|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Canine tumors | Gene 1 | | Gene 2 | | Chromosomal positions and strand | Reads  spanning the fusion junction | Reads encompassing the two fusion transcripts | filter for  manual curation |
| Ensembl ID | Gene Name | Ensembl ID | Gene Name |
| Dermatofibrosarcoma  protuberans–like (DFSP-like) | **ENSCAFG00000001356** | ***PDGFB*** | **ENSCAFG00000014812** | ***COL3A1*** | **10:25807321,-1 / 36:30511682,-1** | **181** | **491** | **No\_paralogy** |
| NA | *NA* | ENSCAFG00000005042 | *RAB3GAP1* | 7:44081193,-1 / 19:37888785,-1 | 24 | 26 | unannoted gene |
| ENSCAFG00000007832 | *TCF7L1* | NA | *NA* | 17:39857421,-1 / 17:7827833,-1 | 8 | 12 | unannoted gene |
| ENSCAFG00000015770 | *PLD5* | ENSCAFG00000017167 ENSCAFG00000017177 | *KCNN3 UBE2Q1* | 7:33541075,-1 / 7:42807018,-1 | 7 | 9 | No\_paralogy |
| ENSCAFG00000009721 | *ALCAM* | ENSCAFG00000008481 | *VPS29* | 33:11182640,-1 / 26:8306617,-1 33:11182640,-1 / 26:8306656,-1 | 13 | 8 | No\_paralogy |
| ENSCAFG00000008039 | *DIP2B* | ENSCAFG00000005074 | *MYO7A* | 27:4110471,1 / 21:21606078,-1 | 5 | 5 | No\_paralogy |
| ENSCAFG00000012143 | *NPEPL1* | ENSCAFG00000029257 | *NA* | 24:43475290,1 / 24:43459903,1 24:43475290,1 / 24:43457764,1 | 17 | 35 | read through |
| ENSCAFG00000020031 | *WWOX* | NA | *WWOX* | 5:72965167,-1 / 5:72299345,-1 | 28 | 20 | Paralogous |
| ENSCAFG00000002743 | *MYEOV2* | NA | *MYEOV2* | 14:36752071,-1 / 25:50301922,-1 | 48 | 13 | Paralogous |
| ENSCAFG00000015878 | *UCHL1* | ENSCAFG00000015887 | *APBB2* | 3:71407039,-1 / 3:71512266,-1 | 11 | 18 | read through |
| ENSCAFG00000023425 | *NA* | ENSCAFG00000031979 | *PRKG1* | 26:36497064,-1 / 26:36175693,-1 | 5 | 11 | read through |
| ENSCAFG00000009230, ENSCAFG00000009249 | *CMSS1 TMEM30C* | ENSCAFG00000031675 | *COL8A1* | 33:6785046,-1 / 33:6423659,-1 | 6 | 6 | read through |
| ENSCAFG00000018981 | *C16orf72* | ENSCAFG00000019025 | *NA* | 6:33151010,1 / X:110022775,-1 | 64 | 47 | Paralogous |
| ENSCAFG00000032099 | *NA* | ENSCAFG00000013770 | *ARHGAP27* | 9:10370985,1 / 9:18195693,1 | 25 | 39 | Paralogous |
| ENSCAFG00000031015 | *YWHAH* | ENSCAFG00000013549 | *YWHAG* | 26:24785598,-1 / 6:7532376,1 | 53 | 33 | Paralogous |
| ENSCAFG00000029171 | *NA* | ENSCAFG00000015864 | *NA* | 7:36719055,1 / 7:37064042,1 | 12 | 15 | Paralogous |
| ENSCAFG00000016270 | *FYTTD1* | ENSCAFG00000029695 | *NA* | 27:45855329,1 / 33:28945695,-1 | 9 | 5 | Paralogous |
| Anaplastic oligodendroglioma 1 | ENSCAFG00000008804 | *MARCH1* | ENSCAFG00000014251 | *DDX3X* | 15:60179225,1 / X:35772912,1 15:60179196,-1 / X:35772890,-1 | 112 | 162 | Paralogous |
| ENSCAFG00000020411 | *NEGR1* | NA | *NA* | 6:74164512,-1 / 6:73824002,-1 | 92 | 138 | read through |
| ENSCAFG00000031492 | *MRPL21* | ENSCAFG00000010757 | *CPT1A* | 18:49094671,-1 / 18:49148330,-1 18:49097274,-1 / 18:49148332,-1 | 9 | 32 | read through |
| ENSCAFG00000010858 | *LSAMP* | NA | *NA* | 33:20136575,1 / 33:20478619,1 | 12 | 15 | read through |
| NA | *NA* | ENSCAFG00000010343 | *KIRREL3* | 5:7583858,1 / 5:8000445,1 | 7 | 12 | read through |
| ENSCAFG00000003935 | *BEND5* | NA | *AGBL4* | 15:11751795,-1 / 15:11345952,-1 | 6 | 9 | read through |
| ENSCAFG00000015518 | *NLGN1* | ENSCAFG00000015488 | *NA* | 34:38196938,-1 / 34:37776648,-1 | 5 | 6 | read through |
| ENSCAFG00000002743 | *MYEOV2* | NA | *MYEOV2* | 14:36752071,-1 / 25:50301922,-1 | 29 | 5 | Paralogous |
| Anaplastic oligodendroglioma 2 | ENSCAFG00000010858 | *LSAMP* | NA | *NA* | 33:20136575,1 / 33:20478619,1 | 185 | 179 | read through |
| **ENSCAFG00000000016** | ***MBP*** | **ENSCAFG00000003907** | ***BRAF*** | **1:2919660,1 / 16:8270092,1 1:2923624,1 / 16:8264593,1 16:8262734,1 / 1:2926747,1  16:8270092,-1 / 1:2919740,-1** | **115** | **344** | **No\_paralogy** |
| NA | *LSAMP* | NA | *NA* | 33:21902041,-1 / 33:20478701,-1 | 113 | 137 | read through |
| ENSCAFG00000015488 | *NA* | ENSCAFG00000015518 | *NLGN1* | 34:37776648,1 / 34:38196938,1 | 37 | 50 | read through |
| ENSCAFG00000015441 | *C10orf11* | NA | *NA* | 4:26177597,-1 / 4:25617633,-1 | 42 | 47 | read through |
| NA | *FGF12* | ENSCAFG00000031187 | *FGF12* | 34:24357360,-1 / 34:24024135,-1 | 15 | 38 | read through |
| ENSCAFG00000008149 | *LRRTM4* | NA | *NA* | 17:46095281,1 / 17:46795796,1 17:46095281,1 / 17:46795793,1 | 11 | 34 | read through |
| NA | *NA* | ENSCAFG00000008418 | *NCAM2* | 31:16912961,1 / 31:17213666,1 | 7 | 30 | read through |
| ENSCAFG00000002743 | *MYEOV2* | NA | *MYEOV2* | 14:36752071,-1 / 25:50301922,-1 | 133 | 28 | paralogous |
| NA | *U7* | ENSCAFG00000004944 | *PCDH9* | 22:21636432,1 / 22:22207872,1 22:21884799,1 / 22:22207872,1 | 7 | 22 | read through |
| NA | *NA* | NA | *U7* | 22:21328248,1 / 22:21636229,1 | 18 | 21 | read through |
| NA | *CADM2* | ENSCAFG00000007806 | *CADM2* | 31:2931390,-1 / 31:2118428,-1 | 17 | 21 | read through |
| NA | *NA* | ENSCAFG00000020411 | *NEGR1* | 6:73824002,1 / 6:74164512,1 | 24 | 18 | read through |
| NA | *NA* | ENSCAFG00000001026 | *NKAIN2* | 1:62910895,1 / 1:63353544,1 | 9 | 17 | read through |
| NA | *NA* | NA | *NA* | 32:15625134,-1 / 32:15322825,-1 | 14 | 16 | read through |
| NA | *NA* | ENSCAFG00000014164 | *MDGA2* | 8:24607586,-1 / 8:24276858,-1 | 13 | 14 | read through |
| NA | *NA* | ENSCAFG00000000786 | *CSMD3* | 13:13601956,1 / 13:13397946,1 | 10 | 11 | read through |
| ENSCAFG00000004544 | *DLG2* | NA | *NA* | 21:14779244,-1 / 21:14412223,-1  21:14779245,-1 / 21:14412223,-1 | 5 | 10 | read through |
| NA | *NA* | ENSCAFG00000024991 ENSCAFG00000024643 | *NA NA* | 32:15625290,1 / 32:16099541,1 | 9 | 8 | read through |
| ENSCAFG00000002716 | *NA* | ENSCAFG00000030961 ENSCAFG00000002712 | *NRXN1 NA* | 10:52665869,-1 / 10:52258100,-1 | 5 | 7 | read through |
| NA | *NA* | ENSCAFG00000006768 | *LRRC4C* | 18:27918122,1 / 18:28273325,1  18:27918122,1 / 18:28361730,1 | 16 | 6 | read through |
| NA | *NA* | ENSCAFG00000015441 | *C10orf11* | 4:25617631,1 / 4:26199496,1 | 8 | 6 | read through |
| ENSCAFG00000000786 | *CSMD3* | NA | *NA* | 13:13397946,-1 / 13:13615380,-1 | 5 | 6 | read through |
| NA | *ROBO1* | ENSCAFG00000007903 | *ROBO1* | 31:7626212,1 / 31:8082560,1 | 9 | 5 | read through |
| ENSCAFG00000024630 | *NA* | ENSCAFG00000005403 | *LRP1B* | 19:44090533,-1 / 19:43782306,-1 | 6 | 5 | read through |
| ENSCAFG00000010745 | *IGHMBP2* | ENSCAFG00000010757 | *CPT1A* | 18:49084620,-1 / 18:49148330,-1 | 7 | 3 | read through |
| ENSCAFG00000003457 | *NA* | ENSCAFG00000024216 | *NA* | 14:58897219,-1 / 14:58442433,-1 | 54 | 93 | Paralogous |
| ENSCAFG00000008115 | *CTNNA2* | ENSCAFG00000008079 | *NA* | 17:44184779,-1 / 17:43742837,-1 | 12 | 42 | Paralogous |
| ENSCAFG00000007956 | *ROBO2* | ENSCAFG00000007980 | *NA* | 31:9590907,1 / 31:9935974,1 | 11 | 25 | Paralogous |
| ENSCAFG00000019025 | *NA* | ENSCAFG00000018981 | *C16orf72* | X:110022775,1 / 6:33151010,-1 | 22 | 20 | Paralogous |
| ENSCAFG00000031015 | *YWHAH* | ENSCAFG00000013549 | *YWHAG* | 26:24785598,-1 / 6:7532376,1 | 25 | 14 | Paralogous |
| ENSCAFG00000029171 | *NA* | ENSCAFG00000015864 | *NA* | 7:36719055,1 / 7:37064042,1 | 12 | 14 | Paralogous |
| Lymphoma T | ENSCAFG00000032099 | *NA* | ENSCAFG00000013770 | *ARHGAP27* | 9:10370985,1 / 9:18195693,1 | 5 | 47 | Paralogous |
| ENSCAFG00000019025 | *NA* | ENSCAFG00000018981 | *C16orf72* | X:110022775,1 / 6:33151010,-1 | 8 | 9 | Paralogous |
| NA | *NA* | ENSCAFG00000002645 | *KCNQ5* | 12:34872998,1 / 12:35194979,1 | 5 | 5 | read through |
| DLBCL 1 | ENSCAFG00000008804 | *MARCH1* | ENSCAFG00000014251 | *DDX3X* | 15:60179225,1 / X:35772912,1  15:60179196,-1 / X:35772890,-1 | 126 | 121 | Paralogous |
| ENSCAFG00000019025 | *NA* | ENSCAFG00000018981 | *C16orf72* | X:110022775,1 / 6:33151010,-1 | 16 | 17 | Paralogous |
| **ENSCAFG00000001618** | ***CCND3*** | **ENSCAFG00000031753 ENSCAFG00000032691** | ***IGKV*** | **12:10687874,-1 / 17:37727274,1  12:10687876,-1 / 17:37709802,1** | **15** | **10** | **No\_paralogy** |
| ENSCAFG00000010757 | *CPT1A* | ENSCAFG00000031492 | *MRPL21* | 18:49148332,1 / 18:49097274,1  18:49148330,1 / 18:49094671,1 | 10 | 10 | read through |
| ENSCAFG00000002743 | *MYEOV2* | NA | *NA* | 14:36752071,-1 / 25:50301922,-1 | 25 | 5 | Paralogous |
| DLBCL 2 | NA | *NA* | ENSCAFG00000002498 | *HDAC9* | 14:32469462,1 / 14:32789338,1 | 6 | 5 | read through |
| ENSCAFG00000031492 | *MRPL21* | ENSCAFG00000010757 | *CPT1A* | 18:49094671,-1 / 18:49148330,-1 | 5 | 11 | read through |
| ENSCAFG00000018981 | *C16orf72* | ENSCAFG00000019025 | *NA* | 6:33151010,1 / X:110022775,-1 | 51 | 63 | Paralogous |

Supplementary Table 1: Fusions identified by RNA-Seq in the analyzed canine tumors. Partners’ genes and chromosomal positions of chimeric transcripts were indicated for the six canine tumors with the number of reads   
spanning the fusion junction and encompassing the two fusion transcripts. The gene fusions further analyzed in this work are represented in yellow. CFA: *Canis* *familiaris* Autosome.