

Thousands of human mutation clusters are explained by short-range template switching

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Data S3: TSM candidates discovered with gnomAD data.

Top: cluster of associated variants in gnomAD data. Bottom: forward alignment of the two alleles, template switch solution, and template switch alignment.

Switch process:
F1: L CTGCAACCTCTGCCTCTGGGGTTCAAGCGATTCTCCTGTCTCAGCCTCCTG 1
F3: 4 TTTCGTATTTTITTAGATACGGGGTTTCGCCATGTTGGCCAGGCTGGTG R

Template-switch alignment:

ALT ACGCTATACTAAAAATATATG|TATAGGATACATATATTTTCATATATGTATGAAATAT|TaCATACATATATGAAATAT
REF ACGCTATACTAAAAATATATG|TATAGGATACATATATTTTCATATATGTATGAAATAT|TTCATACATATATGAAATAT

1 201518806 T C
1 201518808 A G
1 201518809 C T
1 201518811 G A

Alignment:
ALT CAGAGCTCAATATACTTAGTTGTGGTTGCTGGGCAGGcTgtAaCCTGCCAGCAACCACAGAGAGGACTGTCTTAAGACC
REF CAGAGCTCAATATACTTAGTTGTGGTTGCTGGGCAGGTTACAGCCTGCCAGCAACCACAGAGAGGACTGTCTTAAGACC

Switch process:
F1: L TGACATTTACTGATAATCTTTAAGCAGAGCTCAATATACTTAGT 1
F3: 4 GAGAGGACTGTCTTAAGACCTGGGTGCCGCCCTGGCTCAGTGG R
RF: TGACATTTACTGATAATCTTTAAGCAGAGCTCAATATACTTAGTTGTGGTTGCTGGGCAGGTTACAGCCTGCCAGCAACCACAGAGAGGACTGTCTTAAGACCTGGGTGCCGCCCTGGCTCAGTGG
F2: 3 ACACCAACGACCCGTCCTCAATGTCGGACGGGTCGTTGGTGT 2

Template-switch alignment:
ALT CAGAGCTCAATATACTTAGT|TGTGGTTGCTGGGCAGGCTGTAACCTGCCAGCAACCACA|GAGAGGACTGTCTTAAGACC
REF CAGAGCTCAATATACTTAGT|TGTGGTTGCTGGGCAGGCTGTAACCTGCCAGCAACCACA|GAGAGGACTGTCTTAAGACC

1 226919670 T G
1 226919671 T G
1 226919674 C A
1 226919675 C A

Alignment:
ALT AAGTGCCCTCTAGGCTTTTAAATTTTGTGGgTaaCCAACTAAAATTTTACACACTTTTCAAACCA
REF AAGTGCCCTCTAGGCTTTTAAATTTTGTGGTTTACCCCAAACTAAAATTTTACACACTTTTCAAACCA

Switch process:
F1: L AGTATTCACCAACAGATGCATTTTTTAAAGTCCCTCTAGGCTTTT 1
F3: 4 TTACACACTTTTCAAACCCACATAAAACCATGTTAAACTGTTTGA R
RF: AGTATTCACCAACAGATGCATTTTTTAAAGTCCCTCTAGGCTTTTAAATTTTGTGGTTTACCCCAAACTAAAATTTTACACACTTTTCAAACCCACATAAAACCATGTTAAACTGTTTGA
F2: 3 TTTAAATCAAACCAATGGGTTTGATTTTAA 2

Template-switch alignment:
ALT AAGTGCCCTCTAGGCTTTT|AAATTTTGTGGGGTAAACCAAACTAAAATTT|TTACACACTTTTCAAACCA
REF AAGTGCCCTCTAGGCTTTT|AAATTTTGTGGGGTAAACCAAACTAAAATTT|TTACACACTTTTCAAACCA

1 244864220 A T
1 244864227 T C
1 244864233 T A
1 244864234 G A
1 244864241 A T

Alignment:
ALT TAGATTGTGACTTAATAGATACtGTAAAcTCATGaaTTTTAcTGTAAATTGGAATTTATTTCTAT
REF TAGATTGTGACTTAATAGATACAGTAAATTCATGTGTTTTACAGTAAATTGGAATTTATTTCTAT

Switch process:
F1: L AGTAGAGAAGGTTAAGGTTTTTTGTGTTCTTTTCATCTTTAGATTGTGACTTAATAGAT 1
F3: 4 TAATTGGAATTTATTTCTATGTGGTTATGATATTTAGCTGAGGAGATTTCCAAGCAAA R
RF: AGTAGAGAAGGTTAAGGTTTTTTGTGTTCTTTTCATCTTTAGATTGTGACTTAATAGATACAGTAAATTCATGTGTTTTACAGTTAAATTGGAATTTATTTCTATGTGGTTATGATATTTAGCTGAGGAGATTTCCAAGCAAA
F2: 3 TGTCATTTTAAGTACTCAAAATGTCA 2

Template-switch alignment:
ALT TAGATTGTGACTTAATAGAT|ACTGTAAAcTCATGAATTTTACTGT|TAATTGGAATTTATTTCTAT
REF TAGATTGTGACTTAATAGAT|ACTGTAAACACATGAATTTTACTGT|TAATTGGAATTTATTTCTAT

2 8624364 T A
2 8624371 A T
2 8624372 A T
2 8624379 T A
2 8624380 A T

Alignment:
ALT TACATGTTTTATATGTATTAAaAAATACtTGTATTTatAATACATATAAAACATGTATTATACATAGCATATGATACATGATGGCACTACAC
REF TACATGTTTTATATGTATTATAAATACAAGTATTTTAAATACATATAAAACATGTATTATACATAGCATATGATACATGATGGCACTACAC

Switch process:
F1: L GTATATACACATGCATATACATAAATATATGCTATGTATAATACATGTTTTATATGTATTA 1
F3: 4 GATACATGATGGCACTACACTGTATC R
RF: GTATATACACATGCATATACATAAATATATGCTATGTATAATACATGTTTTATATGTATTATAAATACAAGTATTTTAAATACATATAAAACATGTATTATACATAGCATATGATACATGATGGCACTACACTGTATC
F2: 3 TATACGATACATATTATGTACAAAATATACATAAATTTATGTTCAAAA 2

Template-switch alignment:
ALT TACATGTTTTATATGTATTA|AAAATACCTGTATTATAATACATATAAAACATGTATTATACATAGCATAT|GATACATGATGGCACTACAC
REF TACATGTTTTATATGTATTA|AAAATACCTGTATTATAATACATATAAAACATGTATTATACATAGCATAT|GATACATGATGGCACTACAC

2 13787385 G C
2 13787389 T G
2 13787396 T A
2 13787399 T A
2 13787402 T A
2 13787410 C T
2 13787413 G C

Alignment:

ALT TGTATATAGTATATGTATAA|TGTATATGATATACAATATACATAGGTATGTATGTATATTGTATATCATATACA|ATATACAGATATATCTGTAT
REF TGTATATAGTATATGTATAA|TGTATATGATATACAATATACATAGGTATGTATGTATATTGTATATCATATACA|ATATACAGATATATCTGTAT

2 117799588 G A
2 117799597 G A
2 117799604 T C
2 117799609 G A

Alignment:
ALT TACCCTATATAGAGCATGCTCTATaCTATATATaGCATACcCTATaTATACTATAGAGTATGCTAT
REF TACCCTATATAGAGCATGCTCTATGCTATATATGGCATACTCTATGTATACTATAGAGTATGCTAT

Switch process:
F1: L AGAGTATATTATATACAGTATACTATATATACTATATATACCCATATAGAGCATGTC 1
F3: 4 TATACTATAGAGTATGCTATATATAGTATATAGTATACTCTATGGTATACTATATATACT R
RF: AGAGTATATTATATACAGTATACTATATATACTATATATACCCATATAGAGCATGCTCTATGCTATATATGGCATACTCTATGTATACTATAGAGTATGCTATATAGTATATAGTATACTCTATGGTATACTATATATACT
F2: 3 ATATCCCATACGATATATATCATAT 2

Template-switch alignment:
ALT TACCCTATATAGAGCATGTC|TATACTATATATAGCATACcCTATA|TATACTATAGAGTATGCTAT
REF TACCCTATATAGAGCATGTC|TATACTATATATAGCATACTCTATA|TATACTATAGAGTATGCTAT

2 119062817 G C
2 119062823 C T
2 119062824 A G
2 119062831 T C
2 119062838 T G

Alignment:
ALT TATACGTATATACATATATGTATATACGTATATAcATATAtgTATATAcGTATTGgATATACATATATGTATA
REF TATACGTATATACATATATGTATATACGTATATAGATATACATATATATGTATTGTATATACATATATGTATA

Switch process:
F1: L TATATGTATTGTATATACATATATGTATATACGTATATACATATATG 1
F3: 4 TGGATATACATATATGTATATACATATATACATATATATTGATATACATATATATGTATTGTA R
RF: TATATGTATTGTATATACATATATGTATATACGTATATACATATATGTATATACGTATATAGATATACATATATATGTATTGTATATACATATATATGTATATACATATATATATTGATATACATATATATGTATTGTA
F2: 3 TATGCATATATGTATATACATATATGCATATAT 2

Template-switch alignment:
ALT TATACGTATATACATATATG|TATATACGTATATACATATATGTATATACGTAT|TGgATATACATATATGTATA
REF TATACGTATATACATATATG|TATATACGTATATACATATATGTATATACGTAT|TGTATATACATATATGTATA

2 120924815 G A
2 120924819 C G
2 120924823 A T
2 120924828 A T
2 120924832 C G
2 120924834 C A
2 120924836 T C

Alignment:
ALT TTGAATGGTAAATTTTTAGATAAGAgATTcTCAaAATTaTGAcAcTtTCTTAAGTGGTGAGGGATAGCATCT
REF TTGAATGGTAAATTTTTAGATAAGAAATTGTCATAAATTTGAGAATCTCTTAAGTGGTGAGGGATAGCATCT

Switch process:
F1: L AGTCCTATTAAGTGAAGTGAAGTAGTAATAGATTCTTGAATGGTAAATTTTTAGA 1
F3: 4 AGTGGTGAGGGATAGCATCTGTGTTGTATAACAGAAAAGGGTCTTGGATTIAGAA R
RF: AGTCCTATTAAGTGAAGTGAAGTAGTAATAGATTCTTGAATGGTAAATTTTTAGATAAGAAATTGTCATAAATTTGAGAATCTCTTAAGTGGTGAGGGATAGCATCTGTGTTGTATAACAGAAAAGGGTCTTGGATTIAGAA
F2: 3 ATTCITTCACAGTATTAATACTCTTAGAGAAT 2

Template-switch alignment:
ALT TTGAATGGTAAATTTTTAGA|TAAGAGATTCTCAAAATTATGACAcTTTCTTA|AGTGGTGAGGGATAGCATCT
REF TTGAATGGTAAATTTTTAGA|TAAGAGATTCTCAAAATTATGACAAATTTCTTA|AGTGGTGAGGGATAGCATCT

2 137103329 T A
2 137103330 C A
2 137103331 T A
2 137103340 A T
2 137103341 G C
2 137103342 A T

Alignment:
ALT ATATATTCTATATATAGAAAATATATATtctATATATATaGaATATATATAGAATATATATTCTATATATATTCTATATATATAGAATATAT
REF ATATATTCTATATATAGAAAATATATATAAAATATATATTCTATATATATAGAATATATATTCTATATATATTCTATATATATAGAATATAT

Switch process:
F1: L ATATATTTTCATATATATAAAATATATATAAAATATATATTCTATATATAGAAA 1
F3: 4 TCTATATATATAGAATATATATATAAAAAA R
RF: ATATATTTTCATATATATAAAATATATATAAAATATATATTCTATATATAGAAAATATATATAAAATATATATTCTATATATATAGAATATATATTCTATATATATAGAATATATATTCTATATATATAGAATATAT
F2: 3 TATATATATCTTATATATAAGATATATATAAGATATATATATCTTATATATA 2

Template-switch alignment:
ALT ATATATTCTATATATAGAAA|ATATATATTCTATATATAGAATATATATAGAATATATATTCTATATATAT|TCTATATATAGAATATAT
REF ATATATTCTATATATAGAAA|ATATATATTCTATATATAGAATATATATAGAATATATATTCTATATATAT|TCTATATATAGAATATAT

2 147388003 C A
2 147388008 C T
2 147388009 A T
2 147388014 A T
2 147388015 A G
2 147388018 G A
2 147388020 T G

Alignment:
ALT ACAAAAATACTGAATGATAGGAAAcATTGcaTATAaCAgTtTTTCATTTCTCTATGCCTTTTGCTC

REF ACAAAAATACTGAATGATAGGAAAAATTGTTTATATGCAATGTTTCATTTCCTATGCCTTTGCTC

Switch process:

F1: L CCCTCTCCATACCTCTCTCTCCACTTACCTGACATGACAAAAATACTGAATGATAG 1

F3: 4 ATTTCTCTATGCCTTTGCTCTTGTTATTTCTGTGTGAATTGATCCACCAAAACCC R

RF: CCCTCTCCATACCTCTCTCTCCACTTACCTGACATGACAAAAATACTGAATGATAGGAAAAATTGTTTATATGCAATGTTTCATTTCCTATGCCTTTGCTCTTGTTATTTCTGTGTGAATTGATCCACCAAAACCC

F2: 3 CTTTTTGACAAATATACGTTACAAAG 2

Template-switch alignment:

ALT ACAAAAATACTGAATGATAG|GAAACATTGCATATAAACAgTTTTTC|ATTTCTCTATGCCTTTGCTC

REF ACAAAAATACTGAATGATAG|GAAACATTGCATATAAACAAATTTTTTC|ATTTCTCTATGCCTTTGCTC

2 164517323 A G

2 164517324 C T

2 164517330 C T

2 164517336 T C

Alignment:

ALT TATGTATATAGATATACATATATATAcATATAcATATAtATGTATACATATATACATATATATG

REF TATGTATATAGATATACATATATATGTATATATATATACATGTATACATATATACATATATATG

Switch process:

F1: L CACATATACATATATATGTATACACATATACATATATATGTATATAGATATACATA 1

4 CATATATACATATATATATGTATACATATATATATATATATATATATATATTTTTTT R

RF: CACATATACATATATGTATACACATATACATATATATGTATATAGATATACATATATATGTATATATATATACATGTATACATATATACATATATATATATATATATATATATTTTTTT

F2: 3 ATATGTATATATACATATACATATAT 2

Template-switch alignment:

ALT TATGTATATAGATATACATA|TATATAcATATACATATATATGTATA|CATATATACATATATATG

REF TATGTATATAGATATACATA|TATATATATATACATATATATGTATA|CATATATACATATATATG

2 168496311 A G

2 168496315 A T

2 168496316 A G

2 168496318 T A

2 168496321 A T

2 168496324 T A

2 168496326 C T

2 168496327 A T

2 168496331 C T

Alignment:

ALT TGCCATTGTTGATCAAAAAGAAATgATTtGgATGtCAaCttAAttATTGAAGTATTAAGTGGCCCTG

REF TGCCATTGTTGATCAAAAAGAAATAATTAAAGTTGACATCCAAATCATTGAAGTATTAAGTGGCCCTG

Switch process:

F1: L TGTATCATTCCACAGATCCAGACAACAAGCAGTCTGCTGCCATTGTTGATCAAAAAGA 1

4 GAAGTATTAAGTGGCCCTGTCATATGGTTAGCACCTCAATTCCATACTTCCTTGATG R

RF: TGTATCATTCCACAGATCCAGACAACAAGCAGTCTGCTGCCATTGTTGATCAAAAAGAAATAATTAAAGTTGACATCCAAATCATTGAAGTATTAAGTGGCCCTGTCATATGGTTAGCACCTCAATTCCATACTTCCTTGATG

F2: 3 TTATTAATTCACCTGTAGGTTTAGTAA 2

Template-switch alignment:

ALT TGCCATTGTTGATCAAAAAGA|AATGATTGATGTCAACTTAATTATT|GAAGTATTAAGTGGCCCTG

REF TGCCATTGTTGATCAAAAAGA|AATGATTGATGTCAACTTAATTATT|GAAGTATTAAGTGGCCCTG

2 176581438 A G

2 176581439 C T

2 176581440 C G

2 176581443 C T

Alignment:

ALT TATGTGTGTATATATACGTATATATATAccCAcATATATATATGTGTATATATATACGTATATATTTTTTGAGAT

REF TATGTGTGTATATATACGTATATATATGTGCATATATATATATGTGTATATATATACGTATATATTTTTTGAGAT

Switch process:

F1: L CATATATATATGTGTATATATATACACATATATATATGTGTGTATATATACGTA 1

4 GTATATATATTTTTTGAGATGGATTTTCGCTCTGTT R

RF: CATATATATGTGTATATATATACACATATATATATGTGTGTATATATACGTATATATATGTGTATATATACGTATATATTTTTTGAGATGGATTTTCGCTCTGTT

F2: 3 CATATATATATGTGTATATATATACACCCATATATAT 2

Template-switch alignment:

ALT TATGTGTGTATATATACGTA|TATATATACcCACATATATATATGTGTATATATATAC|GTATATATATTTTTTGAGAT

REF TATGTGTGTATATATACGTA|TATATATACACATATATATATGTGTATATATATAC|GTATATATATTTTTTGAGAT

2 180928235 G A

2 180928241 T C

2 180928244 G T

2 180928245 A T

2 180928249 G A

2 180928255 T C

Alignment:

ALT ATAGTTATGCCTGAAATAAACTTGaAAAAAcATttAAFaTTTTTcCAAGACATCAGATGATACAAGACA

REF ATAGTTATGCCTGAAATAAACTTGAAAAAATATGAATGTTTTTTCAAGACATCAGATGATACAAGACA

Switch process:

F1: L TTTGCTTCTAGCTAAGGTGAAGTAACAGACTTGATTATAGTTATGCCTGAAATAAAA 1

4 ACATCAGATGATACAAGACATTAATTTCTGAGAAATGAGAAACAAATGAGGTGAAG R

RF: TTTGCTTCTAGCTAAGGTGAAGTAACAGACTTGATTATAGTTATGCCTGAAATAAACTTGAAAAAATATGAATGTTTTTTCAAGACATCAGATGATACAAGACATTAATTTCTGAGAAATGAGAAACAAATGAGGTGAAG

F2: 3 GAACCTTTTTATAATTACAAAAAAGTTC 2

Template-switch alignment:

ALT ATAGTTATGCCTGAAATAAAA|CTTGAAAAAACATTtAATATTTTTCCAAG|ACATCAGATGATACAAGACA

3 1275639 G T
3 1275641 A C
3 1275642 A T
3 1275643 G T
3 1275645 A C

Alignment:

ALT TGATTTTAAATGGTTCAAGGTTAAAAATGCATcTctAcTGCATTTTAAAGGGCTATAAACATGTAGGC
REF TGATTTTAAATGGTTCAAGGTTAAAAATGCAGTAAGAATGCATTTTAAAGGGCTATAAACATGTAGGC

Switch process:

F1: L GTGAACGAATTCTTGCACCACATCACAGGATTGATTTTAAATGGTTCAAGG 1
F3: 4 AGGGCTATAAACATGTAGGCATTTACAATCATCATAGTTTTTCCAGAGG R
RF: GTGAACGAATTCTTGCACCACATCACAGGATTGATTTTAAATGGTTCAAGGTTAAAAATGCAGTAAGAATGCATTTTAAAGGGCTATAAACATGTAGGCATTTACAATCATCATAGTTTTTCCAGAGG
F2: 3 AATTTACGTCACTCTTACGTAAAATT 2

Template-switch alignment:

ALT TGATTTTAAATGGTTCAAGG|TAAAAATGCATTCTTACTGCATTTTAA|AGGGCTATAAACATGTAGGC
REF TGATTTTAAATGGTTCAAGG|TAAAAATGCATTCTTACTGCATTTTAA|AGGGCTATAAACATGTAGGC

3 8048206 C T
3 8048214 C A
3 8048216 C A
3 8048217 C A

Alignment:

ALT TGGTTTTTGCCATTGAAAGtAATGGCAaAaaCCACAATTACTTTTGCCACCAACCTAATATAATTGGTAT
REF TGGTTTTTGCCATTGAAAGCAATGGCACACCCCACAATTACTTTTGCCACCAACCTAATATAATTGGTAT

Switch process:

F1: L ATGCTCTGAAACTCTCCTATTAGTTTATAGTCAAAAAGTAATTGTGGTTTTTGCCATTGAAAGT 1
F3: 4 CAACCTAATATAATTGGTATGTCCTTAATTGTGGGGTGAAAT R
RF: ATGCTCTGAAACTCTCCTATTAGTTTATAGTCAAAAAGTAATTGTGGTTTTTGCCATTGAAAGCAATGGCACACCCCACAATTACTTTTGCCACCAACCTAATATAATTGGTATGTCCTTAATTGTGGGGTGAAAT
F2: 3 CACGTTTTCAATTAACCAAAAAACGGTAA 2

Template-switch alignment:

ALT TGGTTTTTGCCATTGAAAGt|AATGGCAAAAACCACAATTACTTTTGCCAC|CAACCTAATATAATTGGTAT
REF TGGTTTTTGCCATTGAAAGC|AATGGCAAAAACCACAATTACTTTTGCCAC|CAACCTAATATAATTGGTAT

3 37299536 A G
3 37299537 C T
3 37299544 A G
3 37299546 A G

Alignment:

ALT ATATATGTATGTATATATGTATATATACATAcATATATaTaTGTATGTATATATGTATATATATATGTGTGTAT
REF ATATATGTATGTATATATATGTATATATACATGTATATATGTGTGTATGTATATATGTATATATATATGTGTGTAT

Switch process:

F1: L TGTATGTATATATGTATATATACATACATATATATATGTATGTATATATGT 1
F3: 4 GTATATATATATGTGTATATATATATATATGTCTCTGTATATATATATGT R
RF: TGTATGTATATATGTATATATACATACATATATATATGTATGTATATATGTATATATACATGTATATATGTGTGTATGTATATATATATATGTGTATATATATGT
F2: 3 TATATATGTATGTATATATATACATACATATATA 2

Template-switch alignment:

ALT ATATATGTATGTATATATGT|ATATATACATACATATATATATGTATGTATATAT|GTATATATATATGTGTGTAT
REF ATATATGTATGTATATATGT|ATATATACATACATATATATATGTATGTATATAT|GTATATATATATGTGTGTAT

3 45950350 C G
3 45950353 C G
3 45950356 C G
3 45950359 C G

Alignment:

ALT GCAGGGGTCCCCAACCCCTGGGGCCACAGAgCagTAgTgTCTGTGGCCTGTTAGGAACCAAGGCTGCAC
REF GCAGGGGTCCCCAACCCCTGGGGCCACAGACCACTACTGCTCTGTGGCCTGTTAGGAACCAAGGCTGCAC

Switch process:

F1: L ACATACACAAAAGCAGAGGGAATAGTATTAATGCAGGGGTCCCCAACCCCTG 1
F3: 4 TGTAGGAACCAAGGCTGCACAGGAGGAGGTGAGTGGCAGGCAAGTGAGTGA R
RF: ACATACACAAAAGCAGAGGGAATAGTATTAATGCAGGGGTCCCCAACCCCTGGGGCCACAGACCACTACTGCTCTGTGGCCTGTTAGGAACCAAGGCTGCACAGGAGGAGGTGAGTGGCAGGCAAGTGAGTGA
F2: 3 CCGGTGTCTGGTGATGACGAGACACCG 2

Template-switch alignment:

ALT GCAGGGGTCCCCAACCCCTG|GGCCACAGAGCAGTAGTGGTCTGTGGCC|TGTTAGGAACCAAGGCTGCAC
REF GCAGGGGTCCCCAACCCCTG|GGCCACAGAGCAGTAGTGGTCTGTGGCC|TGTTAGGAACCAAGGCTGCAC

3 49643654 T A
3 49643656 T A
3 49643660 C T
3 49643669 T A
3 49643671 T A

Alignment:

ALT ATATTATATATGTATATATTAAtAtATAcATATATTAAtAtATGTATATATTATATATAAAATATATATAA
REF ATATTATATATGTATATATTAATAAATATATATATTAATAAATGTATATATTATATATAAAATATATATAA

Switch process:

F1: L ATATACATATATTATATATGTATATATATTATATATACATATATTATATATGTATATATT 1
F3: 4 TATATATAAAATATATATAATATATATTTAAAAATATATATTATATATATT R
RF: ATATACATATATTATATATGTATATATATTATATACATATATTATATATTTAAAAATATATATTTAAAAATGTATATATTATATATAAAATATATATAATATATATTTAAAAATATATATTATATATATT
F2: 3 TATATATGTATATATTATATACATATATA 2

Template-switch alignment:
ALT ATATTATATATGTATATATT|ATATATACATATATATATATGTATATAT|TATATATAAAATATATATAA
REF ATATTATATATGTATATATT|ATATATACATATATAATATATGTATATAT|TATATATAAAATATATATAA

3 49929686 C T
3 49929687 A G
3 49929691 C G
3 49929693 G A

Alignment:
ALT AGGCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACtGcAGcCaGCCCAATCTGACATTTTAAAAAAG
REF AGGCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACCACACCCGGCCCAATCTGACATTTTAAAAAAG

Switch process:
F1: L CTGATCTTGTGATTACCCACCTAGGCCTCCCAAAGTGCTGGG 1
F3: 4 AATCTGACATTTTAAAAAAGCAGCAGGGCTGCGTGCAGTGGCTCACACCTGTAATG R
RF: CTGATCTTGTGATTACCCACCTAGGCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACCACCCGGCCCAATCTGACATTTTAAAAAAGCAGCAGGGCTGCGTGCAGTGGCTCACACCTGTAATG
F2: 3 CCCGACGCACGTCACCGAGTGTGGACATTA 2

Template-switch alignment:
ALT AGGCCTCCCAAAGTGCTGGG|ATTACAGGTGTGAGCCACTGCACGCAGCCC|AATCTGACATTTTAAAAAAG
REF AGGCCTCCCAAAGTGCTGGG|ATTACAGGTGTGAGCCACTGCACGCAGCCC|AATCTGACATTTTAAAAAAG

3 60245953 T A
3 60245957 A C
3 60245960 T G
3 60245961 C A
3 60245964 G T
3 60245968 T A

Alignment:
ALT GCCGTAGAGGGTGTAGGAGGTGGTgTaCACCtGgAGtGTGaACCAATTAAGTATGATGACTGCAGC
REF GCCGTAGAGGGTGTAGGAGGTGGTTCACACTTCAGGGTGTACCAATTAAGTATGATGACTGCAGC

Switch process:
F1: L GGAAGATCTAGCAAAACCATCCTTCCAGTTCTAAGGGCCGTAGAGGGTGTAGGAGG 1
F3: 4 TTAAGTATGATGACTGCAGCAAAATAGTGAGTAACACAGCTAGATATTTAAAAAGC R
RF: GGAAGATCTAGCAAAACCATCCTTCCAGTTCTAAGGGCCGTAGAGGGTGTAGGAGGTGGTTCACACTTCAGGGTGTACCAATTAAGTATGATGACTGCAGCAAAATAGTGAGTAACACAGCTAGATATTTAAAAAGC
F2: 3 AAACCAAGTGTGAAGTCCACATGTTT 2

Template-switch alignment:
ALT GCCGTAGAGGGTGTAGGAGG|TTGGTACACCCCTGAAGTGTGAACCAA|TTAAGTATGATGACTGCAGC
REF GCCGTAGAGGGTGTAGGAGG|TTGGTACACCCCTGAAGTGTGAACCAA|TTAAGTATGATGACTGCAGC

3 81093859 T C
3 81093860 G A
3 81093862 G A
3 81093864 G A

Alignment:
ALT CACACACACACACACGTATGTGTgTgTgTGTATATATATATATATATATACACACACACACATGCACACATA
REF CACACACACACACACGTATGTGTGCATATATGTATATATATATATATATATATACACACACACACATGCACACATA

Switch process:
F1: L TAATTTACATTCCCTTCCCCTTTCTTACACACACACACACACACACACACGTATG 1
F3: 4 CACACACACATGCACACATACAATTTTAGGTTAAAA R
RF: TAATTTACATTCCCTTCCCCTTTCTTACACACACACACACACACACACACGTATGTGTGCATATATGTATATATATATATATATATACACACACACATGCACACATACAATTTTAGGTTAAAA
F2: 3 ACATATATATATATATATATATGTGTGTGTGT 2

Template-switch alignment:
ALT CACACACACACACACGTATG|TGTGTGTGTGTATATATATATATATATACACACACATGCACACATA
REF CACACACACACACACGTATG|TGTGTGTGTGTATATATATATATATATATACACACACATGCACACATA

3 82476030 T A
3 82476031 C A
3 82476034 T G
3 82476035 T A

Alignment:
ALT TCATATACATATATGATTCAATCATATATGATCAaaTAgATGATCATATATGATAGAATCATATAGAGACAAGA
REF TCATATACATATATGATTCAATCATATATGATCATCTATTTGATCATATATGATAGAATCATATAGAGACAAGA

Switch process:
F1: L GAAGCAAGTATTACTTTTTAATTTTAATCATATACATATATGATTCA 1
F3: 4 AGAATCATATAGAGACAAGAAGGAGATTTTGTAGGCGCTTGTATG R
RF: GAAGCAAGTATTACTTTTTAATTTTAATCATATACATATATGATTCAATCATATATGATCATCTATTTGATCATATATGATAGAATCATATAGAGACAAGAAGGAGATTTTGTAGGCGCTTGTATG
F2: 3 TAGTATATACTAGTAGATAAACTAGTATATACTA 2

Template-switch alignment:
ALT TCATATACATATATGATTCA|ATCATATATGATCAAAATAGATGATCATATATGAT|AGAATCATATAGAGACAAGA
REF TCATATACATATATGATTCA|ATCATATATGATCAAAATAGATGATCATATATGAT|AGAATCATATAGAGACAAGA

3 82624577 G A
3 82624579 G A
3 82624581 G A
3 82624583 G A
3 82624585 G A

Alignment:

Switch process:
F1: L CATATGTGTATATATATACACATATGTACACATATGTGTATATATATACAC 1
F3: 4 GTGTATATATATATACACATATACACAT R
RF: CATATGTGTATATATATACACATATGTACACATATGTGTATATATATACACATATATGTGTATATGTGTATATATATATATACACATATGTGTATATATATACACATATATACACAT

F2: 3 TATACACATATATATATATATATGTGTATACACATATATA 2

Template-switch alignment:

ALT ATGTGTATATATATATACAC|ATATATACACATATGTGTATATATATATATATACACATAT|GTGTATATATATATACACAT
REF ATGTGTATATATATATACAC|ATATATACACATATGTGTATATATATATATATACACATAT|GTGTATATATATATACACAT

4 12716927 T G
4 12716935 A G
4 12716942 A T
4 12716943 A T

Alignment:

ALT ATCATATATAATACATTATATATATgATATCATgTATAATtATTATATATGATATCATATAATAAATTATATATG
REF ATCATATATAATACATTATATATATTATATCATATATAATAAATTATATATGATATCATATAATAAATTATATATG

Switch process:

F1: L ATCATATATATTGATATAATACATTATATATATTATATCATATATAATACATTATA 1

F3: 4 CATATAATAAATTATATATGATATCATATATAATAAATTATATATG R

RF: ATCATATATATTGATATAATACATTATATATATTATATCATATATAATACATTATATATATTATATCATATATAATAAATTATATATGATATCATATATAATAAATTATATATG

F2: 3 TATAGTATATATTATTAAATGTACTATAGTATAT 2

Template-switch alignment:

ALT ATCATATATAATACATTATA|TATATGATATCATgTATAATTTTATTATATATGATAT|CATATAATAAATTATATATG
REF ATCATATATAATACATTATA|TATATGATATCATATATAATTTTATTATATATGATAT|CATATAATAAATTATATATG

4 14494085 T G
4 14494087 T A
4 14494094 A T
4 14494095 G C
4 14494096 A T
4 14494103 T A
4 14494105 C A
4 14494109 T A

Alignment:

ALT AATAATAGTAATATCTGATTATAgAaATTTTtctTAAATaTaTATaAAGTATGAATAGTTTATTTTA
REF AATAATAGTAATATCTGATTATATATATTTTAAGATAAAATTTCTATTAAAGTATGAATAGTTTATTTTA

Switch process:

F1: L TTTAAAGTAAACAGAGAGAAGACTATTTCAATATTGTAATAATAGTAATATCTGATT 1

F3: 4 AGTATGAATAGTTTATTTTATGATTAAAAATTTTCCTTTTATTATATATACATCTGCAG R

RF: TTTAAAGTAAACAGAGAGAAGACTATTTCAATATTGTAATAATAGTAATATCTGATTATATATTTTAAGATAAAATTTCTATTAAAGTATGAATAGTTTATTTTATGATTAAAAATTTTCCTTTTATTATATATACATCTGCAG

F2: 3 AATATATATAAAATTCATTTTTAAAGATA 2

Template-switch alignment:

ALT AATAATAGTAATATCTGATT|ATAGAAATTTTATCTTAAATATATATAA|AGTATGAATAGTTTATTTTA
REF AATAATAGTAATATCTGATT|ATAGAAATTTTATCTTAAATATATATAA|AGTATGAATAGTTTATTTTA

4 23774704 A G
4 23774707 A C
4 23774712 T A
4 23774717 G T
4 23774719 G C
4 23774720 C T

Alignment:

ALT TATCTTAAAAATTGTCATTGATTGAAACTaGTaATTTtAAATgAgcAGTTTCAAACATAATTTCTCTTTTTT
REF TATCTTAAAAATTGTCATTGATTGAAACTGGTCATTTAAATTAAGTATTCAAGTTTCAAACATAATTTCTCTTTTTT

Switch process:

F1: L ATTTTGTGACAAGTTACTCCAGAATGTATTTAATATCTTAAAAATTGTCATTGA 1

F3: 4 ACTAATATTTCTCTTTTTTTTTCTCTTAATTTTTTTCTCCCTAGTCACAT R

RF: ATTTTGTGACAAGTTACTCCAGAATGTATTTAATATCTTAAAAATTGTCATTGTTGAAACTGGTCATTTAAATTAAGTATTCAAGTTTCAAACATAATTTCTCTTTTTTCTCTTTTTTCTCCCTAGTCACAT

F2: 3 AACTTGACGAGTAAATTTTAATGATCAAAGTT 2

Template-switch alignment:

ALT TATCTTAAAAATTGTCATTGA|TTGAAACTAGTAATTTTAAATGAgCAGTTTCAA|ACTAATATTTCTCTTTTTT
REF TATCTTAAAAATTGTCATTGA|TTGAAACTAGTAATTTTAAATGACCAGTTTCAA|ACTAATATTTCTCTTTTTT

4 23778750 G T
4 23778752 G C
4 23778753 G T
4 23778754 G T
4 23778759 G C
4 23778764 A C
4 23778765 A C
4 23778766 G C
4 23778768 A C

Alignment:

ALT ATGCAGATGAAAGATGATTGATTTtActtCTTTcAAAGcCcTcAAATAACAAGACTTGGTAATCAA
REF ATGCAGATGAAAGATGATTGATTGAGGGCTTTGAAAGAAGTAAATAACAAGACTTGGTAATCAA

Switch process:

F1: L AGTGAAGATATAGTGAAATTGGTTGTAAATGGAAAAATGCAGATGAAAGATGATTG 1

F3: 4 AAACAAGACTTGGTAATCAATTAGATGTGATTGTGAATGGCAGGGAGGGCTTGTGT R

RF: AGTGAAGATATAGTGAAATTGGTTGTAAATGGAAAAATGCAGATGAAAGATGATTGATTGAGGGCTTTGAAAGAAGTAAATAACAAGACTTGGTAATCAATTAGATGTGATTGTGAATGGCAGGGAGGGCTTGTGT

F2: 3 TAAACTCCCGAAACTTTCTTCATTTTA 2

Template-switch alignment:

ALT ATGCAGATGAAAGATGATTG|ATTTTACTTCTTTCAAAGCCCTCAAAT|AAACAAGACTTGGTAATCAA
REF ATGCAGATGAAAGATGATTG|ATTTTACTTCTTTCAAAGCCCTCAAAT|AAACAAGACTTGGTAATCAA

4 40660852 T A
4 40660854 T A
4 40660855 C G
4 40660856 T A
4 40660858 T A

Alignment:

ALT TTACATTTTACTGGGCTTTGCCACTTACTGCTGTGTGACATTGGGCAAGTTATTTAAACCcCagaGaGGTTAAATAACTTGCCCAATGTCACACAGCAGTAAGTGAAAAAGCCCAGATTTCATGCC
REF TTACATTTTACTGGGCTTTGCCACTTACTGCTGTGTGACATTGGGCAAGTTATTTAAACCTCTCTGTGGTTAAATAACTTGCCCAATGTCACACAGCAGTAAGTGAAAAAGCCCAGATTTCATGCC

Switch process:

F1: L ATCTTACATTTTACTGGGCTTTGC 1
F3: 4 AAAAGCCCAGATTTCATGCCTA R
RF: ATCTTACATTTTACTGGGCTTTGCCACTTACTGCTGTGTGACATTGGGCAAGTTATTTAAACCTCTCTGTGGTTAAATAACTTGCCCAATGTCACACAGCAGTAAGTGAAAAAGCCCAGATTTCATGCCTA
F2: 3 GTGAATGACGACACACTGTAACCCGTTCAATAAATTGGAGAGACACCAATTTATTGAACGGTTACAGTGTGTCGTCATTAC 2

Template-switch alignment:

ALT TTACATTTTACTGGGCTTTGC|CACTTACTGCTGTGTGACATTGGGCAAGTTATTTAAACCACAGAGAGGTTAAATAACTTGCCCAATGTCACACAGCAGTAAGTG|AAAAAGCCCAGATTTCATGCC
REF TTACATTTTACTGGGCTTTGC|CACTTACTGCTGTGTGACATTGGGCAAGTTATTTAAACCACAGAGAGGTTAAATAACTTGCCCAATGTCACACAGCAGTAAGTG|AAAAAGCCCAGATTTCATGCC

4 43884285 A G
4 43884286 T G
4 43884291 C A
4 43884292 C T

Alignment:

ALT TTCCCTTCGCCATTAAAAAGATTTTCTATAGAAAAGggGTACatCTTTTCTATAGAAAAATGTCTTGTTAAATTTGGGAG
REF TTCCCTTCGCCATTAAAAAGATTTTCTATAGAAAAGATGTACCCCTTTTCTATAGAAAAATGTCTTGTTAAATTTGGGAG

Switch process:

F1: L TTCCTGCCAGGAGAGATTTTATAGTTCCCTTCGCCATTAAAAAG 1
F3: 4 TGTCTTGTTAAATTTGGGAGTGGCCATGTGACTTGCATTGGCT R
RF: TTCCTGCCAGGAGAGATTTTATAGTTCCCTTCGCCATTAAAAAGATTTTCTATAGAAAAGATGTACCCCTTTTCTATAGAAAAATGTCTTGTTAAATTTGGGAGTGGCCATGTGACTTGCATTGGCT
F2: 3 TAAAAAGATATCTTTTCTACATGGGGAAAAGATATCTTTT 2

Template-switch alignment:

ALT TTCCTTCGCCATTAAAAAG|ATTTTCTATAGAAAAGGGGTACATCTTTTCTATAGAAAAAT|TGTCTTGTTAAATTTGGGAG
REF TTCCTTCGCCATTAAAAAG|ATTTTCTATAGAAAAGGGGTACATCTTTTCTATAGAAAAAT|TGTCTTGTTAAATTTGGGAG

4 45782580 T C
4 45782582 C T
4 45782591 A G
4 45782593 G A

Alignment:

ALT AGTACAAGACCCAGTGAAATATATATAcAtATATATATgTaTATATATGTTAGATTTCTAGTAAGTAA
REF AGTACAAGACCCAGTGAAATATATATATACATATATATGTATATATGTTAGATTTCTAGTAAGTAA

Switch process:

F1: L TTATTAGGAAATTGTTAAGTATTATATCCTCTTGAGTACAAGACCCAGTGAAAT 1
F3: 4 GTTAGATTTCTAGTAAGTAATTCTTAAATGAATGAAATCATACATCAACATCA R
RF: TTATTAGGAAATTGTTAAGTATTATATCCTCTTGAGTACAAGACCCAGTGAAATATATATACATATATATGTATATATGTTAGATTTCTAGTAAGTAA
F2: 3 TATATATATGTATATATACATATATA 2

Template-switch alignment:

ALT AGTACAAGACCCAGTGAAAT|ATATATACATATATATATGTATATATAT|GTTAGATTTCTAGTAAGTAA
REF AGTACAAGACCCAGTGAAAT|ATATATACATATATATATGTATATATAT|GTTAGATTTCTAGTAAGTAA

4 59060304 C T
4 59060307 A G
4 59060308 T C
4 59060309 A G
4 59060311 T C
4 59060311 T G
4 59060328 C T
4 59060332 T C
4 59060333 A G
4 59060335 T C
4 59060335 T G

Alignment:

ALT CACATATTTGTGTATATATGTGTATATATACAcACataTttTGTGTGTATATATACAcACA
REF CACATATTTGTGTATATATGTGTATATATACATACGCGTCGTGTGTATATATACATACA

Switch process:

F1: L CACATATTTGTGTAT 1
F3: 4 TGTGTGTATATACACACATATTTTGTGTATATATGTGTATATATACATACACGTGTGTATCTGTGTATATATAC
RF: ATATATGTGTATATATACACATATTTGTGTATATATGTGTATATATACATACGCGTCGTGTGTATATATGTGTATATATACATACACGTGTGTATCTGTGTATATATAC
F2: 3 TTTATACACACATATATATGTGTATATA 2

Template-switch alignment:

ALT CACATATTTGTGTAT|ATATGTGTATATATACACACATATtT|TGTGTATATATACAcACA
REF CACATATTTGTGTAT|ATATGTGTATATATACACACATATAT|TGTGTATATATACATACA

4 68824484 G C
4 68824486 T C
4 68824487 G C
4 68824490 T G

Alignment:

ALT CCAGGGGCAAAATGATATGGTTTGcCcTGgCCCCACCCAAATCTCATCTTGAAGTGTAGCTCTCAC
REF CCAGGGGCAAAATGATATGGTTTGGCTGTGTCCCCACCCAAATCTCATCTTGAAGTGTAGCTCTCAC

Switch process:

F1: L TCGTTTTAAAAATGTGAGTACATGAGATTTGGGTGGGGCCAGGGGCAAAATGATATGG 1 4 CTGAACTGTAGCTCTCACAATCCCATGTGTCGTAGGAGGGA R
F3:
RF: TCGTTTTAAAAATGTGAGTACATGAGATTTGGGTGGGGCCAGGGGCAAAATGATATGTTTGGCTGTGTCCCCACCCAAATCTCATCTTGAAGTGTAGCTCTCACAATCCCATGTGTCGTAGGAGGGA
F2: 3 TACTCTAAACCCACCCCGTCCCGTTT 2

Template-switch alignment:

ALT CCAGGGGCAAAATGATATGG|TTTGGCCCTGGCCCCACCCAAATCTCAT|CTTGAAGTGTAGCTCTCACA
REF CCAGGGGCAAAATGATATGG|TTTGGCCCTGGCCCCACCCAAATCTCAT|CTTGAAGTGTAGCTCTCACA

4 71662507 C G
4 71662510 A T
4 71662511 A T
4 71662514 C G

Alignment:

ALT TTTTGTAAAGTGGCCACTTCTTTGGGGACAATgCTttAGgATTGTCCCCAAAAGCTTTTTGTAAAGCATCAA
REF TTTTGTAAAGTGGCCACTTCTTTGGGGACAATCCTAAAGCATTGTCCCCAAAAGCTTTTTGTAAAGCATCAA

Switch process:

F1: L ATCTGGCCCTCTTTAAAGTGAGTTATCCTTTTGTAAAGTGGCCACTTC 1 4 AGCTTTTTGTAAAGCATCAATAATTTACAATTCTTCCATCCATGCTT R
F3:
RF: ATCTGGCCCTCTTTAAAGTGAGTTATCCTTTTGTAAAGTGGCCACTTCCTTTGGGGACAATCCTAAAGCATTGTCCCCAAAAGCTTTTTGTAAAGCATCAATAATTTACAATTCTTCCATCCATGCTT
F2: 3 AAACCCCTGTTAGGATTCGTAACAGGGGTTT 2

Template-switch alignment:

ALT TTTTGTAAAGTGGCCACTTC|TTTGGGGACAATGCTTTAGGATTGTCCCCAAA|AGCTTTTTGTAAAGCATCAA
REF TTTTGTAAAGTGGCCACTTC|TTTGGGGACAATGCTTTAGGATTGTCCCCAAA|AGCTTTTTGTAAAGCATCAA

4 88025747 A G
4 88025752 A T
4 88025754 A C
4 88025759 G A
4 88025761 T A
4 88025762 T A
4 88025763 T A
4 88025765 T C
4 88025768 C T
4 88025770 G T
4 88025772 A T

Alignment:

ALT CCAAGTTTCGTTTCATTTTCATTgGAAAtCcTAGTaAaaaTcActAtGtTTTCCAAAGACACCATGCGCTGCTT
REF CCAAGTTTCGTTTCATTTTCATTAGAAAACATAGTGATTTTACCAGGATTTCCAAAGACACCATGCGCTGCTT

Switch process:

F1: L AGAATTACCACTCATGTAGGCGTCATTACGAAACAGCCAAGTTTCGTTTCATTTTCA 1 4 CAAAGACACCATGCGCTGCTTTCTTCAGTGGTAGATATGGCTTTGCAGTAAAAATTG R
F3:
RF: AGAATTACCACTCATGTAGGCGTCATTACGAAACAGCCAAGTTTCGTTTCATTTTCATTAGAAAACATAGTGATTTTACCAGGATTTCCAAAGACACCATGCGCTGCTTTCTTCAGTGGTAGATATGGCTTTGCAGTAAAAATTG
F2: 3 CTTTTGTATCACTAAAAATGATCCTAAAGGTT 2

Template-switch alignment:

ALT CCAAGTTTCGTTTCATTTTCA|TTGGAAATCCTaGTAAAAATCACTATGTTTTTC|CAAAGACACCATGCGCTGCTT
REF CCAAGTTTCGTTTCATTTTCA|TTGGAAATCCTGTTAAAAATCACTATGTTTTTC|CAAAGACACCATGCGCTGCTT

4 92112120 C T
4 92112121 A C
4 92112122 G T
4 92112129 A C
4 92112131 G C
4 92112133 G T
4 92112140 A C
4 92112141 G T
4 92112142 A G

Alignment:

ALT TAACACTGCCACCTGGTTGTTATctGATTAAcTcAtTTAATCctgATAATGCTGAAACATAATGGATG
REF TAACACTGCCACCTGGTTGTTATCAGGATTAAATGAGTTAATCAGAATAATGCTGAAACATAATGGATG

Switch process:

F1: L CTTTACTACCTCAGTTTTCTCACCTGTAAAAATGTCAATAACACTGCCACCTGGTTG 1 4 TGTCTGAAACATAATGGATGCTTTATAACATATGCTATTAAACATTTTAATTTGGAT R
F3:
RF: CTTTACTACCTCAGTTTTCTCACCTGTAAAAATGTCAATAACACTGCCACCTGGTTTATCAGGATTAATGAGTTAATCAGAATAATGCTGAAACATAATGGATGCTTTATAACATATGCTATTAAACATTTTAATTTGGAT
F2: 3 AATAGTCCTAATTTACTCAATTAGTCTTATT 2

Template-switch alignment:

ALT TAACACTGCCACCTGGTTG|TTATTCTGATTAACCTATTTAATCCTGATAA|TGTCTGAAACATAATGGATG
REF TAACACTGCCACCTGGTTG|TTATTCTGATTAACCTATTTAATCCTGATAA|TGTCTGAAACATAATGGATG

4 92920451 C T
4 92920452 T A
4 92920456 G A
4 92920462 A T

Alignment:

ALT GTATATATTATATACTATAGTATATAATATATATTATATAcAtAGtATATaATATATATTATATACTATAGTATATAAT
REF GTATATATTATATACTATAGTATATAATATATATTATATATAAATATATTATATATATTATATACTATAGTATATAAT

Switch process:

F1: L ACATACTATATATACTATGTAGTATATATTATATACTATAG 1 4 TATATACTATAGTATATAATATATATTATATAATATATTATATACTATTA R
F3:
RF: ACATACTATATATACTATGTAGTATATATTATATACTATAGTATATAATATATATTATATAATATATTATATACTATTA

F2: 3 TATATATAATATATGATATCATATATTATATATAATATAT 2

Template-switch alignment:

ALT GTATATATTATATACTATAG|TATATAATATATATTATATACTATAGTATATAATATATAT|TATATACTATAGTATATAAT
REF GTATATATTATATACTATAG|TATATAATATATATTATATACTATAGTATATAATATATAT|TATATACTATAGTATATAAT

4 94293764 T C
4 94293770 G A
4 94293776 T A
4 94293777 G C
4 94293778 T A
4 94293784 T C
4 94293790 G A

Alignment:

ALT GACTCATTAAATTGACTCCTAAATGGTTTCTGTGcCTCTAaTGtCTacaAGACaCTAGAGaCACAGAAACCACTTTTTCAGTGTCTATTTTCCACT
REF GACTCATTAAATTGACTCCTAAATGGTTTCTGTGTCTCTAGTGTCTTGAGACATTAGAGGCACAGAAACCACTTTTTCAGTGTCTATTTTCCACT

Switch process:

F1: L CCTCTTTGTTTTACGATCCCTGGGAGGACTCATTTAATTGACTCCT 1
F3: 4 TTCAGTGTCTATTTTCCACTCGGCATCCAACTAATTTTCCATAAA R
RF: CCTCTTTGTTTTACGATCCCTGGGAGGACTCATTTAATTGACTCCTAAATGGTTTCTGTGTCTCTAGTGTCTTGAGACATTAGAGGCACAGAAACCACTTTTTCAGTGTCTATTTTCCACTCGGCATCCAACTAATTTTCCATAAA
F2: 3 TTTACCAAGACACAGAGATCACAGAACATCTGTAATCTCCGTGTCTTTGGTAAA 2

Template-switch alignment:

ALT GACTCATTAAATTGACTCCT|AAATGGTTTCTGTGCCTCTAATGTCTACAAGACACTAGAGACACAGAAACCACTTT|TTCAGTGTCTATTTTCCACT
REF GACTCATTAAATTGACTCCT|AAATGGTTTCTGTGCCTCTAATGTCTACAAGACACTAGAGACACAGAAACCACTTT|TTCAGTGTCTATTTTCCACT

4 101025854 G A
4 101025855 T C
4 101025860 G A
4 101025861 T C

Alignment:

ALT CCCACCCCTATTTCTACTTCCCAGAGTTAGTCATTCTCAAAAAATGTATATATACACATacATATacATGTGTATATATACATTTTGGAGAATGACTAACTCTGGGAAGTAGAAATAGGGGTGGG
REF CCCACCCCTATTTCTACTTCCCAGAGTTAGTCATTCTCAAAAAATGTATATATACACATGTATATGTATGTGTATATATACATTTTGGAGAATGACTAACTCTGGGAAGTAGAAATAGGGGTGGG

Switch process:

F1: L C 1
F3: 4 G R
RF: CCCACCCCTATTTCTACTTCCCAGAGTTAGTCATTCTCAAAAAATGTATATATACACATGTATATGTATGTGTATATATACATTTTGGAGAATGACTAACTCTGGGAAGTAGAAATAGGGGTGGG
F2: 3 GGTGGGGATAAAGATGAAGGGTCTCAATCAGTAAGAGTTTTACATATATATATGTGTACATATACATACATATATATATGTAATAAATCTTACTGATTGAGACCCCTCATCTTTATCCCCACCC 2

Template-switch alignment:

ALT C|CCCACCCCTATTTCTACTTCCCAGAGTTAGTCATTCTCAAAAAATGTATATATACACATACATATACATGTGTATATATACATTTTGGAGAATGACTAACTCTGGGAAGTAGAAATAGGGGTGG|G
REF C|CCCACCCCTATTTCTACTTCCCAGAGTTAGTCATTCTCAAAAAATGTATATATACACATACATATACATGTGTATATATACATTTTGGAGAATGACTAACTCTGGGAAGTAGAAATAGGGGTGG|G

4 104544272 C G
4 104544274 T G
4 104544275 C A
4 104544277 C G

Alignment:

ALT AAGTCTTTAAAAATATATATTTATCTTAAATCCTCCTgTgaAgAGGAGGATTTAAGATACATTATTTTAAATATTGTAT
REF AAGTCTTTAAAAATATATATTTATCTTAAATCCTCCTCTTCACAGGAGGATTTAAGATACATTATTTTAAATATTGTAT

Switch process:

F1: L AAATAATGTACAAATTTAAATAACAAAGCTTTTAAATATATATT 1
F3: 4 CATTATTTTAAATATTGTATTATTTTAAATCTTCCTGTGAAGAAG R
RF: AAATAATGTACAAATTTAAATAACAAAGCTTTTAAATATATATTTTATCTTAAATCCTCCTCTTCACAGGAGGATTTAAGATACATTATTTTAAATATTGTATTATTTTAAATCTTCCTGTGAAGAAG
F2: 3 ATAGAATTTAGGAGGAGAGGTGCTCCTCAAAATCTAT 2

Template-switch alignment:

ALT AAGTCTTTAAAAATATATATT|TATCTTAAATCCTCCTGTGAAGAGGAGGATTTAAGATA|CATTATTTTAAATATTGTAT
REF AAGTCTTTAAAAATATATATT|TATCTTAAATCCTCCTGTGAAGAGGAGGATTTAAGATA|CATTATTTTAAATATTGTAT

4 106186379 G A
4 106186380 G A
4 106186381 C T
4 106186383 C A
4 106186386 G A
4 106186397 T C
4 106186400 T G
4 106186402 A G
4 106186403 T C
4 106186404 T C

Alignment:

ALT ATTTATGCTGTTCAAGTGAATAAatAaTaaCCACATGTGGcTAgtGccTAACAGTTGATACGTGGCTAGT
REF ATTTATGCTGTTCAAGTGAATAAGGCACTAGCCACATGTGGTTATTTTAAACAGTTGATACGTGGCTAGT

Switch process:

F1: L CTTCTAAGAGAGCTTTCTATGAAGATGGAATATTCTCTATTTTATGCTGTTCAAGTGA 1
F3: 4 ACAGTTGATACGTGGCTAGTGAATTGAGTTTAAATTAAT R
RF: CTTCTAAGAGAGCTTTCTATGAAGATGGAATATTCTCTATTTTATGCTGTTCAAGTGAATAGGCACTAGCCACATGTGGTTATTTTAAACAGTTGATACGTGGCTAGTGAATTGAGTTTAAATTAAT
F2: 3 ATCCGTGATCGGTGTACACCAATAATAAT 2

Template-switch alignment:

ALT ATTTATGCTGTTCAAGTGAAT|TAAATAATAACCACATGTGGCTAGTGCCTA|ACAGTTGATACGTGGCTAGT
REF ATTTATGCTGTTCAAGTGAAT|TAAATAATAACCACATGTGGCTAGTGCCTA|ACAGTTGATACGTGGCTAGT

4 109612885 A T
4 109612886 A T
4 109612893 T C
4 109612900 A C
4 109612903 T G
4 109612910 A G

Alignment:

ALT ATATATATGTGTATATATATaaAATATatACACATaTatATGTGTaTATAAAATATATATATACA
REF ATATATATGTGTATATATATTTAATATACACACATCTAGATGTGTGTATAAAATATATATATACA

Switch process:

F1: L TGTGTGTATATATGTATATATGTATGTATATACACACACATATATATGTGTATATATAT 1
F3: 4 ATATAAAATATATATATACACACATCTAGATGTGTGTATAAAATATATACACACATCTATA R
RF: TGTGTGTATATATGTATATATGTATGTATATACACACACATATATATGTGTATATATTTAATATACACACATCTAGATGTGTGTATAAAATATATACACACATCTATA
F2: 3 TGTGTATATACACATATATAAAA 2

Template-switch alignment:

ALT ATATATATGTGTATATATAT|AaaATATATACACATATATATGTGT|aTATAAAATATATATATACA
REF ATATATATGTGTATATATAT|AATATATATACACATATATATGTGT|GTATAAAATATATATATACA

4 114019037 C T
4 114019045 C T
4 114019053 C T
4 114019055 C T

Alignment:

ALT TGTGTGTGTGTATATATATGcACAcACACACaCAGGACAcAcACATATATATGTATATATACACACACAC
REF TGTGTGTGTGTATATATATGcACATACACACATACGCACATATATATGTATATATACACACACACAC

Switch process:

F1: L AATTTTCCTCTTGTATATATATGTGTGTGTGTGTGTGTGTGTGTGTATATATATG 1
F3: 4 GTATATATACACACACACAAATCATAAATGTGCTTGTGTATATATAAG R
RF: AATTTTCCTCTTGTATATATATGTGTGTGTGTGTGTGTGTGTGTGTATATATATGCACATACACACATACGCACATATACATATATATGTATATATACACACACAAATCATAAATGTGCTTGTGTATATATAAG
F2: 3 TATATATACACACACACGCACACACACACAC 2

Template-switch alignment:

ALT TGTGTGTGTGTATATATATG|CACACACACACACgCACACACACATATATAT|GTATATATACACACACAC
REF TGTGTGTGTGTATATATATG|CACACACACACACACACACACACATATATAT|GTATATATACACACACACAC

4 119928385 A G
4 119928389 A G
4 119928392 T C
4 119928396 T C

Alignment:

ALT AAAAGAACAAGGTATATATATATaTATaTATaTATaTATATGTATATACATATATATATATATATATATGT
REF AAAAGAACAAGGTATATATATATATGTATGTACATACATATGTATATACATATATATATATATATATATGT

Switch process:

F1: L CACAAGAATGAGGAGACTGAAAATTCCCAAAACAAAAAGAACAAGGTATATAT 1
F3: 4 ATATATATATATATATATGTATATACATATATATATATATATATGTAT R
RF: CACAAGAATGAGGAGACTGAAAATTCCCAAAACAAAAAGAACAAGGTATATATATATGTATGTACATACATATGTATATACATATATATATATATATATATATATATATGTAT
F2: 3 TATACATATATGTATATATATATATATATATA 2

Template-switch alignment:

ALT AAAAGAACAAGGTATATAT|ATATATATATATATATATATGTATATACATAT|ATATATATATATATATGT
REF AAAAGAACAAGGTATATAT|ATATATATATATATATATATGTATATACATAT|ATATATATATATATATGT

4 133320060 G A
4 133320063 T A
4 133320064 T A
4 133320065 T A
4 133320068 T C

Alignment:

ALT ATACCAGATAAAGAAAATCTGGTATATATATATTATATATATATGTATATTATAGATATATaTaaaaTAcATATATCTATAATATACATATATATAATATATATATACCAGATTTTCTTTATCCATTCC
REF ATACCAGATAAAGAAAATCTGGTATATATATTATATATATATGTATATTATAGATATATGTATTTTATATATCTATAATATACATATATATAATATATATATACCAGATTTTCTTTATCCATTCC

Switch process:

F1: L ATACCA 1
F3: 4 CATTCC R
RF: ATACCAGATAAAGAAAATCTGGTATATATATTATATATATATGTATATTATAGATATATGTATTTTATATATCTATAATATACATATATATAATATATATATACCAGATTTTCTTTATCCATTCC
F2: 3 CTATTTCTTTAGACCATATATATAATATATATACATATAATATCTATATACATAAAATATATAGATATTATATGTATATATATTATATATATATGGTCTAAAAGAAATAG 2

Template-switch alignment:

ALT ATACCA|GATAAAGAAAATCTGGTATATATATTATATATATATGTATATTATAGATATATATAAAATACATATATCTATAATATACATATATATAATATATATATACCAGATTTTCTTTATC|CATTCC
REF ATACCA|GATAAAGAAAATCTGGTATATATATTATATATATATGTATATTATAGATATATATAAAATACATATATCTATAATATACATATATATAATATATATATACCAGATTTTCTTTATC|CATTCC

4 142202589 T G
4 142202594 C T
4 142202600 T A
4 142202606 A G

Alignment:

ALT ACTCCTACATTACTGAATGTCTATgAGCAtAGCCTaAGGCTgTGCTCATAGTTCCTTTTGAAGAAT
REF ACTCCTACATTACTGAATGTCTATTAGCACAGCCTTAGGCTATGCTCATAGTTCCTTTTGAAGAAT

Switch process:

F1: L ATAATAAGGTAAGGCAGAGTTATGGTAGAACTAATCAACTCCTACATTACTGAATGT 1
F3: 4 CATAGTTCCTTTTGAAGAATGATACCCATTAAACACCCAGCAGTTTTAGGCACGGG R
RF: ATAATAAGGTAAGGCAGAGTTATGGTAGAACTAATCAACTCCTACATTACTGAATGTCTATTAGCACAGCCTTAGGCTATGCTCATAGTTCCTTTTGAAGAATGATACCCATTAAACACCCAGCAGTTTTAGGCACGGG

F2: 3 TCGTGTGCGAATCCGATACGAGTATC 2

Template-switch alignment:

ALT ACTCCTACATTACTGAATGT|CTATGAGCATAGCCTAAGGCTGTGCT|CATAGTTCCTTTAGAAGAT
REF ACTCCTACATTACTGAATGT|CTATGAGCATAGCCTAAGGCTGTGCT|CATAGTTCCTTTAGAAGAT

4 158751508 T C
4 158751512 T C
4 158751518 T C
4 158751520 T C

Alignment:

ALT TATACATATATATATATGTAtATAtATATGtAtACATATATATATGTATATATACACATATATAT
REF TATACATATATATATATGTACATACATATGCACACATATATATATGTATATATACACATATATAT

Switch process:

F1: L ATCAATGAGTGGATAAAGAACTGGTGTATATATATATGTATACATATATATATATG 1
F3: 4 GTATATACACATATATATATGTATACATATATACACATATATATAC R
RF: ATCAATGAGTGGATAAAGAACTGGTGTATATATATATGTATACATATATATATGTACATACATATGCACACATATATATATGTATATACACATATATATATAC
F2: 3 TATATATATACATATGTATATATATAT 2

Template-switch alignment:

ALT TATACATATATATATATATG|TATATATATATGTATACATATATATAT|GTATATACACATATATAT
REF TATACATATATATATATATG|TATATATATATGTATACATATATATAT|GTATATACACATATATAT

5 27790808 G A
5 27790810 A G
5 27790817 G T
5 27790819 A G

Alignment:

ALT TAGTATATATACTATATATgTaTATATAgTaTATATACTATATATGTATATATTTGTATGTATA
REF TAGTATATATACTATATATATGTATATATTGTATATACTATATATGTATATATTTGTATGTATA

Switch process:

F1: L ATACTATATATATGGTATATATACTATACAGTATACTATATATAGTATATATACTATATATG 1
F3: 4 GTATATATATTGTATGTATACATATTATATATATGTGTATGTATAT R
RF: ATACTATATATATGGTATATATACTATACAGTATACTATATATAGTATATATACTATATATGTATATATTGTATATACTATATATATTGTATGTATACATATTATATATATGTGTATGTATAT
F2: 3 TATATATCATATATATGATATATAT 2

Template-switch alignment:

ALT TAGTATATATACTATATATg|TATATATAGTATATATACTATATAT|GTATATATATTGTATGTATA
REF TAGTATATATACTATATATA|TATATATAGTATATATACTATATAT|GTATATATATTGTATGTATA

5 29378002 T A
5 29378007 G C
5 29378008 G C
5 29378013 T A

Alignment:

ALT TAGTTTATATATATTATATGTTCTTAGCTATAaTATAccTATAaTATAGCTAAGAATATATAATATAATACATATT
REF TAGTTTATATATATTATATGTTCTTAGCTATATTATAGGTATATTATAGCTAAGAATATATAATATAATACATATT

Switch process:

F1: L ATATAATAGTTTATATTATGGATTATATATAGTTTATATATTATATG 1
F3: 4 TATATAATATAATACATATTTAATATACATATGAAAGAAATAAGATG R
RF: ATATAATAGTTTATATTATGGATTATATATAGTTTATATATTATGTTCTTAGCTATATTATAGGTATATTATAGCTAAGAATATATAATATAATACATATT
F2: 3 AAGATCGATATAAATATCCATATAATATCGATTCTT 2

Template-switch alignment:

ALT TAGTTTATATATATTATATG|TTCTTAGCTATAATATACCTATAATATAGCTAAGAA|TATATAATATAATACATATT
REF TAGTTTATATATATTATATG|TTCTTAGCTATAATATACCTATAATATAGCTAAGAA|TATATAATATAATACATATT

5 54864017 A G
5 54864017 A T
5 54864018 A C
5 54864018 A T
5 54864019 C T

Alignment:

ALT ATATATATGATATATATAATATATATATCATATATATgtcttATATATATGATATATATAAAAAATACACACATATCTCA
REF ATATATATGATATATATAATATATATATCATATATATAAACATATATATGATATATATAAAAAATACACACATATCTCA

Switch process:

F1: L TAATATATATCATATATATGTTATATATATGATATATATATA 1
F3: 4 AAAAATACACACATATCTCACAGTTTCTTTATCCACTCATT R
RF: TAATATATATCATATATATGTTATATATATGATATATATATAATATATATCATATATATAAACATATATATGATATATATATAAAAAATACACACATATCTCACAGTTTCTTTATCCACTCATT
F2: 3 TATATATATAGTATATATATTCTGTATATATACTATATATATA 2

Template-switch alignment:

ALT ATATATATGATATATATATA|ATATATATATCATATATATGTcTTATATATATGATATATATAT|AAAAATACACACATATCTCA
REF ATATATATGATATATATATA|ATATATATATCATATATATGTTTTATATATATGATATATATAT|AAAAATACACACATATCTCA

5 65813788 C T
5 65813796 T C
5 65813797 C T
5 65813806 G A
5 65813807 T A
5 65813814 T C
5 65813815 G A

5 65813822 T A
5 65813823 T C
5 65813832 A G
5 65813833 G A
5 65813841 A G

Alignment:

ALT TGTGATTAAGCAAATGATTCAAAATGCAATGGAAGTGTATATAGTGaaTATCAAcTTGATAacCACTATATgaCAGTTCCgTTGCATTTTCTAATAGATGAAGATAGAGA
REF TGTGATTAAGCAAATGATTCAAAATGCAACGGAAGTGTATATAGTGGTTATCAATGTTGATATTCAGTATATAGCAGTTCCATTGTCATTTTCTAATAGATGAAGATAGAGA

Switch process:

F1: L GTAAACAGAGATAAAGTATCATGAATGGCAAGTGTGATTAAGCAAATGATTC 1
F3: 4 CTAATAGATGAAGATAGAGAAATGGGA
RF: GTAAACAGAGATAAAGTATCATGAATGGCAAGTGTGATTAAGCAAATGATTCAAAATGCAACGGAAGTGTATATAGTGGTTATCAATGTTGATATTCAGTATATAGCAGTTCCATTGTCATTTTCTAATAGATGAAGATAGAGAAATGGGA
F2: 3 TTTTACGTTGCCTTGACAGTATATACCAATAGTTACAACATAAGTGATATATCGTCAAGGTAACGTAAAA 2

Template-switch alignment:

ALT TGTGATTAAGCAAATGATTC|AAAATGCAATGGAAGTGTCTATATAGTGAATATCAACATTGATAACCACTATATGACAGTTCCGTTGCATTTT|CTAATAGATGAAGATAGAGA
REF TGTGATTAAGCAAATGATTC|AAAATGCAATGGAAGTGTCTATATAGTGAATATCAACATTGATAACCACTATATGACAGTTCCGTTGCATTTT|CTAATAGATGAAGATAGAGA

5 73507224 G C
5 73507226 C G
5 73507227 A G
5 73507230 A T
5 73507231 A T
5 73507232 A T
5 73507239 A T
5 73507240 A T
5 73507241 A T
5 73507244 C T
5 73507245 C G
5 73507247 G C

Alignment:

ALT AATGGCCTCTGCCTTTCTCTTGGcTggCTtttTCTAGAttAgTgAcCCACCATATTGTGAGAAGTGCCC
REF AATGGCCTCTGCCTTTCTCTTGGGCTACTAAATCTAGAAAAAGCCAGCCACCATATTGTGAGAAGTGCCC

Switch process:

F1: L TACTGATACATCATTCTGAATCTAGGTCATAAAATATAATGGCCTCTGCCTTTCTCT 1
F3: 4 CCATATTGTGAGAAGTGCCCAATGGGGAGGCCACCGAGGCCTCCTGCTAACAGCCAG R
RF: TACTGATACATCATTCTGAATCTAGGTCATAAAATATAATGGCCTCTGCCTTTCTCTTGGGTCCTAAATCTAGAAAAAGCCAGCCACCATATTGTGAGAAGTGCCCAATGGGGAGGCCACCGAGGCCTCCTGCTAACAGCCAG
F2: 3 ACCCAGTGATTAGATCTTTTTCGTGCGT 2

Template-switch alignment:

ALT AATGGCCTCTGCCTTTCTCT|TGGCTGGCTTTTTCTAGATTTAGTGACCCA|CCATATTGTGAGAAGTGCCC
REF AATGGCCTCTGCCTTTCTCT|TGGCTGGCTTTTTCTAGATTTAGTGACCCA|CCATATTGTGAGAAGTGCCC

5 110669278 A C
5 110669282 T C
5 110669283 T C
5 110669285 T A
5 110669288 T A
5 110669290 T A
5 110669292 T A
5 110669295 T A
5 110669297 G A
5 110669298 G A
5 110669301 A G
5 110669302 G T

Alignment:

ALT GCATTTGGGTTCCAGAGCTTCTTaCGCttTtAcTtAtGtTAggGCagAAGTTTTATTAAATGTCTGAAAT
REF GCATTTGGGTTCCAGAGCTTCTTCCGCCCTAACATAAAGTAAAGCGTAAGTTTTATTAAATGTCTGAAAT

Switch process:

F1: L AGGCTGTTTTTGCTTTACCTTGTGTAGCTAAAATTGAGCATTGGGTTCCAGAGCTT 1
F3: 4 TTTTATTAAATGTCTGAAATAAGAGGAGCCCATATTTAAGCCAATGCTTATGGAGATC R
RF: AGGCTGTTTTTGCTTTACCTTGTGTAGCTAAAATTGAGCATTGGGTTCCAGAGCTTCTTCCGCCCTAACATAAAGTAAAGCGTAAGTTTTATTAAATGTCTGAAATAAGAGGAGCCCATATTTAAGCCAATGCTTATGGAGATC
F2: 3 GAAGACGGGATTGTATTTTCATTTTCGCATTC 2

Template-switch alignment:

ALT GCATTTGGGTTCCAGAGCTT|CTTACGCTTTTACTTTATGTTAGGGCaGAAG|TTTTATTAAATGTCTGAAAT
REF GCATTTGGGTTCCAGAGCTT|CTTACGCTTTTACTTTATGTTAGGGCGGAAG|TTTTATTAAATGTCTGAAAT

5 124952546 A G
5 124952548 A C
5 124952552 T A
5 124952557 A C

Alignment:

ALT TAAGATAGACTATAATATATATTATATTATAaTaTAGtCTaTaTTATTATATTATATTATATATA
REF TAAGATAGACTATAATATATATTATATTATAGTCTAGACTATCTTATTATATTATATTATATATA

Switch process:

F1: L TATAGACTATATTATAATATATAACATATAAGATAGACTATAATATAT 1
F3: 4 TATATTATATTATATATAATATATTATAATATAGACTATATTATAATATATAAT R
RF: TATAGACTATATTATAATATATAACATATAAGATAGACTATAATATATATTATATTATAGTCTAGACTATCTTATTATATTATATTATATAATATATAATATAAT
F2: 3 TATTATATCTGATATAATATTATATATTA 2

Template-switch alignment:

ALT TAAGATAGACTATAATATAT|ATTATATATTATAATATAGTCTATATTAT|TATATTATATTATATATA
REF TAAGATAGACTATAATATAT|ATTATATATTATAATATAGTCTATATTAT|TATATTATATTATATATA

5 140026330 T A
5 140026333 A T
5 140026334 A T
5 140026337 T A

Alignment:

ALT TAAATGTAAAGGCTCAATCCTGTTAAACTCTAGCTGCAaCTtAGaTGCAGCTAGAGTTTAAACAATAGTGCAAAACAAAGTTTT
REF TAAATGTAAAGGCTCAATCCTGTTAAACTCTAGCTGCATCTAAAGTTGCAGCTAGAGTTTAAACAATAGTGCAAAACAAAGTTTT

Switch process:

F1: L TAAGTGCATTCTAGGAAGGGGAATAAATGTAAAGGCTCAATCC 1
F3: 4 ATAGTGCAAAACAAAGTTTTGATTCCGTTTTCTAATCTCTAC R
RF: TAAGTGCATTCTAGGAAGGGGAATAAATGTAAAGGCTCAATCCTGTTAAACTCTAGCTGCATCTAAAGTTGCAGCTAGAGTTTAAACAATAGTGCAAAACAAAGTTTTGATTCCGTTTTCTAATCTCTAC
F2: 3 ACAATTTGAGATCGACGTAGATTTCAACGTCGATCTCAAATTGT 2

Template-switch alignment:

ALT TAAATGTAAAGGCTCAATCC|TGTTAAACTCTAGCTGCAACTTTAGATGCAGCTAGAGTTTAAACA|ATAGTGCAAAACAAAGTTTT
REF TAAATGTAAAGGCTCAATCC|TGTTAAACTCTAGCTGCAACTTTAGATGCAGCTAGAGTTTAAACA|ATAGTGCAAAACAAAGTTTT

5 147416667 A G
5 147416670 C T
5 147416677 A G
5 147416680 C T

Alignment:

ALT ATATACCTTATATGTATACATGTATATATAAGTATATACATGTgTatATATATgTatACATGTATATACTTATATATACTTATATACATGTGTATATAT
REF ATATACCTTATATGTATACATGTATATATAAGTATATACATGTATACATATATATACACATGTATATACTTATATATACTTATATACATGTGTATATAT

Switch process:

F1: L TACTTATATATGTACATGTATATACTTATATGTATACAT 1
F3: 4 TTATATACATGTGTATATATATGTATATAATACTTAGA R
RF: TACTTATATATGTACATGTATATACTTATATGTATACATGTATATATAAGTATATACATGTATACATATATATACACATGTATATACTTATATATACTTATATACATGTGTATATATGTATATAATACTTAGA
F2: 3 CATATATATTCATATATGTACATATGTATATATATGTGTACATATATGAATATATATG 2

Template-switch alignment:

ALT ATATACCTTATATGTATACAT|GTATATATAAGTATATACATGTGTATATATATGTATACATGTATATACTTATATATAC|TTATATACATGTGTATATAT
REF ATATACCTTATATGTATACAT|GTATATATAAGTATATACATGTGTATATATATGTATACATGTATATACTTATATATAC|TTATATACATGTGTATATAT

5 163755913 G A
5 163755918 T C
5 163755927 A G
5 163755930 C T

Alignment:

ALT ATGTATACGTATACGTATATATGTATgTATAtATACATGTaTAcGTATACGTATATATGTATGTGTGTATATACA
REF ATGTATACGTATACGTATATATGTATATATACATACATGTGTATGTATACGTATATATGTATGTGTGTATATACA

Switch process:

F1: L TATATACGTATACGTATATATGTATGTATATATACATGTATACGTATACGTATAT 1
F3: 4 TATGTATGTGTATATACATGTGTATGTATATATGTATGTGTGTATAT R
RF: TATATACGTATACGTATATATGTATGTATATATACATGTATACGTATACGTATATATGTATATATACATACATGTGTATGTATACGTATATATGTATGTGTGTATATATGTATGTGTGTATAT
F2: 3 ATATGCATATGCATATGTACATATATATGTATGTA 2

Template-switch alignment:

ALT ATGTATACGTATACGTATAT|ATGTATGTATATATACATgTATACGTATACGTATA|TATGTATGTGTGTATATACA
REF ATGTATACGTATACGTATAT|ATGTATGTATATATACATATATACGTATACGTATA|TATGTATGTGTGTATATACA

6 3694932 C T
6 3694936 A T
6 3694939 T C
6 3694941 T A
6 3694946 A T
6 3694950 A G

Alignment:

ALT ATGTTAATTTTCATAGTTTTGGTCTtCTGtACcCaGGGTtCAGgGACATTAATGTTAGGGCAGTCTG
REF ATGTTAATTTTCATAGTTTTGGTCCCTGAACTCTGGGTACAGAGACATTAATGTTAGGGCAGTCTG

Switch process:

F1: L TATGAATAATGACTATAGTTTAGTATTGTGTTGTTAATGTTAATTTTCATAGTTTTG 1
F3: 4 ATTAATGTTAGGGCAGTCTGGGTGAATGGGTGTACAGGAATTCTAAGAAATATTTTTA R
RF: TATGAATAATGACTATAGTTTAGTATTGTGTTGTTAATGTTAATTTTCATAGTTTTGGTCCCTGAACTCTGGGTACAGAGACATTAATGTTAGGGCAGTCTGGGTGAATGGGTGTACAGGAATTCTAAGAAATATTTTTA
F2: 3 CAGGGACTTGGGACCCATGTCTCTG 2

Template-switch alignment:

ALT ATGTTAATTTTCATAGTTTTG|GTCTCTGTACCCAGgGTTcAGGGAC|ATTAATGTTAGGGCAGTCTG
REF ATGTTAATTTTCATAGTTTTG|GTCTCTGTACCCAGAGTTcAGGGAC|ATTAATGTTAGGGCAGTCTG

6 4394293 C A
6 4394294 A T
6 4394296 G T
6 4394300 C T
6 4394304 A G
6 4394307 A G
6 4394311 A C
6 4394313 A T
6 4394314 T G

Alignment:

ALT ATTTAAATGTGCATCAACATTTTAatTtATTtTACgTAgAATcAtgTAACAGATCAAATTTGAAGTTTA
REF ATTTAAATGTGCATCAACATTTACATGATTCTACATAAAATAAATTAAACAGATCAAATTTGAAGTTTA

Switch process:

F1: L ACATCTAATTTCCACAAAGCTGGTGAATAGTTTAAAAATTTAAATGTGCATCAACAT 1
F3: 4 CAGATCAAATTTGAAGTTTAAATGCCAAAAAACTGTCCAATGTCCTTTTTGTACTT R
RF: ACATCTAATTTCCACAAAGCTGGTGAATAGTTTAAAAATTTAAATGTGCATCAACATTTACATGATTCTACATAAAATAAATTAAACAGATCAAATTTGAAGTTTAAATGCCAAAAAACTGTCCAATGTCCTTTTTGTACTT
F2: 3 AATGTACTAAGATGCATTTTATTTAATT 2

Template-switch alignment:
ALT ATTTAAATGTGCATCAACAT|TTAATTTATTTTAcGTAGAATCATGTAA|CAGATCAAATTTGAAGTTTA
REF ATTTAAATGTGCATCAACAT|TTAATTTATTTTATGTAGAATCATGTAA|CAGATCAAATTTGAAGTTTA

6 6690617 C T
6 6690622 T C
6 6690623 A C
6 6690625 A T
6 6690627 T G
6 6690636 C A
6 6690638 A T
6 6690640 G T
6 6690641 G A
6 6690646 A G

Alignment:
ALT CCCACAGTGCATCAGTCCtCTGTccGtGgGGGGCCCCaCtCtaACAGgGACTAAGTGGAGCCCTAGCTA
REF CCCACAGTGCATCAGTCCCTGTTAGAGTGGGGCCCCACGGACAGAGACTAAGTGGAGCCCTAGCTA

Switch process:
F1: L CTACTGGACACAGGTCTGAGTTGACATGGACACTTGGGTACCCACAGTGTGCATCAGTC 1
F3: 4 ACTAAGTGGAGCCCTAGCTAATGTCCAGCTCCTAATGGTCCTGCGGAGTCCACTAACAT
RF: CTACTGGACACAGGTCTGAGTTGACATGGACACTTGGGTACCCACAGTGTGCATCAGTCCCTGTTAGAGTGGGGCCCCACGGACAGAGACTAAGTGGAGCCCTAGCTAATGTCCAGCTCCTAATGGTCCTGCGGAGTCCACTAACAT
F2: 3 GGGACAATCTCACC CGGGGGTGCCTGTCTC 2

Template-switch alignment:
ALT CCCACAGTGCATCAGTC|CTCTGTCCGTGGGGGGCCCCACTCTAACAGGG|ACTAAGTGGAGCCCTAGCTA
REF CCCACAGTGCATCAGTC|CTCTGTCCGTGGGGGGCCCCACTCTAACAGGG|ACTAAGTGGAGCCCTAGCTA

6 44420926 C T
6 44420927 A T
6 44420930 C T
6 44420931 A G
6 44420934 A T
6 44420935 A G

Alignment:
ALT AGGCAAGTGTAACAGTCAACTATTTGTATACCTAACATAGGTATAtTatgTatgTATACCTATGTTAGGTATACAAATATATATATATATAAAGAAAAAT
REF AGGCAAGTGTAACAGTCAACTATTTGTATACCTAACATAGGTATACATACATAAAATATACCTATGTTAGGTATACAAATATATATATATATAAAGAAAAAT

Switch process:
F1: L CTGTACTGAATACCGTAGGCAAGTGTAACAGTCAAC 1
F3: 4 TATATATATATAAAGAAAAATATACAGTAAAAATAT R
RF: CTGTACTGAATACCGTAGGCAAGTGTAACAGTCAACTATTTGTATACCTAACATAGGTATACATACATAAAATATACCTATGTTAGGTATACAAATATATATATATAAAGAAAAATATACAGTAAAAATAT
F2: 3 ATAAACATATGGATTGTATCCATATGTATGTTTATATGGAACAATCCATATGTTTAT 2

Template-switch alignment:
ALT AGGCAAGTGTAACAGTCAAC|TATTTGTATACCTAACATAGGTATATTTATGTATGTATACCTATGTTAGGTATACAAATA|TATATATATATAAAGAAAAAT
REF AGGCAAGTGTAACAGTCAAC|TATTTGTATACCTAACATAGGTATATTTATGTATGTATACCTATGTTAGGTATACAAATA|TATATATATATAAAGAAAAAT

6 51414785 T G
6 51414786 C T
6 51414789 A G
6 51414790 C A

Alignment:
ALT GTGTATATTCACACATATACATACATACATATgtATgaATATGTATGTATAATTAACCTTACTAAAGAT
REF GTGTATATTCACACATATACATACATACATATTCATACATATGTATGTATAATTAACCTTACTAAAGAT

Switch process:
F1: L AGACACAAATATATATGTTATGTGTATATGTGTATATTCACACATATAC 1
F3: 4 AATTAAACCTTACTAAAGATGATAATGGCCCCACAAAAGTCATTGCTT R
RF: AGACACAAATATATATGTTATGTGTATATGTGTATATTCACACATATACATACATATTCATACATATGTATGTATAATTAACCTTACTAAAGATGATAATGGCCCCACAAAAGTCATTGCTT
F2: 3 TATGTATGTATAAGTATGTATACATACATA 2

Template-switch alignment:
ALT GTGTATATTCACACATATAC|ATACATACATATGTATGAATATGTATGTAT|AATTAAACCTTACTAAAGAT
REF GTGTATATTCACACATATAC|ATACATACATATGTATGAATATGTATGTAT|AATTAAACCTTACTAAAGAT

6 68761179 A C
6 68761182 G T
6 68761188 G T
6 68761189 A C

Alignment:
ALT TATATCTATCTAGATATAGATATATcTAtATATAtcTATATCTAGATAGATATATAGATATAGATATATCTAGATAGATATATAGAT
REF TATATCTATCTAGATATAGATATATAGATATAGATATATCTAGATAGATATATAGATATAGATATATCTAGATAGATATATAGAT

Switch process:
F1: L TTATTCTATTTATTTTCTATTCATATCTATATCTATATATCTATCTAGATATAGA 1
F3: 4 ATCTAGATAGATATATAGATATAGATATA R
RF: TTATTCTATTTATTTTCTATTCATATCTATATCTATCTAGATATAGATATATATAGATATAGATATATCTAGATAGATATATAGATATAGATATATCTAGATAGATATATAGATATAGATATA
F2: 3 TATAGATATAGATATATAGATAGATCTATATCTATATATCTATAT 2

Template-switch alignment:
ALT TATATCTATCTAGATATAGA|TATATCTATATATATCTATATCTAGATAGATATATAGATATAGATAT|ATCTAGATAGATATATAGAT
REF TATATCTATCTAGATATAGA|TATATCTATATATATCTATATCTAGATAGATATATAGATATAGATAT|ATCTAGATAGATATATAGAT

ALT TATATGTATATATATGTGTGTACATATATACAtATAtATGTAtAtATGTACAcATATATGTATATAT
REF TATATGTATATATATGTGTGTACATATATACACATACATGTACACATGTACATATATATGTATATAT

Switch process:

F1: L GTATATATATATATATACACACATACATATATATGTATATATATGTGTG 1
F3: 4 GTACACATATATGTATATATGTGCACATATATACATATATATGTATATATGTATATATGTGT R
RF: GTATATATATATATATACACACATACATATATATGTATATATATGTGTGTACATATATACACATACATGTACACATGTACATATATATGTATATATGTGCACATATATACATATATATGTATATATGTATATATGTGT
F2: 3 TATATATGTATATATACATATATACAT 2

Template-switch alignment:

ALT TATATGTATATATATGTGTG|TACATATATACATATATATGTATATAT|GTACAcATATATGTATATAT
REF TATATGTATATATGTGTG|TACATATATACATATATATGTATATAT|GTACATATATATGTATATAT

7 71519389 T C
7 71519390 A G
7 71519399 T C
7 71519400 A G

Alignment:

ALT GTTGGCTGCATATATGTACAtaTATATATaTACCGTGTATATACACGTATATATATATATACATATATA
REF GTTGGCTGCATATATGTACACGTATATATACGTACCGTGTATATATACACGTATATATATATATACATATATA

Switch process:

F1: L TTTTCTAATGGTCAGTGATACTGAGCTTTTTCTGTATGCTTGTGGCTGCATATATGTACA 1
F3: 4 TATATATATATACATATATATACATATATATACATATATA R
RF: TTTTCTAATGGTCAGTGATACTGAGCTTTTTCTGTATGCTTGTGGCTGCATATATGTACACGTATATATACACGTATATATATATACATATATATACATATATA
F2: 3 ATGCACATATATATGTGCATATATATATAT 2

Template-switch alignment:

ALT GTTGGCTGCATATATGTACA|TATATATATATATACGTGTATATATACACGTA|TATATATATATACATATATA
REF GTTGGCTGCATATATGTACA|TATATATATATATACGTGTATATATATACACGTA|TATATATATATACATATATA

7 71757447 C T
7 71757448 T G
7 71757453 C A
7 71757454 A G

Alignment:

ALT TCCCACTCATTAGCAGATAGGGCCTTTGAGAGGTGATTGGGTCAtgATATagTGACCCAATCACCTCTCAAAGGCCATATCTGCTAATACCATCAC
REF TCCCACTCATTAGCAGATAGGGCCTTTGAGAGGTGATTGGGTCACTATATCATGACCCAATCACCTCTCAAAGGCCATATCTGCTAATACCATCAC

Switch process:

F1: L TGAATGAGGCCTCCACCTCCCACTCATTAGCAGATAG 1
F3: 4 ATATCTGCTAATACCATCACATTGGCAATAAGAATT R
RF: TGAATGAGGCCTCCACCTCCCACTCATTAGCAGATAGGGCCTTTGAGAGGTGATTGGGTCACTATATCATGACCCAATCACCTCTCAAAGGCCATATCTGCTAATACCATCACATTGGCAATAAGAATT
F2: 3 CCGGAAACTCTCCACTAACCCAGTGATATAGTACTGGGTTAGTGGAGAGTTCCGG 2

Template-switch alignment:

ALT TCCCACTCATTAGCAGATAG|GGCCTTTGAGAGGTGATTGGGTCACTATATAGTGACCCAATCACCTCTCAAAGGCC|ATATCTGCTAATACCATCAC
REF TCCCACTCATTAGCAGATAG|GGCCTTTGAGAGGTGATTGGGTCACTATATAGTGACCCAATCACCTCTCAAAGGCC|ATATCTGCTAATACCATCAC

7 75293342 A G
7 75293346 G A
7 75293353 T C
7 75293355 T C

Alignment:

ALT ATGTGTATATATATACACATATaTGTgTATATaTAtACACATATATGTGTATATACACATATATGTGTATATACA
REF ATGTGTATATATATACACATATGTGTATATATACACACATATATGTGTATATACACATATATGTGTATATACA

Switch process:

F1: L TATATATATACACATATATGTGTATATATATACACATATATGTGTATATATATACACAT 1
F3: 4 CACATATATGTGTATATACACACATATACACATATGT R
RF: TATATATATACACATATATGTGTATATATATACACATATATGTGTATATATATACACATATGTGTATATACACACATATATGTGTATATACACATATATGTGTATATACACACATATACACATATGT
F2: 3 ATATATGTGTATATACACATATATATATGTGTATA 2

Template-switch alignment:

ALT ATGTGTATATATATACACAT|ATATGTGTATATATATACACATATATGTGTATATA|CACATATATGTGTATATACA
REF ATGTGTATATATATACACAT|ATATGTGTATATATATACACATATATGTGTATATA|CACATATATGTGTATATACA

7 76225552 A T
7 76225554 C T
7 76225555 A G
7 76225557 A T

Alignment:

ALT TTTGAAACTAAACTCTAGTATCCCAGAGATtCtgGtATCTCTGGGACACAGCTAAAGCAGTGGTAA
REF TTTGAAACTAAACTCTAGTATCCCAGAGATACCAGAATCTCTGGGACACAGCTAAAGCAGTGGTAA

Switch process:

F1: L CCATGAAATTAAGGCAAAACATCAAGTAATTCTTTGAAACTAAACTCTAGTA 1
F3: 4 CACAGCTAAAGCAGTGGTAAGAGGGAATTTTATAGTGATGCCACATCAA R
RF: CCATGAAATTAAGGCAAAACATCAAGTAATTCTTTGAAACTAAACTCTAGTATCCCAGAGATACCAGAATCTCTGGGACACAGCTAAAGCAGTGGTAA
F2: 3 AGGGTCTCTATGTGCTTAGAGACCCT 2

Template-switch alignment:

ALT TTTGAAACTAAACTCTAGTA|TCCCAGAGATTCTGGTATCTCTGGGA|CACAGCTAAAGCAGTGGTAA
REF TTTGAAACTAAACTCTAGTA|TCCCAGAGATTCTGGTATCTCTGGGA|CACAGCTAAAGCAGTGGTAA

7 85089680 A G

7 85089687 T C
7 85089694 A G
7 85089695 C T

Alignment:

ALT ATATGTATATATACATATATACGTATATATACGTATATATACGTaTATATgTATATAcATATATACATACATATACGTATATATA
REF ATATGTATATATACATATATACGTATATATACGTATATATACGTATATATACGTGTATATGCATATATGTATATATACATACATATACGTATATATA

Switch process:

F1: L CATATATATGTATATATACATATAT 1
F3: 4 CATACATATACGTATATATACGTATATATACATATATACATATATACGTAT R
RF: CATATATATATGTATATATACATATATACGTATATATACGTATATATACGTATATATACGTGTATATGCATATATGTATATATACATACATATACGTATATACGTAT
F2: 3 ATATATACATATATATGTATATATGCATATATATGCATATATATGCATATATATGCA 2

Template-switch alignment:

ALT ATATGTATATATACATATAT|ACGTATATATACGTATATATACGTATATATACGTATATATGTATATATACATATATA|CATACATATACGTATATATA
REF ATATGTATATATACATATAT|ACGTATATATACGTATATATACGTATATATACGTATATATGTATATATACATATATA|CATACATATACGTATATATA

7 90871214 G A
7 90871218 G A
7 90871223 A T
7 90871224 A T
7 90871229 T C

Alignment:

ALT ACATACATACACACATACATACACACACATaTGTaTGTAttTACAcACATATGTGTGTGTGTGTGTATG
REF ACATACATACACACATACATACACACACATGTGTGTGTAATACATACATATGTGTGTGTGTGTATG

Switch process:

F1: L TTAACCTTTTACACCTTACACACACACACACATACATACACACATACAT 1
F3: 4 TATGTGTGTGTGTATGTATGTGTGTGTATAGAATACGCATCTGTGTGCCACCTAAAA R
RF: TTAACCTTTTACACCTTACACACACACACACATACATACACACATACATACACACATGTGTGTGTAATACATACATATGTGTGTGTATAGAATACGCATCTGTGTGCCACCTAAAA
F2: 3 ACACACATTATGTATGTATACACACACA 2

Template-switch alignment:

ALT ACATACATACACACATACAT|ACACACACATATGTATGTATTTACACACA|TATGTGTGTGTGTATGTATG
REF ACATACATACACACATACAT|ACACACACATATGTATGTATTTACACACA|TATGTGTGTGTGTATGTATG

7 128311426 T A
7 128311427 T C
7 128311428 G A
7 128311437 T C
7 128311438 G A
7 128311439 A C
7 128311441 T G
7 128311480 G A
7 128311487 G A
7 128311490 A G
7 128311493 T A

Alignment:

ALT TATATCATTTTAAGTTTTAAAGGCTGGGCTtgGTGGCTCAtgACtGTAATCCAGCACCTTTGGGAGGCC
REF TATATCATTTTAAGTTTTAAAGGCTGGGCACAGTGGCTCACACCGGTAATCCAGCACCTTTGGGAGGCC

Switch process:

F1: L TTACAGTCATGAGCCACCAAGCCAGCCCAAGTTTATATCATTTTAAGTTTTAAA 1
F3: 4 TCCCAGCACCTTTGGGAGGCCGAGGTGGGTGGATCGCCTGAGGTCAGGTGTTCCAGA R
RF: TTACAGTCATGAGCCACCAAGCCAGCCCAAGTTTATATCATTTTAAGTTTTAAAGGCTGGGCACAGTGGCTCACACCGGTAATCCAGCACCTTTGGGAGGCC
F2: 3 AATGTCAGTACTCGGTGGTTCGGGTCGG 2

Template-switch alignment:

ALT TATATCATTTTAAGTTTTAAA|GGCTGGGCTTGGTGGCTCATGACTGTAA|TCCCAGCACCTTTGGGAGGCC
REF TATATCATTTTAAGTTTTAAA|GGCTGGGCTTGGTGGCTCATGACTGTAA|TCCCAGCACCTTTGGGAGGCC

7 137323301 T C
7 137323303 T C
7 137323311 C T
7 137323317 T C

Alignment:

ALT CACACATATATGTATATATATGTGTgTAtATATATAcACACAtATATGTATATATACATATATAC
REF CACACATATATGTATATATATGTGTGCACATATATATACACATATGTATATATACATATATAC

Switch process:

F1: L ATATATATGTATATATATGTGTGTATATATATACACACATATATGTATATATA 1
F3: 4 GTATATATACATATATACATATATGTATATATATACACACACATATATATGT R
RF: ATATATATGTATATATATGTGTGTATATATATACACACATATATGTATATATATGTGTGCACATATATATACACACATATGTATATATACATATATATGT
F2: 3 TATATACACATATATATATGTGTGT 2

Template-switch alignment:

ALT CACACATATATGTATATATA|TGTGTGTATATATACACACATATAT|GTATATATACATATATAC
REF CACACATATATGTATATATA|TGTGTGTATATATATACACACATATAT|GTATATATACACATATATAC

8 10156698 A C
8 10156699 C T
8 10156702 A G
8 10156703 G T

Alignment:

ALT AAATGTTGGCATTTTGCATGTCTCAATTTACATGTATTTCCTCctATgTGAAGAAATACATGTAAATTGAGAAGAAATAGCCTGTTTACGTC
REF AAATGTTGGCATTTTGCATGTCTCAATTTACATGTATTTCCTCACATAGGAAGAAATACATGTAAATTGAGAAGAAATAGCCTGTTTACGTC

Switch process:

F1: L TTTCAATTTTGATCACTAAAAATGTTGGCATTTCATG 1
F3: 4 AGAAATAGCCTGTTTACGTCTTTTGCTTATTTTAG R
RF: TTTCAATTTTGATCACTAAAAATGTTGGCATTTCATGTCCTCAATTTACATGTAATTCCTTCACATAGGAAGAAATACATGTAATTTGAGAAGAAATAGCCTGTTTACGTCTTTTGCTTATTTTAG
F2: 3 AGAGTTAAATGTACATAAAGAAGTGATCCTTCTTTATGTACATTTAACTCT 2

Template-switch alignment:

ALT AAATGTTGGCATTTCATG|TCTCAATTTACATGTAATTCCTCTATGTGAAGAAATACATGTAATTTGAGA|AGAAATAGCCTGTTTACGTC
REF AAATGTTGGCATTTCATG|TCTCAATTTACATGTAATTCCTCTATGTGAAGAAATACATGTAATTTGAGA|AGAAATAGCCTGTTTACGTC

8 13310943 A T
8 13310945 A T
8 13310953 A G
8 13310959 A G

Alignment:

ALT ATATATATATATATGTGTATATATaTaGTATATATATCaTATATATATGTATATATATACATATATA
REF ATATATATATATATGTGTATATATTTTGTATATGTATACGTATATATATGTATATATATACATATATA

Switch process:

F1: L ATAAGATGGCCAGGATATATATATATATGTGTATATATATATATATATGTGTAT 1
F3: 4 TGTATATATACATATATATGTATATATACATATATATATGTATATATA R
RF: ATAAGATGGCCAGGATATATATATATATGTGTATATATATATATATATGTGTATATATTTTGTATATGTATACGTATATATATGTATATATACATATATATGTATATATATATGTATATATA
F2: 3 ATATATATACATATATATATGTATATATA 2

Template-switch alignment:

ALT ATATATATATATATGTGTAT|ATATATATGTATATATATACATATATATA|TGTATATATATACATATATA
REF ATATATATATATATGTGTAT|ATATATATGTATATATATACATATATATA|TGTATATATATACATATATA

8 52556952 G A
8 52556961 T C
8 52556967 T C
8 52556970 G A

Alignment:

ALT CACACACACACACATATGTATATATACACACACATATGTgTATATATatACACAgtGtGTGTATATATACAC
REF CACACACACACACATATGTATATATATACACACACATATGTATATATATACACACACGTATGTGTATATATACAC

Switch process:

F1: L TATATATACACACACACACACACACACATATG 1
F3: 4 GTGTGTGTATATATACACATATGTGTGTGTATATATATATGGGTGTTTTTGTGTTTTGTTT R
RF: TATATATACACACACACACACACACACATATGTATATATATACACACATATGTATATATATACACACACGTATGTGTATATATATATATATATATGGGTGTTTTTGTGTTTTGTTT
F2: 3 TACACATATATATATGTGTATACACACACATATATAT 2

Template-switch alignment:

ALT CACACACACACACATATG|TATATATATACACACATATGTGTATATATACACAT|GTgGTGTATATATACAC
REF CACACACACACACATATG|TATATATATACACACATATGTGTATATATACACAT|GTATGTGTATATATACAC

8 72652291 T A
8 72652292 T A
8 72652295 T A
8 72652296 T A

Alignment:

ALT AAATATATTTTATTATATAAATATTTATATAAACATATATTTATATAAATATATaaTaaaATATATTTATATAAATATATGTTTATATAAATATATTTTATTACATAAATTATTC
REF AAATATATTTTATTATATAAATATTTATATAAACATATATTTATATAAATATATTTTATTATATATTTATATAAATATATGTTTATATAAATATATTTTATTACATAAATTATTC

Switch process:

F1: L ATTTATAAAATATATTTTATTATATAA 1
F3: 4 ATTTTATTACATAAATTATTCATATAA R
RF: ATTTATAAAATATATTTTATTATATAAATATTTATATAAACATATATTTATATAAATATATTTTATTATATATTTATATAAATATATGTTTATATAAATATATTTTATTACATAAATTATTCATATAA
F2: 3 TATAAATATATTTGTATATAAATATATTTATATAAAATATATATAAATATATTTTATATACAAATATATTTTATA 2

Template-switch alignment:

ALT AAATATATTTTATTATATAA|ATATTTATATAAACATATATTTATATAAATATATAAATAATATATTTTATATAAATATATGTTTATATAAATAT|ATTTTATTACATAAATTATTC
REF AAATATATTTTATTATATAA|ATATTTATATAAACATATATTTATATAAATATATAAATAATATATTTTATATAAATATATGTTTATATAAATAT|ATTTTATTACATAAATTATTC

8 82596835 T C
8 82596836 A T
8 82596840 A G
8 82596842 C G

Alignment:

ALT CTACACATAAGTATCTTTAGATActTATgTgTAGTATATATATACTACACATAAGTATATATACTAC
REF CTACACATAAGTATCTTTAGATATATATATCTAGTATATATATACTACACATAAGTATATATACTAC

Switch process:

F1: L ACATAAGTATCTTTAGATACTAATGTGTAGTATATATACTACACATAAGTATCTTTAG 1
F3: 4 CACATAAGTATATATACTACACATAAGTATATATACTACACATA R
RF: ACATAAGTATCTTTAGATACTAATGTGTAGTATATATACTACACATAAGTATCTTTAGATATATATCTAGTATATATATACTACACATAAGTATATATACTACACATA
F2: 3 ATCATATATATATGTGTATTCATA 2

Template-switch alignment:

ALT CTACACATAAGTATCTTTAG|ATACCTTATGTGTAGTATATATACTA|CACATAAGTATATATACTAC
REF CTACACATAAGTATCTTTAG|ATACCTTATGTGTAGTATATATACTA|CACATAAGTATATATACTAC

8 103644123 G T
8 103644129 A T
8 103644131 A T
8 103644133 A G

Switch process:

```
F1: L TAATTACATATGTAATTACATATGTAATTATATATATAAATTACATATATATAATTAC 1
F3:
RF: TAATTACATATGTAATTACATATGTAATTATATATAAATTACATATATATAAATTACATATTTAATTTTTTGTATAAATCATAAGTAATTATATATATAAATTACATAAATTTTTTATATGTGTAATTACATA R
F2: 3 ATACATATATATATATAAATGTATA 2
4 AGTAATTATATATATAAATTACATAAATTTTTTATATGTGTAATTACATA R
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9 10926746 T A
9 10926747 T A
9 10926750 T A
9 10926751 T A

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Switch process:
F1: L GACAGTGTATCTAAAGTTTAGAGTGCAGCTAGCACTTAATAATTATTC 1
F3:
RF: GACAGTGTATCTAAAGTTTAGAGTGCAGCTAGCACTTAATAATTATCAATGAAGCACTTTTATTAGTGACTCTATTATTATAACAATTAGTAGAGCAGTATTTTATAACAATTAGACTAACC R
3 TTATCTTCAGTGAAATAATCACTGAAGATA 2
4 TTATTAACAATTTAGTAGCAGTATTTTATAACAATTTAGACTAACC R
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9 19820005 G A
9 19820009 A G
9 19820015 A G
9 19820017 A G
9 19820024 C T
9 19820028 T C

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[illegible]

9 28023357 G C
9 28023365 A T
9 28023368 G A
9 28023371 T C
9 28023374 A T
9 28023382 G C

Switch process:

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F1: L ATGTTTATCTGGCTAGAAAGTTGAACTGTGTTTAATGGTTGCTGTATTTGGGTACCCCTAA 1
F3:
RF: ATGTTTATCTGGCTAGAAAGTTGAACTGTGTTTAATGGTTGCTGTATTTGGGTACCCCTAAATAGAGGAATTAGAGCCTTCAAATTCCTGTAATCTCTGTGTTTTTGTCACTTCATTAAAGTAGAATCTATGCGTGGCAGTTCTTTTCATCT R
F2: 3 ATCTCCTTAATCTCCGAAGTTTAAGGACAT 2
4 ATATCCTTGTTTTTGTCACTTCATTAAAGTAGAATCTATGCGTGGCAGTTCTTTTCATCT R
```

9 44235958 T C
9 44235962 C T
9 44235971 G A
9 44235972 T C

Switch process:

F1: L GTGGTGTGTATATATATGTTGTATATATATACATATATATGTATATATATGT 1

F3: 4 GTATATATATGTATATACATATATATGTATATATATGTATATATATGTGTAT R

RF: GTGGTGTGTGTATATATATGTTGTATATATATACATATATATGTATATATGTATATACATATATATATACATATATATGTATATATATGTATATACATATATATATGTATATATATGTATATATATGTGTAT

F2: 3 TATATATATGTATATATACATATATATA 2

Template-switch alignment:

```
ALT  ATATATATGTATATATATGT|ATATATACATATATATGTATATATAT|GTATATATATGTATATACAT
REF  ATATATATGTATATATATGT|ATATATACATATATATGTATATATAT|GTATATATATGTATATACAT
```

9 68319847 C T
9 68319854 G A
9 68319856 G C
9 68319861 T C
9 68319866 C T

Alignment:

ALT TACATATGTGTGTATATATAACATATGTAtATATGTaTcTATAcATAAtATATGTACATATGTGTGTATATATAAC
REF TACATATGTGTGTATATATAACATATGTACATATGTGTGTATATATAACATATGTACATATGTGTGTATATATAAC

Switch process:

F1: L ATATATACATATATTATGTATAGATACATATATACATATGTGTGTATATATA 1
F3: 4 CATATGTGTGTATATATAACATATGTACACGTGTGTATATATAACATATGTAC R
RF: ATATATACATATATTATGTATAGATACATATATACATATGTGTGTATATATAACATATGTACATATGTGTGTATATATAACATATGTACATATGTGTGTATATATAACATATGTAC
F2: 3 ATGTATATAATACATATCTATGTATATATGTATACA 2

Template-switch alignment:

ALT TACATATGTGTGTATATATA|ACATATGTATATATGTATCTATACATAATATATGTA|CATATGTGTGTATATATAAC
REF TACATATGTGTGTATATATA|ACATATGTATATATGTATCTATACATAATATATGTA|CATATGTGTGTATATATAAC

9 82737782 C T
9 82737786 C T
9 82737788 C G
9 82737791 C A

Alignment:

ALT GTATATAGATATATACGTATAtATAtAgATaTATACGTATACGTATATATCTACATCTATACGTATA
REF GTATATAGATATATACGTATACATACACATCTATACGTATACGTATATATCTACATCTATACGTATA

Switch process:

F1: L ATATATGTATATATACGTATATAGATATATACGTATATATGTATATAGATATATACGTAT 1
F3: 4 TATCTACATCTATACGTATACGTATATATCTATATATGTATACG R
RF: ATATATGTATATATACGTATATAGATATATACGTATATATGTATATAGATATATACGTATACATACACATCTATACGTATACGTATATATCTATATATGTATACG
F2: 3 ATATGCATATGCATATATAGATATATA 2

Template-switch alignment:

ALT GTATATAGATATATACGTAT|ATATATAGATATATACGTATACGTATA|TATCTACATCTATACGTATA
REF GTATATAGATATATACGTAT|ATATATAGATATATACGTATACGTATA|TATCTACATCTATACGTATA

9 90599783 G A
9 90599791 A G
9 90599792 C T
9 90599793 G A

Alignment:

ALT ACGTGTATATACGTGTATATACgTATATACacgTATATACGTGTATATACGTATATACACGTATATACGTGTATATACGTGTATATA
REF ACGTGTATATACGTGTATATACATATATACGTATATATACGTGTATATACGTATATACACGTATATACGTGTATATACGTGTATATA

Switch process:

F1: L CACATGTATATATGTGTATATACATATATACACGTATATACGTGTATATACGTGTATAT 1
F3: 4 CGTGTATATACGTGTATATACATATA R
RF: CACATGTATATATGTGTATATACATATATACACGTATATACGTGTATATACGTGTATATACATATATACGTGTATATACGTGTATATACACGTATATACACGTATATACATATA
F2: 3 ATATATGCACATATATGCATATATGTGCATATATGCACATATATGCA 2

Template-switch alignment:

ALT ACGTGTATATACGTGTATAT|ACGTATATACACGTATATACGTGTATATACGTATATACACGTATATA|CGTGTATATACGTGTATATA
REF ACGTGTATATACGTGTATAT|ACGTATATACACGTATATACGTGTATATACGTATATACACGTATATA|CGTGTATATACGTGTATATA

9 103583474 C G
9 103583476 A G
9 103583478 T A
9 103583479 T A
9 103583483 C G

Alignment:

ALT CCAAACTCTAAAAATCCACTGTCTGTAACTGGTGAATGAACAAACAAAATATAgTgTaaTAgTATATTTTGTGTTTCATTCCACAGTTAACAGACTATATAACAATCCTTATATA
REF CCAAACTCTAAAAATCCACTGTCTGTAACTGGTGAATGAACAAACAAAATATATACTATTATATACTATATTTTGTGTTTCATTCCACAGTTAACAGACTATATAACAATCCTTATATA

Switch process:

F1: L AGAGCCCCCAAACTCTAAAAATCCACT 1
F3: 4 TATATAACAATCCTTATATATAGTAG R
RF: AGAGCCCCCAAACTCTAAAAATCCACTGTCTGTAACTGGTGAATGAACAAACAAAATATACTATTTTATACTATATTTTGTGTTTCATTCCACAGTTAACAGACTATATAACAATCCTTATATAGTAG
F2: 3 CAGACAATTGACCACCTTACTTGTGTTTATATGATAAATGTGATATAAAACAAACAAGTAAGTGGTCAATTGTCTG 2

Template-switch alignment:

ALT CCAAACTCTAAAAATCCACT|GTCTGTAACTGGTGAATGAACAAACAAAATATAGTgTAAATAGTATATTTTGTGTTTCATTCCACAGTTAACAGAC|TATATAACAATCCTTATATA
REF CCAAACTCTAAAAATCCACT|GTCTGTAACTGGTGAATGAACAAACAAAATATAGTATAAATAGTATATTTTGTGTTTCATTCCACAGTTAACAGAC|TATATAACAATCCTTATATA

9 106381944 T G
9 106381945 T A
9 106381946 A T
9 106381953 T C
9 106381958 G A
9 106381959 T C

Alignment:

ALT AAAAAATATATATATATATAttaTATATAtACACgTGTGTGTATATATACTATATACACACACGTGT
REF AAAAAATATATATATATATAGATTATATACACACACGTGTGTATATATACTATATACACACACGTGT

Switch process:

F1: L GTTCTAAGCTAAGAACAATCCTACTACTTCTCTGTTGGCAAAAAATATATATATATATAT 1
F3: 4 TACTATATACACACACGTGTGTATATATATAGTATATATACACACGTGT R

RF: GTTCTAAGCTAAGAACAATCCTACTCTCTGTTGGCAAAAAATATATATATATATAGATTATACACACACGTGTGTATATATACTATATACACACACGTGTGTATATATAGTATATATACACACGTGT
F2: 3 ATATATGTGTGTCACATATATATAT 2

Template-switch alignment:

ALT AAAAAATATATATATATAt|TATATATAtACACGTGTGTGTATATA|TACTATATACACACACGTGT
REF AAAAAATATATATATATAG|TATATATACACACGTGTGTGTATATA|TACTATATACACACACGTGT

9 139801038 G A
9 139801039 A T
9 139801041 A G
9 139801047 G C
9 139801050 G T
9 139801052 G T
9 139801053 A C
9 139801055 A C
9 139801058 G C
9 139801064 C T
9 139801067 T C

Alignment:

ALT TTATGGGAGTTGCAATTCAAGATGaGaTTTGGgTGgGgaCaCaGcCAAAAcCatATCAGTGACAAAGTGAGACCCCTG
REF TTATGGGAGTTGCAATTCAAGATATGGTTTGGCTGTGTCCCCACCCAAATCACATCAGTGACAAAGTGAGACCCCTG

Switch process:

F1: L ATGACCTCCCACAGGCCCTCCCAACACATGGGGATTATGGGAGTTGCAATTCAA 1
F3: 4 AGTGACAAAGTGAGACCCCTGTCTCAAAAAACAAAAACAAAAAGCCCTGTTTAG
RF: ATGACCTCCCACAGGCCCTCCCAACACATGGGGATTATGGGAGTTGCAATTCAAGATATGGTTTGGCTGTGTCCCCACCCAAATCACATCAGTGACAAAGTGAGACCCCTGTCTCAAAAAACAAAAACAAAAAGCCCTGTTTAG
F2: 3 CTATACCAAACCGACACAGGGGTGGGTTTAGAGTAG 2

Template-switch alignment:

ALT TTATGGGAGTTGCAATTCAA|GATGaGATTTGGGTGGGACACAGCCAAACCATATC|AGTGACAAAGTGAGACCCCTG
REF TTATGGGAGTTGCAATTCAA|GATGTGATTTGGGTGGGACACAGCCAAACCATATC|AGTGACAAAGTGAGACCCCTG

10 11453055 A G
10 11453058 G T
10 11453059 G T
10 11453063 A G
10 11453068 A T
10 11453072 T C
10 11453073 C T
10 11453077 A C
10 11453078 A C
10 11453081 C T

Alignment:

ALT ACAGGGTGCCAGGAGTACACAgTgttGAAGGGAActGTcctTTCccCatTACACGTGAGAAAACTGGATA
REF ACAGGGTGCCAGGAGTACACAATGGGGAAGGACAGTCTCTTCAACACTACACGTGAGAAAACTGGATA

Switch process:

F1: L CCAGAAATAAACCCATGCATACACAGTCAACTGATCTTCAACAGGGTGCCAGGAGTACAC 1
F3: 4 ACACGTGAGAAAACTGGATATCCGCATGCAAAAAGATGACACTGGATCCCTATCTTTCA R
RF: CCAGAAATAAACCCATGCATACACAGTCAACTGATCTTCAACAGGGTGCCAGGAGTACACAATGGGGAAGGACAGTCTCTTCAACACTACACGTGAGAAAACTGGATATCCGCATGCAAAAAGATGACACTGGATCCCTATCTTTCA
F2: 3 TTACCCCTTTCTCTGTCAGGGAAGTTGTGA 2

Template-switch alignment:

ALT ACAGGGTGCCAGGAGTACAC|AGTGTGAAGgGACTGTCCTTTCCCCATT|ACACGTGAGAAAACTGGATA
REF ACAGGGTGCCAGGAGTACAC|AGTGTGAAGAGACTGTCCTTTCCCCATT|ACACGTGAGAAAACTGGATA

10 45483043 T A
10 45483044 T A
10 45483045 C T
10 45483048 C G
10 45483049 A T
10 45483051 C T
10 45483052 C T

Alignment:

ALT TTGCAAAATGGAAGGTTGCTGttcAGcaAccTTCCATTTGCAAAAATGTGCACTTTTTTTTTTTTTT
REF TTGCAAAATGGAAGGTTGCTGAATAGGTATTTTCCATTTGCAAAAATGTGCACTTTTTTTTTTTTTTT

Switch process:

F1: L TTCATTTTATTGTGCTCTCTGTTACTGTACCTTGCAGATTTTTCGAAATGGAAGGTTGCTG 1
F3: 4 GTGCACTTTTTTTTTTTTTTTTTGTGTCACCTGCGGTTTCTGCAA R
RF: TTCATTTTATTGTGCTCTCTGTTACTGTACCTTGCAGATTTTTCGAAATGGAAGGTTGCTGAATAGGTATTTTCCATTTGCAAAAATGTGCACTTTTTTTTTTTTTTTTTGTGTCACCTGCGGTTTCTGCAA
F2: 3 TAAAAACGTTTACCTTCCAACGACTT 2

Template-switch alignment:

ALT TTGCAAAATGGAAGGTTGCTG|TTCAGCAACCTTCCATTTGCAAAAAT|GTGCACTTTTTTTTTTTTTT
REF TTGCAAAATGGAAGGTTGCTG|TTCAGCAACCTTCCATTTGCAAAAAT|GTGCACTTTTTTTTTTTTTT

10 53250728 A G
10 53250729 A C
10 53250732 G A
10 53250734 A G
10 53250738 C G
10 53250743 T C
10 53250757 C A
10 53250766 A T
10 53250767 G A
10 53250770 G A
10 53250771 C A
10 53250796 T G
10 53250797 T C

10 53250800 T C
10 53250801 A T
10 53250804 A T
10 53250805 C G
10 53250810 T G
10 53250811 T C

Alignment:

ALT GAAACACTTGAAATGGAAGAAAGGGTTTGGATAGGcAGaAgCACgCCAAcATGAAAAGTGAGGacCTACATCtaTGaaATCATGGGACTCCTTCTAGGTGAT
REF GAAACACTTGAAATGGAAGAAAGGGTTTGGATAGAAAGGAACACCCCAATATGAAAAGTGAGGCCCTACATCAGTGGCATCATGGGACTCCTTCTAGGTGAT

Switch process:

F1: L AAGAAACATGTATTCTGATGTTTTTCAGAAACACTTGAAATGGAAGA 1
F3: 4 TGGGACTCCTTCTAGGTGATGCCACTGA R
RF: AAGAAACATGTATTCTGATGTTTTTCAGAAACACTTGAAATGGAAGAAAGGGTTTGGATAGAAAGGAACACCCCAATATGAAAAGTGAGGCCCTACATCAGTGGCATCATGGGACTCCTTCTAGGTGATTTCATAGAACTAGGTTCTCACT
F2: 3 ACTAAAGTATCTACATCCAGGAGTGA

Template-switch alignment:

ALT GAAACACTTGAAATGGAAGA|AAGGGTTTGGATAGGCAGAAGCAGCCCAACATGAAAAGTGAGgACCTAcaTCTATGAAATCA|TGGGACTCCTTCTAGGTGAT
REF GAAACACTTGAAATGGAAGA|AAGGGTTTGGATAGGCAGAAGCAGCCCAACATGAAAAGTGAGAACCTAGTTCTATGAAATCA|TGGGACTCCTTCTAGGTGAT

10 54105010 G T
10 54105011 G C
10 54105013 A T
10 54105015 C T
10 54105017 A T
10 54105019 A T
10 54105021 A T
10 54105023 G T
10 54105024 A G

Alignment:

ALT ATGTATATAGTATATATATCCTTcAtAtTtAtGtGtGTGTATGTATATACTATATACATACACACACAC
REF ATGTATATAGTATATATATCCTGGAAACTAAAGAGGATGTGTATGTATATACTATATACATACACACACAC

Switch process:

F1: L TGTATATATATCTTCATATTTATGTGTGCGTGTATATGTATATAGTATATATATC 1
F3: 4 CTATATACATACACACACACATAAATATGAAGATATAGGGTACAT R
RF: TGTATATATATCTTCATATTTATGTGTGCGTGTATATGTATATAGTATATATATCCTGGAACTAAAGAGGATGTGTATGTATATATACATACACACACATAAATATGAAGATATAGGGTACAT
F2: 3 ATATATGTATGTGTGTGTATTATACCTC 2

Template-switch alignment:

ALT ATGTATATAGTATATATATC|CTTCATATTTATGTGTGTGTGTATATATA|CTATATACATACACACACAC
REF ATGTATATAGTATATATATC|CTTCATATTTATGTGTGTGTGTATATATA|CTATATACATACACACACAC

10 68300805 C T
10 68300807 C T
10 68300808 A T
10 68300809 A G
10 68300811 A G

Alignment:

ALT AATCTGATAACCTGCTTTGAGTTTTTTCTtTtgAgAGAAAAAACCTGTTAATAATAATCAACTA
REF AATCTGATAACCTGCTTTGAGTTTTTTCTCTCAAAAAGAAAAAACCTGTTAATAATAATCAACTA

Switch process:

F1: L TAGCAATCAGATCTACATGGAATATTTGCGGAATCTGATAACCTGCTTTGA 1
F3: 4 CTGTTAATAATAATCAACTATTTTAGCCCCATTTGCTGCATCAATTTGGT R
RF: TAGCAATCAGATCTACATGGAATATTTGCGGAATCTGATAACCTGCTTTGAGTTTTTTCTCTCAAAAAGAAAAAACCTGTTAATAATAATCAACTATTTTAGCCCCATTTGCTGCATCAATTTGGT
F2: 3 CAAAAAAGAGAGTTTTTCTTTTTTTG 2

Template-switch alignment:

ALT AATCTGATAACCTGCTTTGA|GTTTTTTCTTTTTGAGAGAAAAAAC|CTGTTAATAATAATCAACTA
REF AATCTGATAACCTGCTTTGA|GTTTTTTCTTTTTGAGAGAAAAAAC|CTGTTAATAATAATCAACTA

10 77606659 A C
10 77606661 A T
10 77606667 T C
10 77606669 C G
10 77606671 G A
10 77606677 A T
10 77606679 G T
10 77606682 A C

Alignment:

ALT TACCCTATGTACATAGATTGGAcAtTTTAAcAgTaTTAAAtTtTCcATACTACCCAAAAACAATCTAT
REF TACCCTATGTACATAGATTGGAAAATTTAATACTGTTAAATGTCAATACTACCCAAAAACAATCTAT

Switch process:

F1: L ATTGCTAAAAAGAAATCAAAGGTACCAATAAATGGAAGATACCTATGTACATAGATTG 1
F3: 4 TACTACCCAAAAACAATCTATAAATCTATGTAATCTTGATCAAAATCTCAGTGGCAATTT R
RF: ATTGCTAAAAAGAAATCAAAGGTACCAATAAATGGAAGATACCTATGTACATAGATTGGAAAATTTAATACTGTTAAATGTCAATACTACCCAAAAACAATCTATGTAATCTTGATCAAAATCTCAGTGGCAATTT
F2: 3 ACCTTTTAAATTTATGACAATTTTACAG 2

Template-switch alignment:

ALT TACCCTATGTACATAGATTG|GACATTTTAACAGTATTAAATTTTCCA|TACTACCCAAAAACAATCTAT
REF TACCCTATGTACATAGATTG|GACATTTTAACAGTATTAAATTTTCCA|TACTACCCAAAAACAATCTAT

10 78398993 A G
10 78399000 C T
10 78399009 A G
10 78399010 C T
10 78399011 A G

Alignment:

```
ALT  ACATATATACATATATATACATATATACaTATATAcGTATATATacaTATATACaTATATATGTATATATACATATATACA
REF  ACATATATACATATATATATACATATATACGTATATATGTATATATGTGTATATACGTATATATGTATATATACATATATACA
```

F1: L TATACATATATACACATATATACATATATACGTACATATATACATATATATAC 1
F3: 4 TGTATATATACATATATACATACACATATATACATACATATGTACATATATA R
RF: TATACATATATACACATATATACATATATACGTACATATATACATATATATACATATACGTATATATGTATATATGTGTATATACGTATATATGTATATACATATATACATACATATATACATACATATGTACATATATA
F2: 3 ATATATACATATATACATATATATGCATATATACATATATA 2

ALT ACATATATACATATATATAC|ATATATACATATATACGTATATAtACATATATACATATATA|TGTATATATACATATATACA
REF ACATATATACATATATATAC|ATATATACATATATACGTATATACACATATATACATATATA|TGTATATATACATATATACA

Alignment:

```
ALT  TACACTGTTGATGGGAATGTACACTGTCTTCcACaATaGtTGAAGACAGTGTGGCAGTTCCTCAAGGATGTA
REF  TACACTGTTGATGGGAATGTACACTGTCTTCAACTATTGTGGAAGACAGTGTGGCAGTTCCTCAAGGATGTA
```

F1: L GGTGAGGCTGTGGAGAAATAGGAACGCTTTTACACTGTTGATGGGAATGT 1
F3: 4 GGCAGTTCTCTCAAGGATGTAGAAACAGAAATACCATTTTAACCCAGCAAT R
RF: GGTGAGGCTGTGGAGAAATAGGAACGCTTTTACACTGTTGATGGGAATGTACACTGCTTCAACTATTGTGGAAGACAGTGTGGCAGTTCTCTCAAGGATGTAGAAACAGAAATACCATTTTAACCCAGCAAT
F2: 3 TGTGACAGAAGTTGATAACACCTTCTGTGACA 2

ALT TAACTGTTGATGGGAATGT|CACTGTCTTCCACAATAGTTGAAGACAGTGT|GGCAGTTCCTCAAGGATGTA
REF TAACTGTTGATGGGAATGT|CACTGTCTTCCACAATAGTTGAAGACAGTGT|GGCAGTTCCTCAAGGATGTA

Alignment:

```
ALT GAaTCAGCTGGAATGGGATTcAGCTGAaTCcATTcCCCTTTGATATcCTAAATTTTTTTTTTTT
REF GATTcAGCTGGAATGGGATTcAGCTGATTCTcATTCTCCCTTTGATATcCTAAATTTTTTTTTTTT
```

F1: L CTGATCCTGATTATCTCTGGGTGTTCTTCCCCCTTAAAAAAAAAAAAAAAAAATCAAAGGGAGAATGAGAATCAGCTGGAATGGGATT 1
F3: 4 ATCCTAATTTTTTTTTT R
RF: CTGATCCTGATTATCTCTGGGTGTTCTTCCCCCTTAAAAAAAAAAAAAAAAAATCAAAGGGGGAATAGGATTACAGCTGGAATGGGATTACAGCTGATTCTCATTCTCCCTTGGATATCCTAATTTTTTTTTT
F2: 3 TAGTTTCCCCCTTATCCTAAGTCAG 2

ALT GAA TCAGCTGGAATGGGATT|CAGCTGAATCCTATTCCCCCTTTGAT|ATCCTAATTTTTTTTTTTT
REF GATT CAGCTGGAATGGGATT|CAGCTGAATCCTATTCCCCCTTTGAT|ATCCTAATTTTTTTTTTTT

Alignment:

```
ALT ATATTTTATATATAGGTATAATAGGATATGTATATCATATAtgtatgtATATATGATATACATATCCTATATTCATCCAATATAACATCA
REF ATATTTTATATATAGGTATAATAGGATATGTATATCATATACATACATATATGATATACATATCCTATATTCATCCAATATAACATCA
```

F1: L TTATATATTTATATTATATATATTTTATATATAGGTATA 1
F3: 4 ATTCATCCAATATAACATCATATGATATACATATCCCTA R
RF: TTATATATTTTATATTATATATATTTTATATATAGGTATAATAGGATATGTATATCATATATACATACATATATGATATACATATCCCTATATTCATCCAATATAACATCATATGATATACATATCCCTA
F2: 3 TATCCTATACATATAGTATATATGTATGTATATACTATATGTATAGGATA 2

ALT ATATTTTATATATAGGTATA|ATAGGATATGTATATCATATATGTATGTATATATGATATACATATCCTAT|ATTCATCCAATATAACATCA
REF ATATTTTATATATAGGTATA|ATAGGATATGTATATCATATATGTATGTATATATGATATACATATCCTAT|ATTCATCCAATATAACATCA

Alignment:

```
ALT  TATATATATATACACATGTGTATATATATACAcATgTgTATATATATATATATATACACATGTGTATATATATATA
REF  TATATATATATACACATGTGTATATATATATATATATATATATATATATATATATATATACACATGTGTATATATATATA
```

[illegible]

ALT TATATATATATACACATGTG|TATATATATACACATGTGTATATATATATATATA|CACATGTGTATATATATATA
REF TATATATATATACACATGTG|TATATATATACACATGTGTATATATATATATATA|CACATGTGTATATATATATA

11 45689536 G C
11 45689537 G T
11 45689538 G C
11 45689543 T A
11 45689546 T A
11 45689551 G C
11 45689553 G C

Alignment:
ALT GGGGGAGGGGAAACAGAAGCAAaggCTTGtGcTCAAGgAgTTTGGATCCTACACAATGAAGCAG
REF GGGGGAGGGGAAACAGAAGCAAACCTCTTGAGCACAAGCACTTTGGATCCTACACAATGAAGCAG

Switch process:
F1: L GGTGTGGATTGCACCTGTGACAGGTGCCGTGGGAAAAGGGGAGGGGAAACAGAAG 1
F3: 4 GATCCTACACAATGAAGCAGCAAAGAAAAGTCACTACAAATACAATCAAAATACAAA R
RF: GGTGTGGATTGCACCTGTGACAGGTGCCGTGGGAAAAGGGGAGGGGAAACAGAAGCAAACCTCTTGAGCACAAGCACTTTGGATCCTACACAATGAAGCAGAAAGTCACTACAAATACAATCAAAATACAAA
F2: 3 GTTTGAGGAACTCGTGTTCGGGAAAC 2

Template-switch alignment:
ALT GGGGGAGGGGAAACAGAAG|CAAAGgGCTTGTGCTCAAGGAGTTTG|GATCCTACACAATGAAGCAG
REF GGGGGAGGGGAAACAGAAG|CAAAGTGCTTGTGCTCAAGGAGTTTG|GATCCTACACAATGAAGCAG

11 49711887 T C
11 49711889 T C
11 49711890 A G
11 49711892 A G

Alignment:
ALT ATATATATATATATACACGTATATATATaTaTaTATATATATATATATATATATATACACGTATATATATACACACAC
REF ATATATATATATATATACACGTATATATATACACGTGTATATATATATATATATATATATATACACGTATATATATACACACAC

Switch process:
F1: L GTGTGTGTACAC 1
F3: 4 GTATATATATACACACACATAGGTACAGACCTC R
RF: GTGTGTGTGTATATATATATATATATATATATATATATATATATACACGTATATATACACGTGTATATATATATATATATATATATATATATACACGTATATATATACACACACATAGGTACAGACCTC
F2: 3 CACATG 2

Template-switch alignment:
ALT ATATATATATATATATACAC|GTATATATATATATATATATATATATATATATATATATACAC|GTATATATATACACACAC
REF ATATATATATATATATACAC|GTATATATATATATATATATATATATATATATATATATACAC|GTATATATATACACACAC

11 60399619 T C
11 60399621 T G
11 60399622 C A
11 60399624 G A

Alignment:
ALT TGTTTTGCAGGTCATATTGGGAAGGATGTGGCcTgaAaGCCACATCCTTCTGTTTCTGTCTTGTTGGGA
REF TGTTTTGCAGGTCATATTGGGAAGGATGTGGCTTTCAGGCCACATCCTTCTGTTTCTGTCTTGTTGGGA

Switch process:
F1: L CTTGCTACAGGTCCAAAATTAGGCGCCCTGTTTTGCGAGTCATATTGG 1
F3: 4 TGTTTTCTGCTTGTTGGGAAGTTTTGCATTCTGAGCATGAACGTGTCT R
RF: CTTGCTACAGGTCCAAAATTAGGCGCCCTGTTTTGCGAGTCATATTGGGAAGGATGTGGCTTTCAGGCCACATCCTTCTGTTTCTGTCTTGTTGGGA
F2: 3 CTCCTACACCGAAAGTCCGGTGTAGGAAG 2

Template-switch alignment:
ALT TGTTTTGCAGGTCATATTGG|GAAGGATGTGGCTGAAAGCCACATCCTTC|TGTTTCTGTCTTGTTGGGA
REF TGTTTTGCAGGTCATATTGG|GAAGGATGTGGCTGAAAGCCACATCCTTC|TGTTTCTGTCTTGTTGGGA

11 80690004 A G
11 80690005 A T
11 80690006 C T
11 80690014 G T
11 80690015 C G
11 80690016 C T
11 80690021 A C
11 80690024 A T

Alignment:
ALT TACTTTTTTTGTTGTGAGGCTTAAATGaacCATTTAAgCcTCACaTaAAATGTGAGGAGTGCATT
REF TACTTTTTTTGTTGTGAGGCTTAAATGTTTCATTTAATGTTCAACCATTAATGTGAGGAGTGCATT

Switch process:
F1: L GTGCTAGATGTAAACACTGAAAGAAAGTTCACCTACTTTTTTTGTTGTGAGGC 1
F3: 4 TAAATGTGAGGAGTGCATTATTTTTTTCATTATCCGAGGAAGAAACTGAAACTTAGGAAG R
RF: GTGCTAGATGTAAACACTGAAAGAAAGTTCACCTACTTTTTTTGTTGTGAGGCTTAAATGTTTCATTTAATGTTCAACCATTAATGTGAGGAGTGCATTATTTTTTTCATTATCCGAGGAAGAAACTGAAACTTAGGAAG
F2: 3 AACACTCCGAATTTACCAAGTAAT 2

Template-switch alignment:
ALT TACTTTTTTTGTTGTGAGGC|TTAAATGAACCATTTAAGCCTCACAA|TAAATGTGAGGAGTGCATT
REF TACTTTTTTTGTTGTGAGGC|TTAAATGAACCATTTAAGCCTCACAA|TAAATGTGAGGAGTGCATT

11 101080814 G T
11 101080819 A G
11 101080822 C T
11 101080827 A C

Template-switch alignment:

```
ALT  ATGTGTATATATACATATAT|GTATATATATGTATATATGTATATATACATATAT|ACATATATATACCGTGTATA
REF  ATGTGTATATATACATATAT|GTATATATATGTATATATGTATATATACATATAT|ACATATATATACCGTGTATA
```

12 13081138 C T
12 13081139 A G
12 13081144 T C
12 13081152 T C

Alignment:

ALT TATATACACATATATGTGTATATaTATaTATaACACATaTATGTGTATATATACATATATACACACATACATG
REF TATATACACATATATGTGTATATATGTATACACACATACATGTGTATATATACATATATACACACATACATG

Switch process:

F1: L GGGTTGACAATGGGGTACAAACAAATTGGGCAATATATATATACATATATGTGTA 1 4 CATATATACACACATACATGTGTATATATATACATATATACATATAT R
F3: CATATATATACACACATACATGTGTATATATATACATATATACATATATACATATATACATATATACATATAT
RF: GGGTTGACAATGGGGTACAAACAAATTGGGCAATATATATATACATATATGTGTATATGTATACACACATACATGTGTATATATACATATATACACACATACATGTGTATATATACATATATACATATAT
F2: 3 ATATATATGTGTATATACATATATACATAT 2

Template-switch alignment:

ALT TATATACACATATATGTGTA|TATACATATATACACATATATGTGTATATATA|CATATATACACACATACATG
REF TATATACACATATATGTGTA|TATACATATATACACATATATGTGTATATATA|CATATATACACACATACATG

12 19123407 C T
12 19123409 G T
12 19123410 C A
12 19123411 A T
12 19123414 A C
12 19123416 G C
12 19123420 C A
12 19123421 C G
12 19123422 T G
12 19123426 G C
12 19123428 G T
12 19123431 A T
12 19123432 T G
12 19123433 A C
12 19123435 A G

Alignment:

ALT TTCAAGCTGGGCTGTGGGAAATGTATAtatAAcTcCCAaggTGGcAtTTtgcTgTACATCTTCAATTACAATATTTAAT
REF TTCAAGCTGGGCTGTGGGAAATGTACAGCAAAATGCCACCTTGGGAGTTATATATACATCTTCAATTACAATATTTAAT

Switch process:

F1: L ATTCCATGGTAATGGAAAAATGAGTGGCAAAGTCAATTCAAGCTGGGCTGTGGGAA 1 4 CTTC AATTACAATATTTAATTTTATTACAATACTTTAAGCAGCTAATATCACAA
F3: CTTC AATTACAATATTTAATTTTATTACAATACTTTAAGCAGCTAATATCACAA
RF: ATTCCATGGTAATGGAAAAATGAGTGGCAAAGTCAATTCAAGCTGGGCTGTGGGAAATGTACAGCAAAATGCCACCTTGGGAGTTATATATACATCTTCAATTACAATATTTAAT
F2: 3 TACATGTCGTTTTACGGTGGAAACCCCTCAATATATGTA 2

Template-switch alignment:

ALT TTCAAGCTGGGCTGTGGGAA|ATGTATATATAACTCCCAAGGTGGCATTTTGCTGTACAT|CTTCAATTACAATATTTAAT
REF TTCAAGCTGGGCTGTGGGAA|ATGTATATATAACTCCCAAGGTGGCATTTTGCTGTACAT|CTTCAATTACAATATTTAAT

12 60065702 G A
12 60065703 T C
12 60065710 C G
12 60065711 C T
12 60065720 A G
12 60065726 G A

Alignment:

ALT ATGTATATATACATATATGTATATATgtATATATccATATATGTaTATATgTGTATATATGTATATATGT
REF ATGTATATATACATATATGTATATATACATATATGTATATATGTGTATATATGTATATATGTATATATGT

Switch process:

F1: L TATGTATATATGTGTATATATGTATATATGTACATATGTATATATACATATATGT 1 4 GTGTATATATGTATATATGTGTATATATCCATATATCCGTATATATATGTGTATATATCCA R
F3: GTGTATATATGTATATATGTGTATATATCCATATATCCGTATATATATGTGTATATATCCATATATCCGTATATATATGTGTATATATCCA
RF: TATGTATATATGTGTATATATGTATATATGTACATATGTATATATACATATATGTATATATGTGTATATATGTATATATGTGTATATATCCATATATCCGTATATATATGTGTATATATCCA
F2: 3 TATATATGTATATACCTATATATGTATATA 2

Template-switch alignment:

ALT ATGTATATATACATATATGT|ATATATGTATATATcCATATATGTATATAT|gTGTATATATGTATATATGT
REF ATGTATATATACATATATGT|ATATATGTATATATACATATATGTATATAT|ATGTATATATGTATATATGT

12 65097512 G C
12 65097514 A C
12 65097516 G C
12 65097518 A C

Alignment:

ALT ATATATGTATGTATACATACATATATATATgTaTgTaTACATACATATATATATGTATGTATAGTGACCTCTATTATCTAT
REF ATATATGTATGTATACATACATATATATATCTCTCTACATACATATATATGTATGTATAGTGACCTCTATTATCTAT

Switch process:

F1: L TATATATATATATGTATGTATACATACATATATATATGTATGTATACATAC 1 4 TAGTGACCTCTATTATCTATTGGCTAGCTTCAAA R
F3: TAGTGACCTCTATTATCTATTGGCTAGCTTCAAA
RF: TATATATATATATGTATGTATACATACATATATATATGTATGTATACATACATATATATCTCTCTACATACATATATATGTATGTATATAGTGACCTCTATTATCTAT
F2: 3 ATATGTATGTATATATACATACATATGTATGTATATATA 2

Template-switch alignment:

ALT ATATATGTATGTATACATAC|ATATATATATGTATGTATACATACATATATATATGTATGTATA|TAGTGACCTCTATTATCTAT
REF ATATATGTATGTATACATAC|ATATATATATGTATGTATACATACATATATATATGTATGTATA|TAGTGACCTCTATTATCTAT

12 78687976 C T
12 78687979 G T
12 78687984 T C

12 78687992 A T
12 78687999 A G
12 78688007 G T

Alignment:

ALT TATATGTATATAAATATACATATAcATgTATAtGTATATAaATATACaTATACATgTATATGTATATAAATATACATATACATGTAT
REF TATATGTATATAAATATACATATATATTTATACGTATATATATATACGTATACATTTTATATGTATATAAATATACATATACATGTAT

Switch process:

F1: L ATGTACATTTTATATGCATATAAAATATACATATACATGTATATGTATATAAATATACA 1
F3: 4 AAATATACATATACATGTATATGTATATAAATATACATATACATGTA
RF: ATGTACATTTTATATGCATATAAAATATACATATACATGTATATGTATATAAATATACATATATATTTTATACGTATATATATATACGTATACATTTTATATGTATATAAATATACATATACATGTA
F2: 3 TATATGTATATGTACATATACATATAAATATATGTATATGTACAT

Template-switch alignment:

ALT TATATGTATATAAATATACA|TATACATGTATATGTATATAaATATACATATACATGTATATGTATAT|AAATATACATATACATGTAT
REF TATATGTATATAAATATACA|TATACATGTATATGTATATTTATATACATATACATGTATATGTATAT|AAATATACATATACATGTAT

12 91911083 C T
12 91911087 C G
12 91911088 A T
12 91911089 C G
12 91911093 A G

Alignment:

ALT ATGTGATATCACTATGAAACTCATTCTACTGtATTgtgAAATgCAGTAGAATGAATTTGAGAATCTGCATTTGA
REF ATGTGATATCACTATGAAACTCATTCTACTGCATTCAACAATACAGTAGAATGAATTTGAGAATCTGCATTTGA

Switch process:

F1: L CTATTACTCTTGGACGGTTTTTCATGGTGATATGTGATATCACTATGAAAC 1
F3: 4 ATTTGAGAATCTGCATTTGAGAATCACTTTTCAAAGTGATAGACAGGCA R
RF: CTATTACTCTTGGACGGTTTTTCATGGTGATATGTGATATCACTATGAAACTCTCTACTGCATTCAACAATACAGTAGAATGAATTTGAGAATCTGCATTTGAGAATCACTTTTCAAAGTGATAGACAGGCA
F2: 3 AGTAAGATGACGTAAGTGTTATGTCATCTTACT 2

Template-switch alignment:

ALT ATGTGATATCACTATGAAAC|TCATTCTACTGTATTGTGAATGCAGTAGAATGA|ATTTGAGAATCTGCATTTGA
REF ATGTGATATCACTATGAAAC|TCATTCTACTGTATTGTGAATGCAGTAGAATGA|ATTTGAGAATCTGCATTTGA

12 98015540 G A
12 98015541 T C
12 98015543 T C
12 98015544 G A

Alignment:

ALT GTTAACAATGTACAGTTGAAACATATATGTATATATACGTATATATgtAtgTATACATACATATATACGTATATA
REF GTTAACAATGTACAGTTGAAACATATATGTATATATACGTATATATACATATACATACATATATACGTATATA

Switch process:

F1: L TTATCTCCACTTTTATGTTAACAATGTACAGTTGAA 1
F3: 4 CATACATATATACGTATATATACATATATGTGTGTGTGTATGTATATATACACA R
RF: TTATCTCCACTTTTATGTTAACAATGTACAGTTGAAACATATATGTATATATACGTATATATACATATACATATATACGTATATATACATATATGTGTGTGTGTATGTATATATACACA
F2: 3 ATATGTATGTATATATGCATATATATGTATATACA 2

Template-switch alignment:

ALT GTTAACAATGTACAGTTGAA|ACATATATGTATATATACGTATATATGTATGTATA|CATACATATATACGTATATA
REF GTTAACAATGTACAGTTGAA|ACATATATGTATATATACGTATATATGTATGTATA|CATACATATATACGTATATA

12 115230195 T A
12 115230197 A T
12 115230198 A T
12 115230200 T A

Alignment:

ALT GGTGGCTCACGCCTATAATACCAGCACTTTGGGAGGCCGAGGCAGGCGGATCaCttGaGATCCGCCTGCCTCGGCCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACC
REF GGTGGCTCACGCCTATAATACCAGCACTTTGGGAGGCCGAGGCAGGCGGATCTCAAGTGATCCGCCTGCCTCGGCCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACC

Switch process:

F1: L GCTGCGTGGGTGGCTCACGCCTATAATA 1
F3: 4 GATTACAGGTGTGAGCCACCACGCCTGG R
RF: GCTGCGTGGGTGGCTCACGCCTATAATACCAGCACTTTGGGAGGCCGAGGCAGGCGGATCTCAAGTGATCCGCCTGCCTCGGCCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACCACGCCTGG
F2: 3 GGTGCGTGAACCCCTCCGGCTCCGTCCGCCTAGAGTTCTACTAGGCGGACGGAGCCGGAGGGTTTCACGACC 2

Template-switch alignment:

ALT GGTGGCTCACGCCTATAATA|CCAGCACTTTGGGAGGCCGAGGCAGGCGGATCACTTGAGATCCGCCTGCCTCGGCCCTCCCAAAGTGCTGG|GATTACAGGTGTGAGCCACC
REF GGTGGCTCACGCCTATAATA|CCAGCACTTTGGGAGGCCGAGGCAGGCGGATCACTTGAGATCCGCCTGCCTCGGCCCTCCCAAAGTGCTGG|GATTACAGGTGTGAGCCACC

12 127005167 A C
12 127005170 G T
12 127005172 T A
12 127005177 T G

Alignment:

ALT ATATATCATCTATATTATAGATTATATATAATcTAtAaTATAgATAATCTATAATATAGATTATA
REF ATATATCATCTATATTATAGATTATATATAATATAGATTATATATAATCTATAATATAGATTATA

Switch process:

F1: L TAGATGATATATAATCTATATTATAGATTATATATCATCTATATTATAG 1
F3: 4 AATCTATAATATAGATTATATATCATCTATAATATAGATTATATATTATATATAGC R
RF: TAGATGATATATAATCTATATTATAGATTATATATCATCTATATTATAGATTATATATAATCTATAATATAGATTATATATATTATATATAGC
F2: 3 TAGATATAATATCTAATATATATTA 2

Template-switch alignment:

ALT ATATATCATCTATATTATAG|ATTATATATAATCTATAATATAGAT|AATCTATAATATAGATTATA

REF ATATATCATCTATATTATAG|ATTATATATAATCTATAATATAGAT|AATCTATAATATAGATTATA

13 57039956 A G
13 57039963 C T
13 57039964 A G
13 57039969 T C

Alignment:

ALT TATATATGTGTATATATATaTATACaTATAtATGTGTATATATACACACATATATGTATA
REF TATATATGTGTATATATATGTATACATGTATACATGTGTATATATACACACATATATGTATA

Switch process:

F1: L TGTATATATACACATATATATGTGTATATATACACACATATATATGTGTGTATATATA 1
F3: 4 TACACACATATATATGTATATGTATTTCATGCATAAAATTATATGAAT R
RF: TGTATATATACACATATATATGTGTATATATACACACATATATATGTGTGTATATATATGTATACATGTATACATGTGTATATATACACACATATATATGTATATGTATTTCATGCATAAAATTATATGAAT
F2: 3 ATATATATGTGTATATATACACATATATAT 2

Template-switch alignment:

ALT TATATATGTGTGTATATATA|TATATATACACATATATATGTGTATATATA|TACACACATATATATGTATA
REF TATATATGTGTGTATATATA|TATATATACACATATATATGTGTATATATA|TACACACATATATATGTATA

13 105439094 C T
13 105439095 A G
13 105439097 A G
13 105439099 A G
13 105439101 A G

Alignment:

ALT TATATATATACATATATATGTATATATATaTaTaTaTGTATATATATATATACATATATATGTATATATTTA
REF TATATATATACATATATATGTATATATATATGTGTGTGTATATATATATATATACATATATATGTATATATTTA

Switch process:

F1: L ATATACACATATATATATATGTGTATATATATATATATACATATATATG 1
F3: 4 TATATATGTATATATATTTACTCTTGGGAAGAAATTAACCTG R
RF: ATATACACATATATATATATGTGTATATATATATATATACATATATATGTATATATATATGTGTGTGTGTATATATATATATATATACATATATATGTATATATTTACTCTTGGGAAGAAATTAACCTG
F2: 3 ACATATATATATATATATGTATATATACATATATATATAT 2

Template-switch alignment:

ALT TATATATATACATATATATG|TATATATATATACATATATATGTATATATATATATACA|TATATATGTATATATTTA
REF TATATATATACATATATATG|TATATATATATACATATATATGTATATATATATATACA|TATATATGTATATATTTA

14 26467217 A T
14 26467220 A C
14 26467226 T C
14 26467229 A T
14 26467230 A T
14 26467233 G A
14 26467239 G T
14 26467242 A T

Alignment:

ALT CTAGAGTTCTGTACTCTGCAAAATTTcTCCTTcAAAtTTaAAGGAtAAATTAAGACTTTTCCAGACAAACA
REF CTAGAGTTCTGTACTCTGCAAAATTATCCTTTAAAAATTGAAGGAGAAATTAAGACTTTTCCAGACAAACA

Switch process:

F1: L GTGAAACATTTAAAAATGTTAAGAGGAGAAAAACCAACCTAGAGTTCTGTACTCTGCA 1
F3: 4 AAGACTTTTCCAGACAAACAAAAATTGAGGCAATTTGTTGTCAATAGACATACTTTGT R
RF: GTGAAACATTTAAAAATGTTAAGAGGAGAAAAACCAACCTAGAGTTCTGTACTCTGCAAAATTATCCTTTAAAAATTGAAGGAGAAATTAAGACTTTTCCAGACAAACAAAAATTGAGGCAATTTGTTGTCAATAGACATACTTTGT
F2: 3 TTTAATAGGAAATTTAACTTCCTCTTTAA 2

Template-switch alignment:

ALT CTAGAGTTCTGTACTCTGCA|AATTTCTCCTCAATTTTAAAGGATAATTT|AAGACTTTTCCAGACAAACA
REF CTAGAGTTCTGTACTCTGCA|AATTTCTCCTCAATTTTAAAGGATAATTT|AAGACTTTTCCAGACAAACA

14 33716364 C T
14 33716371 T A
14 33716372 C G
14 33716373 T A
14 33716380 A G

Alignment:

ALT ACTTTAAAAAGAGAGTACTTTAATGTAtATTCTAagaTAGAATgTACATTCTAAAGTACTCTCCCCATTA
REF ACTTTAAAAAGAGAGTACTTTAATGTACATTCTATCTTAGAATATACATTCTAAAGTACTCTCCCCATTA

Switch process:

F1: L TTGTGCAAACTTCCTTACATTCTAAAGTAGAATGTACTTTAAAGAGAGTACTTT 1
F3: 4 CTAAGTACTCTCCCCATTATTACCTGTGTTAATGTGATATTATCTTTTGCATT R
RF: TTGTGCAAACTTCCTTACATTCTAAAGTAGAATGTACTTTAAAGAGAGTACTTTAATGTACATTCTTCTAGAATATACATTCTAAAGTACTCTCCCCATT
F2: 3 TTACATGTAAGATAGAATCTTATATGTAA 2

Template-switch alignment:

ALT ACTTTAAAAAGAGAGTACTTT|AATGTATATTCTAAGATAGAATGTACATT|CTAAAGTACTCTCCCCATTA
REF ACTTTAAAAAGAGAGTACTTT|AATGTATATTCTAAGATAGAATGTACATT|CTAAAGTACTCTCCCCATTA

14 41313527 T C
14 41313535 C T
14 41313539 C T
14 41313540 G A

Alignment:

ALT CTCAAAAAAAAAAAAAAAAAGTATATAtATATACaCACgTATATATACATATATATGTATATACGTGTGTATATATATATA
REF CTCAAAAAAAAAAAAAAAAAGTATATACATATACATACATATATATATACATATATATGTATATACGTGTGTATATATATATA

Switch process:

F1: L TGCAATTTGGCCTGGTGACAGAGAGAGACTCTGTCTCAAAAAAAAAAAAAAAAA 1
F3: 4 CGTGTGTGTATATATATACACATATATGTG R
RF: TGCAATTTGGCCTGGTGACAGAGAGAGACTCTGTCTCAAAAAAAAAAAAAAAAAAGTATATACATATACATATATATGTATATACGTGTGTATATATATACACATATATGTG
F2: 3 ATATATATGTATATATACATATATATGACACACATATATATATG 2

Template-switch alignment:

ALT CTCAAAAAAAAAAAAAAAA|GTATATATATATACACACCGTATATATACATATATATGTATATATA|CGTGTGTGTATATATATATA
REF CTCAAAAAAAAAAAAAAAA|GTATATATATATACACACCGTATATATACATATATATGTATATATA|CGTGTGTGTATATATATATA

14 43149692 G C
14 43149694 T C
14 43149695 G A
14 43149697 G C

Alignment:

ALT ACAGCCATAAAGAAATGAAATCTTTTCCTTTGCAGCAACATGGGTGGcTcaAcCCACCCATGTTGCTGCAAAGGAAAAGGTTTTATTATTAAGAAATT
REF ACAGCCATAAAGAAATGAAATCTTTTCCTTTGCAGCAACATGGGTGGGTTGAGCCACCCATGTTGCTGCAAAGGAAAAGGTTTTATTATTAAGAAATT

Switch process:

F1: L AACAGGAATACTACACAGCCATAAAGAAATGAAAT 1
F3: 4 GTTTTATTATTAAGAAATTATATTCATTATTAT R
RF: AACAGGAATACTACACAGCCATAAAGAAATCTTTTCCTTTGCAGCAACATGGGTGGGTTGAGCCACCCATGTTGCTGCAAAGGAAAAGGTTTTATTATTAAGAAATTATATTCATTATTAT
F2: 3 GAAAAGGAAACGTCGTTGTATCCCAACCACTCGGTGGGTACAACGACGTTTCCTTTTC 2

Template-switch alignment:

ALT ACAGCCATAAAGAAATGAAAT|CTTTTCCTTTGCAGCAACATGGGTGGCTCAACCCACCCATGTTGCTGCAAAGGAAAAG|GTTTTATTATTAAGAAATT
REF ACAGCCATAAAGAAATGAAAT|CTTTTCCTTTGCAGCAACATGGGTGGCTCAACCCACCCATGTTGCTGCAAAGGAAAAG|GTTTTATTATTAAGAAATT

14 49402934 A G
14 49402937 G T
14 49402938 A T
14 49402939 A C
14 49402941 A G

Alignment:

ALT AAGAATATATTCTATATAGAATaTagaaTaTATTCTATATATAGAATATATTCTATATATAGAATATA
REF AAGAATATATTCTATATAGAATGATTCTGTATTCTATATATAGAATATATTCTATATATAGAATATA

Switch process:

F1: L AAATCACTAAGCTGATTCCAAAATACATATAGAATACAAAGAATATATTCTATATAGA 1
F3: 4 TATTCTATATAGAATATAGAATAACCAACAACTTAAAA R
RF: AAATCACTAAGCTGATTCCAAAATACATATAGAATACAAAGAATATATTCTATATAGAATGATTCTGTATTCTATATATAGAATATATTCTATATAGAATATA
F2: 3 ATAAGATATATATCTTATATAAGATATA 2

Template-switch alignment:

ALT AAGAATATATTCTATATAGA|ATATAGAATATATTCTATATAGAATA|TATTCTATATAGAATATA
REF AAGAATATATTCTATATAGA|ATATAGAATATATTCTATATAGAATA|TATTCTATATAGAATATA

14 61393578 C A
14 61393580 C A
14 61393581 T A
14 61393582 T G
14 61393584 T G

Alignment:

ALT TTCCAGCCTGCTAACTGCATGGTTGGTTCaCaagGgGAACCAACCCCATCCTGAGGCCATTTCAGG
REF TTCCAGCCTGCTAACTGCATGGTTGGTTCCCTTGTGAACCAACCCCATCCTGAGGCCATTTCAGG

Switch process:

F1: L CTTCCCTAGAGGTCAGAGGGTGAGGCTAGAAGTCCAGCCTGCTAACTGCAT 1
F3: 4 CCATCCTGAGGCCATTTCAGGAACCCATAAGATTGCTTCCTTCAACAAAA R
RF: CTTCCCTAGAGGTCAGAGGGTGAGGCTAGAAGTCCAGCCTGCTAACTGCATGGTTGGTTCCCTTGTGAACCAACCCCATCCTGAGGCCATTTCAGGAACCCATAAGATTGCTTCCTTCAACAAAA
F2: 3 CCAACCAAGGGGAACACTTGGTTGG 2

Template-switch alignment:

ALT TTCCAGCCTGCTAACTGCAT|GGTTGGTTCACAAGGGGAACCAACC|CCATCCTGAGGCCATTTCAGG
REF TTCCAGCCTGCTAACTGCAT|GGTTGGTTCACAAGGGGAACCAACC|CCATCCTGAGGCCATTTCAGG

14 92639685 A T
14 92639687 A T
14 92639689 G T
14 92639691 A T

Alignment:

ALT ATATATATATATATACATATATATATACGTATATaTaTgTaTATATATACGTATATATATATGTATATA
REF ATATATATATATATACATATATATATACGTATATATTTTTTTTATATATACGTATATATATATGTATATA

Switch process:

F1: L GCATGTACCACCATGCTCAGCTAAATATATATATATATACATAT 1
F3: 4 CGTATATATATATGTATATATATACGTATATATATATATACACATATGTA R
RF: GCATGTACCACCATGCTCAGCTAAATATATATATATATACATATATATATACGTATATATTTTTTTTATATATATACGTATATATATATATACACATATGTA
F2: 3 ATATATATATATGTATATATATATGCATATATA 2

Template-switch alignment:

ALT ATATATATATATATACATAT|ATATATACGTATATATATGTATATATATATA|CGTATATATATGTATATA
REF ATATATATATATATACATAT|ATATATACGTATATATATGTATATATATATA|CGTATATATATGTATATA

15 44174924 G T
15 44174926 G T
15 44174927 A T
15 44174928 A C
15 44174930 A C

Alignment:

ALT AGCTACTAGAAATGCTTCGGAACCAAGAATtTtcAcTTCTTGGTTAACAGTCTCAGCCATCCTGA
REF AGCTACTAGAAATGCTTCGGAACCAAGAAGTAAAAATTCTTGGTTAACAGTCTCAGCCATCCTGA

Switch process:

F1: L AGATTTCTATAGCTGAAGCAAAACATGGTGGCAGCTACTAGAAATGCTTCGG 1
F3: 4 AACAGTCTCAGCCATCCTGATAATTTTACTGTGGAGATTGGTCAGATTAG R
RF: AGATTTCTATAGCTGAAGCAAAACATGGTGGCAGCTACTAGAAATGCTTCGGAACCAAGAAGTAAAAATTCTTGGTTAACAGTCTCAGCCATCCTGATAATTTTACTGTGGAGATTGGTCAGATTAG
F2: 3 TTGGTTCTTCACTTTTAAGAACCA 2

Template-switch alignment:

ALT AGCTACTAGAAATGCTTCGG|AACCAAGAATTTTCACTTCTTGGTT|AACAGTCTCAGCCATCCTGA
REF AGCTACTAGAAATGCTTCGG|AACCAAGAATTTTCACTTCTTGGTT|AACAGTCTCAGCCATCCTGA

15 46624719 T C
15 46624720 T C
15 46624723 G A
15 46624724 G A

Alignment:

ALT TAAATTTCTGGAACCTCAAAGAGGTAAGCTTccATaaAGCTTACCTGGAAGATTCTCTTTCAGCAC
REF TAAATTTCTGGAACCTCAAAGAGGTAAGCTTTTATGGAAGCTTACCTGGAAGATTCTCTTTCAGCAC

Switch process:

F1: L AATTCTCATTTCTAAATGTATAAAAGTAATTTAAAAATTTCTGGAACCTCAAAG 1
F3: 4 GGAAGATTCTCTTTCAGCAGATGCTGAATAAATTGAATGTTGCTATAGT R
RF: AATTCTCATTTCTAAATGTATAAAAGTAATTTAAAAATTTCTGGAACCTCAAAGAGGTAAGCTTTTATGGAAGCTTACCTGGAAGATTCTCTTTCAGCAGATGCTGAATAAATTGAATGTTGCTATAGT
F2: 3 TCCATTGAAAAATACCTTCGAATGGA 2

Template-switch alignment:

ALT TAAATTTCTGGAACCTCAAAG|AGGTAAGCTTCCATAAAAGCTTACCT|GGAAGATTCTCTTTCAGCAC
REF TAAATTTCTGGAACCTCAAAG|AGGTAAGCTTCCATAAAAGCTTACCT|GGAAGATTCTCTTTCAGCAC

15 94786174 A G
15 94786175 G T
15 94786178 A C
15 94786179 C T

Alignment:

ALT TATGTATACACATATACACGTACACATATACACGTGTATATGTgtATctACATATACACGTGTATATGTGTATCTACACATACACGTGTATA
REF TATGTATACACATATACACGTACACATATACACGTGTATATGTAGATACACATATACACGTGTATATGTGTATCTACACATACACGTGTATA

Switch process:

F1: L CCTAAATATATGTATATATATGTATACACATATACACG 1
F3: 4 TCTACACATACACGTGTATATGTGTATCTACACATAC R
RF: CCTAAATATATGTATATATATGTATACACATATACACGTGTATATGTAGATACACATATACACGTGTATATGTGTATCTACACATACACGTGTATATGTGTATCTACACATAC
F2: 3 ATGTGTATATGTGCACATATACATCTATGTGTATATGTGCACATATACACAT 2

Template-switch alignment:

ALT TATGTATACACATATACACG|TACACATATACACGTGTATATGTGTATCTACATATACACGTGTATATGTGTA|TCTACACATACACGTGTATA
REF TATGTATACACATATACACG|TACACATATACACGTGTATATGTGTATCTACATATACACGTGTATATGTGTA|TCTACACATACACGTGTATA

15 98790529 A G
15 98790530 C T
15 98790538 A T
15 98790543 G A

Alignment:

ALT TAAATATGTATATATTTATGTATacATACATAaATATgTATATATTTATGTATACATACATATAT
REF TAAATATGTATATATTTATGTATGTATACATATATATATATATATTTATGTATACATACATATAT

Switch process:

F1: L TACATATCTATGTATGTATATATTTATATATGTATACATAAATATGTATATATTTATG 1
F3: 4 TTATGTATACATACATATATACATATTTATGTATGTATATGTATATATACACA R
RF: TACATATCTATGTATGTATATATTTATATATGTATACATAAATATGTATATATTTATGTATGTATACATATATATATATATTTATGTATACATACATATATATATATTTATGTATATGTATATGTATATATACACA
F2: 3 TATATATGTATAAATACATACATAT 2

Template-switch alignment:

ALT TAAATATGTATATATTTATG|TATACATACATAAATATGTATATAT|TTATGTATACATACATATAT
REF TAAATATGTATATATTTATG|TATACATACATAAATATGTATATAT|TTATGTATACATACATATAT

15 100482975 T A
15 100482982 G C
15 100482983 A T
15 100482984 G C

Alignment:

ALT TTTTTTTGTAGAGATAGGGTCTTCCTATGtTACCCAgagTGGGTAACATAGGAAGTTATGGGGAA
REF TTTTTTTGTAGAGATAGGGTCTTCCTATGATACCCACTCTGGGTAACATAGGAAGTTATGGGGAA

Switch process:

F1: L CACCATGCCTGAGTAATTTTTTTATTTTACATTTTTTTTTGTAGAGATAGGGT 1
F3: 4 ACATAGGAAGTTATGGGGAACATATTCAAACCTCCTGGGCTCAAGTAATCCTCCT R
RF: CACCATGCCTGAGTAATTTTTTTTATTTTACATTTTTTTTTGTAGAGATAGGGTCTTCCTATGATACCCACTCTGGGTAACATAGGAAGTTATGGGGAACATATTCAAACCTCCTGGGCTCAAGTAATCCTCCT
F2: 3 ATGGGTGAGACCCATTGTATCCTTC 2

ALT TTTTTTTGTAGAGATAGGGT|CTTCCTATGTTACCCAGAGTGGGTA|ACATAGGAAGTTATGGGGAA
REF TTTTTTTGTAGAGATAGGGT|CTTCCTATGTTACCCAGAGTGGGTA|ACATAGGAAGTTATGGGGAA

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16 960672 C G
16 960673 C T
16 960675 C T
16 960677 T A
16 960679 A G
16 960681 A G
16 960682 C G
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ALT GCAGGGCGTCCAGTGCTCCTCTCTGAGTCTgtTtCaGgAggAGACTCAGAGGTGTGGTTCGTGCCAGAAA
REF GCAGGGCGTCCAGTGCTCCTCTCTGAGTCTCCTCCTGAAACAGACTCAGAGGTGTGGTTCGTGCCAGAAA

F1: L TGGGGGAAGCTCAGGAGGGCTGGTGGGGGAAGCAGGGCGTCCAGTGCTCCT 1
F3: 4 GTGTGGTCTGTCCAGAAACAGGGATCATGAGCATGCCCGGAAAAAGCC R
RF: TGGGGGAAGCTCAGGAGGGCTGGTGGGGGAAGCAGGGCGTCCAGTGCTCCTCTGAGTCTCCTCTGAAACAGACTCAGAGGTGTGGTCTGTCCAGAAACAGGGATCATGAGCATGCCCGGAAAAAGCC
F2: 3 GAGACTCAGAGGAGGACTTTGTCTGAGTCTC 2

ALT GCAGGGCGTCCAGTGCTCTCT|CTCTGAGTCTGTTTCAGGAGGAGACTCAGAG|GTGTGGTTCTGTCCCAGAAA
REF GCAGGGCGTCCAGTGCTCTCT|CTCTGAGTCTGTTTCAGGAGGAGACTCAGAG|GTGTGGTTCTGTCCCAGAAA

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16 8921619 G T
16 8921620 C T
16 8921622 C T
16 8921627 T A
16 8921629 A T
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ALT AGGCCTTTTAAATGTGGCATATATATATATATATATATATATATATATGcAcACAtTaTATATATATTTTATATATA
REF AGGCCTTTTAAATGTGGCATATATATATATATATATATATATATATATATATTATAGATTTTATATATATTTTATATATA

F1: L AGGCCTTTTAAATGTGTGC 1
 F3: 4 TATATATATATTTATATATATTTATACATATTTATATATTTATATAATATATATTATATA R
 RF: AGGCCTTTTAAATGTGTGCATTTATACATATTTATATATATATTTATATATATTTATACATATTTATATATATTTATATAATATATATTATATA
 F2: 3 ATTTACACGCTA 2

ALT AGGCCCTTTTAAATGTGTGC|ATATATATATATATATATATATATATATATATATATGACACATTTA|TATATATATATTTATATATA
REF AGGCCCTTTTAAATGTGTGC|ATATATATATATATATATATATATATATATATATATGACACATTTA|TATATATATATTTATATATA

16	12636583	A	G
16	12636587	T	A
16	12636592	A	T
16	12636597	A	T
16	12636602	T	A
16	12636606	C	T

Alignment:

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ALT  GTCCCAGTCTTTTACTCTTAAgTCTaGTGcTATAtGCACaAGAtTATCACTGCCTTTTTTTTTTTT
REF  GTCCCAGTCTTTTACTCTTAAATCTTGTGCATATAAGCACTAGACTATCACTGCCTTTTTTTTTTTT
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F1: L GCGTGTGGGAACATGGACTTTGGGGCCAGGCTGGTGTGGTCCCAGCTCTTTACTCTTA 1
 F3: 4 ATCACTGCCTTTTTTTTTTTTAAACAAAGTATTAGTTAAATCAGCAAGTAAGTGAAG R
 RF: GCGTGTGGGAACATGGACTTTGGGGCCAGGCTGGTGTGGTCCCAGCTCTTTACTCTTAAATCTTGTGCATATAAGCACTAGACATCACTGCCTTTTTTTTTTTTAAACAAAGTATTAGTTAAATCAGCAAGTAAGTGAAG
 F2: 3 TTGAACACGTATATTCTGTATCTGA 2

ALT GTCCAGTCTTTTACTCTTA|AGTCTAGTGCTTATATGCACAAGATT|ATCACTGCCTTTTTTTTTTTT
REF GTCCAGTCTTTTACTCTTA|AGTCTAGTGCTTATATGCACAAGATT|ATCACTGCCTTTTTTTTTTTT

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16 50788897 T C
16 50788901 T C
16 50788908 G A
16 50788909 T C
16 50788915 T C
16 50788919 T C

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Alignment:

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ALT  ATACACACATATATGTATACATATATaCAtATATATgtATATaACaTATATATGTATATACATATATATGTATATATACATATATAT
REF  ATACACACATATATGTATACATATACACACATATACATATACACACATATATGTATATATACATATATATGTATATATACATATATAT
```

Switch process:

F1: L ATACACACATATGTATATATACACACATATATACATATACACACATATATGTATAC 1

F3: 4 ATGTATATATACATATATATGTATATATACATATAGAT R

RF: ATACACACATATGTATATATACACACATATATACATATATGTATATACATATATATGTATATATACATATATATGTATATATACATATAGAT

F2: 3 TATATACATATATATGTATATATACATATATGTATATATACATATATA 2

ALT ATACACACATATGTGTATAC|ATATATACATATATATGTATATATACATATATATGTATATATACATATAT|ATGTATATATACATATATAT
REF ATACACACATATGTGTATAC|ATATATACATATATATGTATATATACATATATATGTATATATACATATAT|ATGTATATATACATATATAT

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16 60856234 A T
16 60856235 A T
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16 60856238 A T
16 60856239 A T

Alignment:

ALT ATCACATTATAATTAAGGTAGAATTCAGTTACtTtAtGTAAGTGAATTCCTCTCTTATTGAAAAATTTTAA
REF ATCACATTATAATTAAGGTAGAATTCAGTTACAATAAAGTAACTGAATTCCTCTCTTATTGAAAAATTTTAA

Switch process:

F1: L TTCTGAAGTGAGAAGCACACATTTAAAAATCACATTATAATTAAGGT 1
F3: 4 CTCTTATTGAAAAATTTTAAATGTGGCTAAGAAACAATGATATGGTT R
RF: TTCTGAAGTGAGAAGCACACATTTAAAAATCACATTATAATTAAGGTAGAATTCAGTTACAATAAAGTAACTGAATTCCTCTCTTATTGAAAAATTTTAAATGTGGCTAAGAAACAATGATATGGTT
F2: 3 TCTTAAGTCAATGTTATTTTCATTGACTTAAGA 2

Template-switch alignment:

ALT ATCACATTATAATTAAGGT|AGAATTCAGTTACTTTATTGTAAGTGAATTC|CTCTTATTGAAAAATTTTAA
REF ATCACATTATAATTAAGGT|AGAATTCAGTTACTTTATTGTAAGTGAATTC|CTCTTATTGAAAAATTTTAA

17 70469543 T G
17 70469544 C A
17 70469553 G T
17 70469554 A C

Alignment:

ALT TATATATATATTTTTTTCATATATATATTCACATATATATcATATATATgaATATATATGAATATATATGTGAATATAT
REF TATATATATATTTTTTTCATATATATATTCACATATATATGAATATATATTCATATATATGAATATATATGTGAATATAT

Switch process:

F1: L AGTGGATGAAGAAACTTTATATATATATATATTTTTTTCAT 1
F3: 4 GAATATATATGTGAATATATATGTGACTATATATGTGAATATATATGAATAT R
RF: AGTGGATGAAGAAACTTTATATATATATATATTTTTTTCATATATATATTCACATATATATGAATATATATTCATATATATGAATATATATGTGACTATATATGTGAATATATATGAATAT
F2: 3 TATATATAAGTATATATACTTATATATACACTTATATATA 2

Template-switch alignment:

ALT TATATATATATTTTTTTCAT|ATATATATTCACATATATATTCATATATATGAATATATAT|GAATATATATGTGAATATAT
REF TATATATATATTTTTTTCAT|ATATATATTCACATATATATTCATATATATGAATATATAT|GAATATATATGTGAATATAT

17 76756503 A G
17 76756504 T C
17 76756508 C T
17 76756510 C T

Alignment:

ALT TATATGTGTATATATATATgCAtAtAtATACATATATATATGTATATATATATACATACATATAT
REF TATATGTGTATATATATATATATACATACATATATATATGTATATATATATACATACATATAT

Switch process:

F1: L TATATATATATATATATATATATATACACACACATACATATATATATGTATATATATATG 1
F3: 4 ATATATATACATACATATATATATGTATATATATGTATGTAT R
RF: TATATATATATATATATATATATATACACACACATACATATATATGTGTATATATATATATATACACATACATATATATGTATATATATATATGTATGTAT
F2: 3 TATGTATATATATACATATATATAC 2

Template-switch alignment:

ALT TATATGTGTATATATATATg|CATATATATACATATATATATGTAT|ATATATATACATACATATAT
REF TATATGTGTATATATATATA|CATATATATACATATATATATGTAT|ATATATATACATACATATAT

18 29459576 A T
18 29459578 A C
18 29459579 G T
18 29459581 A T

Alignment:

ALT CAAGCTGGCAAAAAGAAAAGAAATAAAGATCtGctCtGATCTTTATTCTTTAAATGAAATTGAGACC
REF CAAGCTGGCAAAAAGAAAAGAAATAAAGATCAGAGCAGATCTTTATTCTTTAAATGAAATTGAGACC

Switch process:

F1: L AGAGGAAACAGAAACAAGAACAACCAAGCCCAAGCTGGCAAAAAGAAAAGA 1
F3: 4 CTTTAAATGAAATTGAGACCAAGAAATCATACAAAGAATCAACAAAATA R
RF: AGAGGAAACAGAAACAAGAACAACCAAGCCCAAGCTGGCAAAAAGAAAAGAAATAAAGATCAGAGCAGATCTTTATTCTTTAAATGAAATTGAGACCAAGAAATCATACAAAGAATCAACAAAATA
F2: 3 TTATTTCTAGTCTCGCTAGAAATAA 2

Template-switch alignment:

ALT CAAGCTGGCAAAAAGAAAAGA|AATAAAGATCTGCTCTGATCTTTATT|CTTTAAATGAAATTGAGACC
REF CAAGCTGGCAAAAAGAAAAGA|AATAAAGATCTGCTCTGATCTTTATT|CTTTAAATGAAATTGAGACC

18 30787486 G T
18 30787488 G C
18 30787489 G C
18 30787490 G C
18 30787492 A C

Alignment:

ALT AGGCATTGCAAAAGTGATAATATGATTTTCTCAGGGAACATTCATTTTCCAtTcccAcTGGAAAAATGAATGTTCCCTGAGAAAAATCATAATATCTAAAGTATGTTTCATT
REF AGGCATTGCAAAAGTGATAATATGATTTTCTCAGGGAACATTCATTTTCCAGTGGGAATGGAAAAATGAATGTTCCCTGAGAAAAATCATAATATCTAAAGTATGTTTCATT

Switch process:

F1: L CAGTGGGGTAAGGCATTGCAAAAGTGATAA 1
F3: 4 ATATCTAAAGTATGTTTCATTGGGTATTAG R
RF: CAGTGGGGTAAGGCATTGCAAAAGTGATAATATGATTTTCTCAGGGAACATTCATTTTCCAGTGGGAATGGAAAAATGAATGTTCCCTGAGAAAAATCATAATATCTAAAGTATGTTTCATTGGGTATTAG
F2: 3 ATACTAAAAGAGTCCCTTGTAAGTAAAAGGTCACCCCTTACCTTTTACTTTACAAGGGACTCTTTTAGTAT 2

Template-switch alignment:

ALT AGGCATTGCAAAAGTGATAA|TATGATTTTCTCAGGGAACATTCATTTTCCATTCCCACTGGAAAAATGAATGTTCCCTGAGAAAAATCATA|ATATCTAAAGTATGTTTCATT
REF AGGCATTGCAAAAGTGATAA|TATGATTTTCTCAGGGAACATTCATTTTCCATTCCCACTGGAAAAATGAATGTTCCCTGAGAAAAATCATA|ATATCTAAAGTATGTTTCATT

18 37692982 T C
18 37692983 T C
18 37692985 C G
18 37692987 G A

Alignment:

ALT CTGGGAAAAGCCCATACATTAGAGGTGGGTGGAGCCCCCAATTccTgAaGAATTGGGGGCTCCACCCAC
REF CTGGGAAAAGCCCATACATTAGAGGTGGGTGGAGCCCCCAATTTTTCAGGAATTGGGGGCTCCACCCAC

Switch process:

F1: L AATCCAATTTCCACAAAGCTGGGAAAAGCCCATACATT 1
F3: 4 GAATTGGGGGCTCCACCCACCTCTCTGGGGAATGTTAGTTTAGTCATTCTTATATTCCTT R
RF: AATCCAATTTCCACAAAGCTGGGAAAAGCCCATACATTAGAGGTGGGTGGAGCCCCCAATTTTTCAGGAATTGGGGGCTCCACCCACCTCTCTGGGGAATGTTAGTTTAGTCATTCTTATATTCCTT
F2: 3 AAGTCCTTAACCCCGAGGTGGGTGGAGA 2

Template-switch alignment:

ALT CTGGGAAAAGCCCATACATT|AGAGGTGGGTGGAGCCCCCAATTCTGAA|GAATTGGGGGCTCCACCCAC
REF CTGGGAAAAGCCCATACATT|AGAGGTGGGTGGAGCCCCCAATTCTGAA|GAATTGGGGGCTCCACCCAC

18 47497318 C T
18 47497320 A T
18 47497323 C T
18 47497327 C A
18 47497328 T G
18 47497332 A G
18 47497335 A T
18 47497337 A G

Alignment:

ALT GTTCTCTCTGGACTCCACTTTTGtCtCtTtTGagCAAgAgTgGCAAGGAGAAGTGAGAAAAATCAAA
REF GTTCTCTCTGGACTCCACTTTTGCCACTCTTGCTCAAAAGAGACAAGGAGAAGTGAGAAAAATCAAA

Switch process:

F1: L GCTGGCTGTATTTCAGAAACTCATCCAGTATTCTTTCTGTTCTCTCTGGACTCCACTT 1
F3: 4 GGAGAAGTGAGAAAAATCAAAAGACATCAGTTCAGCCCCAGGGCATCCTCTATGGGTAC R
RF: GCTGGCTGTATTTCAGAAACTCATCCAGTATTCTTTCTGTTCTCTCTGGACTCCACTTTTGCCACTCTTGCTCAAAAGAGACAAGGAGAAGTGAGAAAAATCAAAAGACATCAGTTCAGCCCCAGGGCATCCTCTATGGGTAC
F2: 3 AACGGTGAGAACGAGTTTTCTCTGTT 2

Template-switch alignment:

ALT GTTCTCTCTGGACTCCACTT|TTGCTCTTTTGAGCAAGAGTGGCAA|GGAGAAGTGAGAAAAATCAAA
REF GTTCTCTCTGGACTCCACTT|TTGCTCTTTTGAGCAAGAGTGGCAA|GGAGAAGTGAGAAAAATCAAA

18 50453587 A G
18 50453588 C T
18 50453596 C T
18 50453597 A G
18 50453598 C T

Alignment:

ALT ATATATAGGTGTATATGTACATATACacATATATGcacATATATACTTATATGTACATATACACAT
REF ATATATAGGTGTATATGTACATATACGTATATATGTGTATATATACTTATATGTACATATACACAT

Switch process:

F1: L TACGTATATATGTGTATATATGTGTATATATACGTATATATAGGTGTATATGTAC 1
F3: 4 TTATATGTACATATACACATATATGCACATATATACTTATATGTGTGTATAT R
RF: TACGTATATATGTGTATATATGTGTATATATACGTATATATAGGTGTATATGTACATATACGTATATATGTGTATATATACTTATATGTACATATACACATATATGCACATATATACTTATATGTGTGTATAT
F2: 3 CATATATACAGTATATACACATATA 2

Template-switch alignment:

ALT ATATATAGGTGTATATGTAC|ATATACACATATATgCACATATATAC|TTATATGTACATATACACAT
REF ATATATAGGTGTATATGTAC|ATATACACATATATACACATATATAC|TTATATGTACATATACACAT

18 51267617 G A
18 51267618 T A
18 51267619 T C
18 51267622 T C
18 51267642 G A
18 51267643 T A
18 51267644 T C
18 51267647 T C

Alignment:

ALT TTTGCATATCTAGATATGTATAgttTAtACATATCTAGATATGTATAgttTAtACATATCTAGATATGTATAGTTTATACATATCTAG
REF TTTGCATATCTAGATATGTATAAACTACACATATCTAGATATGTATAAACTACACATATCTAGATATGTATAGTTTATACATATCTAG

Switch process:

F1: L TATGCACGACTATATTTGCATATCTAGATATGTA 1
F3: 4 TATAGTTTATACATATCTAGATATGTATAGTTTATACATATCTAG R
RF: TATGCACGACTATATTTGCATATCTAGATATGTATAAACTACACATATCTAGATATGTATAAACTACACATATCTAGATATGTATAGTTTATACATATCTAGATATGTATAGTTTATACATATCTAG
F2: 3 GTATAGATCTATACATATTTGATATGTATAGATCTATACATATTTGAT 2

Template-switch alignment:

ALT TTTGCATATCTAGATATGTA|TAGTTTATACATATCTAGATATGTaTAGTTTATACATATCTAGATATG|TATAGTTTATACATATCTAG
REF TTTGCATATCTAGATATGTA|TAGTTTATACATATCTAGATATGTGTAGTTTATACATATCTAGATATG|TATAGTTTATACATATCTAG

18 60443260 T C
18 60443265 A G
18 60443266 C T
18 60443271 G A

Alignment:

ALT AGAGAACCAATAAGATAGCCTATCTATGcCTATgTATAGaCATAGATATATATCTATAAAGAGATTTA

REF AGAGAACCAATAAGATAGCCTATCTATGCTCTATACATAGGCATAGATATATATCTATAAAGAGATTTA

Switch process:

F1: L ATACAAAATGTTGTATTAGGGTCTCCAGAAAAAGAGAACCAATAAGATAGCC 1
F3: 4 TATATCTATAAAGAGATTTAAAAAATATATATATAAAGAGTTTATTTTAA R
RF: ATACAAAATGTTGTATTAGGGTCTCCAGAAAAAGAGAACCAATAAGATAGCCTATCTATGCTCTATACATAGGCATAGATATATCTATAAAGAGATTTAAAAAATATATATATAAAGAGTTTATTTTAA
F2: 3 ATAGATACAGATATGTATCCGTATCTAT 2

Template-switch alignment:

ALT AGAGAACCAATAAGATAGCC|TATCTATGCCTATGTATAGACATAGATA|TATATCTATAAAGAGATTTA
REF AGAGAACCAATAAGATAGCC|TATCTATGCCTATGTATAGACATAGATA|TATATCTATAAAGAGATTTA

18 67418447 G T
18 67418448 C T
18 67418451 T A
18 67418453 T A
18 67418460 T A
18 67418462 T A
18 67418465 A G
18 67418466 A C

Alignment:

ALT TATTGTGGCAAAATATAGTTAGTAATtttGaAaTGTACaATaCaGcATTACCAAGTAAATTTCAAAGGTTTC
REF TATTGTGGCAAAATATAGTTAGTAATGCTGTATTGTACATTTCAAATTTACCAAGTAAATTTCAAAGGTTTC

Switch process:

F1: L CAGGAAGAGTATGTTTTATTTGATTTTGAGTGTCTATTGTGGCAAAATATAGTTA 1
F3: 4 CAAGTAAATTTCAAAGGTTCTTATCACAAAAAGATAAGTATTTGAATTAATGGT R
RF: CAGGAAGAGTATGTTTTATTTGATTTTGAGTGTCTATTGTGGCAAAATATAGTTAGTAATGCTGTATTGTACATTTCAAATTTACCAAGTAAATTTCAAAGGTTTC
F2: 3 CATTACGACATAACATGTAAAGTTTAAATG 2

Template-switch alignment:

ALT TATTGTGGCAAAATATAGTTA|GTAATTTTGAAATGTACAATACAGCATTAC|CAAGTAAATTTCAAAGGTTTC
REF TATTGTGGCAAAATATAGTTA|GTAATTTTGAAATGTACAATACAGCATTAC|CAAGTAAATTTCAAAGGTTTC

20 8269327 C T
20 8269334 T C
20 8269337 G A
20 8269344 A G

Alignment:

ALT AGTCCTTCAGAGAACGGTAGAGGTGtCAGCTGcTaaCAGCTGgCACCTTCAGCATCTGCAGGATGGGT
REF AGTCCTTCAGAGAACGGTAGAGGTGCCAGCTGTTAGCAGCTGACACCTTCAGCATCTGCAGGATGGGT

Switch process:

F1: L CATCTTCGGCCAGGGTGGTACTCCTCAGCCAACAACAGTCCTTCAGAGAACGGTAG 1
F3: 4 TCAGCATCTGCAGGATGGGTGCAATGGCCCCGTGAAGGGAACTGAGTGGGGCAC R
RF: CATCTTCGGCCAGGGTGGTACTCCTCAGCCAACAACAGTCCTTCAGAGAACGGTAGAGGTGCCAGCTGTTAGCAGCTGACACCTTCAGCATCTGCAGGATGGGTGCAATGGCCCCGTGAAGGGAACTGAGTGGGGCAC
F2: 3 TCCACGGTCGACAATCGTCGACTGTGGA 2

Template-switch alignment:

ALT AGTCCTTCAGAGAACGGTAG|AGGTGTCAGCTGCTAACAGCTGGCACCT|TCAGCATCTGCAGGATGGGT
REF AGTCCTTCAGAGAACGGTAG|AGGTGTCAGCTGCTAACAGCTGGCACCT|TCAGCATCTGCAGGATGGGT

20 12348788 A T
20 12348790 G T
20 12348796 A T
20 12348797 A T
20 12348798 A T
20 12348804 A C
20 12348806 A T

Alignment:

ALT ACAAAACTAAATATTAATATTTTCtTtAAATATtTTATATTcAtGAACATATATCAGAATAAATGGA
REF ACAAAACTAAATATTAATATTTTCATGAATATAAAATATTAAAGAACATATATCAGAATAAATGGA

Switch process:

F1: L TCAGATATATAATACAGAAAAATGATTACATTCACAATAACAAAACTAAATATTAATAT 1
F3: 4 CATATATCAGAATAAATGGACACATATTGCATAAAAGATATACAACCTCTATATAAAA R
RF: TCAGATATATAATACAGAAAAATGATTACATTCACAATAACAAAACTAAATATTAATATTTTCATGAATATAAAATATTAAAGAACATATATCAGAATAAATGGACACATATTGCATAAAAGATATACAACCTCTATATAAAA
F2: 3 AAGTACTTATATTTTATAATTTCTT 2

Template-switch alignment:

ALT ACAAAACTAAATATTAATAT|TTCTTTAATATTTTATATTCATGAA|CATATATCAGAATAAATGGA
REF ACAAAACTAAATATTAATAT|TTCTTTAATATTTTATATTCATGAA|CATATATCAGAATAAATGGA

20 12498815 T C
20 12498819 T A
20 12498821 C A
20 12498823 C A
20 12498828 T G
20 12498829 G C
20 12498830 T G
20 12498832 T A
20 12498836 G A

Alignment:

ALT CACTGATGAATTTTCAGTCTTTATAcTATaTaGaCaTgGcgAaATaATATATCTCCTTGTGATACTATTTT
REF CACTGATGAATTTTCAGTCTTTATATTATTCGCCATGTGTATATAGTATATCTCCTTGTGATACTATTTT

Switch process:

F1: L GCAATGCATGGGTATTTCCAGGTTCTCTACATGTCAACACTGATGAATTTTCAGTCTT 1
F3: 4 TCTCCTTGTGATACTATTTTGCATTTCTTTGATAATTAATGATGTTGATCATTTTC R

RF: GCAATGCATGGGTATTTCCAGGTTCTCTACATGTC AACACTGATGAATTCAGTCTTTATATTATTTGCCCATGTTATATAGTATATCTCCTTGATACATATTTGCATTTCCTTTGATAATTAATGATGTTGATCATTTC
F2: 3 ATATAATAAAGCGGTACAGATATATCATAT 2

Template-switch alignment:

ALT CACTGATGAATTTTCAGTCTT|TATACTATATAgACATGGCGAAATAATATA|TCTCCTTGATACACTATTTT
REF CACTGATGAATTTTCAGTCTT|TATACTATATACACATGGCGAAATAATATA|TCTCCTTGATACACTATTTT

20 14163706 C A
20 14163707 T A
20 14163710 T A
20 14163711 T G

Alignment:

ALT GTGTGAGTGCAGTTTGTGTCTGTATGACAAACCCCATGACACAAGTTTACCTATGTAACaaATagGTTACATAGGTAAACTTGTGTCATGGGGGTTTGCATACAGATTATTTTCATCACCCGGGT
REF GTGTGAGTGCAGTTTGTGTCTGTATGACAAACCCCATGACACAAGTTTACCTATGTAACCTATTTGTTACATAGGTAAACTTGTGTCATGGGGGTTTGCATACAGATTATTTTCATCACCCGGGT

Switch process:

F1: L GTGTGAGTGCAGTTTGTG 1
F3: 4 TTATTTTCATCACCCGGGT R
RF: GTGTGAGTGCAGTTTGTGTCTGTATGACAAACCCCATGACACAAGTTTACCTATGTAACCTATTTGTTACATAGGTAAACTTGTGTCATGGGGGTTTGCATACAGATTATTTTCATCACCCGGGT
F2: 3 AGACATACTGTTGGGGGTACTGTGTTCAAATGGATACATTGGATAAACAAATGTATCCATTGAAACACAGTACCCCAACAGTATGTCT 2

Template-switch alignment:

ALT GTGTGAGTGCAGTTTGTGTTG|TCTGTATGACAAACCCCATGACACAAGTTTACCTATGTAACAAATAGGTTACATAGGTAAACTTGTGTCATGGGGGTTTGCATACAGA|TTATTTTCATCACCCGGGT
REF GTGTGAGTGCAGTTTGTGTTG|TCTGTATGACAAACCCCATGACACAAGTTTACCTATGTAACAAATAGGTTACATAGGTAAACTTGTGTCATGGGGGTTTGCATACAGA|TTATTTTCATCACCCGGGT

20 20439129 G A
20 20439130 T A
20 20439132 T A
20 20439135 T C
20 20439140 A G
20 20439160 G A
20 20439161 T A
20 20439163 T A
20 20439165 T A
20 20439166 T C

Alignment:

ALT ATACATATGTATTTTATATAATATATAATATATATaaAaTTcATATgTATTATATATAATATATaaAaTacATATATATTATATATAATATATATGTATTTTATA
REF ATACATATGTATTTTATATAATATATAATATATATGTATTTTATATATATTATATATAATATATATGTATTTTATATATATTATATATAATATATATGTATTTTATA

Switch process:

F1: L TATATGTATTTTATATTACATATAATACATATGTATTTTATATA 1
F3: 4 GTATTTTATA R
RF: TATATGTATTTTATATTACATATAATACATATGTATTTTATATAATATATAATATATATGTATTTTATATATTATATATAATATATATGTATTTTATATATTATATAT
F2: 3 TATATATAATATATATTATATATACATAAAATATATAATATATATTATGTATACTTAAAAATATATAATATATA 2

Template-switch alignment:

ALT ATACATATGTATTTTATATA|ATATATAATATATATAAAATtCATATgTATTATATATAATATATATAAAATACATATATTATATATAATATATAT|GTATTTTATA
REF ATACATATGTATTTTATATA|ATATATAATATATATAAAATACATATATATTATATATAATATATATAAAATACATATATTATATATAATATATAT|GTATTTTATA

20 34891669 G A
20 34891671 T G
20 34891673 T A
20 34891675 C A
20 34891677 T C

Alignment:

ALT TAGTTGCCATTATTTTCAGGATTTTCTGAAaTgTaAaAcTTCAGAAAATCITAACTGCTAGCTTCTCTTG
REF TAGTTGCCATTATTTTCAGGATTTTCTGAAGTTTACATTTTCAGAAAATCTTAACTGCTAGCTTCTCTTG

Switch process:

F1: L GTTTGCATAGAGTTAAACAATTTTTCACCTCTAGTTGCCATTATTTTCAGG 1
F3: 4 TTAAGTCTAGCTTCTCTTGAAAAAATAAGATATGGCTCCACTGTCTCC R
RF: GTTTGCATAGAGTTAAACAATTTTTCACCTCTAGTTGCCATTATTTTCAGGATTTTCTGAAGTTTACATTTTCAGAAAATCTTAACTGCTAGCTTCTCTTGAAAAAATAAGATATGGCTCCACTGTCTCC
F2: 3 CTAAAGACCTTCAAATGTAAAGTCTTTTAG 2

Template-switch alignment:

ALT TAGTTGCCATTATTTTCAGG|GATTTTCTGAAATGTAAAACTTCAGAAAATC|TTAACTGCTAGCTTCTCTTG
REF TAGTTGCCATTATTTTCAGG|GATTTTCTGAAATGTAAAACTTCAGAAAATC|TTAACTGCTAGCTTCTCTTG

20 43588099 G A
20 43588102 T G
20 43588103 C G
20 43588104 C A
20 43588107 T C

Alignment:

ALT GTAGCTTCCCATCCAGCAGCTTTTCATGCCAAaCTGgaAGcTTGGCATGAAATCCGAACTCCTTAGCAGAGT
REF GTAGCTTCCCATCCAGCAGCTTTTCATGCCAAAGCTTCCAGTTTGGCATGAAATCCGAACTCCTTAGCAGAGT

Switch process:

F1: L ATATGCTATTCTTCTGTTTCAAACCTTCCAGTAGCTTCCCATCCAGCAGC 1
F3: 4 TCCGAACTCCTTAGCAGAGTTTACAACACCTCCACAATAAATAAGGGTC R
RF: ATATGCTATTCTTCTGTTTCAAACCTTCCAGTAGCTTCCCATCCAGCAGCTTTTCATGCCAAAGCTTCCAGTTTGGCATGAAATCCGAACTCCTTAGCAGAGTTTACAACACCTCCACAATAAATAAGGGTC
F2: 3 AAAGTACGGTTCGAAGGTCAAACCGTACTTT 2

Template-switch alignment:

ALT GTAGCTTCCCATCCAGCAGC|TTTCATGCCAACTGGAAGCTTGGCATGAAA|TCCGAACTCCTTAGCAGAGT
REF GTAGCTTCCCATCCAGCAGC|TTTCATGCCAACTGGAAGCTTGGCATGAAA|TCCGAACTCCTTAGCAGAGT

Template-switch alignment:

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ALT  TATATACATATATATATG|TATATATATATACATATATATATGTATATATATATACA|TATATATATATGTATATATA
REF  TATATACATATATATATG|TATATATATATACATATATATATGTATATATATATACA|TATATATATATGTATATATA
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