

1 **S1 Note**

2 >*Chilo suppressalis* RDL *Chilo suppressali* RDL-wild-type

3 MHTSRSRGVHNFALVVALTIAWL SHADHAAGTGGGGMFGDVNISAILDSL SVSYDKRVRPNY  
4 GGPPVDVGVTMYVLSISLSEVKMDFTLDFYFRQFWTDPRLAYKKRTGVETLSVGSEFIRNIW  
5 VPDTEFFVNEKQSYFHIATTSNEFIRIHHSITSIRLTITASCPMDLQYFPMDRQLCNIEIESFGYT  
6 MRDIRYK WNEGPN SVGSSEVSLPQFKVLGHRQRAMEISLTGNY SRLACEIQFVRS MGYYLI  
7 QIYIP SGLIVIISWVSFWLNRNATPARVSLGVTTVLTMTTLMSS TNAALPKISYVKSIDV YL TCF  
8 VMVFASLLEYATVGYMAKRIQMRKQRFTAVQKMAAEKKMHIDGPPGTSEPLPPPRTSTLNRPL  
9 PPSRSSEVRFKVHDPKAYS KGGTLENTINGARAPPPVPQPEEDPAPPHLLQASKGINKLLGT  
10 TPSDIDKYSRIVFPVCFVCFNL MYWIIYLHVSDVVADDLVLLGEEN

11  
12 *Chilo suppressalis* RDL-G3'M<sub>TMD3</sub>

13 MHTSRSRGVHNFALVVALTIAWL SHADHAAGTGGGGMFGDVNISAILDSL SVSYDKRVRPNY  
14 GGPPVDVGVTMYVLSISLSEVKMDFTLDFYFRQFWTDPRLAYKKRTGVETLSVGSEFIRNIW  
15 VPDTEFFVNEKQSYFHIATTSNEFIRIHHSITSIRLTITASCPMDLQYFPMDRQLCNIEIESFGY  
16 TMRDIRYK WNEGPN SVGSSEVSLPQFKVLGHRQRAMEISLTGNY SRLACEIQFVRS MGYYL  
17 IQIYIP SGLIVIISWVSFWLNRNATPARVSLGVTTVLTMTTLMSS TNAALPKISYVKSIDV YL MT  
18 CFVMVFASLLEYATVGYMAKRIQMRKQRFTAVQKMAAEKKMHIDGPPGTSEPLPPPRTSTLN  
19 RPLPPRSSEVRFKVHDPKAYS KGGTLENTINGARAPPPVPQPEEDPAPPHLLQASKGINKL  
20 LGTTPSDIDKYSRIVFPVCFVCFNL MYWIIYLHVSDVVADDLVLLGEEN

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22 *Laodelphax striatellus* RDL-wild-type

23 MRRALALVWLAVTTTLR PADRLPFVLAGTGGGSM LGDVNISAILDSFSVSYDKRVRPNYGGP  
24 PVEVGVTMYVLSISLSEVKMDFTLDFYFRQFWTDPRLAFRKRPGVETLSVGSEFIKNIWVPDT  
25 FFFVNEKQSYFHIATTSNEFIRIHHSITSIRLTITASCPMNLQYFPMDRQLCHIEIESFGYTMRDI  
26 RYK WNEGPN SVGSSEVSLPQFKVLGHRQRAMEISLTGNY SRLACEIQFVRS MGYYLIQIYIP  
27 SGLIVIISWVSFWLNRNATPARVALGVTTVLTMTTLMSS TNAALPKISYVKSIDV YL GTCFVMV  
28 FASLLEYATVGYMAKRIQMRKNRFMAIQKIAEQKQKQGMEAHAGHPPGVPGGGDPADHAPK  
29 QTATRYKTLDSKGHYKSGTLD SRTYGRPDKEAPAPPPPPPPPELNRSERELNKMC

30 GISASDIDKYSRIMFPVCFICFNLMYWIIYHLISDIVADDIVMLEPDK  
31  
32 *Laodelphax striatellus* RDL-G3'M<sub>TMD3</sub>  
33 MRRALALVWLAVTTTTLLRPADRLPFVLAGTGGGSM LGD V N I S A I L D S F S V S Y D K R V R P N Y G G P  
34 PVEVGVTMYVLSISSEVKMDFTLDFYFRQFWTDPRLAFRKRPGVETLSVGSEFIKNIWVPDT  
35 FFVNEKQSYFHIATTSNEFIRIHHSITSIRLTITASCPMNLQYFPMDRQLCHIEIESFGYTMRDI  
36 RYKWNENPNSVGVSNEVSLPQFKVLGHRQRAMEISLTTGNYSRLACEIQFVRSMGYLIQIYIP  
37 SGLIVIISWVSFWLNRNATPARVALGVTTLTMSSTNAALPKISYVKSIDVYL M TCFVMV  
38 FASLLEYATVGYMAKRIQMRKNRFMAIQKIAEQKQKQGMEAHAGHPPGVPGGDPADHAPK  
39 QTATRYKTLDKSGHYKSGTLDSTRYGRPDKEAPAPPPPPPELNRSERELNKMCGISASDIDKY  
40 SRIMFPVCFICFNLMYWIIYHLISDIVADDIVMLEPDK

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43 *Apis mellifera* RDL-wild-type

44 MSFHAASWSFALLAATVALLPATHRAPFAQAATGGGSM L N D V N I S A I L D S F S V S Y D K R V R P N  
45 YGGPPVEVGVTMYVLSISSEVKMDFTLDFYFRQFWTDPRLAFKKRTGVETLSVGSEFIKNI  
46 WVPDTFFVNEKQSYFHIATTSNEFIRIHHSITSIRLTITASCPMNLQYFPMDRQLCHIEIESFG  
47 YTMRDIRYKWNENPNSVGVSNEVSLPQFKVLGHRQRAMEISLTTGNYSRLACEIQFVRSMGY  
48 YLIQIYIPSGLIVIISWVSFWLNRNATPARVALGVTTLTMSSTNAALPKISYVKSIDVYL  
49 TCFVMVFASLLEYATVGYMAKRIQMRKNRFQKIAESMKTARENPGPPGVPGDHGDHAPKQ  
50 TEVRFKVHDPKAHSGGTLENTINGRADEEAAPAQHLIHPGKDINKLYGMTPSDIDKYSRIVF  
51 PVCFCVCFNLMYWIIYHLISDVVADDLVLEEK

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53 *Apis mellifera* RDL-G3'M<sub>TMD3</sub>

54 MSFHAASWSFALLAATVALLPATHRAPFAQAATGGGSM L N D V N I S A I L D S F S V S Y D K R V R P N  
55 YGGPPVEVGVTMYVLSISSEVKMDFTLDFYFRQFWTDPRLAFKKRTGVETLSVGSEFIKNI  
56 WVPDTFFVNEKQSYFHIATTSNEFIRIHHSITSIRLTITASCPMNLQYFPMDRQLCHIEIESFG  
57 YTMRDIRYKWNENPNSVGVSNEVSLPQFKVLGHRQRAMEISLTTGNYSRLACEIQFVRSMGY  
58 YLIQIYIPSGLIVIISWVSFWLNRNATPARVALGVTTLTMSSTNAALPKISYVKSIDVYL

59 MTCFVMVFASLLEYATVGYMAKRIQMRKNRFQKIAESMKTARENPGPPGVPGDHGDHAPKQ  
60 TEVRFKVHDPKAHSGGTLENTINGRADEEAAPAPQHLIHPGKDINKLYGMTPSIDDKYSRIVF  
61 PVCFCVFNLMYWIIYLHISDVVADDLVLLLEAK

62

63 *Drosophila melanogaster* RDL-wild-type

64 MSDSKMDKLARMAPLPRTPLLTIWLAINMALIAQETGNKRIHTVQAATGGGSMLGDVNISAIL  
65 DSFSVSYDKRVRPNYGGPPVEVGVTMYVLSISSLSEVKMDFTLDFYFRQFWTDPRLAYRKRPG  
66 VETLSVGSEFIKNIWVPDTEFFVNEKQSYFHIATTSNEFIRVHHSITSIRLTITASCPMNLQYFP  
67 MDRQLCHIEIESFGYTMRDIRYKWNENPNSVGSSEVSLPQFKVLGHRQRAMEISLTTGNYSR  
68 LACEIQFVRSMGYLYLIQIYIPSGLIVVISWVSFWLNRNATPARVALGVTTVLTMTTLMSSSTNAA  
69 LPKISYVKSIDVYLMTCFVMVFASLLEYATVGYMAKRIQMRKQRSMAIQKIAEQKKQQLDGA  
70 NQQQANPNPNANVGGPGGVGVGPGGPGGPGGGVNVGVGMGMGPEHGHGHGHHASHGHP  
71 HAPKQTVSNRPIGFSNIQQNVGTRGCSIVGPLFQEVRFKVHDPKAHSGGTLENTVNGGRGGP  
72 QSHGPGPGQGGPPGGGGVGGGGGGPPEGGGDPEAAVPAHLLHPGKVKKDINKLLGITPSDI  
73 DKYSRIVFPVCFCVFNLMYWIIYLVSDVVADDLVLLGEE

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75 *Drosophila melanogaster* RDL-G3'M<sub>TMD3</sub>

76 MSDSKMDKLARMAPLPRTPLLTIWLAINMALIAQETGNKRIHTVQAATGGGSMLGDVNISAIL  
77 DSFSVSYDKRVRPNYGGPPVEVGVTMYVLSISSLSEVKMDFTLDFYFRQFWTDPRLAYRKRPG  
78 VETLSVGSEFIKNIWVPDTEFFVNEKQSYFHIATTSNEFIRVHHSITSIRLTITASCPMNLQYFP  
79 MDRQLCHIEIESFGYTMRDIRYKWNENPNSVGSSEVSLPQFKVLGHRQRAMEISLTTGNYSR  
80 LACEIQFVRSMGYLYLIQIYIPSGLIVVISWVSFWLNRNATPARVALGVTTVLTMTTLMSSSTNAA  
81 LPKISYVKSIDVYLMTCFVMVFASLLEYATVGYMAKRIQMRKQRSMAIQKIAEQKKQQLDGA  
82 NQQQANPNPNANVGGPGGVGVGPGGPGGPGGGVNVGVGMGMGPEHGHGHGHHASHGHP  
83 HAPKQTVSNRPIGFSNIQQNVGTRGCSIVGPLFQEVRFKVHDPKAHSGGTLENTVNGGRGGP  
84 QSHGPGPGQGGPPGGGGVGGGGGGPPEGGGDPEAAVPAHLLHPGKVKKDINKLLGITPSDI  
85 DKYSRIVFPVCFCVFNLMYWIIYLVSDVVADDLVLLGEE

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87 *Tetranychus urticae* RDL-wild-type

88 MMMLMLMLLLKPISLLCSLCCPLLSLTMLIIPAFGHNWQSHGYQGDQPHEFGHTNGDIGSNI  
89 SQILNSFFSSGYDKRVRPNYGGPPVKVGVMTMHILTISSVSEVQMDFTADFYFRQLWRDSRLSFK  
90 ARHGISQILVDAEVADKIWVPDFTFFANEKQAYFHEATTKNTFLRISHDGQVLRISIRLTVTASCP  
91 MNLQYFPMDRQKCNEIESYGYSMTDIIYNWVDENAVKIDSNLMLPQFSIASIRQSWKYISLTT  
92 GNYSRLMCEIQLTRSMGYMIQIYVPASLIVISWVSFWLHRNATPARVHLGVITVLTMTTLMMS  
93 STNSQLPKISYVKSIDVFLGTCFVMVFAALLEYAAVGYIGKRISMRKNRFQQLAKAAEEKRRK  
94 LVEAAAAAAAAAAAAATSCEPIHLSSSDPSGPQSHPINCNNSNNPSSINISTTTNPMNINNINSNG  
95 TNNNNNNNNPNNNNNLNNINNSNNGSSITTLTTVATAAGGNVSSVGPMSGTGSTFNQTTGQL  
96 VVDSALHGSGLTGTSVCSASATVGVPSVPKHQLYQQQQQPHHHLTHHHRSSYQQHHQHLQ  
97 QQLQQQQQHQSIGTLTSSVNLGVGLSVPSNLVTYDFSGNLSGGSGNLMMTTNPEMINCSL  
98 GPGGHGSGMSGMPLGCSRDDQDQETLVTHVGHYATLRRPLDRSSLPCKGAASSGVVGTG  
99 GTSVGTGGSMGPQPNQKQFLPHRPQEVRLMVGSKMTPVAQTSGSMDGVNHHQPGGLSSSS  
100 IGRIPGHFTTNLHRFTA VPPKNLNNLFGVSPDIDKYSRVVFPVCFVCFNLMYWIIFLHISILEP  
101 GADEES

102

103 ***Tetranychus urticae* RDL-G3'M<sub>TMD3</sub>**

104 MMMLMLMLLLKPISLLCSLCCPLLSLTMLIIPAFGHNWQSHGYQGDQPHEFGHTNGDIGSNI  
105 SQILNSFFSSGYDKRVRPNYGGPPVKVGVMTMHILTISSVSEVQMDFTADFYFRQLWRDSRLSFK  
106 ARHGISQILVDAEVADKIWVPDFTFFANEKQAYFHEATTKNTFLRISHDGQVLRISIRLTVTASCP  
107 MNLQYFPMDRQKCNEIESYGYSMTDIIYNWVDENAVKIDSNLMLPQFSIASIRQSWKYISLTT  
108 GNYSRLMCEIQLTRSMGYMIQIYVPASLIVISWVSFWLHRNATPARVHLGVITVLTMTTLMMS  
109 STNSQLPKISYVKSIDVFLMTCFVMVFAALLEYAAVGYIGKRISMRKNRFQQLAKAAEEKRRK  
110 LVEAAAAAAAAAAAAATSCEPIHLSSSDPSGPQSHPINCNNSNNPSSINISTTTNPMNINNINSNG  
111 TNNNNNNNNPNNNNNLNNINNSNNGSSITTLTTVATAAGGNVSSVGPMSGTGSTFNQTTGQL  
112 VVDSALHGSGLTGTSVCSASATVGVPSVPKHQLYQQQQQPHHHLTHHHRSSYQQHHQHLQ  
113 QQLQQQQQHQSIGTLTSSVNLGVGLSVPSNLVTYDFSGNLSGGSGNLMMTTNPEMINCSL  
114 GPGGHGSGMSGMPLGCSRDDQDQETLVTHVGHYATLRRPLDRSSLPCKGAASSGVVGTG  
115 GTSVGTGGSMGPQPNQKQFLPHRPQEVRLMVGSKMTPVAQTSGSMDGVNHHQPGGLSSSS

116 IGRIPGHFTTNLHRFTAVPPKNLNNLFGVSPSDIDKYSRVVFPVCFVCFNLMYWIIFLHISSILEP  
117 GADEES