

Additional file 1. Identification of *TvPirin* full-length cDNA and open reading frame

A. Multiple alignment of 5'RACE, 3'RACE, and full-length cDNA clones of *TvPirin*

Five cDNA clones of the 5'RACE reactions (5'Pirin_#), 6 of the 3'RACE reactions (3'Pirin_#), and 4 of the full-length *TvPirin* (cTvPirin_#) are aligned to identify the open reading frame. Overlapping segments between the RACE clones and the full-length cDNA clones are in blue. The start codon is highlighted with green bold letters and the stop codon in red bold letters.

	1					60
5' Pirin_1	----AAAATT	CCTCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
5' Pirin_3	----AAAATT	CCTCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
5' Pirin_2	----AAAATT	CCTCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
5' Pirin_5	----AAAATT	CATCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
5' Pirin_4	AAAATTCATT	CATCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
3' Pirin_1	-----	-----	-----	-----	-----	-----
3' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_3	-----	-----	-----	-----	-----	-----
3' Pirin_2	-----	-----	-----	-----	-----	-----
3' Pirin_5	-----	-----	-----	-----	-----	-----
3' Pirin_6	-----	-----	-----	-----	-----	-----
cTvPirin_1	-----ATT	CCTCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
cTvPirin_2	-----ATT	CCTCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
cTvPirin_4	-----ATT	CCTCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
cTvPirin_3	-----ATT	CCTCATAAAC	ATCAAATCCC	CAATAATAAA	AAACCCGTCT	TCTCGACGTT
	61					120
5' Pirin_1	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GACTAGTTGC	CAAGAAGATC	TTGGCCAAGT
5' Pirin_3	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GGCTAGTTGC	CAAGAAGATC	TTGGCCAAGT
5' Pirin_2	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GACTAGTTGC	CAAGAAGATC	TTGGCCAAGT
5' Pirin_5	ATATCATCAT	GTCCAGTTTC	CAACAACCCA	GACTAGTTGC	CAAGAAGATC	TTGGCCAAGT
5' Pirin_4	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GACTAGTTGC	CAAGAAGATC	TTGGCCAAGT
3' Pirin_1	-----	-----	-----	-----	-----	-----
3' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_3	-----	-----	-----	-----	-----	-----
3' Pirin_2	-----	-----	-----	-----	-----	-----
3' Pirin_5	-----	-----	-----	-----	-----	-----
3' Pirin_6	-----	-----	-----	-----	-----	-----
cTvPirin_1	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GACTAGTTGC	CAAGAAGATC	TCGGCCAAGT
cTvPirin_2	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GACTAGTTGC	CAAGAAGATC	TTGGCCAAGT
cTvPirin_4	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GACTAGTTGC	CAAGAAGATC	TTGGCCAAGT
cTvPirin_3	ATATCATCAT	GTCCAGTTTC	CAACAGCCCA	GACTAGTTGC	CAAGAAGATC	TTGGCCAAGT
	121					180
5' Pirin_1	CCCAGTCCGA	GGGCGATGGT	GCACTTGTA	GAAGAAGCAT	TGGCAGGCCT	GAGTTGAAGT
5' Pirin_3	CCCAGTCCGA	GGGCGATGGT	GCACTTGTA	GAAGAAGCAT	TGGCAGGCCT	GAGTTGAAGT
5' Pirin_2	CCCAGTCCGA	GGGCGATGGT	GCACTTGTA	GAAGAAGCAT	TGGCAGGCCT	GAGTTGAAGT
5' Pirin_5	CCCAGTCCGA	GGGCGATGGT	GCACTTGTA	GAAGAAGCAT	TGGCAGGCCT	GAGTTGAAGT
5' Pirin_4	CCCAGTCCGA	GGGCGATGGT	GCACTTGTA	GAAGAAGCAT	TGGCAGGCCT	GAGTTGAAGT
3' Pirin_1	-----	-----	-----	-----	-----	-----
3' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_3	-----	-----	-----	-----	-----	-----
3' Pirin_2	-----	-----	-----	-----	-----	-----
3' Pirin_5	-----	-----	-----	-----	-----	-----
3' Pirin_6	-----	-----	-----	-----	-----	-----
cTvPirin_1	CCCAGTCCGA	GGGCGATGGT	GCACTTGTA	GAAGAAGCAT	TGGCAGGCCT	GAGTTGAAGT
cTvPirin_2	CCCAGTCCGA	GGGCGATGGT	GCACTTGTA	GAAGAAGCAT	TGGCAGGCCT	GAGTTGAAGT

cTvPirin_4 CCCAGTCCGA GGGCGATGGT GCACTTGTA GAAGAAGCAT TGGCAGGCCT GAGTTGAAGT
cTvPirin_3 CCCAGTCCGA GGGCGATGGT GCACTTGTA GAAGAAGCAT TGGCAGGCCT GAGTTGAAGT

181

240

5' Pirin_1 CCCTAGATCC ATTTCTCTTG CTAGATGAAT CTGCTGTTAC ACCTCCTGCT GGATTTCTG
5' Pirin_3 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCTGCT GGATTTCTG
5' Pirin_2 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCTGCT GGATTTCTG
5' Pirin_5 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCTGCT GGATTTCTG
5' Pirin_4 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCTGCT GGATTTCTG
3' Pirin_1 -----
3' Pirin_4 -----
3' Pirin_3 -----
3' Pirin_2 -----
3' Pirin_5 -----
3' Pirin_6 -----
cTvPirin_1 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCTGCT GGATTTCTG
cTvPirin_2 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCTGCT GGATTTCTG
cTvPirin_4 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCTGCT GGATTTCTG
cTvPirin_3 CCCTAGATCC ATTTCTCTTG CTAGATGAAT TTGCTGTTAC ACCTCCCGCT GGATTTCTG

241

300

5' Pirin_1 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
5' Pirin_3 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
5' Pirin_2 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
5' Pirin_5 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
5' Pirin_4 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
3' Pirin_1 -----
3' Pirin_4 -----
3' Pirin_3 -----
3' Pirin_2 -----
3' Pirin_5 -----
3' Pirin_6 -----
cTvPirin_1 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
cTvPirin_2 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
cTvPirin_4 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC
cTvPirin_3 ACCATCCTCA CCGAGGCTTT GAGACTGTTA CATATATGTT GCAGGGAGGC GTCACACATC

301

360

5' Pirin_1 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG
5' Pirin_3 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG
5' Pirin_2 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA TGTGCAGTGG ATGACTGCCG
5' Pirin_5 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG
5' Pirin_4 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG
3' Pirin_1 -----
3' Pirin_4 -----
3' Pirin_3 -----
3' Pirin_2 -----
3' Pirin_5 -----
3' Pirin_6 -----
cTvPirin_1 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG
cTvPirin_2 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG
cTvPirin_4 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG
cTvPirin_3 AAGATTTTGC CGGTCATAAG GGCACCATAG GTGCTGGTGA CGTGCAGTGG ATGACTGCCG

361

420

5' Pirin_1 GCAGAGGTAT TGTTCACTCA GAAATGCCCG C-----
5' Pirin_3 GCAGAGGTAT TGTTCACTCA GAAATGCCCG C-----
5' Pirin_2 GCAGAGGTAT TGTTCACTCA GAAATGCCCG C-----
5' Pirin_5 GCAGAGGTAT TGCTCACTCA GAAATGCCCG C-----

5' Pirin_4	GCAGAGGTAT	TGTTCACTCA	GAAATGCCCG	C-----	-----	-----
3' Pirin_1	-----	-----	-----	-----	-----	-----
3' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_3	-----	-----	-----	-----	-----	-----
3' Pirin_2	-----	-----	-----	-----	-----	-----
3' Pirin_5	-----	-----	-----	-----	-----	-----
3' Pirin_6	-----	-----	-----	-----	-----	-----
cTvPirin_1	GCAGAGGTAT	TGTTCACTCA	GAAATGCCCG	CCGGAGAAGG	CACTCACACT	GGTCTCCAAT
cTvPirin_2	GCAGAGGTAT	TGTTCACTTA	GAAATGCCCG	CCGGAGAAGG	CACTCACACT	GGTCTCCAAT
cTvPirin_4	GCAGAGGTAT	TGTTCACTCA	GAAATGCCCG	CCGGAGAAGG	CACTCACACT	GGTCTCCAAT
cTvPirin_3	GCAGAGGTAT	TGTTCACTCA	GAAATGCCCG	CCGGAGAAGG	CACTCACACT	GGTCTCCAAT

421

480

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	-----	-----	-----	-----	-----	-----
3' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_3	-----	-----	-----	-----	-----	-----
3' Pirin_2	-----	-----	-----	-----	-----	-----
3' Pirin_5	-----	-----	-----	-----	-----	-----
3' Pirin_6	-----	-----	-----	-----	-----	-----
cTvPirin_1	TGTGGATCAA	TCTCTCTTCC	AAGGACAAAA	TGATTGAACC	TAGGTATCAA	GAATTGCTGA
cTvPirin_2	TGTGGATCAA	TCTCTCTTCC	AAGGACAAAA	TGATTGAACC	TAGGTATCAA	GAATTGCTGA
cTvPirin_4	TGTGGATCAA	TCTCTCTTCC	AAGGACAAAA	TGATTGAACC	TAGGTATCAA	GAATTGCTGA
cTvPirin_3	TGTGGATCAA	TCTCTCTTCC	AAGGACAAAA	TGATTGAACC	TAGGCATCAA	GAATTGCTGA

481

540

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	-----	-----	-----	-----	-----	-----
3' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_3	-----	-----	-----	-----	-----	-----
3' Pirin_2	-----	-----	-----	-----	-----	-----
3' Pirin_5	-----	-----	-----	-----	-----	-----
3' Pirin_6	-----	-----	-----	-----	-----	-----
cTvPirin_1	GTAATGACAT	CCCCAAATCA	CAAAAAGATG	GGGTTGAAGT	AAAAGTGATC	GCAGGAGAAG
cTvPirin_2	GTAATGACAT	CCCCAAAGCA	CAAAAAGATG	GGGTTGAAGT	AAAAGTGATC	GCAGGAGAAG
cTvPirin_4	GTAATGACAT	CCCCAAAGCA	CAAAAAGATG	GGGTTGAAGT	AAAAGTGGTC	GCAGGAGAAG
cTvPirin_3	GTAATGACAT	CCCCAAAGCA	CAAAAAGATG	GGGTTGAAGT	AAAAGTGATC	GCAGGAGAAG

541

600

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	-----	-----	-----	-----	-----	-----
3' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_3	-----	-----	-----	-----	-----	-----
3' Pirin_2	-----	-----	-----	-----	-----	-----
3' Pirin_5	-----	-----	-----	-----	-----	-----
3' Pirin_6	-----	-----	-----	-----	-----	-----
cTvPirin_1	CAATGGGTGT	TCACTCACAA	GTTTTTCACAC	GAACCCCAAC	AATGTACGTC	GATTTCACTC
cTvPirin_2	CAATGGGTGT	TCACTCACAA	GTTTTTCACAC	GAACCCCAAC	AATGTACGTC	GATTTCACTC

cTvPirin_4	CAATGGGTGT	TCACTCACAA	GTTTTCCCAC	GAACCCCAAC	AATGTACGTC	GATTTCACTC
cTvPirin_3	CAATGGGTGT	TCACCCACAA	GTTTTTCACAC	GAACCCCAAC	AATGTACGTC	GATTTCACTC

601

660

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	-----	-----	-----	-----	-----	G TTTGTGTACA
3' Pirin_4	-----	-----	-----	-----	-----	G TTTGTGTACA
3' Pirin_3	-----	-----	-----	-----	-----	G TTTGTGTACA
3' Pirin_2	-----	-----	-----	-----	-----	G TTTGTGTACA
3' Pirin_5	-----	-----	-----	-----	-----	G TTTGTGTACA
3' Pirin_6	-----	-----	-----	-----	-----	G TTTGTGTACA
cTvPirin_1	TAAAACCAAA	TTCCGAGTAT	CATCAAGGCA	TTCCGGATTC	TTGGAATGCG	TTTGTGTACA
cTvPirin_2	TAAAACCAAA	TTCCGAGTAT	CATCAAGGCA	TTCCGGATTC	TTGGAATGCG	TTTGTGTACA
cTvPirin_4	TAAAACCAAA	TTCCGAGTAT	CATCAAGGCA	TTCCGGATTC	TTGGAATGCG	TTTGTGTACA
cTvPirin_3	TAAAACCAGA	TTCCGAGTAT	CATCAAGGCA	TTCCGGATTC	TTGGAATGCG	TTTGTGTACA

661

720

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
3' Pirin_4	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
3' Pirin_3	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
3' Pirin_2	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
3' Pirin_5	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
3' Pirin_6	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
cTvPirin_1	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
cTvPirin_2	TTATTGAAGG	CGAGGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
cTvPirin_4	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA
cTvPirin_3	TTATTGAAGG	TGAAGGTGTA	TTTGGCATCC	CGAATTCGAA	GCCTGCAGAA	GCTCATCATA

721

780

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
3' Pirin_4	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
3' Pirin_3	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
3' Pirin_2	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
3' Pirin_5	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
3' Pirin_6	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
cTvPirin_1	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
cTvPirin_2	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
cTvPirin_4	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA
cTvPirin_3	TCTTGGTTTT	GGGACCTGGA	GAGGGGCTAA	GTGTGTGGAA	CAAGTTCACA	GAACCATTGA

781

840

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----

5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
3' Pirin_4	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
3' Pirin_3	GGTTTATTTT	GGTAGGCGGA	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
3' Pirin_2	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
3' Pirin_5	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
3' Pirin_6	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
cTvPirin_1	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
cTvPirin_2	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
cTvPirin_4	GGTTTATTTT	GGTATGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG
cTvPirin_3	GGTTTATTTT	GGTAGGCGGG	CAGCCACTGA	ATGAGCCTGT	GGTTCAGCAC	GGTCCGTTTG

841

900

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
3' Pirin_4	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
3' Pirin_3	TGATGAATAC	GCACGCTGAG	ATTGGCAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
3' Pirin_2	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
3' Pirin_5	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
3' Pirin_6	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
cTvPirin_1	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
cTvPirin_2	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
cTvPirin_4	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG
cTvPirin_3	TGATGAATAC	GCACGCTGAG	ATTGACAAAA	CAATGGAAGA	CTATTACTAT	GGCAAGAATG

901

960

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	GTTTCGAGCC	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
3' Pirin_4	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
3' Pirin_3	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
3' Pirin_2	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
3' Pirin_5	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
3' Pirin_6	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATGAGCAA	CTGCTTAGGG
cTvPirin_1	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
cTvPirin_2	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
cTvPirin_4	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG
cTvPirin_3	GTTTCGAGCT	GGCAAAAAAA	TGGAAATCTA	AATGAGCTAC	ATATAAGCAA	CTGCTTAGGG

961

1020

5' Pirin_1	-----	-----	-----	-----	-----	-----
5' Pirin_3	-----	-----	-----	-----	-----	-----
5' Pirin_2	-----	-----	-----	-----	-----	-----
5' Pirin_5	-----	-----	-----	-----	-----	-----
5' Pirin_4	-----	-----	-----	-----	-----	-----
3' Pirin_1	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT
3' Pirin_4	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT
3' Pirin_3	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT
3' Pirin_2	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT
3' Pirin_5	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT
3' Pirin_6	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT
cTvPirin_1	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT
cTvPirin_2	CCCCAAAAGA	ATATTTAGAA	CGTCCATGTT	TTAAAAAGTC	CTTATTTCCA	TTTCATGTCT

cTvPirin_4 CCCCAAAAGA ATATTTAGAA CGTCCATGTT TTAAAAAGTC CTTATTTCCA TTTCATGTCT
cTvPirin_3 CCCCAAAAGA ATATTTAGAA CGTCCATGTT TTAAAAAGTC CTTATTTCCA TTTCATGTCT

1021

1080

5' Pirin_1 -----
5' Pirin_3 -----
5' Pirin_2 -----
5' Pirin_5 -----
5' Pirin_4 -----
3' Pirin_1 TTTTTTTTTT- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
3' Pirin_4 TTTTTTTTTT- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
3' Pirin_3 TTTTTTTTTT- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
3' Pirin_2 TTTTTTTTTT-- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
3' Pirin_5 TTTTTTTTTT-- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
3' Pirin_6 TTTTTTTTTT-- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
cTvPirin_1 TTTTTTTT--- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
cTvPirin_2 TTTTTTTTTT-- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
cTvPirin_4 TTTTTTTTTT-- -GTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA
cTvPirin_3 TTTTTTTTTTTT TTTTTAAAAA ATAAAGATAT AGGAAAATAA ATATGAAGTG AAATGTAATA

1081

1140

5' Pirin_1 -----
5' Pirin_3 -----
5' Pirin_2 -----
5' Pirin_5 -----
5' Pirin_4 -----
3' Pirin_1 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTTAAAA
3' Pirin_4 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGATAAAA
3' Pirin_3 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTTAAAA
3' Pirin_2 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTTAAAA
3' Pirin_5 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTTAAAA
3' Pirin_6 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTTAAAA
cTvPirin_1 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTT----
cTvPirin_2 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTT----
cTvPirin_4 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTT----
cTvPirin_3 CATCTCGTAT TGTGATTTGT GCCATTTATT TTTATTGGAA AGCTTTTGGT TTCGTT----

1141

5' Pirin_1 -----
5' Pirin_3 -----
5' Pirin_2 -----
5' Pirin_5 -----
5' Pirin_4 -----
3' Pirin_1 AAAAAAAA-
3' Pirin_4 AAAAAAAA
3' Pirin_3 AAAAAAAA-
3' Pirin_2 AAAAAAAA
3' Pirin_5 AAAAAAAA
3' Pirin_6 AAAAAAAA-
cTvPirin_1 -----
cTvPirin_2 -----
cTvPirin_4 -----
cTvPirin_3 -----

B. TvPirin deduced protein sequence from the full-length cTvPirin_1 clone

attcctcataaacatcaaatcccccaataataaaaaaacccgtctttctcgacgttatatcatc

atgtccagttttccaacagcccagactagttgccaagaagatctcggccaagtcccagttcc
M S S F Q Q P R L V A K K I S A K S Q S
gagggcgatgggtgcacttgtaagaagaagcattggcaggcctgagttgaagtccttagat
E G D G A L V R R S I G R P E L K S L D
ccatttctcttgctagatgaatttgctgttacacctcctgctggatttcctgaccatcct
P F L L L D E F A V T P P A G F P D H P
caccgaggcctttgagactgttacatatatgttgcagggaggcgtcacacatcaagatfff
H R G F E T V T Y M L Q G G V T H Q D F
gccggtcataagggcaccataggtgctgggtgacgtgcagtgatgactgcccggcagaggt
A G H K G T I G A G D V Q W M T A G R G
attgttcaactcagaaatgcccgcgggagaaggcactcacactgggtctccaattgtggatc
I V H S E M P A G E G T H T G L Q L W I
aatctctcttccaaggcaaaaatgattgaacctaggtatcaagaattgctgagtaatgac
N L S S K D K M I E P R Y Q E L L S N D
atccccaaatcacaaaaagatgggggttgaagtaaaaagtgatcgcaggagaagcaatgggt
I P K S Q K D G V E V K V I A G E A M G
gttcaactcacaagttttcacacgaaccccccaacaatgtacgtcgtatttcaactctaaaacca
V H S Q V F T R T P T M Y V D F T L K P
aattccgagtatcatcaaggcattccggattcttggaatgcgtttgtgtacattattgaa
N S E Y H Q G I P D S W N A F V Y I I E
ggtgaagggtgattttggcatcccgaattcgaagcctgcagaagctcatcatatcttgggt
G E G V F G I P N S K P A E A H H I L V
ttgggacctggagaggggctaagtgtgtggaacaagttcacagaaccattgaggtttatt
L G P G E G L S V W N K F T E P L R F I
ttggtaggcgggcagccactgaatgagcctgtggttcagcacgggtccgtttgtgatgaat
L V G G Q P L N E P V V Q H G P F V M N
acgcacgctgagattgacaaaaacaatggaagactattactatggcaagaatggtttcgag
T H A E I D K T M E D Y Y Y G K N G F E
ctggcaaaaaaatggaaatctaaatgagctacatataagcaactgcttagggccccaaaa
L A K K W K S K -
gaatattttagaacgtccatggttttaaaaagtccttatttccatttcatgtctttttttttg

tttaaaaaataaagatataggaaaaataaatatgaagtgaaatgtaatacatctcgtattg

tgatttgtgccatttattttttattggaaaagcttttggtttcggt