Supplementary Table 1   Final fermentation characteristics (g.l^{-1}) of the five EUROSCARF deletion

strains selected for further analysis.

	Residual sugars Glucose	Fructose	Glycerol	Ethanol	Glycerol Yield		Ethanol Yield	
BY4742 (wild-type)	7.4 ±0.2	40 ±0.5	4.7 ±0.1	68 ±0.9	4.4	±1.0	44.5	±0.9
tps1 -Δ	0 ±0.0	10.6 ±10.6	8.8 ±1.0	80.2 ±2.8	7.6	±1.8	42.2	±1.1
tdh3 -Δ	0 ±0.0	0 ±0.0	6.2 ±0.1	86.5 ±0.9	4.4	±1.0	43.2	±0.8
zwf1 -Δ	0 ±0.0	13.5 ±1.5	5.7 ±0.2	87.9 ±1.0	3.9	±0.2	47.1	±.8
aco1 -Δ	4.9 ±0.9	27.5 ±2.7	6.3 ±0.2	79.4 ±3.0	4.6	±0.2	47.6	±0.9
aco2 -Δ	0 ±0.0	17.9 ±2.9	6.1 ±0.2	91.2 ±3.1	2.7	±0.2	50	±1.2

Data was generated at 200g.l^{-1} sugar in a synthetic grape must. Values are the average of three repeats ± standard deviation.

Supplementary Table 2 Concentrations of key metabolites for all transformed strains and their

controls throughout fermentation.

GLUCOSE	0	5	11	18
Control	101.2	13.1 ± 1.74	0	0
DUT-TPS	101.2	21.3 ± 2.0	2.3 ± 0.4	0
GIP-TPS	101.2	25 ± 4.8	2.3 ± 1.1	0
DUT control	101.2	22 ± 2.6	3.4 ± 0.7	0
GIP control	101.2	19.4± 0.15	1.6 ± 0.6	0
FRUCTOSE				
Control	99.8	35.8 ± 5.7	7.1 ± 3.6	4 ± 0.4
DUT-TPS	99.8	42.1 ± 6.3	15.1 ± 4.2	5.1 ± 1.1
GIP-TPS	99.8	39.3 ± 4.1	13 ± 2.8	4 ± 0.5
DUT control	99.8	39.1 ± 6	10.4 ± 3.6	3.8 ± 0.3
GIP control	99.8	33.5 ± 3.9	11.9 ± 2.6	3.8 ± 0.8
ETHANOL				
Control	0	78.2 ± 1.9	99 ± 2.6	103.8 ± 2.7
DUT-TPS	0	60.4 ± 4.2	84.5 ± 1	89.7 ± 1.7
GIP-TPS	0	72.5 ± 3.5	89.7 ± 0.8	90.4 ± 0.4
DUT control	0	74.8 ± 3.5	94.1 ± 1.8	101.9 ± 2.9
GIP control	0	74.6 ± 0.4	94.5 ± 0.9	99.1 ± 1.4
GLYCEROL				
Control	0	4.8 ± 0.4	5.4 ± 0.5	5.6 ± 0.3
DUT-TPS	0	6.6 ± 0.4	7 ± 0.5	6.3 ± 0.15
GIP-TPS	0	5.3 ± 0.3	6.7 ± 0.6	6.6 ± 0.35
DUT control	0	5.2 ± 0.1	6.5 ± 0.2	6.1 ± 0.4
GIP control	0	5.4 ±0.2	5.9 ± 0.1	6.3 ± 0.2

Values are the average of three biological repeats ± standard deviation.
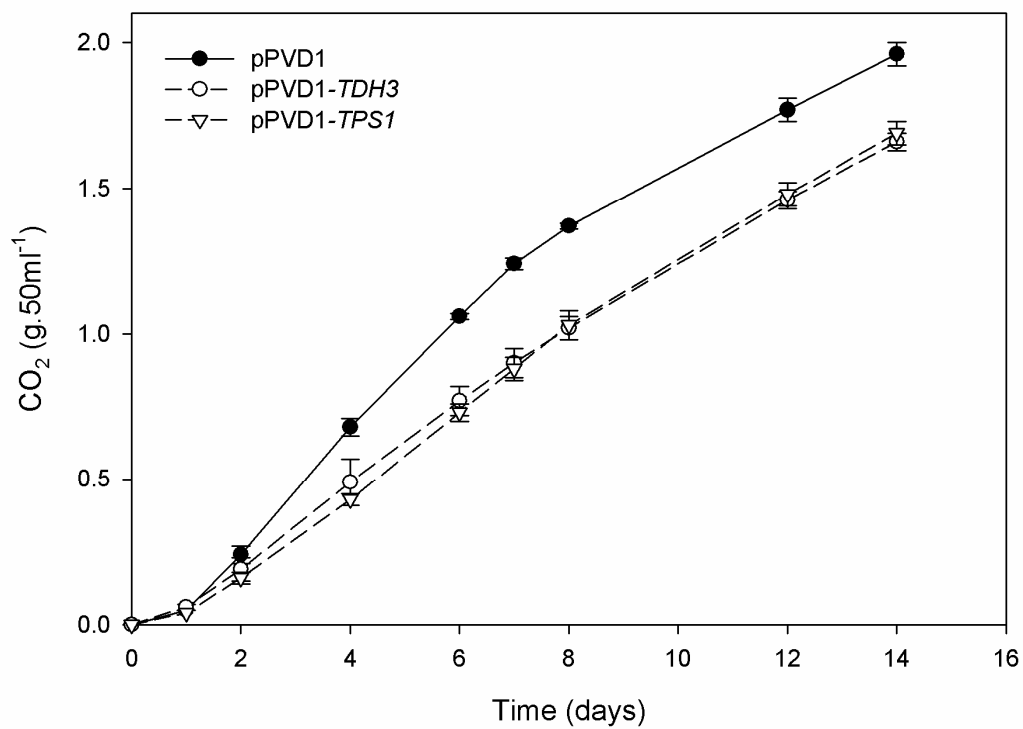
Supplementary Fig 1. CO_2 generation (g.50ml^{-1}) for strains over-expressing *TDH3* and *TPS1* from the pPVD1 construct (PGK1 promoter, 2μ) in the BY4742 genetic background. Fermentations were started at 100g.l^{-1} sugar in a synthetic grape must.