**Table S1 Information of Primer sequences**

| | Gene Name | Primer Sequences |
|---|---|---|
| Relative expression (qRT-PCR) | *OfPIP2* | F: CTTGGCGAGGAAGGTGTCTC<br>R: TGCCGATAATCTCAGCACCG |
| | *OfMYB28* | F: AACTCATGGCAAGGAATCTCTCT<br>R: CCTGATCCATTTGGGCAGTTG |
| | *OfACT* | F: CCCAAGGCAAACAGAGAAAAAAT<br>R: ACCCCATCACCAGAATCAAGAA |
| Subcellular Localization | *pORE-R4-OfPIP2* | F: TTCTTCACTGTTGATAGCTAGCATGACAAAGGAAGTTAGCGAAGAAG<br>R: AGGCCTTCTAGAAAAACTCGAGGTTGGTGGGGTTGCTCCTG |
| GUS staining | *pCAMBIA1300GUS-OfPIP2* | F: TGTAAAACGACGGCCAGTGGCCTGTCATGATTAAAAGCTGT<br>R: AACCAAGAAAATGAAGGAGAAACTTCGCTCTAGCTTTCTCTCTCTAAA |
| Dual-LUC assay | *Pro-OfPIP2::GUS* | F: CAGGAACCAGGGCGTATCTCGGCCTGTCATGATTAAAAGCTGT<br>R: TAATACGACTCACTATAGGGCTTCGCTCTAGCTTTCTCTCTCTAAA |
| | *pORE-R4-OfMYB28* | F: TTCTTCACTGTTGATAGCTAGCATGGGCCATGGCCACCAT<br>R: AGGCCTTCTAGAAAAACTCGAGGGGATTGATCCAGCCTGAAGG |
| Yeast one-hybrid | *pHIS2-proOfPIP2* | F: GACTCACTATAGGGC GAATTCATGACAAAGGAAGTTAGCGAAGAAG<br>R: CCAGGAATTTCTAGA CCGCGGTTAGTTGGTGGGGTTGCTCCT |
| | *pGADT7-OfMYB28* | F: CATATGGCCATGGAGGCCAGTGAATTCATGGGCCATGGCCACCAT<br>R: CATCTGCAGCTCGAGCTCGATGGATCCCTAGGGATTGATCCAGCCTGAA |

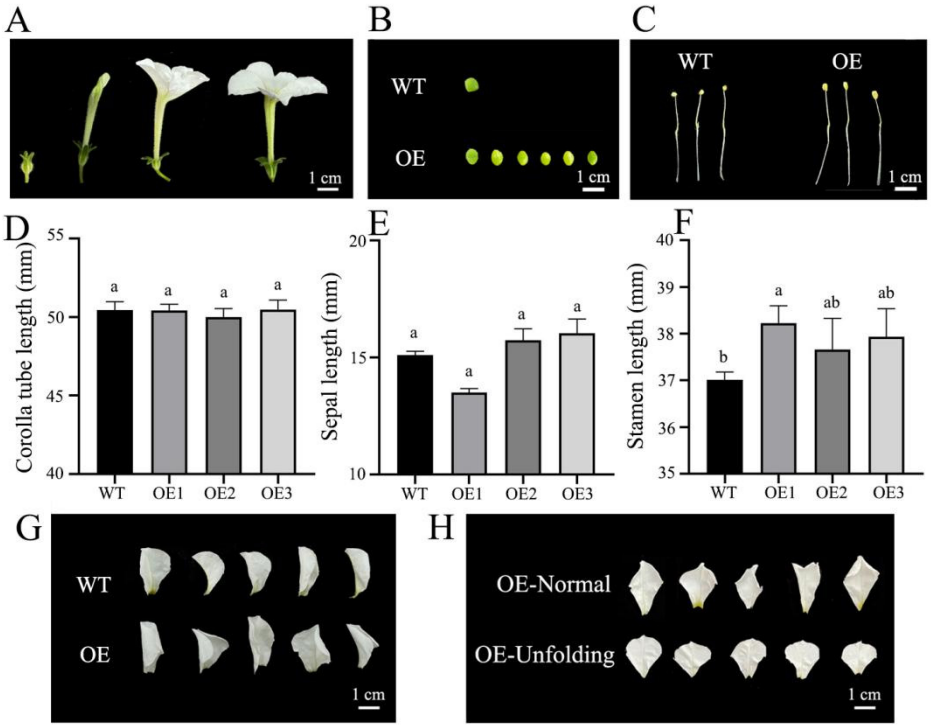



**Figure S1. Phenotypic analysis of *OfPIP2* overexpression in *Petunia*.**

A. Petunia flower opening process. B. Sepal. C. Stamen. D. Corolla tube length Statistics. E. Speal length Statistics. F. Stamen length Statistics. G. Width of petals. H. Normal and unfolded in contrast. Different lowercase letters indicate significant differences between WT and overexpression lines, determined by one-way ANOVA ($p < 0.05$).

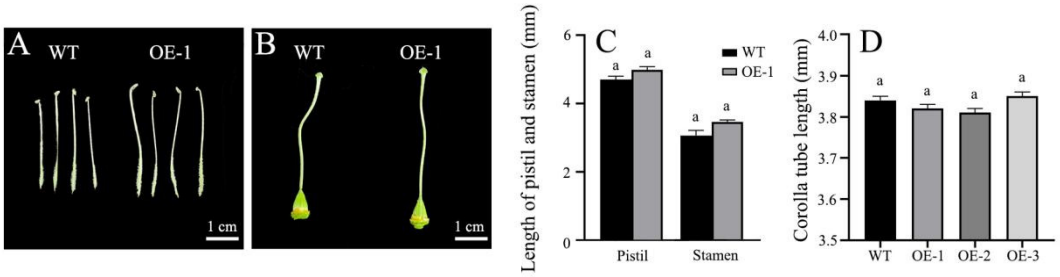



**Figure S2. Phenotypic analysis of *OfPIP2* overexpression in tobacco.**

A. Stamen. B. Pistil. C. Stamen and pistil length Statistics. D. Corolla tube length Statistics. Lowercase letter indicate significant differences between WT and overexpression lines, determined by one-way ANOVA ($p < 0.05$).