# Requirement of *CHROMOMETHYLASE3* for somatic inheritance of the spontaneous tomato epimutation *Colourless non-ripening*

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Running title: *SlCMT3* modulates maintenance of tomato *Cnr* epiallele

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**Supplementary Figure Legends**

**Supplementary Figure 1 | Post-transcriptional and transcriptional silencing of *LeSPL-CNR* inhibits fruit ripening. a,** Outline of the *LeSPL-CNR* epilocus[3]. The two exons for the *LeSPL-CNR* mRNA and the hypermethylated ($5^{m}C$) region upstream of exon 1 are indicated. The 286-bp DNA fragment was PCR amplified and cloned into the *ClaI*/*Eag*I sites of PVX/GFP[3] to generate the ViTGS vector PVX/Pcnr-GFP. **b,** A wild-type AC fruit inoculated with PVX/GFP ripens normally. **c,** Post-transcriptional VIGS of *LeSPL-CNR* by PVX/mLeSPL-CNR blocks AC fruit to ripen, showing non-ripening sectors. PVX/mLeSPL-CNR expresses a non-translatable *LeSPL-CNR* mRNA that triggers silencing of endogenous *LeSPL-CNR* mRNA. **d-e,** Transcriptional ViTGS of *LeSPL-CNR* by PVX/Pcnr-GFP that contains specific RNA targeting the 286-bp region of *LeSPL-CNR* promoter inhibits fruit ripening. AC fruits injected with PVX/Pcnr-GFP RNA developed non-ripening sectors. **f,** Semi qRT-PCR assays with 23 and 28 cycles of amplification revealed that the level of *LeSPL-CNR* mRNA were down-regulated in non-ripening green (Gr) sectors when compared to that of the ripe red (Red) sectors of two treated AC fruits. Total RNAs extracted from the dissected green and red sectors were pre-treated with DNase I prior to being reversely transcribed into cDNA with (+) and without (-, as negative control) reverse-transcriptase (RT). **g-h,** Bisulfite sequencing shows induction of DNA methylation in the 286-bp *LeSPL-CNR* promoter region in non-ripening (filled rectangles, **h**), but not in ripe (open rectangles, **g**) sectors of AC fruits inoculated with PVX/Pcnr-GFP. Electrophoretogram shows

sequences corresponding to the 5' end (-2480 to -2403) of the 286-bp *LeSPL-CNR* promoter region[3](Supplementary Fig. 9i).

**Supplementary Figure 2 | Phylogenetic relationship among tomato and Arabidopsis DNA methyltransferases (DMTs).** Amino acid sequences of 10 AtDMTs including AtDRM1 (NM_121542.2, AT5G15380), AtDRM2 (NM_121466.2, AT5G14620), AtDRM3 (AY050882.1, AT3G17310), AtMET1 (NM_124293.3, AT5G49160), AtMET2 (NM_001203796.1, At4G14140), AtCMT1 (NM_106722.2, AT1G80740), AtCMT2 (NM_118020.4, At4G19020), AtCMT3 (NM_105645.3, AT1G69770), AT4G08990 (NM_116968.1) and AT4G13610 (NM_117435.1) were downloaded from the NCBI database. Amino acid sequences of 9 tomato putative DMTs including SlMET1 (AJ002140.1, SGN-U323958), SlCMT2 (SGN-U582753), SlCMT3 (SGN-U579786), SlCMT4 (SGN-U601004), SlDRM5 (NM_001246974.1), SlDRM6 (SGN-U575586), SlDRM7 (TC161581), SlDRM8 (SGN-U565936), and SlDRM9 (EST583972), were identified in the tomato EST databases (NCBI database, TIGR database, Solanaceae Genome Network). The protein sequences for SlCMT2, SlCMT3, SlCMT4, SlDRM7 and SlDRM9 were deduced from each of the corresponding full-length genes after RACEs (Supplementary Fig. 10). Phylogenetic relationship of DMTs was analyzed using ClustalW.

**Supplementary Figure 3 | Silencing of *SlDMTs* by different VIGS vectors displays various impacts on ripening of *Cnr* epimutant fruits. a-d,** *Cnr* fruits treated with

PVX/SlCMT2. **e-l,** *Cnr* fruits treated with PVX/SlDRM7. **m-n,** *Cnr* fruits treated with PVX/SlMET1. **o,** *Cnr* fruits treated with PVX/SlCMT4. **p,** Genetic *rin* mutant fruits treated with PVX/SlCMT3. Tomato fruits at 5-15 days post anthesis (dpa) were treated with PVX/SlCMT2, PVX/SlDRM7 or PVX/SlMET1 and these fruits broke and subsequently ripened, showing sectors with different degrees of ripening as well as non-ripening sectors (**a-n**). Ripening was assessed by red colour and pericarp softening as observed in the ripe wild-type AC fruits (Supplementary Fig. 5h). No ripening was observed in *Cnr* fruits inoculated with PVX/SlCMT4 (**o**). Genetic *rin* mutant fruits at 5-15 dpa were treated with PVX/SlCMT3 and these fruits remained unripe, showing characteristic of the *rin* phenotype (**p**). Photographs were taken at the indicated day post-anthesis.

**Supplementary Figure 4 | Silencing of *SlCMT3* triggers early breaker of *Cnr* fruits.** *Cnr* fruits at 5-15 days post anthesis (dpa) that were mock-inoculated (Mock), or inoculated with the empty VIGS vector PVX, PVX/SlDRM7 (DRM7), PVX/SlMET1 (MET1), PVX/SlCMT2 (CMT2), PVX/SlCMT3 (CMT3), PVX/SlCMT3$_{UTR}$ (CMT3$_{UTR}$) or PVX/SlCMT4 (CMT4) broke at 38.6±2.2 (n=90), 37.2±2.5 (n=90), 38.1±1.6 (n=30), 37.7±2.5 (n=60), 35.9±1.3 (n=30), 34.1±2.6 (n=60), 36.0±2.4 (n=30), 38.7 ±1.6 (n=30) dpa, respectively. These data suggest that silencing of *SlCMT3* influenced tomato fruit ripening. Breaker was judged when fruits started to turn from mature green to red or yellow. Asterisk (*) indicates statistical significance between the *SlCMT3*-silenced and the PVX control samples by Student's *t*-tests ($p<0.001$).

**Supplementary Figure 5 | Silencing of *SlCMT3* by PVX/SlCMT3 reverses *Cnr* epimutant fruits to complete ripening. a-f,** *Cnr* fruits were treated with PVX/SlCMT3 at 5-15 days post anthesis (dpa) and these fruits broke and subsequently ripened fully. Ripening was assessed by red colour and pericarp softening as observed in the ripe wild-type AC fruits (**h**). Ripening *Cnr* fruits show sectors of red-ripening (RR), weak ripening (WR, light-red) and yellow-ripening (YR, mixed yellow-red), as indicated in (**e**). RR, WR and YR sectors eventually ripened completely. **g,** No ripening was observed in *Cnr* fruits inoculated with PVX. **h,** Ripening of wild-type AC fruits. Photographs were taken at the indicated day post-anthesis.

**Supplementary Figure 6 | Silencing of *SlCMT3* by PVX/SlCMT3$_{UTR}$ causes *Cnr* epimutant fruits to ripening. a-i,** *Cnr* fruits at 5-15 days post anthesis (dpa) were treated with PVX/SlCMT3$_{UTR}$ and these fruits broke and subsequently ripened, showing sectors of red-ripening (RR), weak ripening (WR) and yellow-ripening (YR). Ripening was assessed by red colour and pericarp softening as observed in the ripe wild-type AC fruits (Supplementary Fig. 5h). Photographs were taken at the indicated day post-anthesis.

**Supplementary Figure 7 | *SlCMT3* silencing affects expression of *LeSPL-CNR* and key ripening TF genes. a-f,** Relative levels of endogenous *SlCMT3* (**a**), *LeSPL-CNR* (**b**), *LeMADS-RIN* (**c**), *LeHB1* (**d**), *SlAP2a* (**e**), and *SlTAGL1* (**f**) mRNAs in red-ripening

(RR), weak-ripening (WR) and yellow-ripening (YR) sectors of *Cnr* fruits inoculated with PVX/SlCMT3$_{UTR}$ (SlCMT3) at 41 days post inoculation. Student's *t*-tests indicates a statistical significance ($p<0.001$) of increase of the RNA level of each gene tested in the *SlCMT3*-silenced samples when compared to that in the PVX control (asterisked). Level of mRNA of each gene in the mock-inoculated *Cnr* fruits (Mo) was included as references. **g-h,** Developmental regulation of master ripening TF gene expression. Semi-qRT-PCR reveals levels of mRNA of each TF gene in wild-type AC (**g**) and epimutant *Cnr* (**h**) young leaves (YL), fully opened flowers (OF) and pericarp tissues from fruits at immature green (IMG), mature green (MG), breaker (B), breaker + three days (B+3) and breaker + nine days (B+7) stages. The number of PCR cycles is indicated at the right of each panel. These results together with data in Fig. 3 suggest that in addition to maintaining the methylation of repetitive DNA and transposon-related sequences[31], *CMT3* may also have a novel role in modulation of regulatory genes.

**Supplementary Figure 8 | Silencing of *SlCMT3* affects expression of ethylene synthetic and signalling transduction genes. a-f,** Relative levels of endogenous *SlACS1* (**a**), *SlACS2* (**b**), *SlACS4* (**c**), *SlACO1* (**d**), *SlEBF1* (**e**) and *SlEBF2* (**f**) mRNAs in red-ripening (RR), weak-ripening (WR) and yellow-ripening (YR) sectors of *Cnr* fruits inoculated with PVX/SlCMT3$_{UTR}$ (SlCMT3) at 41 days post inoculation. Student's *t*-tests indicates a statistical significance in increase ($p<0.001$) of the RNA level of each gene tested in the *SlCMT3*-silenced samples when compared to that in the

PVX control (asterisked). Level of mRNA of each gene in the mock-inoculated *Cnr* fruits (Mo) was included as references.

**Supplementary Figure 9 | Silencing of *SlCMT3* reduces cytosine methylation in the epimutated region of the *LeSPL-CNR* promoter. a-h,** Targeted bisulfite sequencing shows the eighteen fully methylated cytosines in the 286-bp region of the *LeSPL-CNR* promoter in *Cnr* (solid-rectangles, **g-h**), but not in wild-type AC fruits (open-rectangles, **a**). *SlCMT3* silencing reduced cytosine methylation in the CHG (red-asterisked) and CG (green-asterisked) context in red-ripening (RR), weak red-ripening (WR) and yellow-ripening (YR) sectors of fruits injected with PVX/SlCMT3 (Cnr+SlCMT3, **d-f**) or PVX/SlCMT3$_{UTR}$ (Cnr+SlCMT3$_{UTR}$, **b-c**). The increasing height of the thymidine (T) peak indicates a shift from methylated to non-methylated cytosine (asterisked). **i,** Nucleotide-coordinates correspond to the numbering of the *LeSPL-CNR* sequence[3]. Numberings of the eight hypomethylated cytosines in the *Cnr* promoter region of *SlCMT3*-silenced fruits are also indicated in terms of their positions in the tomato genome sequence[32].

**Supplementary Figure 10 | Full-length cDNA sequences of nine tomato *DMT* genes. a,** *SlMET1*. **b,** *SlCMT2*. **c,** *SlCMT3*. **d,** *SlCMT4*. **e,** *SlDRM5*. **f,** *SlDRM6*. **g,** *SlDRM7*. **h,** *SlDRM8*. **i,** *SlDRM9*. Sequences highlighted red or blue indicate relevant sequences of corresponding cDNA fragments that were cloned into the PVX-based VIGS vector (Fig. 1b) for gene-specific RNA silencing of each of the targeted *DMT* genes.

**Supplementary Table 1** Nucleotide sequence similarities among VIGS targets and their full-length tomato DMT genes

| | *SlMET1*$^{FL}$ | *SlMET1*$^{VIGS}$ | *SlCMT2*$^{FL}$ | *SlCMT2*$^{VIGS}$ | *SlCMT3*$^{FL}$ | *SlCMT3*$^{VIGS}$ | *SlCMT3-UTR*$^{VIGS}$ | *SlCMT4*$^{FL}$ | *SlCMT4*$^{VIGS}$ | *SlDRM5*$^{FL}$ | *SlDRM6*$^{FL}$ | *SlDRM7*$^{FL}$ | *SlDRM7*$^{VIGS}$ | *SlDRM8*$^{FL}$ | *SlDRM9*$^{FL}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SlMET1***$^{FL}$ | 100.0% | | | | | | | | | | | | | | |
| ***SlMET1***$^{VIGS}$ | 100.0% | 100.0% | | | | | | | | | | | | | |
| ***SlCMT2***$^{FL}$ | 28.4% | n.h | 100.0% | | | | | | | | | | | | |
| ***SlCMT2***$^{VIGS}$ | 28.3% | n.h | 100.0% | 100.0% | | | | | | | | | | | |
| ***SlCMT3***$^{FL}$ | 28.1% | n.h | 30.2% | 34.5% | 100.0% | | | | | | | | | | |
| ***SlCMT3***$^{VIGS}$ | 34.7% | n.h | n.h | n.h | 100.0% | 100.0% | | | | | | | | | |
| ***SlCMT3-UTR***$^{VIGS}$ | 29.0% | n.h | n.h | n.h | 100.0% | 44.9% | 100.0% | | | | | | | | |
| ***SlCMT4***$^{FL}$ | 27.7% | n.h | 27.2% | 31.3% | 28.3% | 40.5% | n.h | 100.0% | | | | | | | |
| ***SlCMT4***$^{VIGS}$ | 26.9% | n.h | 30.5% | 30.5% | 31.4% | n.h | n.h | 100.0% | 100.0% | | | | | | |
| ***SlDRM5***$^{FL}$ | 28.6% | n.h | 28.4% | 31.3% | 30.0% | 32.2% | 34.9% | 29.1% | 30.9% | 100.0% | | | | | |
| ***SlDRM6***$^{FL}$ | 27.7% | n.h | 28.7% | 32.3% | 28.5% | 29.5% | 25.0% | 29.4% | 30.9% | 78.0% | 100.0% | | | | |
| ***SlDRM7***$^{FL}$ | 26.8% | n.h | 28.2% | 29.1% | 30.1% | 25.9% | 32.2% | 28.8% | 30.5% | 75.3% | 75.4% | 100.0% | | | |
| ***SlDRM7***$^{VIGS}$ | 30.4% | n.h | 29.6% | 29.6% | 28.3% | n.h | n.h | 30.4% | 30.6% | 29.6% | 32.6% | 100.0% | 100.0% | | |
| ***SlDRM8***$^{FL}$ | 30.0% | n.h | 27.0% | 29.3% | 27.8% | 25.0% | 40.9% | 28.0% | 29.1% | 40.4% | 40.4% | 40.9% | 33.0% | 100.0% | |
| ***SlDRM9***$^{FL}$ | 28.0% | n.h | 28.5% | 32.3% | 28.7% | 28.1% | 30.2% | 29.1% | 30.9% | 77.2% | 99.6% | 75.6% | 32.6% | 40.1% | 100.0% |

FL: Nucleotide sequences of full-length genes were used for comparisons. VIGS: VIGS-targeting sequences, which were cloned into the PVX vector for silencing specific genes (Fig. 1b), were used for comparisons. n.h: no nucleotide sequence homology was found.

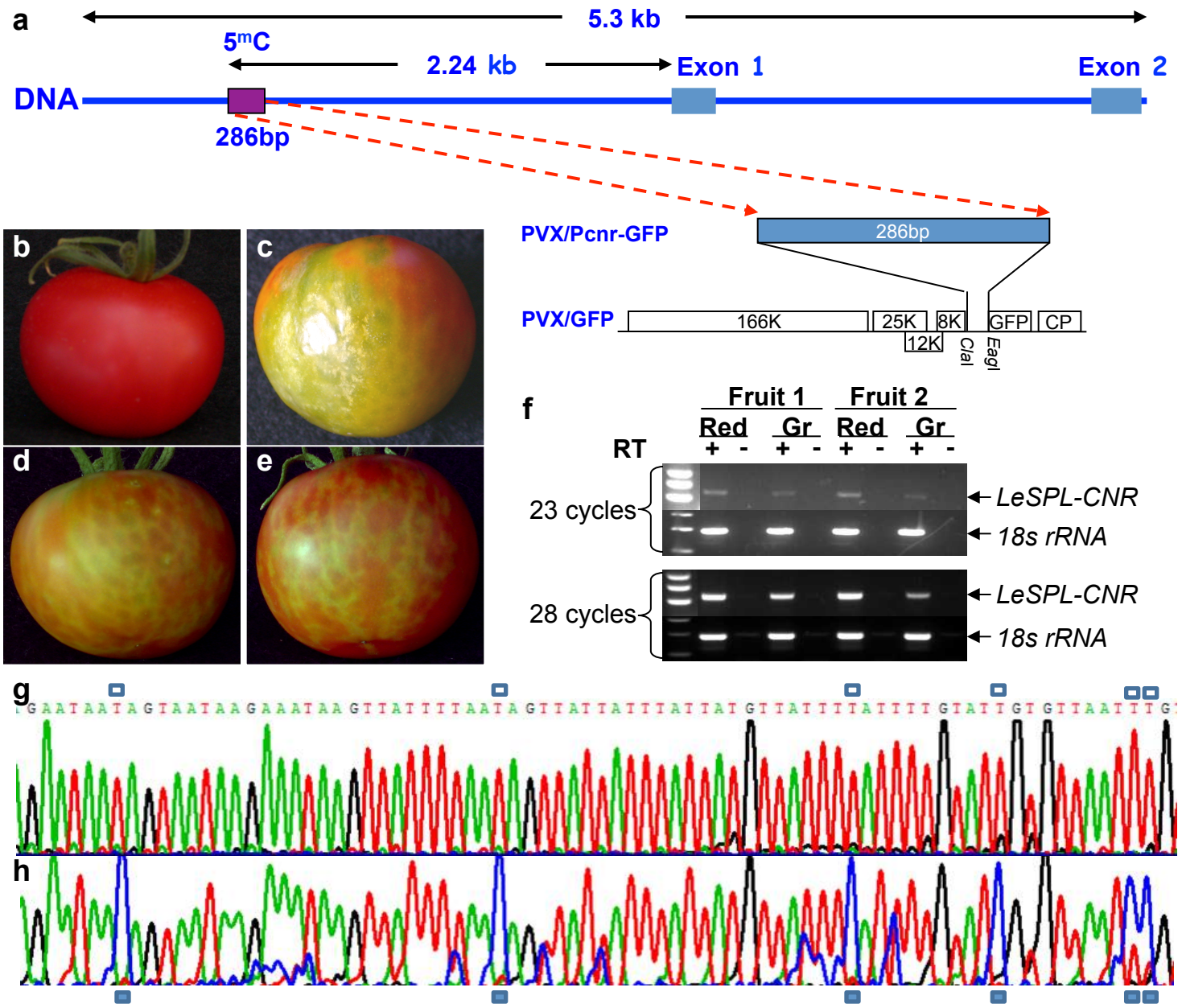
Supplementary Table 2 Primers used for this study

| Primer/Construct | Sequences (5' - 3') | Gene or fragment amplified | Annealing temperature | Detection/Cloning sites |
|---|---|---|---|---|
| **Primers** | | | | |
| **PP269** | CAAGGTGCGCGAGGTTTACCAATC | PVX mRNA (154bp) | 50℃ | qRT-PCR for PVX virus RNA |
| **PP269-R** | CCCCTCTAGATCATTAGCCGCTTC | | | accumulation |
| **PP271** | CGGCTACCACATCCAAGGAAGG | 18S rRNA (188bp) | 50-65℃ | Control gene |
| **PP272** | GAGCTGGAATTACCGCGGCTG | | | |
| **SlCMT3-S** | AGTACCAGTTGCCCGGGCTTT | SlCMT3 (131bp) | 50℃ | qRT-PCR for *SlCMT3* expression |
| **SlCMT3-A** | GAGATTCGTCATTGGAGACCAGTTC | | | |
| **LeSPL-CNR-F** | TGGAAACTAACAAATGGGAAGGG | LeSPL-CNR (207bp) | 58℃ | PCR for *LeSPL-CNR* expression |
| **LeSPL-CNR-R** | GGCGATGGTATGGCTTGG | | | |
| **LeMADS-RIN-F** | AAGGAACCCAAACTTCATCAG | LeMADS-RIN (119bp) | 58℃ | PCR for *LeMADS-RIN* expression |
| **LeMADS-RIN-R** | TTGTCCCAAATCCTCACCTA | | | |
| **LeHB1-F** | CTACGACGAGCAGTCACCG | LeHB1 (161bp) | 58℃ | PCR for *LeHB1* expression |
| **LeHB1-R** | GGAACCATACAGCCACCT | | | |
| **SlAP2a-F** | GGAGTATGAATCCGATGAAGGT | SlAP2a (184bp) | 58℃ | PCR for *SlAP2a* expression |
| **SlAP2a-R** | CGATTCCAAATTGTGGTCTT | | | |
| **SlTAGL1-F** | GCAATAACTCCCTGCCTGTA | SlTAGL1 (140bp) | 55℃ | PCR for *SlTAGL1*expression |
| **SlTAGL1-R** | AGATGAAGAGCCTTGACCC | | | |
| **SlACO1-F** | CACTAACGGGAAGTACAAGAG | SlACO1 (101bp) | 58℃ | qRT-PCR for *SlACO1* expression |
| **SlACO1-R** | CTGCATCACTTCCTGGATTGTA | | | |
| **SlACS1-F** | GTGCTTCAAACAAAGGGAC | SlACS1 (146bp) | 50℃ | qRT-PCR for *SlACS1* expression |
| **SlACS1-R** | GTCCTAACCAAAGGCGAAT | | | |
| **SlACS2-F** | GTAGGTGTTGAGAAAAGTGGAG | SlACS2 (162bp) | 55℃ | qRT-PCR for *SlACS2* expression |
| **SlACS2-R** | GTCTTAACGAACTAATGGTGAGG | | | |

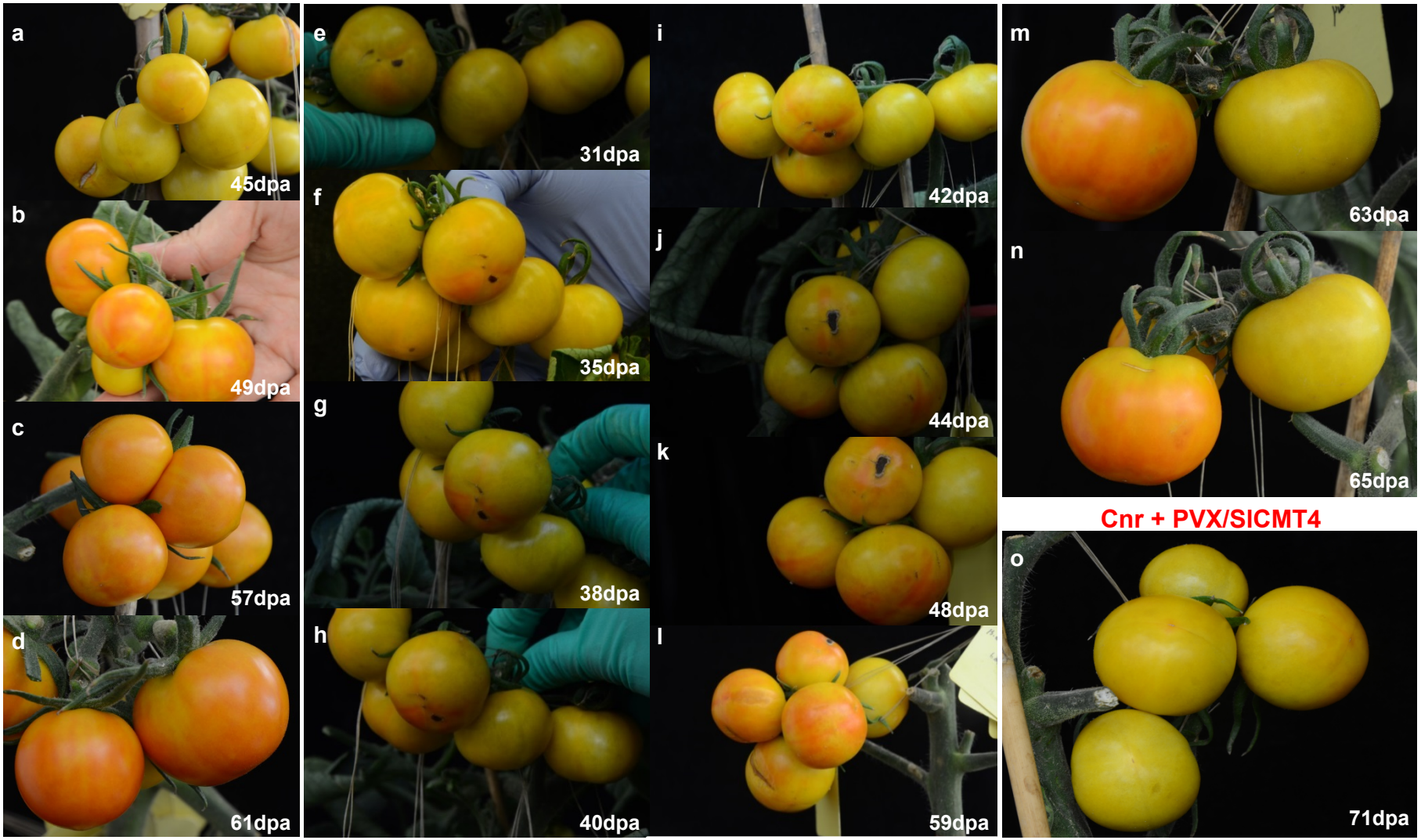
| | | | | |
|---|---|---|---|---|
| **SlACS4-F** | ACACCGATTAACCGAGAGGC | SlACS4 (131bp) | 50℃ | qRT-PCR for *SlACS4* expression |
| **SlACS4-R** | CCCGTGGACGTAGCCAATTT | | | |
| **SlEBF1-F** | ATTGCCATCACTGACATAGC | SlEBF1 (111bp) | 58℃ | qRT-PCR for *SlEBF1* expression |
| **SlEBF1-R** | AGTTATAGCAAGCGACCTC | | | |
| **SlEBF2-F** | TTACCAGGTGTGTGGAAGG | SlEBF2 (136bp) | 58℃ | qRT-PCR for *SlEBF2* expression |
| **SlEBF2-R** | CCGACATTAGTAATACCACGA | | | |
| **SlMET1i-F** | CGACGACAAGACCCTCTGCTAAGCGGCACAACC | SlMET1 (250bp) | 58℃ | Construction of pRNAi-SlMET1 |
| **SlMET1i-R** | GAGGAGAAGAGCCCTATTTGCCTGTGCTTGTGC | | | (intermediate vector, unpublished) |
| **SlCMT2i-F** | CGACGACAAGACCCTCCGATGCAGGATCCCAA | SlCMT2 (436bp) | 58℃ | Construction of pRNAi-SlCMT2 |
| **SlCMT2i-R** | GAGGAGAAGAGCCCTAAGGGAGATCAGAAAGTG | | | (intermediate vector, unpublished) |
| **SlCMT3i-F** | CGACGACAAGACCCTCAAGGTACTAACCTCAAC | SlCMT3 (217bp) | 58℃ | Construction of pRNAi-SlCMT3-3 and |
| **SlCMT3i-R** | GAGGAGAAGAGCCCTGTCAATCCAATGTAGAAA | | | the silencing trigger RNA (intermediate vector, unpublished) |
| **SlCMT3i-F1** | CGACGACAAGACCCTGTTACACGAGCAGAGCC | SlCMT3 (275bp) | 58℃ | Construction of pRNAi-SlCMT3-5 and |
| **SlCMT3i-R1** | GAGGAGAAGAGCCCTGGTGGTAATGTAAGTAATGG | | | the silencing trigger RNA (intermediate vector, unpublished) |
| **SlCMT4i-F** | CGACGACAAGACCCTAAGGTGCGATGGA | SlCMT4 (253bp) | 58℃ | Construction of pRNAi-SlCMT4 |
| **SlCMT4i-R** | GAGGAGAAGAGCCCTTTTCATCAGACAAT | | | (intermediate vector, unpublished) |
| **SlDRM7i-F** | CGACGACAAGACCCTGTTTACAATGAGAAGT | SlDRM7 (260bp) | 58℃ | Construction of pRNAi-SlDRM7 |
| **SlDRM7i-R** | GAGGAGAAGAGCCCTTATGTTCGGGTAGTGGA | | | (intermediate vector, unpublished) |
| | | | | |
| **Constructs** | | | | |
| **PVX/SlMET1** | RNAi/PVX-F: GATACGCGTCCTTCGCAAGACCCTTCC | SlMET1 fragment (359bp) | 58℃ | *Mlu*I/*Sal*I |
| | RNAi/PVX-R: | | | |
| | TTCGTCGACTTACCAAGGGCCCTGAGGAG | | | |
| **PVX/SlCMT2** | RNAi/PVX-F: GATACGCGTCCTTCGCAAGACCCTTCC | SlCMT2 fragment (525bp) | 58℃ | *Mlu*I/*Sal*I |

| | | | | |
|---|---|---|---|---|
| | RNAi/PVX-R: TTCGTCGACTTACCAAGGGCCCTGAGGAG | | | |
| **PVX/SlCMT3$_{UTR}$** | RNAi/PVX-F: GATACGCGTCCTTCGCAAGACCCTTCC RNAi/PVX-R: TTCGTCGACTTACCAAGGGCCCTGAGGAG | 3' UTR portion of SlCMT3 mRNA (306bp) | 58℃ | *Mlu*I/*Sal*I |
| **PVX/SlCMT3** | RNAi/PVX-F: GATACGCGTCCTTCGCAAGACCCTTCC RNAi/PVX-R: TTCGTCGACTTACCAAGGGCCCTGAGGAG | 5' fragment of SlCMT3 mRNA (364bp) | 58℃ | *Mlu*I/*Sal*I |
| **PVX/SlCMT4** | RNAi/PVX-F: GATACGCGTCCTTCGCAAGACCCTTCC RNAi/PVX-R: TTCGTCGACTTACCAAGGGCCCTGAGGAG | SlCMT4 fragment (342bp) | 58℃ | *Mlu*I/*Sal*I |
| **PVX/SlDRM7** | RNAi/PVX-F: GATACGCGTCCTTCGCAAGACCCTTCC RNAi/PVX-R: TTCGTCGACTTACCAAGGGCCCTGAGGAG | SlDRM7 fragment (349bp) | 58℃ | *Mlu*I/*Sal*I |

Supplementary Figure 1 (Hong)

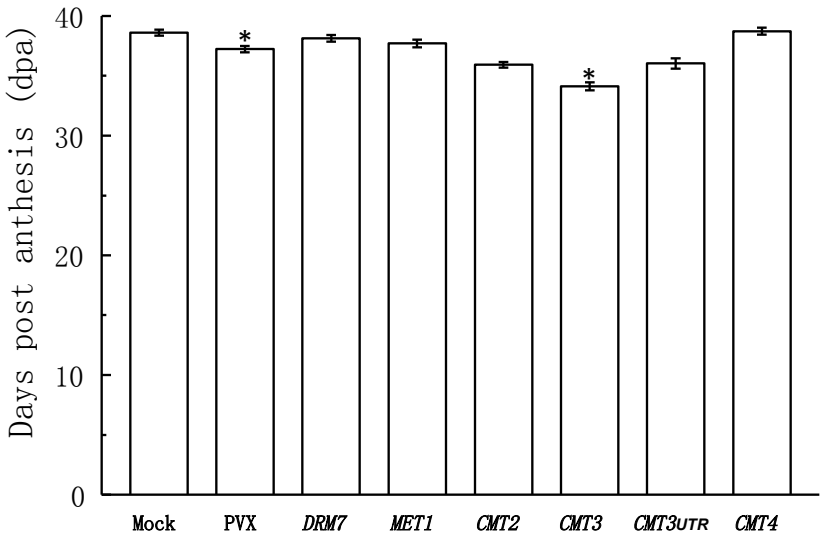


Supplementary Figure 2 (Hong)




Supplementary Figure 3 (Hong)

Supplementary Figure 4 (Hong)



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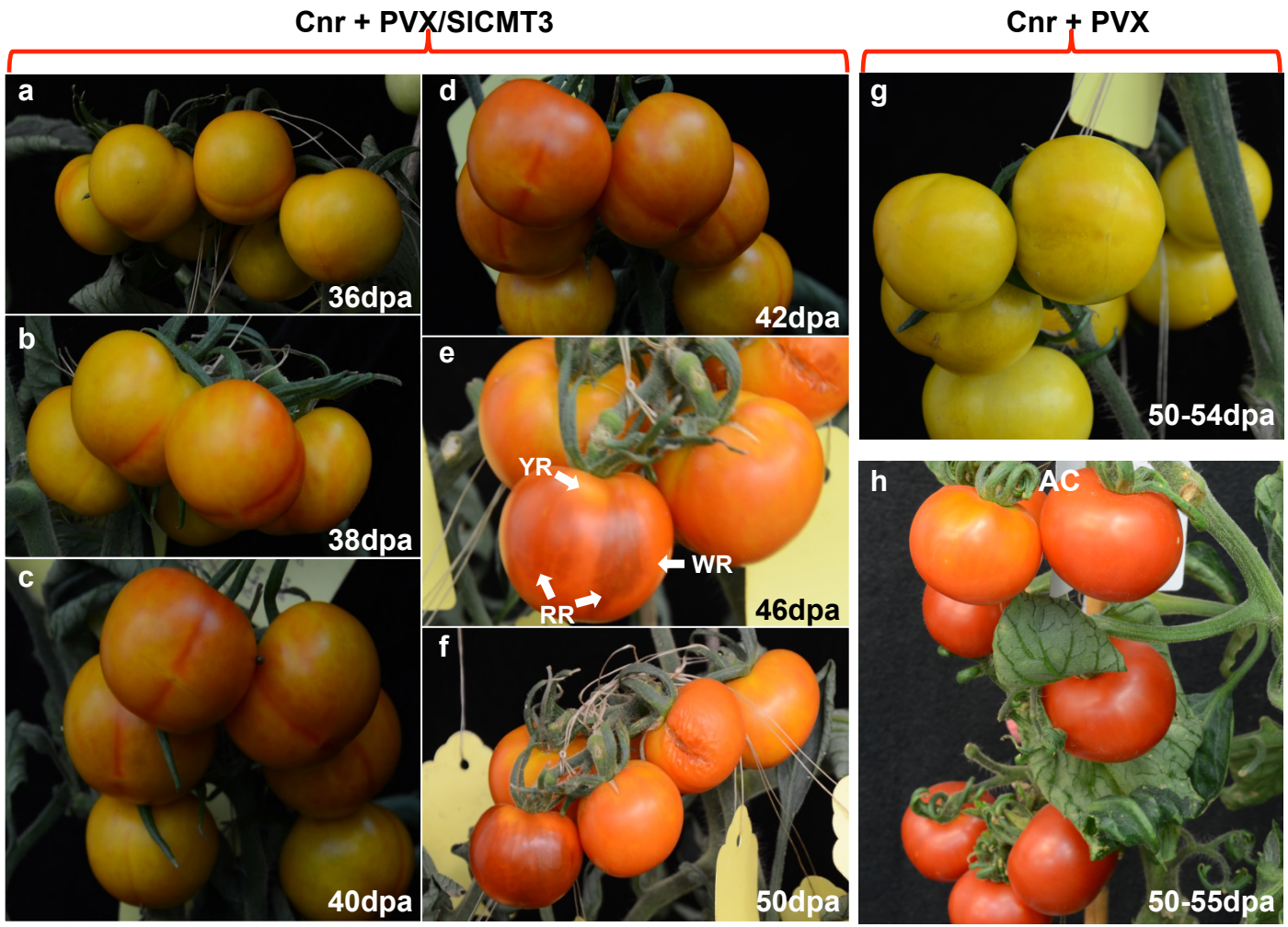

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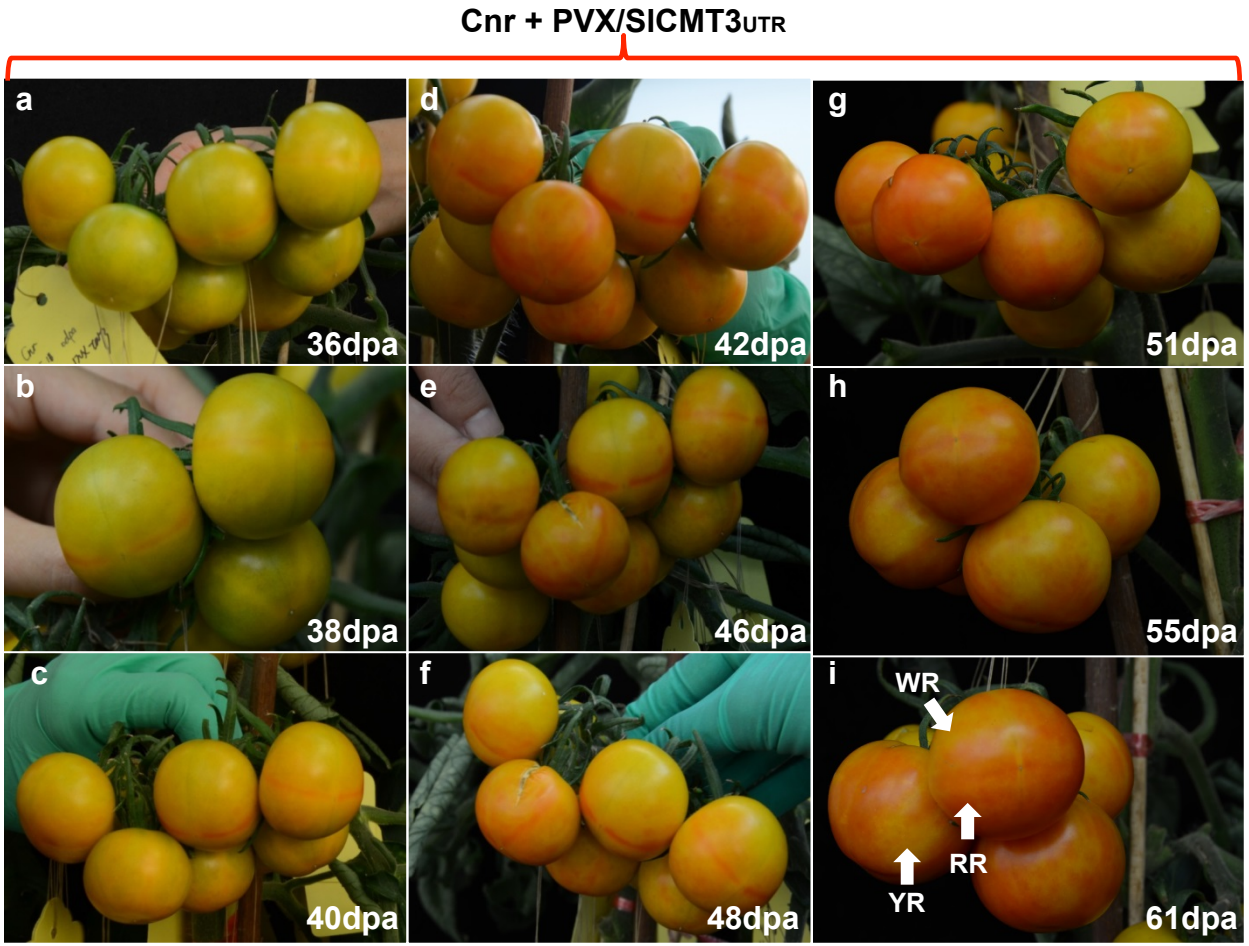

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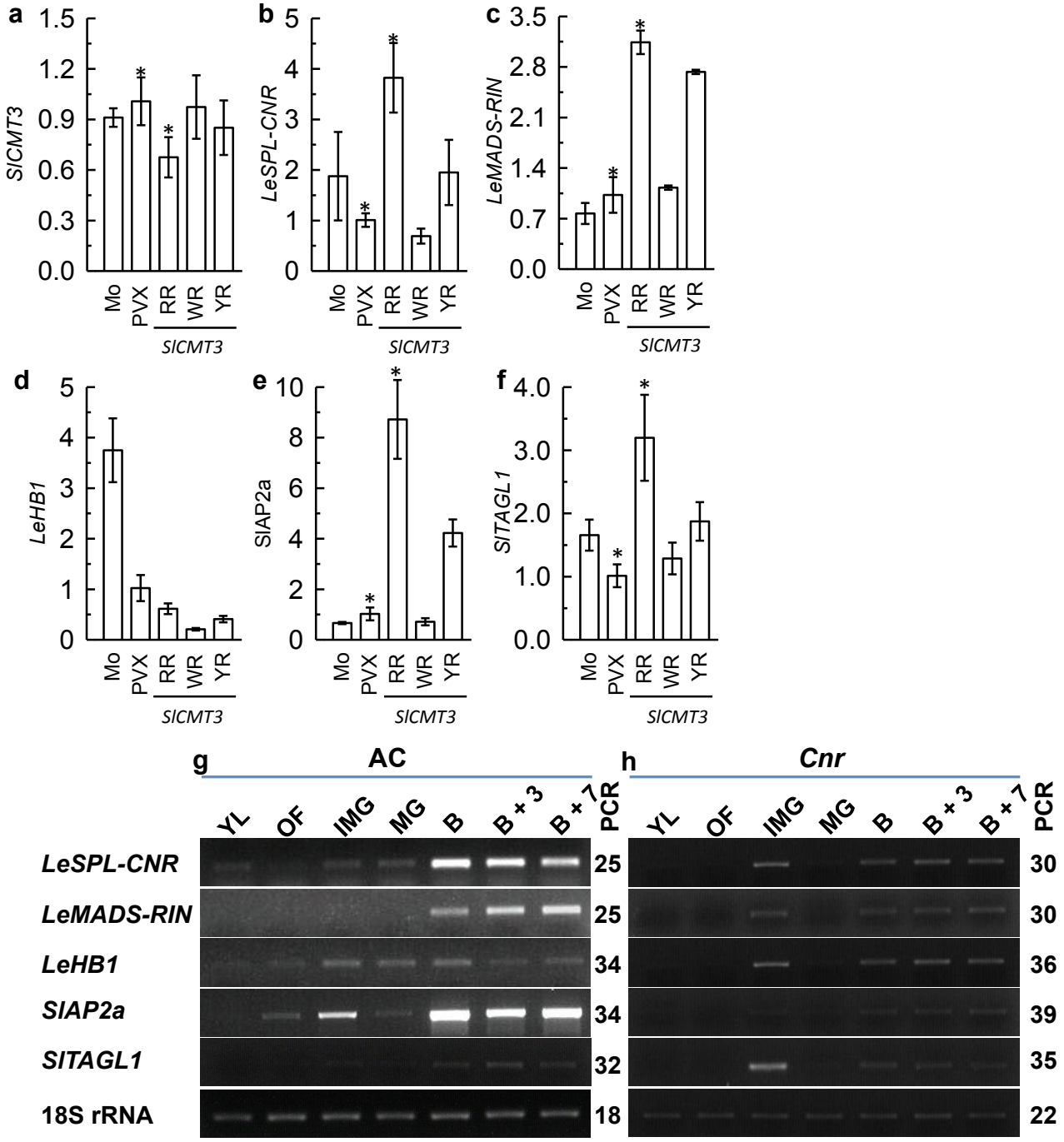

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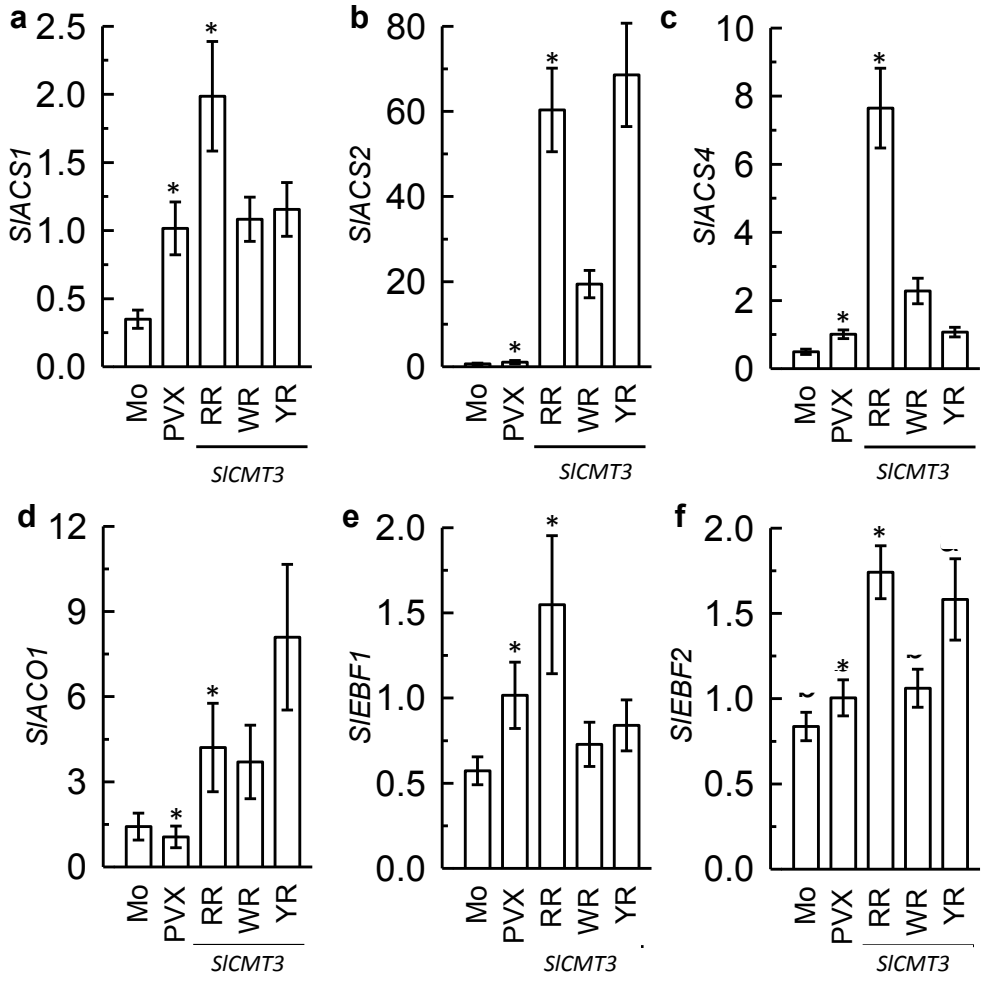

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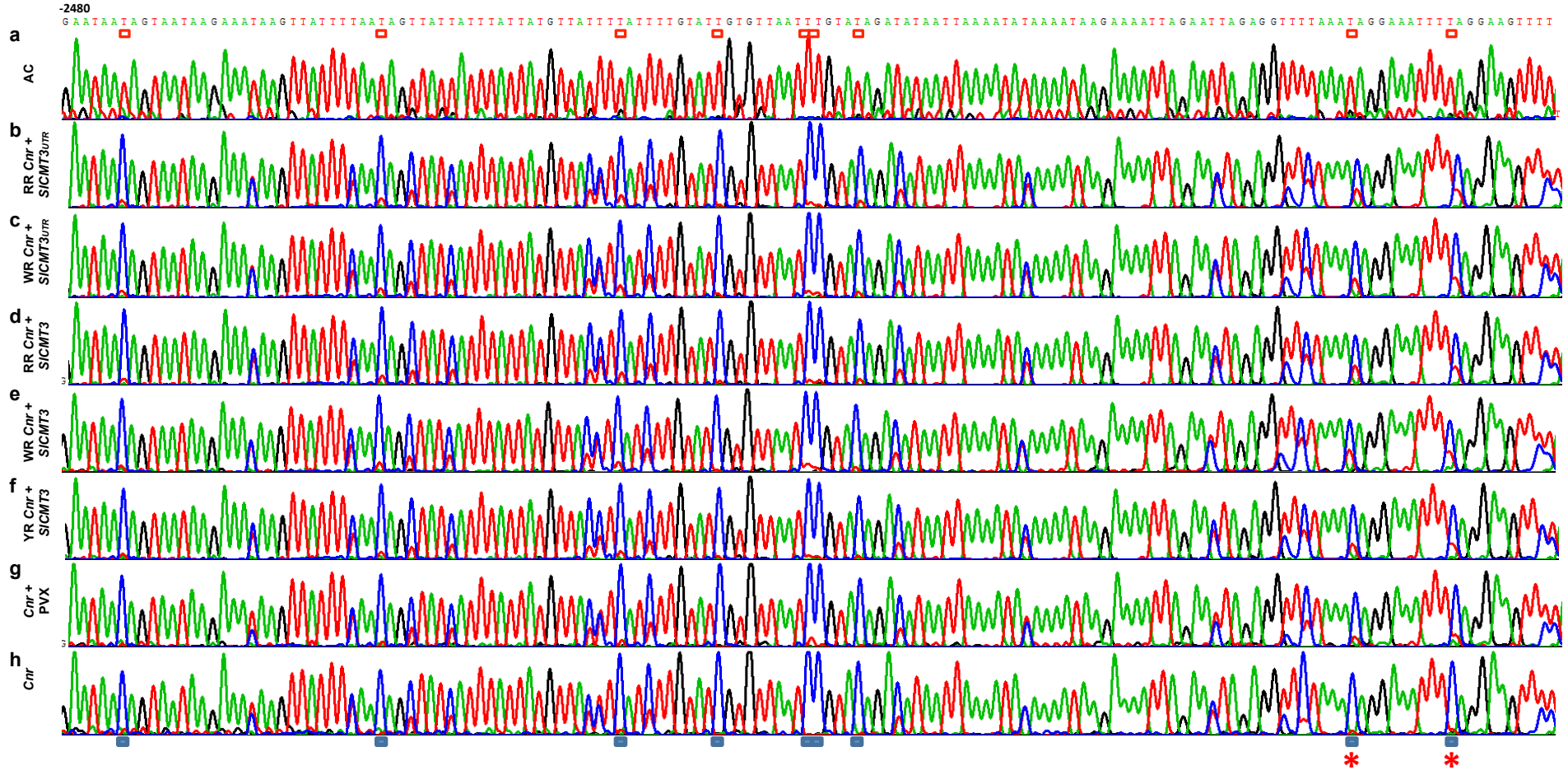

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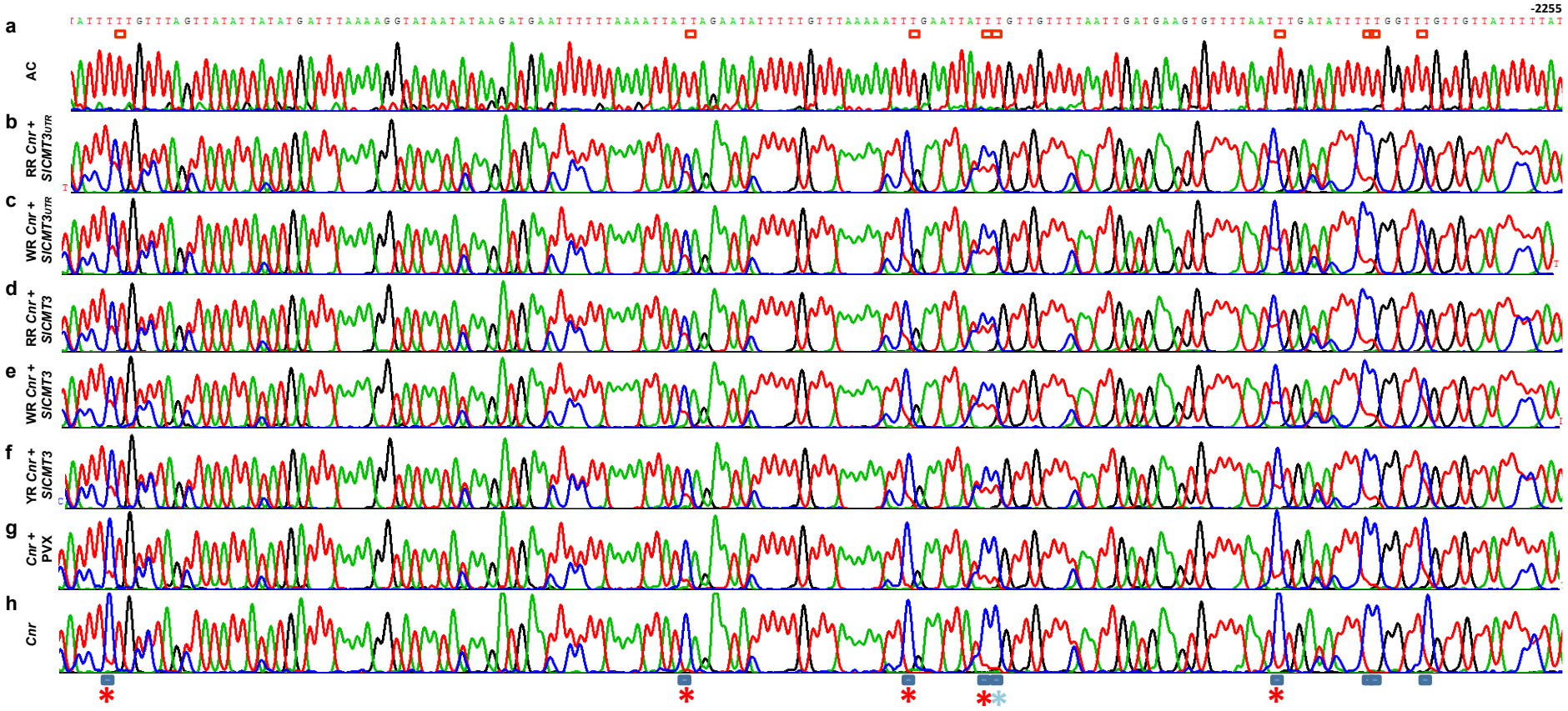
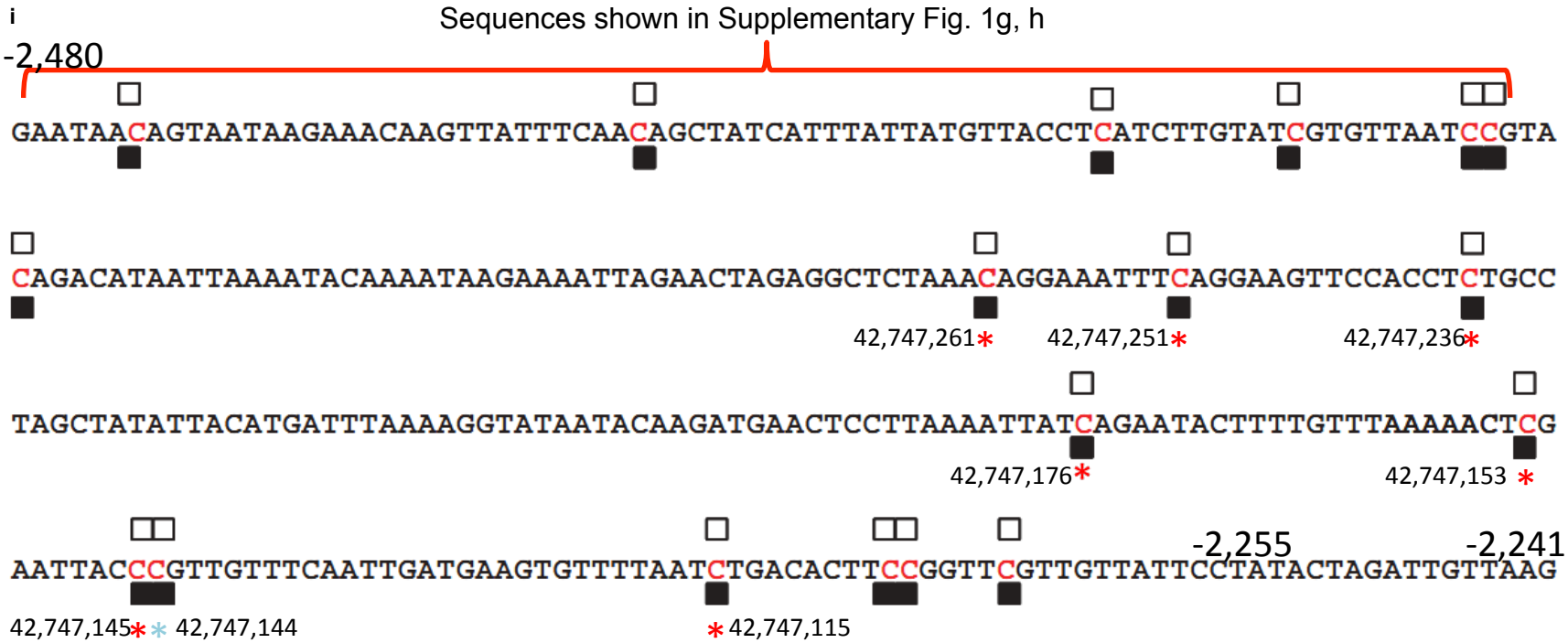


Supplementary Figure 9 Cont. (Hong)



**a**

***SlMET1*** (Sequences highlighted RED was cloned into PVX/SlMET1)

CCCGCCCAAATCCCCCCAAAAACCTATCTCATTTGTCCTCTTCCTGTTGGAGAACTCAGCAACAGC
ACACCCCATCTCCCTCAACTTCTCCGCCGCACCAGCTTCTACTCTCCATTTCCGCCGAAAAATCAC
CTTTCACCGGCAAAGCAGCAGCCTCTGGTCCCTCCTTTATCTTCTCCCTTCGCTGCTCTGGCCACC
ATCGCTGGTCGCTGGCGAGAACTACAACGAAAATCCCTTCGCCTCCGCTCTCCTCTCTCCCTCTTC
CGCCGCCCTGCTCCTCACTTCTCACTTCTCCATTGAAGTCGACGGACGGGATAACGGCAGCGACGA
CTGCTCCGCCCAGCTACTGTGGCGAAGTAGCAGCAAGCTGTGACCAGCAAACTCGGCAAACTCCGG
CCAAAGCAGCGATAACAACTCAGGCCAGCAGTGGGGCAGCAACGACTGCTCTGCCCAGCAGCTTTG
GCGACGGCAAGCTGTGACCAGCAAACTCCGGCGAAGCAGCGATAACAACTCAGGCCAGCAGTGGGG
CAGCAACTCCGGTTGGTGAGGATGGCGTCACCCCAACCTAATTCGGAGTCGGTATTAGAACTTCCG
AACAACGACAAATCTGGACACAAAAAGAACAAACGCAAACAAGATTCTGTGTCAAAAAGGAAGGCA
TCTGCAACTGGTAAGAAGGAAAAGAAACAGGCTGTTTCTGAAACTATTGAGGAGCCCACTGCTGGA
CGTAAAAGGCCTAAGCGAGCTGCTGCCTGTTCAGATTTTAAAGAGAAATCTGTGCATTTATCAAAA
AAGTCTTCAGTCATTGAAACAAAGAAGGACCATTGTGTAGACGAAGAGGATGTAGCTATTAGGTTA
ACTGCGGGTCTGCAAGAGTCTCAACGACCCTGTAGAAGATTAACGGATTTTGTTTTTCATAACTCA
GAAGGAATACCACAACCGTTTGGAATGTCTGAGGTTGATGATCTGTTTATCAGTGGCCTCATTTTA
CCACTTGAGGACAGTCTTGACAAAGTAAAAGCAAAAGGAATTAGATGTGAAGGCTTTGGGCGTATT
GAAGAATGGGCTATCTCTGGCTATGAAGATGGAACTCCTGTCATATGGATCTCAACTGAGACAGCT
GATTATGATTGTTTAAAACCCTCAGGTAGTTATAAGAAGTTTTATGACCACTTCTTGGCCAAGGCG
ACGGCTTGCGTTGAGGTTTATAAGAAGCTTTCAAAGTCATCTGGAGGGAATCCTGATTTAAGTCTT
GACGAGTTGCTTGCAGGGGTTGTCCGAGCGATGACTGGCATAAAATGCTTTTCAGGTGGAGTATCC
ATCAGGGACTTTGTCATCACTCAGGGCGGGTTCATATATAAGGAACTTATTGGTCTGGATGATACA
TCAAAGAAGACTGATCAACTTTTTGTTGAGCTACCTGTCCTAGCTTCCCTTAGAGATGAAAGCAGC
AAGCACGAGACACTTGCACAACCAGAGACTATATCATCTGGTAATGGTCTACGTATTGGCCCAAAA
GCAGGAAATGGAGGAGACAAGATAGTTGAATCTGGTTTGGCCAATGGTCCAGCGCCAGAAGATGAA
GATCTAAAATTGGCTAAATTGTTGCATGAAGAGGAGTATTGGTGCTCCTTGAAGCAGAAGAAAGAC
CGTAATACATCTTCCTCATCCAGCAAAATATACATCAAGATCAATGAGGATGAGATTGCAAGTGAT
TATCCTTTACCTGCATATTACAAAACATCTAATGAAGAGACTGATGAGTATATTGTCTTTGACAGT
GGGGTTGAAACATACCATATTGATGAGTTGCCTCGCAGCATGCTTCATAATTGGGCATTATACAAC
TCGGACTCAAGGCTAATATCTTTAGAACTGCTGCCAATGAAAGCTTGTGCTGATATTGATGTAACC
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CATTCCTCTTCAGGTGGTTCTAGATCAGCTGAAATTGATGGAATGCCAATTTACCTGAGTGCTATA
AAAGAATGGATGATTGAGTTTGGGTCCTCAATGATCTTTATATCAATTCGGACTGATATGGCCTGG
TATAGGCTTGGGAAGCCATTGAAACAGTATGCTCCTTGGTACGAACCAGTCATAAAGACTGCAAGA
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GTGGAAAGGTATGTGGTTGTACATGGGCAAATTATTCTCCAGCAGTTTTCTGAATTTCCTGATGTA
AGCATTAGGAATTGTGCATTTGCGGTTGGTCTCTCAAGGAAAATGGAAGAGAGGCACCATACAAAA
TGGGTGATTAAGAAGAAGAAGGTGATGCAGAGACTGGAACAGAACTTAAATCCTAGAGCATCTATG
GCGCCATCTGTAAAAAGGAAAGCTATGCAGGCTACTACAACAAGGCTAATCAACAGAATCTGGGGG
GAATACTATTCCAATTACTCACCCGAGGTGTCAAAGGAGGTGGCTGATTGTGAGGTGAAGGATGAT
GAAGAACCAGATGAGCAAGAGGAAAATGAAGAGGATGATGTTCCGGAGAGGAACTTGGATGTTCCA
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AACTGGGATGGGGAATCCATAGGTAAAACAGCTTCTGGTGAACAGTTGTTTAAAAAAGCTAGAGTT
CATGGACATGAGATAGCTGTTGGAGATTCAGTTCTAGTGGAACATGATGAACCAGATGAGCTTGGT
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TATTCAGTTGATGACTTTGTTTATGTAAGCCCCGATCACTTTACTGCAGAAAGAGGGGGAAATGGA
ACTTTCAAAGCCGGAAGAAATGTGGGGTTGATGGCCTATGTAGTATGTCAATTACTAGAAATTGTT
GGACCTAAGGGATCTAAACAAGCTAAAGTAGATTCTACAAATGTTAAAGTCAGAAGATTCTTCAGA
CCAGAGGATATATCTTCAGATAAGGCATACCTCTTCTGATATCCGGGAGATCTATTACAGTGAAGA
TATACATACAGTTCCTGTGGAAATAATCAAAGGAAAATGTGAAGTGAGGAAGAAGTATGATATTTC
CTCTGAAGATGTCCCTGCCATGTTCGACCATATTTTCTTTTGTGAATATTTGTATGATCCATTGAA
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AACATCTAGGAAGAGGAAGGGGAAGGGAAAAGAAGGAGTGGATGAAGTTGGGGAACTAAATGAAAC
TTCTCCACAGAATCGTTTGTCCACATTAGATATCTTTGCTGGTTGTGGTGGCTTGTCTGAGGGGTT
GCAGCATTCGGGTGTCACAGATACAAATTGGGCAATTGAATACGAAGCGCCTGCTGGAGATGCATT
TAGACTTAATCATCCAAAGACAAAGGTGTTCATACATAATTGCAATGTGATTTTGAGGGCTGTCAT
GCAGAAGTGTGGAGATTCTGATGACTGTATCTCAACTCCAGAGGCTTCTGAATTAGCTGCAGCAAT
GGATGAGAGCGAACTGAATAGTTTGCCACTGCCTGGACAAGTTGATTTCATTAATGGAGGCCCTCC
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GATTCTGGCATTTTTATCCTTTGCTGATTATTATCGGCCCAAGTTTTTTCTCTTGGAGAATGTTAG
GAATTTTGTTTCGTTCAACCAAAAACAAACATTTCGCTTAACTGTTGCTTCCCTTCTTGAGATGGG
TTATCAGGTTAGGTTTGGTATCCTTGAAGCCGGAGCGTATGGAGTTCCTCAGTCTAGGAAGAGAGC
ATTTATCTGGGCTGCCTCCCCAGAGGAGGTTCTTCCAGAGTGGCCAGAACCAATGCATGTTTTTGC
TGTCCCAGAATTAAAAATCGCATTATCTGAAACTTCATACTATGCAGCTGTGAGGAGTACTGCTAG
TGGAGCTCCATTCCGTTCACTTACTGTCAGAGACACAATTGGAGATCTTCCTGTTGTTGGCAATGG
GGCAAGCAAGACTTGCATAGAGTATCAAGGTGATCCAGTATCCTGGTTCCAAAAGAAAATCCGGGG
CAGCTCAATAACATTATCTGATCACATTTCAAAAGAGATGAATGAGCTTAACCTAATCAGGTGCCA
AAGAATCCCCAAGCGGCCAGGAGCTGATTGGCGTGACCTTGAAGATGAAAAGGTTAAACTATCTAA
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***GGGCAAGGTGGGGATGTGCTTTCATCCAGATCAAGACAGGATTGTTACAGTTCGTGAATGTGCACG***
***TTCTCAAGGTTTCCCAGACAGCTACCAATTTGCTGGTAACATCTTGCACAAGCACAGGCAAAT***AGG
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AAATAGGCTCACTTAGAACTTTTTTAAGCTGTGAATTTTACATGCATGTCAATTACCATTCACATT
GCCAAATTATATCAGTTACTCATTTATTAAATTTGCAGTTTCACCTATAACCCTCTATTTAGAGGT
TGGGTTCAAACAAAAAAAATTAAAACAAAAAAAAA

**b**

***SlCMT2*** (Sequences highlighted RED was cloned into PVX/SlCMT2)

CAGAGAAAATCAGTGAGTTTGTGGTGAAAGGCTTCAAAGCAAATCTTTTGCCGTTGCCTGGTGATG

TTGATGTTGTATGCGGTGGACCACCTTGCCAAGGAATCAGTGGGTTCAATCGTTTTAGGAATAAAG
AAAAT***CCGATGCAGGATCCCAAAAATAAACAACTTGATGTCTACATGGACATTGTGGATTTCTTGA***
***AACCCAGGTTTGTATTAATGGAGAATGTGGTGGACCTTGTCAAATTCTCCAATGGTTTCCTTGGGC***
***GATATGCATTGAGCAGACTTGTAGGGATGAACTACCAAGCACGGATGGGAATGATGGCAGCTGGTG***
***CGTATGGTCTTCCACAATTTCGTATGCGTGTTTTCATGTTTGGAGCTCTTTCATCAGAGAAGTTGC***
***CACAATATCCATTGCCCACACATAAAGTTATTGTGAGGGGTGTTATTCCCGTAGAATTTGAGTCAA***
***ACACAGTTGCGTATGATTCAGTCAGGGATCTCGAGTTAAAGAAAGAACTCTTTCTTGGTGATGCAC***
***TTTCTGATCTCCCTT***TGGTGGAGAACAATGAGCCAAGAGATGAAATGCCTTACACTGATGAGCCTA
AATCTGATTTCCAGCATTTTATAAGAATGGGGAGGGATGGGTTGTTGGGAAGCGTACTATATGATC
ATCGTCCTCTTCAGTTGAACGAAGATGATCATCAGCGTGTATGTCAAATTCCAAAGCGGAAGGGTG
CAAACTTCAGGGACTTGCCCGGAGTTCGTGTTCGGCCAGATAATAAAGTTGAATGGGACCCAGACG
TGGAGAGAGTAAAGCTACCTTCTGGGAAGCCTTTGGTCCCTGACTATGCGATGAGCTTCGTTGGTG
GTAGTTCCTCAAAACCATTTGGTCGTTTGTGGTGGGATGAAACTGTCCCAACAGTTGTGACGAGAG
CTGAACCCCATAATCAGACCATAGTACATCCACTACAAGATAGAGTGCTCACAATTCGTGAAAATG
CAAGGCTCCAAGGTTTTCCTGACTACTACAAGTTGATAGGTCCAATAAAAGAAAGGTACATGCAAG
TAGGTAATGCAGTTGCAGTTCCAGTTGCCCGAGCATTGGGCTATTCTTTGGCCATGTCAATAAAGG
GATTATCTGGAGAAACACCATTGTTCACCTTGCCAAAAAATTTCCCTTCTCATGAGGATCAGAATT
GTAATGAAGTGTCACAATAATTTAAACATTAACTAATTGAGATTACCAAACTATCTTTCACCCTCT
GTATGGGGGATGATTATTTTTAGGATCTTAGTTTTATTGATTAATTTGCCTTCAGACATTGTTTCA
CAATACAATCATGCCAATGTTGAAGCTGGTGAAGGCGTGGGTTTATGTAATAGCAAGGTGAACATG
TGTCATGTTCTATTCTAGTTCCCAGAAAATGTATTTTGAGCATTCAATTCCATGTAACATTTCAAG
TTGTAAACTGTCAGAAAACATTTAGACACATTAAAAAAAAAAAAAAAAAAAAA

**c**

***SlCMT3*** (Sequences highlighted Red is cloned into PVX/SlCMT3; sequences highlighted Blue is cloned into PVX/SlCMT3$_{UTR}$))

CGGAGAAATTGTGCTGGATAGTGAAGCTAGGAAAAAATGGCCTCATAGATATATTTTAAAGGATAA
CGTGAATATAAATAGTGCATCTATGAGCTTAAATTGCCAACATGATTCGGACGAATTAATTCAGGC
CAAGTGCCATTTTGCACAAGCATTAGTTGATAATGTCATTTATAAACTTGGGGATGATGCATATGT
AAAGGCTGCAGAAGATGAAGATGATTACATATGCAAAATTGTTGAATTTTTTCAAGGTGTTGATGA
TATGAAGTATTTTACTGCTCAGTGGTTTTACAGAGCGAAGGATACCGTAATTAAAGCTCATGACCA
GTTTATTGACAAGAAGCGTGTATTCTTGTCAGATATTAAGGATCACAACCCGCTTGATTGCCTCGT
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AGAATGTGACTACTACTATGACATGAAGTACCTTGTCCCATTCTCATCATTTATTAGTTTACCATC
AGATGTTTTAAGTCCTGATAGTGAATCAAATTCGACCATATCAAGTGACGGTGATGTTGTGGAGGT
CAAAGAACAGAAGCAAGAAAAGAAACTCTTGGATCTTTATTCCGGTTGTGGTGGAATGTCTACTGG
GCTGTGCCTGGGTGCTGATGTTTGTGATGTTAAACTTGTCACTAAATGGACTGTTGATCTAAATTG
TTATGCCTGTGATAGTTTAAAAGCAAACCACCCAGAAACCGAGGTGAGAAATGAATCTGCTGAAGA
TTTCTTATTGCTTTTGAAGGAGTGGGAGCAGCTTTGTGCATCCTGCTCCTTATTGAAAAGCAATAC
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TGATGATGGGGGATCTGGTGATGAAGATGAAGGTGAAATTTTTGAAGTGGAAGAGATCTTGGAAGT
TTGTTATGGAGACCCGAAGGAAATAAAAAAGCCAGGCCTTTATTTTAAGGTACGATGGAAGGGTTA
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GGGACCTCCTTGCCAAGGAATAAGTGGCTTTAATCGTTTTAGAAATTCAGCAAATCCATTACAAGA
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AATGGAAAATGTGGTGGACTTGCTTAGGTTTGCACATGGTTACCTTGGAAGATATGCACTAAGCAG
ACTTGTTGGAATGAACTACCAAGCACGGATGGGAATGATGGTTGCTGGGGCATATGGACTTCCACA
ATTTCGTATGCGTGTCTTCATGTGGGGTGCTCTTCCTTCAGAGAAATTGCCACAATATCCGTTGCC
CACACATAACGTTATTGTGAGGGGTGGCATTCCCACAGAATTTGAGTTAAATGCAGTAGATTTTGA
AGAAGGCCTGAAGGTCAAGCTAAAGAGAGAACTTCTTCTCGAGGATGCACTTTCAGATCTTCCTCC
TGTGGAAAATAATGAACCAAGGGATGAAATGCCATATATCGATGAGCCAAAATCAGTCTTTCAGCG
TTTCATAAGATCAAGGAGGGATGGTACGTTGGGTACTGTTTTGTATGATCATCGTCCCCTTCAGTT
AAACGAAGATGACTACCAGCGTGTAACTCAAATTCCCAAACAAAAGGGTGCAAACTTCAGGGACTT
GCCTGGGGTTCGTGTTCGTGCTGACAATGTTGTTGAATGGGATCCAGATATGGAAAGAGTAAAACT
TCCATCAGGGAAGCCTTTGGTTCCTGACTATGCAATGACTTTTGTTCGTGGCACTTCACAAAAGCC
ATTTGGTCGTTTATGGTGGGATGAAATTGTTTCAACAGTT***GTTACACGAGCAGAGCCCCATAATCA***
***GGCTATATTACATCCAGTGCAGGACAGAGTGCTCACTATCCGTGAAAACGCAAGGCTGCAAGGTTT***
***CCCTGATTATTACAAATTGACTGGACCAATAAAAGAAAGGTACATACAAGTTGGAAATGCAGTTGC***
***AGTACCAGTTGCCCGGGCTTTAGGGTATTCTTTAGCATTGGCATTGAAAGGATTGTCGCGAGATCA***
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AGATAAGGTTTAATTATCTGAACGTTACGT***CAAGGTACTAACCTCAACTGATTATTCCAAGTATTA***
***TCATTCATTAGTTTACTGAAAACAGTTGTTGCAATGCAAGTTCTGCATTAACATTATATTTTTTTG***
***TTAGTTGCTAATTTAGGACAATGGAGAAGTTGGAAGTAGGTATTGTGTTTTTGTAGGTATCATTAA***
***TTTCTACATTGGATTGAC***AACTTAACTTATTTTGGTGCAAATGATAACTGTTGTATTGCAATGGTT
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAGAAAAAAAAAAAAAAAA
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CGTTTA

**d**

***SlCMT4*** (Sequences highlighted RED was cloned into PVX/SlCMT4)

TCAACGCAGAGTACATGGGATGACCCAAAGCGCGTATTCTATTCTACTTTGGAGAATGATAATTTA
CTAGACTGCATAGTTTCCAAAGTTAACGTGGTAGAATTACCAACCAGGCATGATTTGAATAAAAAG
GATGTTCCACCTGCTCACTTTTATTACGACATGGAATACTGTGTTGATTATTCCACATTCCGTACG
TTGCATAATGTCAAAAGCTCTGTCTCCCCTTCGCTAGTTGATGTGTCATATAAGCCTATCACTACA
TATCCTCTGGAGGTATCACCAAGTTGTGAACCTATGAAAGTGGAGTTGTCATTATTGGATCTATAT
GCTGGTTGTGGCGGCATGTCAATGGGATTGTGCCTTGGCACAAAACTCTCTGGTCTTAATCTTGTG
ACGAAATGGGCAGTTGATTTTAATAAAGCTGCCTGTGATAGCCTGAAACTGAATCATCCTCAGACA
CATGTTAGGAATGAAGGTGTTGAGAATTTTCTAGAGCTACTGAAAAGATGGGAGAAGCTAATTAAG
TCGTACGGCTGTAGTGATATCAAAACAAGCTCTAATATTGAGCTAGACGACAGAGATGAAGGCGAA
AACAATGATGATTCTCAGTCTGGTTCCAATGCATCTTCTGGAGAATATGAGGTATTAAGATTCGTT
GACATATGTTACGGGGATCCCAACAATGACGGAAAATCTGGACTTCATTTT***AAGGTGCGATGGAAA***
***GGTTATGGTCCGAGTGAAGATACTTGGGAGCCAATTGAGAACTTGAAAAATTGCGGAGACAGTATA***
***AAAGATTTTGTTCGAAGGGGGCAACAGTTGAAAATTCTGCCTCTACCAGGTGACGTTGATATGATA***
***TGTGGGGGTCCTCCTTGCCAGGGCATCAGTGGATATAATCGCCACAGAAATACTGATGACCCATTG***
***TCTGATGAAA***AAAATCGTCAAATTATTATATTTATGGATGTTGTGGAATTCCTACGGCCTAAATAT
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CCACAATTCCGATTGCGAGTTTTCTTTTGGGGTGCACTTCCAAGTGAGAGGTTGCCCCCATTTCCA
CTTCCTTCGCATGACGTGATTGTTAAATATTGGCCCTCACCTGAATTTGAGCGTAATACTGTTGCT
TATGAGGAAGGACAACCACGTGACCTTGAGGAAGCTCTTGTTCTTCGTGATGCGATATCTGATATG
CCAGCTGTCACATGGCATGAAACTCGTGAAGAAAGGCCATATGAGATGCCCCCTGAAACAGAGTTC
CAGAAATACATAAGATTATCTAAACATGAGATACTGAGTTGTACATCAACTGGAGTCAAGGAAACA
AAAGAACCTGTTTTGTCTGATCATCGGCCTTGCCAACTAAACGAGGACGATTACTTGCGAGTTTGT
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GTGGCTCGTCGTGATACTAAAGATCCAAAGGTTCTACCAAACGGAAAGCCCATGGTTCCTGACTGT
GCCTTTAACTTTGAGCATGGAAAGTCTAAGAGGCCATTTGCAAGGTTGTGGTGGGATGAAACAGTA
GCAACATTAGTGACGTTTCCTAATCATCGCGCCCAGGCTATCTTACACCCAGAGCAAGATCGAGTA
CTGACCATACGAGAGTATGCAAGATTGCAAGGTTTTCCAGATTTCTATAGGTTTACTGGTACTCTC
AAGGAAAGATATTGCCAAGTTGGGAATGCTGTAGCAGTTCCTGTTGGTCGCGCACTTGGGTACGCG
CTTGGACTTGCCTATCAGAGGCTAGCTGGAAATGAGCCTCTTATTAAATTGCCATCAAATTTCTCA
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AGCATTCCTTTAAAAAAAAAAAAAAAAAAAAAAGTACTCTGCGTTGATACCACTGCTTGCCCTATA
GTGAGTCGTATTAGAAGGGCAATTCGTTTAAACCTGCAGGACTAGTCCCTTTAGA

**e**

***SlDRM5***

GGCACCAGCTTCCTTCGCTCTCAAATCTATGATATTAAGAAGATTTATGATATAGCGCAGCACGGA
GTTGCTTGACACCCTTTGATCGACAAGGATTCTCAGGGTGCTCAATTACTCTTCGTGCTGAACACT
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ATTGACTGGGATACTGAAGATGAGTTAGAAATACAGGATACAACATTTTCCTCATGCAGGGATTTA
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TCTACGTTCATTCAGAAGTTTTTAGTGATGGGATTTTCTGAAGAGTCCATTGCAAAAGCAATAGAG
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CCTGAAGAACAGCCCAGTGCTAGCCCTCACCTGGAGCCCTGCATTAATTCTGATGATAGCTCTTCT
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GGGATTCAACTAAACAATGTGGTCTCTGTGGAAAAATCTGAAGTGAACAGAAACATTGTGAGAAGT
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GACCGCTTAGAACAACTGATAGATTCATGTGGCGGATTTGATTTACTGATTGGTGGAAGCCCGTGC
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GCCATCACATAAAATTTCTGGCTTAAGATTCTACATCGACTGGTCTCCTACAATACCAGTTGATGA
GCATTCTATTTCGCTTTGAAGCGAAAACAAACATGAAGTGTAAAGTACATTGTTACTATTAGTTAT
TGGCCTAACATGCCATTTCAGTTGATGAGCATGCACAGTTACAGTGTTGTATCCTCCATGAATAAT
ATTCTGGAATTTGCATAAGAAAGCTCTGCACTTGAATCTCAAAAAAAAAAAAAAAAAA

**f**

***SlDRM6***

GTCCAGTGTTGGAAGCGTAAAACTCCAAATATGGGAATCTCTCTTATGCTTTAAAACCAAACAAGA
ATCTCTTCTTCGTCAATTTTCTCTAAAATCTATGGATATCTGATATAGATCAAAATTGATTGTTGC
ATTGATCACTGAAAAATTTCAGGGTGCTGATTTATTCTTCTTGCTGAACAAATTGGAGTTCTTTTT
CAGGCTTACCTTGAGAAATGGACAAAAATCTTTCTGGAGAAGATAATGATGACATTGACTGGGATA
CTGAAGATGAACTTGAAATACAAGAAATACAGGACACAGTGTTTTCCTCATGCACGGATTTAAGAA
CTACTGGGCAGCATGTTGTTTGTTGCGATGTGGAGGCAAGCTCGTCATCAGTACCCTTCCGGTCCA
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TAAATACTGTTAAGCAGTGCTACTTGAATGACGAGGGAAGTTCTTTGTCTGAAAAAGAAAAGATGT
TATTGTTCCTGGGAAATATGGGATATCCAGCGGAAGAGGCCTCCATAGCAATGGATAGATGTGGTC
CAAAAGCATCACTCCCTGAATTGGTAGATTTTATTTGTGCTGCTCAAATGTCAAGAGCGGAAGATC
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AGAGGAAAATGTACAATGAATTGTGCAAACGGAAAAAGCAAAGGGAGATTTCTGTTGAAGAGCCAA
TTCGATTGCCCAAGCCGATGATTGGCTTTGGAATTCCTACCGAATCAGTTCCAAGAATGGTTCAAC
GAATTCTTCCCGAGAAAATCATTGGCCCGCCTTATTTCTATTATGAAAATGTCGCCCTGGCTCCAA
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ACTTTTCTGCAACTGCAAGAAAAAGAGGGTATCTTCATAATCTGCCGATTGAAAACAGATTTCCTT
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GGGATACTAGATCAAAGTTGAACTGCTTACAAACAGCCATTGGGAGTGCAAGGTTGACGGATAAGA
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ATTGCAAGAAGTGGAATTTGGTCTGGGTAGGAAGAAACAAAGTTGCCCCTTTGGAACCTGATGAAG
TTGAAATGCTATTGGGGTTCCCAAAGAATCACACAAGGGGAGGAGGTATAAGTAGGACGGACAGAT
ACAAGTCACTCGGTAACTCTTTCCAGGTTGACACAGTGGCGTACCACTTATCAGTGTTGAGAGACT
TGTTTCCAAATGGAATCAATGTCTTATCACTCTTCTCTGGCATTGGTGGTGCTGAAGTTGCTCTCT
ACCGTCTCGGTGTTCCCCTCAACAATGTTGTTTCAGTTGAAAAGTCTGAAGTGAACAGGAATATTG
TGAGAAGCTGGTGGGAGCAAACAAATCAGAGGGGGAATCTCATACATTTTGACGATGTGCAGCTGC
TGAGCAGAGATCGGTTGAAGAAGTTAATAGAATCAGTTGGTGGATTTGATTTAGTGATTGGTGGAA

GCCCATGCAACAACCTTGCAGGCAGTAACAGAGTGAGCAGGGATGGGCTTGAAGGCAAAGAGTCTT
CTCTGTTTTTTGATTATGTTCGGATATTGGATGATGTCAAGTCCATAATGTCTAGACATAGATGAG
ATACTCTCTCTCATTTAGATATCCTATTCCTTTTTCTCAACCTTGCCAAGGCTTAAGGTTATTCTT
AATTAGTAGGGTGAAATCAAACTAGATACTAATTGCAATTATGAAACTGATGAAATTTTGGTGGTT
GATGAAGTAATGTTATTGTTTCTGGTTCAGTTTTTCCAGAACCCAGGTATCT

**g**

***SlDRM7*** (Sequences highlighted RED was cloned into PVX/SlDRM7)

GGTAGCTAAGTATATCTCCGATAACTAAATTTTGGGTGATGATTTATTTTTGTTGCTGCAGAGTTC
GGAGTTCTTTTTAAGGAATTACCTTTAAAAATGGATAACAACTTTTCTGGAGAAGACAATGACAGC
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GCGATAGAGCAAAATGGAGAAAATGAAGGTTTGGTGCTAGATGCTCTTTTGACATTCAAGGCACTT
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CTGCCAGAGCAAGCTATTGGCCCCCCTTTTTTCTATTATGAAAATGTTGCTCTTGCTCCGAAGGGT
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TGCGCTACCGCAAGGAAAAGAGGATATATTCATAATCTACCAATTGAAGATAGATTTCCTTTACTT
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GATTCTTCTCTATTTTATGAC***TATGTTCGGGTAGTGGACTTGGTCAAATCCATTATGTCTAATCGT***
***AGAGTGTGACGAAAATATGTTTTGAGTTTCTGAACTTGGAAGGCAACAAGTAAAAAGTTGTCTTTG***
***ATTTTGGTTTGTACATATTTTTCGTAAAAGGGGGCACAAAGTAACTCTCTTAGTGCCATCCTAATA***
***TAACTGTTGAACGTTCGTGGAAAGAATGAACTGTTGAACTTCTCATTGTAAAC***GACATTAAATGAT
GTTGAAAATGAACTTGTGATTTTCGCATAAAAAAAAAAAAAAAAAAAAAAAAAAAGTACTCTGCGT
TGATACCACTGCTTGCCCTATAGTGAGTCGTATTAGAAGGGCAATTCGTTTAAACCTGCAGGACTA
G

**h**

***SlDRM8***

GATATTTTGTTTTCATCAGCTGAATTAAGCTCTCTCAGCCTGAATTTCATCTGAGCTCCGATCAGT
TTTCGCCGCAGTTAAAGGCTCAAGGAAAGCACTGTTTTATGCTTTTGCTGTGGCACATAAGAGACA
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TCAAAGCCTGAAGGTGTGAGTGGAATCATGCCTAAAGTTGAAGATCCATATTCCGAATTTCCATCT
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CTTTGTAATATATTAAGCTTATATTGTGAATGGTTCCCATTACATTATTGTAAAAAAAAAAAAAAA
A

**i**

***SlDRM9***

TAGCGAAAAAGTTTCCTCTGTTAAAGCAAAAAACGGAGAGGACTTTCTCGTCCAGTGTTGGAAGCG
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AAAAAAAAAAAAAAA