

Supplements

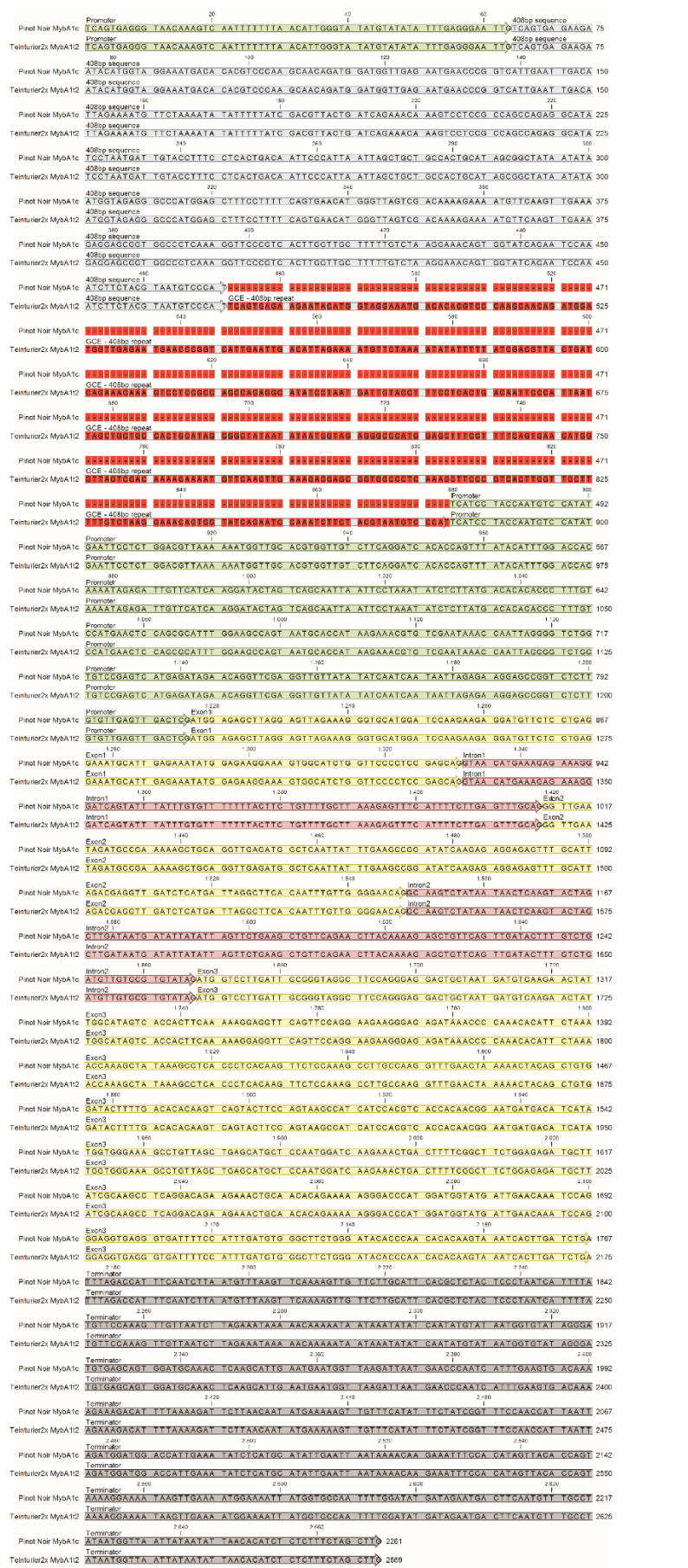
# Color intensity of the red-fleshed berry phenotype of *Vitis vinifera* teinturier grapes varies due to a 408 bp duplication in the promoter of *VvmybA1*

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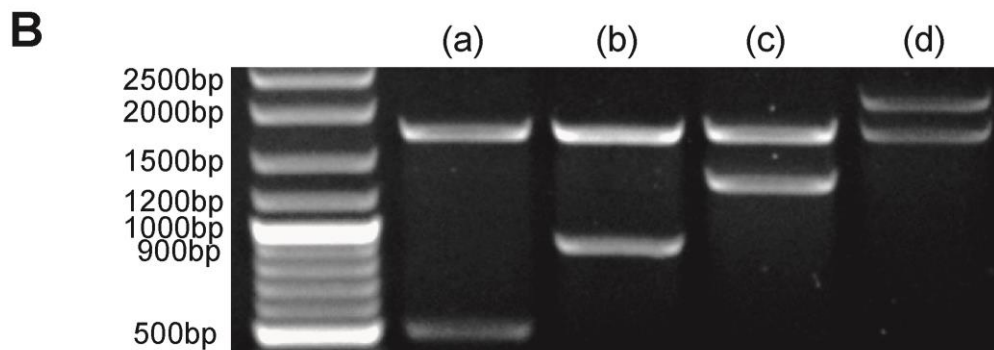
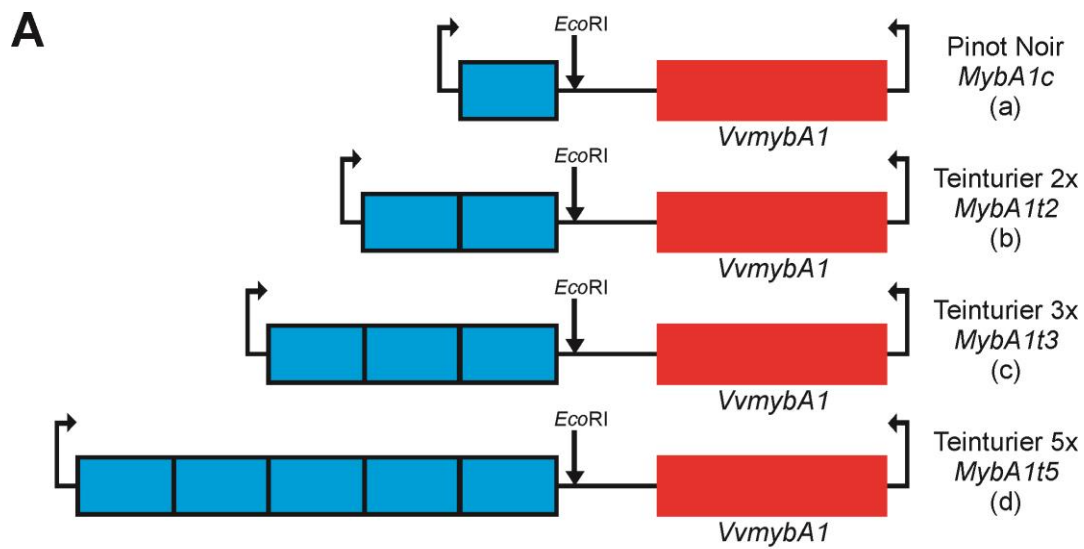
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**Figure S1.** Alignment of the *MybA1t2* allele of ‘Teinturier’ and the *MybA1c* allele of ‘Pinot Noir’. Differences are indicated in red.



**C**

Allele	Length [bp]	Fragment 1 [bp]	Fragment 2 [bp]	Repeat number
<i>MybA1c</i>	2261	1768	493	1 (wildtype)
<i>MybA1t2</i>	2669	1768	901	2
<i>MybA1t3</i>	3077	1768	1309	3
<i>MybA1t5</i>	3893	1768	2125	5

**Figure S2.** *EcoRI* restriction analysis of the *VvmybA1* amplicons. Leaf-DNA sample ('Pinot Noir') and the root-DNA samples ('Teinturier 2x', 'Teinturier 3x' and 'Teinturier 5x') shown in Fig. 1. (A) Schematic overview of the amplicons with the relative position of the *EcoRI* restriction site. (B) Agarose gel of the digested amplicons. (C) Fragment lengths based on amplicon sequencing.

**Table S1.** Analyzed grapevine accessions and their origin according to the VIVC database ([www.vivc.de](http://www.vivc.de)). Tissue types used for anthocyanin analysis are indicated.

Prime name	Variety number VIVC	Accession name	Accession number	Origin	Anthocyanin measurements	Referred in this study as
Pinot Noir	9279	Spaetburgunder M242	DEU098-1980-006	JKI Siebeldingen	berry skin, berry flesh	
Pinot Gris	9275	Pinot Gris Cl. Dunkelgrau	DEU098-1980-058	JKI Siebeldingen	leaf	
Pinot Teinturier	9283	Pinot Teinturier	DEU454-L-28-4-2	HGU Geisenheim		
Gamay Teinturier de Bouze	4379	Gamay Teinturier de Bouze	DEU098-1980-196	JKI Siebeldingen		
Teinturier	12304	Teinturier	DEU098-1993-213	JKI Siebeldingen	leaf, berry skin, berry flesh	Teinturier 2x
Teinturier	12304	Farbtraube	DEU098-2002-003	JKI Siebeldingen		
Teinturier	12304	Farbtraube	DEU098-2011-063	JKI Siebeldingen		
Teinturier	12304	Farbtraube	DEU363-282	DLR Neustadt		
Teinturier	12304	Färbertraube	DEU454-L-9-4-2	HGU Geisenheim		
Teinturier	12304	Teinturier mâle	DEU456-1068	LVWO Weinsberg		
Teinturier	12304	Färbertraube	-	BSA Hassloch		
Teinturier	12304	Farbtraube (Fröhlich)	-	BSA Hassloch		
Teinturier	12304	Plant rouge femelle	FRA139-303Mtp2	INRA Vassal		
Teinturier	12304	Serzial	FRA139-303Mtp6	INRA Vassal		
Teinturier	12304	Teinturier	-	BSA Hassloch	leaf	Teinturier 3x
Teinturier	12304	Plant rouge mâle	FRA139-303Mtp1	INRA Vassal		
Teinturier	12304	Teinturier du Cher PVM	FRA139-0Mtp1749	INRA Vassal		
Teinturier	12304	Rubindraube	DEU456-880	LVWO Weinsberg	leaf	Teinturier 5x
Teinturier	12304	Teinturier du Cher	FRA139-303Mtp7	INRA Vassal		
Dunkelfelder	3724	Dunkelfelder	DEU098-1980-014	JKI Siebeldingen	berry skin, berry flesh	
Rubired	10308	Rubired	DEU098-1991-123	JKI Siebeldingen		
Titan	12531	Titan	DEU098-1980-459	JKI Siebeldingen		
Teinturier Luebeck	23366	Teinturier male	DEU098-1995-052	JKI Siebeldingen		
Seibel 5437	11110	Seibel 5437	DEU098-2003-093	JKI Siebeldingen		
Golubok	4888	Golubok	DEU098-1988-077	JKI Siebeldingen		
Farbfraenkisch	4053	Farbfraenkisch	DEU454-L-27-5-2	HGU Geisenheim		
Alicante Henri Bouschet	304	Alicante Henri Bouschet	DEU098-1990-007	JKI Siebeldingen		

Bouschet Petit	1619	Bouschet Petit	DEU098-2001-016	JKI Siebeldingen	
Karmin	5999	Karmin	DEU098-1991-143	JKI Siebeldingen	
Biborkadarka	1339	Biborkadarka	DEU098-1991-136	JKI Siebeldingen	
Kurucver	6573	Kurucver	DEU098-1991-149	JKI Siebeldingen	
Royalty	10288	Royalty	DEU098-1991-119	JKI Siebeldingen	
Grand Noir	5012	Grand Noir	DEU098-1980-125	JKI Siebeldingen	
Karmrahyut	6002	Karmrahyut	DEU098-1988-079	JKI Siebeldingen	
Morrastel Bouschet	8009	Morrastel Bouschet	DEU098-1980-268	JKI Siebeldingen	
Kolor	6388	Kolor	DEU098-1980-033	JKI Siebeldingen	berry skin, berry flesh
Deckrot	3482	Deckrot	DEU098-1980-010	JKI Siebeldingen	berry skin, berry flesh
Freiburg 54- 64	4240	Freiburg 54- 64	DEU098-1980-671	JKI Siebeldingen	
Teinturier femelle (non identified)	24854	Teinturier femelle	DEU456-1127	LVWO Weinsberg	
Accent	20540	Accent	DEU098-2013-031	JKI Siebeldingen	
Dakapo	14728	Dakapo	DEU098-2011-046	JKI Siebeldingen	
Cabernet Mitos	15499	Cabernet Mitos	DEU098-2010-046	JKI Siebeldingen	berry skin, berry flesh
Palas	16871	Palas	DEU098-2010-049	JKI Siebeldingen	berry skin, berry flesh

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**Table S2.** Information of primers used for berry color specific SSR-marker analysis. The physical position refers to the 12x version of the PN40024 reference genome ([http://ensembl.gramene.org/Vitis\\_vinifera/Info/Index](http://ensembl.gramene.org/Vitis_vinifera/Info/Index)).

Marker name	Chromosome	Physical position	Forward primer	Reverse primer	Reference
GF02-55	2	13998165	AAAATTGAAGGACAGGAGGAGG	GCAAGGCTGGTCTACTCAGAAA	Huber <i>et al.</i> (2016)
VVNTM1	2	14149178	CCACGCCACTATTGCTAAAC	TGCACCGTATCAAGATCATGTC	Fournier-Level <i>et al.</i> (2009)
GF02-61	2	14187240	GCAAACCTCCAGAACCTGATTT	TATTGGTCGAGAAGGAATGTGG	This study
GF02-62	2	14192053	GGGATTTGTTAAGGAGATTTGC	GATGACAGTTCAGAGGTTGGC	This study
GF02-68	2	14252332	CCCCTGCCATCTCCATGC	GGTCGTTGCATCATTTTCTCCA	This study
VVNTM5	2	14325217	AGGAGGAATCCACATCAAAGA	TGATTCAAAGGAATAATAACCATCA	Fournier-Level <i>et al.</i> (2009)

**Table S3.** Genotypic data of 15 SSR loci from the analyzed grapevine accessions.

Prime name	Genome-wide SSR-markers used for genotyping									SSR-markers specific for the berry color locus on chr 2					
	VVS2	VVMD5	VVMD7	VVMD25	VVMD27	VVMD28	VVMD32	VrZag62	VrZag79	GF02-55	VVNTM1	GF02-61	GF02-62	GF02-68	VVNTM5
Pinot Noir	137:151	230:240	239:243	239:249	186:190	218:236	240:272	188:194	239:245	215:229	163:169	283:286	373:385	374:390	294:308
Teinturier (all 15 clones)	137:151	240:240	239:243	239:249	180:190	228:236	272:272	188:194	245:255	215:229	163:169	283:286	373:385	374:390	294:308
Dunkelfelder	135:151	238:240	243:247	249:255	180:195	228:244	240:272	188:204	249:255	217:229	163:169	283:286	373:385	374:390	294:308
Kolor	151:151	240:240	239:243	249:249	180:186	218:236	272:272	188:194	239:255	215:229	163:169	283:286	373:385	374:390	294:308
Deckrot	137:151	230:240	239:243	249:249	190:190	218:236	240:272	188:194	245:245	215:229	163:169	283:286	373:385	374:390	294:308
Cabernet Mitos	137:143	228:240	239:239	239:249	180:195	228:246	250:272	194:194	251:255	217:229	163:169	283:286	373:385	374:390	294:308
Palas	137:143	240:242	239:239	239:249	180:195	228:246	272:272	194:204	251:255	217:229	163:169	283:286	373:385	374:390	294:308

**Table S4.** List of Likelihoods for the kinship of ‘Savagnin Blanc’, ‘Pinot Noir’ and ‘Teinturier’. Calculated with ML Relate (Kalinowski *et al.*, 2006) based on the marker dataset of Lacombe *et al.* (2013). Output Ln(Likelihood) for each of the four following relationships: U = unrelated; HS = half sibs; FS = full sibs; PO = parent / offspring. R = relationship with the highest likelihood; LnL(R) = log likelihood of R; Delta Ln(L) = log likelihood differences for the other relationships compared to the highest likelihood LnL(R).

Variety 1	Variety 2	R	LnL(R)	Delta Ln(L)			
				U	HS	FS	PO
Savagnin Blanc	Teinturier	PO	-92.88	14.34	5.40	6.31	-
Savagnin Blanc	Pinot Noir	PO	-100.17	13.42	5.16	4.07	-
Teinturier	Pinot Noir	FS	-97.72	9.79	2.66	-	Not possible



**Table S5.** Anthocyanin composition [%] in leaf samples of 'Teinturier' clones with different GCE number. Cy-gl = cyanidin-3-O-glucoside; Pe-gl = peonidin-3-O-glucoside; Dp-gl = delphinidin-3-O-glucoside; Pt-gl = petunidin-3-O-glucoside; Mv-gl = malvidin-3-O-glucoside; ayl = acetylated 3-O-glucoside anthocyanins; cum = coumarylated 3-O-glucoside anthocyanins.

Clone	Cy-gl	Pe-gl	Dp-gl	Pt-gl	Mv-gl	Cy-ayl	Pe-ayl	Dp-ayl	Pt-ayl	Mv-ayl	Cy-cum	Pe-cum	Dp-cum	Pt-cum	Mv-cum
Teinturier 2x	21.87±4.54	33.45±3.29	8.01±1.25	5.11±0.8	13.85±3.18	-	0.75±0.39	-	-	-	5.33±1.19	5.81±0.65	2.13±0.63	1.27±0.13	2.43±0.66
Teinturier 3x	13.28±2.36	33.54±3.05	6.79±0.75	5.49±0.25	19.62±1.86	-	1.04±0.14	0.36±0.11	0.38±0.07	0.77±0.18	3.68±0.73	6.81±0.97	1.74±0.31	1.67±0.29	4.83±1.27
Teinturier 5x	7.53±1.08	33.79±2.15	5.02±0.32	4.94±0.37	28.2±1.96	-	1.2±0.1	0.27±0.03	0.22±0.02	1.18±0.09	2.21±0.19	7.01±0.17	0.98±0.12	1.33±0.13	6.11±0.66