Supplementary figures and tables: Nord and Jensen, Genomic regions associated with variation in fur coloration in saddle tan beagles

Graphical user interface, chart, line chart

Description automatically generated

Supplementary Figure 1: Q-Q plots of GEMMA Wald p-values.

A picture containing dark, star, fireworks, looking

Description automatically generated

Supplementary Figure 2: Multidimentional scaling plot of the first and second dimention for the studied population of 190 beagles. Red dots represent the 95 most white dogs while the blue dots represents the 95 least white dogs.

Supplementary Table 1: SNP markers significantly associated with variation in face colouration. The linkage blocks are visualised in Figure 4.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SNP | CHR | BP | P (Wald) | Haplo-block | Haploblock size (kb) | Haploblock range | Genes |
| BICF2S22925547 | 20 | 21691979 | 1.049e-08 | 1 | 24 | 21691979-21715930 |  |
| BICF2P1215624 | 20 | 21715930 | 4.708e-09 | 1 | 23 | 21691979-21715930 |  |
| BICF2G630233693 | 20 | 21904057 | 2.840e-07 |  |  |  |  |
| BICF2G630233682 | 20 | 21911990 | 4.625e-07 |  |  |  |  |
| BICF2G630233677 | 20 | 21920199 | 2.840e-07 |  |  |  |  |
| BICF2P831934 | 5 | 63728735 | 4.129e-09 |  |  |  |  |
| BICF2S23547384 | 5 | 63770156 | 4.129e-09 |  |  |  |  |
| BICF2P391963 | 5 | 64630776 | 4.129e-09 |  |  |  |  |
| BICF2P205133 | 5 | 67050262 | 4.412e-07 | 1 | 111 | 67050262-67161387 |  |
| BICF2G630242040 | 5 | 67161387 | 2.763e-07 | 1 | 111 | 67050262-67161387 |  |

Supplementary Table 2: SNP markers significantly associated with variation in neck colouration. The linkage blocks are visualised in Figure 5.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SNP | CHR | BP | P (Wald) | Haplo-block | Haploblock size (kb) | Haploblock range | Genes |
| BICF2S22925547 | 20 | 21691979 | 2.902e-10 | 1 | 23 | 21691979-21715930 |  |
| BICF2P1215624 | 20 | 21715930 | 1.903e-10 | 1 | 23 | 21691979-21715930 |  |
| BICF2G630233693 | 20 | 21904057 | 1.729e-07 |  |  |  |  |
| BICF2G630233682 | 20 | 21911990 | 3.302e-07 |  |  |  |  |
| BICF2G630233677 | 20 | 21920199 | 1.729e-07 |  |  |  |  |

Supplementary Table 3: SNP markers significantly associated with variation in leg colouration. The linkage blocks are visualised in Figure 6.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SNP | CHR | BP | P (Wald) | Haplo-  block | Haploblock size (kb) | Haploblock range | Genes | | |
| BICF2P483847 | 20 | 16205677 | 7.347e-08 | 1 | 417 | 16205677-16623190 | |  | |
| BICF2P492349 | 20 | 16240738 | 2.093e-09 | 1 | 417 | 16205677-16623190 | |  | |
| BICF2P1372858 | 20 | 16272832 | 7.083e-08 | 1 | 417 | 16205677-16623190 | |  | |
| BICF2S23615297 | 20 | 16623190 | 1.606e-08 | 1 | 417 | 16205677-16623190 | |  | |
| BICF2P253312 | 20 | 16817313 | 1.304e-08 | 2 | 314 | 16817313-17132311 | |  | |
| BICF2P1144936 | 20 | 16834026 | 5.808e-09 | 2 | 314 | 16817313-17132311 | |  | |
| BICF2P255275 | 20 | 17132311 | 2.730e-08 | 2 | 314 | 16817313-17132311 | |  | |
| BICF2G630230266 | 20 | 17458417 | 2.030e-07 |  |  |  |  | |  | |
| BICF2G630230774 | 20 | 18037927 | 5.516e-07 |  |  |  | | | |
| BICF2P850355 | 20 | 18594112 | 3.150e-07 | 3 | 270 | 18594112-18864380 | |  | |
| BICF2S23721855 | 20 | 18768767 | 1.300e-07 | 3 | 270 | 18594112-18864380 | |  | |
| BICF2G630231444 | 20 | 18864380 | 3.811e-07 | 3 | 270 | 18594112-18864380 | |  | |
| BICF2G630232660 | 20 | 20226838 | 1.016e-07 | 4 | 575 | 20226838-20802227 | |  | |
| TIGRP2P272419  \_rs8893890 | 20 | 20555326 | 1.143e-10 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2P1115099 | 20 | 20569369 | 3.095e-12 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233039 | 20 | 20605348 | 5.145e-11 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233041 | 20 | 20606862 | 3.514e-07 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233057 | 20 | 20622687 | 5.145e-11 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233071 | 20 | 20629558 | 4.759e-08 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233096 | 20 | 20651866 | 5.145e-11 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2P594369 | 20 | 20682992 | 2.344e-10 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233108 | 20 | 20694427 | 9.975e-08 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233110 | 20 | 20699604 | 9.975e-08 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2P1098098 | 20 | 20754205 | 2.315e-12 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233132 | 20 | 20756528 | 7.444e-11 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2P1178111 | 20 | 20771917 | 4.239e-07 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2G630233142 | 20 | 20790427 | 5.728e-08 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2S23243984 | 20 | 20802227 | 3.524e-12 | 4 | 575 | 20226838-20802227 | |  | |
| BICF2P616686 | 20 | 21585331 | 2.398e-11 | 5 | 130 | 21585331-21715930 | |  | |
| BICF2S22925547 | 20 | 21691979 | 8.494e-09 | 5 | 130 | 21585331-21715930 | |  | |
| BICF2P1215624 | 20 | 21715930 | 1.787e-08 | 5 | 130 | 21585331-21715930 | |  | |
| BICF2G630234534 | 20 | 22726919 | 2.108e-07 | 6 | 94 | 22726919-22821388 | EOGT | |  | |
| BICF2P1100420 | 20 | 22821388 | 2.108e-07 | 6 | 94 | 22726919-22821388 | EOGT | |  | |
| BICF2P1394766 | 20 | 41401124 | 5.478e-07 |  |  |  |  | |  | |

Supplementary Table 4: SNP markers significantly associated with variation in overall white. The linkage blocks are visualised in Figure 7.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SNP | CHR | BP | P (Wald) | Haplo-block | Haploblock size (kb) | Haploblock range | Genes |
| BICF2P613889 | 20 | 11195510 | 2.264e-08 | 1 | 12 | 11195510-11208465 |  |
| BICF2P326530 | 20 | 11208465 | 2.264e-08 | 1 | 12 | 11195510-11208465 |  |
| BICF2P926832 | 20 | 16480874 | 4.383e-07 |  |  |  |  |
| TIGRP2P272419  \_rs8893890 | 20 | 20555326 | 4.631e-08 | 2 | 246 | 20555326-20802227 | MITF |
| BICF2P1115099 | 20 | 20569369 | 9.607e-08 | 2 | 246 | 20555326-20802227 | MITF |
| BICF2P594369 | 20 | 20682992 | 1.918e-08 | 2 | 246 | 20555326-20802227 | MITF |
| BICF2P1098098 | 20 | 20754205 | 7.982e-08 | 2 | 246 | 20555326-20802227 | MITF |
| BICF2G630233132 | 20 | 20756528 | 7.480e-08 | 2 | 246 | 20555326-20802227 | MITF |
| BICF2S23243984 | 20 | 20802227 | 6.166e-08 | 2 | 246 | 20555326-20802227 | MITF |
| BICF2S22925547 | 20 | 21691979 | 8.582e-13 | 3 | 424 | 21691979-22116909 | MITF |
| BICF2P1215624 | 20 | 21715930 | 2.418e-13 | 3 | 424 | 21691979-22116909 | MITF |
| BICF2G630233693 | 20 | 21904057 | 1.464e-07 |  |  |  |  |
| BICF2G630233682 | 20 | 21911990 | 2.979e-07 |  |  |  |  |
| BICF2G630233677 | 20 | 21920199 | 1.464e-07 |  |  |  |  |
| BICF2P318776 | 20 | 22104719 | 4.718e-08 | 3 | 424 | 21691979-22116909 |  |
| BICF2G630233888 | 20 | 22116909 | 4.718e-08 | 3 | 424 | 21691979-22116909 |  |
| BICF2G630234534 | 20 | 22726919 | 1.051e-09 |  |  |  | EOGT (intron 1/14) |
| TIGRP2P273067  \_rs8691722 | 20 | 23501978 | 2.172e-07 |  |  |  |  |
| BICF2P451155 | 20 | 24250039 | 2.465e-08 |  |  |  |  |

Supplementary Table 5: SNP markers significantly associated with variation in saddle colouration. The linkage blocks are visualised in Figure 8.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SNP | CHR | BP | P (Wald) | Haplo-block | Haploblock size (kb) | Haploblock range | Genes |
| BICF2S23434355 | 5 | 62931527 | 3.640e-07 |  |  |  |  |
| BICF2P1008770 | 5 | 63383195 | 1.083e-08 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P808731 | 5 | 63406809 | 1.083e-08 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P857625 | 5 | 63498067 | 1.263e-11 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P1040066 | 5 | 63506496 | 1.263e-11 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P645336 | 5 | 63520829 | 3.640e-07 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P70559 | 5 | 63539215 | 1.263e-11 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P854028 | 5 | 63697949 | 2.695e-10 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P601502 | 5 | 63710280 | 2.791e-07 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P575049 | 5 | 63718071 | 2.791e-07 | 1 | 334 | 63383195-63718071 | MC1R |
| BICF2P831934 | 5 | 63728735 | 9.782e-18 |  |  |  |  |
| BICF2S23547384 | 5 | 63770156 | 9.782e-18 |  |  |  |  |
| BICF2P381779 | 5 | 64579861 | 1.026e-16 |  |  |  |  |
| BICF2P391963 | 5 | 64630776 | 9.782e-18 |  |  |  |  |
| BICF2S23123672 | 5 | 64662160 | 1.026e-16 |  |  |  |  |
| BICF2P402395 | 5 | 64666164 | 2.064e-07 | 2 | 89 | 64666164-64755545 |  |
| BICF2S22935158 | 5 | 64754407 | 4.107e-09 | 2 | 89 | 64666164-64755545 |  |
| BICF2P483155 | 5 | 64755545 | 5.355e-08 | 2 | 89 | 64666164-64755545 |  |
| BICF2P205133 | 5 | 67050262 | 3.349e-07 |  |  |  |  |