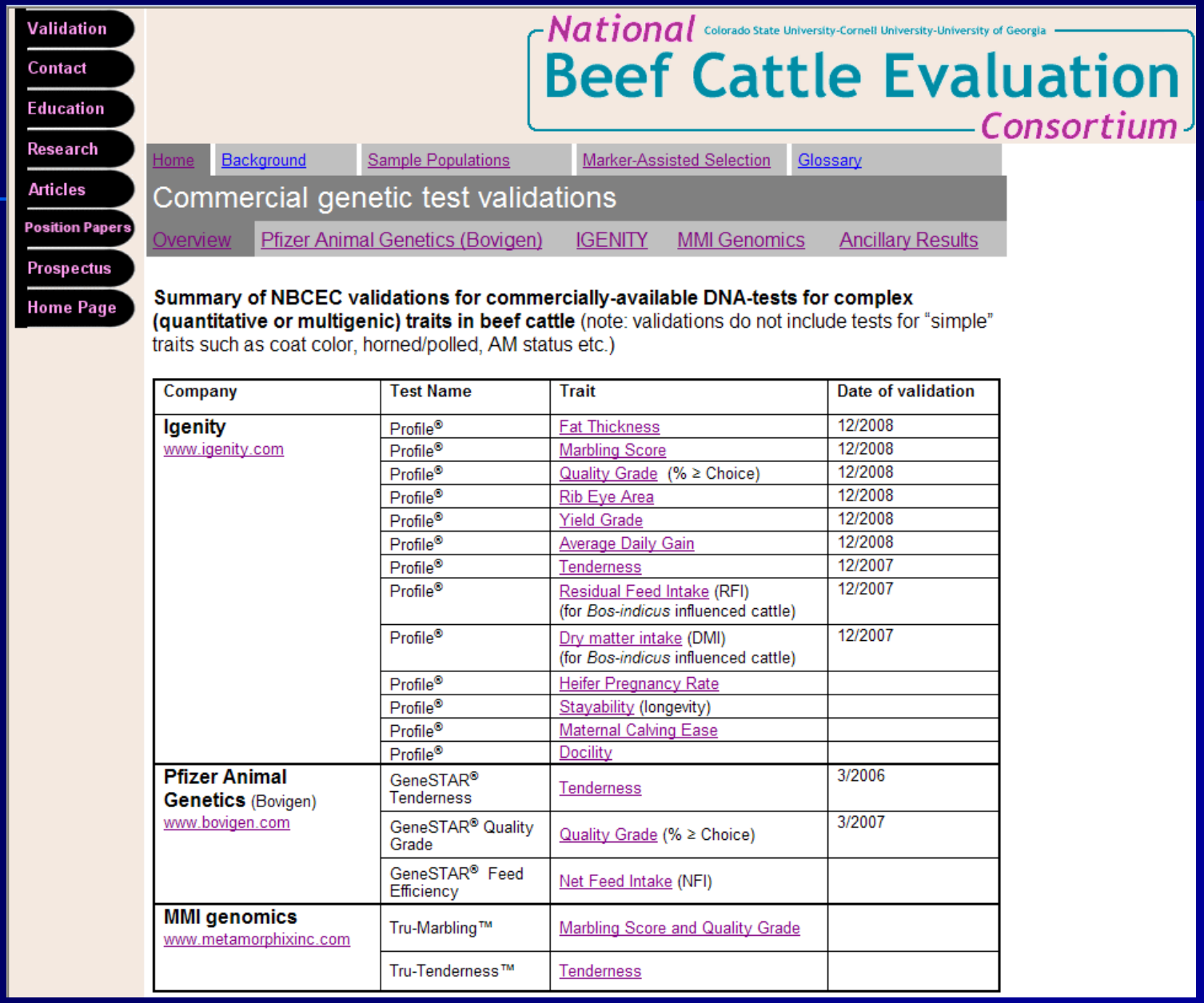
"NBCEC validation update" www.nbcec.org

Overview of validaton page



Validation
Contact
Education
Research
Articles
Position Papers
Prospectus
Home Page

National Beef Cattle Evaluation Consortium
Colorado State University-Cornell University-University of Georgia

Home | Background | Sample Populations | Marker-Assisted Selection | Glossary

Commercial genetic test validations

Overview | Pfizer Animal Genetics (Bovigen) | IGENITY | MMI Genomics | Ancillary Results

Summary of NBCEC validations for commercially-available DNA-tests for complex (quantitative or multigenic) traits in beef cattle (note: validations do not include tests for "simple" traits such as coat color, horned/polled, AM status etc.)

Company	Test Name	Trait	Date of validation
Igenity www.igenity.com	Profile®	Fat Thickness	12/2008
	Profile®	Marbling Score	12/2008
	Profile®	Quality Grade (% ≥ Choice)	12/2008
	Profile®	Rib Eye Area	12/2008
	Profile®	Yield Grade	12/2008
	Profile®	Average Daily Gain	12/2008
	Profile®	Tenderness	12/2007
	Profile®	Residual Feed Intake (RFI) (for *Bos-indicus* influenced cattle)	12/2007
	Profile®	Dry matter intake (DMI) (for *Bos-indicus* influenced cattle)	12/2007
	Profile®	Heifer Pregnancy Rate	
	Profile®	Stayability (longevity)	
	Profile®	Maternal Calving Ease	
	Profile®	Docility	
Pfizer Animal Genetics (Bovigen) www.bovigen.com	GeneSTAR® Tenderness	Tenderness	3/2006
	GeneSTAR® Quality Grade	Quality Grade (% ≥ Choice)	3/2007
	GeneSTAR® Feed Efficiency	Net Feed Intake (NFI)	
MMI genomics www.metamorphixinc.com	Tru-Marbling™	Marbling Score and Quality Grade	
	Tru-Tenderness™	Tenderness	

Overview of Igenity tests

IGENITY Carcass Composition and Average Daily Gain

IGENITY Carcass Composition and Average Daily Gain

Validation
Contact
Education
Research
Articles
Position Papers
Prospectus
Home Page

National Beef Cattle Evaluation Consortium
Colorado State University-Cornell University-University of Georgia

Home | Background | Sample Populations | Marker-Assisted Selection | Glossary

Commercial genetic test validations

Overview | Pfizer Animal Genetics (Bovigen) | IGENITY | MMI Genomics | Ancillary Results

Summary | Test Claims | Test Details | Sample Populations | MBV Quantiles | Results

Igenity profile Carcass Composition and Average Daily Gain

igenity

Cattle Used for Validation

Commercial US cattle sample population

1,364 records of purebred and crossbred offspring of 285 sires from 7 states fed in 7 different Midwestern feed yards and harvested at a single Midwestern packing plant. The sires included the following breeds: 202 Angus, 7 Red Angus, 6 Charolais, 7 Gelbveh , 4 Horned Hereford , 11 Polled Hereford, 4 Limousin , 7 Simmental, 1 Braford, 3 Shorthorn, 12 were of mixed breed, and 21 were of unknown breed. Cows were: 360 Angus, 6 Red Angus, 11 Charolais, 2 Horned Hereford , 5 Polled Hereford, 2 Limousin, 9 Simmental, 15 Shorthorn, 598 were crossbred cows, and 356 were of unknown breed composition.

IGENITY Carcass Composition and Average Daily Gain

Validation
Contact
Education
Research
Articles
Position Papers
Prospectus
Home Page

National Beef Cattle Evaluation Consortium
Colorado State University-Cornell University-University of Georgia

Home | Background | Sample Populations | Marker-Assisted Selection | Glossary

Commercial genetic test validation

Overview | Pfizer Animal Genetics (Bovigen) | IGENITY | MMI Genomics | Ancillary Results

Summary | Test Claims | Test Details | Sample Populations | MBV Quantiles | Results

Igenity profile Carcass Composition and Average Daily Gain

igenity

Summary

The IGENITY profile was found to be significantly associated with marbling score, back fat thickness, quality grade, ribeye area, and yield grade carcass traits and average daily gain in a commercial predominately *Bos taurus* sample population of 1364 animals. This test was not evaluated on a *Bos indicus*-influenced or purebred *Bos indicus* population.

Significance* of the Igenity Molecular Breeding Values for Carcass Traits and Average Daily Gain

Breed	TRAIT	Panel	b**	F	p	N
Commercial Validation population	USDA Marbling Score	MBS	0.76	28.6	0.0000001	1354
	Backfat Thickness	BFAT	0.81	12.46	0.0002	1354
	Quality Grade[1] (% ≥ Choice)	% ≥ CHOICE	0.73	14.06	0.00009	1364
	Ribeye Area	REA	1.01	10.99	0.0005	1354
	Yield Grade	YG	1.16	21.98	0.000002	1354
	Average Daily Gain	ADG	0.61	14.69	0.00007	1364

IGENITY Carcass Composition and Average Daily Gain

Prospectus

Home Page

* Molecular breeding values (MBVs) for each trait were provided by Igenity based on the various SNP panels for each trait. The F test was based on a model including fixed contemporary group and breed of sire, random sire, and regressions of days on feed and of the Igenity score for the trait in question (December 2008).

**The column labeled 'b' is the regression of phenotypes in the test population on the MBVs reported for the DNA test. It is a measure of how well the MBV scales with the phenotype. There are many reasons that this value would differ from its nominally expected value of 1. Traits scale differently in different environments, management scenarios and methods of measurement. Therefore, we would not practically expect this value to be exactly 1. However, values substantially less than 1 suggest that differences in phenotypes observed in other cattle managed under conditions representative of U.S. beef production are likely to be less than those predicted by the MBV. This would not affect how animals would be ranked by the MBV, but would impact the weighting given to differences in MBVs relative to differences in EPDs based on phenotypic data.

[1] Quality Grade was analyzed as an "all or none" trait (each animal was either USDA Choice or better, or it was not). Such traits have the property that the size of the effect is quite dependent on the population mean. This does not reduce the ability of the test to rank animals correctly, but it does complicate the interpretation of the effect sizes. The size of effect is greatest in populations that grade approximately 50% Choice or better, but can be much lower in populations with either a high or low proportion of animals that grade Choice or better. As an example, consider a test scaled such that its effects are relevant to a population grading 50% Choice: then an animal with an MBV 25% above the population average would have a probability of grading at least Choice of 75%. However, if the population average was 80% Choice or better, an animal could still have an MBV 25% above average, but it obviously could not have a probability of 105% of grading at least Choice; the probability would have to be less than 100%. Therefore, the same DNA test result that is interpreted to be 25% above an average of 50% Choice or better should be interpreted to have a substantially smaller numerical effect in a pen that grades 80% Choice or better. The same would also be true in a pen that graded 20% Choice.

Validation
Contact
Education
Research
Articles
Position Papers
Prospectus
Home Page

National Beef Cattle Evaluation Consortium
Colorado State University-Cornell University-University of Georgia

Home | Background | Sample Populations | Marker-Assisted Selection | Glossary

Commercial genetic test validations

Overview | Pfizer Animal Genetics (Bovigen) | IGENITY | MMI Genomics | Ancillary Results

GeneSTAR Tenderness

GeneSTAR Quality Grade

GeneSTAR Feed Efficiency

Peer-reviewed studies

Company website

Other third-party validation reports

Last updated 12/30/2008

Overview of Pfizer Animal Genetics (PAG) tests

Validation
Contact
Education
Research
Articles
Position Papers
Prospectus
Home Page

National Beef Cattle Evaluation Consortium
Colorado State University-Cornell University-University of Georgia

Home | Background | Sample Populations | Marker-Assisted Selection | Glossary

Commercial genetic test validations

Overview | Pfizer Animal Genetics (Bovigen) | IGENITY | MMI Genomics | Ancillary Results

GeneSTAR Feed Efficiency

Summary

Test Claims

Test Details

Company website

Other third-party validation reports

Last updated 01/05/2009

Validation requested for new PAG SNP panel

Validation has been requested for a new 56 SNP panel associated with the traits:

- marbling/quality grade,
- tenderness
- feed efficiency

In North America both *Bos taurus* (3) and *Bos indicus* (1) populations were included in the validation populations

- Tenderness panel validated – better at day 1 than day 14 in Bos indicus cattle
- Feed efficiency data panel validated for RFI in *Bos taurus* cattle
- Marbling panel was associated with %IMF, and approached significance in % choice and marbling – validation is not complete
- More discussions about this afternoon


THE UNIVERSITY OF CALIFORNIA
DAVIS


ANR
UNIVERSITY
of
CALIFORNIA