

Supplemental Table S1. Molecular features of the wheat, barley, maize and rice PAPHy's. Wheat Ta_ACP and barley HvPAP_c were included for multiple alignment purposes. t-AA, the translated amino acids; SP, signal peptide; MW, predicted molecular weight of the deglycosylated mature protein minus signal peptide; differences in N-linked glycosylation sites between the isoforms are indicated in bold; C-terminal phosphorylation sites are only predicted for recombinant proteins as full length of which the sites are indicated in bold (<http://www.cbs.dtu.dk/services/NetPhosYeast>). The putative localization has been predicted by TargetP 1.1 (<http://www.cbs.dtu.dk/services/TargetP/>).

Isoform	ORF (bp)	t-AA length	SP length	MW in kDa	Predicted glycosylations N-X-(S/T)	C-terminal phosphorylation (NetPhosYeast)	TargetP 1.1 prediction
TaPAPhy_a1	1653	551	22	58	NYT 137; NTT 202; NGT 233; NKT 289; NYT 411; NFT 462; NET 497; NSS 533; NTT 543	...CLHKHNSRPAHGRSNTTRESGG	Secreted/Vacuole
TaPAPhy_a2	1647	550	21	58.6	NYT 136; NTT 201; NGT 232; NKT 288; NYT 410; NFT 461; NET 496; NST 532; NTT 543	...CLHKHNSRPAHGRSNTTRESGG	Secreted/Vacuole
TaPAPhy_b1	1617	539	21	57,4	NYT 135; NTT 200; NGT 231; NKT 287; NYT 409; NFT 460; NET 495	... CLLK SS IAAYF	Secreted/Vacuole
TaPAPhy_b2	1614	538	20	57,4	same as TaPAPhy_b1	... CLLK SS IAAYF	Secreted/Vacuole
Ta_ACP	1434	478	23	52,8	NYT 104; NVT 365; NRT 422	... RYESLQSLQSLMSML	Mitochondrion
HvPAPhy_a	1635	545	25	57,8	NYT 140; NTT 205; NGT 236; NKT 292; NYT 414; NFT 465; NET 500; NWT 536	... CLHKHNWTRPAHGP	Secreted/Vacuole
HvPAPhy_b1	1611	538	20	57,2	NYT 135; NTT 200; NGT 231; NKT 287; NYS 329; NYT 408; NFT 459; NET 494	... CLLK SS IAAYF	Secreted/Vacuole
HvPAPhy_b2	1611	538	20	57,2	same as HvPAPhy_b1	... CLL SS IAAYF	Secreted/Vacuole
HvPAP_c	1695	565	32	59	NYT 158; NST 223; NRT 356; NYT 434; NFT 484; NST 519	... CLLQPRGVISQDS	Chloroplast
OsPAPhy_b	1620	540	21	57,5	NYT 135; NTT 200; NGT 231; NST 244; NKT 287; NYT 409; NFT 461; NET 496	... CLIK SS RNRIAYY	Secreted/Vacuole
ZmPAPhy_b	1635	545	23	57,4	NYT 140; NTT 205; NGT 236; NRT 292; NYT 414; NFT 466; NDT 501	... CLAKTARLLAY	Secreted/Vacuole