**Genome wide association study for longevity in the Holstein cattle population**

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**Supplementary Table S1.** *Traits and weights used by the Italian National Holstein Breeders Association in the longevity index used for the selective genotyping*

|  |  |
| --- | --- |
| Trait | Multiplication coefficient |
| Pedigree value \* | 0.49 |
| Dairy character | 0.39 |
| Stature | 0.12 |
| Strength | 0.23 |
| Rump angle | 0.04 |
| Feet and legs | 0.06 |
| Body depth | 0.13 |
| Angularity | 0.15 |
| Rear attachment height | 0.07 |
| Rear attachment width | 0.10 |
| Fore attachment | 0.05 |
| Udder depth | 0.15 |
| Teat length | 0.06 |
| Somatic cell score | 0.26 |

\*average of parents longevity index

**Supplementary Table S2.** *Single Nucleotide Polymorphisms (****SNPs****) in Linkage Disequilibrium (normal) with the significant SNPs (bold),* found in the analyzed cows.

|  |  |  |
| --- | --- | --- |
| SNP1 | chromosome | position |
| **BovineHD1600012095** | **16** | **43250880** |
| BovineHD1600012099 | 16 | 43267903 |
| BovineHD1600012111 | 16 | 43321176 |
| BovineHD1600012118 | 16 | 43355964 |
| BovineHD1600012122 | 16 | 43374946 |
| BovineHD1600012126 | 16 | 43393417 |
| BovineHD1600012127 | 16 | 43397434 |
| BovineHD1600012129 | 16 | 43409202 |
| BovineHD1600012131 | 16 | 43419087 |
| ARS-BFGL-NGS-104135 | 16 | 43424406 |
| BovineHD1600012132 | 16 | 43430127 |
| BovineHD1600012133 | 16 | 43436078 |
| BovineHD1600012139 | 16 | 43472069 |
| BovineHD1600012141 | 16 | 43481562 |
| BovineHD1600012142 | 16 | 43485139 |
| BovineHD1600012144 | 16 | 43495680 |
| Hapmap51220-BTA-38598 | 16 | 43501100 |
| BovineHD1600012148 | 16 | 43529259 |
| BovineHD1600012150 | 16 | 43535617 |
| BovineHD1600012156 | 16 | 43563718 |
| BovineHD1600012157 | 16 | 43566848 |
| BovineHD1600012158 | 16 | 43574435 |
| BovineHD1600012159 | 16 | 43579352 |
| BovineHD1600012163 | 16 | 43599424 |
| BovineHD1600012165 | 16 | 43609215 |
| BovineHD1600012166 | 16 | 43612345 |
| BovineHD1600012168 | 16 | 43627846 |
| BovineHD1600012169 | 16 | 43632461 |
| Hapmap45799-BTA-38599 | 16 | 43642297 |
| BovineHD1600012172 | 16 | 43650904 |
| BovineHD1600012173 | 16 | 43654167 |
| BovineHD4100012512 | 16 | 43660841 |
| BovineHD1600012179 | 16 | 43687687 |
| ARS-BFGL-NGS-111432 | 16 | 43697344 |
| **BovineHD3000005842** | **30** | **17567524** |
| BovineHD3000005845 | 30 | 17578113 |
| BovineHD3000005848 | 30 | 17586327 |
| **BovineHD3000005849** | **30** | **17588787** |
| BovineHD3000005856 | 30 | 17617831 |
| BovineHD3000005857 | 30 | 17623953 |
| BovineHD3000005868 | 30 | 17658018 |
| BovineHD3000005872 | 30 | 17668396 |
| BovineHD3000005878 | 30 | 17680778 |
| BovineHD3000005879 | 30 | 17681607 |
| BovineHD3000005917 | 30 | 17780246 |
| BovineHD3000044398 | 30 | 17784409 |
| BovineHD3000044399 | 30 | 17810900 |
| BovineHD3000044400 | 30 | 17826478 |
| BovineHD3000005931 | 30 | 17843209 |
| BovineHD3000005938 | 30 | 17873190 |
| BovineHD3000005943 | 30 | 17887248 |
| BovineHD3000046133 | 30 | 17892632 |
| BovineHD3000005945 | 30 | 17896970 |
| BovineHD3000005946 | 30 | 17898861 |
| BovineHD3000005947 | 30 | 17900706 |
| **BovineHD3000005850** | **30** | **17591386** |
| BovineHD3000005956 | 30 | 17916881 |
| BovineHD3000005958 | 30 | 17919830 |
| BovineHD3000005959 | 30 | 17923473 |
| BovineHD3000005960 | 30 | 17928776 |
| BovineHD3000005964 | 30 | 17945151 |
| BovineHD3000046134 | 30 | 17949194 |
| **BovineHD3000005851** | **30** | **17595118** |
| BovineHD3000005966 | 30 | 17952147 |
| BovineHD3000005967 | 30 | 17953892 |
| BovineHD3000005968 | 30 | 17957583 |
| BovineHD3000005971 | 30 | 17965515 |
| BovineHD3000005972 | 30 | 17968682 |
| UA-IFASA-1818 | 30 | 17973050 |
| BovineHD3000005973 | 30 | 17978046 |
| BovineHD3000005983 | 30 | 18003580 |
| BovineHD3000005988 | 30 | 18017265 |
| BovineHD3000005989 | 30 | 18019950 |
| BovineHD3000005992 | 30 | 18026990 |
| BovineHD3000005993 | 30 | 18031295 |
| BovineHD3000005996 | 30 | 18046441 |
| BovineHD3000005997 | 30 | 18048563 |
| BovineHD3000006000 | 30 | 18058319 |
| BovineHD3000006002 | 30 | 18062626 |

1Single Nucleotide Polymorphisms (**SNP**)