SUPPLEMENTARY MATERIAL

corresponding to:

Anatomical and genetic bases underlying convergent evolution of fleshy and dry dehiscent fruits in *Cestrum* and *Brugmansia* (Solanaceae)

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Full Text for this paper is available at: https://doi.org/10.1387/ijdb.200080np
Suppl. Fig. S1. Maximum likelihood tree of FRUITFULL genes in Solanaceae. Outgroup used corresponds to the Amborella trichopoda FUL (AmtrFUL). Duplication events are labelled with stars. Genes belonging to species with dry dehiscent fruits are labeled in black, those belonging to species with fleshy fruits are labelled in red, and those belonging to the target species Cestrum nocturnum, indicating an independent origin of fleshy fruits and species from the Daturae tribe (Brugmansia and Datura), indicating phylogenetic reversals to dry dehiscent fruits, are labelled in light blue. Branch numbers indicate BS supports.
Suppl. Fig. S2. Maximum likelihood tree of AGAMOUS/SHATTERPROOF genes in Solanaceae. Outgroup used corresponds to the Amborella trichopoda AG (AmtrAG). Duplication events are labelled with stars. Colors follow the conventions specified in the Suppl. Fig. S1. legend. Branch numbers indicate BS supports.
Suppl. Fig. S3. Maximum likelihood tree of REPLUMLESS genes in Solanaceae. Outgroup used corresponds to the Amborella trichopoda RPL (AmtrRPL). Duplication events are labelled with stars. Colors follow the conventions specified in the Suppl. Fig. S1. legend. Branch numbers indicate BS supports.
Suppl. Fig. S4. Maximum likelihood tree of ALCATRAZ/SPATULA genes in Solanaceae. Outgroup used corresponds to Amborella trichopoda SPATULA (AmtrSPT). Duplication events are labelled with stars. Colors follow the conventions specified in the Suppl. Fig. S1. legend. Branch numbers indicate BS supports.
Suppl. Fig. S5. Maximum likelihood tree of HECATE/INDEHISCENT genes in angiosperms. Outgroup used corresponds to Amborella trichopoda bHLH87 (AtmbrHLH87). Duplication events are labelled with stars. Colors follow the conventions specified in the Suppl. Fig. S1. legend. Branch numbers indicate BS supports.
Suppl. Fig. S6. Expression analyses of the fruit GRN genes in *Cestrum nocturnum* after 35 amplification cycles. PA, ovary in preanthesis; F, fruit developmental stages; -C indicates the amplification reaction loaded without cDNA.
**Suppl. Fig. S7.** Sepal development and maturation in *Alkekengi officinarum* showing parenchyma degradation in between the primary and secondary vascular traces.
Suppl. Fig. S8. Expression profiles of FRUITFUL genes in *Solanum lycopersicum*, from eFP Browser (http://bar.utoronto.ca/efp2/Tomato/Tomato_efPBROWSER2.html), and *Nicotiana benthamiana*, from the Gene Expression ATLAS (http://sefapps02.qut.edu.au/atlas/tREX6.php).
Suppl. Fig. S9. Expression profiles of SHATTERPROOF and REPLUMLESS genes in *Solanum lycopersicum*, from eFP Browser [http://bar.utoronto.ca/efp2/Tomato/Tomato_eFPBrowser2.html], and *Nicotiana benthamiana*, from the Gene Expression ATLAS [http://sefapps02.qut.edu.au/atlas/tREX6.php].
Suppl. Fig. S10. Expression profiles of ALCATRAZ/SPATULA genes in *Solanum lycopersicum*, from eFP Browser (http://bar.utoronto.ca/efp2/Tomato/Tomato_eFPBrowser2.html), and *Nicotiana benthamiana*, from the Gene Expression ATLAS (http://sefapps02.qut.edu.au/atlas/tREX6.php).
Suppl. Fig. S11. Expression profiles of HECATE1/2/3 genes in *Solanum lycopersicum*, from eFP Browser (http://bar.utoronto.ca/efp2/Tomato/Tomato_eFPBrowser2.html), and *Nicotiana benthamiana*, from the Gene Expression ATLAS (http://sefapps02.gut.edu.au/atlas/TREX6.php).
Table S1. Accession numbers for all sequences used in the main figures of this study. Databases: Phyto: Phytozome at https://Phyto.jgi.doe.gov/pz/portal.html ; OneKP: http://www.onekp.com/public_data.html; SGN: Sol Genomics Network; UdeA: Universidad de Antioquia.

### ALCATRAZ/SPATULA genes

| Gene name   | Species                        | Family       | Accession Number            | Database      |
|-------------|--------------------------------|--------------|-----------------------------|---------------|
| AmtrSPT     | Amborella trichopoda           | Amborellaceae| evm_27.model.AmTr_v1.0_scaf | Phyto         |
| AtbeALC1    | Atropa belladonna              | Solanaceae   | BOLZ-2009637                | OneKp         |
| AtbeALC2    | Atropa belladonna              | Solanaceae   | BOLZ-2009636                | OneKp         |
| AtbeSPT     | Atropa belladonna              | Solanaceae   | BOLZ-2039914                | OneKp         |
| BrauALC     | Brunfelsia australis           | Solanaceae   | TRINITY_DN25934_c3_g1_i2    | UdeA          |
| BrauSPT     | Brunfelsia australis           | Solanaceae   | TRINITY_DN18572_c0_g1_i2    | UdeA          |
| BrsuALC     | Brugmansia suaveolens          | Solanaceae   | TRINITY_DN15730_c0_g1_i3    | UdeA          |
| BrsuSPT     | Brugmansia suaveolens          | Solanaceae   | TRINITY_DN15730_c0_g1_i3    | UdeA          |
| CaanBpALC   | Capsicum annuum cv. Black pearl| Solanaceae   | Unassigned code             | UdeA          |
| CaanGlALC   | Capsicum annuum var. glabriscus| Solanaceae   | Capang04g000533              | SGN           |
| CaanGlSPT   | Capsicum annuum var. glabriscus| Solanaceae   | Capang02g002787              | SGN           |
| CaanBpSPT   | Capsicum annuum cv. Black pearl| Solanaceae   | Unassigned code             | UdeA          |
| CaanZuALC   | Capsicum annuum Zunla          | Solanaceae   | Capana04g000590              | SGN           |
| CaanZuSPT   | Capsicum annuum Zunla          | Solanaceae   | Capana02g003079              | SGN           |
| CenoALC     | Cestrum nocturnum              | Solanaceae   | TRINITY_DN23456_c0_g1_i2    | UdeA          |
| CenoSPT     | Cestrum nocturnum              | Solanaceae   | TRINITY_DN28823_c1_g2_i1    | UdeA          |
| DameALC     | Datura metel                   | Solanaceae   | JNVS-2048363                | OneKp         |
| DameSPT     | Datura metel                   | Solanaceae   | JNVS-2035866                | OneKp         |
| LychALC     | Lycopersicon cheesmanii        | Solanaceae   | UGJI-2021566                | OneKp         |
| LyspALC     | Lycium sp                      | Solanaceae   | OSMU-2078921                | OneKp         |
| LybaALC     | Lycium barbarum               | Solanaceae   | LWCK-2014040                | OneKp         |
| NibeALC1    | Nicotiana benthamiana          | Solanaceae   | Niben101Scf04995g00002.1    | SGN           |
| NibeALC3    | Nicotiana benthamiana          | Solanaceae   | Niben101Scf12132g00007.1    | SGN           |
| NibeALC2    | Nicotiana benthamiana          | Solanaceae   | Niben101Scf00868g07004.1    | SGN           |
| NibeSPT1    | Nicotiana benthamiana          | Solanaceae   | Niben101Scf01802g02017.1    | SGN           |
| NibeSPT2    | Nicotiana benthamiana          | Solanaceae   | Niben101Scf04003g05003.1    | SGN           |
| NiobALC     | Nicotiana obtusifolia          | Solanaceae   | Unassigned code             | UdeA          |
| NiobSPT     | Nicotiana obtusifolia          | Solanaceae   | Unassigned code             | UdeA          |
| NiotALC     | Nicotiana otophora             | Solanaceae   | Noto_AWOL0150531733.1       | SGN           |
| NsylALC     | Nicotiana sylvestris           | Solanaceae   | mRNA_74493_cds              | SGN           |
| Name     | Species                          | Family       | Gene Description | Reference   |
|----------|----------------------------------|--------------|------------------|-------------|
| NsylSPT1 | Nicotiana sylvestris             | Solanaceae   | mRNA_20420_cds   | SGN         |
| NsylSPT2 | Nicotiana sylvestris             | Solanaceae   | mRNA_20421_cds   | SGN         |
| NitaBxALC2 | Nicotiana tabacum BX (Basma Xanthi, Oriental) | Solanaceae | mRNA_57026_cds   | SGN         |
| NitaBxALC1 | Nicotiana tabacum BX (Basma Xanthi, Oriental) | Solanaceae | mRNA_89420_cds   | SGN         |
| NitaBxSPT2 | Nicotiana tabacum BX (Basma Xanthi, Oriental) | Solanaceae | mRNA_145507_cds  | SGN         |
| NitaBxSPT1 | Nicotiana tabacum BX (Basma Xanthi, Oriental) | Solanaceae | mRNA_145508_cds  | SGN         |
| NitaBxSPT3 | Nicotiana tabacum BX (Basma Xanthi, Oriental) | Solanaceae | mRNA_124703_cds  | SGN         |
| NitaKALC1 | Nicotiana tabacum K326 (Flue- cured) | Solanaceae   | mRNA_62305_cds   | SGN         |
| NitaKALC2 | Nicotiana tabacum K326 (Flue- cured) | Solanaceae   | mRNA_57185_cds   | SGN         |
| NitaKSPT2 | Nicotiana tabacum K326 (Flue- cured) | Solanaceae   | mRNA_1788_cds    | SGN         |
| NitaKSPT3 | Nicotiana tabacum K326 (Flue- cured) | Solanaceae   | mRNA_123690_cds  | SGN         |
| NitaKSPT1 | Nicotiana tabacum K326 (Flue- cured) | Solanaceae   | mRNA_1787_cds    | SGN         |
| NitaTnALC1 | Nicotiana tabacum TN90 (Burley) | Solanaceae   | mRNA_181946_cds  | SGN         |
| NitaTnALC2 | Nicotiana tabacum TN90 (Burley) | Solanaceae   | mRNA_67992_cds   | SGN         |
| NitaTnSPT2 | Nicotiana tabacum TN90 (Burley) | Solanaceae   | mRNA_5120_cds    | SGN         |
| NitaTnSPT1 | Nicotiana tabacum TN90 (Burley) | Solanaceae   | mRNA_5119_cds    | SGN         |
| NitaTnSPT3 | Nicotiana tabacum TN90 (Burley) | Solanaceae   | mRNA_152209_cds  | SGN         |
| NitaTnSPT4 | Nicotiana tabacum TN90 (Burley) | Solanaceae   | mRNA_152208_cds  | SGN         |
| NitoALC | Nicotiana tomentosiformis | Solanaceae   | mRNA_6688_cds    | SGN         |
| NitoSPT1 | Nicotiana tomentosiformis | Solanaceae   | mRNA_26330_cds   | SGN         |
| NitoSPT2 | Nicotiana tomentosiformis | Solanaceae   | mRNA_26331_cds   | SGN         |
| SoduALC | Solanum dulcamara | Solanaceae   | GHLP-2055933     | OneKp       |
| SoduSPT | Solanum dulcamara | Solanaceae   | GHLP-2034809     | OneKp       |
| SolaALC | Solanum lasiophyllum | Solanaceae   | DLAI-2016414     | OneKp       |
| SlyALC | Solanum lycopersicum | Solanaceae   | Soly04g078690.2.1 | SGN        |
| SbySPT | Solanum lycopersicum | Solanaceae   | Soly02g093280.2.1 | SGN        |
| StjaALC | Streptosolen jamesonii | Solanaceae   | TRINITY_DN88165_c0_g1_i | UdeA |
| StjaSPT1 | Streptosolen jamesonii | Solanaceae   | TRINITY_DN57268_c0_g1_i | UdeA |
| StjaSPT2 | Streptosolen jamesonii | Solanaceae   | TRINITY_DN57268_c0_g2_i | UdeA |
| StjaSPT3 | Streptosolen jamesonii | Solanaceae   | TRINITY_DN57328_c0_g1_i | UdeA |
| StjaSPT4 | Streptosolen jamesonii | Solanaceae   | TRINITY_DN57328_c0_g2_i | UdeA |
| StuALC1 | Solanum tuberosum | Solanaceae   | PGSC0003DMT400020534 | Phyto |
| StuSPT1 | Solanum tuberosum | Solanaceae   | PGSC0003DMT400010253 | Phyto |
| PeaxALC | Petunia axilaris | Solanaceae   | Peaxi162Scf00503g00311.1 | SGN        |
| PeaxSPT | Petunia axilaris | Solanaceae   | Peaxi162Scf00450g00124.1 | SGN        |
| PeinALC | Petunia infata | Solanaceae   | Peinf101Scf00167g11027.1 | SGN        |
| Gen | Species | Genus | Family | Accession | Database |
|-----|---------|-------|--------|-----------|-----------|
| PeinSPT | Petunia infata | Solanaceae | Peinf101Scf000887g01035.1 | SGN |
| SomeALC | Solanum melongena | Solanaceae | Sme2.5_01029.1 | SGN |
| SomeSPT | Solanum melongena | Solanaceae | Sme2.5_00029.1_g00003.1 | SGN |
| StuALC | Solanum tuberosum | Solanaceae | PGSC0003DMT400020534 | Phyto |
| StuSPT | Solanum tuberosum | Solanaceae | PGSC0003DMT400010253 | Phyto |
| SomeALC | Solanum melongena | Solanaceae | Sme2.5_01029.1_g00003.1 | SGN |
| AtALC | Arabidopsis thaliana | Brassicaceae | AT5G67110.1 | Phyto |
| AtSPT | Arabidopsis thaliana | Brassicaceae | AT4G36930.1 | Phyto |
| PPERSPT | Prunus persica | Rosaceae | GU181270.1 | GenBank |
| FaSPT | Fragaria (Fragaria x ananassa Duch) | Rosaceae | AY679615.1 | GenBank |

**HECATE/INDEHISCENT genes**

| Gen | Species | Genus | Family | Accession | Database |
|-----|---------|-------|--------|-----------|-----------|
| AtHEC1 | Arabidopsis thaliana columbia | Brassicaceae | AT5G67060.1 | Phyto |
| AtHEC2 | Arabidopsis thaliana columbia | Brassicaceae | AT3G50330.1 | Phyto |
| AtHEC3 | Arabidopsis thaliana columbia | Brassicaceae | AT5G09750.1 | Phyto |
| AtIND | Arabidopsis thaliana columbia | Brassicaceae | AT4G00120.1 | Phyto |
| AmtrbHLH87 | Amborella trichopoda | Amborellaceae | evm_27.model.AmTr_v1.0_scaf fold00036.88 | Phyto |
| BrauHEC1 | Brunfelsia australis | Solanaceae | TRINITY_DN63683_c0_g1_i1 | UdeA |
| BrauHEC3 | Brunfelsia australis | Solanaceae | TRINITY_DN39092_c0_g1_i1 / TRINITY_DN49723_c0_g1_i1 | UdeA |
| BrsuHEC2 | Bragmansia suaveolens | Solanaceae | TRINITY_DN11677_c0_g1_i1 | UdeA |
| CaanCmHEC1 | Capsicum annuum cv CM334 | Solanaceae | CA02g14320 | SGN |
| CaanCmHEC2 | Capsicum annuum cv CM334 | Solanaceae | CA04g18570 | SGN |
| CaanCmHEC2-1 | Capsicum annuum cv CM334 | Solanaceae | CA12g16720 | SGN |
| CaanCmHEC3 | Capsicum annuum cv CM334 | Solanaceae | CA12g12200 | SGN |
| CaanGlHEC1 | Capsicum annuum glabriusculum | Solanaceae | Capang04g000508 | SGN |
| CaanGlHEC2 | Capsicum annuum glabriusculum | Solanaceae | Capang00g00544 | SGN |
| CaanGlHEC2-1 | Capsicum annuum glabriusculum | Solanaceae | Capang02g002798 | SGN |
| CaanGlHEC3 | Capsicum annuum glabriusculum | Solanaceae | Capang05g001661 | SGN |
| CaanZuHEC1 | Capsicum annuum zunla | Solanaceae | Capana04g000560 | SGN |
| CaanZuHEC2 | Capsicum annuum zunla | Solanaceae | Capana12g000725 | SGN |
| CaanZuHEC2-1 | Capsicum annuum zunla | Solanaceae | Capana02g003089 | SGN |
| CaanZuHEC3 | Capsicum annuum zunla | Solanaceae | Capana12g002036 | SGN |
| CenoHEC1 | Cestrum nocturnum | Solanaceae | TRINITY_DN56773_c0_g1_i1 | UdeA |
| CenoHEC2 | Cestrum nocturnum | Solanaceae | TRINITY_DN52324_c0_g1_i1 | UdeA |
| CenoHEC3a | Cestrum nocturnum | Solanaceae | TRINITY_DN51720_c0_g1_i1 | UdeA |
| CenoHEC3b | Cestrum nocturnum | Solanaceae | TRINITY_DN9705_c0_g1_i1 | UdeA |
| DameHEC1 | Datura metel | Solanaceae | JNVS-2028087 | OneKP |
| Code       | Species                        | Family      | Accession     | Source   |
|------------|--------------------------------|-------------|---------------|----------|
| LychHEC1   | Lycopersicon cheesmanii        | Solanaceae  | UGJI-2070875  | OneKP    |
| LyspHEC2   | Lycium sp                      | Solanaceae  | OSMU-2025308  | OneKP    |
| LyspHEC3   | Lycium sp                      | Solanaceae  | OSMU-2053989  | OneKP    |
| NibeHEC1   | Nicotiana benthamiana          | Solanaceae  | Niben101Scf23305g01001.1 | SGN      |
| NibeHEC1-1 | Nicotiana benthamiana          | Solanaceae  | Niben101Scf06518g02008.1 | SGN      |
| NibeHEC1-2 | Nicotiana benthamiana          | Solanaceae  | Niben101Scf00378g03005.1 | SGN      |
| NibeHEC1-3 | Nicotiana benthamiana          | Solanaceae  | Niben101Scf02681g01005.1 | SGN      |
| NibeHEC2   | Nicotiana benthamiana          | Solanaceae  | Niben101Scf04995g05002.1 | SGN      |
| NibeHEC2-1 | Nicotiana benthamiana          | Solanaceae  | Niben101Scf06261g01001.1 | SGN      |
| NibeHEC2-2 | Nicotiana benthamiana          | Solanaceae  | Niben101Scf04007g05007.1 | SGN      |
| NibeHEC3   | Nicotiana benthamiana          | Solanaceae  | Niben101Scf00446g05004.1 | SGN      |
| NibeHEC3-1 | Nicotiana benthamiana          | Solanaceae  | Niben101Scf03882g01003.1 | SGN      |
| NsylHEC1   | Nicotiana sylvestris           | Solanaceae  | mRNA_43474    |         |
| NsylHEC1-1 | Nicotiana sylvestris           | Solanaceae  | mRNA_38933_cds | SGN      |
| NsylHEC2   | Nicotiana sylvestris           | Solanaceae  | mRNA_38932_cds | SGN      |
| NsylHEC2-1 | Nicotiana sylvestris           | Solanaceae  | mRNA_1417     |         |
| NsylHEC2-2 | Nicotiana sylvestris           | Solanaceae  | mRNA_68279    |         |
| NsylHEC3   | Nicotiana sylvestris           | Solanaceae  | mRNA_20419    |         |
| NitaBxHEC2 | Nicotiana tabacum BX           | Solanaceae  | mRNA_34319_cds | SGN      |
| NitaBxHEC2-1 | Nicotiana tabacum BX         | Solanaceae  | mRNA_76763    |         |
| NitaBxHEC2-2 | Nicotiana tabacum BX         | Solanaceae  | mRNA_143639   |         |
| NitaKHEC2  | Nicotiana tabacum K326         | Solanaceae  | mRNA_113024_cds | SGN      |
| NitaKHEC2-1 | Nicotiana tabacum K326        | Solanaceae  | mRNA_113025_cds | SGN      |
| NitaKHEC2-2 | Nicotiana tabacum K326        | Solanaceae  | mRNA_62314_cds | SGN      |
| NitaKHEC2-3 | Nicotiana tabacum K326        | Solanaceae  | mRNA_33516_cds | SGN      |
| NitaTnHEC1 | Nicotiana tabacum TN90         | Solanaceae  | mRNA_146533   |         |
| NitaTnHEC2 | Nicotiana tabacum TN90         | Solanaceae  | mRNA_16338    |         |
| NitaTnHEC3 | Nicotiana tabacum TN90         | Solanaceae  | mRNA_151510   |         |
| NitaTnHEC3-1 | Nicotiana tabacum TN90       | Solanaceae  | mRNA_12399    |         |
| NitoHEC2   | Nicotiana tomentosiformis      | Solanaceae  | mRNA_68030    |         |
| NitoHEC2-1 | Nicotiana tomentosiformis      | Solanaceae  | mRNA_68029    |         |
| NitoHEC3   | Nicotiana tomentosiformis      | Solanaceae  | mRNA_48928    |         |
| PeaxHEC2   | Petunia axilaris               | Solanaceae  | Peaxi162Scf00458g00320.1 | SGN      |
| PeaxHEC2-1 | Petunia axilaris               | Solanaceae  | Peaxi162Scf01073g00009.1 | SGN      |
| PeaxHEC3   | Petunia axilaris               | Solanaceae  | Peaxi162Scf00012g00161.1 | SGN      |
| PeinHEC1   | Petunia inflata                | Solanaceae  | Peinf101Scf00713g00005.1 | SGN      |
| PeinHEC1-1 | Petunia inflata                | Solanaceae  | Peinf101Scf00167g09003.1 | SGN      |
| Gene    | Species                  | Family      | Accession Number | Source |
|---------|--------------------------|-------------|------------------|--------|
| PeinHEC2| Petunia inflata          | Solanaceae  | Peinf101Scf00475g19014.1 | SGN    |
| PeinHEC2-1| Petunia inflata     | Solanaceae  | Peinf101Scf00811g00011.1 | SGN    |
| PeinHEC3| Petunia inflata          | Solanaceae  | Peinf101Scf00652g02001.1 | SGN    |
| SlyHEC1 | Solanum lycopersicum    | Solanaceae  | Soly02g090950.1.1  | Phyto  |
| SlyHEC1-1 | Solanum lycopersicum   | Solanaceae  | Soly12g088790.1.1  | Phyto  |
| SlyHEC2 | Solanum lycopersicum    | Solanaceae  | Soly03g044460.1.1  | Phyto  |
| SlyHEC2-1 | Solanum lycopersicum  | Solanaceae  | Soly11g005780.1.1  | Phyto  |
| SomeHEC1| Solanum melongena       | Solanaceae  | Sme2.5_03422.1_g00002.1 | SGN    |
| SomeHEC1-1 | Solanum melongena     | Solanaceae  | Sme2.5_13814.1_g00002.1 | SGN    |
| SomeHEC2| Solanum melongena       | Solanaceae  | Sme2.5_09326.1_g00003.1 | SGN    |
| SomeHEC3| Solanum melongena       | Solanaceae  | Sme2.5_01618.1_g00007.1 | SGN    |
| StjaHEC1| Streptosolen jamesonii  | Solanaceae  | TRINITY_DN14891_c0_g2_i1 | UdeA   |
| StjaHEC2| Streptosolen jamesonii  | Solanaceae  | TRINITY_DN29940_c0_g1_i1/ TRINITY_DN56310_c0_g1_i1 | UdeA   |
| StjaHEC3| Streptosolen jamesonii  | Solanaceae  | TRINITY_DN8155_c0_g1_i1 | UdeA   |
| StuHEC1 | Solanum tuberosum       | Solanaceae  | PGSC0003DMT400010344 | Phyto  |
| StuHEC1-1| Solanum tuberosum     | Solanaceae  | PGSC0003DMT400020558 | Phyto  |
| StuHEC2 | Solanum tuberosum       | Solanaceae  | PGSC0003DMT400048857 | Phyto  |
| StuHEC3 | Solanum tuberosum       | Solanaceae  | PGSC0003DMT400073760 | Phyto  |

**REPLUMLESS genes**

| RPL    | Arabidopsis thaliana    | Brassicaceae | At5g02030 | Phyto |
|--------|-------------------------|--------------|-----------|-------|
| BrauRPL1| Brunfelsia australis    | Solanaceae   | DN3343513 | UdeA  |
| BrauRPL2| Brunfelsia australis    | Solanaceae   | DN2866012 | UdeA  |
| BrsuRPL1| Brugmansia suaveolens   | Solanaceae   | TRINITY_DN26133_c4_g1_i1 | UdeA |
| BrsuRPL2| Brugmansia suaveolens   | Solanaceae   | TRINITY_DN22441_c1_g1_i2 | UdeA |
| CaanRPL1| Capsicum annuum cv CM334| Solanaceae   | CA10g00580 | SGN  |
| CaanRPL2| Capsicumannum cv CM334  | Solanaceae   | CA00g18370 | SGN  |
| CaanGRPL| Capsicum annuum var. Glabrisum | Solanaceae | Capana10g001172 | SGN |
| CaanZRPL| Capsicum annuum var. Zanla | Solanaceae   | Capana10g001383 | SGN |
| CenoRPL2-1| Cestrum nocturnum     | Solanaceae   | TRINITY_DN22827_c0_g1_i1 | UdeA |
| CenoRPL2-2| Cestrum nocturnum     | Solanaceae   | TRINITY_DN22827_c0_g1_i2 | UdeA |
| LybaRPL1| Lycium barbarum        | Solanaceae   | LWCK-2075139 | OneKP |
| LybaRPL2| Lycium barbarum        | Solanaceae   | LWCK-2009336 | OneKP |
| LychRPL1| Lycopersicon cheesmaniae | Solanaceae | UGJI-2003766 | OneKP |
| LychRPL2| Lycopersicon cheesmaniae | Solanaceae | UGJI-2121697 | OneKP |
| LyspRPL1| Lycium sp.             | Solanaceae   | OSMU-2076426 | OneKP |
| LyspRPL2| Lycium sp.             | Solanaceae   | OSMU-2074624/OSMU-2078894 | OneKP |
| NitaRPL1| Nicotiana tabacum      | Solanaceae   | mRNA_111768 | SGN |
| NitaRPL2| Nicotiana tabacum      | Solanaceae   | mRNA_129668_cds | SGN |
| NsylRPL1| Nicotiana sylvestris   | Solanaceae   | MKZR-2004973/mRNA_6435_cds | OneKP/ SGN |
| Gene    | Species                  | Family       | Accession     | Database   |
|---------|--------------------------|--------------|---------------|------------|
| NsylRPL2 | *Nicotiana sylvestris*   | Solanaceae   | MKZR-2017542  | OneKP      |
| PeaxRPL1 | *Petunia axillaris*      | Solanaceae   | Peax162Scf00318g00211.1 | SGN       |
| PeaxRPL2 | *Petunia axillaris*      | Solanaceae   | Peax162Scf00014g01719.1 | SGN       |
| PeinRPL1 | *Petunia inflata*        | Solanaceae   | Peinf101Scf00144g03023.1 | SGN       |
| PeinRPL2 | *Petunia inflata*        | Solanaceae   | Peinf101Scf00144g03023.1 | SGN       |
| SoduRPL1 | *Solanum dulcamara*      | Solanaceae   | GHLP-2006410  | OneKP      |
| SoduRPL2 | *Solanum dulcamara*      | Solanaceae   | GHLP-2059273  | OneKP      |
| SomeRPL1 | *Solanum melongena*      | Solanaceae   | Sme2.5_00970.1_g00001.1 | SGN       |
| SomeRPL2 | *Solanum melongena*      | Solanaceae   | Sme2.5_00970.1_g00001.1 | SGN       |
| StjaRPL  | *Streptosolen jamesonii* | Solanaceae   | DN10896_c0_g1_i1 | UdeA      |
| SolaRPL1 | *Solanum lasiophyllum*   | Solanaceae   | DLAI-2004919  | OneKP      |
| SolaRPL2 | *Solanum lasiophyllum*   | Solanaceae   | DLAI-2002365  | OneKP      |
| SlyRPL1  | *Solanum lycopersicum*   | Solanaceae   | Soly10g086640.1 | Phyto     |
| SlyRPL2  | *Solanum lycopersicum*   | Solanaceae   | Soly09g011380.2 | Phyto     |
| SopeRPL1 | *Solanum pennellii*      | Solanaceae   | Sopen10g036050 | SGN       |
| SopeRPL2 | *Solanum pennellii*      | Solanaceae   | Sopen09g006110 | SGN       |
| SopiRPL1 | *Solanum pimpinellifolium* | Solanaceae  | Sopin10g086640.0.1 | SGN       |
| SopiRPL2 | *Solanum pimpinellifolium* | Solanaceae  | Sopin09g011380.0.1 | SGN       |
| SoptRPL1 | *Solanum ptychanthum*    | Solanaceae   | DLJZ-2053145  | OneKP      |
| SoptRPL2 | *Solanum ptychanthum*    | Solanaceae   | DLJZ-2001908  | OneKP      |
| SosiRPL  | *Solanum sisymbriifolium* | Solanaceae   | NMDZ-2079258  | OneKP      |
| StuRPL1  | *Solanum tuberosum*      | Solanaceae   | PGSC0003DMG400019142 | Phyto |
| StuRPL2  | *Solanum tuberosum*      | Solanaceae   | PGSC0003DMG400020824 | Phyto |
| SoxaRPL1 | *Solanum xanthocarpum*   | Solanaceae   | LQJY-2082190  | OneKP      |
| SoxaRPL2 | *Solanum xanthocarpum*   | Solanaceae   | LQJY-2082447  | OneKP      |

**AGAMOUS/SHATTERPROOF genes**

| Gene    | Species                  | Family       | Accession     | Database   |
|---------|--------------------------|--------------|---------------|------------|
| AtbeAG  | *Atropa belladonna*      | Solanaceae   | BOLZ-2039454  | OneKP      |
| AtbeSHP | *Atropa belladonna*      | Solanaceae   | BOLZ-2021153  | OneKP      |
| BrauAG  | *Brunfelsia australis*   | Solanaceae   | TRINITY_DN11345_c0_g1_i1 | UdeA |
| BrauSHP | *Brunfelsia australis*   | Solanaceae   | TRINITY_DN16015_c0_g1_i1 | UdeA |
| BrsuAG  | *Brugmansia suaveolens*  | Solanaceae   | TRINITY_DN17449_c0_g1_i1 | UdeA |
| BrsuSHP1| *Brugmansia suaveolens*  | Solanaceae   | TRINITY_DN18197_c0_g1_i1 | UdeA |
| BrsuSHP2| *Brugmansia suaveolens*  | Solanaceae   | TRINITY_DN18197_c0_g1_i3 | UdeA |
| CaanGIAG| *Capsicum annuum var. glabriusculum* | Solanaceae | Capang02g001521 | SGN |
| CaanZuAG| *Capsicum annuum Zunla* | Solanaceae   | Capana02g001695 | SGN |
| CaanZuSHP| *Capsicum annuum Zunla* | Solanaceae   | Capana07g001940 | SGN |
| CaanCmAG1| *Capsicum annuum CM334* | Solanaceae   | CAg12980     | SGN       |
| CaanCmAG2| *Capsicum annuum CM334* | Solanaceae   | CAg12970     | SGN       |
| CaanCmAG3| *Capsicum annuum CM334* | Solanaceae   | CAg12960     | SGN       |
| CaanAG  | *Capsicum annuum*        | Solanaceae   | HM565943     | NCBI       |
| CaanSHP1| *Capsicum annuum CM334* | Solanaceae   | C07g15230    | SGN       |
| CaanSHP2| *Capsicum annuum CM334* | Solanaceae   | C07g15240    | SGN       |
| CenoAG  | *Cestrum nocturnum*      | Solanaceae   | TRINITY_DN17812_c0_g1_i2 | UdeA |
| CenoSHP | *Cestrum nocturnum*      | Solanaceae   | TRINITY_DN27323_c0_g1_i2 | UdeA |
| LybaAG  | *Lycium barbarum*       | Solanaceae   | LWCK-2076050 | OneKP      |
| Name   | Species          | Family   | Accession | Database | Source |
|--------|------------------|----------|-----------|----------|--------|
| LybaSHP| Lycium barbarum | Solanaceae| LWCK-2006633 | OneKp    |        |
| LyspAG | Lycium sp        | Solanaceae| OSMU-2011751 | OneKp    |        |
| LyspSHP| Lycium sp        | Solanaceae| OSMU-2077894 | OneKp    |        |
| NiatAG1| Nicotiana attenuata | Solanaceae| XM019377632 | NCBI    |        |
| NiatAG2| Nicotiana attenuata | Solanaceae| XM019377633 | NCBI    |        |
| NiatAG3| Nicotiana attenuata | Solanaceae| XM019377634 | NCBI    |        |
| NiatAG4| Nicotiana attenuata | Solanaceae| XM019377635 | NCBI    |        |
| NibeAG1| Nicotiana benthamiana | Solanaceae| Niben101Scf07812g00015.1 | SGN    |        |
| NibeAG1-2| Nicotiana benthamiana | Solanaceae| Niben101Scf07812g00015.1 | SGN    |        |
| NibeAG2| Nicotiana benthamiana | Solanaceae| Niben101Scf12205g00011.1 | SGN    |        |
| NsSHP  | Nicotiana benthamiana | Solanaceae| JQ699178 | NCBI    |        |
| NibeSHP2| Nicotiana benthamiana | Solanaceae| Niben101Scf07678g019 | SGN    |        |
| NibeSHP3| Nicotiana benthamiana | Solanaceae| Niben101Scf07678g017 | SGN    |        |
| NsylAG1| Nicotiana sylvestris | Solanaceae| XM009804457 | NCBI    |        |
| NsylAG2| Nicotiana sylvestris | Solanaceae| XM009804458 | NCBI    |        |
| NsylAG3| Nicotiana sylvestris | Solanaceae| XM009804459 | NCBI    |        |
| NsylSHP| Nicotiana sylvestris | Solanaceae| mRNA_61687_cds | SGN    |        |
| NitaTAG1| Nicotiana tabacum TN90 | Solanaceae| mRNA_92225_cds | SGN    |        |
| NitaTAG2| Nicotiana tabacum TN90 | Solanaceae| mRNA_73080_cds | SGN    |        |
| NitaSHP1| Nicotiana tabacum TN90 | Solanaceae| mRNA_80028_cds | SGN    |        |
| NitaSHP2| Nicotiana tabacum TN90 | Solanaceae| mRNA_12687_cds | SGN    |        |
| NitoAG1| Nicotiana tomentosiformis | Solanaceae| XM009588425 | NCBI    |        |
| NitoAG2| Nicotiana tomentosiformis | Solanaceae| XM009588426 | NCBI    |        |
| NitoAG3| Nicotiana tomentosiformis | Solanaceae| XM009588427 | NCBI    |        |
| NitoAG4| Nicotiana tomentosiformis | Solanaceae| XM009588428 | NCBI    |        |
| PeaxAG1| Petunia axilaris | Solanaceae| Peaxi162Scf00022g00098.1 | SGN    |        |
| PeaxAG2| Petunia axilaris | Solanaceae| Peaxi162Scf00022g00098.1 | SGN    |        |
| PeaxSHP1| Petunia axilaris | Solanaceae| Peaxi162Scf000154 | SGN    |        |
| PeaxSHP2| Petunia axilaris | Solanaceae| Peaxi162Scf00020g02338.1 | SGN    |        |
| PeinAG| Petunia inflata | Solanaceae| Peinf011Scf00304 | SGN    |        |
| PeinSHP| Petunia inflata | Solanaceae| Peinf011Scf00434 | SGN    |        |
| FBP6| Petunia hybrida | Solanaceae| AY370525 | NCBI    |        |
| SolaAG| Solanum lasiophyllum | Solanaceae| DLAI-2096845 | OneKp    |        |
| TAG1| Solanum lycopersicum | Solanaceae| Solyc02g071730.3.1 | SGN    |        |
| TGL1| Solanum lycopersicum | Solanaceae| SGN |        |        |
| SomeAG1| Solanum melongena | Solanaceae| Sme2.5_04194.1_g00003.1 | SGN    |        |
| SomeSHP| Solanum melongena | Solanaceae| Sme2.5_00135.1_g00012.1 | SGN    |        |
| SopeAG| Solanum penelli | Solanaceae| Sopen02g020720 | SGN    |        |
| SopeSHP| Solanum penelli | Solanaceae| Sopen07g029280 | SGN    |        |
| SopiSHP| Solanum pinpinellifolium | Solanaceae| Contig 2909188 | SGN    |        |
| SopT AG| Solanum ptychanthum | Solanaceae| DLJZ-2010704 | OneKp    |        |
| SopT SHP| Solanum ptychanthum | Solanaceae| DLJZ-2002925 | OneKp    |        |
| StuAG1| Solanum tuberosum | Solanaceae| Sotub02g018200.1.1 | SGN    |        |
| StuSHP1| Solanum tuberosum | Solanaceae| Sotub07g023200.1.1 | SGN    |        |
| StuSHP2| Solanum tuberosum | Solanaceae| Sotub07g023190.1.1 | SGN    |        |
| StuSHP3| Solanum tuberosum | Solanaceae| Sotub07g023191.1.1 | SGN    |        |
| Code     | Scientific Name                  | Family      | Accession   | Source |
|----------|----------------------------------|-------------|-------------|--------|
| SoxaAG1  | Solanum xanthocarpum             | Solanaceae  | LQJY-2008939 | OneKp  |
| SoxaAG2  | Solanum xanthocarpum             | Solanaceae  | LQJY-2008940 | OneKp  |
| SoxaSHP  | Solanum xanthocarpum             | Solanaceae  | LQJY-2009701 | OneKp  |
| StjaAG   | Streptosolen jamesonii            | Solanaceae  | TRINITY_DN11324_c0_g1_i1 | UdeA |
| StjaSHP  | Streptosolen jamesonii            | Solanaceae  | TRINITY_DN24588_c0_g1_i1 | UdeA |

Complete scientific names for the above cited species

- Atropa belladonna L.
- Arabidopsis thaliana (L.) Heynh.
- Brunfelsia pauciflora (Cham. & Schltdl.) Benth.
- Brugmansia sanguinea (Ruiz & Pav.) D. Don
- Capsicum annuum cv CM334
- Capsicum annuum var. Glabrisicum (Dunal) Heiser & Pickersgill
- Capsicum annuum cv CM334
- Capsicum annuum var. Zunla L.
- Lycium barbarum L.
- Lycopersicon cheesmaniae L. Riley
- Lycium sp. L.
- Nicotiana tabacum
- Nicotiana sylvestris
- Nicotiana tabacum BX
- Nicotiana tabacum K236
- Nicotiana tabacum TN90
- Petunia axillaris (Lam.) Britton, Sterns & Poggenb.
- Petunia inflata R.E. Fr.
- Solanum dulcamara (Moench) Dumort.
- Solanum melongena (Mill.) Dunal
- Streptosolen jamesonii (Benth.) Miers
- Solanum lasiophyllum Humb. & Bonpl. ex Dunal
- Solanum lycopersicum L.
- Solanum pennellii Correl
- Solanum pimpinellifolium L.
- Solanum pychcanthus Dunal.
- Solanum sisymbrifolium Lam.
- Solanum tuberosum L.
- Solanum xanthocarpum Schrad. & J.C. Wendl.
Table S2. Sequence 5´- 3´ for all primers used in Fig. 4, expression analyses of ALCATRAZ, FRUITFULL, HECATE, REPLUMLESS, SHATTERPROOF and SPATULA homologs in Cestrum nocturnum and Brugmansia suaveolens.

| Primer Name | Sequence Primer 5´-3´ |
|-------------|-----------------------|
| **Cestrum nocturnum** | |
| CenoALCFwd | ATCCGTACAGAAACACCTCAC |
| CenoALCREv | GCAGATCTCCATTGGAACCTGAGCA |
| CenoFUL1Fwd | ACTTGTTGCATCTGACCTGCTT |
| CenoFUL1Rev | TTACCTGCCCTACTTCTCCAGCA |
| CenoFUL2Fwd | AGGCAAGCTCAATCTCCTACTCATG |
| CenoFUL2Rev | TGCTGCGACAATCTTTCAATCTT |
| CenoMBP20Fwd | AACGCCAATCTCAGAAAATTC |
| CenoMBP20Rev | TTAGCTTTCATTTCTCAGCCT |
| CenoHEC1Fwd | CTCTGCTTTTCAAGTTCTCCTTA |
| CenoHEC1Rev | TTATTCGTTCCCTCCGATGCTT |
| CenoHEC2Fwd | CGGAATCAGTGAAGCCCAAG |
| CenoHEC2Rev | CCTGCTCTTTCCAGTGTTTCC |
| CenoHEC3Fwd | TGCAACAACAGTTACTCTCCTT |
| CenoHEC3Rev | TTACCATTACCTCATACGTAGGAG |
| CenoRPL2-1Fwd | CCGGCATTAATGTTGTTTC |
| CenoRPL2-1 y RPL2-2 Rev | CCAACCAGTAAACCTGTCTGAC |
| CenoRPL2-2Fwd | CCTTAAAGATGCCATCACTG |
| CenoSHPFwd | TTAATCAAGAATTTGAGGAGTCG |
| CenoSHPRev | TGGATTTGGTTCGAGCAGATTCAC |
| CenoSPTFwd | ATGGCCAACAATGCAATCCTCC |
| CenoSPTRev | AGCAGCAGGGAATGCGAATC |
| **Brugmansia suaveolens** | |
| BrsuALCFwd | ATCCGTACAGAAACACCTCA |
| BrsuALCREv | TTAGCTCCTCCATTGGAACCTG |
| BrsuFUL1Fwd | TGCTCCTAATGATCATACCTC |
| BrsuFUL1Rev | ACAGTATTACGAGTTGCTGCT |
| BrsuFUL2Fwd | AGCCTTAATGATCTACGTAGC |
| BrsuFUL2Rev | AGTGTGTTGTGTTGCTGAGAG |
| BrsuMBP10Fwd | CTCTATGCGAAGACTCTAAMT |
| BrsuMBP10Rev | ATGACGATTGACACATAGC |
| BrsuMBP20Fwd | TGAATGCAAATGACTCTGAC |
| BrsuMBP20Rev | ATACCTAGCTTTGACCCCATCAT |
| BrsuHEC2Fwd | CAGACTTCTCCTACTGCAATTG |
| BrsuHEC2Rev | CACTCACAAGATTGTACAGGAG |
| BrsuRPL1Fwd | TACTGAGCTAAAAGGACTGAAAG |
| BrsuRPL1Rev | TTAGATGATTGTTGATCGAGGAG |
| BrsuRPL2Fwd | TGAACCATACCATGCCCACAAC |
| BrsuRPL2Rev | CAAAGTGGGAAATATCATCAGCAGC |
| Primer                  | Sequence                        |
|------------------------|---------------------------------|
| BrsuSHP1 y SHP2 Fwd    | CAAGCGTAGAAATGGGCTACTAAA        |
| BrsuSHP1 Rev           | TGAGGATTAGGTTCCAGCAGATTATA      |
| BrsuSHP2 Rev           | CCAAAACAAGTATGTGTAACACTAG       |
| BrsuSPT Fwd            | TATAACATGCCTGCAAGTGCAACG        |
| BrsuSPT Rev            | GAGATTCCCAGCCACTTTAGCAT         |
| ACTIN Fwd              | GATGGATCCTCCAATCCAGACACTGTA     |
| ACTIN Rev              | GTATTGTGTGGACTCTGGTGATGGGTG     |