Plant Omics Journal POJ

POJ 8(1):30- (2015) ISSN:1836-3644

Supplementary data

A novel plant code optimization phosphomannose isomerase (pPMI) and its application in rice (*Oryza sativa* L.) transformation as selective marker

Chunhong QIU, Hao LI, Fengshun SONG, Yongbo DUAN, Yicheng SUN, Yachun YANG, Ruiying Qin, Li LI, Pengcheng WEI*, Jianbo YANG*

Fig S1. The nucleotide sequences of *pPMI* and *PMI*.

Fig S2. The amino acids sequences of pPMI and PMI.

Fig S3. Copy number assay of transgenic plants by real-time PCR.

```
PMI     ATGCAAAAACTCATTAACTCAGTGCAAAACTATGCCTGGGGCAGCAAAACGGCGTTGACT
pPMI    ATGCAGAAGCTCATCAACAGCGTGCAGAACTATGCCTGGGGGAGCAAGACAGCCCTGACC
        *****.**.***** ***: .*****.********** *****.**.**  ****
PMI     GAACTTTATGGTATGGAAAATCCGTCCAGCCAGCCGATGGCCGAGCTGTGGATGGGCGCA
pPMI    GAGCTGTACGGCATGGAAAACCCGTCCTCCCAACCGATGGCCGAGCTCTGGATGGGGGCC
        **.** ** ** ******** ******: ***.********** ******** **.
PMI     CATCCGAAAAGCAGTTCACGAGTGCAGAATGCCGCCGGAGATATCGTTTCACTGCGTGAT
pPMI    CATCCGAAGTCCAGCAGCAGGGTGCAAAATGCGGCGGGGGACATTGTGTCCCTCAGGGAC
        ********.: *** : ..*.*****.***** ** **.** ** ** **.** .* **
PMI     GTGATTGAGAGTGATAAATCGACTCTGCTCGGAGAGGCCGTTGCCAAACGCTTTGGCGAA
pPMI    GTCATCGAGTCCGATAAGAGCACCCTGCTCGGGGAAGCCGTGGCCAAACGCTTCGGGGAA
        ** ** ***:  *****.:  ** ********.**.***** ********** ** ***
PMI     CTGCCTTTCCTGTTCAAAGTATTATGCGCAGCACAGCCACTCTCCATTCAGGTTCATCCA
pPMI    CTCCCGTTCCTCTTCAAAGTGCTCTGCGCCGCCCAACCGCTCAGCATTCAGGTCCACCCG
        ** ** ***** ********.  *.*****.**.**.**.***: ********* ** **.
```

```
PMI             AACAAACACAATTCTGAAATCGGTTTTGCCAAAGAAAATGCCGCAGGTATCCCGATGGAT
pPMI            AACAAGCACAACAGCGAGATCGGCTTCGCCAAGGAGAATGCCGCGGGCATCCCAATGGAT
                *****.***** :  **.***** ** *****.**.********.** *****.******
PMI             GCCGCCGAGCGTAACTATAAAGATCCTAACCACAAGCCGGAGCTGGTTTTTGCGCTGACG
pPMI            GCCGCGGAAAGGAACTACAAGGACCCGAACCACAAGCCGGAGCTCGTGTTCGCCCTCACA
                ***** **..* ***** **.** ** ********************* ** ** ** ** **.
PMI             CCTTTCCTTGCGATGAACGCGTTTCGTGAATTTTCCGAGATTGTCTCCCTACTCCAGCCG
pPMI            CCGTTTCTGGCGATGAACGCCTTCCGCGAGTTCAGCGAGATCGTGTCCCTGCTGCAACCA
                ** ** ** ********** ** ** **.** : ****** ** *****.** **.**.
PMI             GTCGCAGGTGCACATCCGGCGATTGCTCACTTTTTACAACAGCCTGATGCCGAACGTTTA
pPMI            GTGGCGGGCGCCCATCCAGCCATTGCCCACTTCCTCCAGCAGCCAGACGCCGAGAGGCTG
                ** **.** **.*****.** ***** *****  *.**.*****:** *****..*  *.
PMI             AGCGAACTGTTCGCCAGCCTGTTGAATATGCAGGGTGAAGAAAAATCCCGCGCGCTGGCG
pPMI            AGCGAACTGTTCGCCTCCCTGCTCAACATGCAAGGCGAGGAAAAGTCCAGGGCGCTCGCG
                **********: **** * ** *****.** **.*****.***.* ***** ***
PMI             ATTTTAAAATCGGCCCTCGATAGCCAGCAGGGTGAACCGTGGCAAACGATTCGTTTAATT
pPMI            ATTCTGAAGTCCGCCCTCGATAGCCAGCAAGGCGAGCCGTGGCAGACCATCCGCCTGATC
                *** *.**.** *****************.** **.********.** ** **  *.**

PMI              TCTGAATTTTACCCGGAAGACAGCGGTCTGTTCTCCCCGCTATTGCTGAATGTGGTGAAA
pPMI             TCCGAGTTTTACCCAGAGGACTCCGGGCTCTTCTCCCCACTGCTCCTCAACGTCGTCAAG
                 ** **.********.**.***: *** ** ********.**.  * ** ** ** ** **.
PMI              TTGAACCCTGGCGAAGCGATGTTCCTGTTCGCTGAAACACCGCACGCTTACCTGCAAGGC
pPMI             CTCAACCCAGGGGAGGCGATGTTTCTCTTCGCCGAAACACCGCATGCCTATCTGCAGGGG
                  * *****:** **.******** ** ***** ********** ** ** *****.**
PMI              GTGGCGCTGGAAGTGATGGCAAACTCCGATAACGTGCTGCGTGCGGGTCTGACGCCTAAA
pPMI             GTCGCGCTCGAAGTGATGGCGAACAGCGACAATGTCCTCCGCGCCGGCCTCACACCGAAG
                 ** ***** **********.***: *** ** ** ** ** ** ** ** **.** **.
```

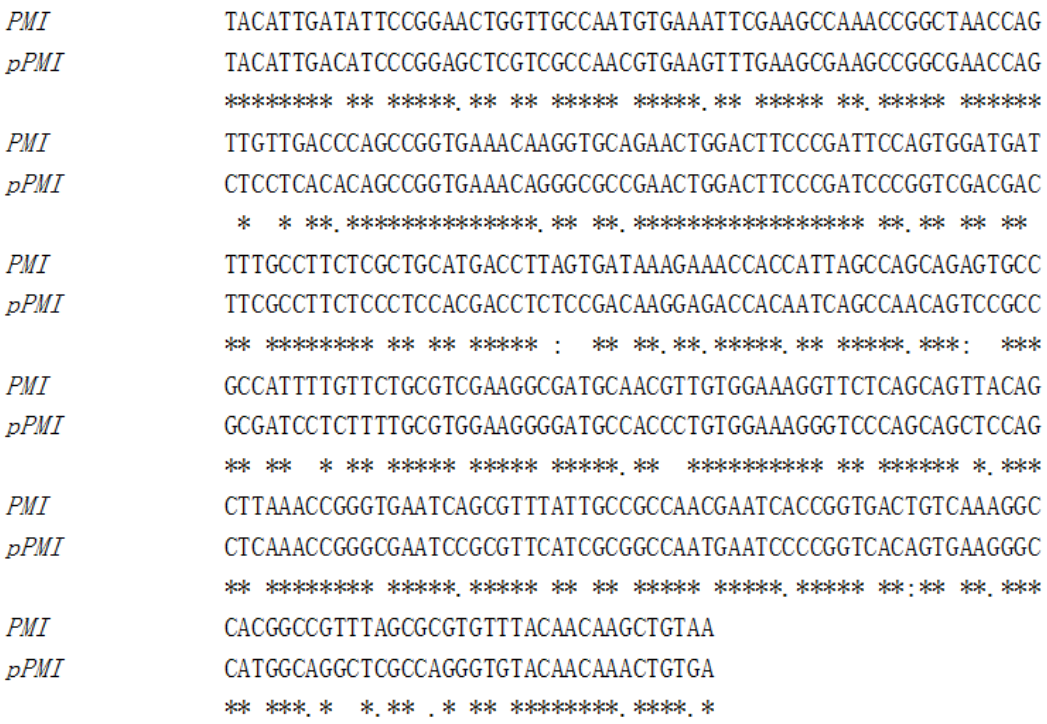

Fig S1. The nucleotide sequences of *pPMI* and *PMI*.

```
PMI: 1    MQKLINSVQNYAWGSKTALTELYGMENPSSQPMAELWMGAHPKSSSRVQNAAGDIVSLRD 60
pPMI:1    MQKLINSVQNYAWGSKTALTELYGMENPSSQPMAELWMGAHPKSSSRVQNAAGDIVSLRD 60
PMI: 61   VIESDKSTLLGEAVAKRFGELPFLFKVLCAAQPLSIQVHPNKHNSEIGFAKENAAGIPMD 120
pPMI:61   VIESDKSTLLGEAVAKRFGELPFLFKVLCAAQPLSIQVHPNKHNSEIGFAKENAAGIPMD 120
PMI: 121  AAERNYKDPNHKPELVFALTPFLAMNAFREFSEIVSLLQPVAGAHPAIAHFLQQPDAERL 180
pPMI:121  AAERNYKDPNHKPELVFALTPFLAMNAFREFSEIVSLLQPVAGAHPAIAHFLQQPDAERL 180
PMI: 181  SELFASLLNMQGEEKSRALAILKSALDSQQGEPWQTIRLISEFYPEDSGLFSPLLLNVVK 240
pPMI:181  SELFASLLNMQGEEKSRALAILKSALDSQQGEPWQTIRLISEFYPEDSGLFSPLLLNVVK 240
PMI: 241  LNPGEAMFLFAETPHAYLQGVALEVMANSDNVLRAGLTPKYIDIPELVANVKFEAKPANQ 300
pPMI:241  LNPGEAMFLFAETPHAYLQGVALEVMANSDNVLRAGLTPKYIDIPELVANVKFEAKPANQ 300
PMI: 301  LLTQPVKQGAELDFPIPVDDFAFSLHDLSDKETTISQQSAAILFCVEGDATLWKGSQQLQ 360
pPMI:301  LLTQPVKQGAELDFPIPVDDFAFSLHDLSDKETTISQQSAAILFCVEGDATLWKGSQQLQ 360
PMI: 361  LKPGESAFIAANESPVTVKGHGRLARVYNKL 391
pPMI:361  LKPGESAFIAANESPVTVKGHGRLARVYNKL 391
```

Fig S2. The amino acids sequences of pPMI and PMI.

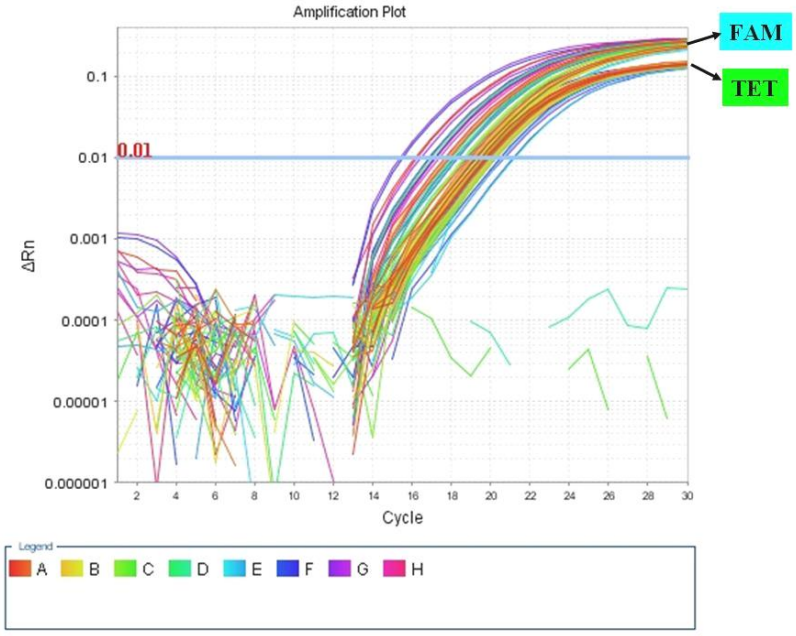

Fig S3. Copy number assay of transgenic plants by real-time PCR.

FAM, the reporter of *PMI* or *pPMI* target genes;

TET, the reporter of the internal control, sucrose phosphate synthase.