

TABLE S1**A sample of potassium channel related genes, their locations and the significance of CLL in their respective genomic regions**

| Gene | Chromosome | Location (Mbp) | P-value ^a |
|---|------------|------------------------|----------------------|
| KCNMB2 potassium large conductance calcium-activated channel, subfamily M, beta member 2 | 1 | 90497302 to 90533714 | <0.01 |
| LOC539609 similar to calcium-activated potassium channel beta 3 subunit | 1 | 90178175 to 90189020 | <0.05 |
| KCNJ6 potassium inwardly-rectifying channel, subfamily J, member 6 | 1 | 153203304 to 153302300 | <0.01 |
| KCTD18 potassium channel tetramerisation domain containing 18 | 2 | 93326843 to 93347668 | <0.01 |
| LOC528741 similar to Potassium voltage-gated channel subfamily KQT member 4 | 3 | 112355459 to 112397271 | <0.01 |
| KCTD17 potassium channel tetramerisation domain containing 17 | 5 | 81355293 to 81365551 | <0.01 |
| KCTD8 potassium channel tetramerisation domain containing 8 | 6 | 65617020 to 65880230 | <0.01 |
| KCNIP4 Kv channel interacting protein 4 | 6 | 41419999 to 41522915 | <0.01 |
| KCTD9 potassium channel tetramerisation domain containing 9 | 8 | 76553678 to 76634800 | <0.01 |
| KCNN2 potassium intermediate/small conductance calcium-activated channel, subfamily N, member 2 | 10 | 2774232 to 2941240 | <0.01 |
| KCNK10 potassium channel, subfamily K, member 10 | 10 | 102914246 to 103002706 | N.S. |
| LOC787307 similar to potassium channel, subfamily K, member 13 | 10 | 104750054 to 104868308 | <0.01 |
| KCNT1 potassium channel, subfamily T, member 1 | 11 | 107250180 to 107296127 | <0.01 |
| KCMF1 potassium channel modulatory factor 1 | 11 | 51702094 to 51734247 | <0.01 |
| KCNRG potassium channel regulator | 12 | 18849412 to 18854893 | <0.01 |
| KCTD12 potassium channel tetramerisation domain containing 12 | 12 | 52443570 to 52445112 | N.S. ^b |
| KCNV1, potassium channel, subfamily V, member 1 | 14 | 52285517 to 52291616 | <0.01 |
| KCNK9 potassium channel, subfamily K, member 9 | 14 | 2992665 to 2993414 | N.S. |
| KCNC1 potassium voltage-gated channel, Shaw-related subfamily, member 1 | 15 | 33443470 to 33478009 | <0.01 |
| KCNAB2 potassium voltage-gated channel, shaker-related subfamily, beta member 2 | 16 | 44432964 to 44488939 | <0.01 |
| KCNK2 potassium channel, subfamily K, member 2 | 16 | 66195133 to 66332411 | <0.01 |
| KCTD10 potassium channel tetramerisation domain containing 10 | 17 | 66989274 to 67018624 | <0.01 |
| KCTD15 potassium channel tetramerisation domain containing 15 | 18 | 43672614 to 43687280 | <0.01 |
| KCNN4 potassium intermediate/small conductance calcium-activated channel, subfamily N, member 4 | 18 | 51704024 to 51717711 | <0.01 |
| KCNK6 potassium channel, subfamily K, member 6 | 18 | 47597197 to 47605452 | <0.01 |

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| KCTD11 potassium channel tetramerisation domain containing 11 | 19 | 27430450 to 27433058 | <0.01 |
| KCNMB1 potassium large conductance calcium-activated channel, subfamily M, beta member 1 | 20 | 879685 to 892344 | <0.01 |
| KCTD6 potassium channel tetramerisation domain containing 6 | 22 | 43720967 to 43723995 | <0.01 |
| KCTD20 potassium channel tetramerisation domain containing 20 | 23 | 10658756 to 10694823 | <0.01 |
| KCNK17 potassium channel, subfamily K, member 17 | 23 | 13661306 to 13673969 | <0.01 |
| KCTD1 potassium channel tetramerisation domain containing 1 | 24 | 31526407 to 31532051 | <0.01 |
| KCTD1 potassium channel tetramerisation domain containing 1 | 24 | 31252383 to 31331532 | <0.01 |
| KCTD5 potassium channel tetramerisation domain containing 5 | 25 | 2655433 to 2676088 | <0.01 |
| KCTD13 potassium channel tetramerisation domain containing 13 | 25 | 28157084 to 28170312 | <0.05 |
| KCTD7 potassium channel tetramerisation domain containing 7 | 25 | 29978110 to 29988583 | <0.05 |
| KCNK18 potassium channel, subfamily K, member 18 | 26 | 37920930 to 37933177 | N.S. |
| LOC524144 similar to potassium channel, subfamily U, member 1 | 27 | 34349739 to 34419158 | <0.01 |
| KCNK4 potassium channel, subfamily K, member 4 | 29 | 44377105 to 44387219 | <0.01 |
| KCTD21 potassium channel tetramerisation domain containing 21 | 29 | 18831873 to 18850491 | <0.01 |
| KCND1 potassium voltage-gated channel, Shal-related subfamily, member 1 | X | 55447620 to 55453611 | <0.01 |

^a genome-wide

^b P < 0.01 in the Holstein breed