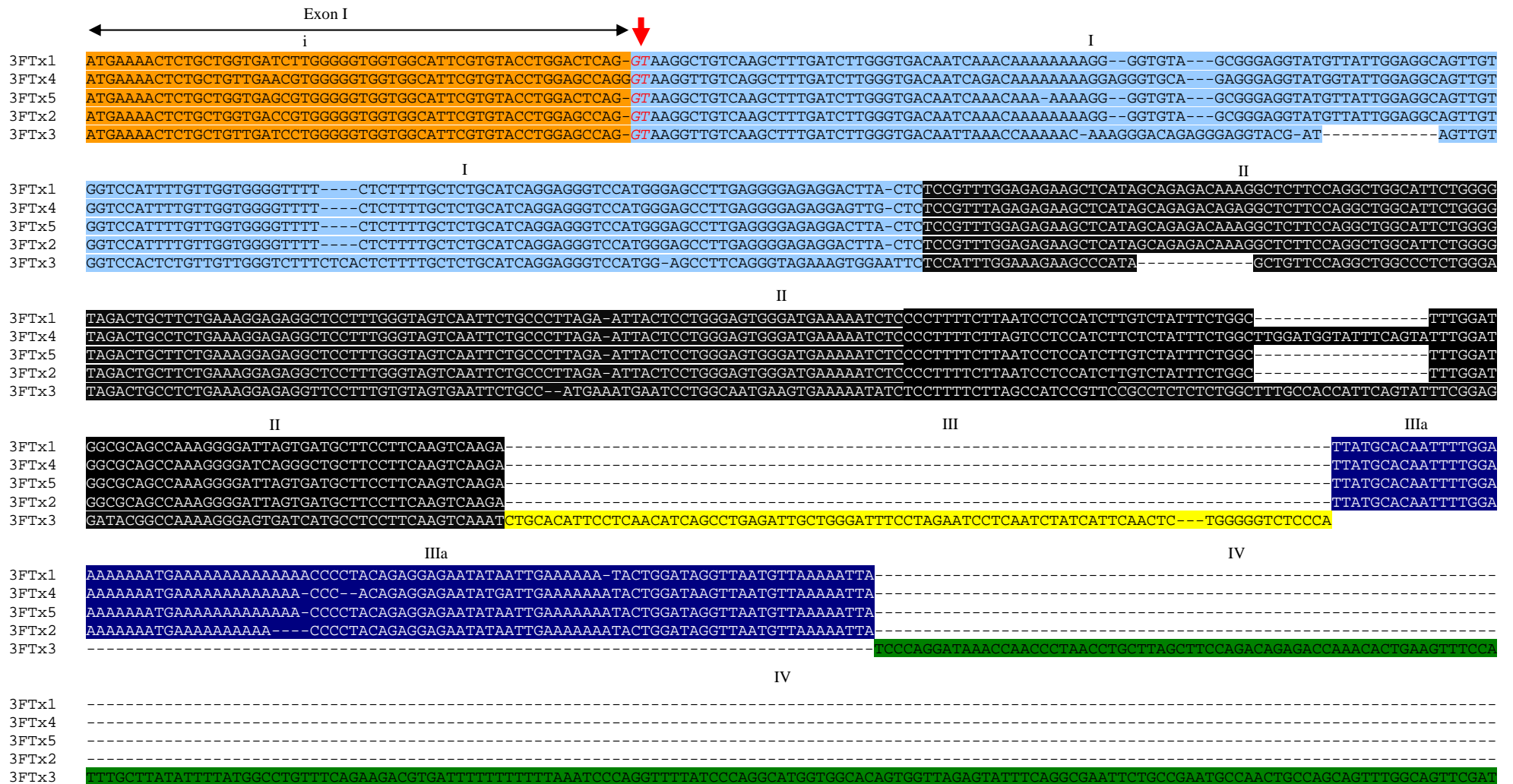


Additional file 2. Comparison of gene structure of *Sistrurus catenatus edwardsii* three-finger toxin genes. Similar color coding is given to segments in introns on the basis of sequence homology with other three-finger gene. Exons are marked by double headed arrows; the intron-exon boundary is marked by thick red color arrows. The segments in exons are numbered as in Figure 5. The pink, blue and red boxes are repeats in intron segment Vd as in Figure 5.







II III IV

3FTx1 -----CGAAAGGGGGCTTGGAGTGGGGAGCCCCATCTG-TCCCAGCAACAGCGTAGACTGGGGGGGAGACAA-TA-----ATGATGAT

3FTx4 -----CGAAAGGGGGCTTGGAGTGGGGAGCCCCATCTG-TCCCAGCAACAGCACAGACTGGGGGGGAGACAA-TAATGATGGTGATGATGATGAT

3FTx5 -----CGAAAGGGGGCTTGGAGTGGGGAGCCCCATCTG-TCCCAGCAACAGCACAGACTGGGGGGGAGACAA-TAATGATGGTGATGATGATGAT

3FTx2 -----CGAAAGGGGGCTTGGAGTGGGGAGCCCCATCTG-TCCCAGCAACAGCACAGACTGGGGGGGAGACAA-GAACAAACAACAAATA-----

3FTx3 CCCCAAATGGGATCCCGACCCACAGGTTGAGAACCCTGGTCTAAGGAGTACAAGGGAAGTGGGCTTCAAATGGGGAGCCCCCTTCCATCCCAACAACAGCACAGATTGGAGGGGGGGG-----

IV

3FTx1 AATGATGATGATAATAATAAAGTTGGAAGGGACCTTGGAGGTCATCTAGTCCAATGC-----CCTGCTCAGGCAGCAAAACCCTATAACCATTTCGGACAAAATGGCT-TCCAGTCTCTTCTTAAAAACTTCCAGTGTGGAGCAT

3FTx4 GATGATGATGATGATGATAAGGTTGGAAGGGAACCTTGGAGGTCATGTAAGTCCA-CC-----CCTGCTCAGGCAGGAAAACCCTATAACCATTGAGTCAAATGGCTGTCCAGTCTCTTCTTAAAAACGTCCAGTGTGGAGCAT

3FTx5 GATGATGATGATGATGATAAAGTTGGAAGGGAACCTTGGAGGTCATGTAAGTCCA-CC-----CCTGCTCAGGCAGGAAAACCCTATAACCATTGAGTCAAATGGCTGTCCAGTCTCTTCTTAAAAACGTCCAGTGTGGAGCAT

3FTx2 AATAATAATAATAATAATAATGTTGGAAGGAACCTTGGAGGTCATCTAGTCCAATCCTACTGCCTGCTCAGGCAGGAC-CCTAGACAATTTGAGACAAA---TGCCAATCTCTTCTTAAAGACCTCCAGTGTGGAGCAT

3FTx3 -----

IV

3FTx1 TCACCTCTTCTGGAGGCAGTG-----GTCCCTGGTTAATTGTCTCTCTGTCAGGAAGTTTCTCCTTAGTTCCAGTTGCTTCTCTCCTTGATCAG-TTCCATCCGTCGCTTCTTGTCTGCCTTTAGGCGCCTTGGAGAAT

3FTx4 TCAGCGCTTCTGGAGGCAAGGCAAGGAGTCCACTGGTTAATTGTCTCTACTGTCAGGAAGTTTCTCCTTAGTTCTAGTTGCTTCTTGCCTTGGTTAATTTCCCTCCATTGCTTCTTGTCTGCCTTCAGGCGCTTTGGAGAAT

3FTx5 TCAGCGCTTCTGGAGGCAAGGCAAGGAGTCCACTGGTTAATTGTCTCTACTGTCAGGAAGTTTCTCCTTAGTTCTAGTTGCTTCTTGCCTTGGTTAATTTCCCTCCATTGCTTCTTGTCTGCCTTCAGGCGCTTTGGAGAAT

3FTx2 TCACCTCTTCTGGAGGCAGTG-----GTCCCTGGTTAATTGTTACAACCTGTCAGGAAGTTTCTCCTTAGTTCTAGTTGCTTCTCTCCTTGATGAGCTTCCATCCATTGCTTCTTGTCTGCCTTCAGGCGCTTTGGAGAAT

3FTx3 -----

IV V

3FTx1 AGCATGACTCCCTCTTCTTTAGAGAAAGGGCGGAGGGAAAGGGGGAGGATTGGGGTGTGTTCTGGAATTGACA-----GAAATTAGATCTCGCACATTAATAATCCAGGAGGGAGGGCATTGCCCTGAGTCAATGTCAGA

3FTx4 AGCTTGACTCCCTCTTCTTTAGAGAAAGGGGTGGAGGAAAAGGGGCAGGACTGGGGGGTGTGTTGACATTGACA-----GAAATTAGATCTTGCACATTAATAATCCAGGAGGGAGGGCATTGCCCCGAGTCAATGTCAGA

3FTx5 AGCTTGACTCCCTCTTCTTTAGAGAAAGGGGTGGAGGAAAAGGGGCAGGACTGGGGGGTGTGTTGACATTGACA-----GAAATTAGATCTTGCACATTAATAATCCAGGAGGGAGGGCATTGCCCCGAGTCAATGTCAGA

3FTx2 AGCTTGACTCCCTCTTCTTTAGAGAAAGGGGTGGAGGAAAAGGGGCAGGACTGGGGGTGTGTTGACATTGACA-----GAAATTAGATCTCGCACATTAATAATCCAGGAGGGAGGGCATTGCCCCGAGTCAATGTCAGA

3FTx3 -----CTTCTTTAGAGAAAGGGGGAGAGAATGGCTGGGAGAGGTGTGGTATTATTGACATTGGATTAAGCCATGAAATTGGATTAAGC-CATGAAATAATCCAGGAGGGAGGGCATTGCCCCGAGTCAATGTCAGA

V

3FTx1 AACACAGGACTTTCCCCAGAGAAAGGGGAAAAGTTTCCCTTTTATTTATTTACTCCTGAGTATTCCTAGAGGAGGAAAAGAGGTCTGCCTTCCCCTGGGAGGGGAATCCACCAATGTGTTAAAAGTGGGTTTACCATT

3FTx4 AACACGGGACTTTCCCCAGAGATAT-----CTTTTTTATTTATTTGCTCCTGAGTATTCCTAGAGGAGGAAAAGAGGTCCGCCTTCCCCTGNGAGGGGAATCCACCGATGTGTTAAAAGTGGCTTTACCATT

3FTx5 AACACGGGACTTTCCCCAGAGATAT-----CTTTTTTATTTATTTGCTCCTGAGTATTCCTAGAGGAGGAAAAGAGGTCCGCCTTCCCCTGGGAGGGGAATCCACCGATGTGTTAAAAGTGGCTTTACCATT

3FTx2 AACACGGGACTTTCCCCAGAGATAT-----CTTTTTTATTTATTTACTCCTGAGTATTCCTAGAGGAGGAAAAGAGGTCCGCCTTCCCCTGGGAGGGGAATCCACCGATGTGTTAAAAGTGGCTTTACCATT

3FTx3 AACACGGGACTTTCTCCACAGATAT-----CTTTTTTATTTATTTACTCCTGAGTATTCCTAGAGGAGGAAAAGAGGTCCGCCTTCCCCTGGGAGGGGAATCCACCGATGTGTTAAAAGTGGCTTTACCATT

v Exon III

3FTx1 TGTTCAAGCCACAGCCCCAGATCTGTCTTTGGCATTTTTAAAAAATATCATTCTGCTTTGTGTTTCCT-TCACAGTACTGAAGATCGAAAAGGGATGTACTACAAATTCACCTCAGACTTGGACAGAT-----AAATGTTG

3FTx4 TGTTCAAGCCACAGCCCCAGATCTGTCTTTT-----AATAGTCAATCTGCTTTGTGTTTCCT-TCACAGTACTGAAGATCGAAAAGGGATGTACTACAAATTCACCTCAGACTTGGACAGAT-----AAATGTTG

3FTx5 TGTTCAAGCCACAGCCCCAGATCTGTCTTTT-----AATAGTCAATCTGCTTTGTGTTTCCT-TCACAGTACTGAAGATCGAAAAGGGATGTACTACAAATTCACCTCAGACTTGGACAGAT-----AAATGTTG

3FTx2 TGTTCAAGCCACAGCCCCAGATCTGTCTTTT-----AATAGTCAATCTGCTTTGTGTTTCCT-TCACAGTAAATGAATATCGAAAAGGGATGTACTGCAAATTCACCTCCGAATGCGCAAAC-----AAGTGTG

3FTx3 TGTTCAAGCCACAGCCCCAGATCTGTCTTTGGCATTTT-----AATAATATTCTGCTTTGTGTTTCCT-TCACAGGAAGGAGGTACACCAGGGGATGTGCCGAGCTTGCCTTAATCCGGTTGGCAATGAGAAAGTTCTGTGTTG

i ii iii

Exon III

iii

3FTx1 CCGAGACAGACAAAGTGCAACTTTATTTGA

3FTx4 CCGAGACAGACAAAGTGCAACTTTATTTGA

3FTx5 CCGAGACAAACAAAGTGCAACATTTATTTGA

3FTx2 CCAAGACAAAC-CTGTGCAACGC---TTAG

3FTx3 GTGTAACAGAC-AACTGCAACAA---ATAG