

Table of Loci for Traits in Grapevine 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
<i>Be size</i>	berry size (berry weight)	SCC8	18	25.9	MTP2223-27	x MTP2121-30	139		<i>V. vinifera</i>	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)	
<i>Fib</i>	Fleshless berry	VMC2A3	18	0.9	Chardonnay	x Ugni Blanc Mutant	71	Ugni Blanc	<i>V. vinifera</i>	Fernandez et al. (2006)	Mutant
<i>Lin</i>	Linalool content	cn41	10		Italia	x Big Perlon	163		<i>V. vinifera</i>	Battilana et al. (2009)	
		VrZAG67/VVIH01			Moscato Bianco	x <i>V. riparia</i>	174				
		VrZAG64		13.4	Muscat Ottonel	x Muscat Ottonel	121		<i>V. vinifera</i>	Duchene et al. (2009)	
		VMC3d7		10.8	Gewürztraminer	x Gewürztraminer	115		<i>V. vinifera</i>		
<i>Mic</i>	monoterpene content	DXS1	5	3.8	Italia	x Big Perlon	163		<i>V. vinifera</i>	Battilana et al. (2009)	
					Moscato Bianco	x <i>V. riparia</i>	174				
					Muscat Ottonel	x Muscat Ottonel	121		<i>V. vinifera</i>	Duchene et al. (2009)	
					Gewürztraminer	x Gewürztraminer	115		<i>V. vinifera</i>		
<i>MybA</i>	berry skin colour		2	14.2					<i>V. vinifera</i>		
<i>Pdr1</i>	Pierce's disease	VMCNg3h8	14	25.3	<i>V. rupestris</i>	x <i>V. arizonica</i>	181		<i>V. arizonica</i>	Riaz et al. (2006)	
		VVIn64		26.6						Riaz et al. (2008)	
		UDV-095		26.1							
<i>Rda1</i>	<i>Diaporthe ampelina</i> (<i>Phomopsis viticola</i>)									Barba et al. (in preparation)	
<i>Rda2</i>	<i>Diaporthe ampelina</i> (<i>Phomopsis viticola</i>)									Barba et al. (in preparation)	
<i>Rdv1</i>	<i>Daktulosphaera vitifoliae</i>	Gf13_9	13	21.9	Gf.V3125	x Börner	188	Börner	<i>V. cinerea</i>	Zhang et al. (2009)	
		VMC8e6		22.5							
		Gf13-1			Gf.V3125	x Börner	188	Börner	<i>V. cinerea</i>	Hausmann et al. (2011)	
		Gf13-7		21.5							
<i>Rpv1</i>	<i>Plasmopara viticola</i>	VV1b32	12	10.3	Syrah	x 28-8-78		28-8-78	<i>M. rotundifolia</i>	Merdinoglu et al. (2003)	
<i>Rpv2</i>	<i>Plasmopara viticola</i>		18		Cabernet Sauvignon	x 8624	129	8624	<i>M. rotundifolia</i>	Wiedemann-Merdinoglu et al. (2006)	
<i>Rpv3</i>	<i>Plasmopara viticola</i>	UDV-112	18		Regent	x Lemberger	153	Regent		Welter et al. (2007)	Regent and Bianca descend from Seibel 4614 (= <i>Rpv3</i> ²⁹⁹⁻²⁷⁹ = <i>Rpv3-1</i>)
		UDV-305		24.9	Chardonnay	x Bianca	116	Bianca		Bellin et al. (2009)	
		VMC7f2		26.9	Regent	x RedGlobe	206	Regent		van Heerden et al. (2014)	
<i>Rpv3-1</i> (= <i>Rpv3</i> ²⁹⁹⁻²⁷⁹)		UDV305		24.9				'Seibel 4614'	<i>V. rupestris</i>	Di Gaspero et al. (2012)	Pedigree analysis
		UDV737		26.1							
		GF18-06		25.9	GF.GA-47-42	x Villard blanc	151	'Villard blanc'	<i>V. rupestris</i>	Zyprian et al. (2016)	
<i>Rpv3-2</i> (= <i>Rpv3</i> ^{null-297})		UDV305		24.9				'Munson' (Jaeger 70)	<i>V. rupestris</i> or <i>V. linccumii</i>	Di Gaspero et al. (2012)	Pedigree analysis
		UDV737		26.1							
		GF18-06		25.9	GF.GA-47-42	x Villard blanc	151	GF.GA-47-42	<i>V. rupestris</i> or <i>V. linccumii</i>	Zyprian et al. (2016)	
<i>Rpv3-3</i> (= <i>Rpv3</i> ^{null-271})		UDV305		24.9				'Noah'	<i>V. labrusca</i> or <i>V. riparia</i>	Di Gaspero et al. (2012)	
		UDV737		26.1							
					Merzling	x Teroldego		S.V. 5-276		Vezzulli et al. (in preparation)	
<i>Rpv3</i> ³²¹⁻³¹²		UDV305		24.9				'Noah'	<i>V. labrusca</i> or <i>V. riparia</i>	Di Gaspero et al. (2012)	Pedigree analysis
		UDV737		26.1							
<i>Rpv3</i> ³⁶¹⁻²⁹⁹		UDV305		24.9				<i>V. rupestris</i> Ganzin	<i>V. rupestris</i>		
		UDV737		26.1							
<i>Rpv3</i> ²⁹⁹⁻³¹⁴		UDV305		24.9				<i>V. rupestris</i> Ganzin	<i>V. rupestris</i>	Di Gaspero et al. (2012)	Pedigree analysis
		UDV737		26.1							

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Rpv3 ^{mull-287}	<i>Plasmopara viticola</i>	UDV305 UDV737	18	24.9 26.1				'Bayard' (Couderc 28112)	<i>V. rupestris</i> or <i>V. labrusca</i>			
Rpv4	<i>Plasmopara viticola</i>	VMC7h3 VMCNg2e1	4	4.7 5.2	Regent	x Lemberger	153	Regent		Welter et al. (2007)		
Rpv5	<i>Plasmopara viticola</i>	VV1o52b	9	4.0	Cabernet Sauvignon	x Gloire de Montpellier	138	Gloire de Montpellier	<i>V. riparia</i>	Marguerit et al. (2009)		
Rpv6	<i>Plasmopara viticola</i>	VMC8G9	12	20.4	Cabernet Sauvignon	x Gloire de Montpellier	138		<i>V. riparia</i>	Marguerit et al. (2009)		
Rpv7	<i>Plasmopara viticola</i>	UDV-097	7	11.4	Chardonnay	x Bianca	116	Bianca		Bellin et al. (2009)		
Rpv8	<i>Plasmopara viticola</i>	Chr14V015	14	6.6	<i>V. amurensis</i> 'Ruprecht'	x <i>V. amurensis</i> 'Ruprecht'	232	<i>V. amurensis</i> 'Ruprecht'	<i>V. amurensis</i>	Blasi et al. (2011)		
Rpv9	<i>Plasmopara viticola</i>	CCoAOMT	7	16.6	Moscato Bianco	x <i>V. riparia</i>	174	Wr63	<i>V. riparia</i>	Moreira et al. (2011)	CCoAOMT is the candidate gene from which the marker IN0006 was derived	
Rpv10	<i>Plasmopara viticola</i>	GF09-46	9	3.7	Gf.Ga-52-42	x Solaris	256	Solaris	<i>V. amurensis</i>	Schwander et al. (2012)		
Rpv11	<i>Plasmopara viticola</i>	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. (2012)		
Rpv12	<i>Plasmopara viticola</i>	UDV-014	14	8.0	99-1-48	x Pinot noir	180	99-1-48	<i>V. amurensis</i>	Venuti et al. (2013)		
		UDV-304		9.3	Cabernet Sauvignon	x 20/3		20/3	<i>V. amurensis</i>			
		rgvvin180										
		UDV-370		10.1								
Rpv13	<i>Plasmopara viticola</i>	VMC1G3.2	12	10.0	Moscato Bianco	x <i>V. riparia</i>	174	Wr63	<i>V. riparia</i>	Moreira et al. (2011)		
Rpv14	<i>Plasmopara viticola</i>	GF05-13	5	20.2	Gf.V3125	x Börner	202	Börner	<i>V. cinerea</i>	Ochssner et al. (2016)		
Rpv15	<i>Plasmopara viticola</i>		18		<i>V. piasezkii</i> (DVIT2027)	x F2-35	94	<i>V. piasezkii</i> (DVIT2027)	<i>V. piasezkii</i>	Pap et al. (in preparation)		
Rpv16	<i>Plasmopara viticola</i>									Pap et al. (in preparation)		
Rpv17	<i>Plasmopara viticola</i>		8		<i>V. rupestris</i> B38	x Horizon	163	Horizon		Divilov et al. (in preparation)		
Rpv18	<i>Plasmopara viticola</i>		11		<i>V. rupestris</i> B38	x Horizon	163	Horizon		Divilov et al. (in preparation)		
Rpv19	<i>Plasmopara viticola</i>		14		<i>V. rupestris</i> B38	x Horizon	163	<i>V. rupestris</i> B38	<i>V. rupestris</i>	Divilov et al. (in preparation)		
Rpv20	<i>Plasmopara viticola</i>		6		Horizon	x <i>V. cinerea</i> B9	152	Horizon		Divilov et al. (in preparation)		
Rpv21	<i>Plasmopara viticola</i>		7		Horizon	x <i>V. cinerea</i> B9	152	Horizon		Divilov et al. (in preparation)		
Rpv22	<i>Plasmopara viticola</i>									Jiang et al. (in preparation)		
Rpv23	<i>Plasmopara viticola</i>									Jiang et al. (in preparation)		
Rpv24	<i>Plasmopara viticola</i>									Jiang et al. (in preparation)		
Rcg1	<i>Agrobacterium spec.</i>	UDV-015	15	7.1	Kunbarát	x Sárfehér	272	Kunbarát	<i>V. amurensis</i>	Kuczmozg et al. (2012)		
		9M3-3		9.3								
Rgb1	<i>Guignardia bidwellii</i>	GF14-42	14	26.7	V3125	x Börner	202	Börner		Rex et al. (2014)		
Rgb2	<i>Guignardia bidwellii</i>	VChr16c	16	15.3	V3125	x Börner	202	Börner		Rex et al. (2014)		
Ren1	<i>Erysiphe necator</i>	UDV-020	13		Nimrang	x Kishmish vatkana	310	Kishmish vatkana	<i>V. vinifera</i>	Hoffmann et al. (2008)		
		VMC9h4-2		18.4								
		VMCNg4e10.1		18.4								
Ren2	<i>Erysiphe necator</i>	CS25	14	26.9	Horizon	x Illinois 547-1	58	Illinois 547-1		Dalbo et al. (2001)		
Ren3	<i>Erysiphe necator</i>	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)
		GF15-42		9.3	Regent	x Lemberger		132	Regent			Zendler et al. (2017)
Ren4	<i>Erysiphe necator</i>	VMC7f2	18	26.9	C166-043	x F8909-08	42	C166-043	<i>V. romanetii</i>	Riaz et al. (2012)		
		SNPs		26.9	C87-41	x B70-57		57	C87-41		<i>V. romanetii</i>	Mahanil et al. (2012)

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Ren5	<i>Erysiphe necator</i>		14	4.8					<i>M. rotundifolia</i>	Blanc et al. (2012)			
Ren6	<i>Erysiphe necator</i>	PN9-057	9	8.6	F2-35	x <i>V. piasezkii</i> (DVIT2027)	277	<i>V. piasezkii</i> (DVIT2027)	<i>V. piasezkii</i>	Pap et al. (2016)			
		PN9-068		9.1									
Ren7	<i>Erysiphe necator</i>	VVIp17.1	19	0.2	F2-35	x <i>V. piasezkii</i> (DVIT2027)	277	<i>V. piasezkii</i> (DVIT2027)	<i>V. piasezkii</i>	Pap et al. (2016)			
		VMC9a2.1		0.9									
Ren8	<i>Erysiphe necator</i>		18		GF.GA-47-42	x Villard blanc	151			Zyprian et al. (2016)			
Ren9	<i>Erysiphe necator</i>	CenGen6	15	1.4	Regent	x Lemberger	153	Regent		Zendler et al. (2017)			
Ren10	<i>Erysiphe necator</i>	S2_17854965	2	79.0	MN1264	x MN1214	147	Seyval blanc		Teh et al. (2017)			
		Haploblock validation	2		MN1264	x MN1246	125						
Run1	<i>Erysiphe (Uncinula) necator</i>	VMC4f3.1	12	13.1	VRH3082-1-42	x Cabernet Sauvignon	161	VRH3082-1-42	<i>M. rotundifolia</i>	Barker et al. (2005)	powdery mildew resistance originating from <i>Muscaninia</i> should be named as		
	VMC8g9	20.4											
Run2.1	<i>Erysiphe (Uncinula) necator</i>	VMC7f2	18	26.9	JB81-107-11	x Chenin Blanc	97	Magnolia	<i>M. rotundifolia</i>	Riaz et al. (2011)	resistant tissue: Cane		
		VMCNg1e3		20.9									
		VVin16		23.4	JB81-107-11	x Tokay	47						
		VMC7f2		26.9									
		VMC7f2		26.9	A90-71	x Flame Seedless	80						Leaf, Cane, Rachis, Fruit
Run2.2	<i>Erysiphe (Uncinula) necator</i>	VMC7f2	18	26.9	e2-9	x Malaga Rosada	255	Trayshed	<i>M. rotundifolia</i>	Riaz et al. (2011)			
SdI	seed development inhibitor	SCC8	18	25.9	MTP2223-27	x MTP2121-30	139			Doligez et al. (2002)			
		VMC6f1.1		23.2	Dominga	x Autumn Seedless	118	Autumn Seedless		Cabezas et al. (2006)			
				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)			
		APT3		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)			
Vvgai1	GA insensitive dwarf mutant		1	4.9				Pinot Meunier		Boss & Thomas (2002)			
VvOMT3	Isobutyl-methoxyprazine (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	<i>Xiphinema index</i>	VMC5a10	19	20.9	<i>V. rupestris</i>	x <i>V. arizonica</i>	185		<i>V. arizonica</i>	Xu et al. (2008)			
		IN2R3b		20.9						Hwang et al. (2010)			
		M4F3R											
5-GT	anthocyanin 3,5-diglucosides		9	6.5	Regent	x Lemberger	153	Regent		Hausmann et al. (2009)			
										Janvary et al. (2009)			