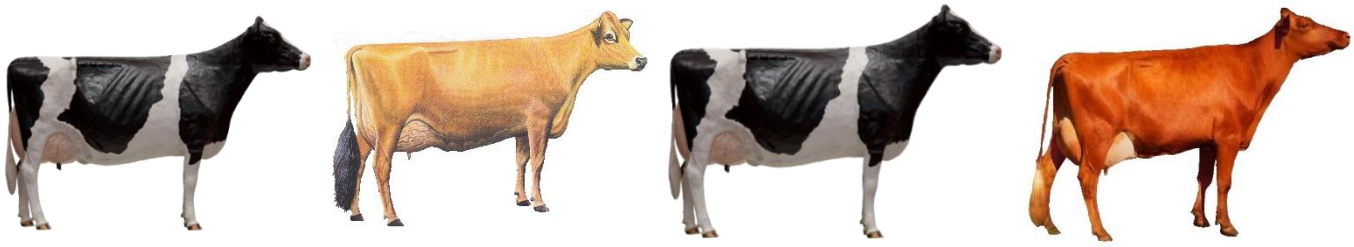

Breeding for improved type

Australian Breeding Values (ABVs) for type traits

Key points

- Cows with a higher Overall Type ABV are more structurally sound, which contributes to longer herd life.
- DataGene publishes ABVs for 22 individual type traits and five composite type traits.
- The model used to calculate Australian Breeding Values (ABV) for type traits was updated in April 2020, to make it easier to identify bulls with a high genetic merit for specific type traits.
- The updated type ABVs apply to Holsteins, Red Breeds and Guernseys.
- Type ABVs are unchanged for Jerseys and aren't evaluated for Brown Swiss.

To improve overall type, choose Good Bulls with an Overall Type ABV of more than 100

Breeding for improved type

A cow's structure – how she's put together – more commonly known as Type, is a breeding priority for many Australian dairy farmers.

DataGene publishes ABVs for 22 individual type traits, including body length, udder depth, fore attachment and pin set. The Overall Type ABV is a combination of all type traits.

A bull's type ABVs are based on genomics, pedigree and his daughters' classifications. Bulls with overseas daughters will have their information included for traits and composites that are routinely evaluated in most countries and provided through Interbull. Type ABVs are expressed against a breed average which is set at 100.

Cows with a higher Overall Type ABV are often more structurally sound, which contributes to longer herd life. This is why Overall Type is included in Australia's three indices: Balanced Performance Index (BPI), Health Weighted Index (HWI) and Type Weighted Index (TWI), with the greatest emphasis in the TWI.

Composite type traits

Composite traits combine ABVs for a number of traits which together affect the functionality of a dairy cow. For example, the Mammary System ABV is calculated using a number of individual udder traits such as udder texture, fore attachment, rear udder height, rear udder width, centre ligament and teat placement.

DataGene publishes ABVs for five composite type traits: Overall Type, Dairy Strength, Feed & Legs, Mammary System and Rump.

The Overall Type ABV is based on final score and a combination of four composite type ABVs (see table). The weightings are set by breed associations.

In Jerseys, the Overall Type ABV is based only on final score. The weightings used in the classification system to produce final score are general appearance 30%, head 15%, conformation 20% and udder (vessel) 35%.

Further reading

Tech Note: Understanding Type ABVs
Genetics Backgrounder: Type ABVs explained

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Relative weightings of composite type traits in Overall Type ABV *as set by breed associations*

	Holstein	Aussie Reds	Ayrshires	Illawarra	Guernsey
Mammary System	40%	40%	40%	40%	40%
Feet & Legs	25%	25%	15%	25%	25%
Dairy Strength	25%	25%	35%	25%	25%
Rump	10%	10%	10%	10%	10%

Trait ideals and weightings in composites

Breed associations set trait ideals and their relative contribution to composite scores (weight). Classifiers use a sliding scale of 1 to 9 to measure each trait, with a score of 5 representing the intermediate position of the two biological extremes. Depending on the trait, the ideal could either be "9" so that the extreme is wanted (e.g. Pin Width), or an intermediate ideal, (e.g. Teat Length) with an ideal linear score at 5 as neither too short (1) nor too long teats (9) are required. Composite scores are calculated by comparing linears to the ideal linear for each trait.

More information on classification systems: Holstein Australia classification Jersey Australia classification

Dairy Strength

Trait	Holsteins		Jersey Ideal
	Ideal	Weight	
Stature	6-8	5%	9
Muzzle Width	9	12%	9
Chest Width	7	22%	7
Body Depth	7	18%	7
Angularity (rib)		25%	9
Bone Quality	7	13%	7
Loin Strength	9	5%	Cow 6 Heifer 7
Body Length	n/a	n/a	9
Composite weighting in Overall Type		25%	n/a

Mammary System

Trait	Holstein		Jersey Ideal
	Ideal	Weight	
Udder Depth	5-6	13%	Heifer 4 Cow 3
Udder Texture	9	14%	9
Centre ligament	9	12%	9
Fore Attachment	9	16%	9
Front Teat Placement	6	8%	7
Rear Attach – Height	9	11%	9
Rear Attach – Width	9	11%	9
Rear Teat Placement	5	8%	5
Teat Length	5	7%	5
Composite weighting in Overall Type		40%	n/a

Feet & Legs

Trait	Holstein		Jersey Ideal
	Ideal	Weight	
Foot angle	7	12%	5
Heel Depth	7-9	24%	6
Rear Set (Rear legs Side view)	5	22%	5
Rear Leg Rear View	9	30%	9
Thurl placement	6	12%	n/a
Composite weighting in Overall Type		25%	n/a

Rump

Trait	Holstein		Jersey Ideal
	Ideal	Weight	
Pin Set (rump angle)	5-6	24%	6
Pin Width	9	21%	9
Loin Strength	9	32%	Cow 6 Heifer 7
Rump Length	n/a	n/a	9
Thurl placement	6	23%	n/a
Composite weighting in Overall Type		10%	n/a

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Holstein ABVs, average linear scores

Depending on your breeding goals, extremes are not always ideal for type traits, and therefore the highest ABVs are not always desirable. The table below, supplied by Holstein Australia, shows the average linear scores for cows grouped by ABV for each trait. This helps to visualise the typical linear scores of animals with varying ABVs. To see what each score looks like, refer to Appendix 1 and 2.

Average linear (classification) score for Holstein animals with a given ABV for that trait and the ideal for that trait highlighted in grey.
i.e. the average linear score for animal with a genomic breeding value of 100 for bone quality is 6.8

source: Holstein Australia

ABV(g)	90	95	Breed average: 100	105	110	Extreme ideal (> 110)
Linear Stature	5.1	6.0	7.0	7.9	8.6	
Linear Udder Texture	4.6	5.6	6.1	6.6	7.2	✓
Linear Bone Quality	5.4	6.2	6.8	7.3	7.8	
Linear Angularity	3.7	4.9	5.7	6.2	6.7	✓
Linear Muzzle Width	4.1	5.2	6.0	6.5	7.0	✓
Linear Body Depth	3.8	5.0	5.9	6.5	7.2	✓
Linear Loin Strength	4.8	5.8	6.4	6.8	7.4	✓
Linear Chest Width	3.5	4.1	4.9	5.5	6.5	✓
Linear Pin Width	5.0	5.9	6.7	7.5	8.1	✓
Linear Pin Set	2.6	3.4	4.1	5.0	6.0	
Linear Foot Angle	4.1	5.0	5.5	6.0	6.5	✓
Linear Rear Set of Leg	3.8	5.1	5.8	6.2	6.8	
Linear Rear leg Rear View	3.3	4.5	5.6	6.2	7.1	✓
Linear Udder Depth	3.3	4.4	5.2	6.0	6.9	
Linear Fore attachment	3.0	4.5	5.6	6.5	6.9	✓
Linear Rear attachment height	4.0	5.3	6.4	7.2	8.1	✓
Rear Attachment Width	4.2	5.2	6.0	6.5	6.9	✓
Linear Centre ligament	4.4	5.7	6.5	7.3	8.2	✓
Linear Teat placement fore	2.8	4.0	5.1	5.9	6.9	
Linear Teat placement rear	5.7	6.7	7.3	7.8	8.3	
Linear Teat length	2.6	3.3	4.1	5.0	6.3	

Acknowledgment

The improvements to Type evaluations are the result of DairyBio research. DairyBio is a joint initiative between Agriculture Victoria, Dairy Australia and the Gardiner Dairy Foundation. We also thank breed associations, farmers, herd test centres and software providers who supply data used in genetic evaluations.