Table 1. Putative candidate genes in proximity of the significantly different markers between the Alpago sheep and the dairy breeds and allele frequencies at each marker (\*)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| OAR | marker | Position on OARv3.1 | Freq in Alpago | Freq in dairy sheep | Fst | χ2 | P χ2 | Gene symbol |
| 1 | s52761.1 | 6810500 | 0.50 | 0.08 | 0.20 | 48.00 | 4.26E-12 | SPP2, TRPM8, HJURP, HEATR7B1, UGT1A1-UGTIA9, |
| 1 | OAR1\_6722309.1 | 7192190 | 0.60 | 0 | 0.54 | 131.94 | 0 | USP40, DGKD |
| 1 | s32787.1 | 19742061 | 0.04 | 0.72 | 0.30 | 72.43 | 0 | MUTYH, TOE1, TESK2, MMACHC, PRDX1, LOC101121380, AKR1A1 |
| 1 | OAR1\_20007545.1 | 19939524 | 0.35 | 0.86 | 0.23 | 55.24 | 1.06E-12 | NASP |
| 1 | OAR1\_60457820.1 | 57434877 | 0.40 | 0.04 | 0.20 | 48.24 | 3.77E-12 | LPHN2 |
| 1 | OAR1\_66650935.1 | 63128803 | 0.66 | 0.99 | 0.24 | 57.72 | 3.03E-13 | LOC101116002 |
| 1 | OAR1\_91646701.1 | 86350067 | 0.790 | 0.12 | 0.38 | 91.44 | 0 | LOC101103942, CSF1 |
| 1 | s56663.1 | 111532788 | 0.470 | 0.92 | 0.22 | 53.24 | 2.95E-12 | OLFML2B |
| 1 | s22780.1 | 111532788 | 0.470 | 0.92 | 0.22 | 51.89 | 5.87E-13 | - |
| 1 | OAR1\_173875406.1 | 161194679 | 0.450 | 0.05 | 0.19 | 46.67 | 8.41E-12 | LOC101105868 |
| 1 | OAR1\_179807744.1 | 166717786 | 0.770 | 0.23 | 0.23 | 54.84 | 1.30E-12 | CLDND1 |
| 1 | OAR1\_182821609.1 | 169588616 | 0.60 | 0.00 | 0.20 | 49.13 | 0 | LOC101110901 |
| 1 | s71677.1 | 187513941 | 0.35 | 0.01 | 0.26 | 62.24 | 131.94 | ITGB5 |
| 1 | OAR1\_207388399.1 | 192144328 | 0.310 | 0.86 | 0.26 | 63.13 | 1.89E-14 | OPA1, ATP13A4 |
| 1 | OAR1\_214229899.1 | 198470222 | 0.120 | 0.85 | 0.41 | 98.82 | 0 | ST6GAL1, ADIPOQ |
| 1 | OAR1\_214257185.1 | 198500259 | 0.75 | 0.05 | 0.52 | 124.62 | 0 | ADIPOQ, AHSG |
| 1 | OAR1\_214611738.1 | 198809677 | 0.350 | 0.01 | 0.26 | 62.24 | 3.00E-14 | DNAJB11 |
| 1 | OAR1\_256257300.1 | 237070498 | 0.410 | 0.88 | 0.21 | 51.16 | 8.52E-12 | LOC101122652, HLTF |
| 1 | s50451.1 | 255176105 | 0.930 | 0.35 | 0.22 | 53.44 | 2.66E-12 | DNAJC13 |
| 1 | s52939.1 | 272093628 | 0.23 | 0.79 | 0.23 | 54.36 | 1.67E-12 | - |
| 1 | s01321.1 | 272093628 | 0.23 | 0.79 | 0.21 | 51.35 | 7.70E-12 | PLCL2 |
| 2 | s64483.1 | 8561759 | 0.33 | 0.84 | 0.20 | 49.09 | 2.44E-12 | TNC |
| 2 | OAR2\_12017706.1 | 12636461 | 0.25 | 0 | 0.21 | 50.53 | 1.18E-12 | MUSK |
| 2 | OAR2\_14833429.1 | 15388156 | 0.29 | 0.81 | 0.20 | 47.64 | 5.12E-12 | - |
| 2 | OAR2\_26696117.1 | 25850068 | 0.87 | 0.28 | 0.23 | 54.41 | 5.90E-14 | SYK, AUH |
| 2 | OAR2\_27179097.1 | 26300198 | 0.93 | 0.33 | 0.24 | 56.54 | 5.51E-13 | NFIL3 |
| 2 | s05642.1 | 40076474 | 0.58 | 0.14 | 0.19 | 45.82 | 1.30E-11 | DOCK5 |
| 2 | OAR2\_51548671.1 | 48025916 | 0.29 | 0.87 | 0.29 | 69.23 | 1.11E-16 | LOC101123268 |
| 2 | OAR2\_57729090.1 | 53725483 | 0.16 | 0.72 | 0.20 | 48.02 | 4.22E-12 | - |
| 2 | s34608.1 | 53797807 | 0.77 | 0.21 | 0.23 | 55.76 | 8.19E-13 | - |
| 2 | OAR2\_72534353\_X | 67927937 | 0.50 | 0.06 | 0.24 | 57.65 | 3.13E-14 | PGM5, FOXD4L1 |
| 2 | OAR2\_81561486.1 | 76562755 | 0.62 | 0.15 | 0.19 | 46.53 | 9.04E-12 | LOC101119443 |
| 2 | OAR2\_81599764.1 | 76595968 | 0.35 | 0.85 | 0.21 | 50.14 | 1.43E-12 | LOC101119443 |
| 2 | OAR2\_118458759.1 | 110252253 | 0.71 | 0.12 | 0.30 | 71.30 | 0 | CLCN3 |
| 2 | OAR2\_118492152.1 | 110284541 | 0.71 | 0.14 | 0.26 | 63.42 | 1.67E-14 | CLCN3 |
| 2 | s24740.1 | 110941391 | 0.31 | 0.84 | 0.23 | 54.34 | 1.69E-12 | PALLD |
| 2 | OAR2\_137787334.1 | 129421996 | 0.37 | 0.03 | 0.22 | 53.96 | 2.04E-13 | ZNF385B |
| 2 | OAR2\_162435425.1 | 153167948 | 0.85 | 0.29 | 0.21 | 51-57 | 6.92E-13 | KCNJ3 |
| 2 | OAR2\_170664020.1 | 161137278 | 0.10 | 0.70 | 0.23 | 55.54 | 9.15E-13 | LOC101114427 |
| 2 | OAR2\_172379160.1 | 162689295 | 0.70 | 0.20 | 0.19 | 46.31 | 1.01E-11 | - |
| 2 | s40187.1 | 187478444 | 0.31 | 0.86 | 0.25 | 61.25 | 5.00E-14 | LOC101121835 |
| 2 | OAR2\_212548956.1 | 200791746 | 0.73 | 0.18 | 0.24 | 57.14 | 4.06E-13 | SATB2 |
| 2 | OAR2\_233917337.1 | 221274691 | 0.35 | 0.87 | 0.24 | 57.07 | 4.21E-13 | LOC101115609 |
| 2 | OAR2\_246920756.1 | 233813983 | 0.62 | 0.16 | 0.19 | 46.53 | 9.04E-12 | RNF19B, TMEM54 |
| 2 | s12918.1 | 234947844 | 0.50 | 0.94 | 0.24 | 57.65 | 3.13E-13 | PEF1, LOC443167 |
| 2 | OAR2\_253147956.1 | 239679240 | 0.41 | 0.04 | 0.21 | 49.43 | 2.06E-12 | CD52, UBXN11, SH3BGRL3 |
| 3 | s12653.1 | 9384809 | 0.06 | 0.60 | 0.19 | 45.07 | 1.90E-11 | ZBTB43, LMX1B |
| 3 | s18917.1 | 20945203 | 0.79 | 0.25 | 0.20 | 47.82 | 4.67E-12 | LOC101121081 |
| 3 | OAR3\_22585512.1 | 20990316 | 0.37 | 0.87 | 0.23 | 55.05 | 1.17E-12 | LOC101121081 |
| 3 | OAR3\_55527602.1 | 52567205 | 0.56 | 0.94 | 0.19 | 45.53 | 1.50E-11 | LOC101122267 |
| 3 | OAR3\_57105491.1 | 54028026 | 0.64 | 0.14 | 0.22 | 53.48 | 2.61E-12 | - |
| 3 | OAR3\_57220169.1 | 54132844 | 0.21 | 0.75 | 0.20 | 49.00 | 2.56E-12 | - |
| 3 | s25321.1 | 62015360 | 0.89 | 0.30 | 0.23 | 55.54 | 9.15E-13 | LIMS1, RANBP2, CCDC138, EDAR |
| 3 | s68356.1 | 62044832 | 0.08 | 0.66 | 0.21 | 50.77 | 1.04E-12 | EDAR, SEPT10 |
| 3 | OAR3\_76396398.1 | 72444777 | 0.66 | 0.176 | 0.20 | 47.60 | 5.22E-12 | - |
| 3 | OAR3\_80674590.1 | 76290246 | 0.75 | 0.23 | 0.20 | 46.88 | 7.57E-12 | LOC101113750 |
| 3 | OAR3\_109038412.1 | 102642452 | 0.39 | 0.90 | 0.25 | 59.08 | 1.51E-13 | INPP4A |
| 3 | OAR3\_117600112.1 | 110405090 | 0.56 | 0.94 | 0.20 | 45.53 | 1.50E-11 | ATXN7L3B |
| 3 | OAR3\_128369653.1 | 120461206 | 0.48 | 0.92 | 0.22 | 51.89 | 5.87E-13 | - |
| 3 | OAR3\_129795005.1 | 121783973 | 0.50 | 0.05 | 0.25 | 60.42 | 7.66E-14 | RASSF9 |
| 3 | OAR3\_129827293.1 | 121820648 | 0.580 | 0.13 | 0.19 | 45.82 | 1.30E-11 | RASSF9 |
| 3 | OAR3\_150346213.1 | 140531160 | 0.50 | 0.93 | 0.22 | 52.56 | 4.18E-12 | ARID2 |
| 3 | OAR3\_155236610.1 | 145440383 | 0.27 | 0.81 | 0.22 | 52.62 | 4.04E-12 | PDZRN4 |
| 3 | OAR3\_164422954.1 | 153757136 | 0.12 | 0.71 | 0.23 | 54.08 | 1.92E-12 | LOC101115783 |
| 3 | s26177.1 | 154006814 | 0.75 | 0.18 | 0.25 | 59.41 | 1.28E-13 | MSRB3 |
| 3 | OAR3\_199195610.1 | 184943054 | 0.31 | 0.82 | 0.21 | 49.71 | 1.78E-12 | TMTC1 |
| 3 | OAR3\_217071000.1 | 201792214 | 0.81 | 0.13 | 0.38 | 91.41 | 0 | HEBP1 |
| 3 | s30057.1 | 201873340 | 0.79 | 0.24 | 0.21 | 50.21 | 1.38E-12 | DDX47 |
| 3 | OAR3\_217297404.1 | 201904310 | 0.29 | 0.88 | 0.32 | 75.68 | 0 | DDX47, APOLD1 |
| 3 | OAR3\_228151147.1 | 210503819 | 0.58 | 0.12 | 0.20 | 47.53 | 5.42E-12 | PRMT8, TSPAN5 |
| 4 | OAR4\_5373295.1 | 5154846 | 0.21 | 0.75 | 0.20 | 49.00 | 2.56E-12 | GRB10, DDC |
| 4 | OAR4\_26202538\_X.1 | 24914993 | 0.85 | 0.14 | 0.39 | 94.06 | 0 | ISPD, SOSTDC1 |
| 4 | OAR4\_43234910.1 | 41134617 | 0.56 | 0.10 | 0.20 | 49.28 | 2.22E-12 | GNAI1 |
| 4 | OAR4\_51441757.1 | 48627750 | 0.21 | 0.76 | 0.21 | 51.45 | 7.36E-12 | DUS4L, BCAP29 |
| 4 | OAR4\_51489408.1 | 48669962 | 0.96 | 0.27 | 0.31 | 75.13 | 0 | CBLL1, SLC26A3 |
| 4 | OAR4\_62748691.1 | 59406742 | 0.14 | 0.79 | 0.29 | 70.06 | 1.11E-16 | LOC101108828 |
| 4 | s29492.1 | 64853293 | 0.48 | 0.92 | 0.21 | 49.70 | 1.79E-12 | PPP1R17, CCDC129 |
| 4 | OAR4\_72606039.1 | 68639881 | 0.52 | 0.08 | 0.24 | 56.61 | 5.32E-13 | ZNF804B |
| 4 | OAR4\_72720594.1 | 68754789 | 0.33 | 0.85 | 0.22 | 53.86 | 2.16E-12 | ZNF804B |
| 4 | OAR4\_106683143.1 | 100255840 | 0.52 | 0.98 | 0.36 | 85.42 | 0 | CHRM2 |
| 5 | s75595.1 | 32903045 | 0.44 | 0.05 | 0.22 | 53.57 | 2.49E-12 |  |
| 5 | s25265.1 | 36255558 | 0.31 | 0 | 0.27 | 64.00 | 1.22E-14 | MXD3, LMAN2 |
| 5 | OAR5\_56371275.1 | 51953150 | 0.10 | 0.69 | 0.23 | 54.43 | 1.61E-12 | NR3C1 |
| 5 | s07518.1 | 58793978 | 0.04 | 0.66 | 0.25 | 60.42 | 7.66E-14 | PPARGC1B, PDE6A, SLC26A2, TIGD6, CSF1R |
| 5 | OAR5\_86274234.1 | 78494552 | 0.40 | 0.87 | 0.21 | 49.47 | 2.02E-12 | RASGRF2 |
| 6 | OAR6\_1269948.1 | 1164307 | 0.56 | 0.09 | 0.24 | 57.61 | 3.19E-14 | - |
| 6 | OAR6\_21601091.1 | 18643578 | 0.37 | 0.02 | 0.22 | 53.97 | 2.04E-13 | - |
| 6 | OAR6\_37329315.1 | 33333517 | 0.50 | 0.08 | 0.20 | 48.00 | 4.26E-12 | - |
| 6 | OAR6\_42247197.1 | 37987281 | 0.85 | 0.24 | 0.26 | 61.40 | 4.66E-14 | LOC101104580 |
| 6 | OAR6\_55628478.1 | 50334519 | 0.46 | 0.90 | 0.20 | 47.44 | 5.67E-12 | LOC101109016, LOC101109273 |
| 6 | OAR6\_60012668.1 | 54526894 | 0.73 | 0.20 | 0.21 | 51.21 | 8.32E-12 | LOC101108134 |
| 6 | OAR6\_60020197.1 | 54534735 | 0.73 | 0.22 | 0.19 | 45.91 | 1.24E-11 | LOC101108134 |
| 6 | OAR6\_96811452.1 | 88386008 | 0.50 | 0.09 | 0.19 | 45.90 | 1.25E-11 | RASSF6, CXCL8 |
| 6 | OAR6\_100948773.1 | 92003603 | 0.37 | 0.04 | 0.21 | 50.42 | 1.24E-12 | CXCL13, CNOT6L |
| 7 | s11241.1 | 27033106 | 0.29 | 0.88 | 0.30 | 71.30 | 0 | SCG5, ARHGAP11A |
| 7 | OAR7\_36667473.1 | 32490777 | 0.50 | 0.09 | 0.19 | 45.90 | 1.25E-11 | FSIP1, GPR176 |
| 7 | OAR7\_44708135.1 | 40393699 | 0.94 | 0.31 | 0.26 | 62.11 | 3.22E-14 | CDKL1, MAP4K5, ATL1 |
| 7 | OAR7\_46642359.1 | 42042691 | 0.56 | 0.11 | 0.21 | 49.28 | 2.22E-12 | NID2 |
| 7 | OAR7\_46765080.1 | 42133836 | 0.60 | 0.13 | 0.20 | 47.75 | 4.81E-12 | NID2 |
| 7 | s61284.1 | 77275362 | 0.19 | 0.72 | 0.19 | 46.75 | 8.07E-12 | ZFP36L1 |
| 7 | OAR7\_97378846.1 | 89519883 | 0.06 | 0.89 | 0.55 | 132.09 | 0 | TSHR, GTF2A1, STON2, IMPG1 |
| 7 | OAR7\_108844976.1 | 99971068 | 0.73 | 0.20 | 0.21 | 49.83 | 1.68E-12 | B2M, TRIM69 |
| 7 | OAR7\_108923470.1 | 100046039 | 0.27 | 0.80 | 0.21 | 49.83 | 1.68E-12 | C7H15orf43 |
| 8 | OAR8\_2827442.1 | 2581572 | 0.23 | 0.75 | 0.19 | 46.71 | 8.24E-12 | MYO6, IMPG1 |
| 8 | OAR8\_10929708.1 | 9763241 | 0.60 | 0.14 | 0.19 | 46.12 | 1.11E-11 | - |
| 8 | OAR8\_19904601.1 | 17750087 | 0.58 | 0.12 | 0.20 | 47.53 | 5.42E-12 | - |
| 8 | OAR8\_33619693.1 | 30902908 | 0.46 | 0.06 | 0.20 | 49.48 | 2.00E-12 | PRDM1 |
| 9 | OAR9\_44551958.1 | 42410286 | 0.31 | 0.81 | 0.20 | 46.87 | 7.60E-12 | LOC101119648 |
| 9 | s35171.1 | 46593673 | 0.56 | 0.96 | 0.24 | 56.64 | 5.24E-13 | SLCO5A1, PRDM14 |
| 9 | OAR9\_60354037.1 | 57418715 | 0.49 | 0.03 | 0.29 | 68.81 | 1.11E-16 | FABP5, PMP2, FABP9, FABP4, FABP12 |
| 9 | OAR9\_70808263.1 | 66797326 | 0.64 | 0.12 | 0.25 | 60.94 | 5.88E-14 | - |
| 9 | OAR9\_81995689.1 | 77377746 | 0.33 | 0.83 | 0.20 | 49.09 | 2.44E-12 | LOC101105166 |
| 9 | OAR9\_82171170.1 | 77563420 | 0.67 | 0.16 | 0.20 | 49.09 | 2.44 E-12 | LOC101105667 |
| 9 | OAR9\_82428531.1 | 77756891 | 0.64 | 0.14 | 0.19 | 46.12 | 1.11E-11 | LOC101105578 |
| 9 | s68288.1 | 82845383 | 0.50 | 0.07 | 0.22 | 52.56 | 4.18E-12 | PDP1 |
| 10 | OAR10\_17009371.1 | 17985749 | 0.54 | 0.93 | 0.20 | 47.04 | 6.96E-12 | SUCLA2 |
| 10 | OAR10\_20153574.1 | 20743646 | 0.62 | 0.97 | 0.21 | 50.42 | 1.24E-12 | RNASEH2B |
| 10 | OAR10\_25277320.1 | 25372643 | 0.52 | 0.93 | 0.20 | 48.60 | 3.14E-12 | CCNA1, SPG20 |
| 10 | OAR10\_29722772.1 | 29688513 | 0.44 | 0.05 | 0.21 | 50.71 | 1.07E-12 | LOC101110520 |
| 10 | OAR10\_49581266.1 | 48804938 | 0.42 | 0.91 | 0.25 | 59.41 | 1.28E-13 | KLF12 |
| 10 | OAR10\_68107947.1 | 65895391 | 0.50 | 0.04 | 0.29 | 69.81 | 1.11E-16 | LOC101105511 |
| 10 | OAR10\_86476189.1 | 79312434 | 0.33 | 0.03 | 0.19 | 45.41 | 1.59E-11 | - |
| 11 | s44351.1 | 49904840 | 0.48 | 0.93 | 0.24 | 59.16 | 1.45E-13 | CCDC57, FASN |
| 11 | OAR11\_53396507.1 | 50045164 | 0.52 | 0.06 | 0.26 | 61.86 | 3.66E-14 | LRRC45 |
| 11 | s21293.1 | 50499706 | 0.85 | 0.28 | 0.22 | 52.70 | 3.88E-12 | FSCN2, BAHCC1 |
| 11 | OAR11\_53911339.1 | 50555954 | 0.16 | 0.83 | 0.33 | 79.38 | 0 | SLC38A10 |
| 11 | s02321.1 | 56879263 | 0.68 | 0.98 | 0.32 | 76.89 | 0 | SDK2 |
| 12 | s01814.1 | 61016447 | 0.66 | 0.12 | 0.26 | 62.98 | 2.11E-14 | CACNA1E |
| 13 | OAR13\_16352990.1 | 12507130 | 0.50 | 0.93 | 0.21 | 50.22 | 1.38E-12 | - |
| 13 | OAR13\_28884642.1 | 26065987 | 0.35 | 0 | 0.28 | 67.40 | 2.22E-16 | - |
| 13 | OAR13\_60759835.1 | 55866953 | 0.02 | 0.62 | 0.23 | 55.10 | 1.14E-13 | CDH26 |
| 13 | s47781.1 | 55915765 | 0.02 | 0.66 | 0.27 | 64.43 | 9.99E-16 | FAM217B, PPP1R3D |
| 13 | OAR13\_60821868.1 | 55934178 | 0.02 | 0.66 | 0.27 | 64.43 | 9.99E-16 | SYCP2 |
| 13 | OAR13\_60855392.1 | 55970160 | 0.02 | 0.74 | 0.35 | 83.86 | 0 | PHACTR3 |
| 13 | OAR13\_60893851.1 | 56010691 | 0.02 | 0.65 | 0.25 | 61.16 | 5.22E-14 | PHACTR3 |
| 13 | s02520.1 | 67358011 | 0.70 | 0.20 | 0.20 | 47.64 | 5.12E-12 | DHX35 |
| 13 | s02926.1 | 81307319 | 0.66 | 0.97 | 0.19 | 45.42 | 1.59E-11 | PFDN4 |
| 14 | s14664.1 | 35090205 | 0.48 | 0.07 | 0.20 | 48.61 | 3.14E-12 | PRMT7, SMPD3, ZFP90 |
| 14 | OAR14\_40361772.1 | 38773893 | 0.50 | 0.92 | 0.21 | 50.22 | 1.38E-12 | MARVELD3, TAT |
| 15 | OAR15\_44383019.1 | 42255552 | 0.60 | 0.10 | 0.25 | 59.08 | 1.51E-13 | SBF2 |
| 16 | OAR16\_16170469.1 | 14767179 | 0.23 | 0.79 | 0.23 | 55,76 | 8.19E-13 | FAM159B |
| 16 | OAR16\_29940273.1 | 27626805 | 0.73 | 1 | 0.23 | 54.98 | 1.22E-12 | ISL1 |
| 17 | OAR17\_5388531.1 | 4867509 | 0.94 | 0.26 | 0.30 | 72.23 | 0 | TMEM154 |
| 17 | OAR17\_5405721.1 | 4884323 | 0.83 | 0.28 | 0.20 | 48.02 | 4.22E-12 | TMEM154 |
| 18 | s11494.1 | 21073874 | 0.33 | 0.85 | 0.23 | 55.56 | 9.08E-13 | BLM, CRTC3 |
| 18 | s67461.1 | 61359564 | 0.31 | 0.81 | 0.20 | 46.87 | 7.60E-12 | - |
| 19 | OAR19\_4811675.1 | 4574002 | 0.83 | 0.29 | 0.19 | 45.89 | 1.25E-11 |  |
| 19 | OAR19\_11294238.1 | 10978405 | 0.62 | 0.15 | 0.19 | 45.00 | 1.97E-11 | ITGA9 |
| 19 | OAR19\_21731241.1 | 20710410 | 0.83 | 0.21 | 0.27 | 65.97 | 4.44E-16 | - |
| 19 | OAR19\_33278780.1 | 31599394 | 0.08 | 0.78 | 0.34 | 81.35 | 0 | - |
| 19 | s10362.1 | 31777619 | 0.71 | 0.18 | 0.22 | 51.87 | 5.92E-12 | MITF |
| 19 | OAR19\_33531772.1 | 31856390 | 0.71 | 0.18 | 0.21 | 50.42 | 1.24E-12 | MITF |
| 19 | OAR19\_34526931.1 | 32853591 | 0.79 | 0.25 | 0.20 | 47.82 | 4.67E-12 | FAM19A4 |
| 19 | OAR19\_35350920.1 | 33675852 | 0.48 | 0.93 | 0.25 | 58.46 | 2.08E-14 | SUCLG2 |
| 19 | OAR19\_36976172.1 | 35253502 | 0.21 | 0.75 | 0.21 | 50.21 | 1.38E-12 | SLC25A26 |
| 20 | OAR20\_12428276.1 | 11892651 | 0.14 | 0.68 | 0.19 | 45.22 | 1.76E-11 | ZFAND3 |
| 20 | OAR20\_20802573.1 | 19823302 | 0.19 | 0.73 | 0.20 | 49.00 | 2.56E-12 | RCAN2 |
| 20 | OAR20\_25674688.1 | 24176589 | 0.75 | 0.23 | 0.19 | 45.66 | 1.41E-11 | PKHD1 |
| 20 | OAR20\_37554109.1 | 34287734 | 0.69 | 0.17 | 0.21 | 51.20 | 8.31E-13 | PRL |
| 20 | s09368.1 | 47985215 | 0.40 | 0.86 | 0.20 | 47.76 | 4.81E-12 | NRN1 |
| 20 | s69797.1 | 48727676 | 0.19 | 0.83 | 0.31 | 75.04 | 0 | CDYL |
| 21 | OAR21\_33386433.1 | 29821881 | 0.40 | 0.89 | 0.23 | 55.00 | 1.20E-12 | - |
| 21 | s58433.1 | 48899255 | 0.84 | 0.20 | 0.29 | 70.67 | 0 | MUC6, AP2A2 |
| 22 | OAR22\_1443093.1 | 952918 | 0.05 | 0.78 | 0.38 | 91.10 | 0 | - |
| 22 | OAR22\_12633012.1 | 10696700 | 0.55 | 0.07 | 0.25 | 60.75 | 6.44E-14 | CH25H, LIPA |
| 22 | s06766.1 | 14579580 | 0.23 | 0 | 0.19 | 46.11 | 1.12E-11 | FFAR4, RBP4, PDE6C |
| 22 | OAR22\_38886643.1 | 34060763 | 0.54 | 0.95 | 0.23 | 54.84 | 1.30E-12 | ABLIM1 |
| 22 | s63122.1 | 37597560 | 0.52 | 0.97 | 0.30 | 72.52 | 0 | FAM204A |
| 22 | s20215.1 | 48144160 | 0.87 | 0.27 | 0.24 | 57.60 | 3.21E-13 | EBF3, GLRX3 |
| 22 | s03678.1 | 49701952 | 0.44 | 0.06 | 0.19 | 45.53 | 1.50E-11 | PPP2R2D, BNIP3, JAKMIP3 |
| 23 | OAR23\_26218052.1 | 25073948 | 0.46 | 0.94 | 0.29 | 69.09 | 1.11E-16 | MEP1B |
| 23 | OAR23\_30585446.1 | 29385811 | 0.33 | 0.01 | 0.24 | 57.72 | 3.03E-13 | CDH2 |
| 23 | OAR23\_54640737.1 | 51643007 | 0.06 | 0.61 | 0.19 | 46.82 | 7.78E-12 | - |
| 23 | OAR23\_56352885.1 | 53003629 | 0.58 | 0.99 | 0.32 | 76.11 | 0 | DCC |
| 24 | s01398.1 | 884092 | 0.81 | 0.23 | 0.24 | 57.76 | 0 | TRYPTASE-1 |
| 24 | s12708.1 | 2416588 | 0.25 | 0 | 0.21 | 50.53 | 1.18E-12 | KREMEN2, PAQR4, PKMYT1, CLDN6, TNFRSF12A, HCFC1R1, THOC6, CCDC64B |
| 24 | OAR24\_28699670.1 | 26142394 | 1.00 | 0.44 | 0.20 | 48.27 | 3.71E-12 | CLN3, APOBR, IL27, NUPR1, CCDC101, SULT1A1, SLX1A, BOLA2B, CORO1A, MAPK3, YPEL3, GDPD3, TBX6, PPP4C, ALDOA |
| 24 | s11262.1 | 27182624 | 0.50 | 0.02 | 0.36 | 85.55 | 0 | FBXL19, ORAI3, SETD1A, HSD3B7, STX1B, STX4, ZNF668, ZNF646, PRSS53, BCKDK, KAT8, PRSS36, FUS, PYCARD, TRIM72, ITGAM |
| 25 | s03686.1 | 7517270 | 0.910 | 0.37 | 0.19 | 45.12 | 1.86E-12 | TARBP1, IRF2BP2 |
| 25 | OAR25\_23251006.1 | 22243677 | 0.48 | 0.07 | 0.21 | 50.99 | 9.29E-12 | CTNNA3 |
| 26 | OAR26\_12774373.1 | 10223750 | 0.48 | 0.07 | 0.20 | 48.60 | 3.14E-12 | - |
| 26 | OAR26\_15157626.1 | 12382671 | 0.82 | 0.26 | 0.21 | 50.16 | 1.41E-12 | TENM3 |
| 26 | s43123.1 | 15461566 | 0.61 | 0.11 | 0.23 | 55.00 | 1.20E-12 | FAT1 |
| 26 | OAR26\_24448304\_X.1 | 20763584 | 0.63 | 0.13 | 0.22 | 53.22 | 2.98E-12 | LOC101122163 |
| 26 | OAR26\_30335417.1 | 26245096 | 0.71 | 0.20 | 0.19 | 46.31 | 1.01E-11 | NRG1 |
| 26 | OAR26\_33170440.1 | 28944776 | 0.40 | 0.04 | 0.19 | 45.37 | 1.63E-12 | - |
| 26 | OAR26\_34322333.1 | 30000919 | 0.77 | 0.25 | 0.19 | 45.54 | 1.49E-11 | - |
| 26 | OAR26\_35926259.1 | 31588369 | 0.79 | 0.25 | 0.20 | 47.82 | 4.67E-12 | LOC101117474 |
| 26 | OAR26\_35965231.1 | 31624872 | 0.58 | 0.10 | 0.22 | 53.09 | 4.67E-12 | ERLIN2 |
| 26 | OAR26\_46471996\_X.1 | 41014058 | 0.92 | 0.30 | 0.24 | 58.21 | 2.36E-13 | UB2E2 |
| 26 | OAR26\_48248025.1 | 42537822 | 0.45 | 0.89 | 0.20 | 47.44 | 5.67E-12 | - |
| X | OARX\_14005468.1 | 7822202 | 0.58 | 0.06 | 0.31 | 74.16 | 0 | MID1 |
| X | s64293.1 | 7916573 | 0.58 | 0.11 | 0.21 | 50.47 | 1.21E-12 | MID1 |
| X | OARX\_14104070.1 | 7924371 | 0.27 | 0.87 | 0.31 | 73.47 | 0 | MID1 |
| X | OARX\_14214233.1 | 8033887 | 0.52 | 0.10 | 0.19 | 45.65 | 1.42E-11 | MID1 |
| X | OARX\_25730959.1 | 17767983 | 0.96 | 0.39 | 0.20 | 48.61 | 3.12E-12 | RPS6KA3 |
| X | OARX\_57823297.1 | 44086585 | 0.25 | 0 | 0.30 | 71.,44 | 1.18E-12 | ARHGEF9 |
| X | OARX\_53225720.1 | 51690973 | 0.56 | 0.98 | 0.21 | 50.53 | 0 | DGKK |
| X | OARX\_59194976.1 | 55788390 | 0.50 | 0.01 | 0.38 | 90.24 | 0 |  |
| X | OARX\_59327581.1 | 55909305 | 0.10 | 0.78 | 0.31 | 75.39 | 0 | LOC101119112 |
| X | OARX\_59383635.1 | 55937193 | 0.10 | 0.78 | 0.31 | 75.39 | 0 | LOC101119112 |
| X | OARX\_59578440.1 | 56165053 | 0.96 | 0.27 | 0.31 | 73.76 | 0 | LOC101119962 |
| X | OARX\_59912586.1 | 56538556 | 0.44 | 0.01 | 0.34 | 80.83 | 0 | LOC101119370 |
| X | OARX\_63233390\_X.1 | 60071643 | 0.44 | 0.03 | 0.28 | 67.30 | 2.22E-16 | DLG3, TEX11 |
| X | OARX\_63571789.1 | 60424702 | 0.25 | 0.97 | 0.57 | 137.40 | 0 | MED12 |
| X | OARX\_63797403.1 | 60640247 | 0.85 | 0.29 | 0.21 | 50.45 | 1.22E-12 | TAF1 |
| X | DU400878\_520.1 | 73847207 | 0.54 | 0.96 | 0.25 | 60.95 | 5.88E-14 | CHM |
| X | OARX\_71592298.1 | 73893601 | 0.52 | 0.09 | 0.20 | 47.63 | 5.16E-12 | CHM |
| X | OARX\_72164491.1 | 74388397 | 0.5 | 0.98 | 0.36 | 85.55 | 0 | DACH2 |
| X | OARX\_72236232.1 | 74464263 | 0.56 | 0.04 | 0.36 | 87.39 | 0 | DACH2 |
| X | OARX\_72263548.1 | 74498463 | 0.44 | 0.97 | 0.4 | 95.63 | 0 | DACH2 |
| X | OARX\_72351736.1 | 74590448 | 0.49 | 0.91 | 0.20 | 47.63 | 5.16E-12 | DACH2 |
| X | OARX\_97512438.1 | 77506859 | 0.46 | 0.06 | 0.21 | 51.46 | 2.00E-12 | L1CAM |
| X | OARX\_118303785.1 | 79075581 | 0.06 | 0.61 | 0.21 | 49.48 | 1.22E-11 | GABRE |
| X | OARX\_102028326.1 | 82170076 | 0.21 | 0.81 | 0.27 | 65.73 | 5.55E-16 | [AFF2](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=gene&cmd=retrieve&dopt=full_report&list_uids=101116804) |
|  | OARX\_110496762.1 | 91284477 | 0.23 | 0.77 | 0.21 | 50.39 | 1.26E-12 |  |
| X | OARX\_117997553\_X1 | 96253450 | 0.61 | 0.07 | 0.30 | 70.97 | 0 | GPC4 |
| X | OARX\_77318524.1 | 118018281 | 0.54 | 0.09 | 0.19 | 45.94 | 7.32E-12 | AMMECR1 |

(\*) frequency refers to A allele for A/G SNPs and to C allele for C/T SNPs.