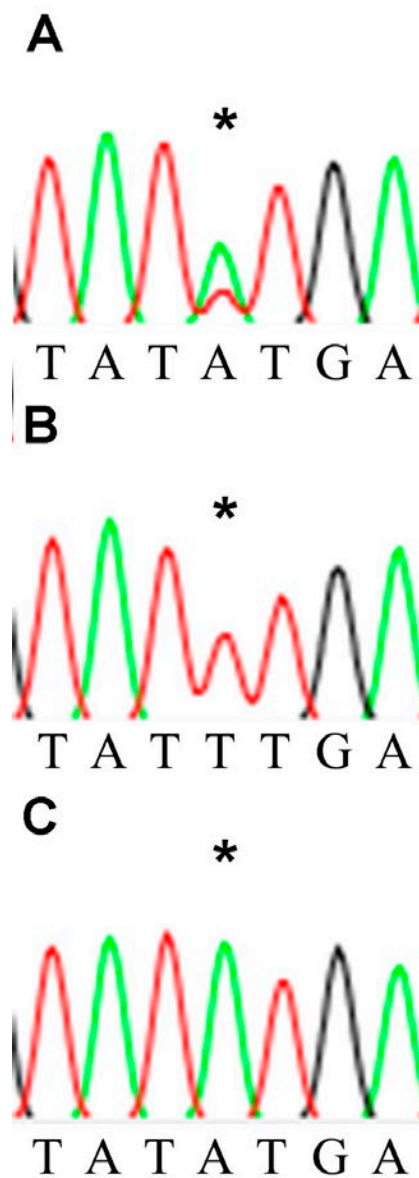
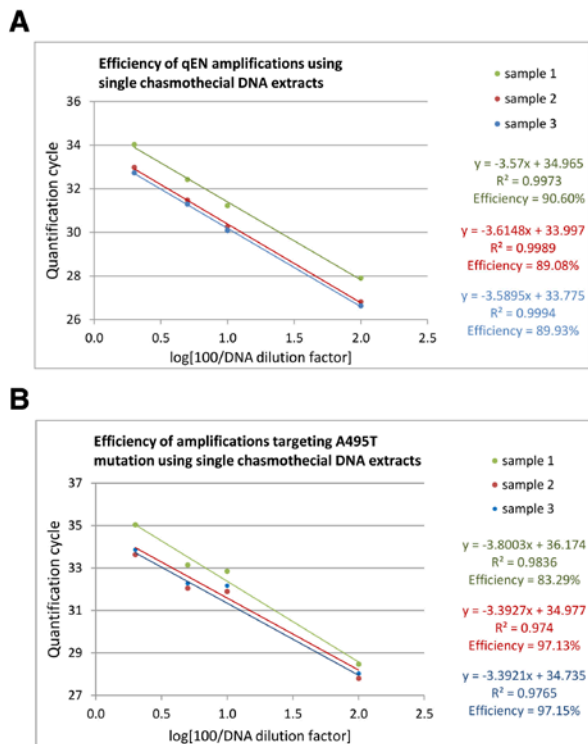


Supplementary Figure S1. Results of β -tubulin (*TUB2*) amplifications with different master mix solutions. Lanes 1 to 7, *Red Taq* 2 \times DNA Polymerase Master Mix; lanes 8 to 14, *DreamTaq* Green PCR Master Mix (2X); lanes 15 to 21, *Phusion* Green Hot Start II High-Fidelity PCR Master Mix; lanes 6, 13 and 20, positive control reactions; lanes 7, 14 and 21, negative control reactions; lane M, DNA marker (GeneRuler DNA Ladder Mix; Thermo Fisher Scientific). Lanes 1-5, 8-12 and 15-16 each represent the same samples amplified with different master mix solutions.



Supplementary Figure S2. Electropherogram of the *Erysiphe necator* eburicol 14 α -demethylase gene (*CYP51*) nucleotide sequence showing different genotypes at position 495. Arrows mark the polymorphic position **A**, double peak, **B**, mutant type, and **C**, wild-type.



Supplementary Figure S3. Standard curve-based efficiency estimations of the adapted qPCR method using individual chasmothecium DNA extracts. The A and B panels both show three standard curves obtained using three independent samples depicted with different colours. The curves were calculated from Cq values of samples amplified with the described method using undiluted, or 10-, 20- or 50-fold diluted DNA. The upper panel shows standard curves of qEN amplification; the lower panel shows standard curves of reactions targeting A495T. Regression equations, regression coefficients and the calculated efficiencies are included next to graphs.

ROC curve

Variable	mean
Classification variable	diagnosis
Sample size	186
Positive group :	diagnosis = 1
Negative group :	diagnosis = 0
Disease prevalence (%)	25.3
Area under the ROC curve (AUC)	0.928
Standard Error ^a	0.0299
95% Confidence interval ^b	0.881 to 0.961
z statistic	14.328
Significance level P (Area=0.5)	<0.0001

^a DeLong et al., 1988
^b Binomial exact

Criterion values and coordinates of the ROC curve [Hide]

Criterion	Sensitivity	Specificity	+LR	-LR	+PV	-PV
< 22.61	0,00	100,00		1,00		74,7
<= 28,24	21,28	100,00		0,79	100,0	79,0
<= 28,28	21,28	99,28	29,57	0,79	90,9	78,9
<= 28,67	36,17	99,28	50,28	0,64	94,4	82,1
<= 28,79	36,17	98,56	25,14	0,65	89,5	82,0
<= 29,04	42,55	98,56	29,57	0,58	90,9	83,5
<= 29,08	42,55	97,84	19,72	0,59	87,0	83,4
<= 29,23	53,19	97,84	24,65	0,48	89,3	86,1
<= 29,27	53,19	97,12	18,48	0,48	86,2	86,0
<= 29,41	63,83	97,12	22,18	0,37	88,2	88,8
<= 29,45	63,83	96,40	17,74	0,38	85,7	88,7
<= 29,54	68,09	96,40	18,93	0,33	86,5	89,9
<= 29,56	68,09	95,68	15,77	0,33	84,2	89,9
<= 29,75	74,47	95,68	17,25	0,27	85,4	91,7
<= 29,89	74,47	94,96	14,79	0,27	83,3	91,7
<= 29,91	76,60	94,96	15,21	0,25	83,7	92,3
<= 30,06	76,60	93,53	11,83	0,25	80,0	92,2
<= 30,08	78,72	93,53	12,16	0,23	80,4	92,9
<= 30,15	78,72	92,09	9,95	0,23	77,1	92,8
<= 30,26	80,85	92,09	10,22	0,21	77,6	93,4
<= 30,3	80,85	91,37	9,37	0,21	76,0	93,4
<= 30,49	87,23	91,37	10,10	0,14	77,4	95,5
<= 30,77	87,23	89,93	8,66	0,14	74,5	95,4
<= 30,96	89,36	89,93	8,87	0,12	75,0	96,2
<= 30,98	89,36	89,21	8,28	0,12	73,7	96,1
<= 31,23	93,62	89,21	8,68	0,072	74,6	97,6
<= 31,26	93,62	88,49	8,13	0,072	73,3	97,6
<= 31,3 *	95,74	87,77	7,83	0,048	72,6	98,4
<= 36,89	95,74	5,76	1,02	0,74	25,6	80,0
<= 36,94	97,87	5,76	1,04	0,37	26,0	88,9
<= 37,67	97,87	0,00	0,98		24,9	0,0
<= 37,95	100,00	0,00	1,00		25,3	

* Criterion corresponding with highest Youden index

Supplementary Figure S4. Outputs of MedCalc receiver operating characteristic (ROC) plot analysis showing details of the cut-off determination calculation.

Supplementary Table S1. Designations, places (wine regions) and dates of collection of *Erysiphe necator* samples. Nucleotides at polymorphic sites of *TUB2* and *CYP51*, Cq values and diagnosis based on the results of qPCR are provided. Colour of the chasmothecia are included, indicating their states of maturation (black: mature; yellow or brown: immature). Ratio of mutant allele based on qPCR measurements is provided where available.

Sample designation	Date of collection	Wine region	Color of the chasmothecium	<i>TUB2</i> position no. 79	<i>CYP51</i> position no. 495	Cq	Diagnosis based on qPCR	Ratio of mutant allele
E2K7A-1	October 2017	Eger	black	C	A	35.15	wild type	
E2K7A-2	October 2017	Eger	black	C	A	35.35	wild type	
E2K7A-3	October 2017	Eger	black	C	A	35.32	wild type	
E2K7A-4	October 2017	Eger	black	C	A	33.83	wild type	
E2K7A-5	October 2017	Eger	black	C/T	A	35.58	wild type	
E2K7A-6	October 2017	Eger	black	C	A	35.30	wild type	
E2K7A-7	October 2017	Eger	black	C	A	35.82	wild type	
E2K7A-8	October 2017	Eger	black	C	A	35.10	wild type	
E3S14B-1	October 2017	Eger	black	C	A	34.93	wild type	
E3S14B-2	October 2017	Eger	black	C	A/T	30.96	mutant	
E3S14B-3	October 2017	Eger	black	N	A	36.22	wild type	
E3S14B-4	October 2017	Eger	black	C	A	34.30	wild type	
E3S14B-5	October 2017	Eger	black	N	A	34.58	wild type	
E3S14B-6	October 2017	Eger	black	N	A	32.61	wild type	
E3S14B-7	October 2017	Eger	black	C	A	34.62	wild type	
E3S14B-8	October 2017	Eger	black	C	A	33.45	wild type	
E3S3B-65	October 2017	Eger	black	C	A/T	28.41	mutant	
E3S3B-66	October 2017	Eger	black	C	A/T	28.40	mutant	
E3S3B-67	October 2017	Eger	black	C/T	A	36.31	wild type	
E3S3B-68	October 2017	Eger	black	C/T	A	35.22	wild type	
E3S3B-69	October 2017	Eger	yellow	C	A	29.27	mutant	15%
E3S3B-70	October 2017	Eger	yellow	C	A/T	29.12	mutant	
E3S3B-71	October 2017	Eger	yellow	C/T	A	35.81	wild type	
E3S3B-72	October 2017	Eger	yellow	C/T	A	35.17	wild type	
E3S3B-73	October 2017	Eger	brown	C/T	A	34.98	wild type	
E3S3B-74	October 2017	Eger	brown	C/T	A	34.71	wild type	
E3S3B-75	October 2017	Eger	brown	C/T	A	36.59	wild type	
E3S3B-76	October 2017	Eger	brown	C/T	A	36.59	wild type	
E3S4B-1	October 2017	Eger	black	C	A	31.99	wild type	
E3S4B-2	October 2017	Eger	black	C	A	31.26	mutant	18%
E3S4B-3	October 2017	Eger	black	N	A	33.76	wild type	
E3S4B-4	October 2017	Eger	black	C	A	31.75	wild type	
E3S4B-5	October 2017	Eger	black	C	A	34.51	wild type	
E3S4B-6	October 2017	Eger	black	C	A	35.37	wild type	
E3S4B-7	October 2017	Eger	black	C	A	36.18	wild type	
E3S4B-8	October 2017	Eger	black	C	A	37.45	wild type	
EC46B-1	October 2017	Eger	black	C	A	34.49	wild type	
EC46B-2	October 2017	Eger	black	C	A	35.66	wild type	
EC46B-3	October 2017	Eger	black	C	A	35.22	wild type	
EC46B-4	October 2017	Eger	black	C	A	35.08	wild type	
EC46B-5	October 2017	Eger	black	C	A	36.89	wild type	
EC46B-6	October 2017	Eger	black	C	A	35.23	wild type	
EC46B-7	October 2017	Eger	black	C	A	34.43	wild type	
EC46B-8	October 2017	Eger	black	C	A	34.73	wild type	
EK36B-1	October 2017	Eger	black	C	A	35.60	wild type	

(Continued)

Supplementary Table S1. (Continued).

Sample designation	Date of collection	Wine region	Color of the chasmothecium	<i>TUB2</i> position no. 79	<i>CYP51</i> position no. 495	Cq	Diagnosis based on qPCR	Ratio of mutant allele
EK36B-2	October 2017	Eger	black	C	A	36.97	wild type	
EK36B-3	October 2017	Eger	black	C	A	30.06	mutant	37%
EK36B-4	October 2017	Eger	black	C	A	36.81	wild type	
EK36B-5	October 2017	Eger	black	C	A	35.63	wild type	
EK36B-6	October 2017	Eger	black	C/T	A	32.34	wild type	
EK36B-7	October 2017	Eger	black	C	A	36.37	wild type	
EK36B-8	October 2017	Eger	black	C	A	35.87	wild type	
EL42B-17	October 2017	Eger	black	C	A	34.34	wild type	
EL42B-18	October 2017	Eger	black	C	A	35.82	wild type	
EL42B-19	October 2017	Eger	black	C	A	36.64	wild type	
EL42B-20	October 2017	Eger	black	C	A	32.62	wild type	
EL42B-21	October 2017	Eger	black	C	A	35.30	wild type	
EL42B-22	October 2017	Eger	black	C/T	A	29.08	mutant	12%
EL42B-23	October 2017	Eger	black	C	A	35.39	wild type	
EL42B-24	October 2017	Eger	black	C	A	35.42	wild type	
EL48B-21	October 2017	Eger	black	C	A	35.27	wild type	
EL48B-25	October 2017	Eger	black	C	A	35.25	wild type	
EL48B-26	October 2017	Eger	black	C	A	34.56	wild type	
EL48B-27	October 2017	Eger	black	C	A	35.58	wild type	
EL48B-28	October 2017	Eger	black	C	A	35.03	wild type	
EL48B-29	October 2017	Eger	black	C	A	36.19	wild type	
EL48B-30	October 2017	Eger	black	C/T	A/T	29.91	mutant	
M1F1A-1	November 2017	Tokaj	black	C	A	36.98	wild type	
M1F1A-2	November 2017	Tokaj	black	N	A	35.57	wild type	
M1F1A-3	November 2017	Tokaj	black	C	A	36.57	wild type	
M1F1A-4	November 2017	Tokaj	black	C	A	30.98	mutant	24%
M1F1A-5	November 2017	Tokaj	black	C	A	36.79	wild type	
M1F1A-6	November 2017	Tokaj	black	C	A	37.01	wild type	
M1F1A-8	November 2017	Tokaj	black	N	A	35.83	wild type	
M2F16B-33	November 2017	Tokaj	black	C	A	35.58	wild type	
M2F16B-34	November 2017	Tokaj	black	C	A	34.84	wild type	
M2F16B-35	November 2017	Tokaj	black	C	A	35.09	wild type	
M2F16B-36	November 2017	Tokaj	black	C	A	35.48	wild type	
M2F16B-37	November 2017	Tokaj	black	C	A	35.30	wild type	
M2F16B-38	November 2017	Tokaj	black	C	A	35.31	wild type	
M2F16B-39	November 2017	Tokaj	black	C	A	35.45	wild type	
M2F16B-40	November 2017	Tokaj	black	C	A	34.82	wild type	
M3F25B-77	November 2017	Tokaj	black	C	A	37.67	wild type	
M3F25B-78	November 2017	Tokaj	black	C	A	37.38	wild type	
M3F25B-79	November 2017	Tokaj	black	C	A	36.00	negative	
M3F25B-80	November 2017	Tokaj	black	C	A	35.80	wild type	
M3F25B-81	November 2017	Tokaj	black	C/T	A	35.47	wild type	
M3F25B-82	November 2017	Tokaj	black	C	A	36.46	wild type	
M3F25B-83	November 2017	Tokaj	black	C	A	36.01	wild type	
M3F25B-84	November 2017	Tokaj	black	C	A	34.80	wild type	
M3F25B-85	November 2017	Tokaj	yellow	C	A	37.13	wild type	
M3F25B-86	November 2017	Tokaj	yellow	C	A	36.82	wild type	
M3F25B-87	November 2017	Tokaj	yellow	C	A	36.80	wild type	

(Continued)

Supplementary Table S1. (Continued).

Sample designation	Date of collection	Wine region	Color of the chasmothecium	<i>TUB2</i> position no. 79	<i>CYP51</i> position no. 495	Cq	Diagnosis based on qPCR	Ratio of mutant allele
M3F25B-88	November 2017	Tokaj	yellow	C	A	35.98	wild type	
M3F25B-89	November 2017	Tokaj	brown	C	A	31.30	mutant	7%
M3F25B-90	November 2017	Tokaj	brown	C/T	A	35.47	wild type	
M3F25B-91	November 2017	Tokaj	brown	C	A	35.78	wild type	
M3F8B-41	November 2017	Tokaj	black	C/T	A	36.35	wild type	
M3F8B-42	November 2017	Tokaj	black	C	A	34.76	wild type	
M3F8B-43	November 2017	Tokaj	black	C/T	A	34.35	wild type	
M3F8B-44	November 2017	Tokaj	black	C	A	34.24	wild type	
M3F8B-45	November 2017	Tokaj	black	C	A	33.91	wild type	
M3F8B-46	November 2017	Tokaj	black	C	A	34.27	wild type	
M3F8B-47	November 2017	Tokaj	black	C	A	30.15	mutant	14%
M3F8B-48	November 2017	Tokaj	black	C	A	34.39	wild type	
M3F8B-49	November 2017	Tokaj	yellow	C	A/T	36.94	wild type	
M3F8B-50	November 2017	Tokaj	yellow	C/T	A	32.02	wild type	
M3F8B-51	November 2017	Tokaj	yellow	C	A	34.07	wild type	
M3F8B-52	November 2017	Tokaj	yellow	C	A	32.30	wild type	
M3F8B-53	November 2017	Tokaj	yellow	C	A	35.46	wild type	
M3F8B-54	November 2017	Tokaj	yellow	C	A	29.93	mutant	8%
M3F8B-55	November 2017	Tokaj	yellow	N	A	28.79	mutant	23%
M3F8B-56	November 2017	Tokaj	yellow	C	A	36.48	wild type	
M3F8B-57	November 2017	Tokaj	brown	C	A	34.10	wild type	
M3F8B-58	November 2017	Tokaj	brown	C	A	33.80	wild type	
M3F8B-59	November 2017	Tokaj	brown	C	A	34.79	wild type	
M3F8B-60	November 2017	Tokaj	brown	C	A	35.47	wild type	
M3F8B-61	November 2017	Tokaj	brown	C	A	33.93	wild type	
M3F8B-62	November 2017	Tokaj	brown	C	A	30.297	mutant	8%
M3F8B-63	November 2017	Tokaj	brown	C	A	32.73	wild type	
N1C27B-1	November 2017	Neszmély	black	C	T	29.75	mutant	
N1C27B-2	November 2017	Neszmély	black	C	A/T	29.18	mutant	
N1C27B-3	November 2017	Neszmély	black	C	A/T	31.23	mutant	
N1C27B-4	November 2017	Neszmély	black	C	A	34.46	wild type	
N1C27B-5	November 2017	Neszmély	black	C	A/T	31.21	mutant	
N1C27B-6	November 2017	Neszmély	black	C	A/T	31.303	wild type	74%
N1C27B-7	November 2017	Neszmély	black	C	A/T	28.67	mutant	
N1C27B-8	November 2017	Neszmély	black	C	A/T	28.62	mutant	
N1T26C-1	November 2017	Neszmély	black	C	A/T	29.04	mutant	
N1T26C-2	November 2017	Neszmély	black	C	A/T	30.08	mutant	
N1T26C-3	November 2017	Neszmély	black	C	A/T	30.49	mutant	
N1T26C-4	November 2017	Neszmély	black	C/T	A/T	29.63	mutant	
N1T26C-5	November 2017	Neszmély	black	C	A	30.77	mutant	27%
N1T26C-6	November 2017	Neszmély	black	C	A/T	29.03	mutant	
N1T26C-7	November 2017	Neszmély	black	C	T	28.80	mutant	
N1T26C-8	November 2017	Neszmély	black	C	A/T	29.14	mutant	
N2C1A-2	November 2017	Neszmély	black	C	A/T	28.24	mutant	
N2C1A-3	November 2017	Neszmély	black	C	A	30.60	mutant	32%
N2C1A-4	November 2017	Neszmély	black	C	A	29.89	mutant	19%
N2C1A-5	November 2017	Neszmély	black	C	T	29.41	mutant	
N2C1A-6	November 2017	Neszmély	black	N	A	29.45	mutant	29%

(Continued)

Supplementary Table S1. (Continued).

Sample designation	Date of collection	Wine region	Color of the chasmothecium	<i>TUB2</i> position no. 79	<i>CYP51</i> position no. 495	Cq	Diagnosis based on qPCR	Ratio of mutant allele
N2C1A-7	November 2017	Neszmély	black	C	T	29.23	mutant	
N2C21C-51	November 2017	Neszmély	black	C	T	30.26	mutant	
N2C21C-52	November 2017	Neszmély	black	C	T	22.61	mutant	
N2C21C-53	November 2017	Neszmély	black	C	A/T	28.14	mutant	
N2C21C-54	November 2017	Neszmély	black	C	T	28.49	mutant	
N3T32B-1	November 2017	Neszmély	black	C	A/T	27.58	mutant	
N3T32B-2	November 2017	Neszmély	black	C	A	34.67	wild type	
N3T32B-3	November 2017	Neszmély	black	C	A/T	29.31	mutant	
N3T32B-4	November 2017	Neszmély	black	C/T	A/T	26.50	mutant	
N3T32B-5	November 2017	Neszmély	black	C	A/T	29.13	mutant	
N3T32B-6	November 2017	Neszmély	black	C/T	A	29.56	mutant	54%
N3T32B-7	November 2017	Neszmély	black	C	A/T	27.60	mutant	
N3T32B-8	November 2017	Neszmély	black	C	A/T	37.95	wild type	19%
N3T9B-1	November 2017	Neszmély	black	C	A/T	29.54	mutant	
N3T9B-2	November 2017	Neszmély	black	C	A/T	28.32	mutant	
N3T9B-3	November 2017	Neszmély	black	C	A/T	28.16	mutant	
N3T9B-4	November 2017	Neszmély	black	C	A/T	30.33	mutant	
N3T9B-5	November 2017	Neszmély	black	C	A/T	29.36	mutant	
N3T9B-6	November 2017	Neszmély	black	C	A/T	30.46	mutant	
N3T9B-7	November 2017	Neszmély	black	C	A/T	29.40	mutant	
N3T9B-8	November 2017	Neszmély	black	C	A/T	29.61	mutant	
SO4B-1	November 2017	Bükk	black	C	A/T	28.48	mutant	
SO4B-2	November 2017	Bükk	black	C/T	A	37.12	wild type	
SO4B-3	November 2017	Bükk	black	T	A/T	28.01	mutant	
SO4B-4	November 2017	Bükk	black	C/T	A	33.83	wild type	
SO4B-5	November 2017	Bükk	black	N	A/T	29.39	mutant	
SO4B-6	November 2017	Bükk	black	C	A/T	27.84	mutant	
SO4B-7	November 2017	Bükk	black	C	A/T	27.80	mutant	
SO4B-8	November 2017	Bükk	black	T	A	34.32	wild type	
SO6B-1	November 2017	Bükk	black	C/T	A	33.94	wild type	
SO6B-10	November 2017	Bükk	yellow	C/T	T	29.49	mutant	
SO6B-11	November 2017	Bükk	yellow	C	A	28.28	mutant	13%
SO6B-12	November 2017	Bükk	yellow	C	A	34.74	wild type	
SO6B-13	November 2017	Bükk	brown	C/T	A	30.11	mutant	8%
SO6B-14	November 2017	Bükk	brown	C	A	32.11	wild type	
SO6B-15	November 2017	Bükk	brown	C/T	A	33.35	wild type	
SO6B-16	November 2017	Bükk	brown	C	A	36.80	wild type	
SO6B-2	November 2017	Bükk	black	C	A	35.56	wild type	
SO6B-3	November 2017	Bükk	black	C	A	35.56	wild type	
SO6B-4	November 2017	Bükk	black	C	A	33.67	wild type	
SO6B-5	November 2017	Bükk	black	C/T	A	33.80	wild type	
SO6B-6	November 2017	Bükk	black	C	A	36.28	wild type	
SO6B-7	November 2017	Bükk	black	C	A	35.57	wild type	
SO6B-8	November 2017	Bükk	black	C	A	35.49	wild type	
SO6B-9	November 2017	Bükk	yellow	C	A	36.05	wild type	