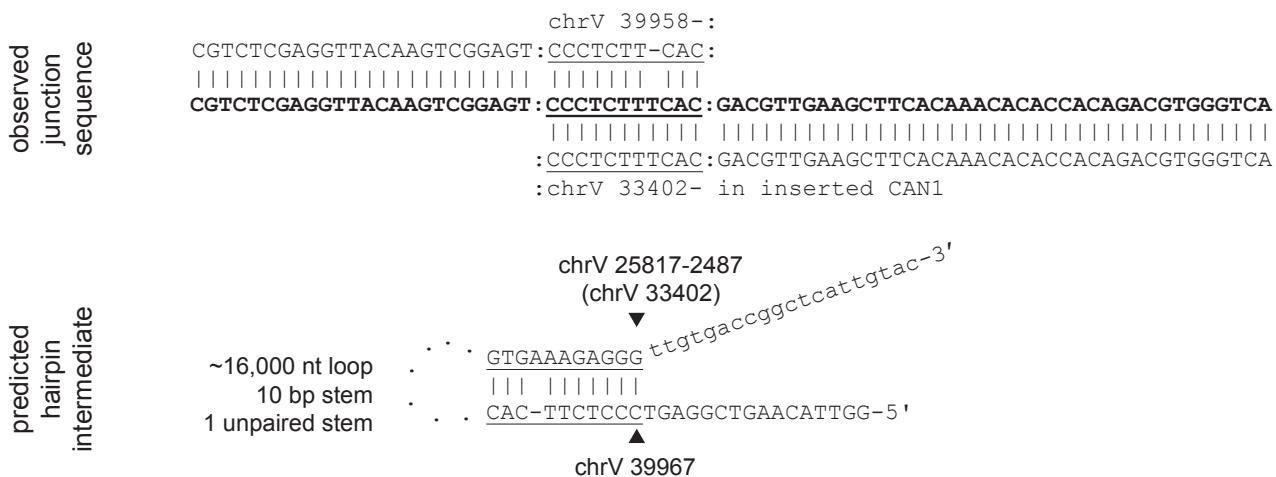


Figure 2 - Source Data 1 (page 1 of 32)

A. chrV L 25,817-2,487_39,967 hairpin



B. chrV L 25,817-1,749_25,817-1,737 hairpin

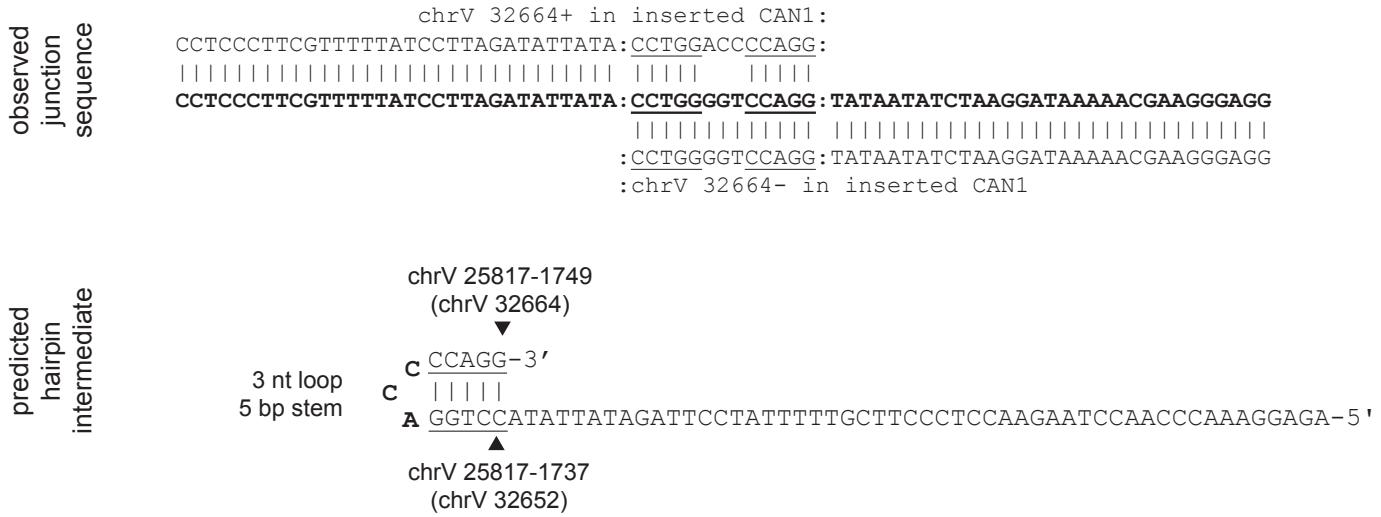


Figure 2 - Source Data 1. Predicted ssDNA hairpin structures for selected observed foldback inversions.

The structures of the key predicted ssDNA hairpin intermediates observed (panels A to BK are sorted by the chromosomal position of the predicted hairpin). The chrV coordinates for each predicted hairpin correspond to the coordinates reported for the foldback inversion-containing GCRs.

Figure 2 - Source Data 1 (page 2 of 32)

C. chrV L 25,817-1,731_25,817_-1,720 hairpin

observed junction sequence

chrV 32646+ in inserted CAN1:
 AAACCCAACCTAAGAACCTCCCTCGTTT : TATCCTTAGATA:
 ||||||| ||||| ||||| ||||| |||||
AAACCCAACCTAAGAACCTCCCTCGTTT : TATCCTTAGATA : AAAACGAAGGGAGGTTCTTAGGTTGGGTTT
 ||||| ||||| ||||| ||||| |||||
 : TATCTAAGGATA : AAAACGAAGGGAGGTTCTTAGGTTGGGTTT
 : chrV 32646- in inserted CAN1

predicted hairpin intermediate

chrV 25817-1731
 (chrV 32646)
 ▼
 4 nt loop T A GATAttataacctggacccaggca-3'
 4 bp stem T | | | |
 C CTATTTTGCTCCCTCCAAGAATCCAACCAAAGGAGAAACTAATTGCGACGGAAGTG...
 ▲
 (chrV 32635)
 chrV 25817-1720

D. chrV L 25,817-1,529_25,817-1,505 hairpin

observed junction sequence

chrV 32444+ in inserted CAN1:
 AGATTGTGTTAG : TTTAGGGTCATTGTATGGAACTAAA :
 ||||||| ||||| ||||| |||||
AGATTGTGTTAG : TTTAGGGTCATTGTATGGAACTAAA : CTAACACAATCTACTTCCTACGTT
 ||||| ||||| ||||| |||||
 : TTTAGTTCCATACAATGACCCTAAA : CTAACACAATCTACTTCCTACGTT
 : chrV 32444- in inserted CAN1

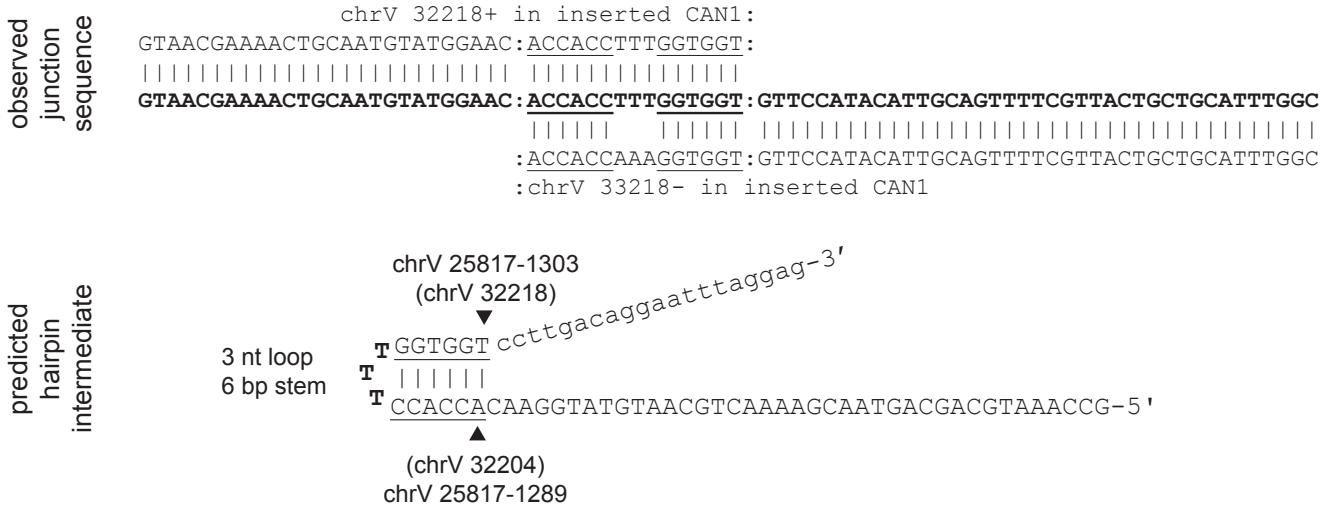
predicted hairpin intermediate

15 nt loop 5 bp stem

chrV 25817-1529
 (chrV 32444)
 ▼
 G T A T G G A chrV 25817-1529
 G A (chrV 32444)
 T A chrV 25817-1529
 T C (chrV 32421)
 A G chrV 25817-1505
 C T (chrV 32421)
 G G chrV 25817-1505

Figure 2 - Source Data 1 (page 3 of 32)

E. chrV L 25,817-1,303_25,817-1,289 hairpin



F. chrV L 25,817-592_25,817-570 hairpin

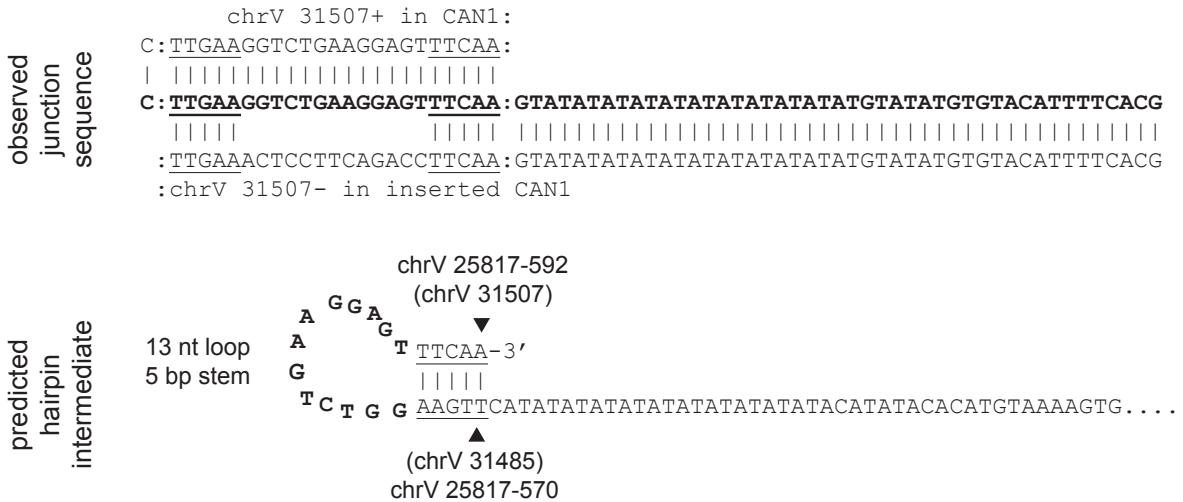


Figure 2 - Source Data 1 (page 4 of 32)

G. chrV L 25,817-568_25,817-546 hairpin

observed junction sequence

chrV 31483+ in inserted CAN1:
GAAAATGTACACATATAACATATATA: TATATATATATATA:
||||| ||||| ||||| ||||| |||||
GAAAAAAACGAGAAAATGTACACATA: TACATATATATATA: TATATGTATATGTGTACATTTCACGCTAATA
||||| ||||| ||||| : TATATATATATATA: TATATGTATATGTGTACATTTCACGCTAATA
:chrV 31483- in inserted CAN1

predicted hairpin intermediate

5 nt loop 9 bp stem

chrV 25817-568 (chrV 31483)
AT ATATATATA ctgaaaggctgtgaaggagtt-3'
T |||||
A T ATATATATAACATACACATGTAAAAGTGCATTATGATTACATATTAATCTTCTATT...
▲
(chrV 31461)
chrV 25817-546

H. chrV L 25,817-43_25,817-20 hairpin

observed junction sequence

CACCACTGAAT GCTAGCACGGCCGCCAGTG: TGCTGGAATT CGCCCTT ACCAGCA:
||||| ||||| ||||| ||||| |||||
CACCACTGAAT GCTAGCACGGCCGCCAGTG: TGCTGGTAAGGGCGAATT CCAGCA: CACTGGCGGCCGTGCTAGC ATTCACTGGTGGTA
||||| ||||| ||||| ||||| : TGCTGGTAAGGGCGAATT CCAGCA: CACTGGCGGCCGTGCTAGC ATTCACTGGTGGTA

starting genome sequence

5' - cgatcaaaaa TGCTGGTAAGGGCGAATT CCAGCACACTGGCGGCCGTGCTAGC ATTCACTGGTGGTAGTTTACGCTCCAAATCTCT-3'
3' - gcttagtttt ACGACC ATCCCGCTTAA AGGTCTGTGACCGCCGGCACGATCG TAAGTGACCACCATCAAATGCGAGGTTTAGAGA-5'

CAN1 insertion

chrV 25817

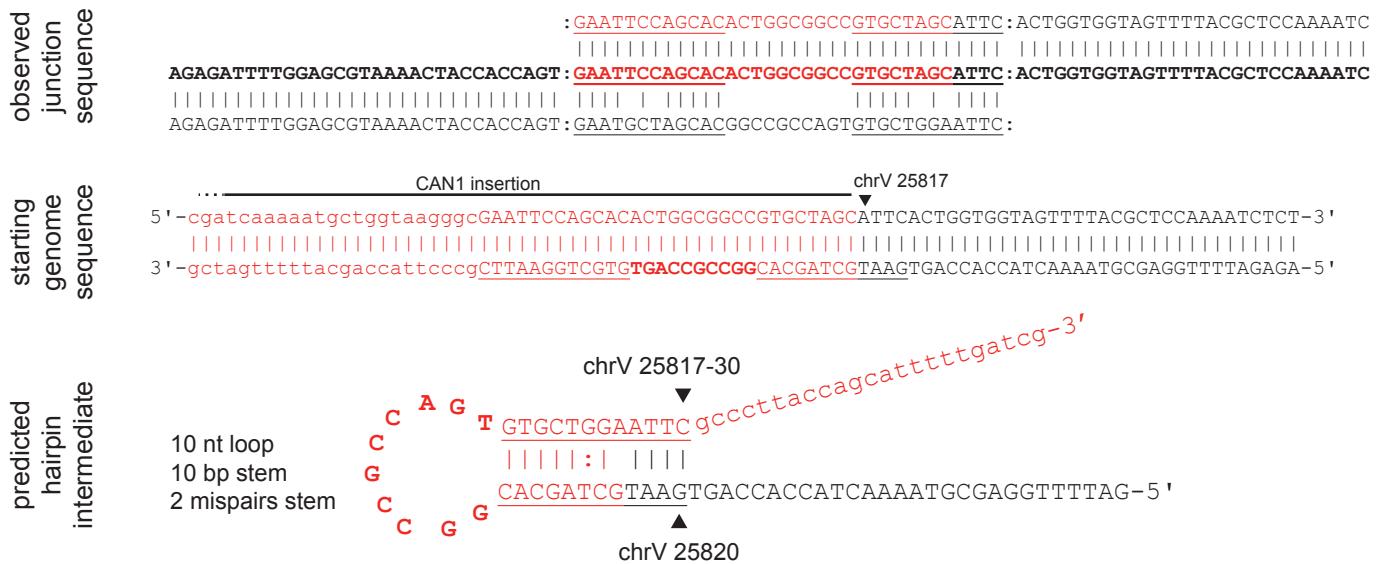
predicted hairpin intermediate

12 nt loop 6 bp stem

chrV 25817-43
C T T A
C C G C
T T A A
CCAGCA tttttgcg-3'
GGTCGTGTGACCGCCGGCACGATCG TAAGTGACCACCATCAA...
chrV 25817-20

Figure 2 - Source Data 1 (page 5 of 32)

I. chrV L 25,817-30_25,820 hairpin



J. chrV L 25,817-25_25,817-14 hairpin

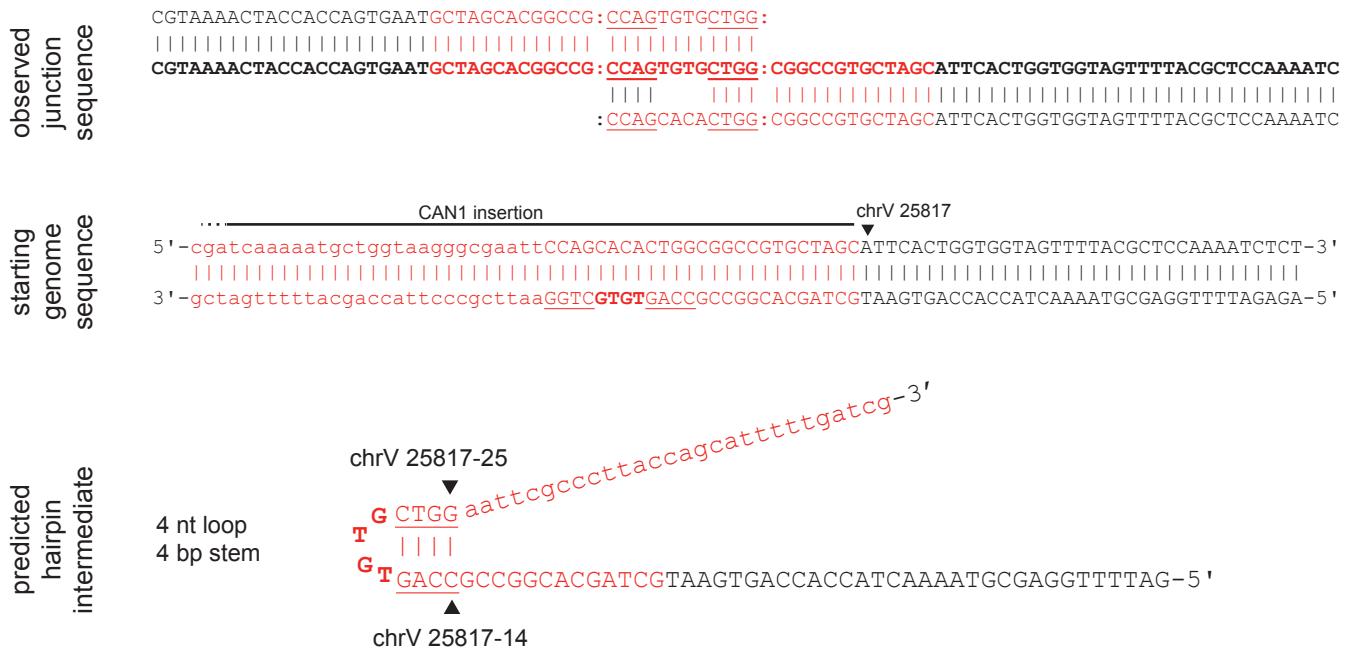
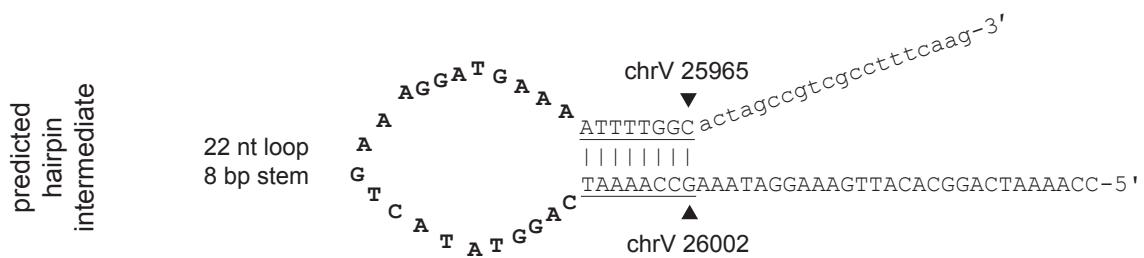


Figure 2 - Source Data 1 (page 6 of 32)

K. chrV L 25,965_26,002 hairpin

observed junction sequence	chrV 25965-: ATAAA:GCCAAAATCAGGTATACTGAAAGGATGAAAATTGGC: ATAAA:GCCAAAAT <u>CAGGTATACTGAAAGGATGAAAATTGGC</u> :TTTATCCTTCATGTGCCTGATTTGGCTTCGTA :GCCAAAAT <u>TTTCATCCTTCAGTATAACCTGATTTGGC</u> :TTTATCCTTCATGTGCCTGATTTGGCTTCGTA :chrV 25965+
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L. chrV L 26,457_26,474 hairpin

observed junction sequence	chrV 26457-: ATGCAATGTACCGCCTGATCATCAGCTGATCGCTTCAGT:GCGATC: ATGCAATGTACCGCCTGATCATCAGCTGATCGCTTCAGT:GCGATC:AGCTGATGATCAGGCAGTACATTGCATACTCTGC :GCGATC:AGCTGATGATCAGGCAGTACATTGCATACTCTGC :chrV 26469+
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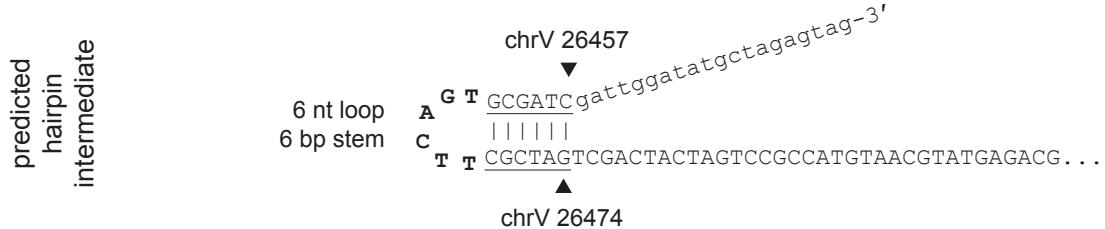
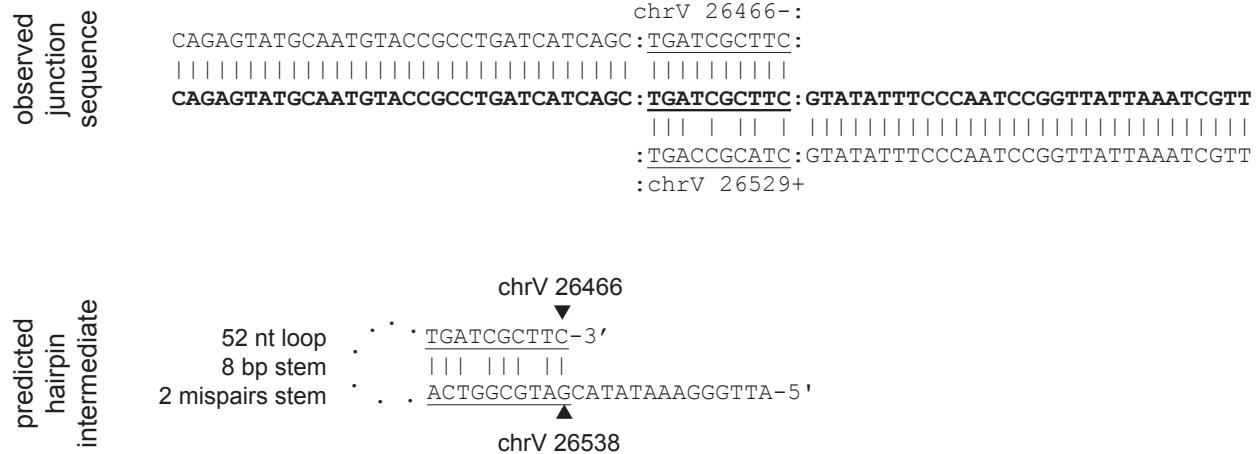


Figure 2 - Source Data 1 (page 7 of 32)

M. chrV L 26,466_26,538 hairpin



N. chrV L 26,572_28,017 hairpin

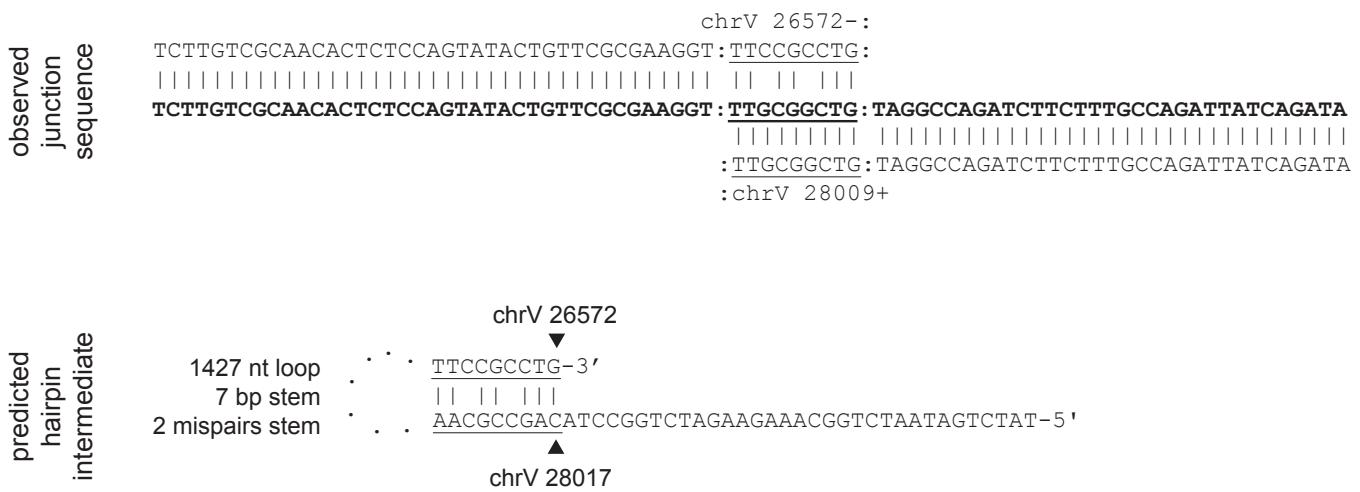
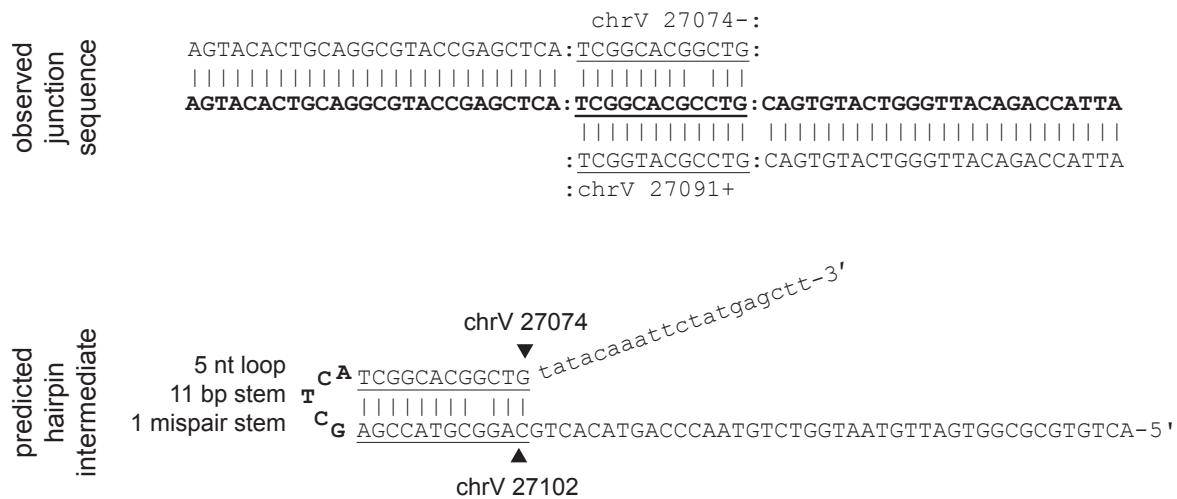


Figure 2 - Source Data 1 (page 8 of 32)

O. chrV L 27,074_27,102 hairpin



P. chrV L 27,348_27,361 hairpin

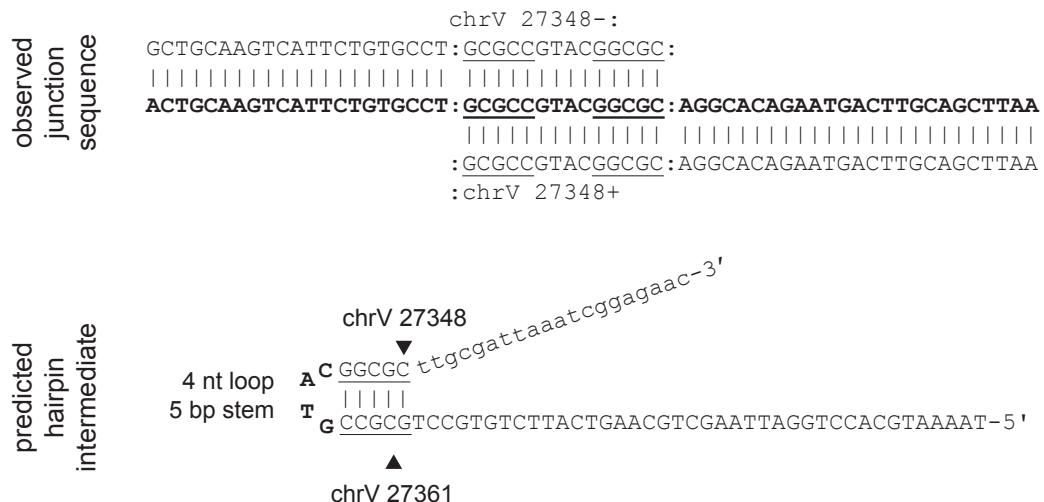
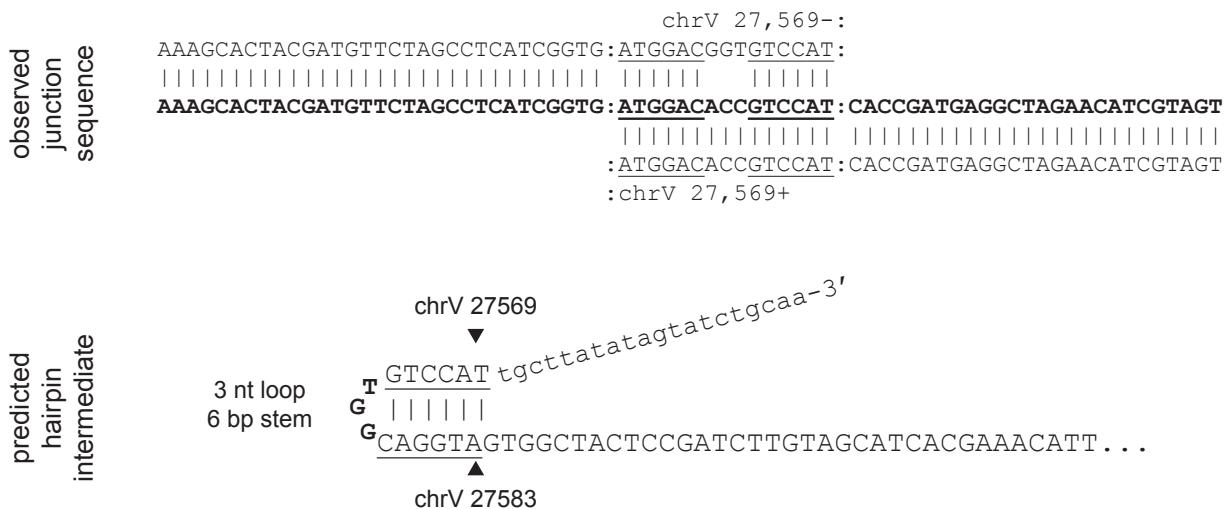


Figure 2 - Source Data 1 (page 9 of 32)

Q. chrV L 27,569_27,583 hairpin



R. chrV L 28,829_28,849 hairpin

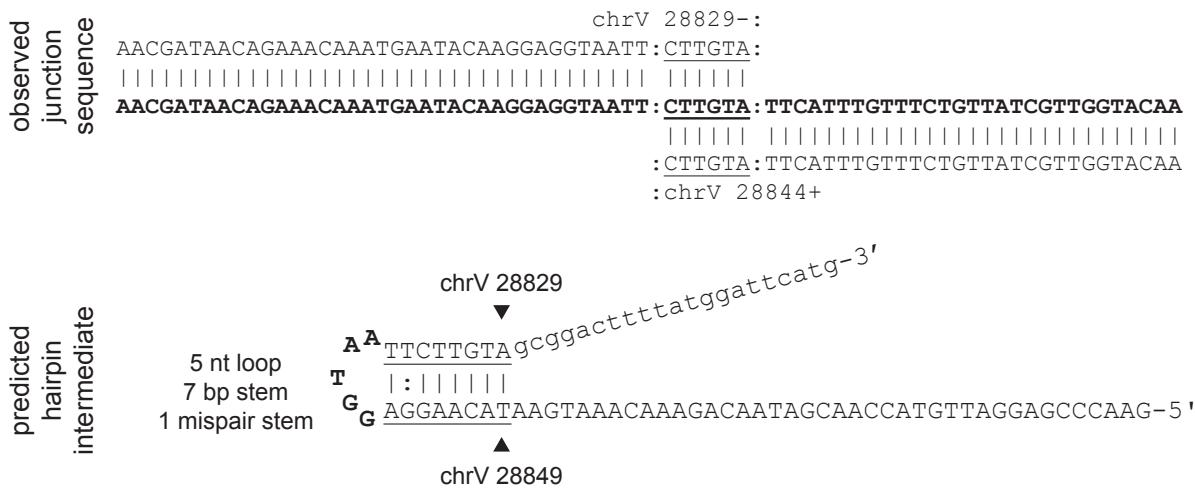
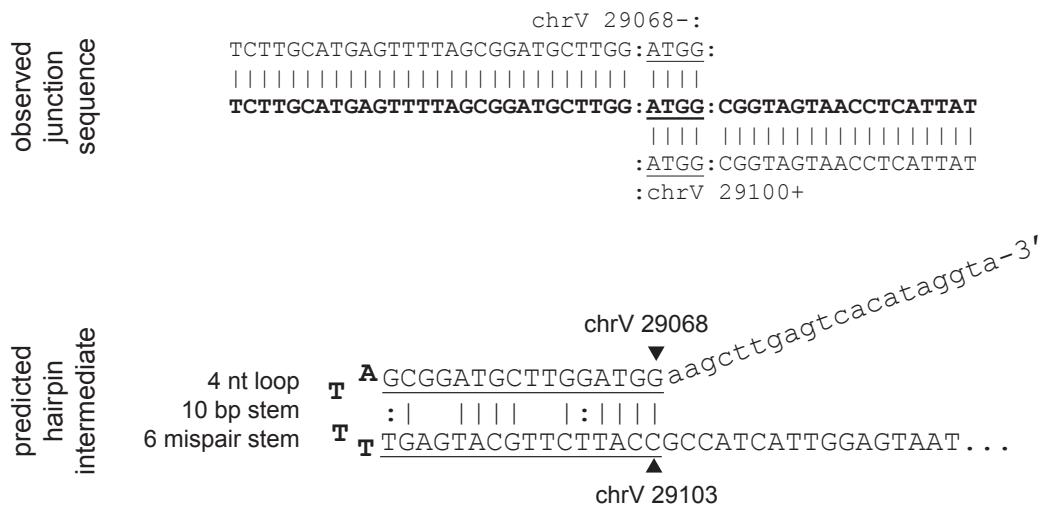


Figure 2 - Source Data 1 (page 10 of 32)

S. chrV L 29,068_29,103 hairpin



T. chrV L 29,418_29,435 hairpin

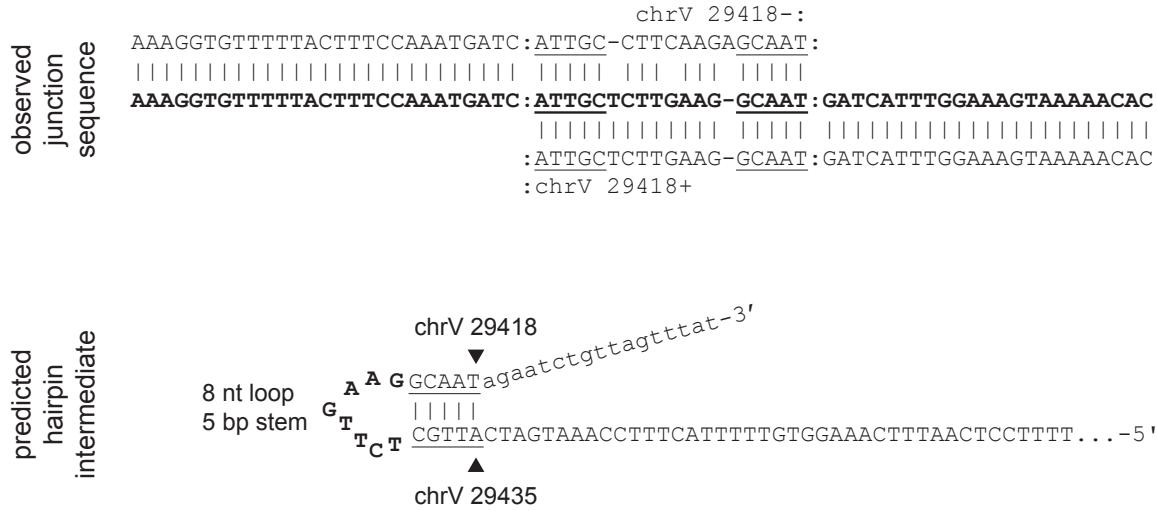
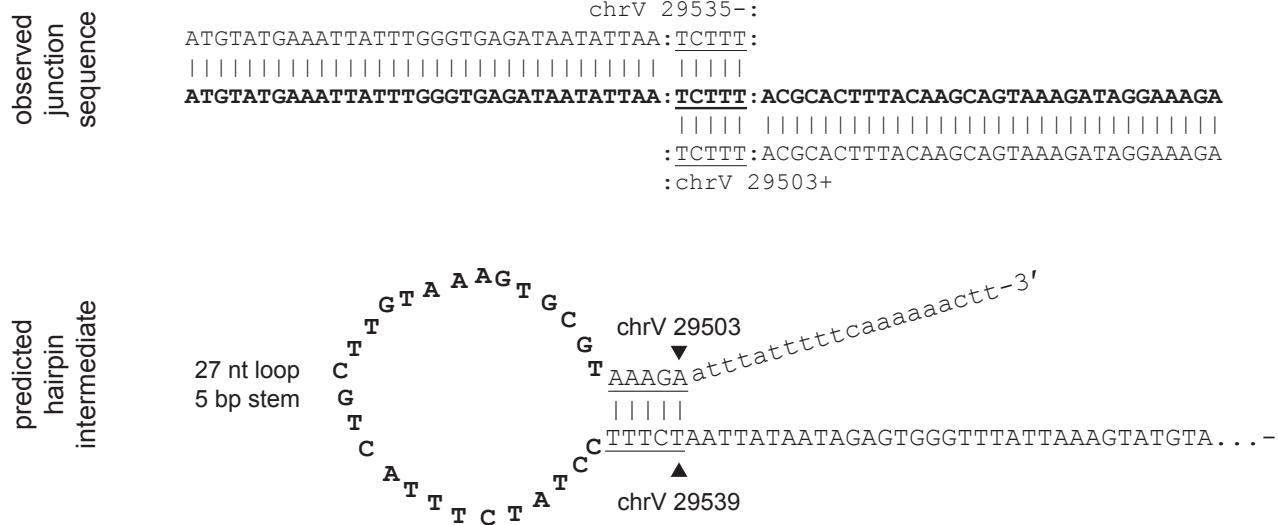


Figure 2 - Source Data 1 (page 11 of 32)

U. chrV L 29,503_29,539 hairpin



V. chrV L 29,513_29,529 hairpin

observed junction sequence

chrV 29513-:
TATTAATCTTCCTATCTTACTGCTT :GTAAAG:
||||| ||||| ||||| |||||
TATTAATCTTCCTATCTTACTGCTT :GTAAAG:ATAGGAAAGATTAATATTATCT
||||| ||||| |||||
:GTAAAG:ATAGGAAAGATTAATATTATCT
:chrV 29524+

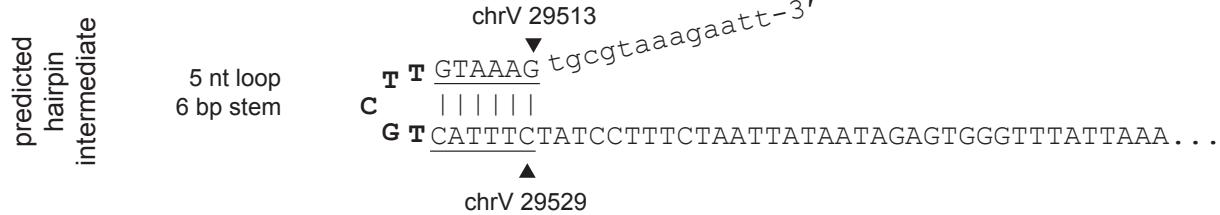
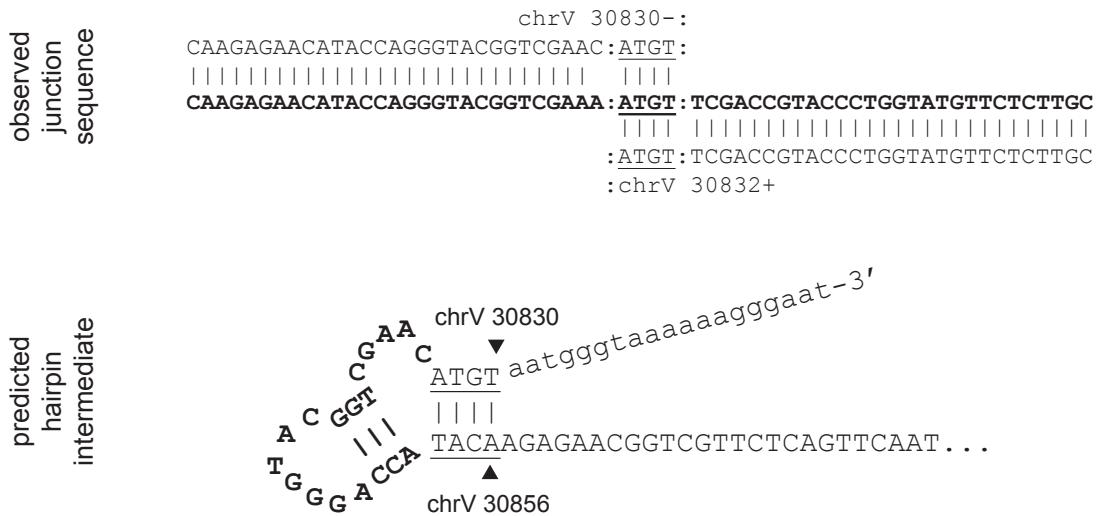


Figure 2 - Source Data 1 (page 12 of 32)

W. chrV L 30,830_30,856 hairpin



X. chrV L 30,857_30,872 hairpin

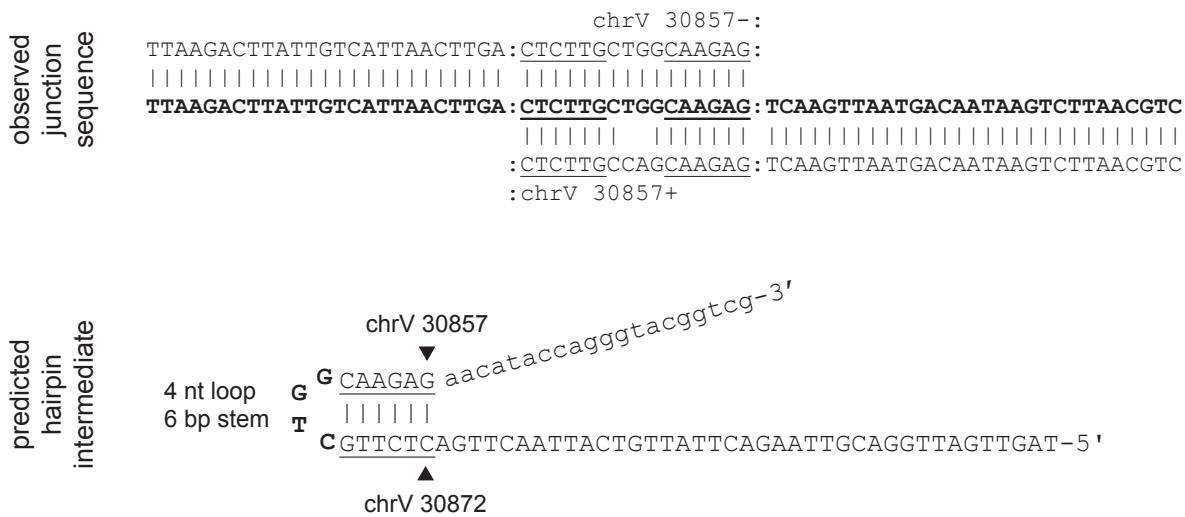


Figure 2 - Source Data 1 (page 13 of 32)

Y. chrV L 34,339-1,219_34,339-501 hairpin

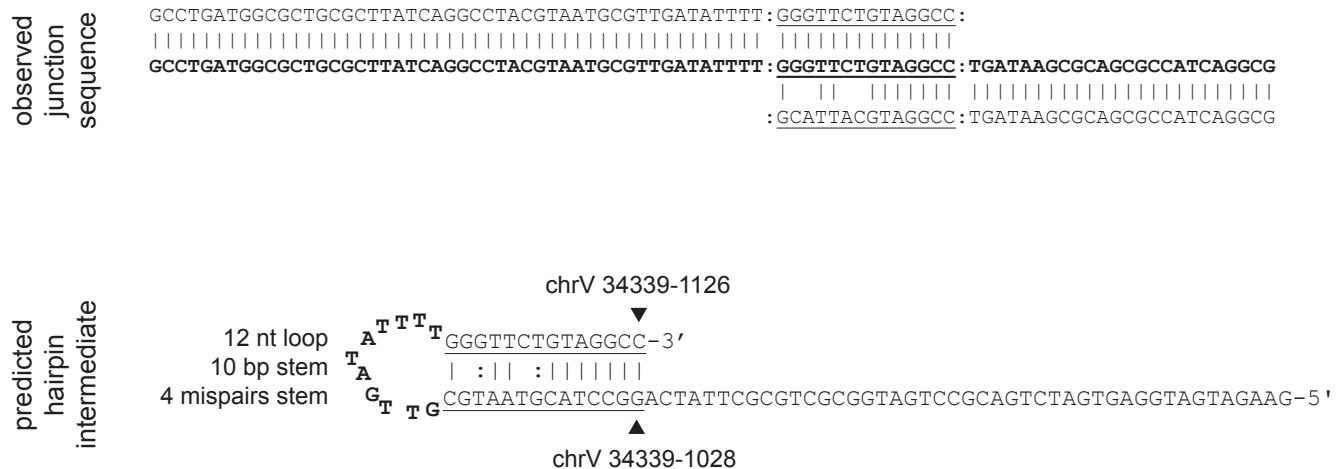


Z. chrV L 34,339-1,211_34,339-1,196 hairpin



Figure 2 - Source Data 1 (page 14 of 32)

AA. chrV L 34,339-1,126_34,339-1,028 hairpin



AB. chrV L 34,339-1,091_34,339-1,066 hairpin

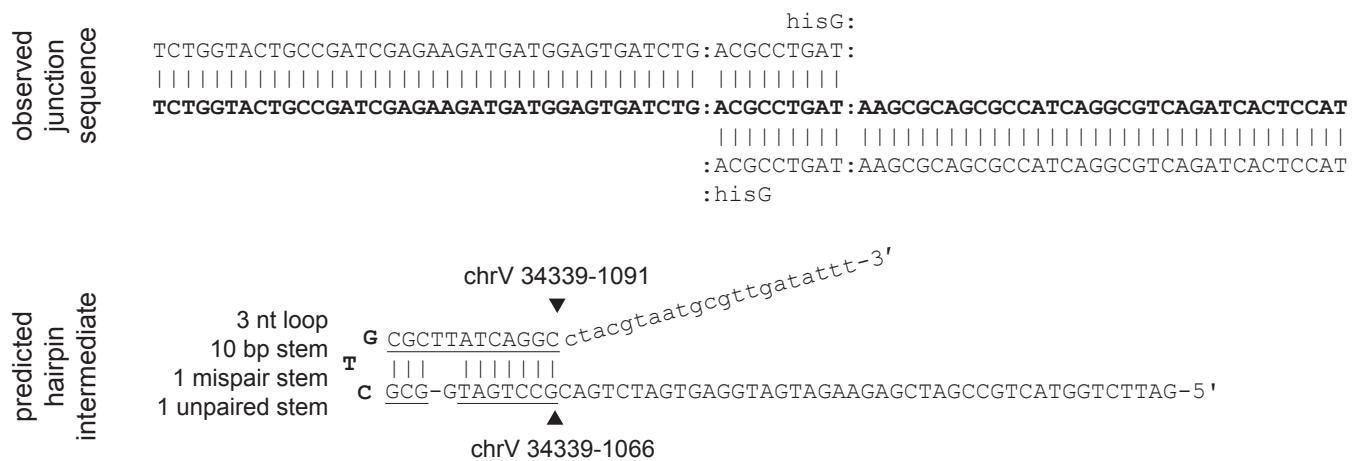
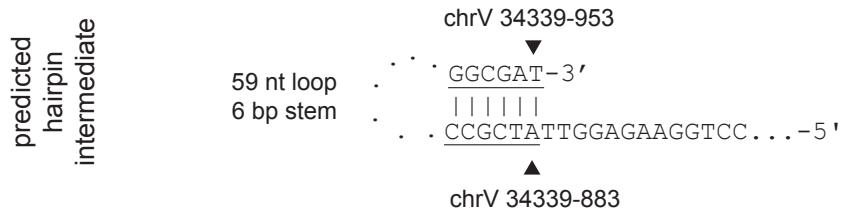


Figure 2 - Source Data 1 (page 15 of 32)

AC. chrV L 34,339-953_34,339-883 hairpin

observed junction sequence	hisG 908+: ACAATTCTGCCGCTGGCAGGCAGCAACAGCGCGT: <u>GGCGAT</u> : ACAATTCTGCCGCTGGCAGGCAGCAACAGCGCGT : <u>GGCGAT</u> : AACCTCTCCAGGC GTTCACTTGGCGCGTG :GGCGAT:AACCTCTCCAGGC GTTCACTTGGCGCGTG :hisG 843-
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AD. chrV L 34,339-931_34,339-919 hairpin

observed junction sequence	hisG: CAGGCGCCGAAAGGCCGACAATTCTGCCGCT: <u>GGCAG</u> : CAGGCGCCGAAAGGCCGACAATTCTGCCGCT : <u>GGCAG</u> : AATTGTCGGCCTTCGGCGCCTGGCAGCAGGG :GGCAG:AATTGTCGGCCTTCGGCGCCTGGCAGCAGGG
----------------------------	--

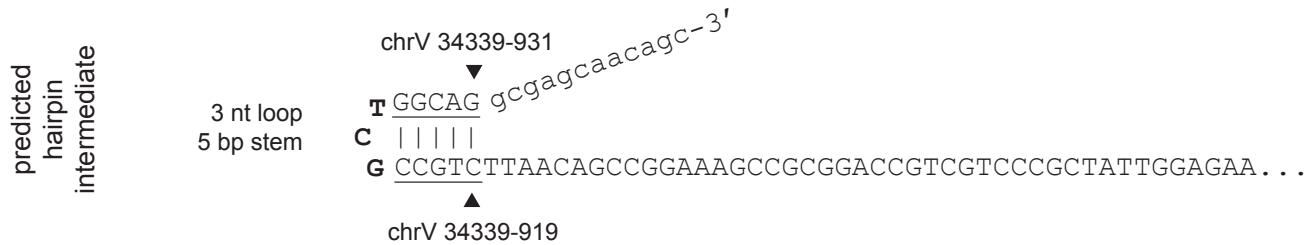
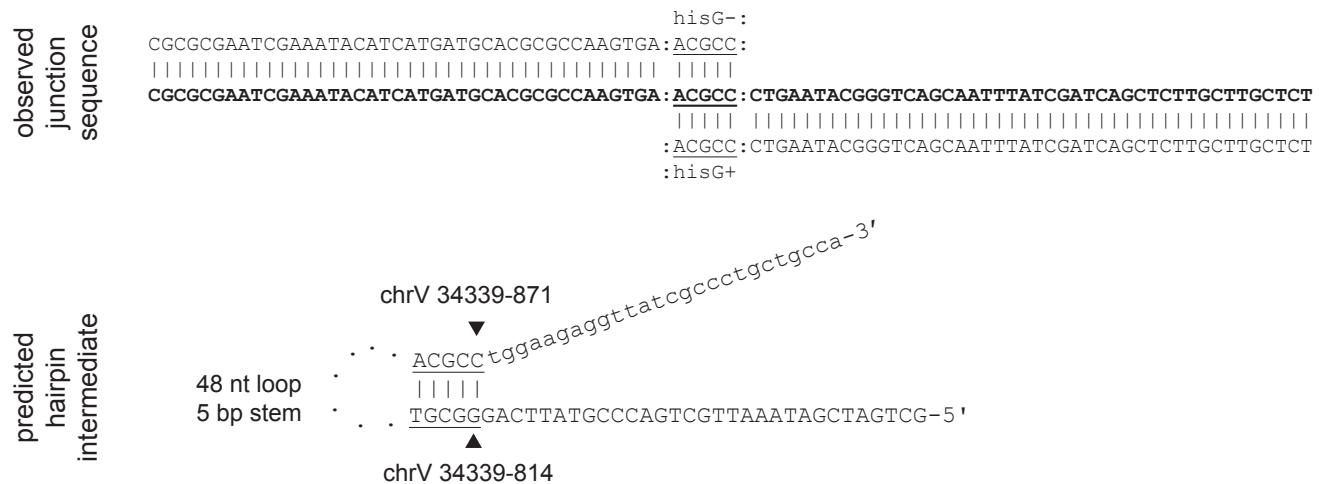


Figure 2 - Source Data 1 (page 16 of 32)

AE. chrV L 34,339-871_34,339-814 hairpin



AF. chrV L 34,339-640_34,339-630 hairpin

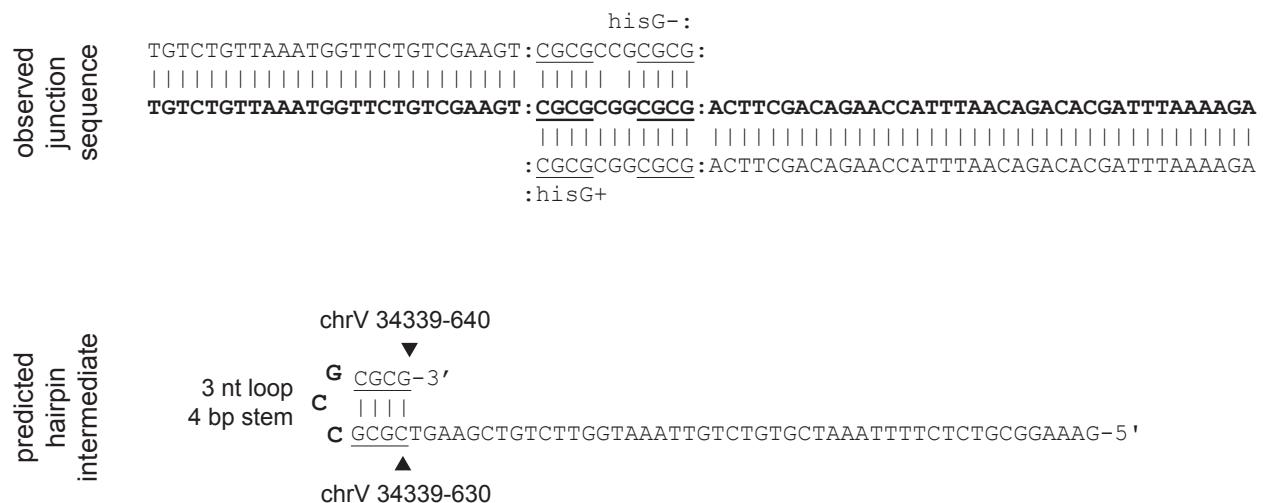
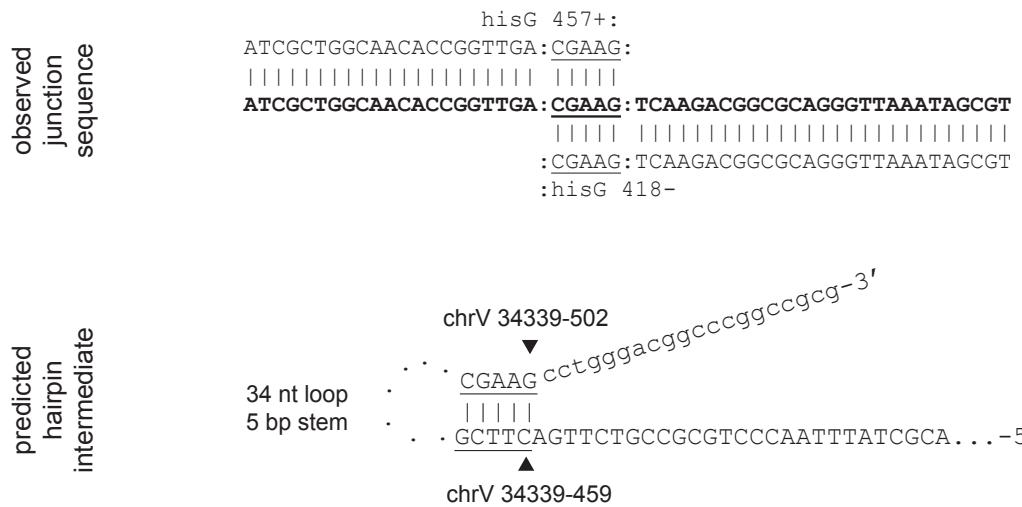


Figure 2 - Source Data 1 (page 17 of 32)

AG. chrV L 34,339-502_34,339-459 hairpin

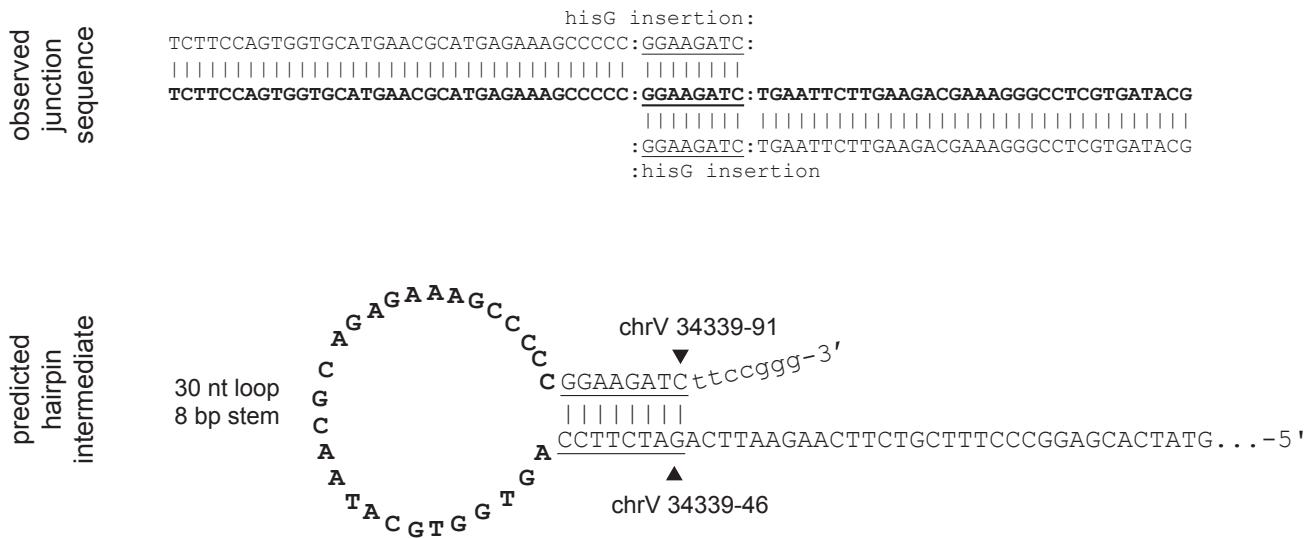


AH. chrV L 34,339-107_34,339-75 hairpin



Figure 2 - Source Data 1 (page 18 of 32)

AI. chrV L 34,339-91_34,338-46 hairpin



AJ. chrV L 34,759_36,909 hairpin

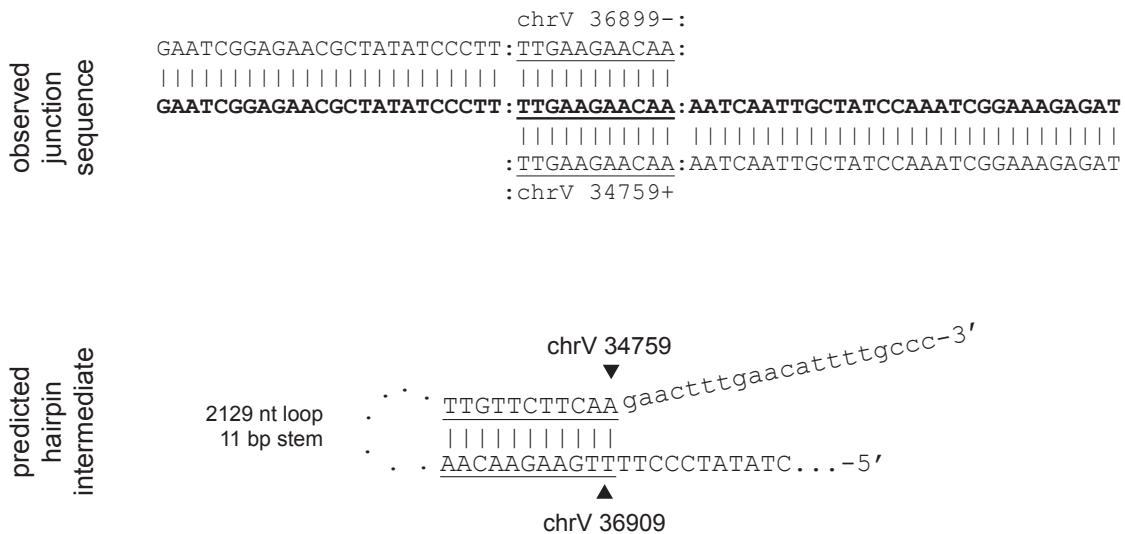
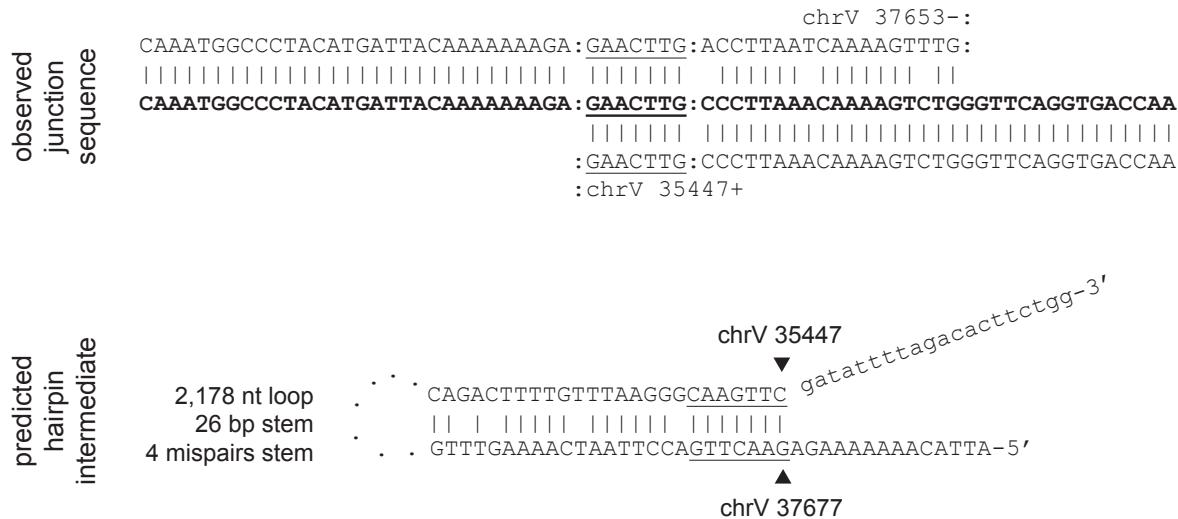


Figure 2 - Source Data 1 (page 19 of 32)

AK. chrV L 35,447_37,677 hairpin



AL. chrV L 35,478_35,494 hairpin

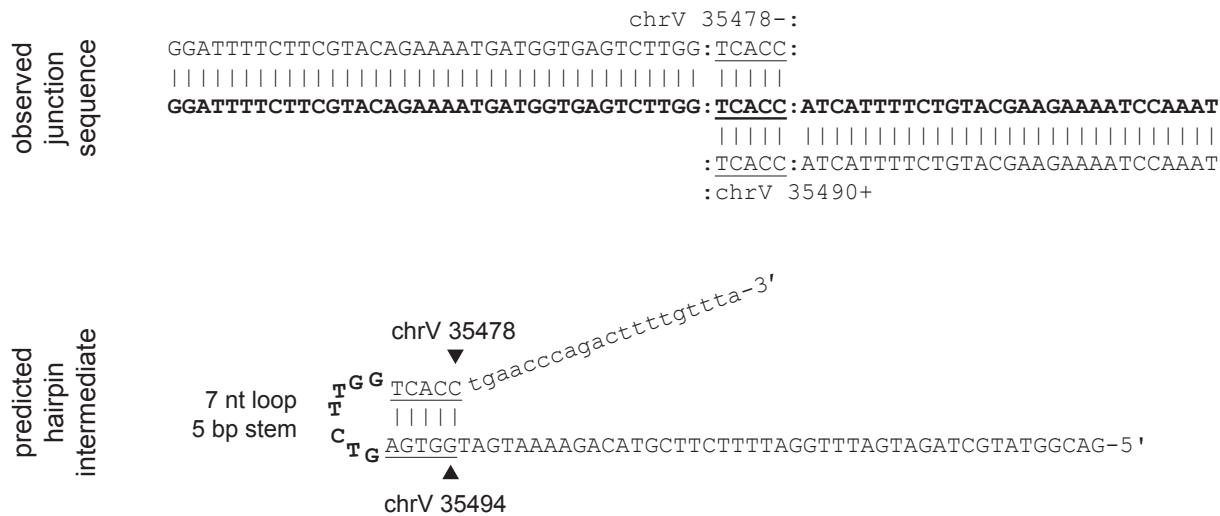
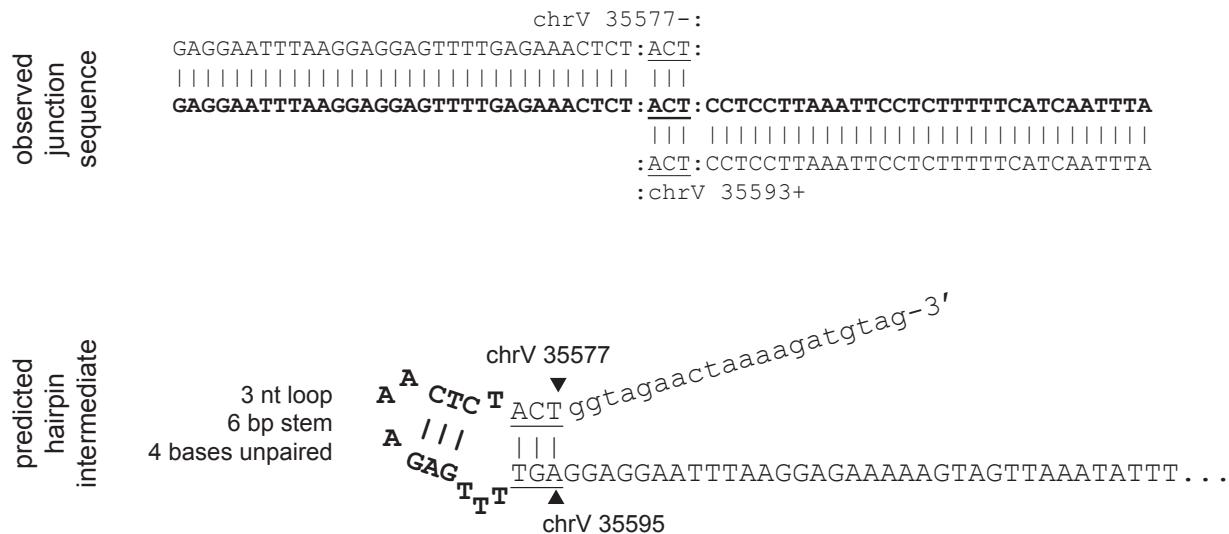


Figure 2 - Source Data 1 (page 20 of 32)

AM. chrV L 35,577_35,595 hairpin



AN. chrV L 35,581_35,596 hairpin

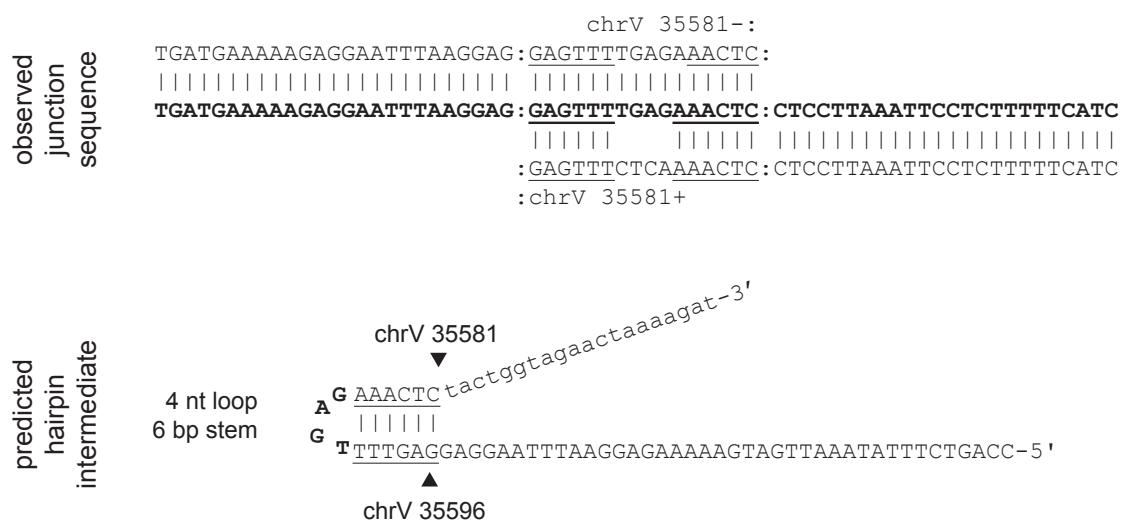


Figure 2 - Source Data 1 (page 21 of 32)

AO. chrV L 35,664_35,725 hairpin

observed junction sequence

```

chrV 35664-:
AATCGGTTACGATTGTTGATGACATGAA:TATTGA:
| | | | | | | | | | | | | | | | | | | | | |
AATCGGTTACGATTGTTGATGACATGAA:TATTGA:CCTTATAGGTCACTTCACAAGGTCAAAC
| | | | | | | | | | | | | | | | | | | | | |
: TATTGA:CCTTATAGGTCACTTCACAAGGTCAAAC
: chrV 35719+

```



AP. chrV L 35,685_35,698 hairpin

observed junction sequence

```

chrV 35694-:
CCTATAAAGGTCAAATAGGCATGATCTTGGTAGG:AATCG:
| | | | | | | | | | | | | | | | | | | | | |
CCTATAAAGGTCAAATAGGCATGATCTTGGTAGG:AATCG:TAACCGATT CCTACCAACAAGATCATGCCTATTG
| | | | | | | | | | | | | | | | | | | | | |
:AATCG:TAACCGATT CCTACCAACAAGATCATGCCTATTG
: chrV 35685+

```

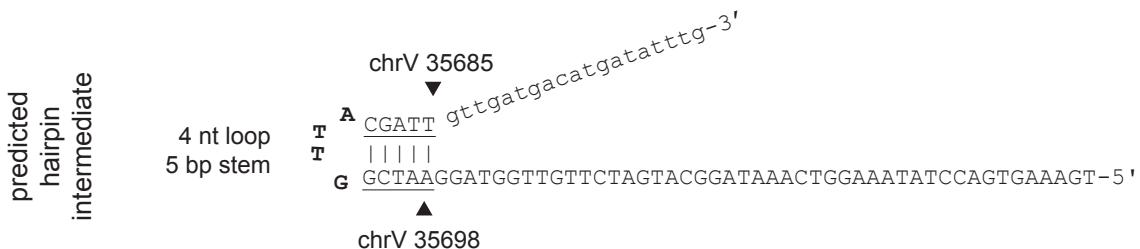
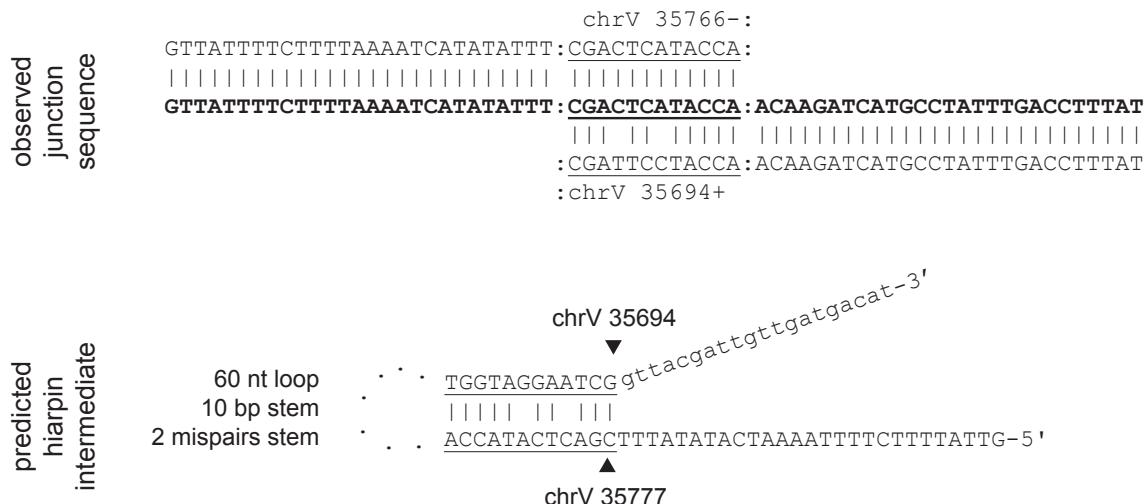


Figure 2 - Source Data 1 (page 22 of 32)

AQ. chrV L 35,694_35,777 hairpin



AR. chrV L 35,721_35,754 hairpin

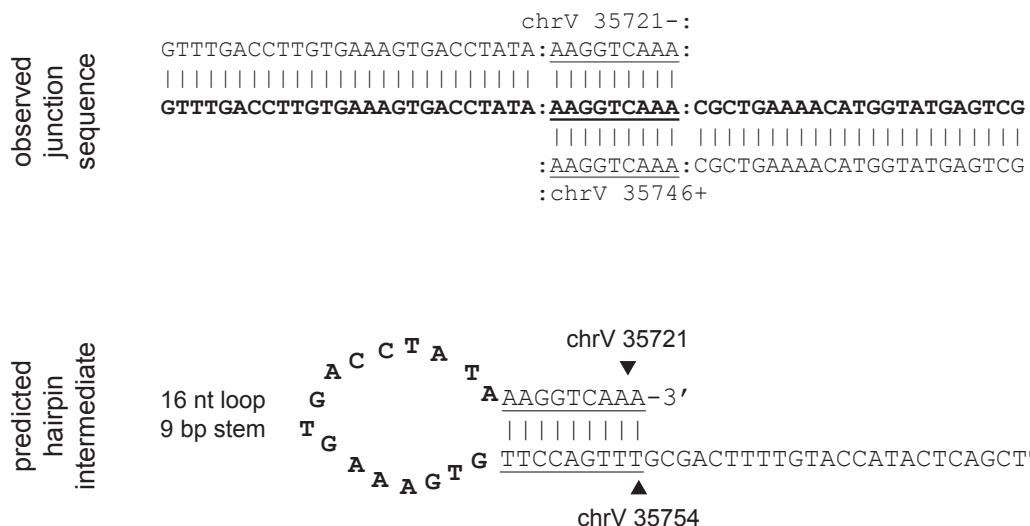
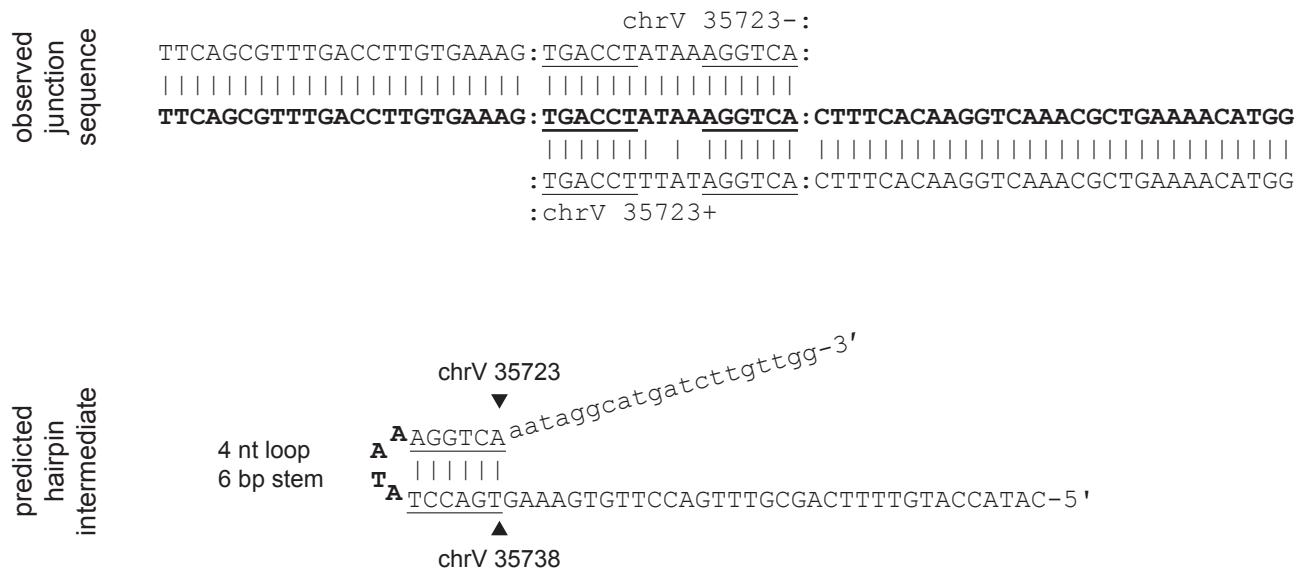


Figure 2 - Source Data 1 (page 23 of 32)

AS. chrV L 35,723_35,738 hairpin



AT. chrV L 35,837_35,872 hairpin

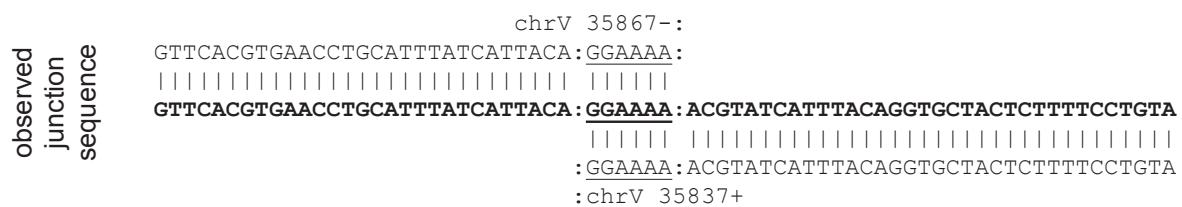
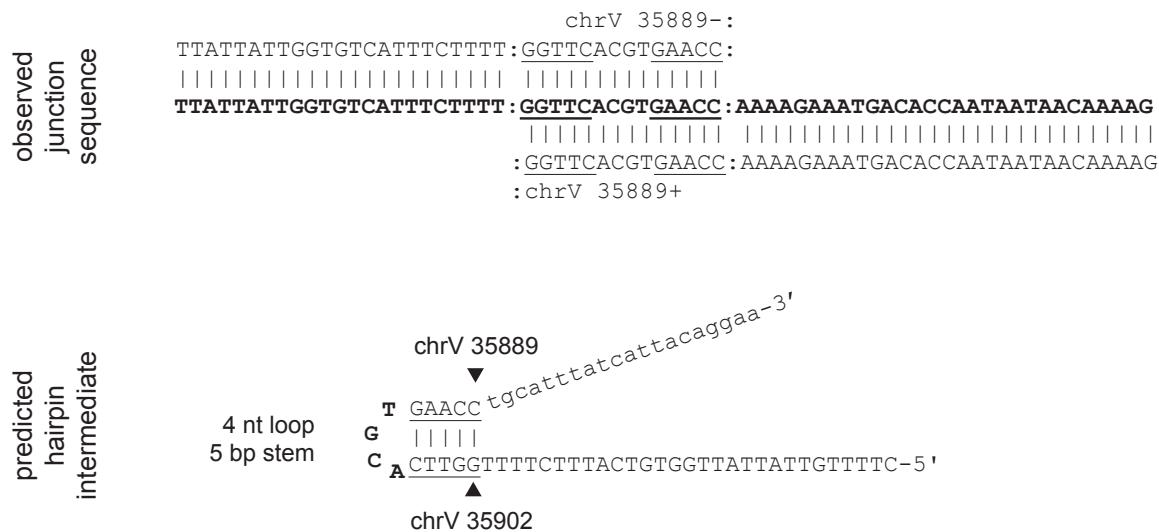


Figure 2 - Source Data 1 (page 24 of 32)

AU. chrV L 35,889_35,902 hairpin



AV. chrV L 37,132_37,150 hairpin

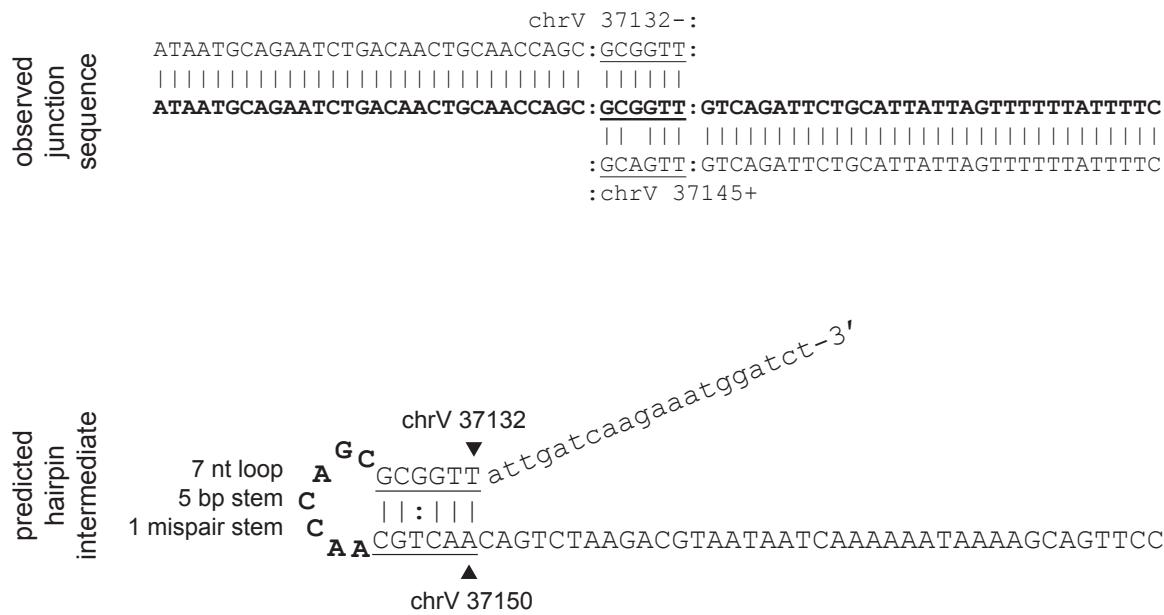
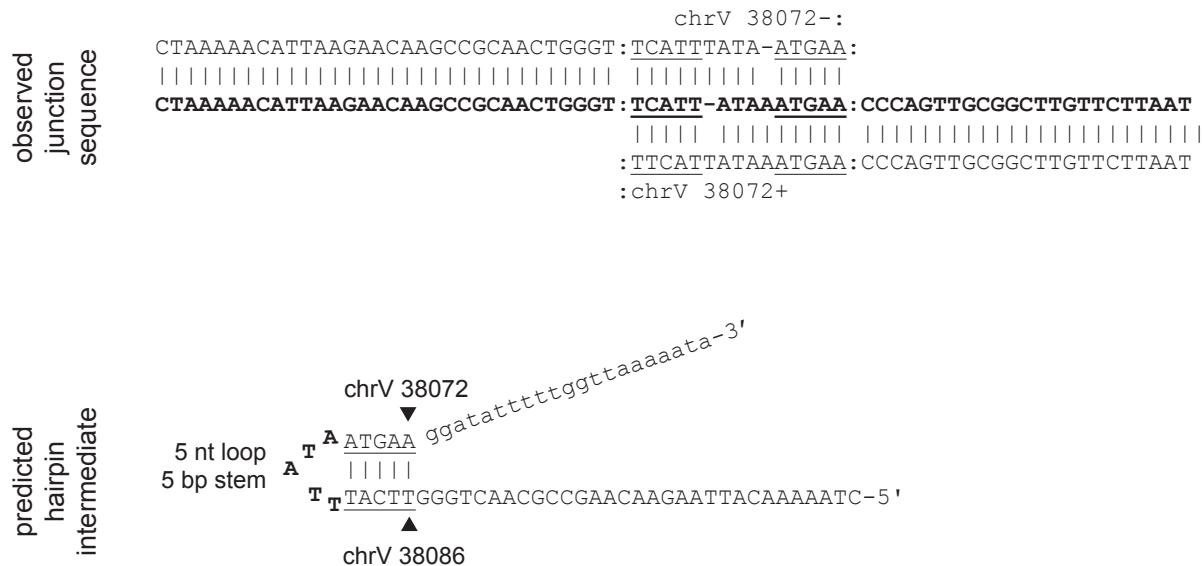


Figure 2 - Source Data 1 (page 25 of 32)

AW. chrV L 38,072_38,086 hairpin



AX. chrV L 38,848_38,871 hairpin

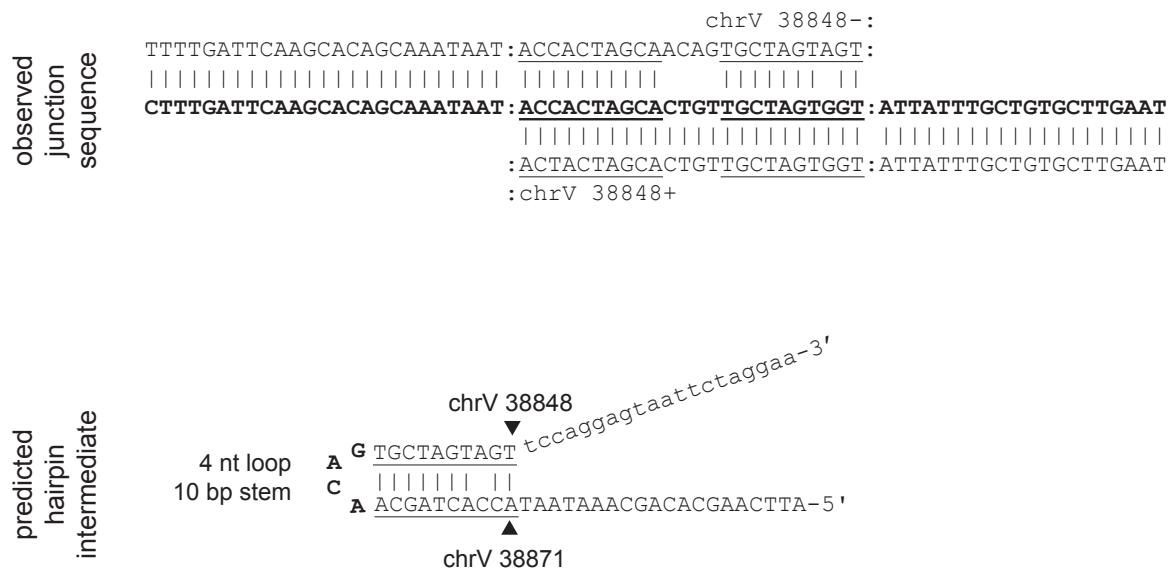
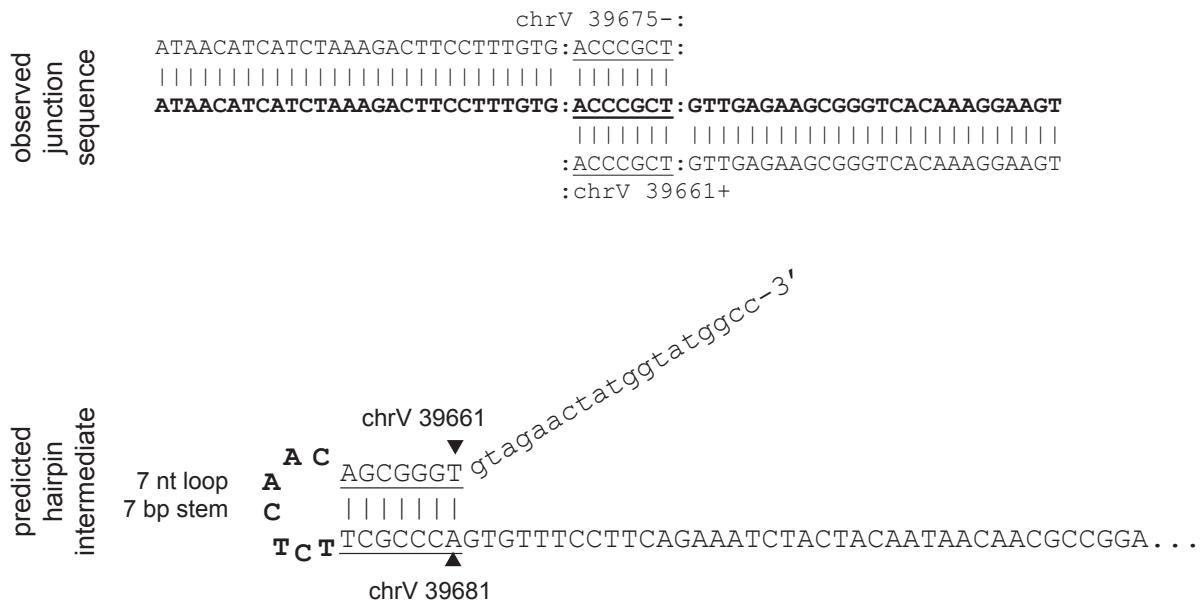


Figure 2 - Source Data 1 (page 26 of 32)

AY. chrV L 39,661_39,681 hairpin



AZ. chrV L 40,281_40,326 hairpin

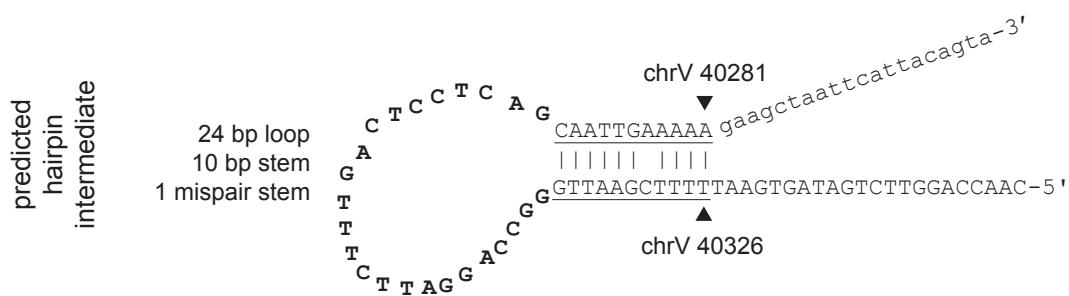
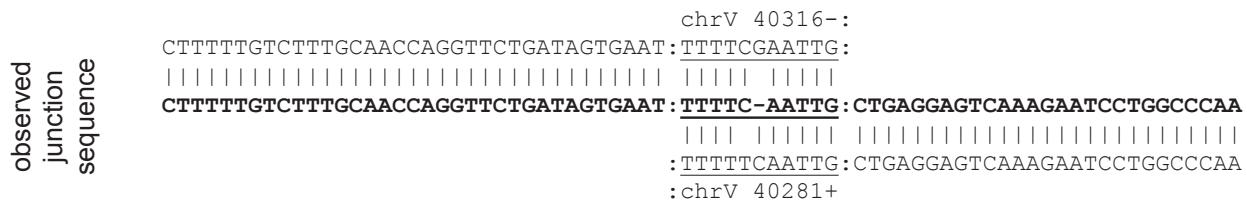
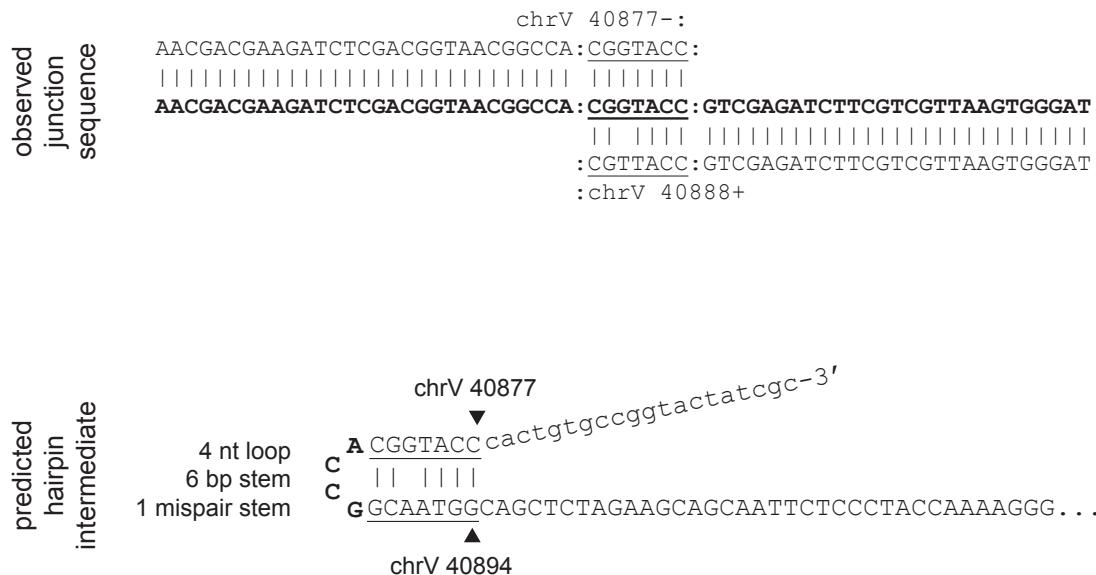


Figure 2 - Source Data 1 (page 27 of 32)

BA. chrV L 40,877_40,894 hairpin



BB. chrV L 40,968_40,983 hairpin

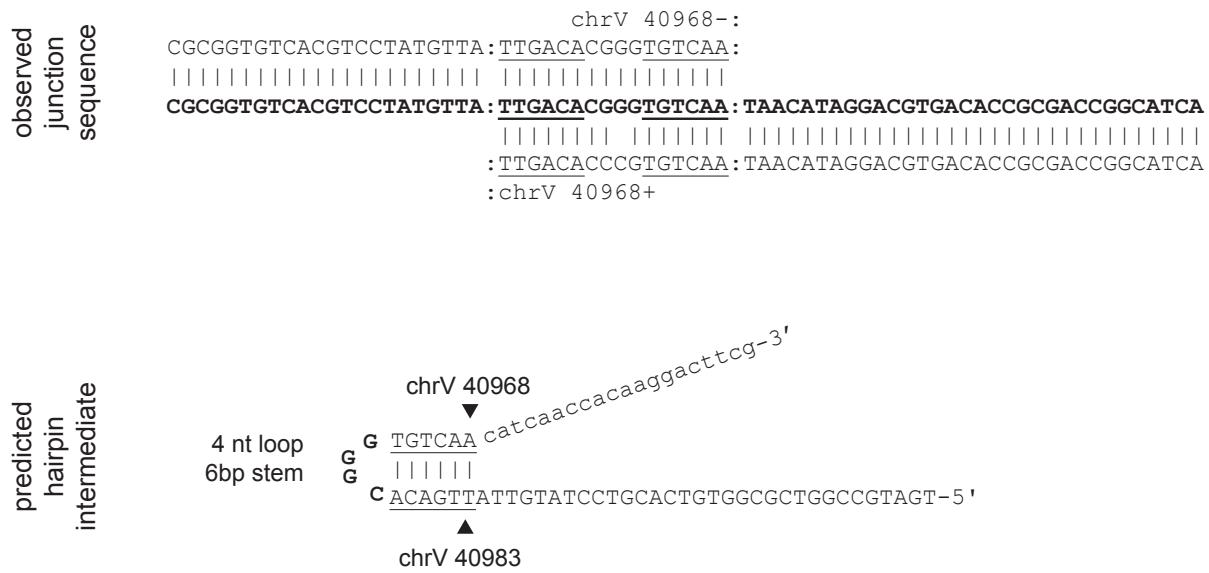


Figure 2 - Source Data 1 (page 28 of 32)

BC. chrV L 40,994_43,019 hairpin

observed junction sequence	chrV 43013-: AATCTGCTAATCGTCAAGTAAGGGTTCT : <u>CGTGACA</u> : AATCTGCTAATCGTCAAGTAAGGGTTCT :<u>CGTGACA</u>: CCGCGACCGGCATCATCATCGTAGAGATACT :CGTGACA: CCGCGACCGGCATCATCATCGTAGAGATACT :chrV 40994+
----------------------------	--

predicted hairpin intermediate	chrV 40994 2013 nt loop 7 bp stem · · · · · <u>TGTCACG</u> tcctatgttatt-3' · · · · · ACAGTGCTTGGGAATGAACGTGCTAATCGT ... -5 ▲ chrV 43019
--------------------------------	---

BD. chrV L 41,350_41,363 hairpin

observed junction sequence	chrV 41350-: GCCCCCTCAAGAAGAGATCGATTTCCACAA : <u>GGAAA</u> : GCCCCCTCAAGAAGAGATCGATTTCCACAA : <u>GGAAA</u> : TCGATCTCTTCTTGAGGGCACCTCTCTGAAGAC :GGAAA: TCGATCTCTTCTTGAGGGCACCTCTCTGAAGAC :chrV 41359+
----------------------------	---

predicted hairpin intermediate	chrV 41350 4 nt loop 5 bp stem A A <u>GGAAA</u> acgtccagcaggcacaactcaa-3' C C <u>CCTTAGCTAGAGAAGAACTCCCCGTGGAGAGAACTTCTGATATTACATC</u> -5' ▲ chrV 41363
--------------------------------	--

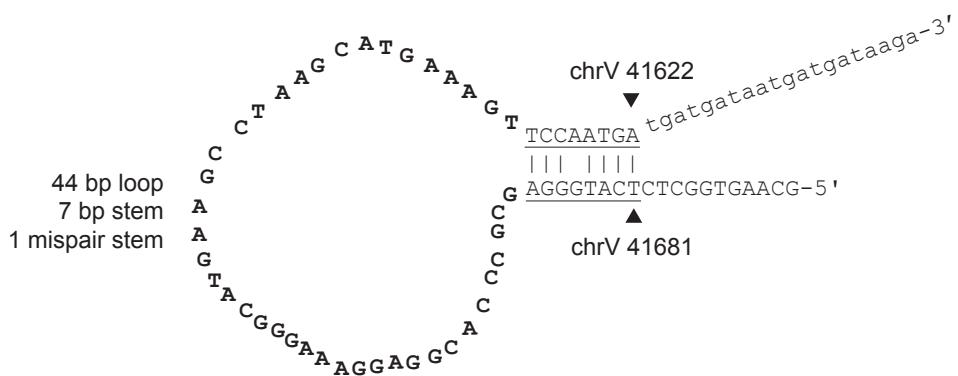
Figure 2 - Source Data 1 (page 29 of 32)

BE. chrV L 41,622_41,681 hairpin

observed junction sequence

chrV 41674-:
 CAACGGTAAACGTGCAAGTGGCTC : TCATGGGA :
 ||||| ||||| ||||| |||||
CAACGGTAAACGTGCAAGTGGCTC : TCATTGGA : ACTTTCATGCTTAGGCTTCATGCCCTT
 ||||| ||||| ||||| |||||
 : TCATTGGA : ACTTTCATGCTTAGGCTTCATGCCCTT
 : chrV 41622+

predicted hairpin intermediate



BF. chrV L 42,277_42,290 hairpin

observed junction sequence

chrV 42277-:
 AGATCAGGTCTGTGCCTACTATGCACTTATG : CCC GG GT CCC CGG :
 ||||| ||||| ||||| |||||
AGATCAGGTCTGTGCCTACTATGCACTTATG : CCC GG G ACC CC CGG : CATAAGTGCATAGTAGGCACAGACC
 ||||| ||||| |||||
 : CCC GG G ACC CC CGG : CATAAGTGCATAGTAGGCACAGACC
 : chrV 42277+

predicted hairpin intermediate

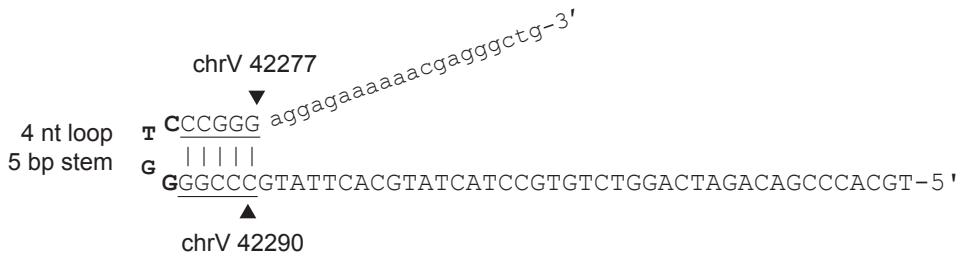
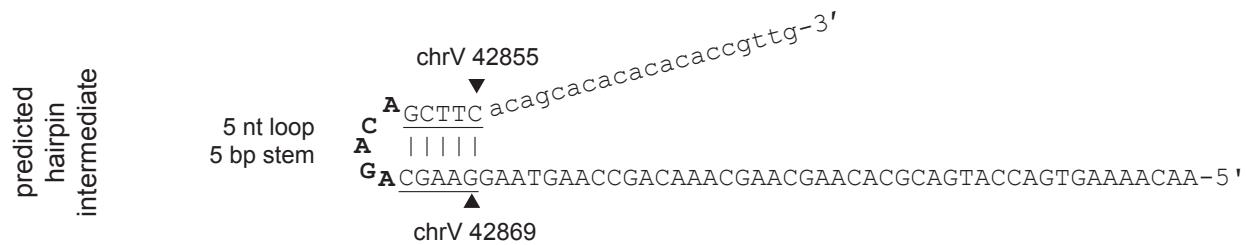


Figure 2 - Source Data 1 (page 30 of 32)

BG. chrV L 42,855_42,869 hairpin

observed junction sequence	chrV 42865-: GCACAAGCAAGCAAACAGCCAAGTAAG: <u>GAAGC</u> : GCACAAGCAAGCAAACAGCCAAGTAAG: <u>GAAGC</u> : TGTCTGCTTCCTTACTTGGCTGTTGCTTGC : <u>GAAGC</u> : TGTCTGCTTCCTTACTTGGCTGTTGCTTGC : chrV 42855+
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BH. chrV L 42,939_42,955 hairpin

observed junction sequence	chrV 42939-: GTCAGATATGCTTAATTTTAACCTGTAGGCTGT:GCCGACA: GTCAGATATGCTTAATTTTAACCTGTAGGCTGT: <u>CCCGACA</u> : GTTAAAAATTAAAGCATATCTGACTGTTTATCT : <u>CCCTACA</u> : GTTAAAAATTAAAGCATATCTGACTGTTTATCT : chrV 42949+
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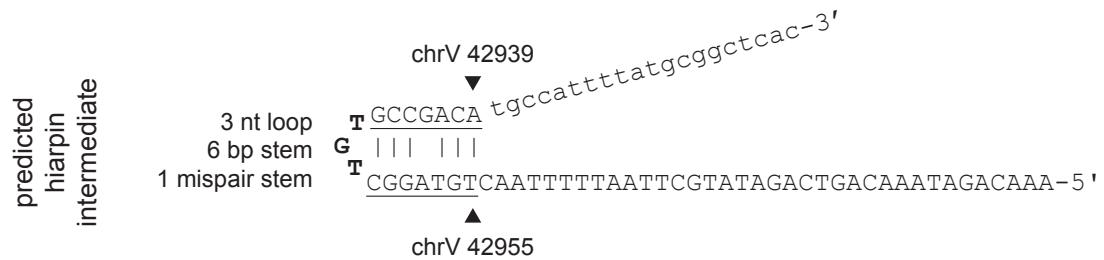
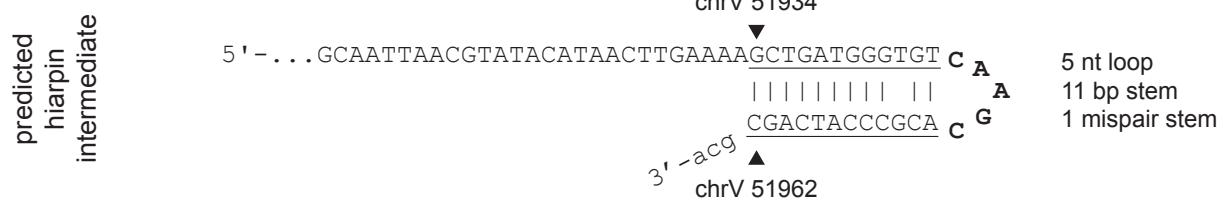


Figure 2 - Source Data 1 (page 31 of 32)

BI. chrV L 51,934_51,962 hairpin

observed junction sequence

chrV 51962+:
TGAAAA : GCTGATGGGTGT-CAAGCACGCCCATCAGC :
||||||| ||||||| ||| ||| ||| ||| ||| |||
TGAAAA : GCTGATGGGTGT-CAAGCACGCCCATCAGC : TTTTCAAGTTATGTATACTTAAATT
||||||| ||| | | | | ||| ||| ||| ||| ||| |||
: GCTGATGGCGTGCTTG-ACACCCATCAGC : TTTTCAAGTTATGTATACTTAAATT
: chrV 51962-



BJ. chrV L 72,380_72,456 hairpin

observed junction sequence

chrV 72456+:
ATCAAGCTTTGAATACGATAA : TGCAAACCACTTAATCAGTGGTTGCA :
||||||| ||| ||| ||| ||| ||| ||| |||
ATCAAGCTTTGAATACGATAA : TGCAAACCACTTAATCAGTGGTTGCA : TTATCGTATTCAAAAGCTTGATC
||||||| | | | | ||| ||| ||| |||
: TGCAAACCACTGATTAAGTGGTTGCA : TTATCGTATTCAAAAGCTTGATC
: chrV 72456-

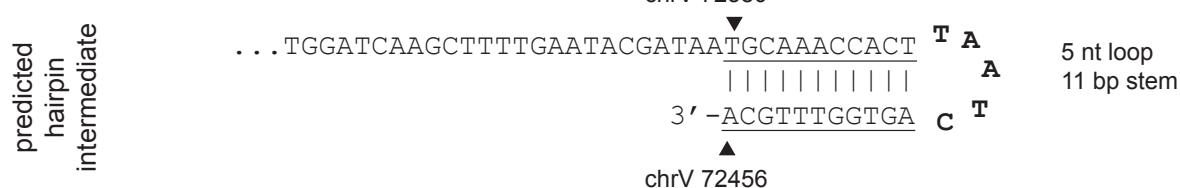


Figure 2 - Source Data 1 (page 32 of 32)

BK. chrV L 84,266_84,283 hairpin

