

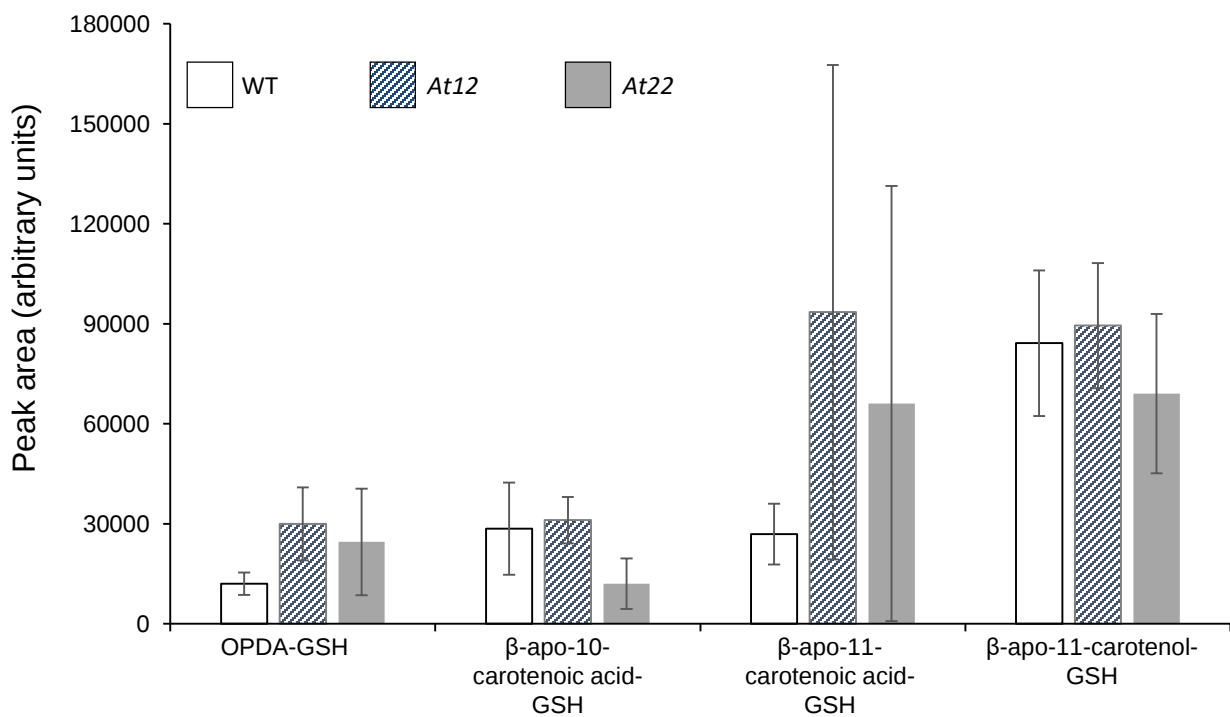


Figure S1: Detection of glutathione adducts in Arabidopsis roots

OPDA-GSH and putative apocarotenoid glutathione adducts were detected in three biological replicates of roots from hydroponically grown wild-type and *AtPSY*-overexpressing Arabidopsis lines *At12* and *At22*.

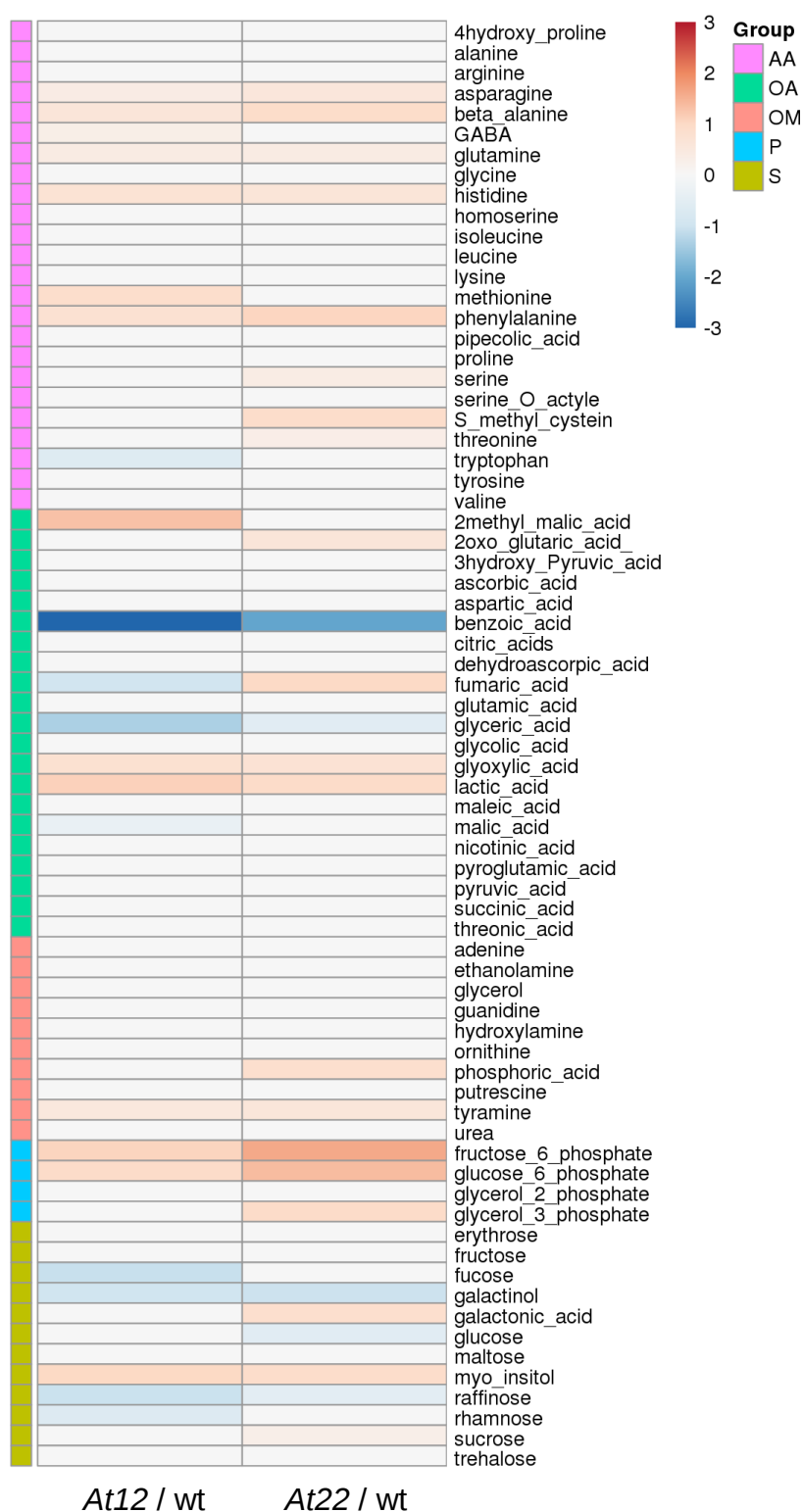


Figure S2: Differential metabolic profiling of wild-type and carotenoid-accumulating Arabidopsis roots

Metabolites were analyzed from roots of hydroponically grown wild-type and *AtPSY*-overexpressing Arabidopsis lines *At12* and *At22*. Log2 of significant metabolite fold changes for indicated pairwise comparisons are given by shades of red or blue colors according to the scale bar. Metabolites were grouped according to their chemical or functional family as amino acids and derivatives (AA), organic acids (OA), other metabolites (OM), organic phosphates (P), and sugars and derivatives (S). Data represent mean values of three biological replicates for each line. Statistical analysis was performed using Tukey's honest significant difference method followed by a false discovery rate (FDR) correction, with $FDR < 0.05$. For $FDR \geq 0.05$, Log2 fold changes were set to 0.

GST gene	fold induction for At22 / At12	primary substrate
<i>GSTU subfamily</i>		
At2g29450 (AtGSTU5)	4 / < 2	4-hydroxynonenal
At3g09270 (AtGSTU8)	6 / 11	?
At1g59700 (AtGSTU16)	3 / 6	?
Atg78380 (AtGSTU19)	2 / 3	acrolein
At1g78370 (AtGSTU20)	2 / 3	?
At1g17170 (AtGSTU24)	3 / 3	acrolein
At1g17190 (AtGSTU26)	7 / 3	?
<i>GSTF subfamily</i>		
At1g02930 (AtGSTF6)	3 / 3	n.a.
At1g02920 (AtGSTF7)	3 / 3	n.a.
At2g30860 (AtGSTF9)	2 / 2	n.a.
At3g03190 (AtGSTF11)	6 / 3	n.a.

Table S1: Induced GST transcript levels in Arabidopsis roots in response to β-carotene and β-apocarotenoid accumulation

RNA-Seq-determined expression changes in roots of *AtPSY*-overexpressing lines *At22* and *At12* relative to wild-type roots are shown for GST genes with at least 2-fold induction. Known substrates are given based on *in vitro* assays with purified GSTUs reported by Mano *et al.* (2019) and are not available (n.a.) for GSTFs.