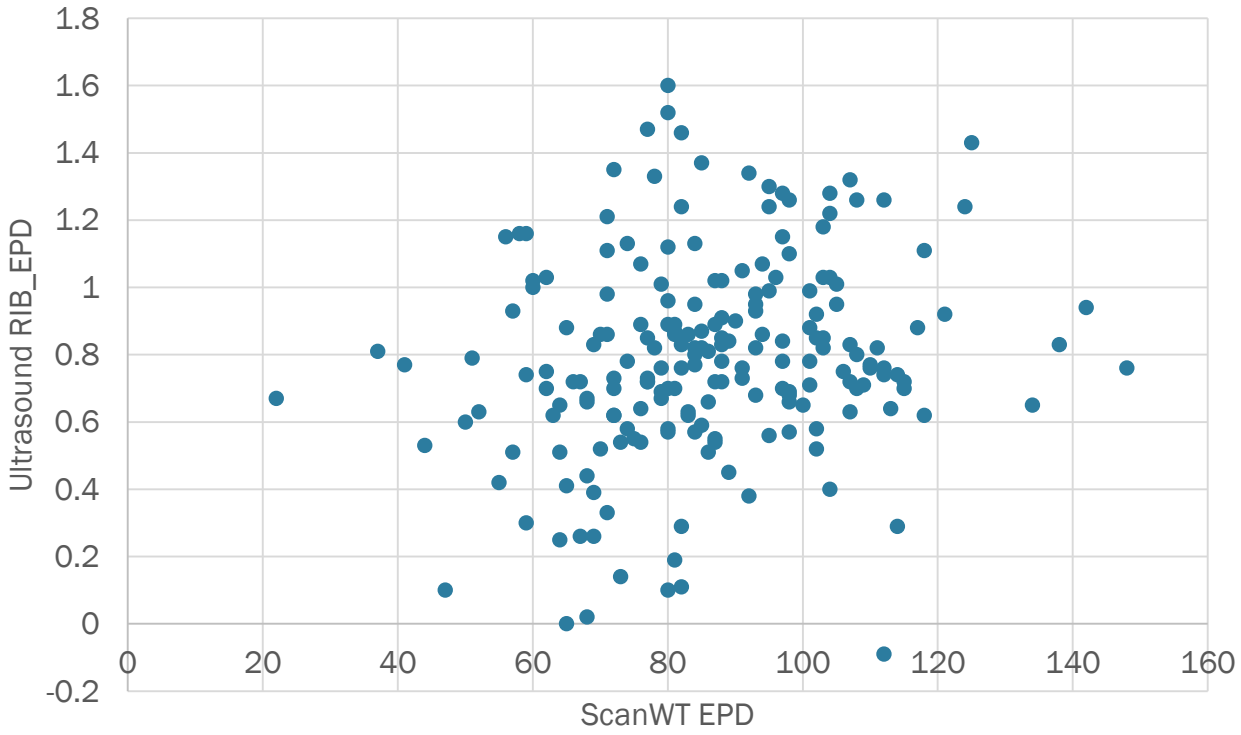
	$M	$B	$AxH	$AxJ
Calving Ease	✓		✓	✓
Growth to weaning	✓		✓	✓
Milk	✓			
Mature weight	✓			
Fertility	✓			
Docility	✓			
Foot score	✓			
Post-weaning growth		✓	✓	✓
Post-weaning intake		✓	✓	✓
Carcase weight		✓	✓	✓
Yield Grade		✓	✓	✓
Quality Grade		✓	✓	✓
Muscling			✓	✓
Height			✓	

New traits added to penalize bulls with poor muscling or excessively tall

ANGUS THE BUSINESS BREED

abacusbio. BRIDGING SCIENCE & BUSINESS

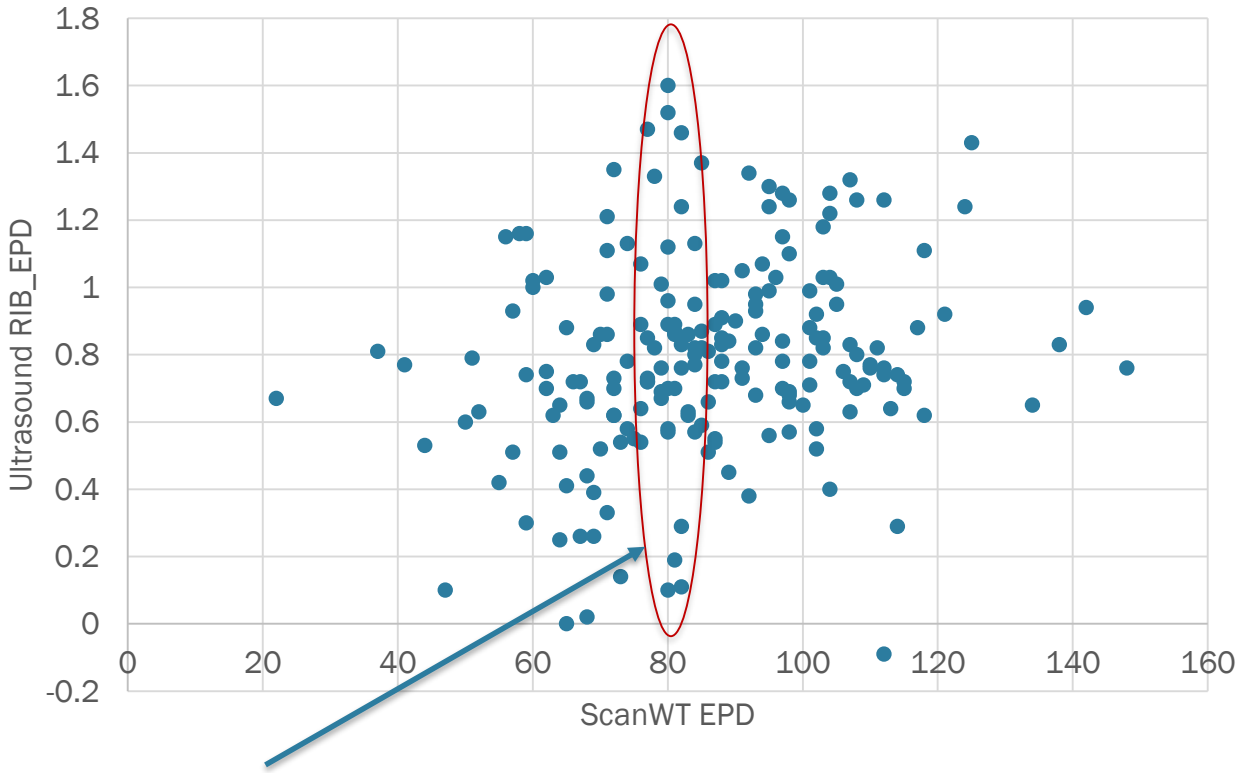
Determination of Muscling



ANGUS
THE BUSINESS BREED

abacusbio.
BRIDGING SCIENCE & BUSINESS

Determination of Muscling

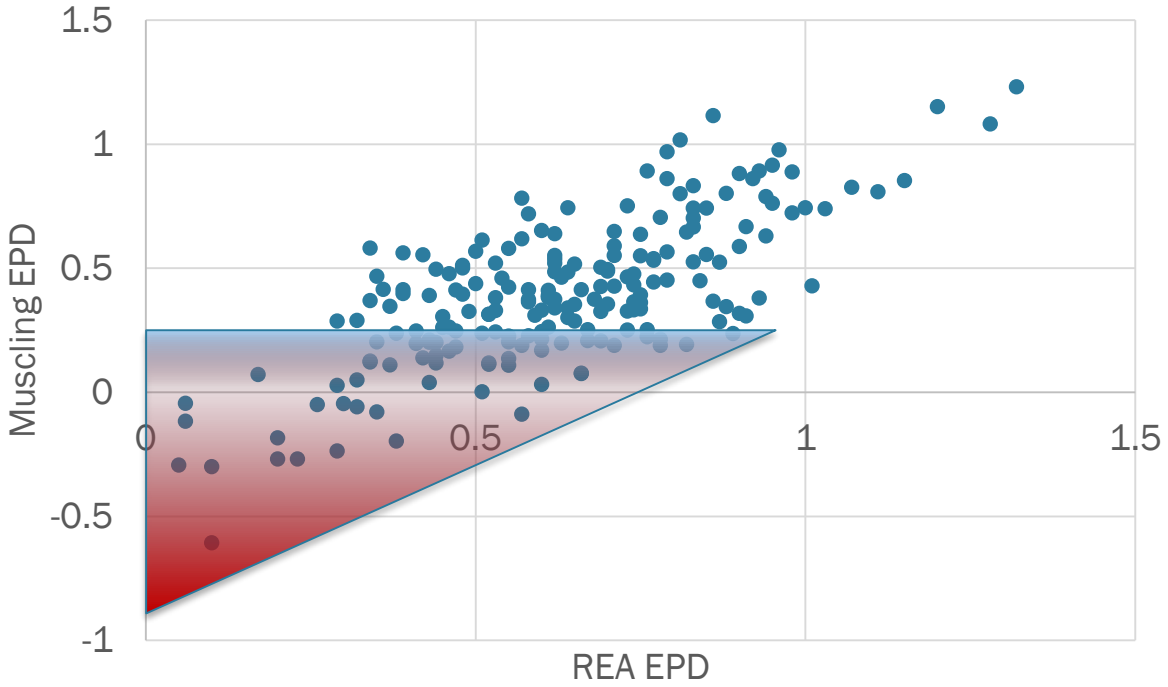


These animals all have similar Weight EPD, but vastly different Ultrasound RIB-EYE Area EPD

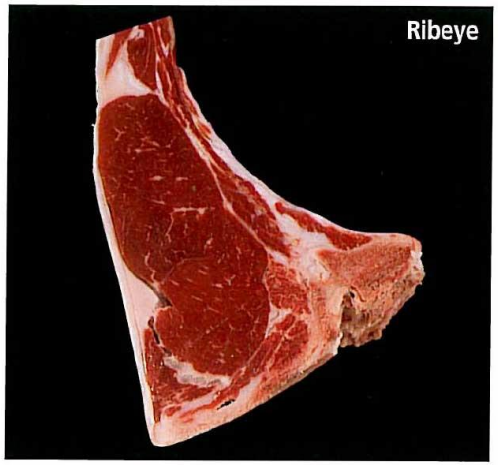
ANGUS
THE BUSINESS BREED

abacusbio.
BRIDGING SCIENCE & BUSINESS

REA EPD and Muscling



Poor muscling will lead to increased percent Sunken Strips



Dairy Type

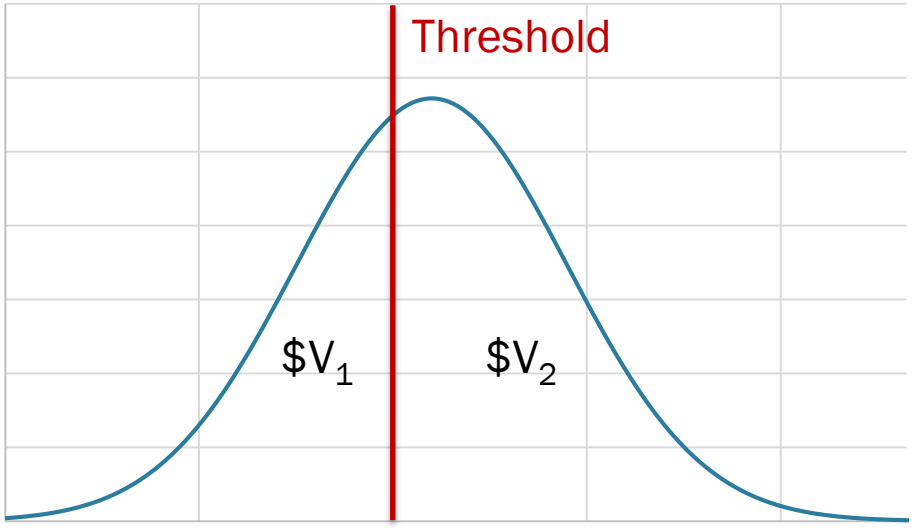
Sunken Strip discount is $20/CWT

Sunken Strip frequency 3X higher in AxJ vs. AxH
Creates a non-linear economic emphasis

ANGUS
THE BUSINESS BREED

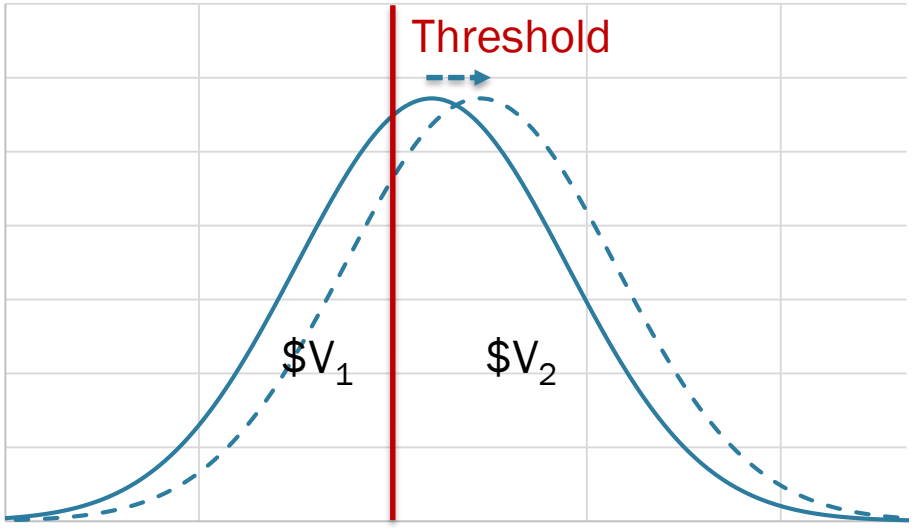
abacusbio.
BRIDGING SCIENCE & BUSINESS

Modelling thresholds



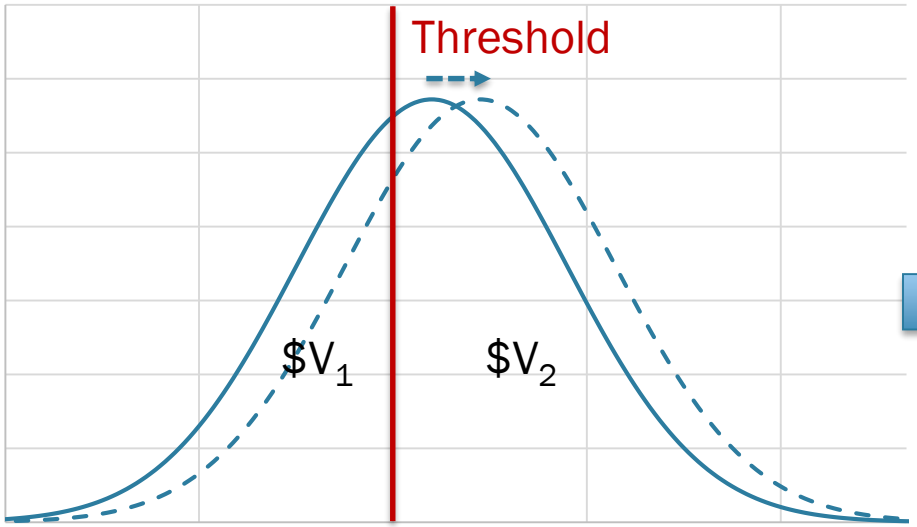
Rib Eye Area distribution of progeny

Modelling thresholds

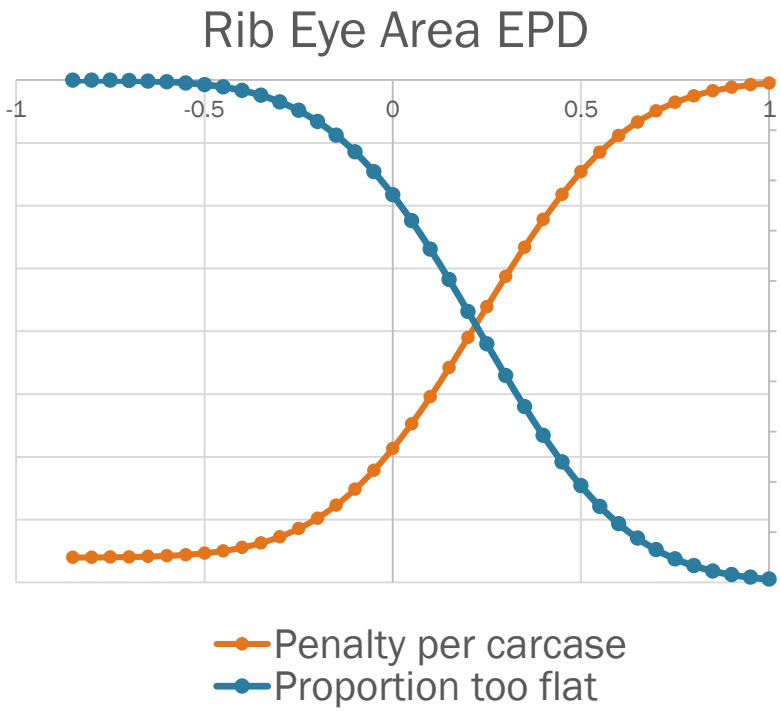


Rib Eye Area distribution of progeny

Modelling thresholds



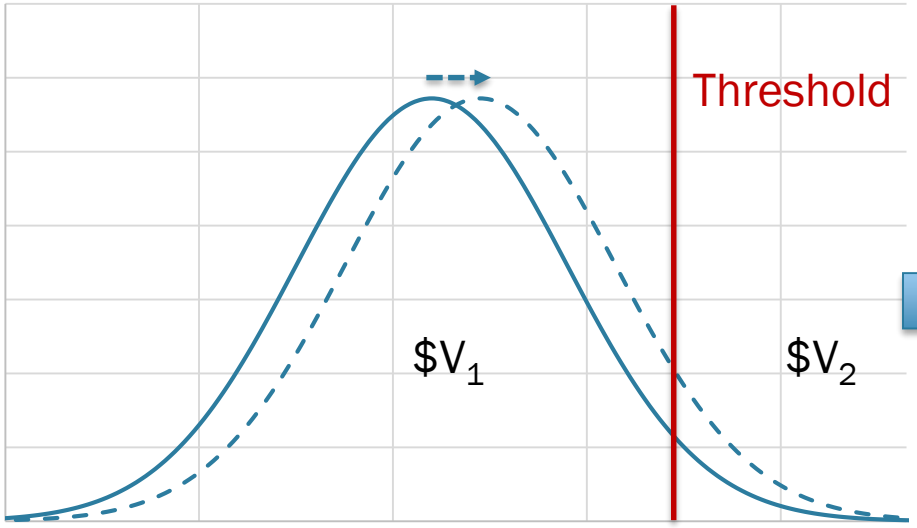
Rib Eye Area distribution of progeny



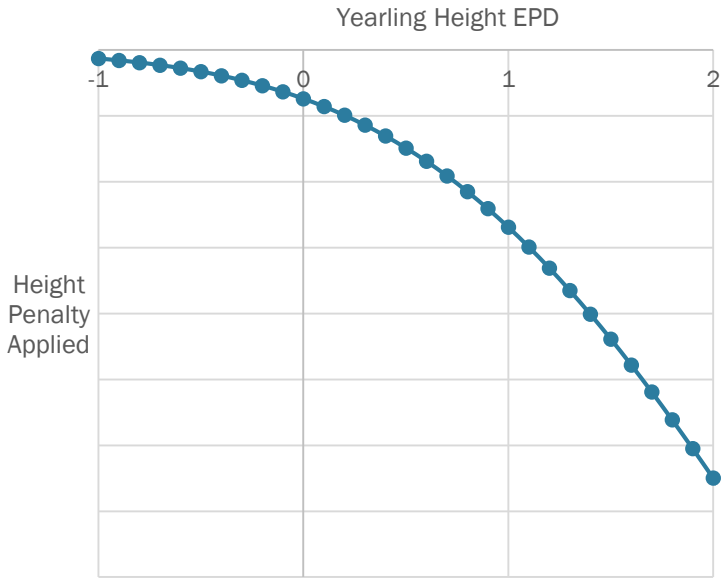
ANGUS
THE BUSINESS BREED

abacusbio.
BRIDGING SCIENCE & BUSINESS

Modelling thresholds



Height distribution of progeny



Two Indexes in the end
Coming later this summer

$AxJ
Angus on
Jersey
Value

0.95
Correlation
on Current
Sires

$AxH
Angus on
Holstein
Value

ANGUS
THE BUSINESS BREED

Correlation to $B is moderate
Result: significant re-ranking

0.95
Correlation
on Current
Sires

$AxJ
Angus on
Jersey
Value

.72

$B

.67

$AxH
Angus on
Holstein
Value

ANGUS
THE BUSINESS BREED

The dairy cow is to the beef industry what the laying hen is to the broiler industry

Need to put a little meat on them bones

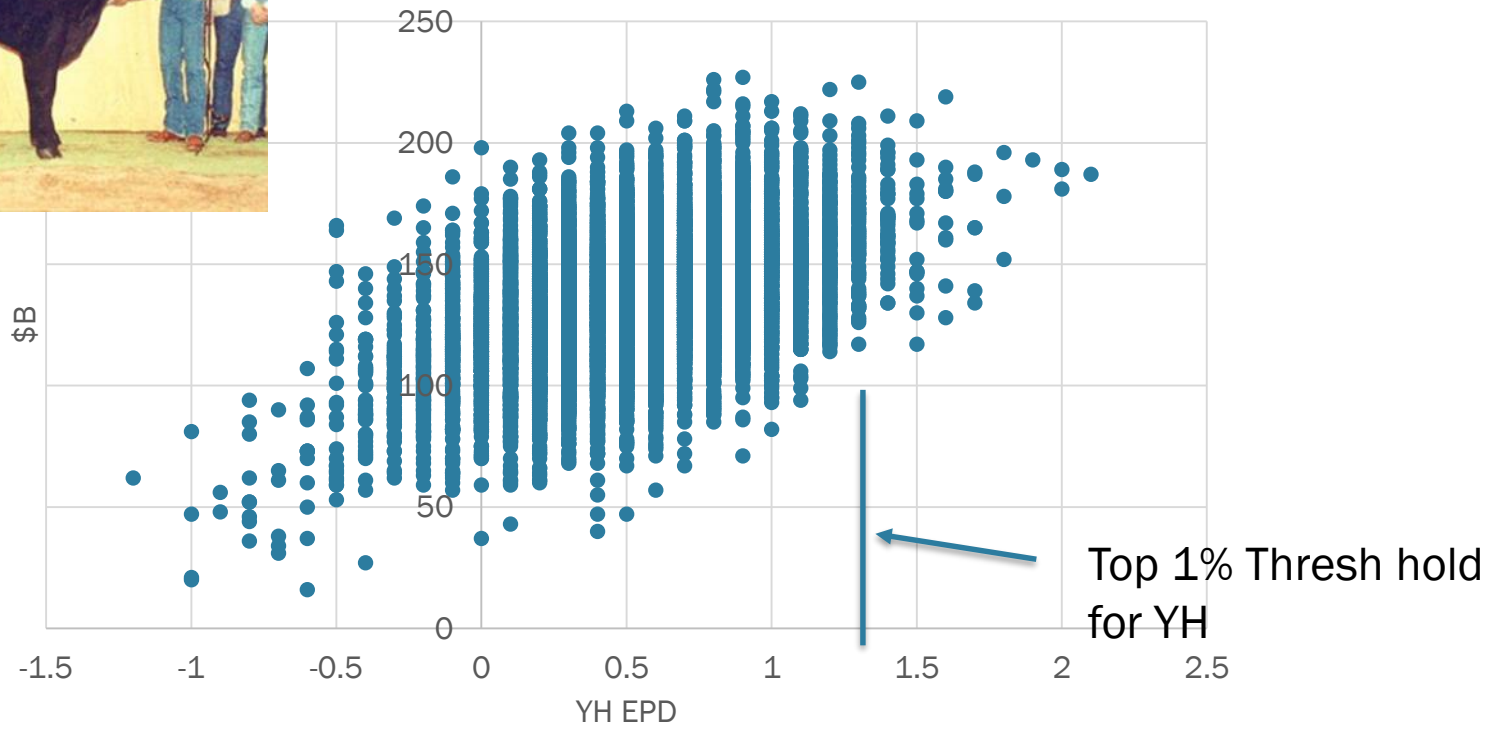
ANGUS
THE BUSINESS BREED

Rib-eye is to the dairy indexes what carcass weight was to $B

Correlations	$B	$AxH	$AxJ
CW EPD	0.74	0.41	0.54
REA EPD	0.54	0.73	0.81

Correlation across ~10,000 current sires

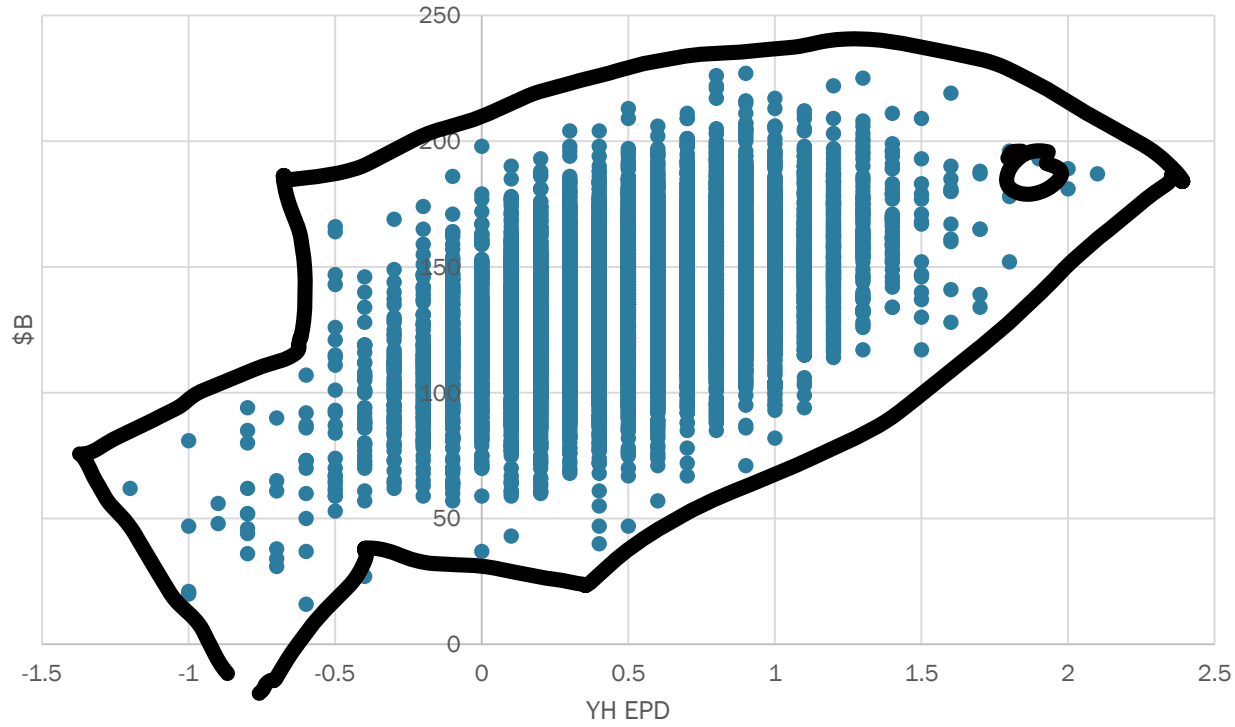
$B and YH EPD are positively correlated (0.47)



Correlation between YH EPD and $B is 0.47

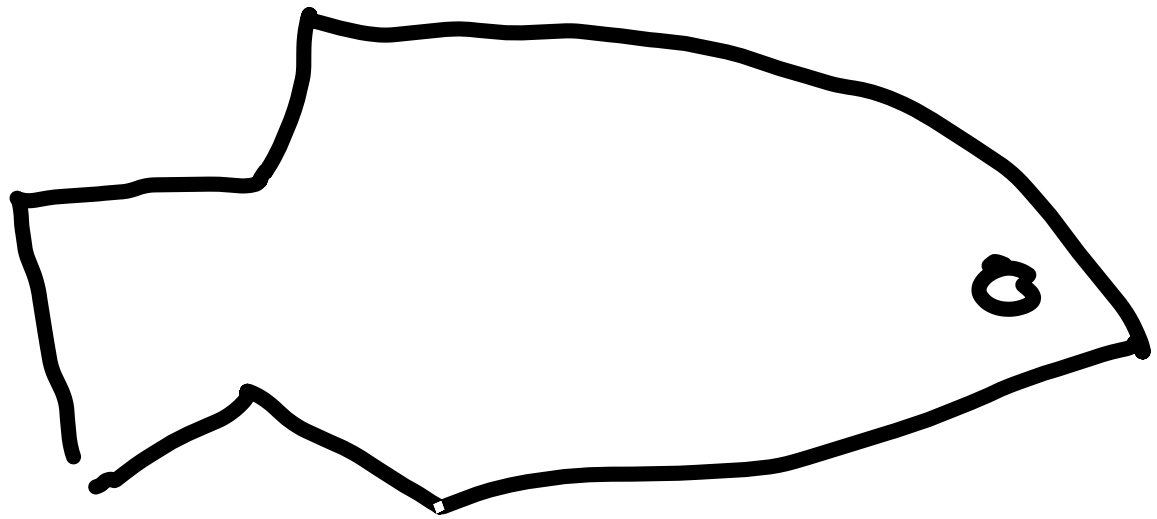
ANGUS
THE BUSINESS BREED

Can you see the rising fish?



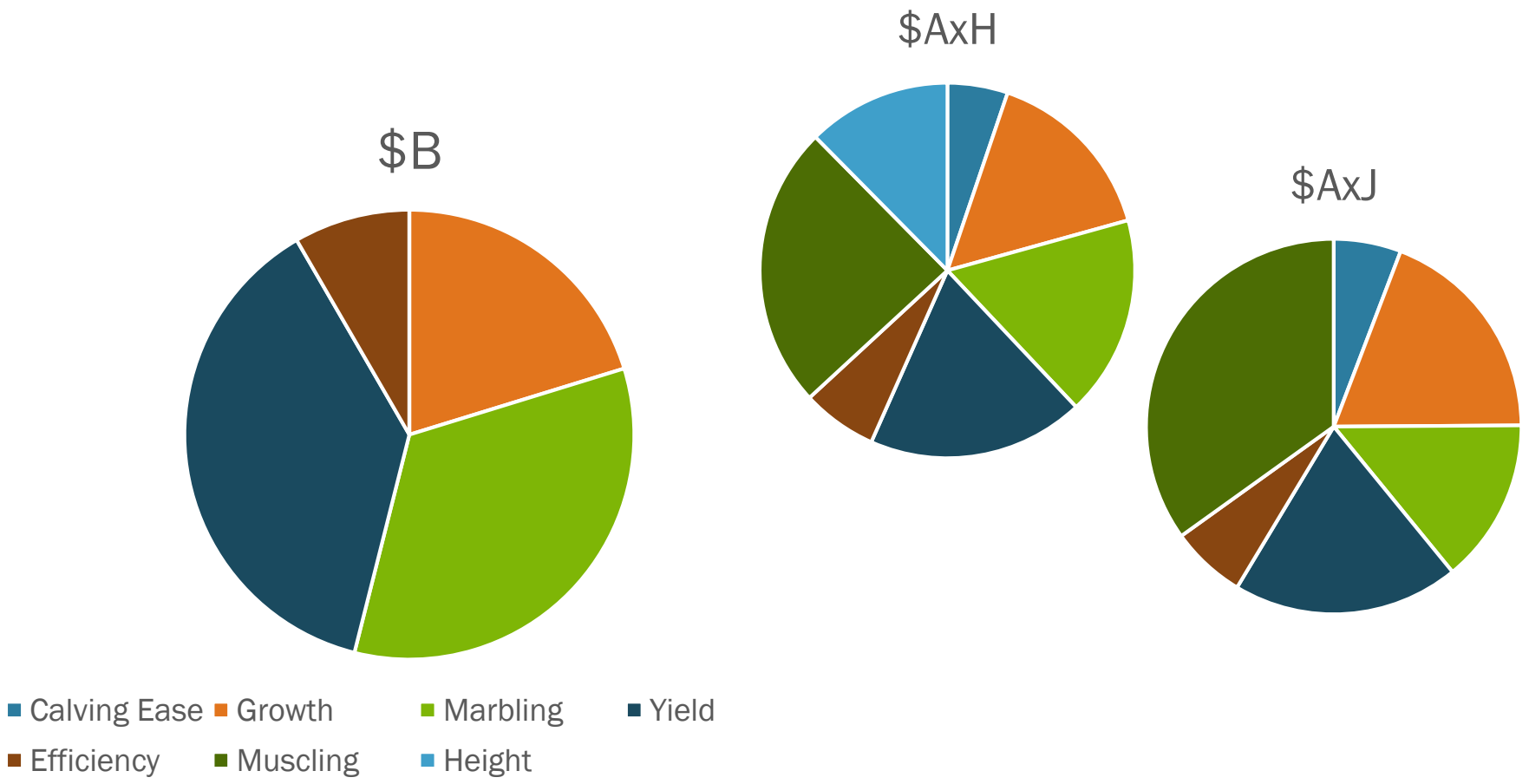
ANGUS
THE BUSINESS BREED

$AxH Turns the fish from rising to level



Correlation between YH EPD and $AxH is Zero

Comparing Emphasis



ANGUS
THE BUSINESS BREED

Poorest 10 CED from top 100 on $Value

These bottom 5% of the breed for CED don't make the top 100 on AxJ or AxH

$B	$AxH	$AxJ
-11	3	-4
-9	3	0
-7	3	1
-5	4	1
-4	4	2
-2	5	2
-1	5	3
-1	6	3
1	6	4
1	6	4

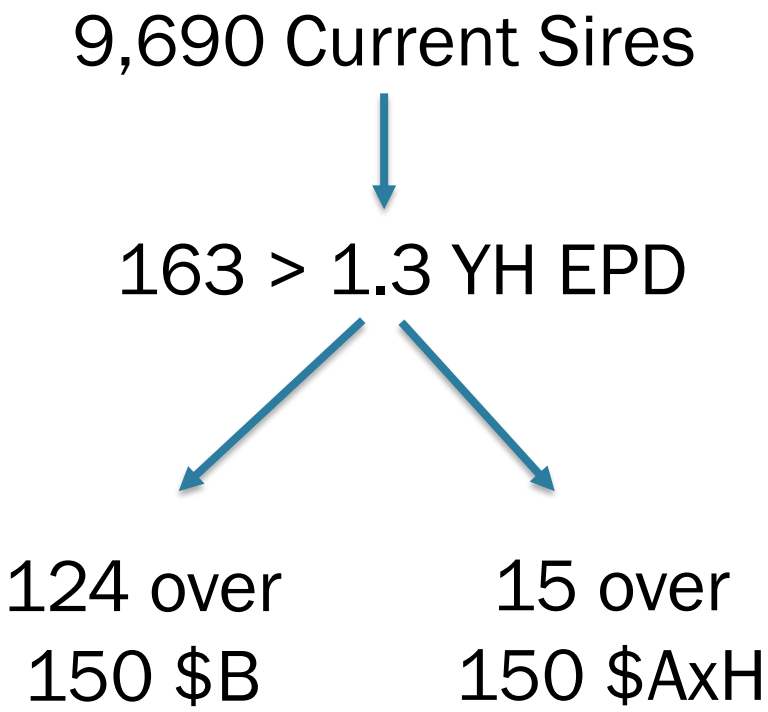
Highest 10 YH from top 100 on $Value

Top1% of the breed for YH is 1.3. Far fewer of those in Top 10 on $AxH.

$B	$AxH
1.8	1.3
1.6	1.2
1.5	1.1
1.4	1.1
1.4	1
1.4	1
1.4	1
1.3	1
1.3	0.9
1.3	0.9

ANGUS
THE BUSINESS BREED

Far Fewer Top $AxH bulls in Top 1% for YH



More ways to fail

Poor Calving Ease

Poor Muscling

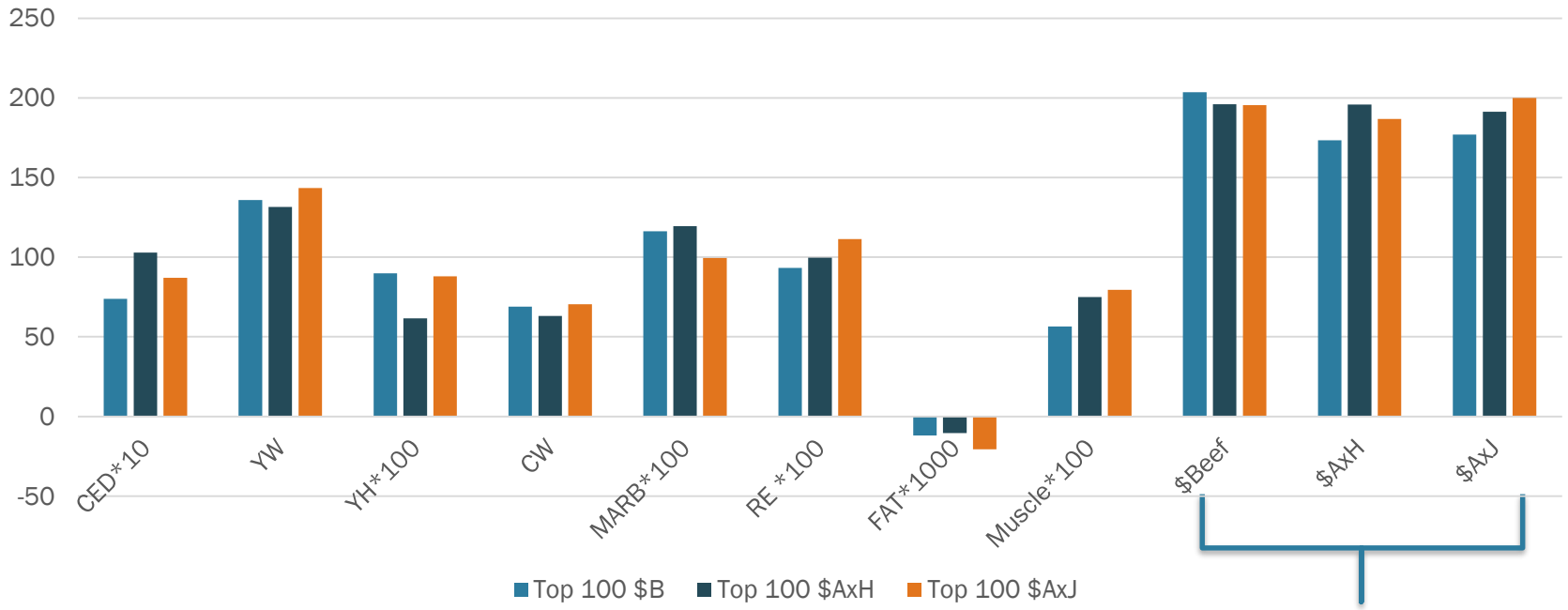
Too much height

Longer Feeding Period

Bulls that tick all the “wrong boxes” will compound discounts and have a seriously negative $AxH or $AxJ

-200 AxH or AxJ is possible.

Average of Top 100 Current Sires on each index



Average EPD of Top 100 bulls on each index

Compare within not between indexes

ANGUS
THE BUSINESS BREED

In a Nut Shell

- Growth – Similar to $B – Highest in $AxJ
- More CED
- Muscle – more in $AxH and most in $AxJ
- Height – High YH EPD penalized in $AxH
- Similar CW
- Similar MARB in $AxH, less in $AxJ

Questions/Discussion

Stephen Miller, Ph.D.
smiller@angus.org

Genetic Research Director
816-383-5157

ANGUS
THE BUSINESS BREED