

Traits and alleles relevant for breeding and genetics:

Associated markers, their chromosomal localisation, and the donor genotype/species are given. Chromosomal position of a trait/allele is given in megabases according to the 12 x genome sequence of PN40024 (<http://www.genoscope.cns.fr/vitis>).

The symbols were discussed and assigned at the International Conference on Grapevine Breeding and Genetics at Geneva, August 1 - 5, 2010. Follow up information on naming of loci will be provided on VIVC to avoid homonyms.

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Symbol	Trait/Allele	Associated marker	Chromosome	Position on chr [Mb]	Parent 1	Parent 2	Population size	Genotype of origin	Original species trait/allele derived from?	Reference	Comment	
Be size	berry size (berry weight)	SCC8	18	25.9	MTP2223-27	x MTP2121-30	139		V. vinifera	Doligez et al. (2002)	Only one major QTL for berry size is indicated. There are several other QTLs described in the literature.	
		VMC7f2		26.9	Dominga	x Autumn Seedless	118			Cabezas et al. (2006)		
					Ruby Seedless	x Thompson Seedless	144			Mejia et al. (2007)		
					Italia	x Big Perlon	163			Costantini et al. (2008)		
Mtc	monoterpene content	DXS1	5	3.8	Italia	x Big Perlon	163		V. vinifera	Battilana et al. (2009)		
					Moscato Bianco	x V. riparia	174					
					Muscat Ottonel	x Muscat Ottonel	121		V. vinifera	Duchene et al. (2009)		
					Gewürztraminer	x Gewürztraminer	115		V. vinifera			
Lin	Linalool content	cnd41	10		Italia	x Big Perlon	163		V. vinifera	Battilana et al. (2009)		
		VrZAG67/VVIH01			Moscato Bianco	x V. riparia	174					
		VrZAG64		13.4	Muscat Ottonel	x Muscat Ottonel	121		V. vinifera	Duchene et al. (2009)		
		VMC3d7		10.8	Gewürztraminer	x Gewürztraminer	115		V. vinifera			
Fib	Fleshless berry	VMC2A3	18	0.9	Chardonnay	x Ugni Blanc Mutant	71	Ugni Blanc	V. vinifera	Fernandez et al. (2006)	Mutant	
MybA	berry skin colour		2	14.2					V. vinifera			
Pdr1	Pierce's disease	VMCNg3h8	14	25.3	V. rupestris	x V. arizonica	181		V. arizonica	Riaz et al. (2006)		
		VVIn64		26.6							Riaz et al. (2008)	
		UDV-095		26.1								
Rda1	Diaporthe ampelina (Phomopsis viticola)									Barba et al. (in preparation)		
Rda2	Diaporthe ampelina (Phomopsis viticola)									Barba et al. (in preparation)		
Rdv1	Daktulosphaira vitifoliae	Gf13_9	13	21.9	Gf.V3125	x Börner	188	Börner	V. cinerea	Zhang et al. (2009)		
		VMC8e6		22.5								
Rpv1	Plasmopara viticola	VVIB32	12	10.3	Syrah	x 28-8-78		28-8-78	M. rotundifolia	Merdinoglu et al. (2003)		
Rpv2	Plasmopara viticola		18		Cabernet Sauvignon	x 8624	129	8624	M. rotundifolia	Wiedemann-Merdinoglu et al. (2006)		
Rpv3	Plasmopara viticola	UDV-112	18		Regent	x Lemberger	153	Regent		Welter et al. (2007)	Regent and Bianca descend from Seibel 4614 (=Rpv3 ²⁹⁹⁻²⁷⁹ = Rpv3-1)	
		UDV-305		24.9	Chardonnay	x Bianca	116	Bianca		Bellin et al. (2009)		
		VMC7f2		26.9								van Heerden et al. (2014)
		VMC7f2		26.9	Regent	x RedGlobe	206	Regent				
Rpv3 ²⁹⁹⁻²⁷⁹		UDV305		24.9				'Seibel 4614'	V. rupestris	Di Gaspero et al. (2012)	Pedigree analysis	
		UDV737		26.1								
Rpv3-1 (=Rpv3 ²⁹⁹⁻²⁷⁹)		GF18-06 GF18-08		25.9	GF.GA-47-42	x Villard blanc	151	Villard blanc	V. rupestris	Zyprian et al. (2016)		
				26.9								
Rpv3 ^{mult-297}		UDV305		24.9				'Munson' (Jaeger 70)	V. rupestris or V. lincecumii	Di Gaspero et al. (2012)	Pedigree analysis	
		UDV737		26.1								
Rpv3-2 (=Rpv3 ^{mult-297})		GF18-06 GF18-08		25.9	GF.GA-47-42	x Villard blanc	151	GF.GA-47-42	V. rupestris or V. lincecumii	Zyprian et al. (2016)		
				26.9								
Rpv3 ³²¹⁻³¹²		UDV305		24.9				'Noah'	V. labrusca or V. riparia	Di Gaspero et al. (2012)	Pedigree analysis	
		UDV737		26.1								
Rpv3 ^{mult-271}		UDV305		24.9				'Noah'	V. labrusca or V. riparia			
		UDV737		26.1								
Rpv3 ³⁶¹⁻²⁹⁹		UDV305		24.9				V. rupestris Ganzin	V. rupestris			
		UDV737		26.1								
Rpv3 ²⁹⁹⁻³¹⁴		UDV305		24.9				V. rupestris Ganzin	V. rupestris	Di Gaspero et al. (2012)	Pedigree analysis	
		UDV737		26.1								
Rpv3 ^{mult-287}		UDV305		24.9				'Bayard' (Couderc 28-112)	V. rupestris or V. labrusca			
		UDV737		26.1								

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Rpv4	Plasmopara viticola	VMC7h3	4	4.7	Regent	x Lemberger	153	Regent		Welter et al. (2007)				
		VMCNg2e1		5.2										
Rpv5	Plasmopara viticola	VV1o52b	9	4.0	Cabernet Sauvignon	x Gloire de Montpellier	138	Gloire de Montpellier	V. riparia	Marguerit et al. (2009)				
Rpv6	Plasmopara viticola	VMC8G9	12	20.4	Cabernet Sauvignon	x Gloire de Montpellier	138		V. riparia	Marguerit et al. (2009)				
Rpv7	Plasmopara viticola	UDV-097	7	11.4	Chardonnay	x Bianca	116	Bianca		Bellin et al. (2009)				
Rpv8	Plasmopara viticola	Chr14V015	14	6.6	V. amurensis 'Ruprecht'	x V. amurensis 'Ruprecht'	232	V. amurensis 'Ruprecht'	V. amurensis	Blasi et al. (2011)				
Rpv9	Plasmopara viticola	CCoAOMT	7	16.6	Moscato Bianco	x V. riparia	174	Wr63	V. riparia	Moreira et al. (2011)	CCoAOMT is the candidate gene from which the marker IN0006 was derived			
Rpv10	Plasmopara viticola	GF09-46	9	3.7	Gf.Ga-52-42	x Solaris	256	Solaris	V. amurensis	Schwander et al. (2012)				
Rpv11	Plasmopara viticola	VVMD27	5	4.5	Regent	x Lemberger	153	Regent		Fischer et al. (2004)				
		CS1E104J11F				Chardonnay	x Bianca	116	Chardonnay		Bellin et al. (2009)			
		VCHR05C			4.1	Gf.Ga-52-42	x Solaris	256	Solaris		Schwander et al. (2011)			
Rpv12	Plasmopara viticola	UDV-014	14	8.0	99-1-48	x Pinot noir	180	99-1-48	V. amurensis	Venuti et al. (2013)				
		UDV-304		9.3	Cabernet Sauvignon	x 20/3		20/3	V. amurensis					
		rgvvin180												
		UDV-370		10.1										
Rpv13	Plasmopara viticola	VMC1G3.2	12	10.0	Moscato Bianco	x V. riparia	174	Wr63	V. riparia	Moreira et al. (2011)				
Rpv14	Plasmopara viticola	GF05-13	5	20.2	Gf.V3125	x Börner	202	Börner	V. cinerea	Ochssner et al. (2016)				
Rpv15	Plasmopara viticola		18		V. piasezkii (DVIT2027)	x F2-35	94	V. piasezkii (DVIT2027)	V. piasezkii	Pap et al. (in preparation)				
Rcg1	Agrobacterium spec.	UDV-015	15	7.1	Kunbarát	x Sárfehér	272	Kunbarát	V. amurensis	Kuczmozog et al. (2012)				
		9M3-3		9.3										
Rgb1	Guignardia bidwellii	Gf14-42	14	26.7	V3125	x Börner	202	Börner		Rex et al. (2014)				
Rgb2	Guignardia bidwellii	VChr16c	16	15.3	V3125	x Börner	202	Börner		Rex et al. (2014)				
Ren1	Erysiphe necator	UDV-020	13		Nimrang	x Kishmish vatkana	310	Kishmish vatkana	V. vinifera	Hoffmann et al. (2008)				
		VMC9h4-2		18.4										
		VMCNg4e10.1		18.4										
Ren2	Erysiphe necator	CS25	14	26.9	Horizon	x Illinois 547-1	58	Illinois 547-1		Dalbo et al. (2001)				
Ren3	Erysiphe necator	UDV-015b	15	7.1	Regent	x Lemberger	153	Regent		Welter et al. (2007)				
		VViv67		10.9										
		ScORA7-760				Regent		x Lemberger	152		Regent		Akkurt et al. (2007)	
		VChr15CenGen02		4.9	Regent	x RedGlobe		206	Regent			van Heerden et al. (2014)		
		GF15-28 / VViv67		10.9	GF.GA-47-42	x Villard blanc		151				Zyprian et al. (2016)		
Ren4	Erysiphe necator	VMC7f2	18	26.9	C166-043	x F8909-08	42	C166-043	V. romanetii	Riaz et al. (2012)				
		SNPs		26.9	C87-41	x B70-57		57	C87-41		V. romanetii	Mahanil et al. (2012)		
Ren5	Erysiphe necator		14	4.8					M. rotundifolia	Blanc et al. (2012)				
Ren6	Erysiphe necator	PN9-057	9	8.6	F2-35	x V. piasezkii (DVIT2027)	277	V. piasezkii (DVIT2027)	V. piasezkii	Pap et al. (2016)				
		PN9-068		9.1										
Ren7	Erysiphe necator	VV1p17.1	19	0.2	F2-35	x V. piasezkii (DVIT2027)	277	V. piasezkii (DVIT2027)	V. piasezkii	Pap et al. (2016)				
		VMC9a2.1		0.9										
Ren8	Erysiphe necator		18		GF.GA-47-42	x Villard blanc	151			Zyprian et al. (2016)				
Ren9	Erysiphe necator									Zendler et al. (in preparation)				
Ren10	Erysiphe necator	S2_17854965	2	79.0	MN1264	x MN1214	147	Seyval blanc		Teh et al. (in review)	Contact: J.J. Luby and M.D. Clark, U of Minnesota, USA			
		Haploblock validation		2		MN1264		x MN1246	125					
Run1	Erysiphe (Uncinula) necator	VMC4f3.1	12	13.1	VRH3082-1-42	x Cabernet Sauvignon	161	VRH3082-1-42	M. rotundifolia	Barker et al. (2005)	powdery mildew resistance originating from Muscaninia should be named as			
		VMC8g9		20.4										
Run2.1	Erysiphe (Uncinula) necator	VMC7f2	18	26.9	JB81-107-11	x Chenin Blanc	97	Magnolia	M. rotundifolia	Riaz et al. (2011)	resistant tissue: Cane			
		VMCNglc3		20.9										
		VVin16		23.4	JB81-107-11	x Tokay						47		Rachis
		VMC7f2		26.9										Rachis
		VMC7f2		26.9	A90-71	x Flame Seedless						80		Fruit
Run2.2	Erysiphe (Uncinula) necator	VMC7f2	18	26.9	e2-9	x Malaga Rosada	255	Trayshed	M. rotundifolia	Riaz et al. (2011)	Leaf, Cane, Rachis, Fruit			

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Sdl	seed development inhibitor	SCC8	18	25.9	MTP2223-27	x MTP2121-30	139			Doligez et al. (2002)	
	seedlessness	VMC6f1		23.2	Dominga	x Autumn Seedless	118	Autumn Seedless		Cabezas et al. (2006)	
		VMC7f2		26.9			118				
					Italia	x Big Perlon	163	Big Perlon		Costantini et al. (2008)	
Sen1	<i>Erysiphe necator</i>	S8_19258484	9	13.6 - 18.0	<i>V. rupestris</i> B38	x Chardonnay	85	Chardonnay	<i>V. vinifera</i>	Barba et al. (2014)	
Sex	sex	VVMD34	2	3.7	Horizon	x Illinois 547-1	58			Dalbó et al. (2000)	
		VVS3		4.2	Ramsey	x Riparia Gloire	188			Lowe and Walker (2006)	
		VVIb23		4.9	<i>V. rupestris</i>	x <i>V. arizonica</i>	181			Riaz et al. (2006)	
		AFT3		5.0	V3125	x Börner	202			Fechter et al. (2012)	
		SNP4C_1		4.7	Moscato Bianco	x Vr	340			Battilana et al. (2013)	
		Vvib23		4.9	Muscat Ottonel	x <i>Malvasia aromatica di Candia</i>	91				
Ufgt		UFGT	16	2.3	Regent	x Lemberger	153			Fischer et al. (2004)	
Ver	véraison	VMC1E11	16	13.7	Regent	x Lemberger	153	Regent		Fischer et al. (2004)	For véraison (begin of ripening) several QTLs are published. This list here is still incomplete.
					Italia	x Big Perlon	163		Costantini et al. (2008)		
Ver1	véraison	UDV52	16	15.8	GF.GA-47-42	x Villard blanc	151	GF.GA-47-42		Zyprian et al. (2016)	
					SNP1092P11R						
Ver2	véraison	SPS_P_SNP632GF	18		GF.GA-47-42	x Villard blanc	151			Zyprian et al. (2016)	
Vvgat1	GA insensitive dwarf mutant		1	4.9				Pinot Meunier		Boss & Thomas (2002)	
VvOMT3	Isobutyl-methoxypyrazine (IBMP)	VvOMT3	3	2.2	(Cabernet Sauvignon x Pinot Meunier)	x self pollinated	64	Cabernet Sauvignon		Dunlevy et al. (2013)	F2 population
					Cabernet Sauvignon	x Gloire de Montpellier	138	Cabernet Sauvignon		Guillaumie et al. (2013)	3 significant QTLs for IBMP content
Xir1	Xiphinema index	VMC5a10	19	20.9	<i>V. rupestris</i>	x <i>V. arizonica</i>	185		<i>V. arizonica</i>	Xu et al. (2008)	
		JN2R3b		20.9						Hwang et al. (2010)	
		M4F3R									
5-gt	anthocyanin 3,5-diglucosides	Gf09_01	9	6.5	Regent	x Lemberger	153	Regent		Hausmann et al. (2009)	