

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

last update November, 22th 2012

For updating information please contact: reinhard.toepfer@jki.bund.de.

Symbol	Trait/Allele	Associated marker	Chromosome	Position on chromosome [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	18	26.9	Dominga	x Autumn Seedless	118			Cabezas et al. (2006)		
					Ruby Seedless	x Thompson Seedless	144			Mejia et al. (2007)		
<i>Mtc</i>	monoterpene content	DXS1	5	3.8	Italia	x Big Perlon	163		<i>V. vinifera</i>	Costantini et al. (2008)		
					Moscato Bianco	x <i>V. riparia</i>	174			Battilana et al. (2009)		
					Muscat Ottonel	x Muscat Ottonel	121			Duchene et al. (2009)		
<i>Lin</i>	Linalool content	cnd41	10	13.4	Gewürztraminer	x Gewürztraminer	115					
					Italia	x Big Perlon	163		<i>V. vinifera</i>	Battilana et al. (2009)		
					Moscato Bianco	x <i>V. riparia</i>	174					
<i>Ffb</i>	Fleshless berry	VMC2A3	18	10.8	Muscato Ottonel	x Muscat Ottonel	121			Duchene et al. (2009)		
					Chardonnay	x Ugni Blanc Mutant	71	Ugni Blanc	<i>V. vinifera</i>	Fernandez et al. (2006)		Mutant
									<i>V. vinifera</i>			
<i>MybA</i>	berry skin colour	VMCNg3h8	14	26.6	<i>V. rupestris</i>	x <i>V. arizonica</i>	181		<i>V. arizonica</i>	Riaz et al. (2006)		
										Riaz et al. (2008)		
<i>Pdr1</i>	Pierce's disease	VVIn64	14	26.1								
					UDV-095							
<i>Rdv1</i>	<i>Daktulosphaira vitifoliae</i>	Gf13_9	13	21.9	Gf.V3125	x Börner	188	Börner	<i>V. cinerea</i>	Zhang et al. (2009)		
		VMC8e6		22.5								
<i>Rpv1</i>	<i>Plasmopara viticola</i>	VMC72	12	10.3	Syrah	x 28-8-78		28-8-78	<i>M. rotundifolia</i>	Merdinoglu et al. (2003)		
		VV1b32										
			18		Cabernet Sauvignon	x 8624	129	8624	<i>M. rotundifolia</i>	Wiedemann-Merdinoglu et al. (2006)		
<i>Rpv2</i>	<i>Plasmopara viticola</i>									Bellin et al. (2010)		
			18		Regent	x Lemberger	153	Regent		Welter et al. (2007)		
				24.9	Chardonnay	x Bianca	116	Bianca		Bellin et al. (2009)		
<i>Rpv3</i>	<i>Plasmopara viticola</i>	VMC7f2		26.9								
			4	4.7	Regent	x Lemberger	153	Regent		Welter et al. (2007)		
				5.2								
<i>Rpv4</i>	<i>Plasmopara viticola</i>	VMC7h3	4	4.7	Regent	x Lemberger	153	Regent		Welter et al. (2007)		
		VMCNg2e1		5.2								
			9	4.0	Cabernet Sauvignon	x Gloire de Montpellier	138	Gloire de Montpellier	<i>V. riparia</i>	Marguerit et al. (2009)		
<i>Rpv5</i>	<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)		
			12	20.4	Cabernet Sauvignon	x Gloire de Montpellier	138		<i>V. riparia</i>	Marguerit et al. (2009)		
			7	11.4	Chardonnay	x Bianca	116	Bianca		Bellin et al. (2009)		
<i>Rpv6</i>	<i>Plasmopara viticola</i>	UDV-097	7	11.4	Chardonnay	x Bianca	116	Bianca		Bellin et al. (2009)		
			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)		
<i>Rpv7</i>	<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)		
			7	16.6	Moscato Bianco	x <i>V. riparia</i>	174	Wr63	<i>V. riparia</i>	Moreira et al. (2011)		
<i>Rpv8</i>	<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	
			9	3.7	Gf.Ga-52-42	x Solaris	256	Solaris	<i>V. amurensis</i>	Schwander et al. (2012)		
			5	4.5	Regent	x Lemberger	153	Regent		Fischer et al. (2004)		
<i>Rpv9</i>	<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)		
			5	4.5	Regent	x Lemberger	153	Regent		Fischer et al. (2004)		
					Chardonnay	x Bianca	116	Chardonnay		Bellin et al. (2009)		
<i>Rpv10</i>	<i>Plasmopara viticola</i>	CS1E104J11F			Chardonnay	x Bianca	116	Chardonnay		Bellin et al. (2009)		
				4.1	Gf.Ga-52-42	x Solaris	256	Solaris		Schwander et al. (2011)		
<i>Rpv11</i>	<i>Plasmopara viticola</i>	VCHR05C			Gf.Ga-52-42	x Solaris	256	Solaris		Schwander et al. (2011)		
<i>Rpv12</i>	<i>Plasmopara viticola</i>								<i>V. amurensis</i>	Di Gaspero et al., in preparation		
<i>Rpv13</i>	<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)		

Symbol	Trait/Allele	Associated marker	Chromosome	Position on chromosome [Mb]	Parent 1	Parent 2	Population size	Genotype of origin	Original species trait/allele derived from?	Reference	Comment
<i>Rcg1</i>	<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							
<i>Ren1</i>	<i>Erysiphe necator</i>	UDV-020	13		Nimrang	x Kishmish vatkana	310	Kishmish vatkana		Hoffmann et al. (2008)	
		VMC9h4-2		18.4							
		VMCNg4e10.1		18.4							
<i>Ren2</i>	<i>Erysiphe necator</i>	CS25	14	26.9	Horizon	x Illinois 547-1	58	Illinois 547-1		Dalbo et al. (2001)	
<i>Ren3</i>	<i>Erysiphe necator</i>	UDV-015b	15	7.1	Regent	x Lemberger	153	Regent		Welter et al. (2007)	
		VViv67		10.9							
<i>Ren4</i>	<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)	
<i>Ren5</i>	<i>Erysiphe necator</i>		14	4.8					<i>M. rotundifolia</i>	Blanc et al. (2012)	
<i>Run1</i>	<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 <i>Run...</i>
		VMC8g9		20.4							
<i>Run2.1</i>	<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							Rachis
		VVin16		23.4	JB81-107-11	x Tokay	47				Rachis
		VMC7f2		26.9							Fruit
		VMC7f2		26.9	A90-71	x Flame Seedless	80				Leaf, Cane, Rachis, Fruit
<i>Run2.2</i>	<i>Erysiphe (Uncinula) necator</i>	VMC7f2	18	26.9	e2-9	x Malaga Rosada	255	Trayshed	<i>M. rotundifolia</i>	Riaz et al. (2011)	
<i>Sdl</i>	seed development inhibitor	SCC8	18	25.9	MTP2223-27	x MTP2121-30	139			Doligez et al. (2002)	
		VMC6f11		23.2	Dominga	x Autumn Seedless	118	Autumn Seedless		Cabezas et al. (2006)	
	seedlessness	VMC7f2		26.9	Dominga	x Autumn Seedless	118				
					Italia	x Big Perlon	163	Big Perlon		Costantini et al. (2008)	
<i>Sex</i>	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)	
		APT		5.0	V3125	x Börner	202			Fechter et al. (2012)	
<i>Ufgt</i>		UFGT	16	2.3	Regent	x Lemberger	153			Fischer et al. (2004)	
<i>Ver</i>	véraison	VMC1E11	16	13.7	Regent	x Lemberger	153	Regent		Fischer et al. (2004)	For véraison (begin of ripening) several QTLs are published. The locus on LG 16 is the only one which was found in two independent mapping populations.
					Italia	x Big Perlon	163			Costantini et al. (2008)	
<i>Vygail</i>	GA insensitive dwarf mutant		1	4.9				Pinot Meunier		Boss & Thomas (2002)	
<i>Xir1</i>	<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	19	20.9	<i>V. rupestris</i>	x <i>V. arizonica</i>	185		<i>V. arizonica</i>	Hwang et al. (2010)	
		M4F3R									
<i>5-gt</i>	anthocyanin 3,5-diglucosides	Gf09_01	9	6.5	Regent	x Lemberger	153	Regent		Hausmann et al. (2009)	