**Supporting Information Table 1** Overview of the T-PLL cases and the available datasets

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Case** | **Diagnosis** | **Material** | **TU/**  **cell line** | **Karyotype** | **FISH** | **WGS** | **RNA-seq** |
| Case #1 | T-PLL | FFPE | TU | available | available | available | available |
| Case #2 | T-PLL | FFPE | TU | available | available | available | available |
| Case #3 | T-PLL | FFPE | TU | n.a. | available | available | n.a. |
| Case #4 | T-PLL | FFPE | TU | available | available | available | n.a. |
| Case #5 | T-PLL | FFPE | TU | available | n.a. | available | n.a. |
| Case #6 | T-PLL | DMSO | TU | n.a. | n.a. | available | available |
| Case #7 | T-PLL | DMSO | TU | n.a. | available | available | available |
| Case #8 | T-PLL | DMSO | TU | n.a. | available | available | available |
| Case #9 | T-PLL | DMSO | TU | n.a. | available | available | available |
| Case #10 | T-PLL | DMSO | TU | n.a. | available | available | available |
| Case #11 | T-PLL | DMSO | TU | n.a. | available | available | available |
| Case #12 | T-PLL | DMSO | TU | n.a. | available | available | available |
| Case #13 | T-PLL | DMSO | TU | n.a. | available | available | available |
| Case #14\* | T-PLL | n.a. | TU | n.a. | n.a. | available | n.a. |
| Case #15\* | T-PLL | n.a. | TU | available | available | available | n.a. |
| Case #8a\* | T-PLL | n.a. | TU | available | available | available | n.a. |
| Case #16\* | T-PLL | n.a. | TU | n.a. | n.a. | available | n.a. |
| SUP-T11  (Case # 17) | T-ALL | Cell culture | Cell line | available | available | available | available |

\* These cases have been published by Schrader et al 1. Case 14 refers to TP001, Case #15 to TP002, Case #8a to TP003 and Case #16 to TP025; T-PLL: T-Cell prolymphocytic leukemia; T-ALL: T-cell acute lymphoblastic leukemia; FFPE: formalin-fixed paraffin embedded; DMSO: viably frozen in 20% Dimethyl sulfoxide; TU: tumor; n.a.: not available; WGS: Whole genome sequencing; RNA-seq: RNA sequencing.

**Supporting Information Table 2** Overview of the clinical and conventional and/or molecular cytogenetic characteristics and immunophenotypes of the T-PLL cases. Highlighted in the karyotype are the hallmark chromosomal alterations in the T-PLL cases.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Case** | **Age** | **Sex** | **Conventional and/or molecular cytogenetic characteristics** | |  |
| ***TCL1A/MTCP1* status (FISH)** | **Karyotype** | **Immunophenotype** |
| Case #1 | 69 | F | TRA*-TCL1A* | 42~44,XX,ider(8)(q10)dup(8)(q24q24),del(11)(q13),  -13,del(13)(q14q21),**inv(14)(q11q32)**,-16,add(19)(p13)[cp3] /43,idem,add(8)(p11),-21[cp3]/41~44,idem,-X, -21,+mar1,+mar2[cp7]/46,XX[8] | n.a. |
| Case #2 | 75 | M | TRA*-TCL1A* | 46,add(X)(p22),add(Y)(q12),t(6;17)(p12;q22),t(6;20)(q10;q10),+8, der(8)t(8;8)(p21;q21)x2,del(11)(q14q24),**t(14;14)(q11;q32),** -22, del(22)(q11)[7] | CD4+, CD8- |
| Case #3 | 90 | F | TRA*-TCL1A* | n.a. | CD3+, CD5+  CD7+, CD4+, CD8+ |
| Case #4 | 53 | M | TRA*-TCL1A* | 47,XY,+5,inv(9)(p11q13**),inv(14)(q11q32)**[18]/46,XY[2] | CD3+, CD4+, CD8+ |
| Case #5 | n.a. | F | n.a. | 44,XX, add(4)(q31), -6,-11, del(13)(q14q21),-14,-16,  -22,+mar1,+mar2,+mar3[3]/ 44,idem,add(7)(q34)[5]/ 43,idem,add(7)(q34),  -13[11]/43,idem,add(7)(q34),-13, t(5,12)(q11;p11)[3]/46,XX[3] | CD4+, CD8+ |
| Case #6 | 52 | M | n.a. | n.a. | CD3+, CD2+, CD5+ CD7+, CD4+ , CD8+ |
| Case #7 | 56 | F | TRA*-TCL1A* | n.a. | CD3+, CD2+, CD5+ CD7+, CD8+ |
| Case #8 | 63 | F | TRA*-TCL1A* | 42~44,XX,del(6)(q12),+7,der(7;11)(p10;q10),ider(8)(q10)add(8)(q24), der(11;20)(p10;q10),add(12)(p12),-13,-14,**inv(14)(q11q32)**, add(16)(p13),-21, -22,+mar[cp8]/46,XX[2] | CD3+, CD2+, CD5+ CD7+, CD8+ |
| Case #9 | 71 | F | TRA*-TCL1A* | n.a. | CD3+, CD2+, CD5+ CD7+, CD4+ |
| Case #10 | 68 | M | TRA*-TCL1A* | n.a. | CD3+, CD2+, CD5+ CD7+, CD4+ |
| Case #11 | 66 | M | TRA*-TCL1A* | n.a. | CD3+, CD2+, CD5+ CD7+, CD4+ |
| Case #12 | 57 | M | TRA*-TCL1A* | n.a. | CD3+, CD2+, CD5+ CD7+, CD4+ |
| Case #13 | 72 | F | TRA*-MTCP1* | n.a. | CD3+, CD2+, CD5+ CD7+, CD4+ |
| Case #14 | 73 | M | TRA*-TCL1A* | n.a. | CD3+, CD7+, CD4+ |
| Case #15 | 74 | F | TRA*-TCL1A* | 46,XX,-7,+8,der(8)t(8;8)(p21;q23),dic(11;?)(p11;?)t(?;7)(?;q21), **inv(14)(q11q32)**,der(19)t(13;19)(q31;p13)[8]. | CD3+, CD7+, CD4+ |
| Case #8a | 61 | F | TRA*-TCL1A* | 42~44,XX,del(6)(q12),+7,der(7;11)(p10;q10),ider(8)(q10)add(8)(q2), der(11;20)(p10;q10),add(12)(p12),-13,-14,**inv(14)(q11q32)**, add(16)(p13),-21, -22,+mar[cp8]/46,XX[2] | CD3+, CD7+CD4+  CD8+ |
| Case #16 | 72 | M | n.a | n.a. | CD3+, CD4+, CD8+ |
| SUP-T11  (Case #17) | 74 | M | TRA-*TCL1A* | 38,X, del(X)(q11q23)[25],der(1)del(1)(p32)t(1;4)(q32;q32.2)[22],der (1)del(1)(p32)t(1;7)(q32;q32)[3],der(2)t(2;4)(p23;q35)[6],der(3)t(1;3)(p31;q25)[25],der(4)t(1;4)(p32;q31)[25],der(5)t(5;9)(p15;q11.2)[25],add(5)(q14q23)[25],add(6)(q27)[25],der(7)t(7;15)(q31;q21.2)[23],?der(8)t(8;16)(p12;p13)[4],add(8)(q24.33), del(9)(q21q23)[21], -10[25],der(12)t(8;12)(q24;p13)t(12;16)(q24;q23)[25],del(12)(q23q24)[12] -13[25],**t(14;14)(q11.2q32.1)**[25], -15(25),der(15)t(1;15)(q31;q26)[23],-16[25], -17[21],add(17)(q24)[4],der(19)t(19;21)(p13;q21)[16],add(19)(p13)[3], add(20)(q13)[16],-21[25],der(21)t(12;21)(q24;q12)[26], -22[25],add(22)(q13)[3][cp25] | CD3+, CD2+,  CD7+, CD4-, CD8- |

F: female; M: Male; n.a.: not available; TRA*-TCL1A*/*MTCP1* status: TRA*-TCL1A* orTRA*-MTCP1* inversion/translocation.

**Supporting Information Table 3** Overview of PCR primers and PCR conditions used for verification of the first breakpoint of the inv(14) and t(14;14) breakpoints by Sanger sequencing of 14/17 cases (including SUP-T11 cell line). The breakpoints of the four already published cases1 were not validated by PCR and Sanger sequencing due to lack of material.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Case** | **Gene locus** | **Genomic position of breakpoint 1 in bp (hg19)** | **Primer sequence 5´-3´**  **forward (F)/reverse (R) primer** | **Genomic region in bp (hg19) of primers** | **Annealing**  **temp (°C)** | **Size of PCR product** |
| Case #1 | TRA | chr14:22946697 | TGAGCATTGTTTAGCCAAG (F) | chr14:22946857-22946886 | 55 | 311 bp |
| *TCL1* | chr14:96056248 | GAAAGCAACCATAATGTTTAAAGTC (R) | chr14:96056346-96056370 |
| Case #2 | TRA | chr14:22855228 | TTCACTGCATATCCTAGAGCTGA (F) | chr14:22855049-22855071 | 55 | 450 bp |
| *TCL1* | chr14:96308992 | CTCCCAGGTTCAATCAATC (R) | chr14:96309236-96309262 |
| Case #3 | TRA | chr14:22892031 | GGAAGACCCAAGGTAACAC (F) | chr14:22891851-22891880 | 55 | 252 bp |
| *TCL1* | chr14:95991410 | AGCTCAAAAACCACTGACC (R) | chr14: 95991287-95991309 |
| Case #4 | TRA | chr14:22853314 | CTTGCAAGTTGGGGGTTA (F) | chr14:22853189-22853214 | 55 | 247 bp |
| *TCL1* | chr14:96092800 | ATCTCCAGGTTAGCAGTGG (R) | chr14: 96092667-96092693 |
| Case #5 | TRA | chr14:22892031 | CGAGAAAAGGACATCTATGG (F) | chr14:22891896-22891915 | 55 | 295 bp |
| *TCL1* | chr14:95984496 | CCAGGATTCACTCTGAGGTA (R) | chr14: 95984339-95984358 |
| Case #6 | TRA | chr14:22740445 | GAGTTGCACATATGACACCA (F) | chr14:22740219-22740238 | 60 | 356 bp |
| *TCL1* | chr14:96188812 | AATGAAAATTCTGGAGCTGA (R) | chr14:96188919-96188938 |
| Case #7 | TRA | chr14:22555237 | TACGTCCAGATGTGAGTGAA (F) | chr14:22555107-22555126 | 60 | 255 bp |
| *TCL1* | chr14:96166618 | TCCTTGCTTTTCTAAAATTGA (R) | chr14:96166490-96166510 |
| Case #8 | TRA | chr14:22772435 | CTATCAAATGGAGCAGTGAA (F) | chr14:22772309-22772328 | 55 | 382 bp |
| *TCL1* | chr14:96120432 | AGTCATGGTGTTGAGGTCAG (R) | chr14:96120180-96120199 |
| Case #9 | TRA | chr14:22918118 | TTCTAGTCACAAACCCCAAG (F) | chr14:22917896-22917915 | 55 | 463 bp |
| *TCL1* | chr14:96000619 | TAGTTCCCCATTCAACAAAC (R) | chr14:96000352-96000371 |
| Case #10 | TRA | chr14:22690356 | ACACCTGGCTATGGTACAAG (F) | chr14:22690184-22690203 | 60 | 296 bp |
| *TCL1* | chr14:96168531 | AAGAATGTTGGTGTTTCAAG (R) | chr14:96168411-96168430 |
| Case #11 | TRA | chr14:22521312 | CGCTATTTACAACCTCCAGT (F) | chr14:22521120-22521139 | 55 | 375 bp |
| *TCL1* | chr14:96111090 | CAGGCTTGAACCATCTCTAT (R) | chr14: 96110911-96110930 |
| Case #12 | TRA | chr14:22979961 | GCCAATTTTTCTTCCTATCA (F) | chr14: 22979788-22979807 | 60 | 255 bp |
| *TCL1* | chr14:96039132 | TGAGAACTTACTCCCTAGCTG (R) | chr14:96039053-96039073 |
| Case #13 | TRA | chr14:22315387 | GCTGCTGAGGTGCAACTACTC (F) | chr14:22315176-22315196 | 60 | 420 bp |
| *MTCP1* | X:154363058 | TTTTGTCTCGTGTATGGGTCA (R) | chrX:154363247-154363267 |
| SUP-T11 | TRA | chr14:22539468 | TGACTCTGTGAACAATTTGC (F) | chr14:22539278-22539297 | 55 | 390 bp |
| *TCL1* | chr14:96280381 | ATCTCATGGAATCCTCCTTT (R) | chr14:96280581-96280600 |

**Supporting Information Table 4** Overview of PCR primers and PCR conditions used for verification of the second breakpoint of the inv(14) and t(14;14) breakpoints by Sanger sequencing of 14/17 cases (including SUP-T11 cell line). The breakpoints of the four already published cases1 were not validated by PCR and Sanger sequencing due to lack of material.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Case** | **Gene locus** | **Genomic position of breakpoint 2 in bp (hg19)** | **Primer sequence 5´-3´**  **forward (F)/reverse (R) primer** | **Genomic region in bp (hg19) of primers** | **Annealing**  **temp (°C)** | **Size of PCR product** |
| Case #1 | TRA | chr14:22855218 | TTCACTGCATATCCTAGAGCTGA (F) | chr14:22855049-22855071 | 60 | 246 bp |
| *TCL1* | chr14:96056252 | CAGCATCACTGTGTATGAGGA (R) | chr14:96056133-96056153 |
| Case #2 | TRA | chr14:22855224 | GAAACTGACTCAGATGATCC (R) | chr14: 22944513-22944532 | 60 | 314 bp |
| *TCL1* | chr14:96308996 | TCCTTCCTTTTCCTCTCTTT (F) | chr14:96308912-96308931 |
| Case #3 | TRA | chr14:22959479 | TTAAATAGTCAGGACTGGAGTT (F) | ch14: 22959687-22959708 | 60 | 606 bp |
| *TCL1* | chr14:96096770 | TCCCAGTACAGTTTTTCTGC (R) | ch14: 96097128 -96097147 |
| Case #4 | TRA | chr14:22958483 | GGGCCTCTTTACTCTGGTC (F) | chr14:22958645-22958674 | 55 | 407 bp |
| *TCL1* | chr14:96153452 | ACGCTACTGTATTTACTTCATC (R) | chr14: 96153655-96153676 |
| Case #5 | TRA | chr14:22958477 | GGGCCTCTTTACTCTGGTC (F) | chr14:22958645-22958671 | 55 | 362 bp |
| *TCL1* | chr14:96153444 | CCGTTTCCTGAGTCATTATC (R) | chr14:96153596-96153615 |
| Case #6 | TRA | chr14:22955223 | ACCTCAGAGGACACCACTTA (R) | chr14:22955373-22955392 | 60 | 302 bp |
| *TCL1* | chr14:96188806 | TTTAGATAAGCTTTCTGGTTTTT (F) | chr14:96188666-96188688 |
| Case #7 | TRA | chr14:22555235 | TTAATTACCATTCTCATACTGC(F) | chr14:22555389-22555410 | 60 | 346 bp |
| *TCL1* | chr14:96166618 | GAAAAGCAAGGAGGTTAGAA (R) | chr14: 96166482-96166501 |
| Case #8 | TRA | chr14:22958475 | AAGACCTGTCCAAGCATAAA (F) | chr14:22958685-22958704 | 60 | 411 bp |
| *TCL1* | chr14:96176679 | TGAACTTGTGAGAACACAGC (R) | chr14:96176831-96176850 |
| Case #9 | TRA | chr14:22944310 | CGGAAACTGACTCAGATGAT (F) | chr14: 22944515-22944534 | 55 | 392 bp |
| *TCL1* | chr14:96153472 | CTGTGATCTAAAGCCCTCAT (R) | chr14: 96153622-96153641 |
| Case #10 | TRA | chr14:22984601 | CACAGGGAGAGACTACATGG (F) | chr14: 22984850-22984869 | 60 | 477 bp |
| *TCL1* | chr14:96168541 | TGGTTTATGGCTGATCCTAT (R) | chr14: 96168746 -96168765 |
| Case #11 | TRA | chr14:22989402 | GCACACTTACATAGCCCATT (F) | chr14: 22989615-22989634 | 55 | 409 bp |
| *TCL1* | chr14:96109475 | CCAGAAAGAGTGCTTTACCA (R) | chr14: 96109629-96109648 |
| Case #12 | TRA | chr14:22980087 | ATGGAAAACAAATTCTGTGG (F) | chr14: 22980316-22980335 | 60 | 472 bp |
| *TCL1* | chr14:96039132 | GGCCTCCCCTAGGATTTC (R) | chr14: 96039331-96039356 |
| Case #13 | TRA | chr14:22995819 | TGCATAAGAGCAACATGAAACA (R) | chr14: 22995974 - 22995995 | 60 | 359 bp |
| *MTCP1* | chrX:154310964 | TGAAGAACCAGATGCAACAA (F) | chr14: 96039331-96039356 |
| SUP-T11 | TRA | chr14:22965889 | TCACTCTGGAAAAGTTATCTGA (R) | chrX: 154310784 154310803 | 55 | 539 bp |
| *TCL1* | chr14:96280537 | TTAGGGGCAAGCAATATCTA (F) | chr14: 96280152-96280171 |

**Supporting Information Table 5** Overview ofTRA-*TCL1A* as well as TRA-*MTCP1* breakpoints retrieved from the WGS data of 17 T-PLL cases as well as the cell line, which were verified by PCR and Sanger sequencing in 14/17 cases (including SUP-T11 cell line).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Case** | **Type** | **Breakpoint junction 1** | | | | | | | **Breakpoint junction 2** | | | | | | |
| **BP1 TRA/D locus** | **Breakpoint location from the gene** | **RSS** | **BP2 *TCL1*/*MTCP1* locus** | **Breakpoint location from the gene** | **Verified** | **N** | **BP1 TRA/D locus** | **Breakpoint location from the gene** | **RSS** | **BP2 *TCL1*/*MTCP1***  **locus** | **Breakpoint location from the gene** | **Verified** | **N** |
| Case #1 | inv(14) | chr14:22946697 | TRAJ58 | yes | chr14:96056248 | 5´ of *TCL1B* | yes | 0 | chr14:22855218 | 3´of TRAV41& 5´ of TRDV2 | no | chr14:96056252 | 3’ of *TCL1B* | yes | 0 |
| Case #2 | t(14;14) | chr14:22855228 | 3´of TRAV41& 5´ of TRDV2 | no | chr14:96308992 | 5´of *TCL1B* | yes | 7 | chr14:22855224 | TRAJ61 | yes | chr14:96308996 | 3´ of *TCL1B* | yes | 1 |
| Case #3 | inv(14) | chr14:22892031 | TRDV2 | yes | chr14:95991410 | 3´of *TCL1B* | yes | 20 | chr14:22959479 | TRAJ48 | yes | chr14:96096770 | 5´ of *TCL1B* | yes | 6 |
| Case #4 | inv(14) | chr14:22853314 | 3´of TRAV41& 5´ of TRDV2 | no | chr14:96092800 | 5´of *TCL1B* | yes | 0 | chr14:22958483 | TRAJ49 | yes | chr14:96153452 | *TCL1B*  intron 1 | yes | 8 |
| Case #5 | inv(14) | chr14:22892031 | TRDV2 | yes | chr14:95984496 | 3´of *TCL1B* | yes | 0 | chr14:22958477 | TRAJ49 | yes | chr14:96153444 | *TCL1B*  intron 1 | yes | 2 |
| Case #6 | t(14;14) | chr14:22740445 | TRAV38-1 | yes | chr14:96188812 | 3´of *TCL1B* | yes | 8 | chr14:22955223 | TRAJ52 | yes | chr14:96188806 | 5´of *TCL1A* | n.d | 0 |
| Case #7 | inv(14) | chr14:22555237 | TRAV23DV6 | yes | chr14:96166618 | *3´of TCL1A* | yes | 9 | chr14:22962392 | TRAJ46 | yes | chr14:96166618 | 3´of *TCL1A* | yes | 0 |
| Case #8 | inv(14) | chr14:22772435 | TRAV39 | yes | chr14:96120432 | *TCL6*  intron 2 | yes | 12 | chr14:22958475 | TRAJ49 | yes | chr14:96176679 | *TCL1A*  Exon 4 | yes | 0 |
| Case #9 | inv(14) | chr14:22918118 | TRDD3 | yes | chr14:96000619 | 3´of *TCL1B* | yes | 9 | chr14:22944310 | TRAJ61 | yes | chr14:96153472 | *TCL1B*  intron 1 | yes | 7 |
| Case #10 | inv(14) | chr14:22690356 | TRAV35 | yes | chr14:96168531 | 3´of *TCL1A* | yes | 5 | chr14:22984601 | TRAJ28 | yes | chr14:96168541 | *3´of TCL1A* | n.d | 8 |
| Case #11 | inv(14) | chr14:22521312 | TRAV21 | yes | chr14:96111090 | 5´of *TCL1B* | yes | 4 | chr14:22989402 | TRAJ23 | yes | chr14:96109475 | 5´of *TCL1B* | yes | 16 |
| Case #12 | inv(14) | chr14:22980087 | TRAV10 | yes | chr14:96039132 | 5´of *TCL1B* | n.d | 0 | chr14:22979961 | TRAJ31 | yes | chr14:96039132 | 5´of *TCL1B* | yes | 6 |
| Case #13 | t(X;14) | chr14:22315387 | TRAV8-4 | yes | chrX:154363058 | 3´of *MTCP1* | yes | 4 | chr14:22995819 | TRAJ17 | yes | chrX:154310964 | 5´ of *MTCP1* | yes | 9 |
| Case #14 | inv(14) | chr14:22946695 | TRAJ58 | yes | chr14:95984498 | 5´of *TCL1B* | n.a. | 0 | chr14:22962915 | TRAJ45 | yes | chr14:96045402 | 5´of *TCL1B* | n.a. | 0 |
| Case #15 | inv(14) | chr14:22944305 | TRAJ61 | yes | chr14:95984497 | 5´of *TCL1B* | n.a. | 0 | chr14:22978336 | TRAJ32 | yes | chr14:96159989 | 3´of *TCL1B* | n.a. | 8 |
| Case #8a | inv(14) | chr14:22772435 | TRAV39 | yes | chr14:96120432 | *TCL6*  intron 2 | n.a. | 12 | chr14:22958475 | TRAJ49 | yes | chr14:96176679 | *TCL1A*  Exon 4 | n.a. | 0 |
| Case #16 | inv(14) | chr14:22892031 | TRDV2 | yes | chr14:96002102 | 5´of *TCL1B* | n.a. | 9 | chr14:22976656 | TRAJ34 | yes | chr14:96159983 | 3´of *TCL1B* | n.a. | 1 |
| SUP-T11  (Case #17) | t(14;14) | chr14:22539468 | TRAV22 | yes | chr14:96280381 | 3´side of *TCL1B* | yes | 10 | chr14:22965889 | TRAJ42 | yes | chr14:96280537 | 3´ of *TCL1B* | yes | 6 |

BP1/2: Breakpoint 1 and 2, RSS: breakpoint at recombination signal sequence, n.d: could not be detected by PCR based Sanger Sequencing. N: number of N-nucleotides in fusion sequence.

**Supporting Information Table 6** Tabular results obtained from a cRSS ‘Chromosomal search’ database query on a region chr14:22852856-22855418 (GENCODE version 19). Shown are the chromosomal breakpoints of the non-RSS associated cases, type of cRSS requested and the putative signal sequences with the sequence, the location from the breakpoint and the RIC score.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Case** | **Breakpoint location** | **cRSS-23 sequence** | **Distance from the breakpoint (bp)** | **RIC score** | **RIC PASS/FAIL** |
| Case #1 | chr14:22855218 | cacggtgatgcataggcacctgcaccccgtgcctaaacc | 12 | -56.271 | PASS |
| Case #2 | chr14:22855228 | cacggtgatgcataggcacctgcaccccgtgcctaaacc | 0 | -56.271 | PASS |
| Case #4 | chr14:22853314 | cacagactctgatctttggcttcactttggttccaagac | 85 | -47.616 | PASS |

cRSS-23: cryptic RSS 23; RIC score: Recombination information content score; RIC PASS/FAIL: 23 RSS pass with RIC > -58.4

**Supporting Information Table 7** Overview on the gene segments of the non‑translocated/inverted T-cell receptor alpha locus used during V-J recombination. In addition, the features of the recombined exon from the V-J gene segments are listed.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Case** | **V-J sequence analysis** | | | | | | | |
| **TRAV gene segment** | **TRAJ gene segment** | **N** | **In frame** | **CDR3 length in bp** | **Translation of the recombined exon** | **Vmut** | **Jmut** |
| Case #1 | TRAV1-2 | TRAJ18 | 3 | yes | 14 | CAVRDIRGSTLGRLYF | 0 | 0 |
| Case #2 | TRAV22 | TRAJ48 | 5 | yes | 13 | CAVLISNFGNEKLTF | 0 | 0 |
| Case #6 | TRAV14DV4 | TRAJ29 | 0 | yes | 9 | CAISGNTPLVF | 0 | 0 |
| Case #7 | TRAV12-2 | TRAJ42 | 1 | yes | 12 | CAVIYGGSQGNLIF | 0 | 0 |
| Case #8 | TRAV6 | TRAJ43 | 5 | yes | 11 | CALDEGNNNDMRF | 0 | 0 |
| Case #9 | TRAV12-1 | TRAJ13 | 4 | yes | 14 | CVVNPLNSGGYQKVTF | 0 | 0 |
| Case #10 | TRAV29DV5 | TRAJ10 | 0 | yes | 11 | CAAITGGGNKLTF | 0 | 0 |
| Case #11 | TRAV8-6 | TRAJ11 | 9 | yes | 13 | CAVSDHRRGYSTLTF | 0 | 0 |
| Case #12 | TRAV12-1 | TRAJ31 | 0 | yes | 8 | CVVNNARLMF | 0 | 0 |
| Case #13 | TRAV9-2 | TRAJ9 | 6 | yes | 12 | CALTGYTGGFKTIF | 0 | 0 |
| SUP-T11 | TRAV25 | TRAJ40 | 1 | yes | 9 | CVTSGTYKYIF | 0 | 0 |

N: Number of N-nucleotides; Vmut: number of nucleotides mutated in TRAV gene segment; Jmut: number of nucleotides mutated in the TRAJ gene segment; in-frame: if the sequence is in-frame