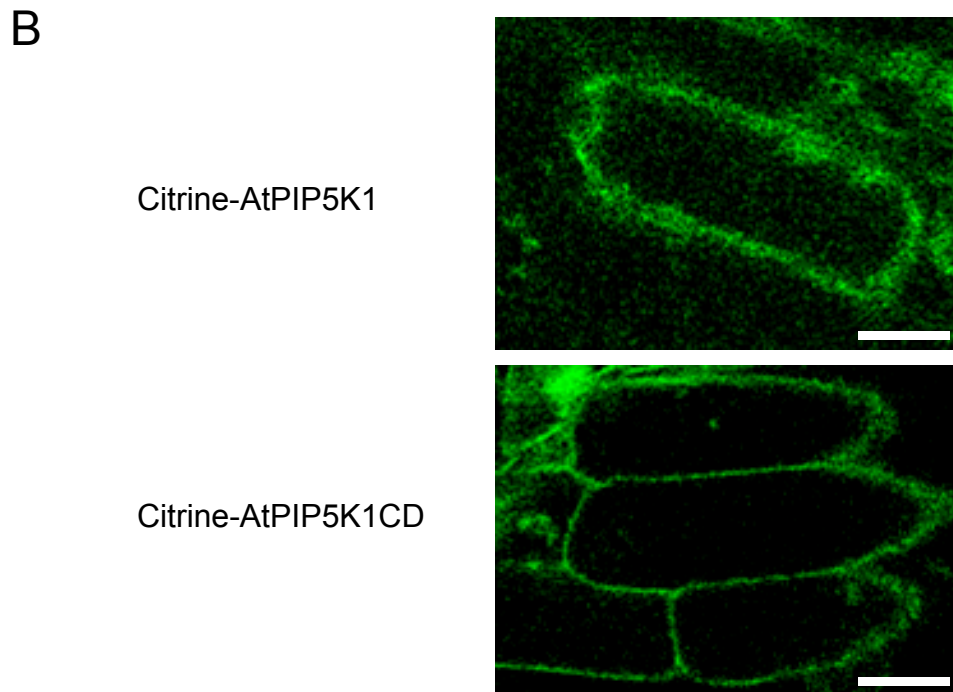
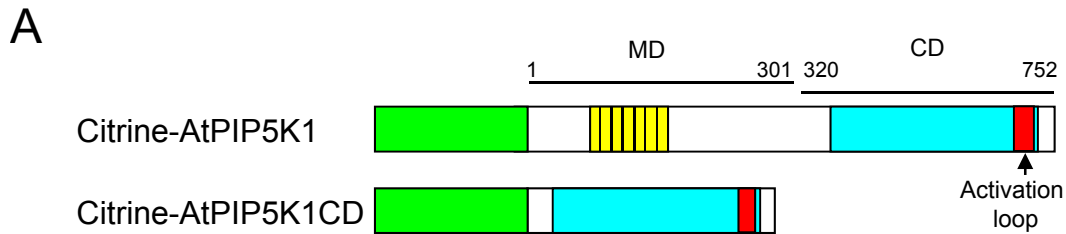


**Figure S1.** Visual confirmation of plasma membrane localization of the catalytic domains from *P. patens* and *A. thaliana* PIPKs. A, Co-localization of Citrine-PpPIPK1CD and Citrine-AtPIP5K1CD with a signal of FM4-64, a plasma membrane maker in *P. Patens* protoplasts. As shown in the right panels, Citrine signals (green) almost overlap with the FM4-64 signals (violet) for both PpPIPK1CD (upper) and AtPIP5K1CD (lower). Left panels correspond blight field images. Scale bar: 10  $\mu$ m. B, Plasma membrane localization of the catalytic domains of *P. patens* and *A. thaliana* PIPKs in onion epidermal cells. Citrine-PpPIPK1CD and Citrine-AtPIP5K1CD were expressed in onion epidermal cells, then cells were treated for plasmolysis with 0.3 M NaCl for 3 min. Citrine signals was still observed at the surface of shrunk cells. Upper and lower panels show Citrine fluorescence and bright field images, respectively. Scale bar: 35  $\mu$ m.



**Figure S2.** Importance of the catalytic domain for plasma membrane localization of AtPIP5K1 in *A. thaliana* root cortical cells. A, Recombinant Citrine-fusion proteins whose intracellular localization was determined by transient expression. The green box indicates Citrine and yellow, blue and red boxes are the same as in Figure 1. The MD and CD of AtPIP5K1 are indicated by bars with numbers of amino acid positions. B, Plasma membrane localization of Citrine-AtPIP5K1CD. Confocal images of *A. thaliana* root cortical cells transformed with expression plasmids for Citrine-AtPIP5K1 (upper) and Citrine-AtPIP5K1CD (lower) are shown. Cytoplasmic and nuclear distribution and plasma membrane localization of Citrine fluorescence were observed from Citrine-AtPIP5K1 and Citrine-AtPIP5K1MD, respectively. Scale bar: 20  $\mu$ m.

**Table S1.** Oligonucleotide primer pairs used to amplify complete ORF, and the MD and CD of *PpPIP1K1* and *AtPIP5K1*

Domain	Amino acid Positions	Primer pair	Sequence
PpPIP1K1	1-922	PpPIP1K1-U PpPIP1K1-L	5' -CACCATGTCTGAAGGGCTTTATG-3' 5' -CTGGGTAGGAGGAAAAATCTGC-3
PpPIP1K1MD	1-445	PpPIP1K1-U PpPIP1K1MORN-L	5' -AACTACGGTAGGAGGAAG -3
PpPIP1K1CD	453-922	PpPIP1K1CD-U PpPIP1K1-L	5' -CACCGTGCTGATGAGTGAGCTGG-3
PpPIP1K1CD-E885A	453-922	PpPIP1K1CD-U PpPIP1K1-L	
PpPIP1K1CD-B	453-903	PpPIP1K1CD-U PpPIP1K1-B	5' -AGGTTCCACCGCAGATATG-3'
PpPIP1K1CD-KRND	453-922	PpPIP1K1CD-U PpPIP1K1-L	
AtPIP5K1	1-752	AtPIP5K1-U AtPIP5K1-L	5' -CACCATGAGTGATTCAGAAGAAGACG-3 5' -GCCCTCTCAATGAAGATCC-3
AtPIP5K1MD	1-301	AtPIP5K1-U AtPIP5K1MORN-L	5' -ATCTCCAGCTTCACCATCAG-3
AtPIP5K1CD	320-752	AtPIP5K1CD-U AtPIP5K1-L	5' -CACCTCTCTGTTATCGTGATGGG-3