FAQ – Ultrasound vs Genomic Data vs Actual Carcass data

How is the data used in conjunction with genomic (DNA) results?
Genomic predictions are only made possible with the help of real performance data collection which includes both ultrasound scan data and actual carcass data collected at the plant. When an animal is genomic tested, the results helps us tie pedigrees closer together, determining which random assortment of DNA has been passed down to the offspring. Once an animal is found to be more closely related to another ancestor, we then use that ancestor's progeny data to make an assumption about the calf at hand. For instance, if a calf is genomic tested and found to have a 30% genomic relationship to his paternal grandsire (5% stronger than expected in a tradition pedigree relationship) who is proven to excel for a trait like Marbling, the young unproven calf's Marbling EPD will go up.

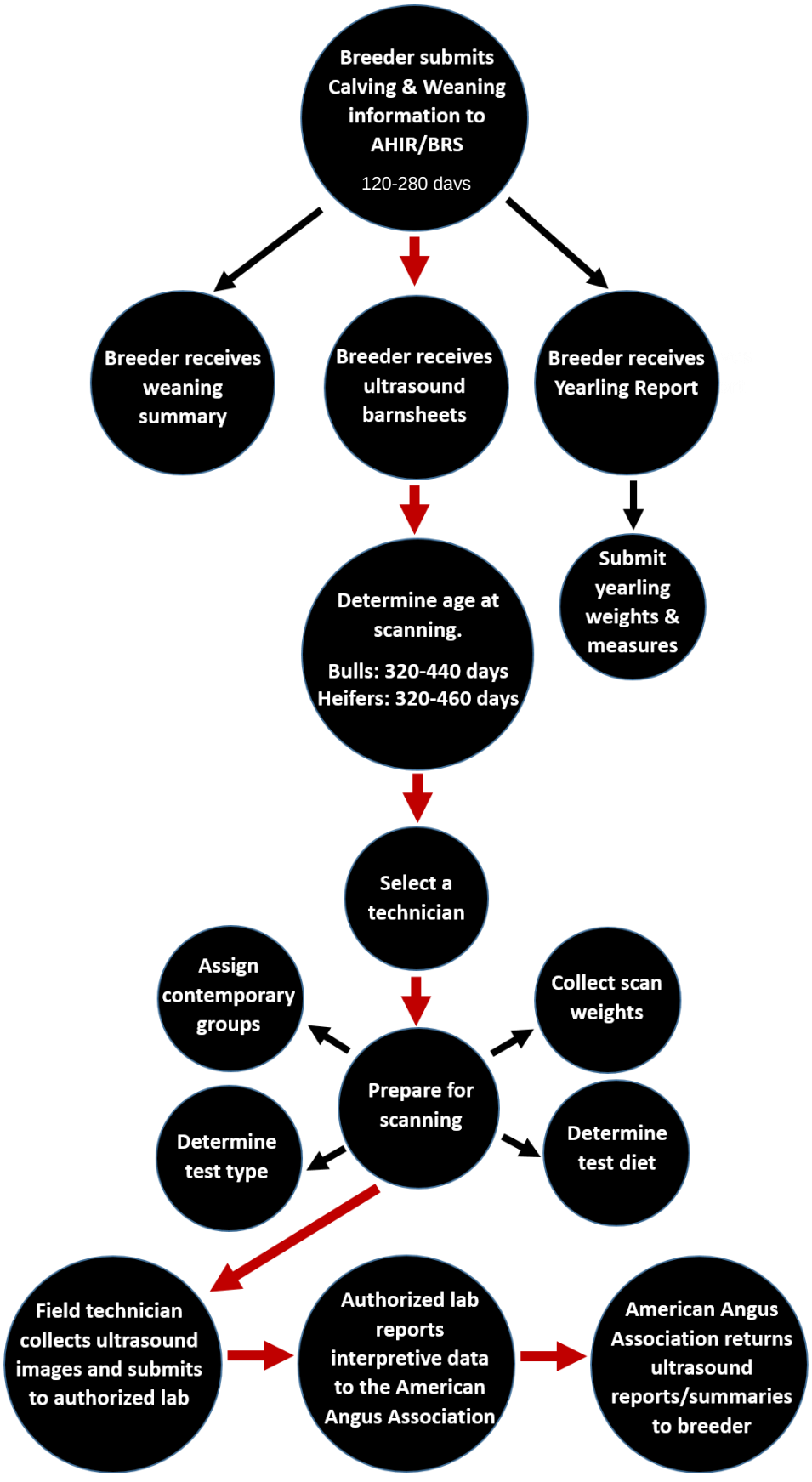
Is it important to continue to scan females?
Yes. Scan data on a set of yearling heifers is a valuable as scan data on a set of yearling bulls. The information has the same merit in the national cattle evaluation as their male counterparts. In addition by not scanning one's heifers, breeders are discounting the parents of those animals by not providing the performance information to progeny test parents and add accuracy to their EPDs.

Progeny carcass data seems to have more weight or emphasis on the EPD calculation, why should I even bother scanning if that's the case?
It's true, carcass data received in proper contemporary groups has more weight on Carcass EPD predictions when included to a sire's Carcass EPDs because the carcass data is the direct economic trait being captured. Ultrasound measures are an indicator of carcass performance with a 0.76 correlation with actual carcass data. Although not perfect, ultrasound measures give us a good indication of the carcass value and is a great source of information on breeding animals, and not to mention can be collected earlier on in life.

How is ultrasound data utilized in the Angus national cattle evaluation?
Ultrasound phenotypes are put in the model as correlated traits. Much like birth weight is used as a correlated trait in the calving ease EPD predictions. While the calving ease scores are the directly relevant traits, birth weights are utilized to add more information to calving ease EPDs. Any additional data point helps us to explain a greater percentage of genetic variation thus increasing the Association's ability to predict Carcass EPDs.

What are other reasons to continue to ultrasound animals?
While using genomic testing increases the direct accuracy on a particular animal, it does not have a significant impact on the accuracy of its parents. Collecting ultrasound phenotypes of progeny will increase EPD accuracy of carcass traits just as additional progeny weaning weights or yearling weights will help to increase EPD accuracy of a sire or dam's growth traits.

FIGURE 1. Taking on-farm ultrasound collection to genetic predictions



Genetic parameters: heritability estimates (bold) and genetic correlations used in the prediction of carcass EPDs. Light grey boxes indicate correlation estimates between ultrasound and carcass data.

	WW	YW	UFat	UIMF	UREA	Fat	MARB	REA	CW
WW	**0.28**	0.87	0.12		0.34	0.09		0.27	0.65
YW		**0.42**	0.07		0.33	-0.07		0.35	0.75
UFat			**0.46**		0.00	0.65		-0.35	-0.10
UIMF				**0.41**			0.71		
UREA					**0.39**	-0.10		0.65	0.28
Fat						**0.33**		-0.34	0.10
MARB							**0.48**		
REA								**0.32**	0.46
CW									**0.44**

WW- Weaning Weight
YW – Yearling Weight (scan weight)
UFat – Ultrasound Fat
UIMF – Ultrasound Intramuscular Fat
UREA – Ultrasound Ribeye Area
Fat – Carcass Fat
Marb – Carcass Marbling
REA – Carcass Ribeye Area
CW – Carcass Weight