Supplementary Data

Developmental regulation of primary carbohydrate metabolism in grape berry (*Vitis vinifera* L.) cv. Cabernet Sauvignon

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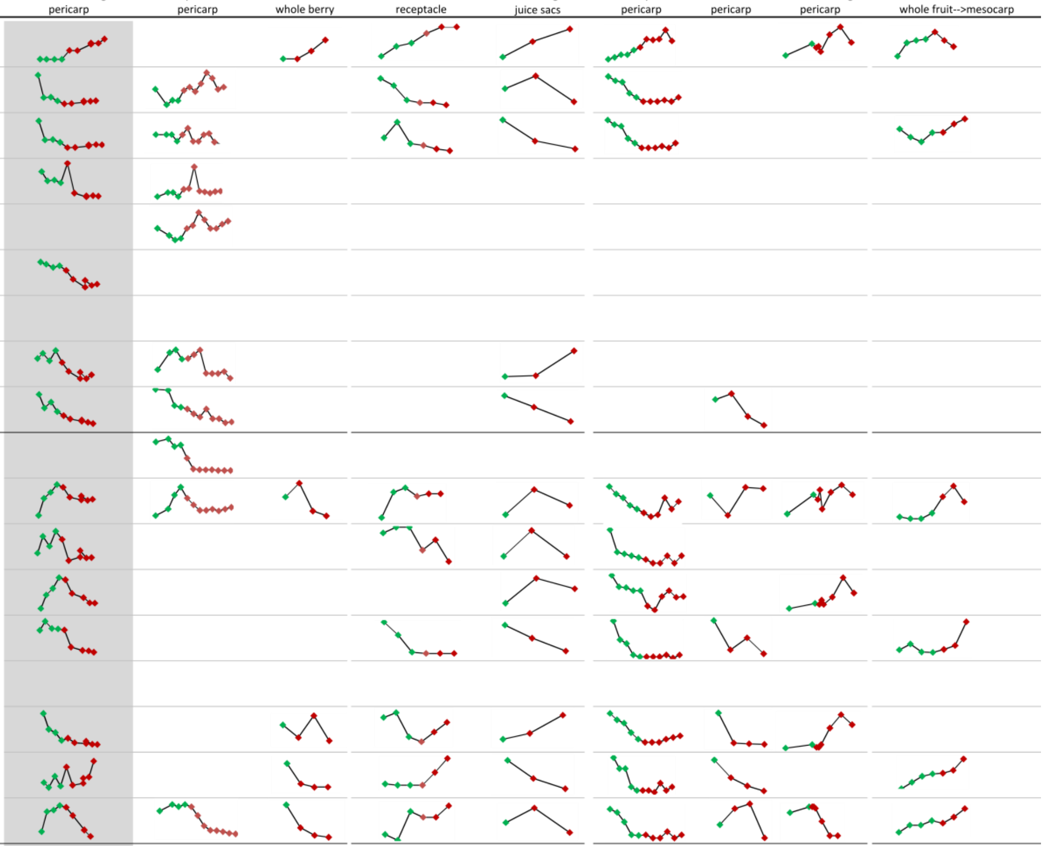
Table S1. List of the 27 measured metabolites and their abbreviations.

Name	Abbreviation
Sucrose	sucrose
Glucose	glucose
Fructose	fructose
Sucrose 6-phosphate	S6P
Glucose 6-phosphate	G6P
Fructose 6-phosphate	F6P
Glucose 1-phosphate	G1P
Fructose 1-phosphate	F1P
Mannose-6-phosphate	M6P
Uridine diphosphate glucose	UDPG
Adenosine diphosphoglucose	ADPG
Phosphoenolpyruvate	PEP
Fructose 1,6-bisphosphate	F1,6BP
Pyruvate	pyruvate
3-Phospho-D-glycerate	PGA
citrate	citrate
Aconitate	aconitate
Isocitrate	Isocitrate
2-Oxoglutarate	2-Oxoglutarate
Succinate	succinate
Fumarate	fumarate
Malate	malate
Tartrate	tartrate
Glycerol 3-phosphate	Gly3P
shikimate	shikimate
Glycerate	Glycerate
Trehalose-6-phosphate	T6P

Table S2. Developmental changes in primary metabolite levels in climacteric and non-climacteric fleshy fruits. Metabolite profiles from the current study of developing grape berries are compared with published data from grape, and with data from other non-climacteric fleshy fruits (strawberry and citrus) and from climacteric fruits (tomato and peach). For all species, two distinct phases of fruit development are apparent: the early stages when fruits are hard and acidic (in green) and the ripening stages where fruits become softer and rich in sugars (in red). The bottom panel shows the coverage of the metabolites of interest in each study and the analytical method used to measure the metabolites.

		Non-climacteric fleshy fruit					Climacteric fleshy fruit			
		Grape *Vitis vinifera L.*			Strawberry *Fragaria x ananassa Duch.*	Citrus *Citrus sinensis L.*	Tomato *Solanum lycopersicum L.*			Peach *Prunus persica (L.) Batsch*
Pathway	metabolites	cv. Cabernet Sauvignon pericarp	cv. Thompson Seedless pericarp	cv. Trincadeira whole berry	cv.Herut receptacle	cv. Washington juice sacs	cv.Moneymaker pericarp	cv. Micro-Tom pericarp	cv. Ailsa Craig pericarp	cv. Dixiland whole fruit-->mesocarp
Glycolysis	Glucose									
	G6P									
	F6P									
	F1,6P2									
	Gly3P									
	3-PGA									
	2-PGA									
	PEP									
	Pyruvate									
TCA cycle	Oxaloacetate									
	Citrate									
	Aconitate									
	Isocitrate									
	2-Ketoglutarate									
	SuCoA									
	Succinate									
	Fumarate									
	Malate									
Coverage %	Glycolysis	77.8	66.7	11.1	33.3	55.6	33.3	11.1	11.1	22.2
	TCA	77.8	33.3	44.4	66.7	77.8	77.8	55.6	44.4	44.4
	Global	77.8	50	27.8	50	66.7	55.6	33.3	27.8	33.3
Method		LC-MS	Enzymatic method	[1]H NMR	GC-MS	LC-MS/MS	GC-MS	GC-MS	GC-MS	GC-MS
Ref		present work	Ruffner&Hawker,1977	Ali etal 2011	Fait etal 2008	Katz etal 2011	Carrari etal 2006	Yin etal 2010	Osorio etal 2011	Lombardo et al 2011



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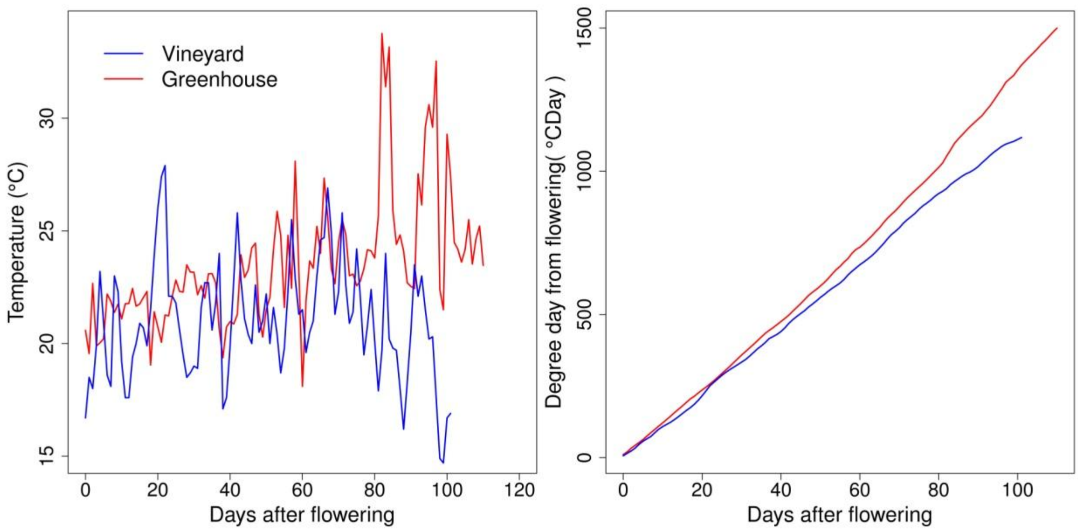

Figure S1. Daily temperature and sums of temperature (°Cday: degree-days) from flowering to maturity in the vineyard and greenhouse. Greenhouse and vineyard had similar temperatures during the early developmental stages, but the greenhouse temperature was notably higher than in the vineyard during the final stages of development (from 80 to 110 DAF).