

Supplemental information

**Splice variants of pH-sensitive chloride channel identify a key determinant
of ivermectin sensitivity in the larvae of the silkworm *Bombyx mori***

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Supplemental Table 1. Primers used for the mutations of pHCI-1 variants 1 and 9.

Primer name	Sequence (5'-3')
BmpHCl_1_R233K_F	GTTGCCTCAAGGTGGATCTAATCTTCACAAGA
BmpHCl_1_R233K_R	TAGATCCACCTTGAGGCAACTGTAATTACCTCT
BmpHCl_1_S243A_F	GAGATAGAGCTTTTACTCACCATCAGTATTATA
BmpHCl_1_S243A_R	AAGTAAAAAGCTCTATCTCTGTGAAGATTAGATC
BmpHCl_1_V275S_F	CTGCTAGATCTATGATAGGTGTAACAACAATGTTG
BmpHCl_1_V275S_R	CCTATCATAGATCTAGCAGGCACAGCATTCCATT
BmpHCl_9_K233R_F	AGCTGTCTAACAGAGTTGACTTAATCTTACTAGAGA
BmpHCl_9_K233R_R	AAGTCAACTCTTAGACAGCTGTAGTTACCTCTCCA
BmpHCl_9_A243S_F	AGAGACCGATCTTCTACTTACTACAGTATTAT
BmpHCl_9_A243S_R	AAAGTAGAAAGATCGGTCTCTAGTAAAGATTAAGT
BmpHCl_9_S275V_F	GCCCCGTGTGATGATAGGTGTAACAACAATG
BmpHCl_9_S275V_R	TGGCACCGCGTTCCATTCCAGCC

Supplemental Table 2. Accession numbers of variants of *Bombyx* pHCI-1 gene transcripts

Variant name	Accession number
Bm pHCI1 variant 1	LC259029
Bm pHCI1 variant 2	LC259030
Bm pHCI1 variant 3	LC259031
Bm pHCI1 variant 4	LC259032
Bm pHCI1 variant 5	LC259033
Bm pHCI1 variant 6	LC259034
Bm pHCI1 variant 7	LC259035
Bm pHCI1 variant 8	LC259036
Bm pHCI1 variant 9	LC259037
Bm pHCI1 variant 10	LC259038
Bm pHCI1 variant 11	LC259039
Bm pHCI1 variant 12	LC259040
Bm pHCI1 variant 13	LC259041
Bm pHCI1 variant 14	LC259042
Bm pHCI1 variant 15	LC259043
Bm pHCI1 variant 16	LC259044
Bm pHCI1 variant 17	LC259045
Bm pHCI1 variant 18	LC259046
Bm pHCI1 variant 19	LC259047
Bm pHCI1 variant 20	LC259048
Bm pHCI1 variant 21	LC259049
Bm pHCI1 variant 22	LC259050
Bm pHCI1 variant 23	LC259051
Bm pHCI1 variant 24	LC259052
Bm pHCI1 variant 25	LC259053
Bm pHCI1 variant 26	LC259054
Bm pHCI1 variant 27	LC259055
Bm pHCI1 variant 28	LC259056
Bm pHCI1 variant 29	LC259057
Bm pHCI1 variant 30	LC259058
Bm pHCI1 variant 31	LC259059
Bm pHCI1 variant 32	LC259060
Bm pHCI1 variant 33	LC259061

Bm pHCI1 variant 34	LC259062
Bm pHCI1 variant 35	LC259063
Bm pHCI1 variant 36	LC259064
Bm pHCI1 variant 37	LC259065
Bm pHCI1 variant 38	LC259066
Bm pHCI1 variant 39	LC259067
Bm pHCI1 variant 40	LC259068
Bm pHCI1 variant 41	LC259069
Bm pHCI1 variant 42	LC259070
Bm pHCI1 variant 43	LC259071
Bm pHCI1 variant 44	LC259072
Bm pHCI1 variant 45	LC259073
Bm pHCI1 variant 46	LC259074
Bm pHCI1 variant 47	LC259075
Bm pHCI1 variant 48	LC259076
Bm pHCI1 variant 49	LC259077
Bm pHCI1 variant 50	LC259078
Bm pHCI1 variant 51	LC259078

Supplemental Table 3. Variants of *Bombyx* pHCI-1 with incomplete structures due to generation of an in-frame stop codon in their mRNAs

Variant numbers	Amino acid sequences	Detection (%)
52	MGWSCVVTRAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDEDTLRKSPSLTTLNAYLIQNQTIPCP IKASWRAEGNSLYEEDEEELCNLCQRRFEEQAV	0.67
53	MVVMRRGTRRGGLYPHARQNISFYVRHLCRGKVGQRDFGQSS	1.3
54	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDEDTLRKSPSLTTLNAYLIQNQTIPCP IKASWRGNYSCLKVDLIFTRDRAFYFTTVFIPGIILVTSSFITFWL EWNAVPARSMIGVTTMLNFFYNI	0.67
55	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDEDTLRKSPSLTTLNAYLIQNQTIPCP IKASWRGVTTMLNFFYNI	0.67
56	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCCQGRLNIFPFDDPLCSF ALESISYEQSAITYAWKNDEDTLRKSPSLTTLNAYLIQNQTIPCP KASWRGNYSCLRVDLIFTRDRSFYFTTVFIPGIILVTSSFITFWL EWNAVPARVMIGVTTMLNFTTSNGFRSTLPVVSNLAMNVW DGVCMCFIYASLLEFVCVNYVGRKRPLHNVYRPGENPVTQE AM AFLQWVKSETPQPACSGEVSDVTATSRKHFA LFHFHPFMIS	1.3
57	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFHSMTHCVH	1.3

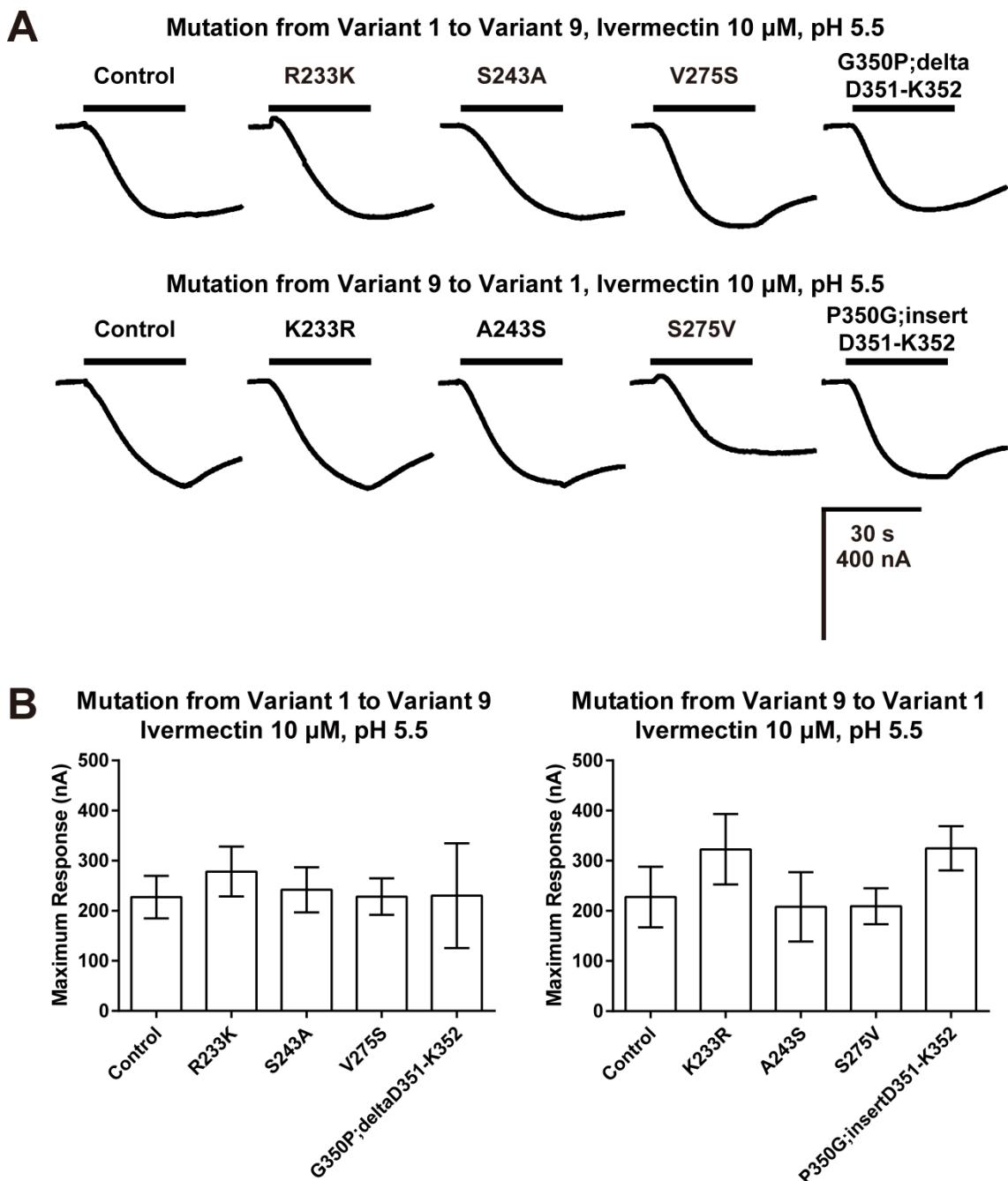
	LP	
58	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDEDTLRKSPSLTTLNAYLIQNQTIPCP IKASWRGNYSCLKVLIFTRDRAYFTTVFIPGIILVTSSFITFWL EWNAVPARSMIGVTTMLNFFTSNGFRSTLPVVSNLAMNVW DGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGENPVTQP K	1.3
59	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKE YSEHSRDPIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYVWKNDEDTLRKSPSLTTLNAYLIQ NQTIPCPIKASWRAGNSLYEEDEELTCNLQCRRFEEQGNYS CLKVDLIFTRDRAYFTTVFIPGIILVTSSFITFWLENAVPARSM IGVTTMLNFFTSNGFRSTLPVVSNLAMNVWDGVCMCFIYAS LLEFVCVNYVGRKRPLHNVVYRPGENPVTQPGDKRLLT	0.67
60	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKE YSEHSRDPIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYAWKNDEDTLRKSPSLTTLNAYLIQ NQTIPCPIKASWRGNYSCLRVLIFTRDRSFYFTTVFIPGIILVTS SFITFWLENAVPARVMIGVTTMLNFFTSNGFRSTLPVVSNLT AMNVWDGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPG NPVTQEAMAFLQWVKSETPQPCSGEVSDVTATSRKHFA HPFMIS	0.67
61	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKE YSEHSRDPIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYVWKNDEDTLRKSPSLTTLNAYLIQ NQTIPCPIKASWRAGNSLYEEDEELTCNLQCRRFEEQGNYS CLKVDLIFTRDRAYFTTVFIPGIILVTSSFITFWLENAVPARSM	0.67

	IGVTTMLNFTTSNGFRSTLPVVSNLTAMNVWDGVCMCFIYAS LLEFVCNYVGRKRPLHNVVYRPGENPVTQRLPAVLSRIGIILA SPLPKRESTGAADLVACTGPPAPVRTPPIMAVYPSHVSSR FAKKNPRISEWRLLT	
62	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPTFYFIMHGDFKE YSEHSRDPIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQ NQTIPCPIKASWRAEGNSLYEEDEELTCNLQCRRFEEQGVTT MLNFTTSNGFRSTLPVVSNLTAMNVWDGVCMCFIYASLLEFV CVNYVGRKRPLHNVVYRPGENPVTQPGDKKRLLT	0.67
63	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDDPEFCCGLTSPNDSLQAQNVRGFSSLRPRSH NRGVLTNVSVLLSLASPDESSLKYEVEFLLQQWYDPRRLRY SNQSHYDYLNAIHHHEDIWLPTFYFIMHGDFKDPIIPMHFALRIY RNGTINYLMRRHLILSCQGRLNIFPFDDPLCSFALESISYEQSAI TYVWKNDDETLRKSPSLTTLNAYLIQNQTIPCPIKASWRAEGN SLYEEDEELTCNLQCRRFEEQGVTTMLNFTTSNGFRSTLPVV SNLTAMNVWDGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYR PGENPVTQPGDKKRLLT	0.67
64	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEIWTIFLKIP ATTKDCSHQLMVFSQ	1.3
65	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDDPEFCCGLTSPNDSLQAQNVRGFSSLRPRSH NRGVLTNVSVLLSLASPDESSLKYEVEFLLQQWYDPRRLRY SNQSHYDYLNAIHHHAWRF	0.67
66	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPTFYFIMHGDFKE YSEHSRDPIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQ NQTIPCPIKASWRGNYSCLKVLIFTRDRAFTVFIGIILVTS SFITFWLEWNNAVPARSMIGVTTMLNFTTSNGFRSTLPVVSNLT AMNVWDGVCMCFIYASQKRTPASDPSGEDY	4.0
67	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN	0.67

	TRYDKRLLPPVDDPEFCCGLTSPNDSLAQNRVGFSSLRPRSH NRGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQWYDPRRLRY SNQSHYDYLNAIHHHEDIWL PDTYFIMHGDFKEYSEHSRDPIIP MHFALRIYRNGTINYLMRRHLILSCQGRLNIFPFDDPLCSFALE SISYEQSAITYVWKND ETLRKSPSLTTLNAYLIQNQTIPCPKA SWRGNY SCLKV D L I F T R D R A F Y F T T V F I P G I I L V T S S F I T F W L E W NAVPARSMIGVTMLNFFTTSNGFRSTLPVVSNLAMNVWDG VCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGENPVTQPGD KKRLLT	
68	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPV DGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHAWRF	4.0
69	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDDPEFCCGLTSPNDSLAQNRVGFSSLRPRSH NRGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQWYDPRRLRY SNQSHYDYLNAIHHHEDIWL PDTYFIMHGDFKDPIIPMFALRIY RNGTINYLMRRHLILSCQGRLNIFPFDDPLCSFALESISYEQSAI TYVWKND ETLRKSPSLTTLNAYLIQNQTIPCPKASWRGNYS CLRVDLIFTRDRSFYFTTVFIPGII LTSSFITFLAGMECCAC	1.3
70	MGWSCVVARAVAFILMLGKISAFTSDILCGD	0.67
71	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPV DGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWL PDTYFIMHGDFKE YSEHSRDPIIPMFALRIYRNGTINYLMRRHLILSCRGRLNIFPF DDPLCSFALESISYEQSAITYVWKND ETLRKSPSLTTLNAYLIQ NQTIPCPKASWRGNYSCLKV D L I F T R D R A F Y F T T V F I P G I I L V T S S FITFWLEWNAVPARSMIGVTMLNFFTTSNGFRSTLPVVSNL AMNVWDGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGE NPVTQRLPAVL SRIGII LASPLPKRESTGAADLV S C T A C T G P P R L LYAHRQ	0.67
72	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPV DGVLTNVSVLLLSSLASPDESSLKYEVEFYFN NNGTTLG	0.67
73	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPV DGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWL PDTYFIMHGDFKE	2.0

	YSEHSRDPIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQ NQTIPCPIKASWRGNYSCLKVDLIFTRDRAFYFTTVFIPGIILVTS SFITFWLEWNAVPARSMIGVTMLNFFYNI	
74	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPFDDPLCSF ALESISYEQSAITYAWKNDDETLRKSPSLTTLNAYLIQNQTIPCPI KASWRGNYSCLRVDLIFTRDRSFYFTTVFIPGIILVTSSFITFWL EWNAVPARVMIGVTMLNFFTSNGFRSTLPVVSNLAMNVW DGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGENPVTQE AM AFLQWVKSETPQPACSGEVSDVTATSRKHFA LFHFHPFIIS	0.67
75	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKE YSEHSRDPIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQ NQTIPCPIKASWRGNYSCLKVDLIFTRDRAFYFTTVFIPGIILVTS SFITFWLEWNAVPARSMIGVTMLNFFTSNGFRSTLPVVSNL AMNVWDGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGE NPVTQRLPAVLSRIGIILASPLPKRESTGAADLVSCTACTGPPAP VRTPPIMAVYPRFAKKNPRIRSEWRRLLT	1.3
76	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQNQTIPCP IKASWRAEGNSLYEEDEELTCNLCQRRFEEQGNYSCLKVDLIF TRDRAFYFTTVFIPGIILVTSSFITFWLEWNAVPARSMIGVTML NFFYNI	0.67
77	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLSLASPDESSLKYEVEFLLQQ QWYDPRRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQNQTIPCP	1.3

	IKASWRGNYSCLRVDLIFTRDRSFYFTTVFIPGIILVTSSFITFWL EWNAVPARVMIGVTTMLNFFTSNGFRSTLPVVSNLAMNVW DGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGENPVTQP GDKKRESTGAADLVSCTACTGPPGSCTHTANNGVSEPCFVQ VRKKRTPASDPSGEDY	
78	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKE YSEHSRDPIIPMHFALRIYRNCTINYLMRRHLILSCQGRLNIFPF DDPLCSFALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQ NQTIPCP IKASWRGNYSCLRVDLIFTRDRSFYFTTVFIPGIILVTS SFITFWLEWNAVPARVMIGVTTMLNFFTSNGFRSTLPVVSNLT AMNVWDGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPG NPVTQPKRESTGAADLVSCTACTGPPAPVRTPPIMAVYPSHVS SRFAKKNPRIRSEWRRLLT	0.67
79	MGWSCVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQNQTIPCP IKASWRGNYSCLRVDLIFTRDRSFYFTTVFIPGIILVTSSFITFWL EWNAVPARVMIGVTTMLNFFTSNGFRSTLPVVSNLAMNVW DGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGENPVTQR LPAVLSRIGIILASPLEAMAFLQWVKSETPQPACSGEVSDVTAT SRKHFAHFHPFMIS	0.67
80	MGWSCVVVARAVAFILMLGKISAFTSDIFAAGKSDKEILDNLLKN TRYDKRLLPPVDGVLTNVSVLLLSSLASPDESSLKYEVEFLLQQ QWYDPRLRYSNQSHYDYLNAIHHHEDIWLPDTYFIMHGDFKD PIIPMHFALRIYRNGTINYLMRRHLILSCQGRLNIFPFDDPLCSF ALESISYEQSAITYVWKNDDETLRKSPSLTTLNAYLIQNQTIPCP IKASWRGNYSCLRVDLIFTRDRSFYFTTVFIPGIILVTSSFITFWL EWNAVPARVMIGVTTMLNFFTSNGFRSTLPVVSNLAMNVW DGVCMCFIYASLLEFVCVNYVGRKRPLHNVVYRPGENPVTQE AMAFLQWVKSETPQPACSGEVSDVTATSRKHFAHFHPFMIS	0.67



Supplemental Figure 1. Effects of mutations of variants 1 and 9 of *Bombyx* pHCl-1 on the response to 10 μ M ivermectin at pH 5.5. (A) Responses of oocytes expressing the wild-type and mutant variants 1 and 9 of *Bombyx* pHCl-1 to 10 μ M ivermectin. Horizontal lines indicate the application of 10 μ M ivermectin at pH 5.5. (B) Comparison of peak current amplitude of the response to 10 μ M ivermectin in oocytes expressing the variant 1, variant 9 and their mutants at pH 5.5. Each bar graph represents mean \pm S.D. ($n = 5$).