

SUPPLEMENTARY TABLES AND FIGURES FOR:

**Identification of non-specific Lipid Transfer
Protein gene family members in *Solanum
lycopersicum* and insights into the features of Sola
l 3 protein**

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Supplementary Tables

Table S1. Tomato genes encoding proteins with Pfam domains PF00234 and/or PF14368 lacking the N-terminal signal sequence or including the chloroplast or mitochondrial targeting peptide.

Table S2. Tomato genes encoding proteins with Pfam domains PF00234 and/or PF14368 which belong to alpha-amylase/trypsin inhibitors, proline-rich proteins, hybrid proline-rich proteins, glycine-rich proteins.

Table S3. Tomato genes encoding proteins with Pfam domains PF00234 and/or PF14368 with C-terminal GPI anchor signals.

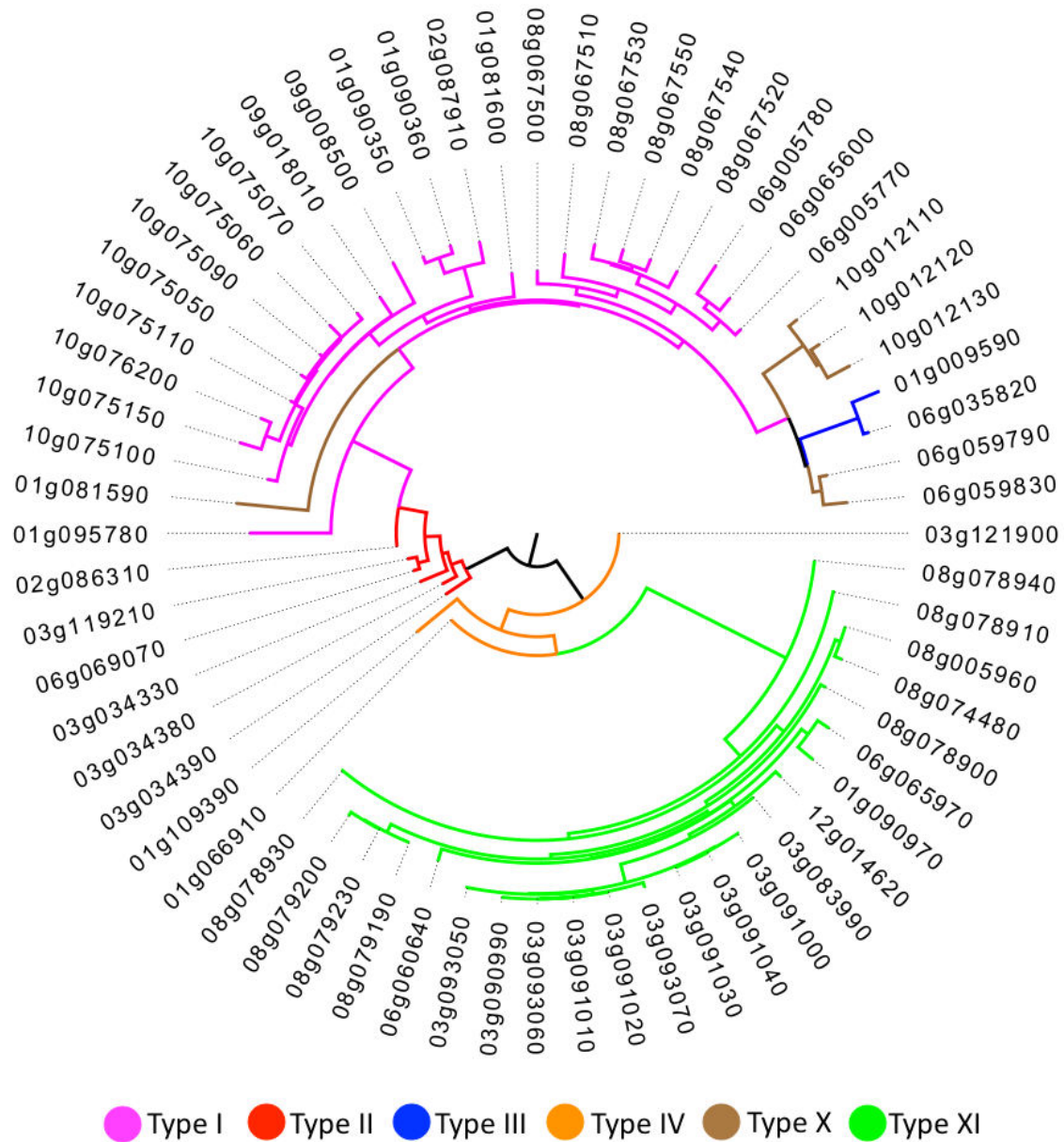
Table S4. List of nsLTP genes identified in the *Solanum lycopersicum* genome including indications on theoretical isoelectric point, molecular weight, sub-cellular localization and the complete sequence of the eight-cysteine motif (ECM). RNA-seq data across different tomato tissues/organs were the average of two replicates and were expressed as RPKM normalized values.

Table S5. Comparison between nsLTPs identified within the Solanaceae family by Liu et al. 2010 and the tomato nsLTP genes (iTAG v. 2.40).

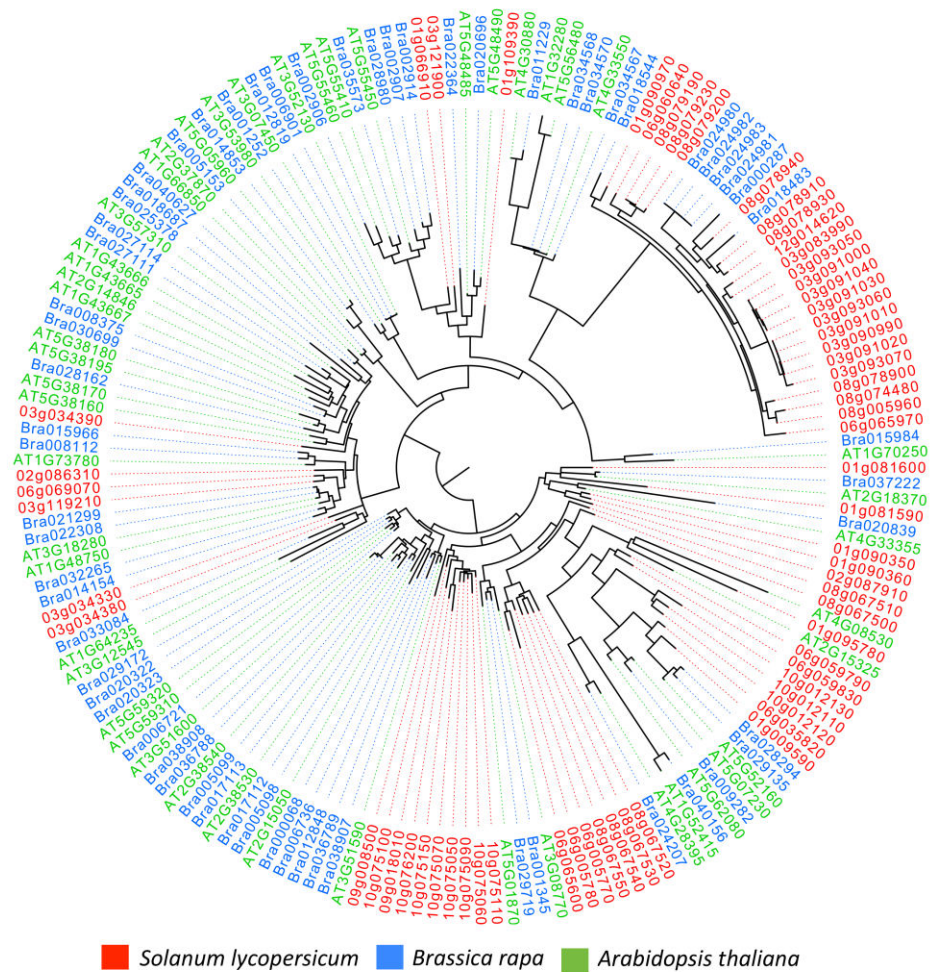
Table S6. List of Primers used for Real-time qPCR analysis. Sequences and structures of primers are reported.

Oligo ID	Sequence (5'→3')	Length	Tm (°C)	GC%	GC clamp	Cross Dimer (ΔG)	Self Dimer (ΔG)	Hairpin (ΔG)
Solyc10g075070_fwd	CTCCATGCCTCCCTTATCTTC	21	54.79	52.38	1	-2.3	-2.3	0
Solyc10g075070_rev	CATGCTGTCTTTTCGATCCG	19	53.33	52.63	1	-2.3	-3	0
Solyc10g075090_fwd	GCTCCTTGCTCTCCCTTATCTCG	22	57.43	54.55	2	-3.7	0	0
Solyc10g075090_rev	TAAGGAATGTTGACTCCACAAACT	24	56.15	37.5	2	-3.7	-1.3	-1.3
Solyc10g075100_fwd	CTTTTGGGTCAAGCCAAAGACTA	23	56.77	43.48	1	-3.7	-3.8	-3.8
Solyc10g075100_rev	TGTAAGGGATGTTGACACTACAAGTG	26	59.18	42.31	1	-3.7	-2.5	-2.5
Solyc10g075110_fwd	CTCCTTGCCTCCCTTATCTTC	21	54.72	52.38	1	-2.3	0	0
Solyc10g075110_rev	CAAGTGCATGCTGTCTTTTCG	20	55.12	50	1	-2.3	-7	-0.5
Solyc10g075150_fwd	AGGCATTGATTTTGGTAAAGCTG	23	55.85	39.13	1	-3	-3	-0.1
Solyc10g075150_rev	GGGCTGATCTCAAAAGGAATCT	22	55.53	45.45	1	-3	-2	-0.4
EF_fwd	CAACCCTGACAAAATCCCCTTT	22	56.44	45.45	2	-2.1	-0.1	-0.1
EF_rev	TTGGTCCCTTGTACCAGTCGAG	22	59.09	54.55	2	-2.1	-3.1	-2.9

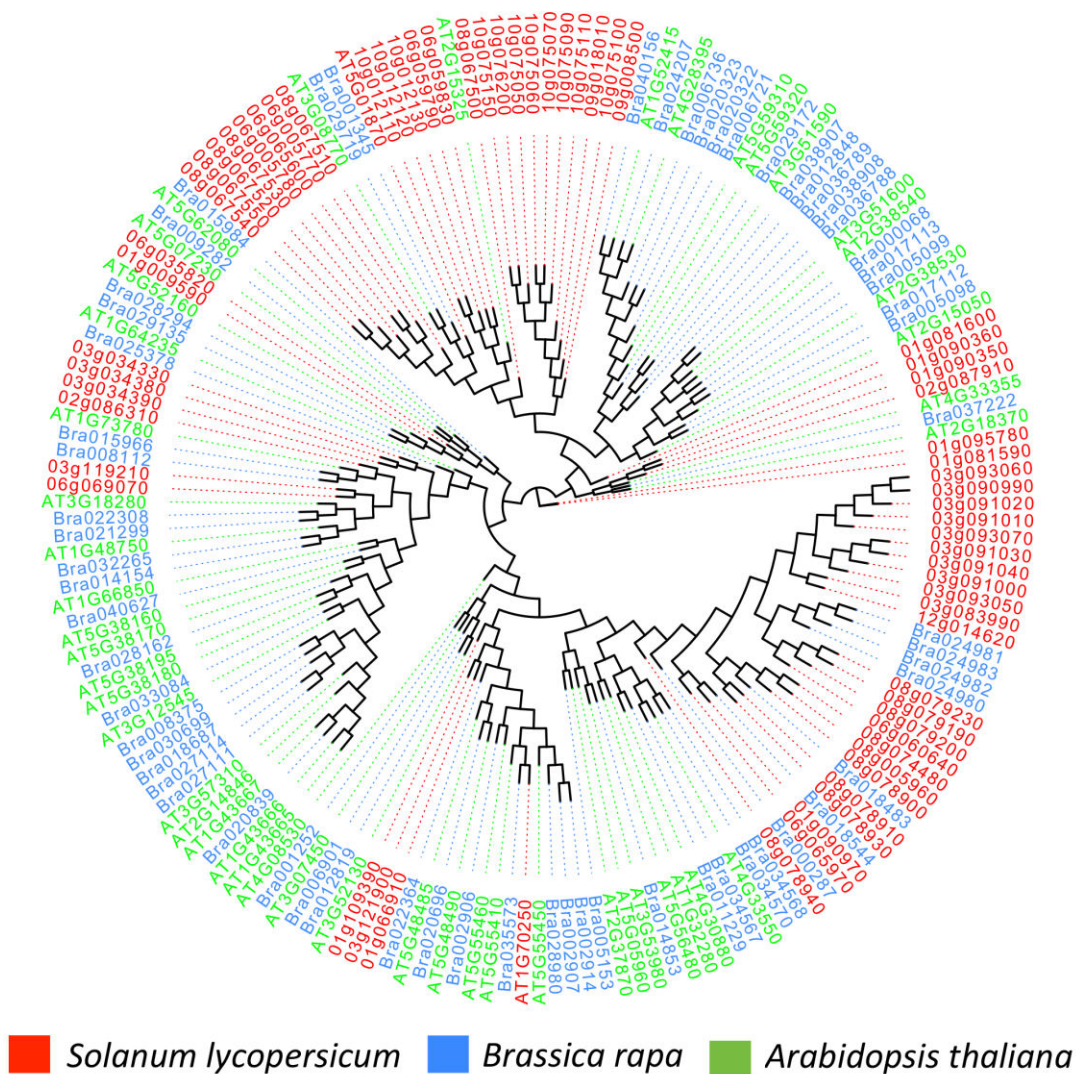
Supplementary figures



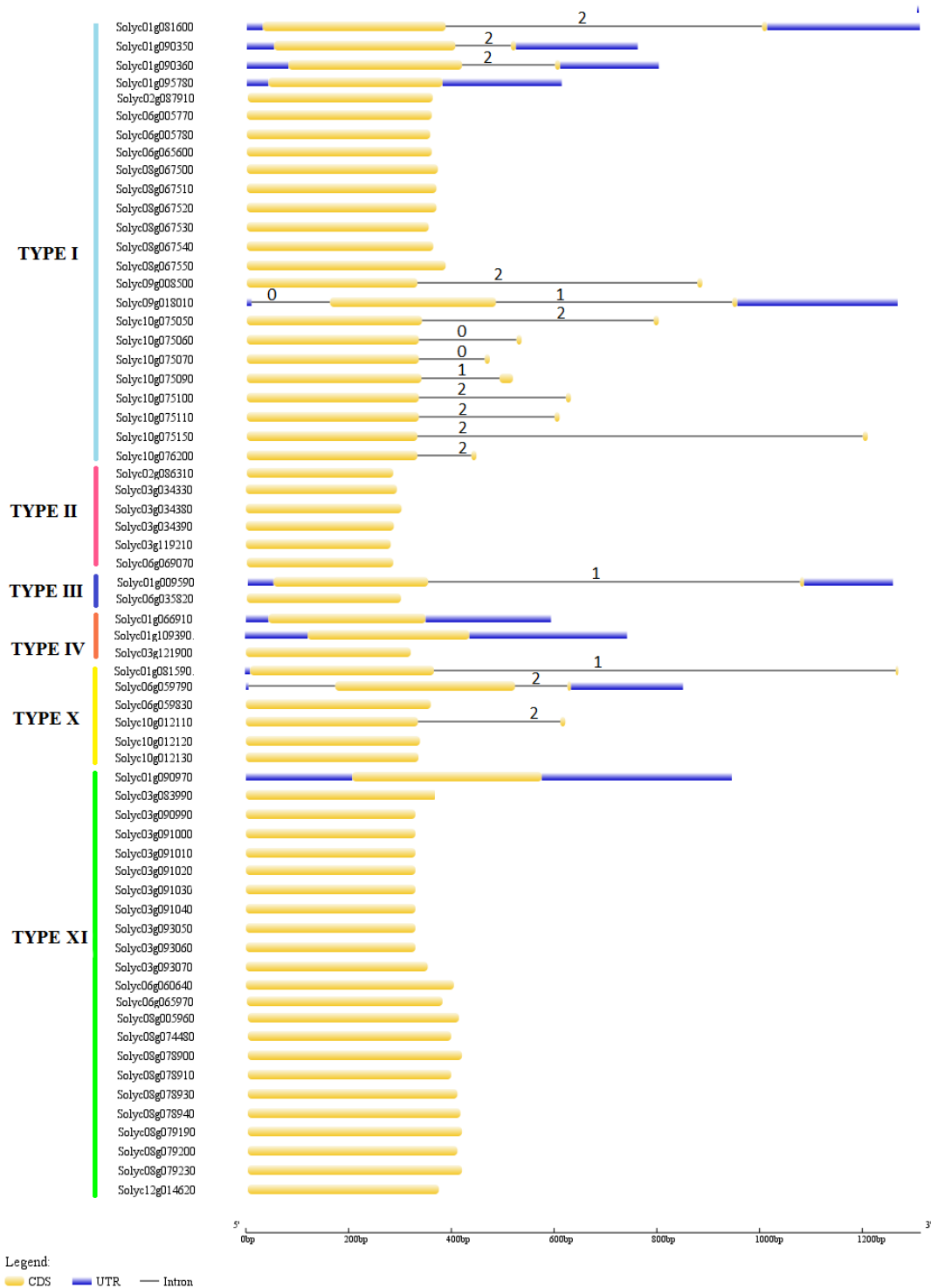
Supplementary Figure 1. Phylogenetic relationships among nsLTP members in *Solanum lycopersicum* inferred from the multiple alignment of ECM sequences. The phylogenetic tree was inferred from maximum likelihood analysis using RAxML with a bootstrap value of 1000. nsLTP types (sub-families) are indicated by different colours.



Supplementary Figure 2. Phylogenetic relationships among nsLTP members in *Solanum lycopersicum* (red), *Arabidopsis thaliana* (green) and *Brassica rapa* (blue) inferred from the multiple alignment of ECM sequences. The phylogenetic tree was inferred from maximum likelihood analysis using RAXML with a bootstrap value of 1000.



Supplementary Figure 3. Phylogenetic relationships among nsLTP members in *Solanum lycopersicum* (red), *Arabidopsis thaliana* (green) and *Brassica rapa* (blue) inferred from the multiple alignment of full-length protein sequences. The phylogenetic tree was inferred from maximum likelihood analysis using RAxML with a bootstrap value of 1000.

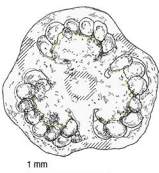


Supplementary Figure 4. Gene structure of nsLTP members in *Solanum lycopersicum*. Protein coding exons and untranslated regions (UTRs) are indicated by yellow and blue boxes, respectively. Introns are indicated by black lines. The scale represents gene length in base pairs. nsLTPs are grouped into sub-families (i.e. types). 0: intron located between two codons (phase 0); 1: intron splitting codons between the first and second nucleotides (phase 1); 2: intron splitting codons between the second and third nucleotides (phase 2).

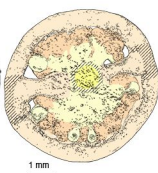
Supplementary Figure 5. Expression images from the tomato expression atlas (TEA) of five nsLTP genes with high level of expression in tomato fruits.

Solyc10g075070

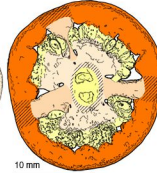
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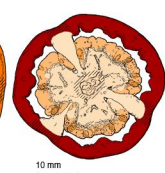
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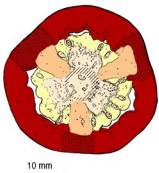
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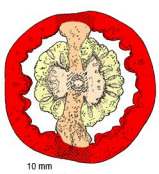
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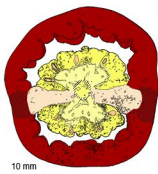
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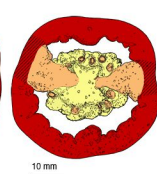
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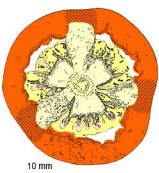
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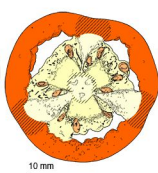
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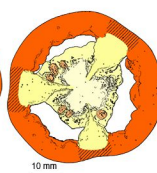
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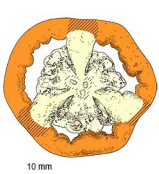
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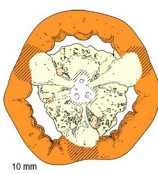
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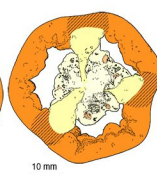
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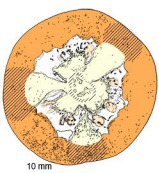
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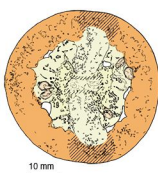
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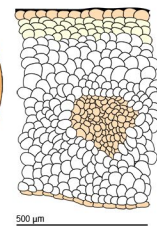
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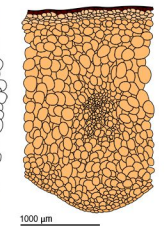
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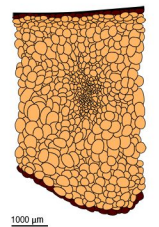
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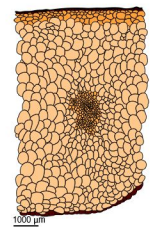
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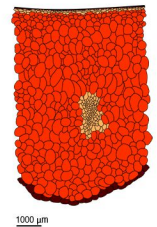
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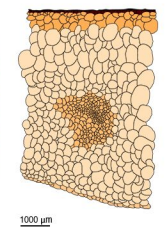
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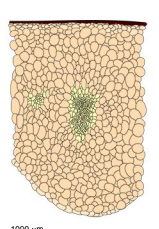
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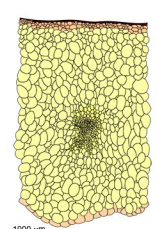
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Light Red Pericarp LMD



Red Ripe Pericarp LMD



RPM

300

100

10

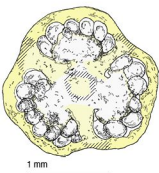
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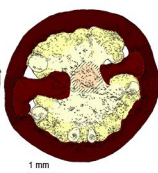
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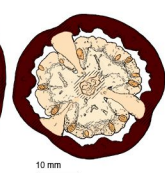
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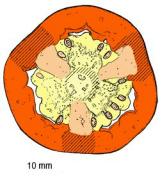
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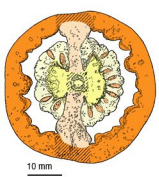
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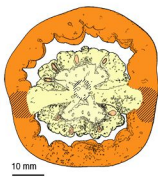
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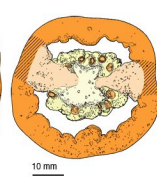
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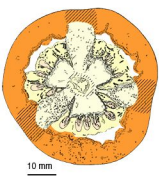
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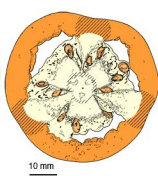
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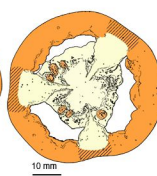
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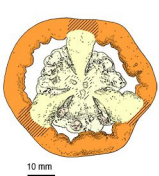
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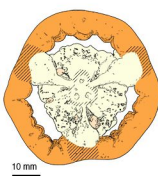
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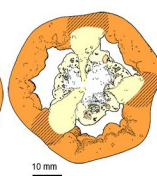
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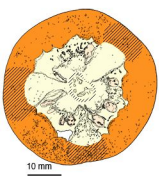
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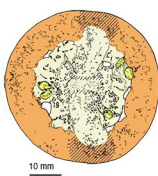
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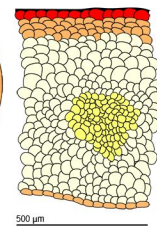
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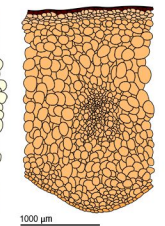
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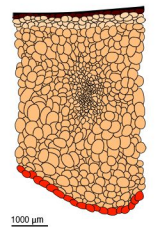
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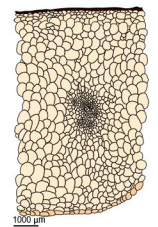
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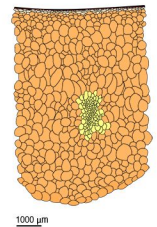
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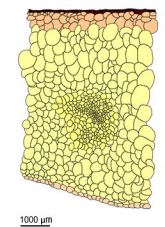
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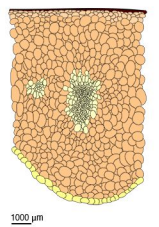
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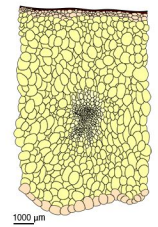
Pink Pericarp LMD



Light Red Pericarp LMD



Red Ripe Pericarp LMD



RPM

300

100

10

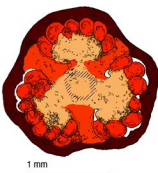
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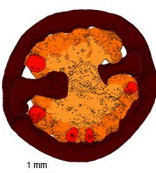
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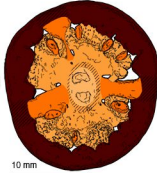
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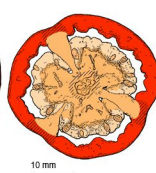
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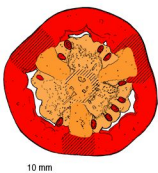
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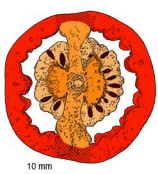
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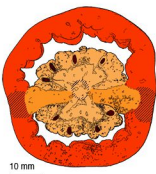
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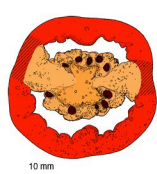
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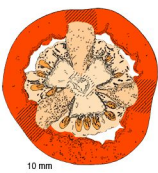
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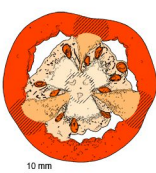
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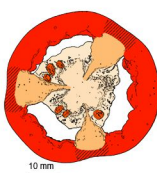
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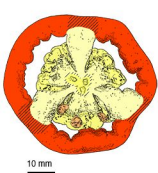
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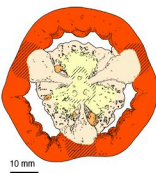
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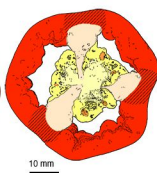
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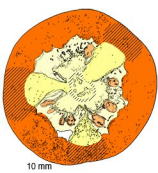
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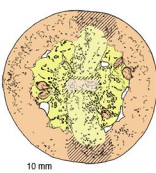
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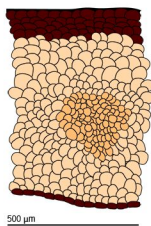
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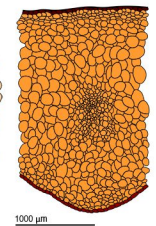
Red Ripe Equatorial
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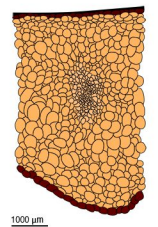
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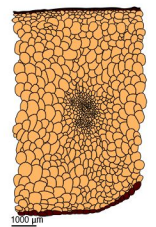
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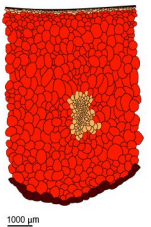
20 Days Post Anthesis
Pericarp LMD



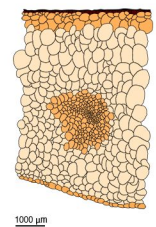
Mature Green Pericarp
LMD



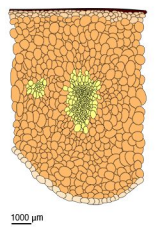
Breaker Pericarp LMD



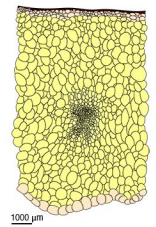
Pink Pericarp LMD



Light Red Pericarp LMD



Red Ripe Pericarp LMD



RPM

300

100

10

1

0

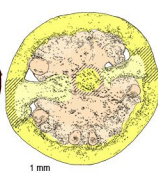
No data

Solyc10g075110

0 Days Post Anthesis
Equatorial Region



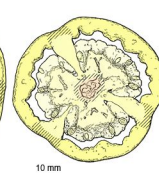
5 Days Post Anthesis
Equatorial Region



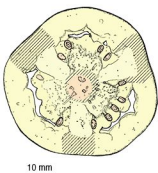
10 Days Post Anthesis
Equatorial Region



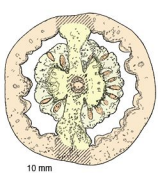
20 Days Post Anthesis
Equatorial Region



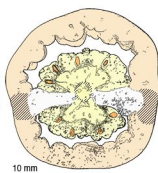
30 Days Post Anthesis
Equatorial Region



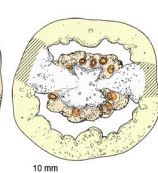
Mature Green Stem End



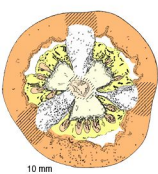
Mature Green Equatorial
Region



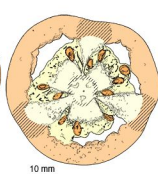
Mature Green Styler End



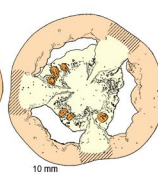
Breaker Stem End



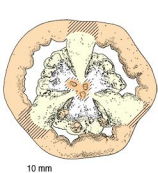
Breaker Equatorial Region



Breaker Styler End



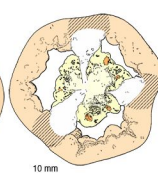
Pink Stem End



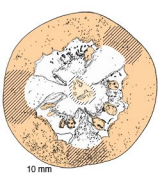
Pink Equatorial Region



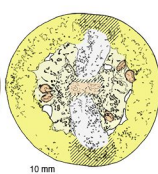
Pink Styler End



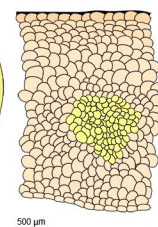
Light Red Equatorial
Region



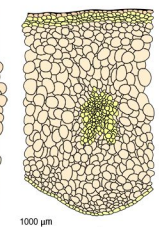
Red Ripe Equatorial
Region



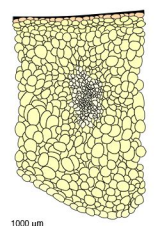
5 Days Post Anthesis
Pericarp LMD



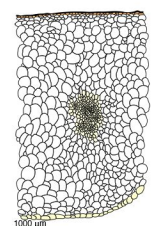
10 Days Post Anthesis
Pericarp LMD



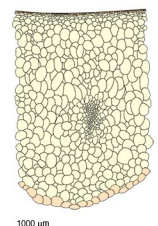
20 Days Post Anthesis
Pericarp LMD



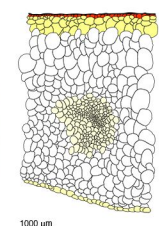
Mature Green Pericarp
LMD



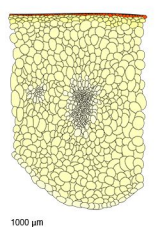
Breaker Pericarp LMD



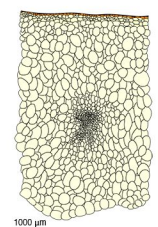
Pink Pericarp LMD



Light Red Pericarp LMD



Red Ripe Pericarp LMD



RPM

300

100

10

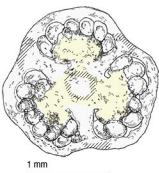
1

0

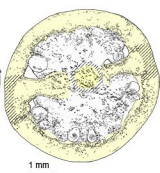
No data

Solyc10g075150

0 Days Post Anthesis
Equatorial Region



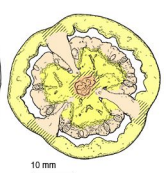
5 Days Post Anthesis
Equatorial Region



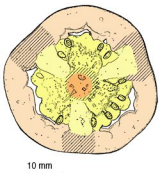
10 Days Post Anthesis
Equatorial Region



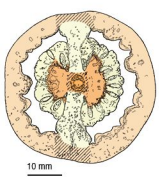
20 Days Post Anthesis
Equatorial Region



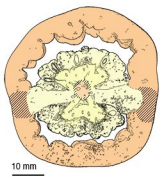
30 Days Post Anthesis
Equatorial Region



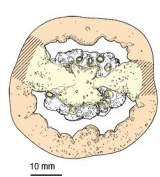
Mature Green Stem End



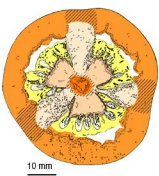
Mature Green Equatorial Region



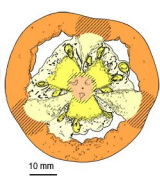
Mature Green Stylar End



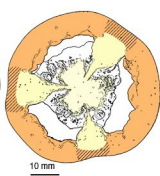
Breaker Stem End



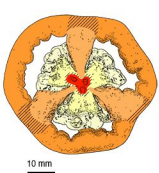
Breaker Equatorial Region



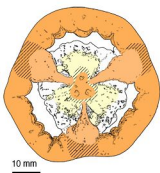
Breaker Stylar End



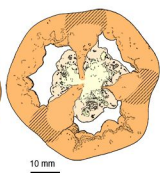
Pink Stem End



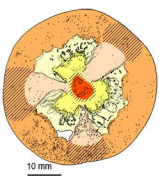
Pink Equatorial Region



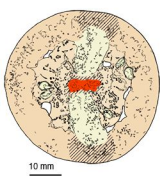
Pink Stylar End



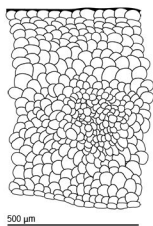
Light Red Equatorial Region



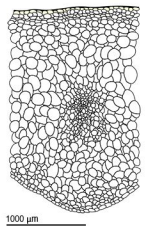
Red Ripe Equatorial Region



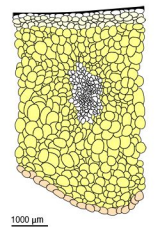
5 Days Post Anthesis
Pericarp LMD



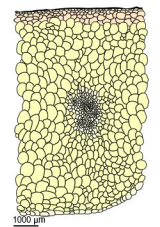
10 Days Post Anthesis
Pericarp LMD



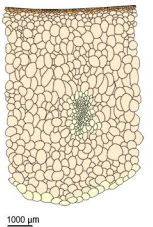
20 Days Post Anthesis
Pericarp LMD



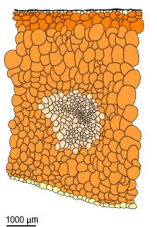
Mature Green Pericarp
LMD



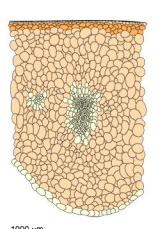
Breaker Pericarp LMD



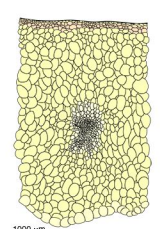
Pink Pericarp LMD

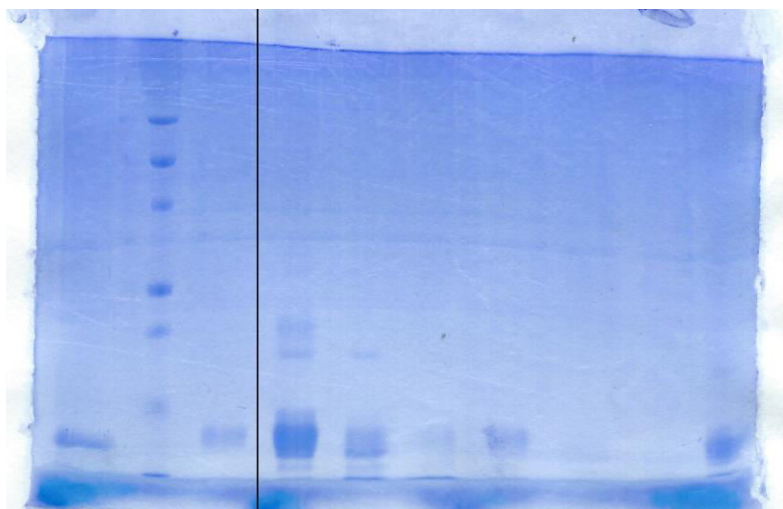


Light Red Pericarp LMD

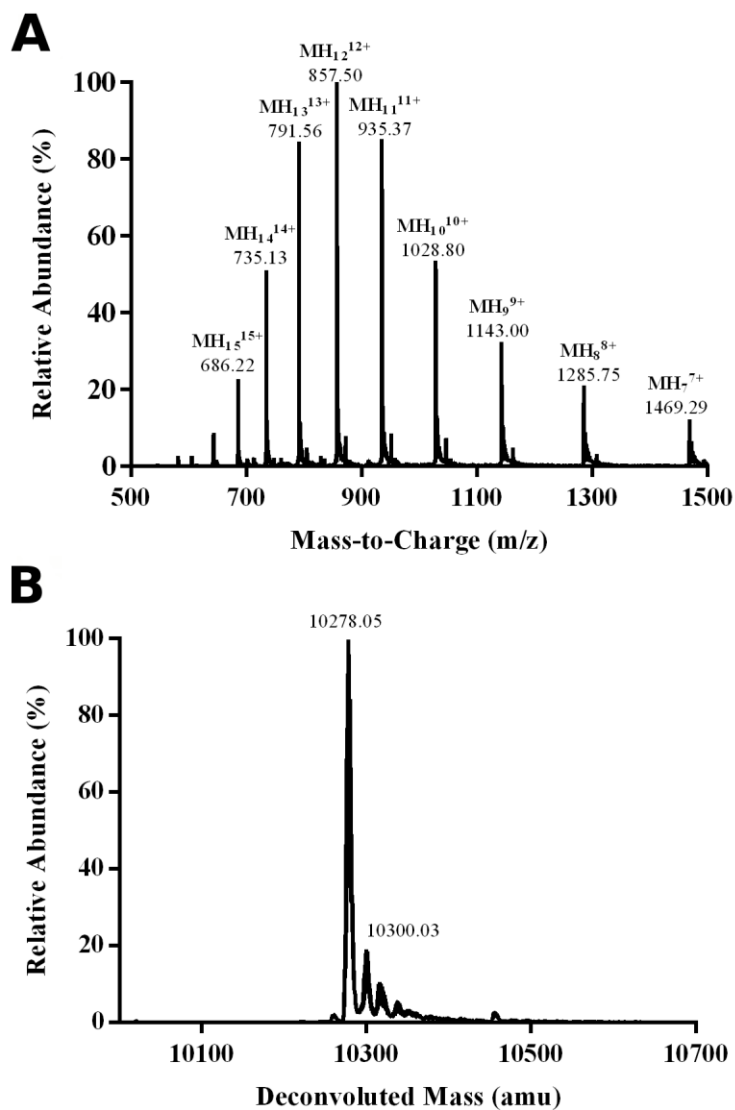


Red Ripe Pericarp LMD





Supplementary Figure 6. Full-length gel displayed in Figure 6. The lanes to the left of the black line are those shown in Figure 6. The lanes to the right of the black line include samples not related to the present work.



Supplementary Figure 7. ESI-TOF mass spectrum of the purified Sola 1 3 protein incubated with 10 mM DTT before the analysis. A. Multicharged spectrum between m/z 600 and 1500. B. Deconvoluted mass spectrum. The experimental molecular weight corresponds to the polypeptide lacking the initial methionine.