

Figure S1 MBP kinase activities in elicitor-treated and mock-treated WT cells.

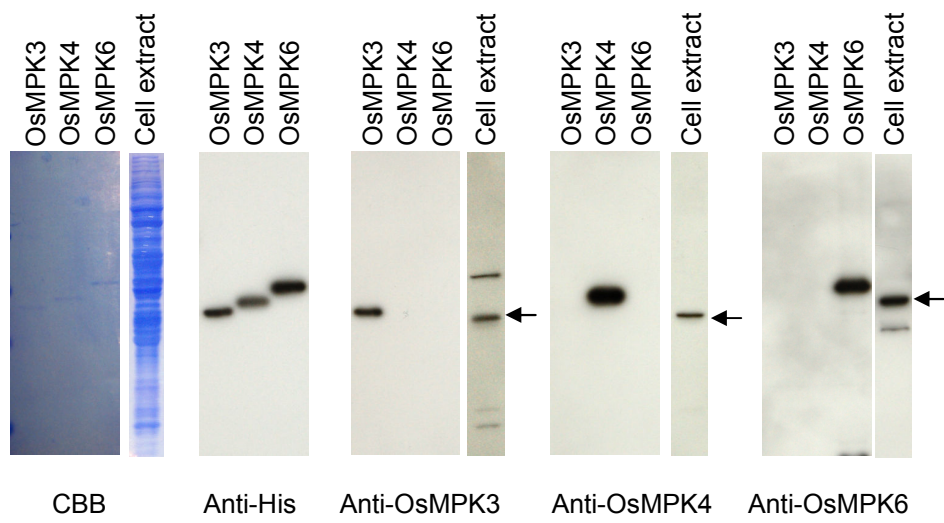


Figure S2 Immuno-blot using MAPK specific antibodies.

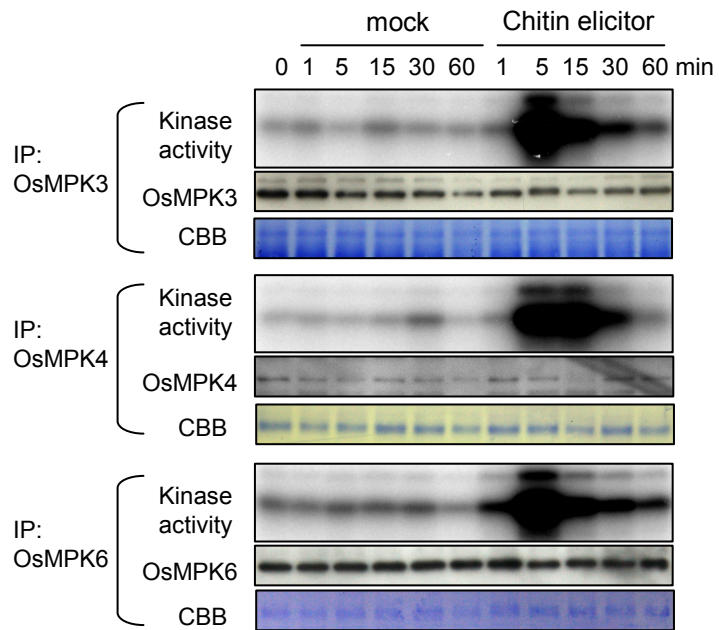


Figure S3 MBP kinase activities of OsMPK3, OsMPK4, and OsMPK6 in elicitor-treated and mock-treated WT cells.

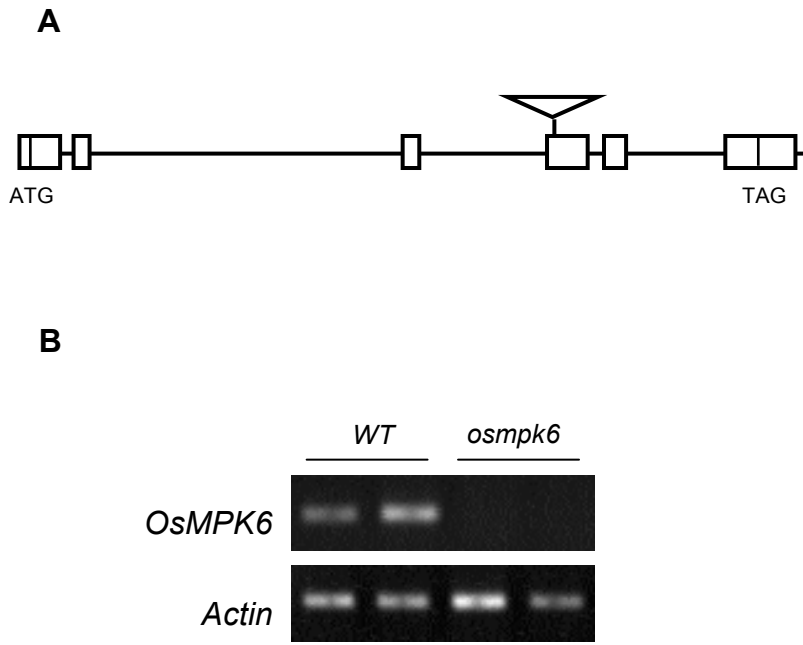


Figure S4 Position of the *Tos17* insertion in the *OsMPK6* locus and *OsMPK6* expression in *osmpk6* cells.

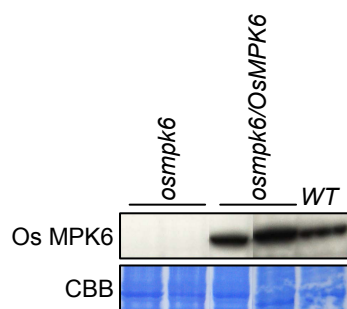


Figure S5 Accumulation of OsMPK6 protein in *osmpk6/OsMPK6* lines used for the phytoalexin measurement.

(a)

```
AtMKK4 1 MRPTCSPP-----GVSVFVK----SPRRRDLTLPLPQD--VSLAVPLP
AtMKK5 1 MRPTCSPP-----GVASPMK----NRRRRDLTLPLPQRD--VALAVPLP
NtMEK2 1 MRPLQPPPPAAAA---TTSSSTTASMPPPSRNRRRRDLDLTLPLPQD--PLAVPLP
OsMKK5 1 -----MRAG-----DMFGRG-----RRRDLTLPLPQDAPTSLAVPLP
OsMKK4 1 MRFGGPESLRAGLQQQQQQQFC--TFGR-----SRRRDLTLPLPQD-LTSLAVPLP

AtMKK4 41 LP-----PTSGGSGGSSGAPSSGG--SASSTNTNNSIEAKNYSDLVRCNRIGSGAGGT
AtMKK5 41 LP-----PPS-----SSSSAPASS--SAISINIS---AAKLSSELERVNRIGSGAGGT
NtMEK2 56 LP-----PTS-----APSSSS--SSSSPLP---TFLNFSLELERVNRIGSGAGGT
OsMKK5 36 LP-----PAATTTTS---APPAGG--AMHPLASAGAAP--PPPLSELERVNRIGSGAGGT
OsMKK4 51 LPLPPSSAPSSSSSSG---SSSLGG--VPTPPMSVGSAPPAPPPLSELERVNRIGSGAGGT

AtMKK4 93 VYKVIHRPSSRLYALKVIYGNHEDVRRQICREIEILRVDVHPNVVVCHEMFDNNGEIQV
AtMKK5 84 VYKVIHRPSSRLYALKVIYGNHEDVRRQICREIEILRVDVHPNVVVCHEMFDNNGEIQV
NtMEK2 96 VYKVIHRPTGRLYALKVIYGNHEDSVRLQICREIEILRVDVHPNVVVCHEMFDNNGEIQV
OsMKK5 84 VVVVHRHRTGKEYALKVIYGNHEDVRRQICREIEILRVDVHPNVVVCHEMFDNNGEIQV
OsMKK4 107 VVVVHRHRTGKEYALKVIYGNHEDVRRQICREIEILRVDVHPNVVVCHEMFDNNGEIQV

AtMKK4 153 LLEFMDKGSLEGAWWRDQCLADLSRQLSLGLAYLHRRHIVHRDIKPSNLLINSARVVKI
AtMKK5 144 LLEFMDKGSLEGAWWRDQCLADLSRQLSLGLAYLHRRHIVHRDIKPSNLLINSARVVKI
NtMEK2 156 LLEFMDKGSLEGAWWRDQCLADLSRQLSLGLAYLHRRHIVHRDIKPSNLLINSARVVKI
OsMKK5 144 LLEFMDKGSLEGAWWRDQCLADLSRQLSLGLAYLHRRHIVHRDIKPSNLLINSARVVKI
OsMKK4 167 LLEFMDKGSLEGAWWRDQCLADLSRQLSLGLAYLHRRHIVHRDIKPSNLLINSARVVKI

AtMKK4 213 ADFGVSRILAQTMDPCNSSVGTIAYMSPERINTDLNCGYDGYAGDIWSLGVSILEFYLG
AtMKK5 204 ADFGVSRILAQTMDPCNSSVGTIAYMSPERINTDLNCGYDGYAGDIWSLGVSILEFYLG
NtMEK2 216 ADFGVSRILAQTMDPCNSSVGTIAYMSPERINTDLNCGYDGYAGDIWSLGVSILEFYLG
OsMKK5 204 ADFGVSRILAQTMDPCNSSVGTIAYMSPERINTDLNCGYDGYAGDIWSLGVSILEFYLG
OsMKK4 227 ADFGVSRILAQTMDPCNSSVGTIAYMSPERINTDLNCGYDGYAGDIWSLGVSILEFYLG

AtMKK4 273 RFPF--FVSRQGDWASLMCAICMSQPPEAPATASPEFRFFISCCLOREPCKRRSAMQLLQ
AtMKK5 264 RFPF--FVSRQGDWASLMCAICMSQPPEAPATASPEFRFFISCCLOREPCKRRSAMQLLQ
NtMEK2 276 RFPF--FVSRQGDWASLMCAICMSQPPEAPATASPEFRFFISCCLOREPCKRRSAMQLLQ
OsMKK5 264 RFPF--FVSRQGDWASLMCAICMSQPPEAPATASPEFRFFISCCLOREPCKRRSAMQLLQ
OsMKK4 287 RFPF--FVSRQGDWASLMCAICMSQPPEAPATASPEFRFFISCCLOREPCKRRSAMQLLQ

AtMKK4 331 HPFLLRAS-----PSQNRSPCNLHQLPPPRPLSSSSPTT
AtMKK5 322 HPFLLKAT-----GGPN-----LRQLPPPRPLSSAS---
NtMEK2 333 HPFLLQNSPAATTTGNMMLPNQVHCPAHQLPPPRPLSSSSPTT
OsMKK5 324 HPFVAGP-----QPCLAMPSSS-----
OsMKK4 347 HPFVAGP-----QPCLAMPSSS-----
```

(b)

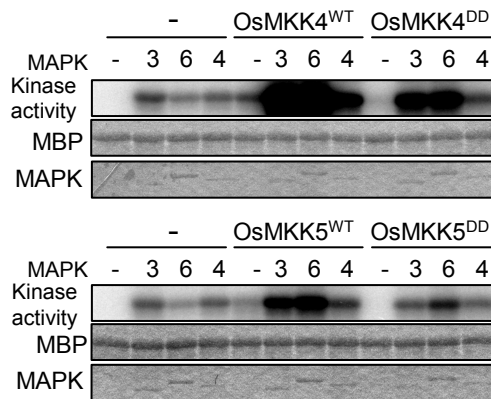


Figure S6 OsMKK4 and OsMKK5 are similar to AtMKK4, AtMKK5 and NtMEK2 and activate OsMPK3, OsMPK4 and OsMPK6 *in vitro*.

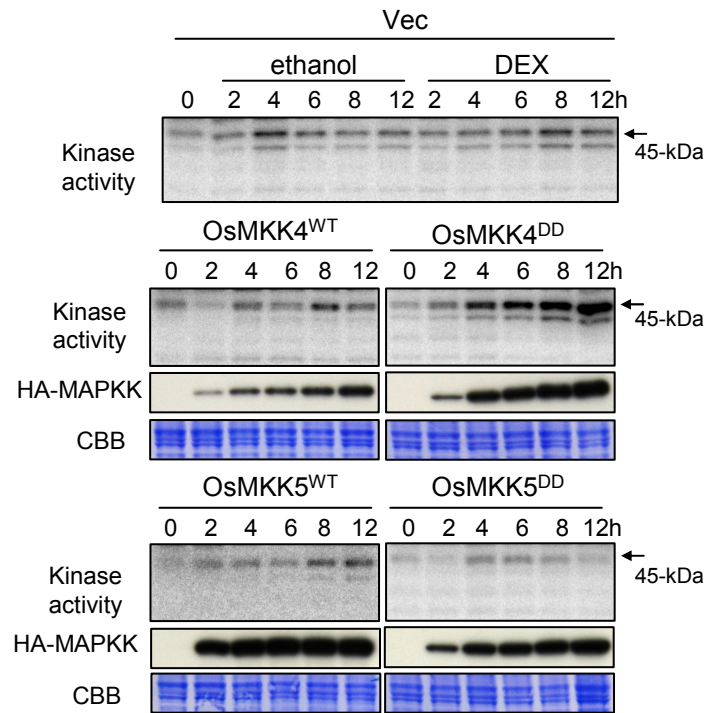


Figure S7 *In vivo* activation of OsMPPK3 and OsMPPK6 by constitutively active OsMPPK4.

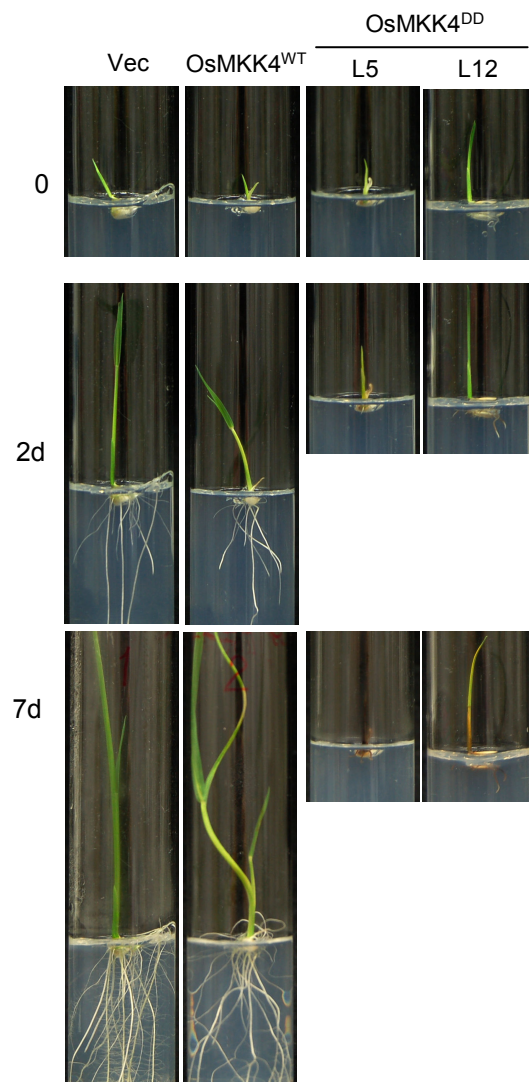


Figure S8 Phenotypes of seedlings expressing *OsMKK4^{DD}* or *OsMKK4^{WT}*.

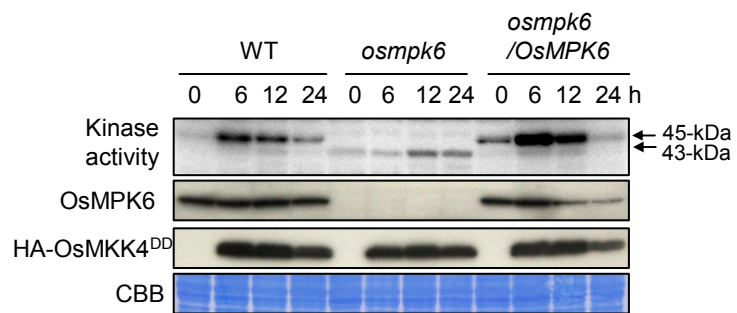


Figure S9 Activation of kinases by the expression of OsMKK4^{DD} in WT, *osmpk6*, and *osmpk6/OsMPK6* cells.

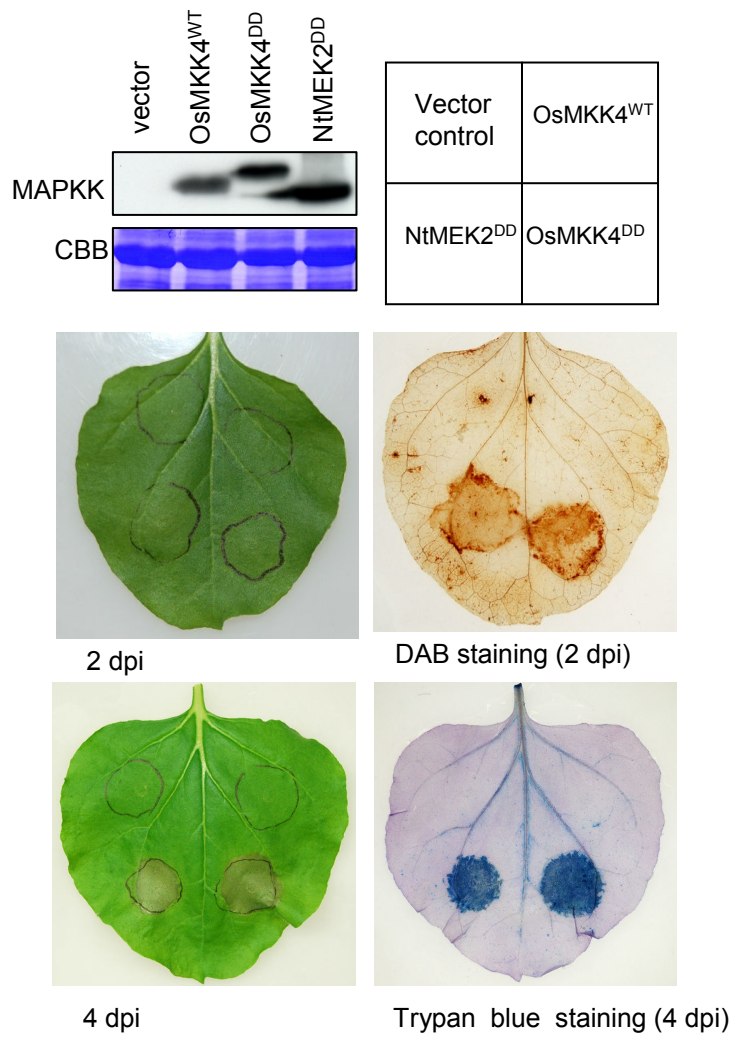


Figure S10 ROS and cell death assays in *Nicotiana benthamiana*.

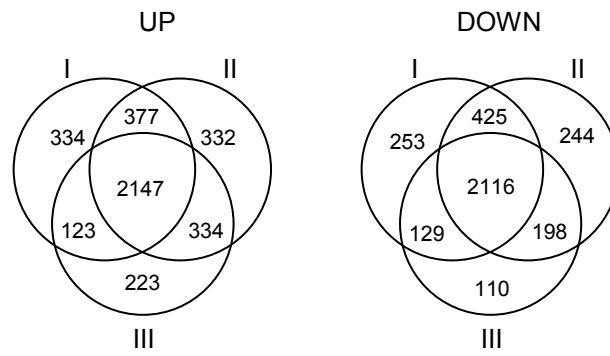


Figure S11 Summary of the genes regulated by OsMKK4^{DD}.

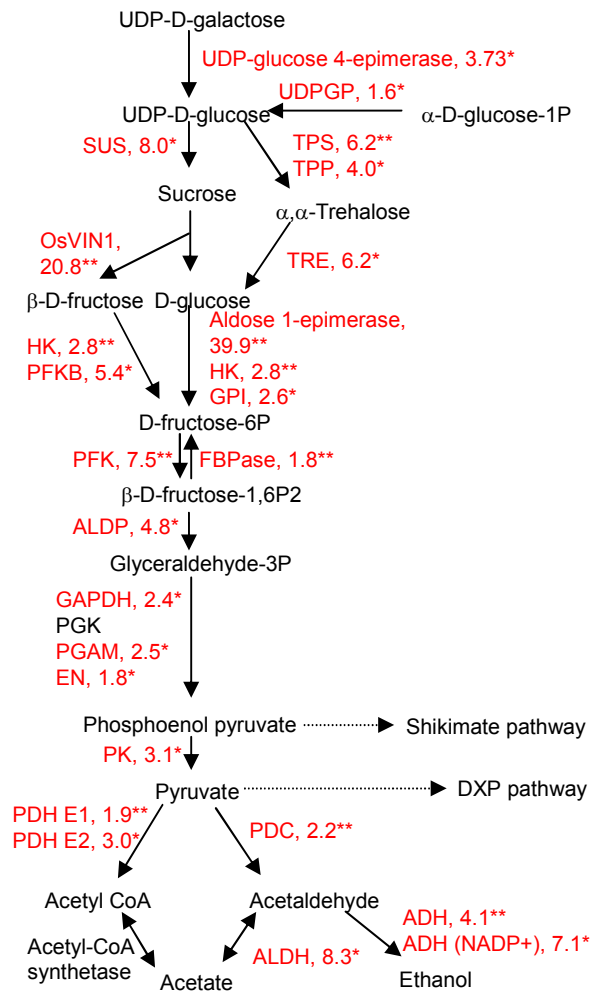


Figure S12 Regulation of sugar metabolism pathway genes by OsMKK4^{DD}.

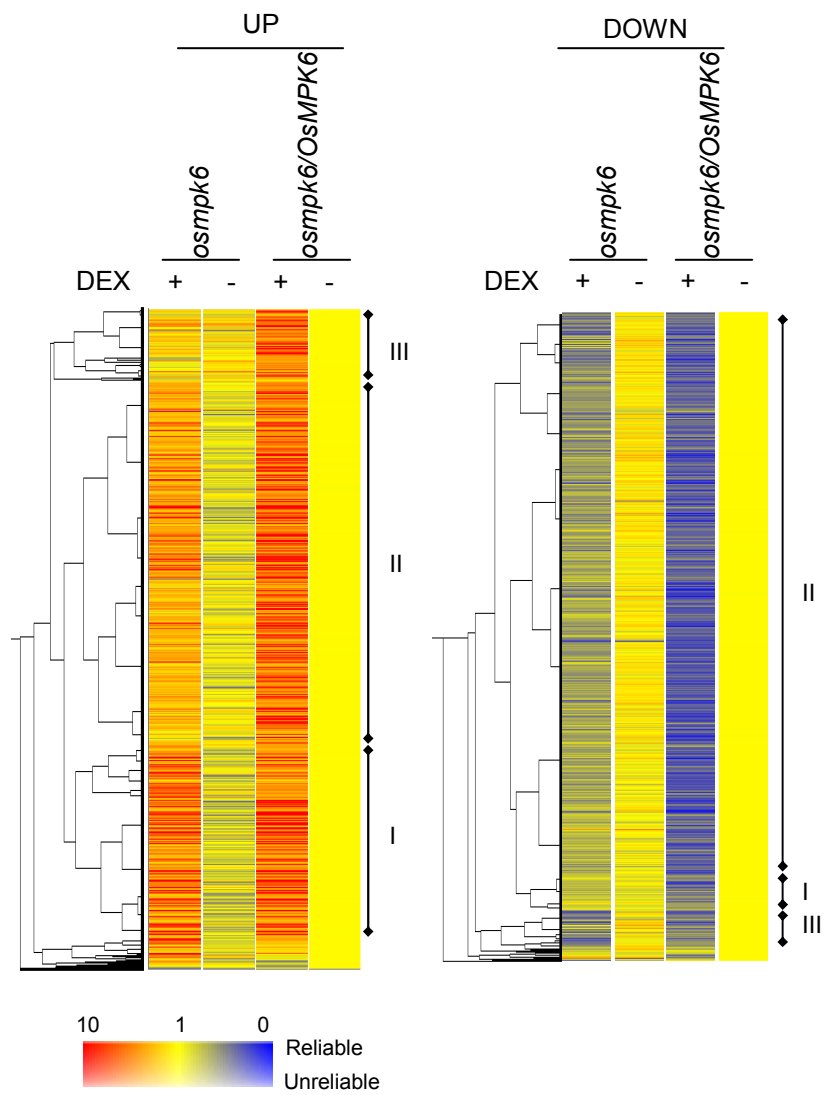


Figure S13 Gene regulation in *osmpk6* cells expressing *OsMKK4^{DD}*.

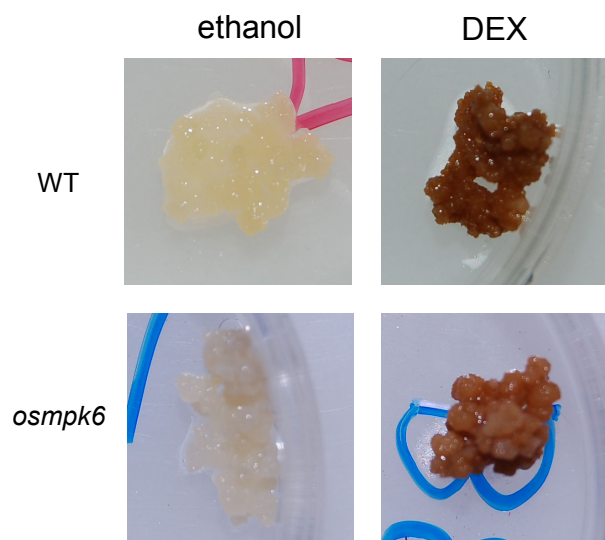


Figure S14 Appearance of cells after OsMKK4^{DD} induction.