This data contains the directions and effect categories of mutant alleles for 7.9M variants on 37 traits of Australian dairy cattle. The effect directions and categories are obtained from GWAS of these variants for the 37 traits (see details in <https://www.biorxiv.org/content/10.1101/2021.04.19.440546v1>).

The first 6 columns of the data are:

SNP: the ID of SNP

anc.a: the assigned ancestral allele of this SNP

Chr: chromosome of this SNP

bp: position of this SNP

A1.allele: the reference allele of this SNP

A2.allele: the alternative allele of this SNP

Note that if the column of anc.a equals to the column of A1.allele; then the A2.allele is the mutant allele and vise versa.

The rest of the columns describe the effect direction and the effect size category of the mutant allele for each SNP (every 2 columns describe 1 trait).

Columns labelled as mut.bd.tr\* describe the effect direction of the mutant allele of the SNP on 37 traits (mut.bd.tr01 - mut.bd.tr37). In each of these columns, there are 3 types of labels: ‘+’, ‘-’ and ‘NA’, representing positive effects, negative effects and missing, respectively. The reason for missing (NA) is because the effect direction of mutant alleles did not agree between bulls and cows.

Columns labelled as mut.eff.tr\* describe the effect categories of the mutant allele of the SNP on 37 traits (mut.eff.tr01 - mut.eff.tr37). In each of these columns, there are up to 4 types of labels: ‘S’, ‘M’, ‘L’ and NA (the remaining variants) representing small effects (5e-5 < GWAS p < 0.05 in both bulls and cows), medium effects (5e-8 < GWAS p < 5e-5 in both bulls and cows), large effects (GWAS p < 5e-8 in both bulls and cows) and not significant, respectively.

Interpretation of trait label:

|  |  |
| --- | --- |
| Trait label | trait name |
| tr01 | protein yield |
| tr02 | fat yield |
| tr03 | milk yield |
| tr04 | protein percentage |
| tr05 | fat percentage |
| tr06 | mastitis |
| tr07 | somatic cell count |
| tr08 | survival |
| tr09 | fertility |
| tr10 | ease (of birth) |
| tr11 | birth size |
| tr12 | gestation length |
| tr13 | temperament |
| tr14 | milking speed |
| tr15 | likeability |
| tr16 | stature |
| tr17 | chest width |
| tr18 | angularity |
| tr19 | bone quality |
| tr20 | rear legs set |
| tr21 | fore attachment |
| tr22 | rear attachment height |
| tr23 | front teat placement |
| tr24 | loin strength |
| tr25 | udder texture |
| tr26 | central ligament |
| tr27 | pin width |
| tr28 | foot angle |
| tr29 | udder depth |
| tr30 | pin set |
| tr31 | rear attachment width |
| tr32 | muzzle width |
| tr33 | teat length |
| tr34 | body depth |
| tr35 | overall type |
| tr36 | rear teat placement |
| tr37 | rear leg view |