

**Table S1.** Primers used in this research.

| Primer ID | Sequence                                 | Note                                           |
|-----------|------------------------------------------|------------------------------------------------|
| OL13180   | ATGGAAGGTTTTACCCCTTCTATG                 | Amplification of <i>Glyma. 05G134000</i> CDS-F |
| OL13181   | AGCATTGAAACTCTGGAAGGGC                   | Amplification of <i>Glyma. 05G134000</i> CDS-R |
| OL10628   | GCTACACTACACTCCTCAACATTTA                | <i>In situ</i> hybridization-F                 |
| OL10629   | CTAAGCATTGAAACTCTGGAAGGGC                | <i>In situ</i> hybridization-R                 |
| OL13183   | CTGTACAAGCATATGATGGAAGGTTTTACCCCTTCTATGT | Subcellular localization-F                     |
| OL13184   | GATGAATTCGAGCTCAGCATTGAAACTCTGGAAGGGC    | Subcellular localization-R                     |
| OL15707   | TGAACATGGGTGGCAATTAC                     | qGmAP1a-F                                      |
| OL15708   | TGTCAAATGCCATACCAAAG                     | qGmAP1a-R                                      |
| OL15715   | TCTTGCTCCACCCTTCTCTA                     | qGmAP2-F                                       |
| OL15716   | CGAGTGGAGGAATGTCATGTT                    | qGmAP2-R                                       |
| OL15717   | GAGGATAGAGAACACCACCAAC                   | qGmAP3-F                                       |
| OL15718   | AAACCTTGGCATCGCATAGA                     | qGmAP3-R                                       |
| OL15719   | CAAAGAGGAAGAATGGGATCCTTA                 | qGmPI04G-F                                     |
| OL15720   | GGCTGATGTACTCATGCATCT                    | qGmPI04G-R                                     |
| OL15725   | CAAGAGGATTGAGAACACTACCA                  | qGmAG-F                                        |
| OL15726   | CTGCATCACAAAGCACAGATAAT                  | qGmAG-R                                        |
| OL9129    | ATCTTGACTGAGCGTGGTTATTCC                 | Actin-F                                        |
| OL9130    | GCTGGTCCTGGCTGTCTCC                      | Actin-R                                        |
| OL14387   | TTGGGCACGTTTCAGCTTGCTCTTCTCA             | Knockout test <i>Glyma.08G088700-R</i>         |

**Table S2.** Protein physical information of 11 UFO genes from nine species.

|                           | Motif | Protein length (aa) | Mol. wt. (Da) | PI (pH) | Instability index | GRAVY  | Arabidopsis ortholog locus | Arabidopsis locus description |
|---------------------------|-------|---------------------|---------------|---------|-------------------|--------|----------------------------|-------------------------------|
| AT1G30950.1               | 12    | 442                 | 49,047.32     | 8.62    | 56.21             | 0.001  |                            |                               |
| <i>Glyma.05G134000.1</i>  | 13    | 430                 | 48,378.84     | 8.71    | 47.99             | -0.024 | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Glyma.08G088700.1</i>  | 13    | 440                 | 49,651.21     | 8.6     | 46.36             | -0.05  | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Medtr4g094748.1</i>    | 13    | 444                 | 49,946.73     | 8.98    | 50.88             | -0.017 | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Gorai.002G139700.1</i> | 9     | 357                 | 39,766.63     | 8.55    | 52.26             | -0.074 | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>HORVU7Hr1G108970.1</i> | 11    | 438                 | 45,988.19     | 10.34   | 60.45             | 0.224  | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Os06g45460.1</i>       | 11    | 407                 | 42,738.55     | 9.95    | 63.51             | 0.300  | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Phvul.002G188300.1</i> | 13    | 434                 | 48,843.49     | 8.74    | 49.12             | 0.005  | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Vigun03g153100.1</i>   | 13    | 441                 | 49,447.06     | 8.74    | 48.33             | -0.005 | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Zm00001d046950</i>     | 13    | 433                 | 45,917.02     | 9.79    | 58.42             | 0.184  | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |
| <i>Zm00001d036653</i>     | 13    | 436                 | 46,192.15     | 9.27    | 59.54             | 0.179  | AT1G30950.1                | PROTEIN UNUSUAL FLORAL ORGANS |