Supporting Information

Figure Legends for Supporting Information

Fig. S1. Multiple amino acid alignments among tissue-type (*A*) and venom-type (*B*) VEGFs.

Identical residues with *Vaa*-VEGF-A_{166} (*A*) and barietin (*B*) are shaded and conserved cysteine residues are highlighted in black. Putative signal peptides and possessed sequences are shown in *italic-style lowercase*. The numbers at the top refer to residue numbers of Hs-VEGF-A_{165} (A) and barietin (B) respectively. The secondary structural elements are shown as arrows for β-strands and cylinders for α-helices, and loops are labeled. C-terminal putative coreceptor-binding regions are boxed with dotted lines, and the reported heparin-binding sequences are marked with underlines. *B*, The six residues which are predicted to form a basic cluster in barietin are in bold letters. Note that the sequences of HF and ICPP are shown as mature proteins, because the cDNAs encoding HF and ICPP have not been reported (29,30).

Fig. S2. Nucleotide sequences of tissue- and venom-type VEGF genes from *T. flavoviridis*

A. Nucleotide sequence of tissue-type VEGF gene from *T. flavoviridis* (*Tf*-VEGF-A). Sequences of exons and introns are shown in bold capitals and lowercase, respectively.

B. Nucleotide sequence of venom-type VEGF gene from *T. flavoviridis* (*Tf*-svVEGF). Additive sequences that are only seen in the venom-type VEGF gene are shaded in gray.

C. Sequence alignment of introns of genes encoding tissue- and venom-type VEGFs from *Trimeresurus flavoviridis.* Identical nucleotides between tissue- and venom-type genes are shaded in gray.

Fig. S3. Sequence alignment of amino acids and nucleotides of tissue- and venom-type VEGFs from *Trimeresurus flavoviridis*

Identical nucleotides between tissue- and venom-type VEGF cDNAs are shaded in gray. The amino acid sequence of tissue-type (*Tf*-VEGF-A) is shown at the top, and that of venom-type (*Tf*-svVEGF) is on the bottom. Each exon is divided with a vertical bar, and numbered with Roman numerals. -; gap.

Fig. S4. Characterization of barietin, novel venom-type VEGF from the venom of *Bitis arietans*

***A*,** Purification of barietin, novel venom-type VEGF from the venom of *Bitis arietans.* Barietin was purified by using three steps of chromatography: Superdex 200-pg gel-filtration, Q Sepharose High Performance, and Hi-Trap Heparin FPLC columns. Figure S4*A* shows a chromatogram of heparin affinity chromatography, the final step of purification. The fractions containing barietin were determined by anti-vammin antiserum reactivity (●), indicated with a *bar* on the top. SDS-PAGE (10% acrylamide) of purified barietin, with or without reducing agent, is indicated by *R* or *NR*.

B, Amino acid sequence deduced from the nucleotide sequence encoding barietin. Putative signal peptide and propeptide are indicated in lowercase italics. The numbers at the top refer to residue numbers of purified barietin. The determined internal amino acid residues by amino acid analysis are indicated with lines and arrows. K: endoprotease Lys-C; *D*: endoprotease Asp-N.

C, ***D***, The molecular masses of purified barietin (*C*) and peptide-K2 (*D*) as analyzed by MALDI-TOF MS (average ± SD, *n*=3).

Fig. S5. Multiple alignment of cDNA sequences encoding venom-type VEGFs

Conserved nucleotides among cDNAs are shaded in light (UTR) and dark gray (ORF), and the initial-codon (ATG) and stop-codon (TGA) are highlighted in black. The number on the left indicates nucleotides starting at the initial-codon. Each exon is divided with a vertical bar, and numbered with Roman numerals (*I* to *VI*). The nucleotide sequence of the 3'-UTR of *Tf*-svVEGF cDNA (10) was determined in this study. The complete sequences of 5’- and 3’-UTRs of Pm-VEGF cDNA have been not reported (11). -; gap. Gaps in the C-terminal tail-coding region are highlighted in yellow.

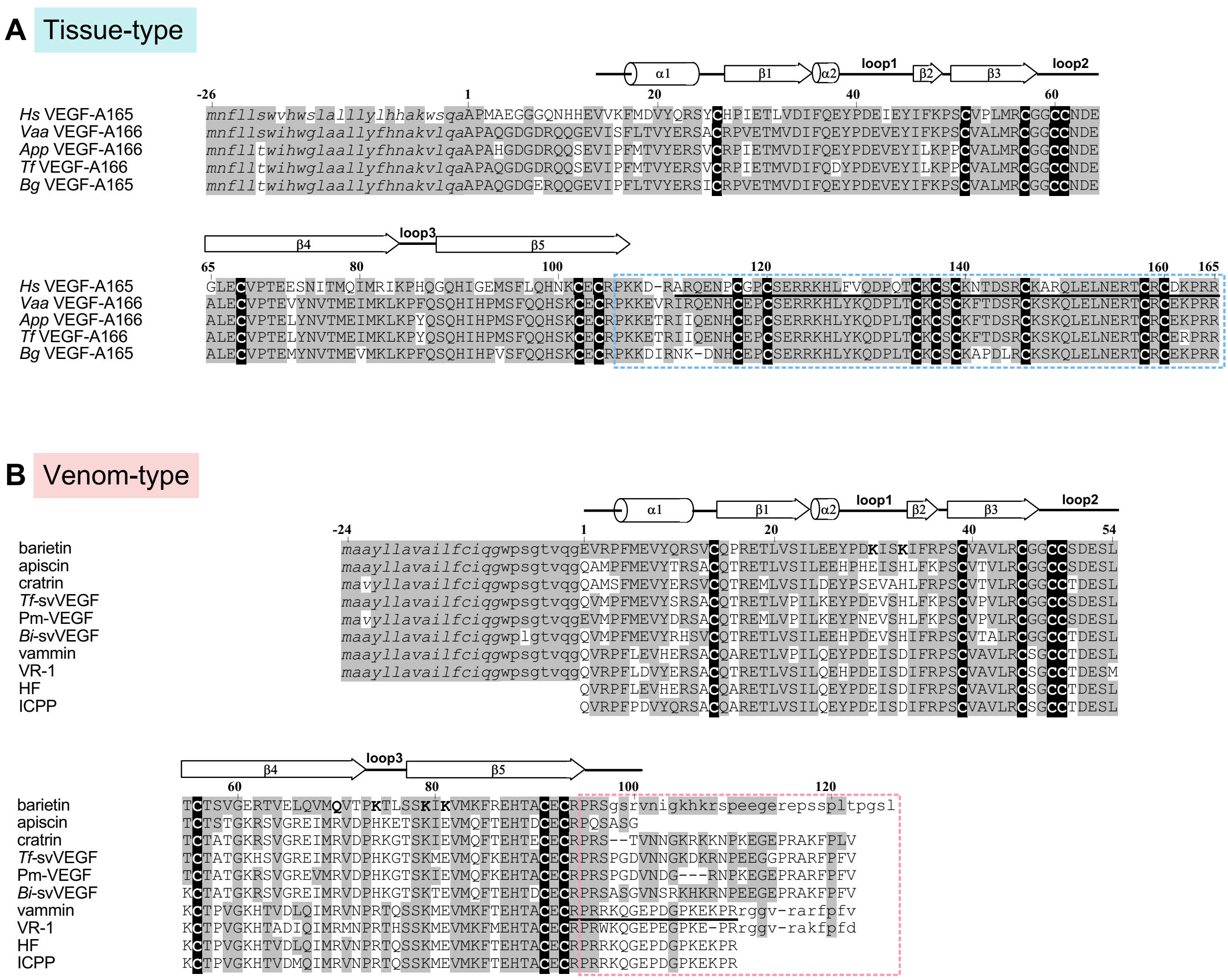
A Tissue-type
Hs VEGF-A165
Vaa VEGF-A166
App VEGF-A166
Tf VEGF-A166
Bg VEGF-A165
B Venom-type
barietin
apiscin
cratrin
Tf-svVEGF
Pm-VEGF
Bi-svVEGF
vammin
VR-1
HF
ICPP

Fig. S1.

(bp) (aa)

Exon I

1 **CCTTCCCCCTTCAACCCCTTCAGCTCGATCACAGCGACCGCCGAGCAAAG**
AAGAGAAGGCTTAAGAGAACCCGACCGAGCCAATCCACCCTCGCTCCTGG
AATCATGAACTTTCTGCTCACTTGGATCCATTGGGGGTTGGCGGCGCTGC
m n f l l t w i h w g l a a l
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l y f h n a k -5
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a A P A Q G D G D R Q Q S E 13
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Fig. S2*A*. Tissue-type VEGF (*Tf* VEGF-A_{190}) gene

(bp) (aa)

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aatgcattcaatgtctagctggttaaaattcagacaagacagatgctaaa
cttgtcagtgattcatcatatcttgctcatcccacaatccctatagtctgc
cttcttaggctttaagtacattttaagtaggctaatgcatttactgagag
cctgtattttgctgagcctgttgggtaagaatccagtagaaggggcagac
ttagtggtccttgtgtcttaagtctatgtgtatactgtattgtaatgtta

atgttagacttcacagaataagtgtaactaatccctccttttcctttctc
ctttccctttgttttctag**TTATCCCATTTATGACCGTCTATGAGCGCAG**
V I P F M T V Y E R S
TGTCTGCAGGCCAATTGAGACCATGGTAGATATTTTCCAGGACTATCCTG
V C R P I E T M V D I F Q D Y P
13001 **ATGAGGTGGAATACATCTTGAAACCACCCTGTGTGGCCCTGATGAGATGT**
D E V E Y I L K P P C V A L M R C
GGAGGATGCTGTAATGACGAAGCACTAGAATGTGTGCCTACAGAGCTGTA
G G C C N D E A L E C V P T E L Y
CAATGTCACCATGGAGgtgagactgtggttaaacagtcaaggcgactttt
N V T M E **79**
Exon III
gacctgcagttttgtcttgttttctttaataaattccactatggatggtt
tttataatttgggaagggtcaactggtggtcttggaccacatccagctcc
taatataaccacttgtatctgttgggtgtggaaagaatagagaaggatga
atcatagaattgtaggactggaagggacacagaagtcttccagtctaact
cctagctcaaggcaggagccttatcttatcccagttaaatggtaaatgtc
cagtctattgaaaacctctagtgatagagcacccacagcaccaggaggtg
aggtattccattgattaattgttctcactgtcagaaaatttcttcttact
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agactgttattatatcgtctccccccctcccccaatccttcttttcaata
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gactaggtcatgttgttcctgggcaatatgagtaggtcaggggtgcttct
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ccccccccaacaaaacagaacagaaaagtaattgccctggtggcctttg
ttatttcaagaactataaatgcggccttggctactgtgatgctctcatgt
tctccaaagggaaggattgtgaagtgaagtgatgctttatacacattaat
ttaaacctgaatataatttcccctgaaaattcagagaccactttttgcct
14001 atacttctatatacatatgtacacacagagagacatatagattatatact
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caaaaaatcttttaacctttaaacttgtggacatgaggcctatttacgaa
gtagtccttgttgaatgactgcctcatttagtgattgtttgcaggtacta
tagggatgaaaaagtaactttataaccaatctaatttgcgggtttgtaaa
gcaaaggaaagctgaagtacgataataaacatagtcatggtttcacctaa
14501 tgaccgatttgattaacaaccaatttgctaaacccaattgtgattgctaa
atgaagactaattgtactttttggcatggtgattcatatcaggaatttg
gcatttcttactgcttttgagcattttccaatacattcctgctcaaaact
gagtcccatgagtttagagcagtgtttcttacacttttaagatgtatgga
ttttaactcccagcatggctgctggggaattttggtagttgaaatccaca
tatcgtaaagttgccaagtttaagaaatactggtttagaaggtaaaatga
ggataggatggcaacgtaagaatgctaactcatctagccttcattttgcc
ccgtctgttttatcgttatttggcttatttgttttgtgagatggctgttg
aacattacccatttgggaatgcaactcactgtccctctttttttctttctc
ccttctattgcatccttttcttttag**ATCATGAAACTCAAACCCTATCAG**
I M K L K P Y Q
15001 **AGCCAGCATATACATCCAATGAGCTTCCAGCAGCACAGTAAATGTGAATG**
S Q H I H P M S F Q Q H S K C E C
CAGgtgaggacagagagcttttctgattgaatttggagaaggattataca
R **105**
Exon IV
attataccaatagtacccagctggtcacctgtatccacctgttcacccaa
aatcttgtggtcttgttctgtattgggaagggtttttttccttgctagcca
taggcttggtaatttaatctatattgattgacagatgatgtacgtttact
gtccagtaacaggagggctttaacttttcttctttagaaacctcagttac
atcaacattgcttcagcaagagaagcattccttatgggtctgcatctgtg
tcataaaatgaatgtgtgggtatctggtgtgtttacatgctctcaatctc
tgtcatggaaatttcactggctgcttggtacattctttgggtaggtgcag
ttgagaaccaacagctagttaagaaacattgtattgctgttttgctccaa
15501 ctgagtaaacaggtggttaggttttgcctatgtccctaggtgctctgatc
ccttagcccccaacctttgtattataagtttacatgatcacgaaaacatg
attacaatcaagagagctactctggtgcaatggtgcaatggctaaagtgc
tggactagaatcccagagactgcaagttctagtcctctcttaggtgtgaa
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cttgagttgtacaaaataacagtgggatataaatctaataataaatagat
ccgtataaggcagagctctgctgtcaacgcaagttatattcattttcatg
tcaatatgtacaaaatctcccttcagattttgctatttagtcaatgttgg
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16001 ctttttaatgcataagatttaggcataacatctgaacagtgttttaattt
gatcagaaagaaatgtgctttcttttctgcccttggctgtcataattaag
gccaacttcaacaaccagatgatcctatggtgttttaagcttgtgctgcc
agataacatttccagtggacaaggataatggaattggtagtctggaacat
ttgaaaggctgaaacaggcagtgctggaaggcagaagagcatcctttatt
aagttttctgctgaaagtggggtggtaaaacgtggatgtgatctttatat
ttattgctagttgtcttctaatcctgctcttcttttcttctgttgtag**AC**
P
CAAAGAAAGAAACCAGAATTATACAAGAAAAgtaagtgacctggattata
K K E T R I I Q E N **116**
Exon V
tccctcccctaagttggtgctggtgatcttcctcctttctttcttagatc
actacaaataagaattggttgttgctgttctttaaagaaaccaagtgttc
16501 atctaaagaattatatcttgaatccattcctcttagctacagtcacacat
gtagctttgacagctgtggttcctttatgctttgaggccattttgaaact
gtttacttataaaaatatgtcaggaacagcatggaattaaccgaaagctt
ttatccctttttcaactggattctagctgaaattttccttcacatgcattt

Fig. S2*A*. Tissue-type VEGF (*Tf* VEGF-A_{190}) gene *(continued)*

(bp) (aa)

gaccccattgccctcccatctctttgctgctttgatgaaaacttgctgat
gtttacaccaactttcatagatacctaacattaaggctgtgcatggaagc
tctgctatctcacttagaacaagggagttttgccctttcatgaaccaaaa
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tcgcatatcaatcatgaaaggtggaataaagagagttattttatcgccag
cactccccagcatggtgccttttatagtgcttttggaatatctatcccag
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tagagtttagatgcttatgctttagctaagtcgcatatggtagcttctcc
ttctttttcttcctttttttctccccccctgtgcactttctctctccctct
ctctctctctctcttgcttgttttgtttttcttccag**AAAATCAAAGCGA**
K S K R

Exon VI

GAAAAGGGGAAGGGTCAAAAAAGAAAGCGCAAGAGAGGCCGGTATAAACC
E K G K G Q K R K R K R G R Y K P
ACAGAATTTgtacgtttttgcatcatgtgcttttagactctgccctttat
Q N F **140**
ccatttccttctattcactcctcaaatcaaaactcctgcttgcattacat
19501 ctaattaaacaatcaaaggagcaaataattttcactcacatctccaaatc
acttgttattgtggttgcactatatagtttggggacattggggagcatat
agaagctgtgatcctttttttttttttgtttttctttgcttgggattatt
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gtgtatggagtctgatggaaactactaaccattaccagaggggagctaga
ggattctgggaaaattggggattgttctctctttctctctctgctggaat
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20001 cctgcatttccagcaattctcagttggtggggtgatgcaggtggggtggg
ggggatttcaagagctgctgttttgattcaatccgtatggaaaacaacac
aacttgaataggagcagctgggttttgaagtctgtttcctctctctctct
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ggctctcctttccactgcaaattggactaatgcaggatttgtggattgtg
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gttggaatgcctttgggagtgtccaaccccccccccccagcagtgctcta
gacgtgcagtgttgggagcgggggggtggggtaaggggtgggggcaaggg
ttgcttcaatgtggtagggtgttgcatgtgtacatttcttctcgctaaag
20501 cgctgtagcttagacctctttcctttttgcctttttgcag**TCACTGTGAAC**
H C E

Exon VII

CTTGCTCAGAAAGGAGAAAGCACTTGTACAAACAAGATCCCCTGACCTGT
P C S E R R K H L Y K Q D P L T C
AAATGTTCCTGCAAATTCACAGACTCACGTTGCAAGTCGAAGCAGCTTGA
K C S C K F T D S R C K S K Q L E
GTTAAACGAGCGCACTTGCAGgtttgtgtcctgaagaatgaaaaacagca
L N E R T C R **184**

aataaaccccacatactactctctcagacatattcattcaatacacacac
acacacacacacacacacagagagagagagagacagacagacagacagag
agacagagagacagacagacagagaaaggaattagcttttgctggtttct
agtgccattattcttcttttcttctgcttggccagtcgggcaagagggaa
acagatggtgtaatctgcctaaagtttaaaacttcccttgttctggcaga
gttgaactgaactgtctgtcagtagggtgatgatagataatctagaatac
21001 atctcttagggaacaaggtggctccttctacattgctagcgctcaggaga
aatcctcaaaagacttttatgcagtccttgtataatgcaactggctgttt
taatgagattgcccgtcttttttttgcctcaaaacaaagattttgtctcta
aatccatttttaaagttctacaacagacctgcaatggataaatctatgtg
ggactgagtcaaaaatccagacatgcattctttcctgcacctctctttta
ccctagagtgtgtgttttttaagaagagtgcatgattagcccttnccttc
tctgtattatttctgtgtgttcagaagagtgaattgcctggaaaaatacc
ttggctaaagctcaggtggtcaaagtaaaaacccaggatatctatcccag
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cctgctttgtggctgcaaatgtcagcctgcccgcccctaagtacggttct
21501 gaaaaggcagaacacatttgctgtgactagattagatctctgagaatatt
gcatgaggctctacctttcctagaacatcagaaatgctcacctagagcca
ggctgatggtgttaggctttatacgtgtatatatatcatgaagctcagtt
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agaaaccagacagtcttctgaccttgacctttatagtatcccctcaaatt
aaccaatgagaagtttgaaataatccttgaagtaagtgccatgctattcc
caagggaagagtgggggggaagggaggaatggctgattaagaaatcgccc
cagcgtaggaccaaggccagcattcaggttgccctcgagtagtgccagac
22001 gataggttggattgttttggctttggcagctgctcagttgcttcaaatga
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tcgtttcctggtttttgcacagctgctgtggttgctgctgtgtttttagg
cactaatctctgcctctgcagcagcggaatttaagctctttgtttccccc
ccttttgctggcacagggcaccccggcttgcttcgactgcacctctttaa
acacacagcaaaaagaggttagtgtggcgaacagggtaggctatctctat
acaggtacgaatgagagttatgccaggatgtaaaaaaaaaatcaaccttg
gagatgcaggagttcttaatagtattcttatctgtggggagaaaactgga
ggaaatgcagtggcttttttctttttttctttttaaagagcaagtcctgt
tggtccctatataggattttgatctattctgtggcaaaacactttcgcta
22501 atcttttaacccaagaggttccttctcacctgttaatgccgtatctgttt
ggagactcccacatagtatagtgacataacctctctcctcccttctctct
tctccttcacag**ATGTGAAAAACCGAGGCGGTGAGCAGCAGGGGAAGAAA**
C E K P R R * **190**

Exon VIII

GGGAGTGCGGGAGCAGCCTTGGTTCTGGAGCCTGACATCTCACCTGGTCA
GAAATTGAAAACAAACACTAATCCAAATGAACACTAAAAATGAAGGATCA
GCAGCGCACAGCACTTTTGAGTATGGACGATAGACTCTGGAAGGAACATT
CCCTGAGGACCCGCGCACGATTCACCTTTCGATTTTGAACTGGTTTTACA
GAAAAACTTTCCTTCTCATGCTGCTAAGATATAGAGCCAGGGAGAGTGGA
GTGATATATGCTTGGGACTCCCCATACACATGAAGTATATGTATATGTAT
ATGAATATGTATGTGTATATGTATATATACTGAATTTCTAAAACATTGCT
23001 **AACATTATTGGTGTCTTCACTGGATATACTCAACTGCTGTGGACACAAGT**
GGGCTATTTGGGACATAAGAAAGAAACTACGACTGGACTCCAGTCAATAC
TGCTCAATATATTCTTCATACTCTTCCTGACCCTCTAAAGCCTGCTGGTC
TCATTTCCTCTCCCTACTCTCCTGCCCCAGTCCCATGCGGTGAAACATTT
ATGCG (23,205 bp)

Fig. S2*A*. Tissue-type VEGF (*Tf* VEGF-A_{190}) gene *(continued)*

```
(bp)                                                                        (aa)
   1 GGGAATGGACTGCCAGGCCCTGCCATGCTTCTGGGATTTGCCCACTCTGTGCCTGCTGTT
     GTCCACCGGCTTCTGCCTCTCTCTTGTCTTGTTTAATCTCACCACCACCACCACCACCCC      Exon I
     AGTCTGAAATTTGCCCAGCTCAGATCTCACCCCATCTCCTTCTTCTGAGCAGCTGTGAAG
     CCAGGAGGAGATAGGCCATGGCTGCGTACCTGCTGGCAGTTGCCATCCTCTTCTGCATCC
                       m  a  a  y  l  l  a  v  a  i  l  f  c  i
     AGgtgagaaactctggggttccctggtggggatcttgcctgggatcaactcctcacaggc
     q                                                            -10
     aattttcagccaaataagggggaaaaacagattaaatctgttatttagtcagggtaagc
     aataaaagtgacttctaaggttggagaattcacgaccctctgctgcagatgagaattaaa
     ttacctctgtaggtggtggcagcctctccactaacacacgtggccaccccacccggcttg
     cctggcaggatgatgcacagagcagctgggtgcttctggggagaagagcgacctgctctc
     tgccccctgcaggagacccaggcaggtgcccggctgcatctccctctagtggtcatcagt
 601 agcatagaagcttcttgatttcaaaagttagcccttgcattgtgaccactgggcaggagc
     cgcccaggacaaggcaactgggcgagggttaaaacattccacaccagcagttttcaaagt
     tggccactttgggatgtgtggacttccactccaggctgactggggaattctgggaattga
     agtccacattaaagtggctaaatttgaaaaacactgaccctgtcacccagatggaggact
     agaaccgtggctcgggtgcagatgcattcttgtctttggcacttcctggtttccttgctt
     tcctgccatctgtgatgctcccgggtgccagattcagggctggaccctttgctaactggg
     cctttcttctcttgcagGGCTGGCCATCAGGGACAGTGCAGGGACAAGgcaagttccctt     Exon II
                       g  w  p  s  g  t  v  q  g  Q                1
     tctaagatcttatctggtaaatgggggtggtgtccagagcatcgctcttgcccttgaaaa
     gagccgggggcagaaaaggggacccccacctctgccttcgccccaggccagaacctctgg
     gtgagatccctggcagacacacgccctgccacctgcacgctcagagcatgtgggaacagg
1201 ctccctggggagggcaaaggttgcagggttgcagcacgcagcgtttcccccaggggtgag
     gggcctggaggggagacatagcccggctggagaagaggagggactacccggcccccacc
     tgtctttcccccaacccagggaaggaaggctgcgcttggcttaaggcaagaggagctctg
     aaggccgaggcagcgtctgactcttttcctcccctcctcagTGATGCCCTTTATGGAAGT
                                                V  M  P  F  M  E  V
     GTACAGCCGCAGCGCCTGCCAGACCAGGGAGACACTAGTGCCCATCCTCAAAGAGTACCC
       Y  S  R  S  A  C  Q  T  R  E  T  L  V  P  I  L  K  E  Y  P      Exon III
     CGATGAAGTTTCCCACCTCTTCAAGCCCTCCTGTGTCCCTGTGTTGCGATGCGGTGGCTG
       D  E  V  S  H  L  F  K  P  S  C  V  P  V  L  R  C  G  G  C
     CTGCAGCGACGAAAGCCTCACGTGCACCGCTACGGGAAAGCACTCAGTCGGTCGGGAGgt
       C  S  D  E  S  L  T  C  T  A  T  G  K  H  S  V  G  R  E     67
     caggggctgttcgtgctgaggtgacgggctggggtgggggtgtcaggatagctcttgggg
     gccaggaagagcagagcccagccttggactgctcctggggtgcaactgaacggtggctgt
     ctctccccttgggtagATCATGCGGGTGGATCCCCACAAGGGGACTTCGAAGATGGAGGT
                       I  M  R  V  D  P  H  K  G  T  S  K  M  E  V
1801 GATGCAATTCAAGGAGCACACAGCCTGTGAATGCAGgtgaggaaggggggccgaacagcgg      Exon IV
       M  Q  F  K  E  H  T  A  C  E  C  R                         94
     ctgtcctgggtggctggtcagaggggtggggaatgggggagaattgctggaggtggaag
     atgacaagcagttcttagttcacacaaccctccctccctccctgtttttcttgcttgctt
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     ctattttccccaccacaacaaccctgtgaggcaggtttggctgagagagagggaccagcc
     caaacgtcacccggctcattttccacactggggttctgcaggggtctctgagcaggagga
     cagaggtgggggctccagacctgtgcaggcacctcctcagaggccaggcttcttcgcctc
     actcctcttcctggagccccagccgcgggccaagtcctgagcctgctggctatgcagac
     tgcaactgggttatttcctctttccagGCCTCGATCACCAGGCGATGTGAACAACGGGAA
                                  P  R  S  P  G  D  V  N  N  G  K      Exon V
     GGACAAGAGgtacatgggggggaggggctgggggttaacagaataagagagttgtaaggga
       D  K  R                                                    108
2401 ccttggaggtcttctagtccaacccctggctcaggttggcctggggcaggctgggagggc
     ggggcaggagggcaagatggctgcttgaggcgaactcctctttcttcccccctttgcagG
     AACCCAGAGGAAGGGGGGCCGAGAGCCAGGTTCCCCTTTGTCTGACCAGCTTTTGACTCC
      N  P  E  E  G  G  P  R  A  R  F  P  F  V  *                 122
     AGAGCCCTTTGAGGCTTCACAGCCCACCAAGGTGGGGAGGCTCTGGTCTGCAAAGCCAGC
     TGGGGACGGCCCTGGGTCCCTGTTCTCCTCTTTCTGATGCTGGGGGTGGGTGGGAAAGGG
     AGGCATCTCCAACATCTGGAGAAGTTGCTATGTATCCATCTACACTTCTATGACAGCCGG      Exon VI
     GCCTGGCCTGGCCTCTTCCATGTGTGTTGACCTGCAAAACACATCACTCCCAGGCTGCAA
     GGCCAGAACTGAAGAGCGAAGGCAGCTTCCTTCTCCAGTAACTCAGCAATCGAGTTTGGA
     TTTCTGGCATCCGAAAGCCTCTTTGACCAGCTAACTCATCTCCCTCAAGAGTTTGCCATT
     TTGTGTCAGCCTTAATGGCTTTTAGTAAAATTGTCTTTGTAATACACAATTTTTAAAATT
3001 AAGATTTGATATCTTCCGACCCCTCATCAGGGGAGCTGGGGAAAAACAGTTTCTTTTAAA
     GAATGTGGAATTATGTCTTTTAGCCCCGTCTGGATCTGCATGACTTTCACAGAGCCTTGG
     AATAAACGGAGTAAACT (3,137 bp)
```

Fig. S2*B*. Venom-type VEGF (*Tf*-svVEGF) gene

Intron 1 Tissue- vs venom-type genes

```
                  (bp)
tissue-type        171   gtaaagggggcgggcgggcgggaggatctggggcggcggggaagccttcctcctcctctcctcct
                         cctcctccgcgtggcctgttcgccgcatgttacgctgaacgtgcgtgacgagcgcgaggtgatag
                         cggggggggcccccaaaagggagcccacacacacgcgtcggatgagcggatccggaggcgccaga
                         cagaccctccggtcgggttgctcgcgctcagcccgccggggcttggttgaccttgtgagggcacg
                         cggctaacctcggctcggcgctcttcggggctgccgacaaaagaccggccgcccgacccttttga
                         gccgagcgagcgagcgagcgagcaaagccctgcgttatatggcgtttaagctgactggcctgccc
                         gcgtggggcctgcgcgtgcgatcgcagggctggggaaaggaaaaaaaaaaaaaagagtagaagat
                         cagaagctgtttgcccaccctggcaggtctggcttccttcttgccgtgttgcctaggcttaagag
                         accgttccgagtaggtttccttctcttcctgtctggggagctgggtagtttggaaacctggtttt
                         tgaaggacgcctacggaggaggcacgtctctgcgtcgtcactgatcggagcatataggctgactt
                   821   cttgcaacagcggcggcggcggcggcagcagcagcgccgatgcgctctctctccctcccccctgct
                         cctcctgacattgcaaaagcggtgtttttggcttgtttgctttagttaggcaggtttactgaccg
                         gagttcaaaattcctggcttgcaaaagcaaacagagatcaaagaccgccaaatgaattctgtgcc
                         tcttccagattgatttacagatggaacgaccctgctgagtttccataaataagagctccttctct
                         atacggtttcccccgcttctaaactcctctcatctttattcggttccttattataaaaagtacgg
                         caaaggccattacccgaagaccccgctagcaggagcttttgacttgctccttaaaggaatcaaat
                         aagttggatggttgtcgcgtttgtttgggtttagctcctgtttgctgttaggtagttgattcaca
                         agaaagaaaggggatgcgggttaattttccatggtggtttgcctttggaaatttaagggagagaa
                         gtgaagtcttaaaacccccacttcaaatgcaggcatgctgccctttgccacttttcatatgtctt
                         ggaacaaaatcttgtcatctatagcccatagtcacttggtggcatcaaagttaaacgagagtgta
                  1471   gaaaaagttataactttttttttccagccgtagatgtaagatatctgccatttcaggtttgtctg
                         gttagatgtcacaagcgttccaagctaatttgttcaagtccagctttgctggaagtgacagcagc
                         acatttatctgtacaggacaggaggtgtttttgaggaaaacgtgtgaacaggttaatctgagatg
                         gccatgcttgcttttttaaaatgatcctcaggttatacggttttaccaagcttactcagcctgggt
                         ttacagattctgtcatcctaaacaatctggccagtgataggaggtttccaccagcacgttcagat
                         gtcactagattaagaaatctgattaatgcatgaagtactgtggagacaagtaaaaacagaatata
                         aaaaaaatacagagagggagaatagatggaatgatcagaaatatagatgacttccccccccccc
                         caaataagtagagagaggatcctcaactcttatgaccccaccatcatttgggtaaattgctaggt

tissue-type       1991   gccgtattataatattatatattaccaagccaaggcagatacagtatatgaagtatgaatctctg
venom-type         243   ---gtgagaaactctggggttccctggtggggatcttgcctgggatcaactcctcacaggcaatt

tissue-type       2056   gggagcccaaaatgaatgcatttgcacttttttgac-cctagtaagt-tttgaaacagcttaaact
venom-type         305   ttcagccaaataagggggggaaaaacagattaaatctgttatttagtcagggtaagcaataaaagt

tissue-type       2119   atattggaaacatgg--aaggaaaaaaactgttggtaagaagagaattaagttatc-ctgtgcgg
venom-type         370   gacttctaaggttggagaattcacgaccctctgctgcagatgagaattaaattacctctgtaggt

tissue-type       2181   tgtggca-cct-taagggagcgtggaagacgagtctaatc--tttgctgaaagtgagat-----
venom-type         435   ggtggcagcctctccactaacacacgtggccaccccacccggcttgcctggcaggatgatgcaca

tissue-type       2237   -agcattaatgtaagttattagggaccactaatct-ctat-taatatataatgcaaactgatttc
venom-type         500   gagcagctgggtgcttctggggagaagagcgacctgctctctgccccctgcaggagacccaggca

tissue-type       2299   atagctttaatgctttttttattaattataaggtaatggtattaggagctgattgttttatttatt
venom-type         565   ggtgcccggctgcatctccctctagtggtcatcagtagca-tagaagcttcttgattt-caaaag

tissue-type       2364   ttactgctttttttggattgcttttcactgcccagagttgcttttggtgaaatgggcagctatata
venom-type         628   tta--gc--ccttgcattg-tgaccactgggc--aggagccgcccaggaca-aggcaactgggcg

tissue-type       2429   aagttgataaataaataaaatatatccagcctt--gacttgttgaataaagtcatagttaacttg
venom-type         685   agggt--taaa-acattccacaccagcagttttcaaagttggccactttgggatgtgtggacttc

tissue-type       2492   ttttata-tat-tatgtgaagttttaacccatggttgacacaccatagtggctggattcaaaaaa
venom-type         747   cactccaggctgactggggaattctgggaattgaagtccacattaaagtggctaaatttgaaaaa

tissue-type       2555   agcaatcggtcaaagccagacaagtcacagtatagcttaatgtaagttgtgagctcataactcag
venom-type         812   cactgaccctgtcacccag--atggaggactagaaccgtggctcgggtg-cagatgcattcttgt

tissue-type       2620   gtgatggaaatgcagg---cattgatttcctcttaacagttcatctgttggctgtaataat-ggt
venom-type         874   ctttggcacttcctggtttccttgctttcctgccatctgtgatgctcccgggtgccagattcagg

tissue-type       2681   gcagtgcccccccccccagtgactaatcactttgaaagtgttacccttggagtgaagcatgtg
venom-type         939   gctggaccctttgctaactgggcctttcttctcttgcag-------------------------

tissue-type       2746   ttattggtgagaagaccaatggatgaaaagactgaagatccaatccaaaacctgcctgcctttag
                         ttttgctacattggcaatacttagtcccctgatgtaatcctttgtgataccggtactaagtttgt
                         tgcagtgagcaagtcctggggctccctctcaagacatctttctgataggacctgagccaaagatc
                         aaacagtaaagggtggaaacacgagcgtgtgaccagactgctaatgatctcacacgccactcata
                         cagccttttgctcaggccacactggggctcctgcttacggcccagctgcttcttctgaggggagg
```

Fig. *S2C*.

Intron 1 Tissue- vs venom-type genes *(continued)*

```
                  (bp)
tissue-type       3071    cagtgggtcaccttcctccttttagctatgcagctgaaggtggaaatcttcttcccgatacaaag
                          tggatgttgcagccctcttcggatgtatcctagtcattttctgaactcgttttctctctcctttg
                          tgccatgtcagaaatccctcccttattgggccattgcgctttctttctccttagagtgcatagca
                          gggggaggaggagagggagaactgcagcatttaggcagaaaaaaattagaggaggttttctctcc
                          ccccccccccccagcacctaggatggcatgggtttttaactctagtcccaggggccctcccaaag
                          tggctggattgtttgctccagtccaaaacagttacaaagctcttttaatgaggctgctgagatta
                          aggggagggggaggagaaagctagagaaagaatggttttgatgtgaaagaataggaagtatgtgt
                          gtttgtgtgtgtgtatgcgtgtgtgtgtgtagaagcaatgtaccgagttaacctttttacttgctt
                          catataggaatgagtaggatataagaatagaattgccagctccctgccaacttgctgttgctcaa
                          gccttaaaagagatatttctcctactgtctgtgctgctgaaaactcctaccaggagacaattaag
                          tgtcttaatggggaaacaatgagtaaaacctcaggccagggaaaaagagatgggtacaagcaatg
                  3786    tgaccttcaaacgggcacttgtcccttgagaagaaaagtttgttttgtccttcctttgatgggaa
                          cagggaacatttagacccttcatctaagccctgatacttgggttaacggagtggccagagaaaat
                          gtaattcatcagcatgggagcagagaagaaccttcagatttctcaaatggattcaaggtgactct
                          gctgtataaatagctcctagattcaaaggcaaacggcatgagcaatggtgtgaatagattgtacg
                          tgatggctaatggggttccttttccttgtctgattggtgaatatactgcttccagtttctgctaa
                          tcgggaaatagtagtctagccttgacaggcagtttgaaagagagaaaaaagagacagatggacac
                          agaccataccaagtccctatttgcgatctggaatctcttctagtgatttttcaggtctctttcct
                          aaatgatcctcacacacacacacacacacacacacacacacacacacacacacacacacacacac
                          acacacacacagaggctttgagagaaagagagaaggagaaagctgttttggacaaggtgaagaaa
                          cagcagcaagaagtacctcaggggcaactttaggccagaagtaaggaacagtttctagctgatgc
                  4436    cgcaggacccaagcagggctttgaagaatgaaagctgggggtgtctccttccccagagccctgac
                          caagttatggcagggctgcatgcttagctgctcagtcagggcacttgcgggcagcatgtttgcca
                          cagtctcatcctgcagatggaggaatcccaggacagcctgccacagcctgctggctcataaagac
                          tacgtgctctacgcgatgctagagaaatgggcggacacctgcctgtcaaggagctgtggcaactt
                          gccacctcaccagagagctgcctgtctgaagcgtctttcagatgcaacagaggctgtgctcagaa
                          ctgattgtggcagcttgctggcccatgaaggccttagtgattaaattttgactcccccccacctt
                          gtttgtaaagttactgtgaccttcacccagagatagaaaaatcttgtcagcttaaaaaggaacat
                          tgtcacctgtgtgctgctagactcgtgtctctgcagatccaagtgattctatctgttgggccatc
                          caatagatcagtcctcccaactcctggagttcctagtcattggccatgtgggctgggagttcttg
                          gaaatgtcgtcccaaatcaggtaggggataccaggcaacaaatagatgagcagcattgcattctt
                  5086    aacctctgttacctgttgctgacagcctagtgaaccagctggattgctcttgaaatccactggct
                          gattccagactccataatttgcaaatcagaagggcctgatggttcttcctctcggctgaaactgt
                          ggtaatgaccttggctatgtaccctcagaggtatgaaacacttgacattcagattccttgtcatg
                          tcatttttagaatgtcaccaatattatttctcttttgccagtcacctcccctgttcaggtttgt
                          gttgtagattttaatcttaataataataaatgctttaaagcagatcattccgctgcctagaaaag
                          tgagagtgctatccgagaaaactttttgagttctcctttctgtcccatgtgcagaaagcagacat
                          ataagctaaattgactcttactaaatagagatcttgctttctcacatttatatcccaggggaatc
                          ttccttgtctagagtatgataatcgcttaaatctactttttcttacatacttagaaaacgacaat
                          tcagtgttttgctagtgtaaaatctctatttccccaatgtctcagtatatttcttagctcccttt
                          taggcactgaaagttctgtgatatctttctatagtatcttcccctgtaaaatagctccattagca
                  5736    ctgaatcataaaagcaacttaaatgtagtcagccagataaaatgcaatttcaaaagtcaatgatt
                          atttaacctttttagaaaacaggtaagccacagtttgccaacttggcactttccaggtgtatggaa
                          tcaaagtggggatgcgtggcatggtatacaacatttttaaaagtagctggacatggaatctggcc
                          atttacagtatattttgtagaccaccaccgaaacagaagcaaaaaagtctccattaagttccata
                          tttccaagaaatgtttggttcacaattcaggtgcattttcctttggattttctgcagagaaatgg
                          gtattagaacataattggcatatgccgtttttggtttccttttgtattctgcaaagtacaacaga
                          ttctgacctttattactcaaacctacaaagtgacttaagatcgaaaaagagcttcaggtttgta
                  6191    ggctgagggcaccggatttgtgttctgattagttctatgttggtttttcag
```

Fig. S2*C*. *(continued)*

Intron 2 Tissue- vs venom-type genes

```
                    (bp)
tissue-type          6294      gtaagtgctgataaattccctgataaatataatggtccctttaagaaggtgttgatgatttgaag
                               aggaggagatgaactggcaccagtccattagctggaccgctggggagggaatcctcacttacgtt
                               gctaacatttggaaaatgaatttatgggagggtgtgggatgaaggtggtgttggattgtaattct
                               gtggacagaaacaatggaaatgacttcactaactggagtgaagtagactaaagatttccagcatg
                               actacactgaaaatgtttaagtgaagacagtgggggattcttagttgccaggtttgacatattga
                               gtttcaagatttcccaggatttttttttattaagcagctgcagttatgcacaacagtattttgct
                               ctaaaggagaaatgagataacaccatgtttttattaaacttcaaagaacaaccttatcaacccag
                               atgtgttaagcgtacagctgcagatcacacaggctgtgaatggcaggagttcaatctacatggag
                               actatccaactaaagaagcttgtcagggagaatatattggactgaaatgttggcattttagtctt
                               ttttaaaccttacttaaaactaagatcagacatctcagcaactctgggaataatagttggaggaa
                     6944      tttaccatgattttcaaagtgaagtcactttgaaaatttcctgtctctcatctttttgctgacag
                               acctttgacccatgttgttttgctcagacacaaaataaagttaccaaactatcagtgcttaagtt
                               tctaaggatcatggcactggccaactgaaaagataattttcagaagcaattatgagaaggttgat
                               ccatctttttaaaggccacagtgctacatgcctatagggaagtatgccctactgaaagtaatggt
                               gatttcttctgcataaatatgtgcagcatttgctgttggtgtgtttagaagaattgcctgcacct
                               taagagagtctgggagcatttttacaaataggccatttataaccaactgcacttgctgcattgtt
                               ggacattttatttgaatatgtcaaaaatggaatagaatggaagctccattgtgcttttaaaattt
                               tagatcagccatgtcctgaatctgcatctgtggaaatgattgcccacactggatggggattatgg
                               aagctgcagttgggaagctatcaggttgaagtaggttgttaacaaaaagttctgttatgtctaga
                               gccaggatcctctgattttggcagtgtgggtctaaatgcatttgtcttttagccaaacgcttatt
                     7594      agacttgggtcttgcaagaaatttctcagaaagaaattcctcagcaaaaacataatttgtgaaaa
                               tatttagtaaccttcaaatcttatacagtactttgcaaaatatgtggcaggaaggaaggaaagga
                               ggagatgtagaaatcaggcatactacagtaaagaaattgagagggattcagggaataagctactg
                               gcaagagggtagcacctattgtttcatagtacagagagcaccagtttaaacttagtatcaatcct
                               cacagcctttgaagcttcaggcagtagaagttcacctaacctgggatattccacagcaaacaact
                               tgctttccacagtgtgaaattctgctgtggaatctctttagtttggggcattcagggagtggcac
                               ttgctgctgttcttagagctagacagcagcagggggcgccctttctcttaccacggttagtttc
                               agttgcaatcaggttttttggcctggtgaacttggaggagtgttgtcacgagtctcaggggagca
                               taactttgtaagagcacacccttatattgtgatctaattgctgttctgcttttaacatttttgc
                               cctgaaaatgaatacgtggtggttccttttcctgtgtatgtgagaaaacaacttcatggcaggtt
                     8244      gatctttaaactgcttggccctttatcttgaactgccaatgcatgaataacattcaagcattggc
                               ttgtattttgtggtgttagtctgtcacaaaggagttgtttggatttctttgagctctgggactga
                               tacaaactctgcagaatgctgtatttcagaaaaggccagcaagggttttgcaggttatcataatt
                               acattttccttctgcttaaaggttaggcgttatgtcacctagtcaaccagtagccagataaaac
                               caggctttctgactgagtcctgatctgattgacataattgaatatcaagagatgtgattagcaag
                               caactgcaaaacagttgctgcagtaacgttgcacaactaggtataaagatctgaggtttctgcgg
                               gaccatagaatagcttattgggggggactcatagtgaagctttaaagatgcagatgatcaagttg
                               cactatttaagacttcacattattacatgctaaactgcaaatgagaaggccagcaaccaagtaat
                               tgtttctttctgctgtgtatcagtgaccagtctctcttaaatagagattgacaaatatctcttaa
                               tttcccttgttcttgaatttgtatcttaaaagttagaatagtcagagtactctgtcattttgcac

tissue-type          8894      gatttttcttgtttgaatatcattcatatgaaaggatagaatatagaatagagctggaagggttc
venom-type           1009      ---------------------------------gcaagttccctttctaagatcttatctggtaa

tissue-type          8959      ttggaggt--cttctagtccagcccgc-tg--ctcg--agcaggagaagctataccagtggtggc
venom-type           1041      atgggggtggtgtccagagcatcgctcttgcccttgaaaagagccgggggcagaaaaggggaccc

tissue-type          9017      gaacctatggcatgcgtgccagaggcggcactcagagccctctctgtgg-gcacacacgccatgc
venom-type           1106      ccacctct-gccttcgccccaggccagaacctctgggtgagatccctggcagacacacgccctgc

tissue-type          9081      cccggagatggcaaccatccctctttaaccagctgcctgctaactcgctgaggtcccataggacc
venom-type           1170      cac-ctgcacgctcagagcatgtgggaacaggctccctgggga-gggcaaaggttgcagggttgc

tissue-type          9146      ag-atgcatcccagcacccatgcgctcgctggcctcta----tgtccaggggccaatggtg-tca
venom-type           1233      agcacgcagcgtttcccccca-ggggtgaggggcctggaggggagacatagcccggctggagaaga

tissue-type          9205      ggcagcagccgccccagcccatctcaccttgccctgtgacaatggcacccccgccttgcctcgcc
venom-type           1297      ggagggactacccggccccccacctgtctttcccccaacccagggaaggaaggctgcgcttggct

tissue-type          9269      tcaccccacaggacaagcctcctgcccactgccccacctgccagagacccctggatctcccca
venom-type           1362      taaggcaagagg--agctctgaaggccgaggcagcgtctgactcttttcctcccctcctcag---

tissue-type          9334      accctgcccggcccccacaggtgtccctccccatgagcaacatcaaggtggccatgcccatcttg
                               gccacacccatcca atctgccatgaccaccacagccatgcccacccagtgggccacgcccacct
                               ggcacccggcgataaataagtgggttttgggttgcagtttgggcacttggtctctaaaaggttcg
                               ccatcactgagctataccatttcagacaagtgactgtctagtccaggggtaggcaaccttggctc
                               ttttatgacttgtggactcccagaattctgggagttgaagtccacgagtcataaaagagccaagg
                               ttgcctacccctggtctagtctcttcttaaaaacctccaatgatggagcacccatgatttctgga
                               aagcaacaaagcaatttcttacctttttttctgttgttgtggctgcattgagtctgcttttgtag
                               Tgttctgttgctaacagattggcaagttaatttaagaacgttacttccaaatgaggcagaagaat
```

Fig. *S2C*. *(continued)*

Intron 2 Tissue- vs venom-type genes *(continued)*

```
                  (bp)
tissue-type       9854    aatgctttttgctagaattattatcttaatggagtgtgccggcaatggagtttactattctaggt
                          atattctagggggcattctgtgtttgatgtcatgagatactaacctaaatttcatgtaattcata
                          attacataggaaataggcaaagaactcagaaataagaaggtgcctctattcacttttcatatcat
                          tataattatcagtttttagaagttgataattctcccactgtccttccccccttctcatatttatac
                          atttgaaagtgatgaagcaaaaataaaaactctgtagaagatgctaaatgtctgccagctattat
                          gtgtacatagggtgcatctctttggatgatccacagattataaaaaaaaaaaaaatcctaaatca
                          tttaggacagccatttagttatctttagatagatggtgagatgggcggtacgtaaatttaataaa
                          taaatagtttgtgatgaagttaaagggtaaattagttgctcaggcaaagacagtaggtaccccac
                          gactttcatactgagctttatttggggatacatccatccccttcagtgtgtacgtgggtcataag
                          atttcattacatggaaaaaacctgttgaatttgtttcacagcatgagagtcaagtgtttgagatg
                 10504    ctcagtctttgtctttgtccattagttttcttctgaatgcagatgcataaggaggtagataataa
                          tctttcaactcagcgttattatggcaaagtttcttgtgctcttaatgctcagaaagaagtgaata
                          atcagcaaggtgttacatgtctggctatgtgccggcaagttttcccagacactaaattgtttaat
                          tctccagtttatagatagctgcattttaaggttaaggtcaacctgaaggggaataaggaagagtt
                          ggcccacactaatcccacatgtcttgctagagcttggactggacagaaggttgctgtggatggaa
                          gtgctccttttgagctggagatcgcccatcactacacattttctctctctgagcaactgtctctt
                          taaataggcacttaggctgggcagccggtagaaatcccgggcaggcttctcctcagatggtggcc
                          ctctcagtcgcacatgaccaagaattaactttccgcaattatcaagagcactctgtctctccttc
                          cctctccccacccccagcacgtgcctgcgcttcagtggagcaacctttatgctggtttgtcacag
                          gttcaggactgttcaaaacgcttactggtttctgtttttttccatgatgcaagcaatttgtgcttt
                 11154    ttatcacactgggttatcaacgtagacactgcaggccttggaaggcaaaaaaaaacacttaggcc
                          gaacagtaatctcctgcctctctaagggactccattagctacttctaatgtgcctgttggaggaa
                          caggcagaagcccgtgttttgtttaaaagatctcttattttgtttggaagacagattttgtactc
                          ttgtattgagccatgcgtctctatctcctgcttcagttttgcaatgaatcattagttttagccta
                          ctcacggtaggattgtgtgtgtgtttgtatgtatgtataaatttgttaaggctgggggccttgca
                          ttctccccccccaatgttgcataaaaaaattggactggagtgatttttagtttcatgcaccttt
                          tcctgcatatttggatcagcctttctcaacgctaactgtgggctgtccagatgctttggacatga
                          cagctagaatttcagccattagccatgctggctggtaactgatgaaggctgagctagatgttggt
                          ggctgggctggaataaaatacataatttctctggtagaacctcccccgctttattgacgaagtta
                          atctattctaaacgcctttctaacattagaacttaataataaatatcataatgaggtagatccgg
                 11804    aataaataaggcccactgaagttcttttgaacttagtttcaattggattgtacctcaatccaatc
                          cagaattactcatatcaaattctacaataattgaagcaaatgatgaggccctttgtgtaaatatg
                          aaattatgaaaatgttttgctacccagccacagtgcacaacccagaatggtgacaacatttttgg
                          agggagtaaggtgattgtttgctccttgtagtttagaaacatgaatgagggcatttctgtgctgg
                          agtaaaactaaaactaaaacattttggagagggtcaggaaatggtatggcgtgggtttatggaag
                          ggagcagggccttccctcccattaagttccttgatttttgtgctgaaaactgcatgactagaatc
                          tagattctgcttcttctctggctactttttgtatagtcttggcagtagcatagggccagaagtta
                          aaggaagaagcatattttccagctacatggcactgtgtgacgattcctggaaaatgtgatattcc
                          cactgcagaaaattttctgaggaaattgaatctggttctgctcgacagctgtgcctttgagagaa
                          tctgttaggctaacatcaaataggagctgaggtatcaaataggagctgaggtattttacatttta
                 12454    caggtattttacactgtgttggaacctctgggtttctgaaatgaccaggttctgtgtccattcac
                          ttcagggtaaagcgtctctaacaagctgccaccatgccatgagattcgtggtcttgtgaatcatt
                          tttatttccctcttgcaaatgcattcaatgtctagctggttaaaattcagacaagacagatgcta
                          aacttgtcagtgattcatcatatcttgctcatccacaatccctatagtctgccttcttaggcttt
                          aagtacattttaagtaggctaatgcatttactgagagcctgtattttgctgagcctgttgggtaa
                          gaatccagtagaaggggcagacttagtggtccttgtgtcttaagtctatgtgtatactgtattgt
                          aatgttaatgttagacttcacagaataagtgtaactaatccctcctttcctttctcctttccct
                 12909    ttgttttctag
```

Fig. S2*C*. *(continued)*

Intron 3 Tissue- vs venom-type genes

```
                   (bp)
tissue-type   13117     gtgagactgtggttaaacagtcaaggcgacttttgacctgcagttttgtcttgttttctttaata
                        aattccactatggatggtttttataatttgggaagggtcaactggtggtcttggaccacatccag
                        ctcctaatataaccacttgtatctgttgggtgtggaaagaatagagaaggatgaatcatagaatt
                        gtaggactggaagggacacagaagtcttccagtctaactcctagctcaaggcaggagccttatct
                        tatcccagttaaatggtaaatgtccagtctattgaaaacctctagtgatagagcacccacagcac
                        caggaggtgaggtattccattgattaattgttctcactgtcagaaaatttcttcttacttctagg
                        ttgcatctctctttaacaagcttacatccattacttcgtgcccttagagaataaataaatcccct
                        cttcttcgtgacagctcctcaaatagtaaagactgttattatatcgtctccccccctccccccaat
                        ccttcttttcaataggctagacatgcctagcttttacctatttttaatgtgaccagagtaacgtg

tissue-type   13702     actaggtcatgttgttcctgggcaatatgagtaggtcaggggtgcttctgagattataaaaagtg
venom-type     1619     -----gtca-ggggctgttcgtgctgaggtgacgggctggggtgggggtgtcaggatagctcttg

tissue-type   13767     cggcctaaatataaaaacaaaaacaaaagtaccccccccccccaacaaaacagaacag-aaaagt
venom-type     1678     ggggccaggaagagcagagcccagccttggactgctcctggggtgc--aactgaacggtggctgt

tissue-type   13831     aattgccctggtggcctttgttatttcaagaactataaatgcggccttggctactgtgatgctct
venom-type     1741     ctctccccttgggtag-------------------------------------------------

tissue-type   13896     catgttctccaaagggaaggattgtgaagtgaagtgatgctttatacacattaatttaaacctga
                        atataatttcccctgaaaattcagagaccactttttgcctatacttctatatacatatgtacaca
                        cagagagacatatagattatatactcatgtaataacaacctacatttcaagtttccgtttcctgt
                        gtgtgcttcactttctaaccattttaaaaggtagtttgcctgataaactaaatagacagattact
                        tgccccagatctgttgttctatgtataccttgcttaattctctttaaataacatccacgttttag
                        aatctatataccggtatcaaaggatctgtgtgagtgaagccaagaccagttcgtaaggcaatctg
                        ttttgatgagcagggcaaaaaatcttttaacctttaaacttgtggacatgaggcctatttacgaa
                        gtagtccttgttgaatgactgcctcatttagtgattgtttgcaggtactatagggatgaaaaagt
                        aactttataaccaatctaatttgcgggtttgtaaagcaaaggaaagctgaagtacgataataaac
                        atagtcatggtttcacctaatgaccgatttgattaacaaccaatttgctaaacccaattgtgatt
              14546     gctaaatgaagactaattgtactttttttggcatggtgattcatatcaggaatttggcatttctta
                        ctgcttttgagcattttccaatacattcctgctcaaaactgagtcccatgagtttagagcagtgt
                        ttcttacacttttaagatgtatggattttaactcccagcatggctgctggggaattttggtagtt
                        gaaatccacatatcgtaaagttgccaagtttaagaaatactggtttagaaggtaaaatgaggata
                        ggatggcaacgtaagaatgctaactcatctagccttcattttgccccgtctgttttatcgttatt
                        tggcttatttgttttgtgagatggctgttgaacattacccatttgggaatgcaactcactgtccc
              14936     tctttttttctttctcccttctattgcatccttttcttttag
```

Fig. *S2C*. *(continued)*

Intron 4 Tissue- vs venom-type genes

```
                  (bp)
venom-type   1837      gtgaggaagggggccgaacagcggctgtcctgggtggctggtcagaggggtgggggaatgggggga
                       gaattgctggaggtggaagatgacaagcagttcttagttcacacaaccctccctccctccctgtt
                       tttcttgcttgcttgctttctcccaccttttattatttttacaaataactcaaggtggcgaagat
                       attctcctcctattttccccaccacaacaaccctgtgaggcaggtttggctgagagagagggacc

tissue-type  15054     --------------------------------------------------------gtgaggac
venom-type   2097      agcccaaacgtcacccggctcatttccacactggggttctgcaggggtctctgagcaggaggac

tissue-type  15062     agagagcttttctgattgaatttggagaaggattatacaattataccaatagt-acccagctggt
venom-type   2162      agaggtgggggctccagacctgtgcaggcacctcctcagaggccaggcttcttcgcctcactcct

tissue-type  15126     c-acctgtatccacctg-ttcacccaaaatcttgtg--gtcttgttctg—-tattgggaa-gggt
venom-type   2227      cttcctggagcccccagccgcgggccaagtcctgagcctgctggctatgcagactgcaactgggt

tissue-type  15184     ttttccttgctagccataggcttggtaatttaaatctatttgattgacagatgatgtacgttta
venom-type   2292      tatttcctctttccag------------------------------------------------

tissue-type  15249     ctgtccagtaacaggagggctttaacttttcttctttagaaacctcagttacatcaacattgctt
                       cagcaagagaagcattccttatgggtctgcatctgtgtcataaaatgaatgtgtgggtatctggt
                       gtgtttacatgctctcaatctctgtcatggaaatttcactggctgcttggtacattctttgggta
                       ggtgcagttgagaaccaacagctagttaagaaacattgtattgctgttttgctccaactgagtaa
                       acaggtggttaggttttgcctatgtccctaggtgctctgatcccttagcccccaacctttgtatt
                       ataagtttacatgatcacgaaaacatgattacaatcaagagagctactctggtgcaatggtgcaa
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                       gagttcagtgactttgggccagtcactctctgcaacctaaatcaccatacaggtttactgtggga
                       aaaatagaaggcagaaacattgtatattttgccttgagttgtacaaaataacagtgggatataaa
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                       tgtcaatatgtacaaaatctcccttcagattttgctatttagtcaatgttgggcaaagggaaata
                       gagctggggatattgggggcaaggccaaaagatacgactttttaatgcataagatttaggcataa
                       catctgaacagtgttttaatttgatcagaaagaaatgtgctttcttttctgcccttggctgtcat
                       aattaaggccaacttcaacaaccagatgatcctatggtgttttaagcttgtgctgccagataaca
                       tttccagtggacaaggataatggaattggtagtctggaacatttgaaaggctgaaacaggcagtg
                       ctggaaggcagaagagcatcctttattaagttttctgctgaaagtggggtggtaaaacgtggatg
             16289     tgatctttatatttattgctagttgtcttctaatcctgctcttcttttcttctgttgtag
```

Fig. S2*C*. *(continued)*

Intron 5 Tissue- vs venom-type genes

```
                 (bp)
tissue-type  16382    gtaagtgacctggattatatccctcccctaagttggtgctggtgatcttcctcctttctttctta
                      gatcactacaaataagaattggttgttgctgttctttaaagaaaccaagtgttcatctaaagaat
                      tatatcttgaatccattcctcttagctacagtcacacatgtagctttgacagctgtggttccttt
                      atgctttgaggccattttgaaactgtttacttataaaaatatgtcaggaacagcatggaattaac
                      cgaaagcttttatcccttttcaactggattctagctgaaattttccttcacatgcatttgacccc
                      attgccctcccatctctttgctgctttgatgaaaacttgctgatgtttacaccaactttcataga
                      tacctaacattaaggctgtgcatggaagctctgctatctcacttagaacaagggagttttgccct
                      ttcatgaaccaaaagtcatgtacacccagtcaaagagtgggtacggttctgatgtgaattaactt
                      cgcatatcaatcatgaaaggtggaataaagagagttattttatcgccagcactccccagcatggt
                      gccttttatagtgcttttggaatatctatcccaggctattggtgttgcagtctggggccaagcag
             17032    atagtagttcaaagcatctggaaatactgcattgtggtgactgtagatgagttgtgtgtgggaat
                      ggaagtagctgatcttgtaatgtgaaactgacatctaccttgagacttgtgtagtattattgaat
                      gataaaatagaattcttctctgtacattagccagcctaatcaaatatggatatactttttcaatt
                      tctagcttaaaaataaatgcatgtatccactgtgagggtatattaagatggtttatggtctgcga
                      gttggcttggaagctggggaagaaagagagagagagagagagagagagagagagagagagagaga
                      atggggactggggaggatatttttagttagttgtgctgttttcatacatgtcctagcttaatcga
                      attctcatgaattcacattgtggagccatcagtggattgcccggggaatactgctagcttggttt
                      atactcttctggtgcacatgttattcagctgaatggcagagtgactcagagatgtaagagtgttg
                      tgattgagtgagcaccgtggccacagtcttccctctgggactatagctttccactccttcaggtg
                      gcttactttgctctgcaaatctccatatcggtatcgggttcctctggtttgggttaagctgaaat
             17682    tcctcttaatgcttgatgcctttttcatggtgtgcctctggatgaatgtggcattaatgaatgt
                      aaaactttgtgaaagtttcctgacgtaaacatgcttcctctgccctgctagtaattctgtgttct
                      tgtgatgcttactttgcttgtggttaggagagaaaaactgatgccaaccaagaggcttgaacaag
                      atccacggcacatcctgtccattaacctcagggacttcctcctttattacagcaactccttcttc
                      taaagtttaaataaactgtttctaggaagaaaggagtactttttgtattaggttttgtcccaaga
                      atattgcgtttttccacgtgcatttctctcagaatctactgctggagcagtaggtgctaagtttc
                      acctgattttctccttggctgggattgctgctctaggtctgtgcacattatcaaaagtacacagg
                      aagaccttaatgtgtgtgggtaggaatttgctttgcagaacgtcccagggtttctctaggcagag
                      ctgagaaatcacttgcctgactttggcgcatagtgtagacaatattaaattagatgaactggcaa
                      actgttcagtagagttggtttcttaggatcaccgtttttaatgaaagggtggaaaaccaaaccta
                      tacattactttctctggcatttgctgcagggaagggggctcagattctctgttaaaaaataccgt
                      tgtgttatcttccaaggaatgatagttagattagccccattgccttacctcacagtgtagaagtt
                      ggatatattttaaacctctagtagcagcaagtgtgagggatcagagttcatctgcctgtatgtag
                      tagctcacagagttcttggatgttagtgataacccctataataatggggttcagacgggccatag
                      ttatcttatgttccaagagcagagcagagcaattgaggctgaactgcatattagtagctgacctc

tissue-type  18657    ctttttcatagaatgcagaattacctccccatctttcactgttatctgcctacaggtggacagct
venom-type    2350    -------------------------------------------------gtacatggggggaggg

tissue-type  18722    caaaggagctttctgatggttccagtgggaattg-tcagaaataattgctgagggtaaagcttgt
venom-type    2366    gctgggggttaacagaataagagagttgtaagggaccttggaggtcttctagtccaacccctggc

tissue-type  18786    gcatgtcaaaatgcaaaaggcataaaacaagcaggtgcatagggaggcacatttgtccattgtta
venom-type    2431    tcaggttggcctggggcaggc---tgggagggcggggc--aggagggcaagatggctgcttgagg

tissue-type  18851    agtgctgcccactttcttccttccttccttccttactgaggttggagagcccattctctctcggg
venom-type    2491    cgaact--cctctttcttcccccctttgcag----------------------------------

tissue-type  18916    gagcagagaagctgacttttagggcccatactggcagccaaaataaggcatttcattttcttaag
                      aaaggagcagagttttgtaggctgggtcatatttgaagtgagacatgcctatctgtaactggaag
                      ggaagttgagagtcttgtcaagtttcaacttttgatagagttgtgtgaagtacagaaacaaattt
                      atttatttaaaagatttatatggccacccatcttaaaaaaaaaaacaactcacagcaagaaagaa
                      gaaatgcctcaactccaaggacttctagagtttagatgcttatgctttagctaagtcgcatatgg
                      tagcttctccttctttttcttcctttttttctcccccccctgtgcactttctctctccctctctctc
             19306    tctctctcttgcttgttttgtttttcttccag
```

Fig. *S2C*. *(continued)*

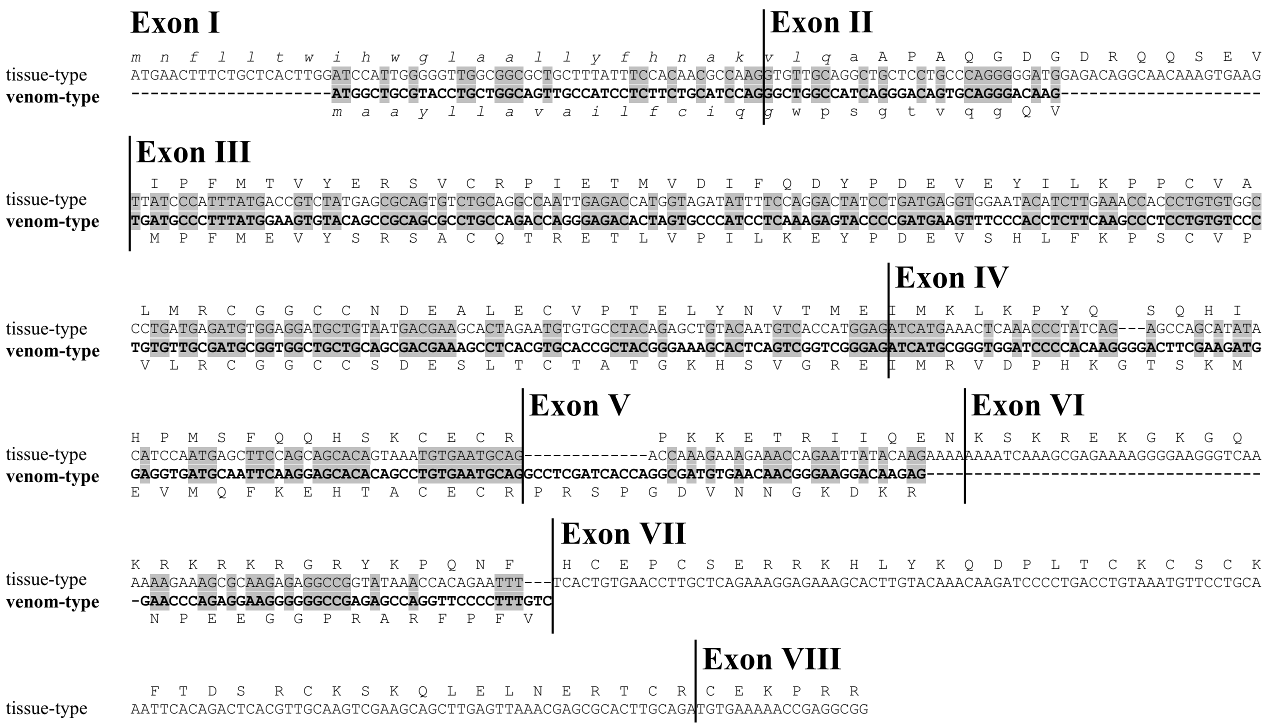
Exon I
Exon II
Exon III
Exon IV
Exon V
Exon VI
Exon VII
Exon VIII
tissue-type
venom-type

Fig. S3.

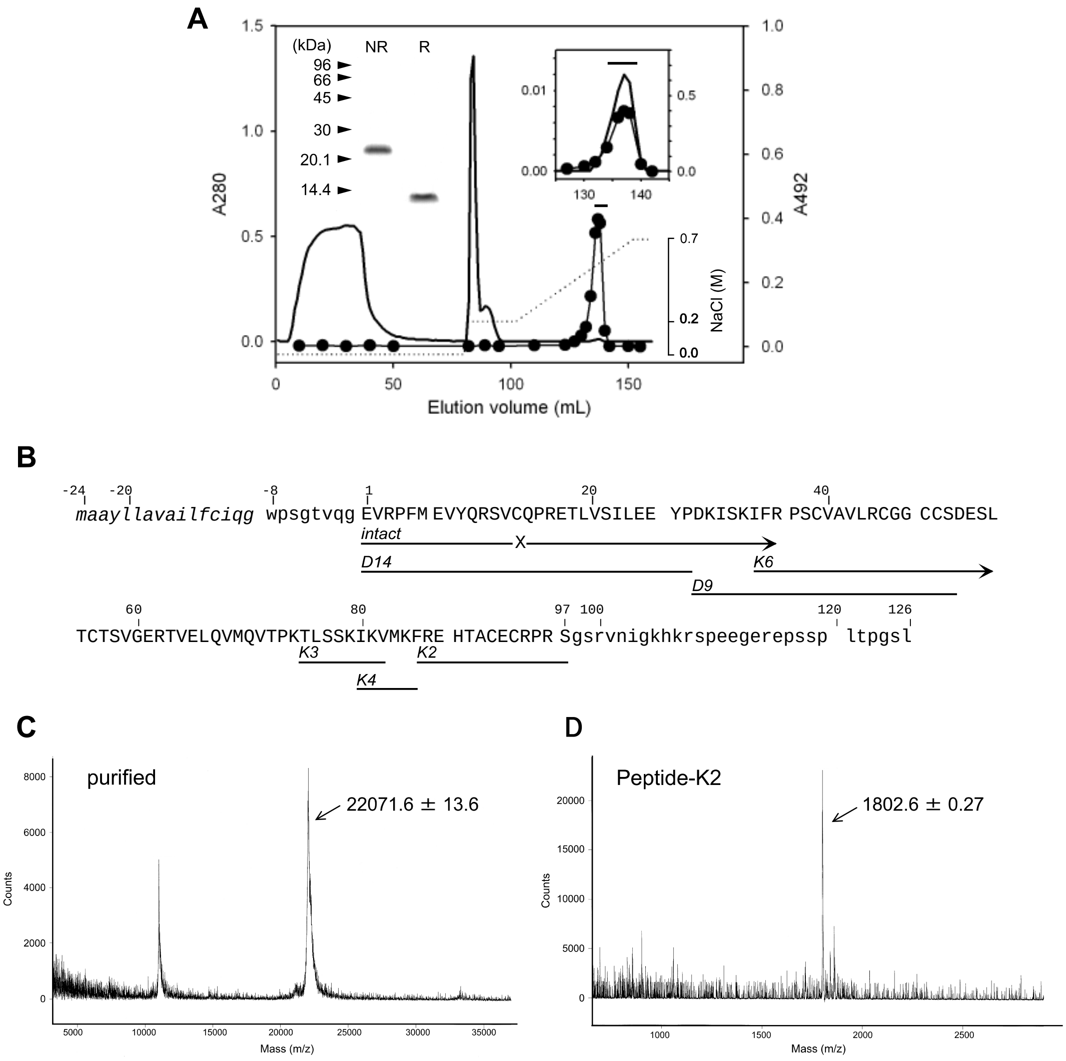
A
(kDa)
NR
R
96
66
45
30
20.1
14.4
A280
A492
NaCl (M)
Elution volume (mL)
B
maayllavailfciqg wpsgtvqg EVRPFM EVYQRSVCQPRETLVSILEE YPDKISKIFR PSCVAVLRCGG CCSDESL
intact
D14
K6
D9
TCTSVGERTVELQVMQVTPKTLSSKIKVMKFRE HTACECRPR Sgsrvnigkhkrspeegerepssp ltpgsl
K3
K2
K4
C
purified
22071.6 ± 13.6
Counts
Mass (m/z)
D
Peptide-K2
1802.6 ± 0.27
Counts
Mass (m/z)

Fig. S4.

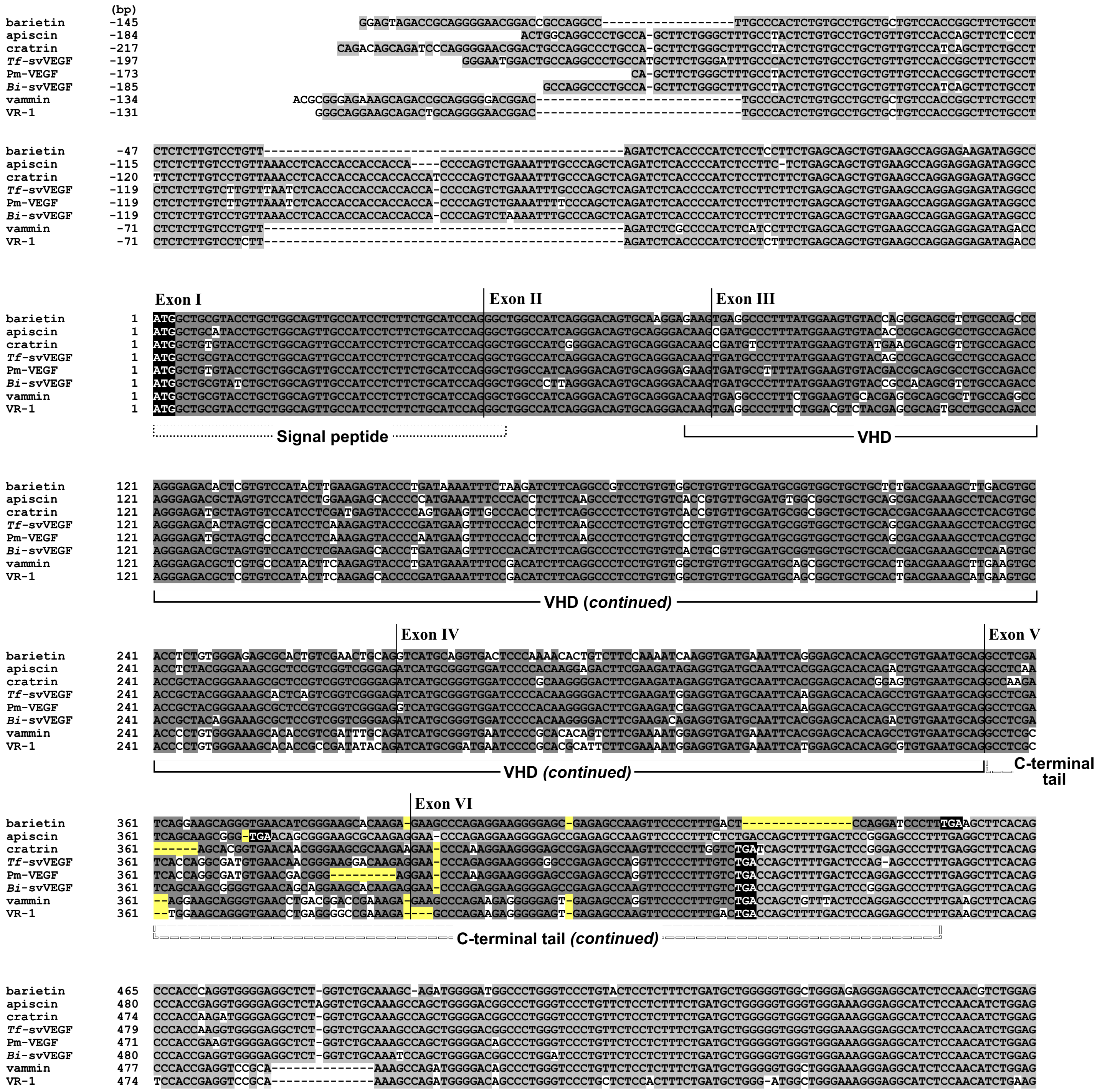
(bp)
barietin
apiscin
cratrin
Tf-svVEGF
Pm-VEGF
Bi-svVEGF
vammin
VR-1
Exon I
Exon II
Exon III
Signal peptide
VHD
VHD (continued)
Exon IV
Exon V
C-terminal tail
Exon VI
C-terminal tail (continued)

Fig. S5.

```
barietin     583  AGGTTGCTTTGCATCTGTCTACACTTCTACGGCAGCCGGGCCTGC-----------------------------AAAACACATC-CTCCCAGGCTGCAAGGCCAGAACTGAAGAGCGAAG
apiscin      600  AAGTTGCCATGTATCCATCTACACTTCCATGACAGCCGGGCCTGGCCTGGCCTCTTCCATGTTTGTTGACCTGTAAAACACATCACTCCCAGGCTGCAAGGCCAGAACTGAAGAGCGAAG
cratrin      593  AAGTTGCTATGTATCCATCTACACTTCTATGACAGCCGGGCCTGGCCTGGCCTCTTCCATGTTTGTTGACCTGCAAAACACATCACTCCCAGGCTGCAAGGCCAGAACTGAAGAGCGAAG
Tf-svVEGF    598  AAGTTGCTATGTATCCATCTACACTTCTATGACAGCCGGGCCTGGCCTGGCCTCTTCCATGTGTGTTGACCTGCAAAACACATCACTCCCAGGCTGCAAGGCCAGAACTGAAGAGCGAAG
Pm-VEGF      590  AAGTTGCTATGTATCCATCTACACTTTTATGACAGCCGGGCCTGGCCTGGCCTCTTCCATGTTTGTTGACCTGCAAAACACATCACTCCCAGGCTGCAAGGCCAGAACTGAAGAGCGAAG
Bi-svVEGF    599  AAGTTGCTATGTATCCATCTACACTTCTATGACAGCTGGGCCTGGTCTGGCCTCTTCCATGTTTGTTGACCTGCAAAACACATCACTCCCAGGCTGCAAGGCCAGAACTGAAGAGCGAAG
vammin       583  AGGTTGCTTTGTATCCATCTAAACTTCTGTGACAGCCGGGCCTGC-----------------------------AAAACACATCACTCCCAGGCTGCAAG-CCAGAGCTGAAGAGTGAAG
VR-1         579  AGGTTGCTTTGTATCCATCTAAACTTCTGTGACAGCCGGGCCTGC-----------------------------AAAACACATCACTCCCAGGCTGCAAGGCCAGAGCTGAAGAGCGAAG

barietin     673  GCAGCTTCCTTTTCCAATAACTCAGCAATCGAGTTTGAATATCTGGCATCTTTTTTCTTACATCCGAAAGCCAGGTGCCTCTTTGACCAGCTAATTCATCTCCCT-----GTTTGCGATT
apiscin      720  GCAGCTTCCTTCTCCAGTAACTCAGGAATCGAGTTTGAATTTCTGGCATC--------------CGAAAGCC-------TCTTTGACCAGCTAACTC------CTCA-GAGTTTGCCCTT
cratrin      713  GCAGCTTCCTTCTCCAGTAACTCAGGAATCGAGTTTGAATTTCTGGCATC--------------TGAAAGCC-------TCTTTGACCAGCTAACTC------CTCA-GAGTTTGCCATT
Tf-svVEGF    718  GCAGCTTCCTTCTCCAGTAACTCAGCAATCGAGTTTGGATTTCTGGCATC--------------CGAAAGCC-------TCTTTGACCAGCTAACTCATCTCCCTCAAGAGTTTGCCATT
Pm-VEGF      710  GCAGCTTCCTTCTCCAGTAACTCAGCAATCGAGTTTGGATTTCTGGCATC--------------CGAAAGCC-------TCTTTGACCAGCTAACTCATCTCCCTCAAGAGTTTGCCATT
Bi-svVEGF    719  GCAGCTTCCTTCTCCAGTAACTCAGGAATCGAGTTTGAATTTCTGGCATC--------------CGAAAGCC-------TCTTTGACCAGCTAACTC------CTCA-GAGTTTGCCATT
vammin       673  GCATCTTCCTTTACCAATAACTCAGCGATCGAGTTTGAATATCTGGCGTCTTTTTTCTTACATCCGAAAGCCAGGTGCCTCTCTGACCAACTAACTCATCCCCCT-----GTTTGCCATT
VR-1         670  GCAGCTTCCTTTTCCAATAACTCGGCGATCGAGTTTGAATATCTGGCATCTTTTTTCTTACTTCCGAAAGCCAGGTGCCTCTCTGACCAACTAACTCATCTCCCTCA---GTCTGCCATT

barietin     788  TTGTGTCAGCGTTTAATGGCTTTTAGTAAAATTGT------AATACACAATTTTTAAAATTAAGATTTGATATCTCCCGACCCCTCATCAGGGGAGCTGGGGAAAAACATTTGGTTTCTT
apiscin      812  TTGTGTCAGT-CTTAATGGCTTTTAGTAAAATTGTCCTTGTAATACACCATTTTTAAAATTAAGATTTGATATCTCCCAACCCCTCATCAGGGGAGCTGGGGGAAAAACATTAGTTTCTT
cratrin      805  TTGTGTCAGC-CTTAATGGCTTGTAGTAAAATTGTCCTTGTAATACACAATTTTTAAAATTAAGATTTGCTATCTCCCGACCCCTCATCAGGGGAGCTGGGGAAAAACATTTAGTTTCTT
Tf-svVEGF    817  TTGTGTCAGC-CTTAATGGCTTTTAGTAAAATTGTCTTTGTAATACACAATTTTTAAAATTAAGATTTGATATCTTCCGACCCCTCATCAGGGGAGCTGGGGAAAAACAGTTTCTTT---
Pm-VEGF      809  TTGTGTCAGC-CTTAATGGCTTTTAGTAAAATTGTCCTTGTAATACACAATTTTTAAAATTAAGATTTGATATCTCCCGACCCTTCATCAGGGGAGCTGGGGAAAAACAGTTTCTTT---
Bi-svVEGF    811  TTGTGTCAGC-CTTAATGGCTTTTAGTAAAATTGTCCTTGTAATACACAGTTTTTAAAATTAAGATTTGATATCTCCCGACCCCTCATCAGGGGAGCTGGGGAAAAACATTTAGTTTCTT
vammin       788  TTGTGTCAGC-TTTAATGGCTTTTAGTAAAATTGTCCTTGTAATGCACAATTTTTAAAATTAAGATTTGATATCTCCCGACCCCTCATCAGGGGAGCTGGGGAAAAACATTTATTTTCTT
VR-1         787  TTGTGTCAGC-TTTAATGGCTTTTAGTAAAATTGTCCTTGTAATACACAATTTTTAAAATTAAGATTTGATATCTCCTGACCCCTCAACAGGGGAGCTGGGGAAAAACATTTAGTTTCTT

barietin     902  TTAAAGAATGTGGAATTCTGTCTTTTAGCCC-ACCTG------CATGAGTTTCACGGAGCCTTGGAATAAA----CGGAGTAAATT-polyA
apiscin      931  TTAAAGAATGTGGAATTATGTCTTTTAGCCCCGTCTGGATCTGCATGACTTTCACAGAGCCTTGGAATAAA----CGGAGTAAACTAAAAAGC-polyA
cratrin      924  TTAAAGAATGTGGAATTATGTCTTTTAGCCCCGTCTGGATCTGCATGACTTTCA--GAGCCTTGGAATAAA----CGGAGTAAACC-polyA
Tf-svVEGF    933  -TAAAGAATGTGGAATTATGTCTTTTAGCCCCGTCTGGATCTGCATGACTTTCACAGAGCCTTGGAATAAA----CGGAGTAAACT-polyA
Pm-VEGF      926  -TAAAGAATGTGGAATTATGTCTTTTAGCCCCGTCTGGATCTGCGTGACTTTCACAGAGCCTTGGA
Bi-svVEGF    930  TTAAAGAATGTGGAATTATGTCTTTTATCCCCGTCTGGATCTGAGTGACTTTCACAGAGCCTTGGAATAAATAAACGGAGTAAACT-polyA
vammin       907  TTAAAGAATGTGGAATTATGTCTTTTAGCCCCATCTG------CATGACTTTCACGGAGCCTTGGAATAAAT----GGAGTAAACC-polyA
VR-1         906  TTAAAGAATGCGGAATTATGTCTTTTAGCCCCATCTG------CATGACTTTCACGGAGCCTTGGAATAAAT----GGAGTAAACTC-polyA
```

Fig. S5. *(continued)*