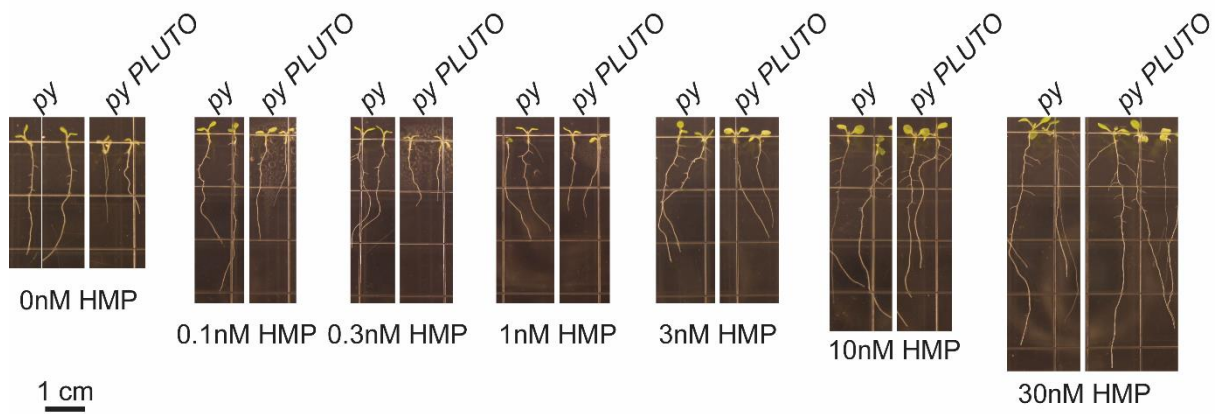


Supplementary Fig. S1. IPTG-induced *E. coli* cells expressing PLUTO show no increase in HMP uptake when supplied with 12.5 nM [^3H]HMP relative to an empty vector control (EV). *E. coli* expressing PLUTO (black circles) or the empty vector control (white circles) were grown as described [7] and resuspended to an OD_{600} of 10 in M9-glucose medium. Assays were initiated by combining 500 μL of cell suspension and 500 μL of M9-glucose containing 25 nM [^3H]HMP. Aliquots (50 μL) were taken, the cells separated by filtration, washed, and [^3H]HMP uptake measured by liquid scintillation counting. Data are means and SEM for three independent replicates.



Supplementary Fig. S2. Representative *py* and *py PLUTO* *Arabidopsis* mutants grown with or without exogenous HMP. Plants were grown for 6 days on $\frac{1}{2}$ MS medium with sucrose.

Supplementary Table S1. GeneMANIA query and co-expressed genes

	Gene name	Locus tag	Description
Query genes	NCS1	<i>At5g03555</i>	Nucleobase cation symporter 1
	THIC	<i>At2g29630</i>	HMP-P synthase
	TH1	<i>At1g22940</i>	HMP-P/HMP kinase; Thiamin-phosphate pyrophosphorylase
	THI1	<i>At5g54770</i>	Thiazole synthase
	At1g02880	<i>At1g02880</i>	Thiamin pyrophosphokinase
	At2g44750	<i>At2g44750</i>	Thiamin pyrophosphokinase
	THIM	<i>At3g24030</i>	HET kinase
	TNEA_C	<i>At5g32470</i>	Thiamin monophosphate hydrolase
	TENA_E	<i>At3g16990</i>	Thiaminase
	NUDT20	<i>At5g19460</i>	Nudix hydrolase 20, associated with thiamin pyrophosphokinase
	NUDT24	<i>At5g19470</i>	Nudix hydrolase 24, associated with thiamin pyrophosphokinase
	COG0212	<i>At1g76730</i>	5-Formyltetrahydrofolate cyclo-ligase-like protein
	At5g48970	<i>At5g48970</i>	Mitochondrial thiamine diphosphate transporter TPC1
	At3g21390	<i>At3g21390</i>	Mitochondrial thiamine diphosphate transporter TPC1
	Co-expressed genes	PHS2	<i>At3g46970</i>
TRY		<i>At5g53200</i>	Transcription factor TRY
At1g64430		<i>At1g64430</i>	Pentatricopeptide repeat (PPR) superfamily protein
At4g24700		<i>At4g24700</i>	unknown protein
At5g17570		<i>At5g17570</i>	TatD related DNase
GCN2		<i>At3g59410</i>	Probable serine/threonine-protein kinase GCN2
At4g00490		<i>At4g00490</i>	Beta-amylase 2
SPA4		<i>At1g53090</i>	Protein SPA1-RELATED 4
AHL		<i>At5g54390</i>	PAP-specific phosphatase HAL2-like
At4g09620		<i>At4g09620</i>	Mitochondrial transcription termination factor family protein
RPP13		<i>At3g46530</i>	Disease resistance protein RPP13
At1g78995		<i>At1g78995</i>	unknown protein
At5g02830		<i>At5g02830</i>	Pentatricopeptide repeat-containing protein
T2E22.34		<i>At3g12320</i>	unknown protein
LCAT1		<i>At1g27480</i>	Lecithin-cholesterol acyltransferase-like 1
SBE2.1		<i>At2g36390</i>	1,4-Alpha-glucan-branching enzyme 2-1
At5g40060		<i>At5g40060</i>	Disease resistance protein (NBS-LRR class) family
MT2A		<i>At3g09390</i>	Metallothionein-like protein 2A
EPF1		<i>At2g20875</i>	Protein EPIDERMAL PATTERNING FACTOR 1
At5g62130		<i>At5g62130</i>	Per1-like family protein