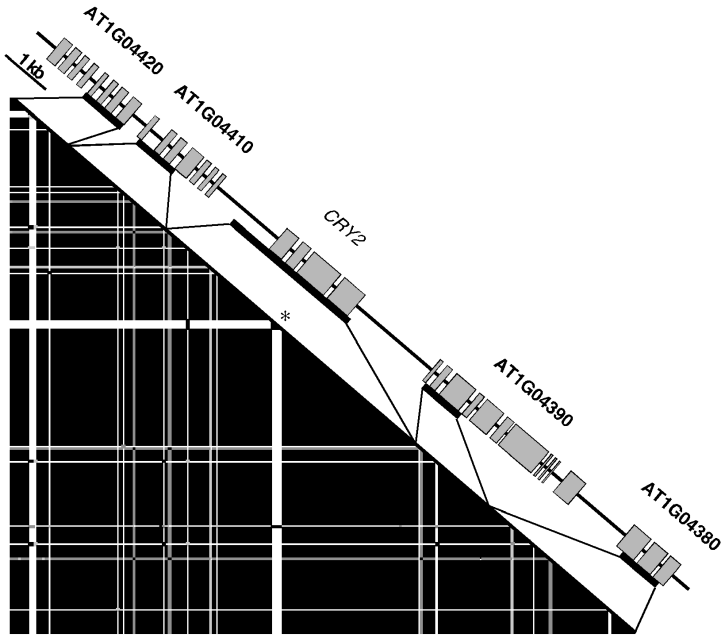
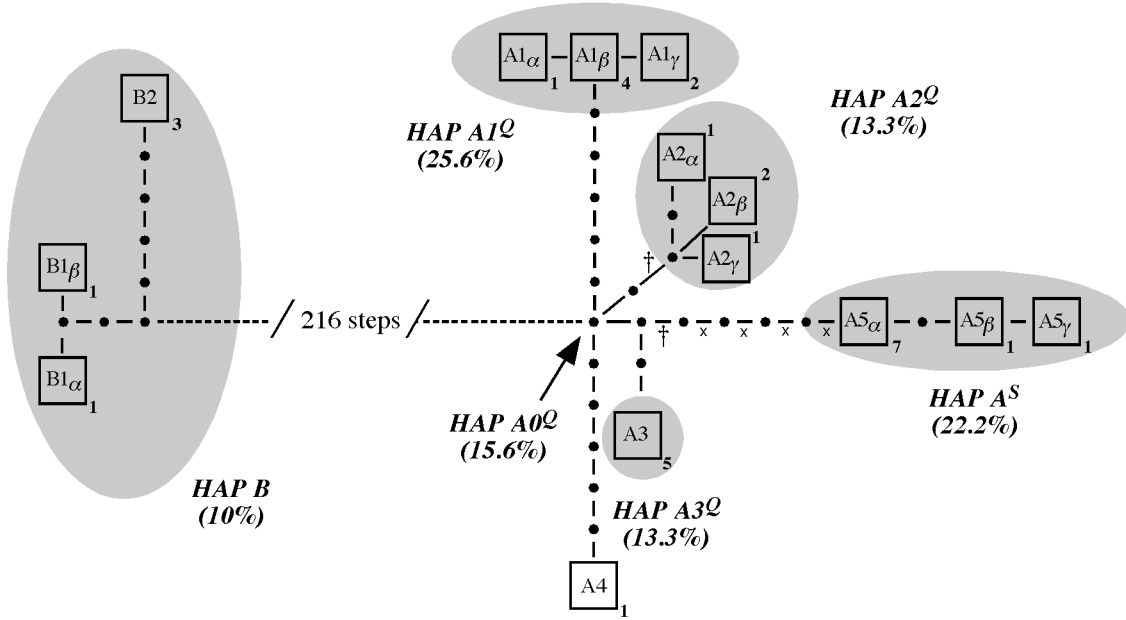


## SUPPLEMENTAL DATA

**Figure S1.** Linkage disequilibrium across the *CRY2* genomic region. Statistical significance of pairwise Fisher's exact tests of  $r^2$  among all parsimony-informative SNPs is indicated as follows:  $P < 0.0001$  (black),  $P < 0.05$  (gray),  $P > 0.05$  (white). The asterisk indicates 4 consecutive nucleotide sites associated with the *CRY2* Q/S amino acid polymorphism at codon 127.

**Figure S2.** Alternative, equally parsimonious arrangement of the *CRY2*-region haplotype tree shown in Figure 3. Haplotype designations and other symbols follow Figure 3 in the main text.





Supplemental Data, Table S1. *Arabidopsis thaliana* ecotypes used in *CRY2* analyses. Accessions marked with asterisks were sequenced at *CRY2* and portions of six flanking loci. Accessions other than those in italic text belong to a single, unstratified population based on a Bayesian analysis (PRITCHARD *et al.* 2000) using 79 AFLP loci (SHARBEL *et al.* 2000). Daggers indicate sequenced accessions for which AFLP data were not available; these accessions were not included in phenotypic association tests.

ABRC Accession	Name	Origin	SNP	DNA
			haplotype	Sequence Haplotype
*CS20	Ler-0	Landsberg an der Warthe, Poland	A <sup>S</sup>	A5 <sub>□</sub>
†*CS902	<i>Cvi-0</i>	<i>Cape Verde Islands</i>	A4	A4
*CS910	Di-G	Dijon, France	A <sup>S</sup>	A5 <sub>□</sub>
CS913	RLD1	Rshew, Russia	B	
*CS917	Da, 1-12	Czechoslovakia	A <sup>S</sup>	A5 <sub>□</sub>
CS924	Je54	Czechoslovakia	A <sup>S</sup>	
CS931	Sorbo	Tadzhikistan	B	
†*CS1008	<i>Bu-2</i>	<i>Burghaun/Rhon, Germany</i>	A1 <sup>Q</sup>	A1 <sub>□</sub>
†*CS1074	<i>Chi-1</i>	<i>Chisdra, Russia</i>	B	B2
†*CS1202	<i>Gr-3</i>	<i>Graz, Austria</i>	A3 <sup>Q</sup>	A3
†*CS1316	<i>Li-3</i>	<i>Limburg, Germany</i>	A3 <sup>Q</sup>	A3
CS1352	Lu-1	Lund, Sweden	A2 <sup>Q</sup>	
CS1364	Me-0	Mechtshausen/Hessen, Germany	A1 <sup>Q</sup>	
CS1540	Su-0	Southport, UK	A3 <sup>Q</sup>	
CS1602	Ws-0	Wassilewskija, Russia	A <sup>S</sup>	
†*CS6042	<i>PHW-1</i>	<i>Corsecalla, Italy</i>	B	B1 <sub>□</sub>
†*CS6092	<i>PHW-33</i>	<i>Lisse, Netherlands</i>	A2 <sup>Q</sup>	A2 <sub>□</sub>
†*CS6098	<i>PHW-36</i>	<i>Bretagny Sur Orge, France</i>	A1 <sup>Q</sup>	A1 <sub>□</sub>
CS6173 <sup>a</sup>	⊞st	Germany	A1 <sup>Q</sup> /A <sup>S</sup>	

†*CS6175	<i>Kondara</i>	<i>Kondara, Tadzhikistan</i>	<i>B</i>	<i>B2</i>
CS6176	En-T□	Acad. Sci., Tadzhikistan	<i>A3<sup>Q</sup></i>	
CS6178	Hodja-Obi-Garm	Tadzhikistan	<i>B</i>	
*CS6180	Shahdara	Pamiro-Alaya, Tadzhikistan	<i>B</i>	<i>B2</i>
CS6182	Wei-0	Weiningen, Switzerland	<i>A<sup>S</sup></i>	
CS6600	Aa-0	Aua/Rhon, Germany	<i>A1<sup>Q</sup></i>	
CS6602	Ak-1	Achkarren/Freiburg, Germany	<i>A0<sup>Q</sup></i>	
CS6604	An-2	Antwerpen, Belgium	<i>A0<sup>Q</sup></i>	
CS6609	Bch-1	Buchen/Lauenburg, Germany	<i>A3<sup>Q</sup></i>	
CS6615	Bl-1	Bologna, Italy	<i>A1<sup>Q</sup></i>	
CS6616	Bla-1	Blanes/Gerona, Spain	<i>A1<sup>Q</sup></i>	
*CS6622	Bla-10□	Blanes/Gerona, Spain	<i>A1<sup>Q</sup></i>	<i>A1□</i>
CS6626	Br-0□	Brunn, Brno, Czechoslovakia	<i>A1<sup>Q</sup></i>	
CS6627	Bs-1	Basel, Switzerland	<i>A2<sup>Q</sup></i>	
*CS6630	Bsch-0	Buchschlag/FFM, Germany	<i>A2<sup>Q</sup></i>	<i>A2□</i>
*CS6632	Bu-0	Burghaun/Rhon, Germany	<i>A<sup>S</sup></i>	<i>A5□</i>
CS6658	Ca-0	Camberg/Taunus, Germany	<i>A0<sup>Q</sup></i>	
CS6659	Cal-0	Calver, UK	<i>A0<sup>Q</sup></i>	
CS6665	Chi-1	Chisdra, Russia	<i>B</i>	
*CS6669	Co-1	Coimbra, Portugal	<i>B</i>	<i>B1□</i>
CS6674	Ct-1	Catania, Italy	<i>?<sup>b</sup></i>	
CS6678	Db-1	Tenne/Ts., Germany	<i>A<sup>S</sup></i>	
CS6680	<i>Di-0</i>	<i>Dijon, France</i>	<i>A<sup>S</sup></i>	
CS6681	Di-1	Dijon, France	<i>A0<sup>Q</sup></i>	
CS6683	Do-0	Donsbach/Westerw., Germany	<i>A2<sup>Q</sup></i>	
CS6684	Dr-0	Dresden, Germany	<i>A1<sup>Q</sup></i>	
CS6688	Edi-0	Edinburgh, UK	<i>A3<sup>Q</sup></i>	

CS6693	Eil-0	Eilenburg, Germany	A2 <sup>Q</sup>	
*CS6694	EI-0	Ellershausen, Germany	A1 <sup>Q</sup>	A1 <sub>□</sub>
CS6695	En-1	Enkheim/Frankfurt, Germany	A1 <sup>Q</sup>	
*CS6703	Fe-1	Freiburg, Germany	A2 <sup>Q</sup>	A2 <sub>□</sub>
CS6704	Fi-0	Frickhofen, Germany	A3 <sup>Q</sup>	
CS6714	Ga-0	Gabelstein, Germany	A0 <sup>Q</sup>	
CS6716	Gd-1	Gudow, Germany	? <sup>b</sup>	
CS6720	Gie-0	Gieben, Germany	A2 <sup>Q</sup>	
CS6732	Gy-0	La Miniere, France	A1 <sup>Q</sup>	
CS6733	Ha-0	Hannover, Germany	B	
*CS6739	Hn-0	Hennetalsperre, Germany	A1 <sup>Q</sup>	A1 <sub>□</sub>
CS6745	Jl-3	Vranov u Brno, Czech Repub.	A <sup>S</sup>	
CS6748	Jm-0	Jamolice, Czechoslovakia	A <sup>S</sup>	
CS6751	Kas-1	Kashmir, India	B	
CS6752	Ka-0	Karnten, Austria	A1 <sup>Q</sup>	
CS6753	Kb-0	Kronberg/Taunus, Germany	A2 <sup>Q</sup>	
CS6754	Kil-0	Killean, UK	A0 <sup>Q</sup>	
CS6756	Kl-0	Koeln, Germany	A0 <sup>Q</sup>	
CS6761	Kl-5	Koeln, Germany	A2 <sup>Q</sup>	
*CS6764	Kr-0	Krefeld, Germany	A1 <sup>Q</sup>	A1 <sub>□</sub>
CS6766	Kro-0	Krotzenburg, Germany	A3 <sup>Q</sup>	
CS6768	Lan-0	Lanark, UK	A1 <sup>Q</sup>	
CS6769	Lc-0	Loch Ness, UK	? <sup>b</sup>	
*CS6770	Le-0	Leiden, Netherlands	A <sup>S</sup>	A5 <sub>□</sub>
CS6775	Li-5	Limburg, Germany	A1 <sup>Q</sup>	
*CS6780	Lip-0	Lipowiec/Chrzanow, Poland	A <sup>S</sup>	A5 <sub>□</sub>
CS6781	Ll-0	Llagostera, Spain	A1 <sup>Q</sup>	

CS6784	Lm-2	Le Mans, France	A0 <sup>Q</sup>	
CS6785	Lo-1	Lorrach, Germany	A <sup>S</sup>	
CS6786	Lo-2	Lorrach, Germany	A <sup>S</sup>	
*CS6788	Lz-0	Lezoux, Puy-de-Dome, France	A1 <sup>Q</sup>	A1 <sub>□</sub>
CS6789	Ma-0	Marburg/Lahn, Germany	A3 <sup>Q</sup>	
CS6792	Mh-0	Muhlen, Poland	A0 <sup>Q</sup>	
*CS6796	Mrk-0	Markt/Baden, Germany	A <sup>S</sup>	A5 <sub>□</sub>
CS6797	Ms-0	Moscow, Russia	B	
*CS6799	Mt-0	Martuba/Cyrenaika, Libya	A3 <sup>Q</sup>	A3
*CS6800	Mz-0	Merzhausen/Ts., Germany	A3 <sup>Q</sup>	A3
CS6803	Nd-0	Niederzenz, Germany	A0 <sup>Q</sup>	
CS6805	No-0	Nossen, Germany	A <sup>S</sup>	
CS6807	Nok-0	Noordwijk, Netherlands	A2 <sup>Q</sup>	
CS6811	Nw-0	Neuweilnau, Germany	A3 <sup>Q</sup>	
CS6816	Ob-0	Oberursel/Hasen, Germany	A1 <sup>Q</sup>	
*CS6823	Ove-0	Ovelgoenne, Germany	A2 <sup>Q</sup>	A2 <sub>□</sub>
CS6824	Oy-0	Oystese, Norway	A1 <sup>Q</sup>	
CS6825	Pa-1	Palermo, Italy	? <sup>b</sup>	
CS6827	Pa-3	Palermo, Italy	B	
CS6828	Per-1	Perm, Russia	A <sup>S</sup>	
CS6832	Pi-0	Pitztal/Tirol, Austria	A1 <sup>Q</sup>	
CS6834	Pla-0	Playa de Aro, Spain	A3 <sup>Q</sup>	
CS6839	Po-0	Poppelsdorf, Germany	A0 <sup>Q</sup>	
CS6841	Pr-0	Frankfurt-Praunheim, Germany	A1 <sup>Q</sup>	
CS6846	Rak-2	Raksice nr. Moravsky, Czech.	A <sup>S</sup>	
CS6848	Rsch-0	Rschew/Starize, Russia	B	
CS6854	Sap-0	Slapy, Czechoslovakia	A <sup>S</sup>	

CS6855	Sf-1	San Feliu, Spain	<i>B</i>	
CS6856	Sav-0	Slavice, Czechoslovakia	<i>A1<sup>Q</sup></i>	
<i>CS6864</i>	<i>Ste-0</i>	<i>Stendal, Germany</i>	<i>A<sup>S</sup></i>	
*CS6865	Stw-0	Stobowa/Orel, Russia	<i>A<sup>S</sup></i>	<i>A5<sub>□</sub></i>
*CS6867	Ta-0	Tabor, Czechoslovakia	<i>A<sup>S</sup></i>	<i>A5<sub>□</sub></i>
CS6876	Tu-1	Turin, Italy	<i>A0<sup>Q</sup></i>	
CS6879	<i>Uk-1</i>	<i>Umkirch, Germany</i>	<i>A2<sup>Q</sup></i>	
CS6892	Wt-1	Wietze, Germany	<i>A1<sup>Q</sup></i>	
CS6918	Te-0	Tenela, Finland	<i>A1<sup>Q</sup></i>	
CS6920	WI-0	Wildbad, Germany	<i>A2<sup>Q</sup></i>	
CS6922	Nd-1	Niederzenz, Germany	<i>A0<sup>Q</sup></i>	
*CS6924	Ws-3	Wassilewskija	<i>A3<sup>Q</sup></i>	<i>A3</i>
CS6929	Oy-1	Oystese, Norway	<i>A1<sup>Q</sup></i>	

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a. SNPs consistent with *A1<sup>Q</sup>* X *A<sup>S</sup>* recombinant haplotype

b. Haplotype unknown due to missing SNP data from 1 or more loci



Supplemental Data, Table S2. Primers used in PCR amplifications and DNA sequencing. Annealing temperatures are listed for primer pairs used in PCR amplifications.

<b>Locus</b>	<b>Primer</b>	<b>Sequence</b>	<b>PCR annealing temp</b>
At1g04300	4300F4	GGGAGGTTGATACAGGACAAGG	50
At1g04300	4300R4	TGACCTCTTCTCCATCATTGC	
<i>CRY2</i>	CRY1Fa	CCCAAATATTTTATAACCAAACACC	53
<i>CRY2</i>	CRY1Ra	TACCTGCAGTTATTGGCATCAA	
<i>CRY2</i>	CRY2Fb	GATTGAATCCGTTATGCTTCCT	53
<i>CRY2</i>	CRY2Rb	AGCCAATTGAAATAATATCAGCA	
<i>CRY2</i>	CRY1Fint <sup>a</sup>	TGTGGATAAAGTTGTCTACTTTTGT	
<i>CRY2</i>	CRY1Rint <sup>a</sup>	ACTGTCCTTCTTCTTCAGGACA	
<i>CRY2</i>	CRY2Fint <sup>a</sup>	ACAAGGCAGGACCGGTTA	NA
<i>CRY2</i>	CRY2Rint <sup>a</sup>	CATGATCTGTGCTTCACGG	
<i>CRY2</i>	CRY2R2ib <sup>a</sup>	CCAAGGGAAAAACCGAAGAT	
At1g04380	AcoF	CCTCCTATCTTTGGCCTTCC	50
At1g04380	AcoR	CTGAAAAAGCATGCGATTGA	
At1g04390	4390F	ACGCTCTCAATCTTGGCTTC	50
At1g04390	4390R	AGCACTGCTCTTGATGCTGA	
At1g04410	MdhF	ATCCCAAATTCGATCCGTTT	48
At1g04410	MdhR	GATCAATGCGTTGGTGTTG	
At1g04420	4420F	GGTGGTCAGCAGCAGTAACA	50
At1g04420	4420R	AAATCACCGAAGAGTGGTACG	
At1g04480	4480F	AATTCAGGATGTCACTGGGTCT	50
At1g04480	4480R	GGACCAGTAATTGCAGAACCTT	

<sup>a</sup>internal primers used in DNA sequencing

Supplemental Data, Table S3. Primers used in haplotype tagging of *CRY2* and the extended *CRY2* genomic region.

Locus	Position	Poly-morphism	Haplo-group	Primers	PCR Annealing Temp	dCAPs Enzyme
At1g04380	618	A/T	A3 <sup>Q</sup>	Acogt2F Acogt2R	ACAAGTAAGCATTCCGACAACACTTTGA TTTTAGGTCCAACATATGGATCAGTG	51 <i>Bcl</i> I
At1g04380	898	A/T	B	Acogt1F AcoR	CAAGTAAGCATTCCGACAACA CTGAAAAAGCATGCGATTGA	48 <i>Bcl</i> I
At1g04390	349	A/G	A2 <sup>Q</sup>	4390_2F 4390_2R	CTTAGGATTCAATTTCTGATATG GCGAAACATCGAATTGTTGA	48 <i>Hae</i> III
At1g 04390	847	A/T	B	4390_1F 4390_1R	CTGAGGGGAGTATGTCAGTGG GAACATAATATCTAAGTTTGATAAGCT	48 <i>Hind</i> III
CRY2	338-349 <sup>a</sup>	2 bp indel plus 2 substitutions	B	CRYUAF CRYUR  CRYUBF CRYUR	GATCTCTTATAAAAAAATATCTCACA TTCTTCCTATTTTGGGTATGC  CGATCTCTTATAAAAAATATCTTACT TTCTTCCTATTTTGGGTATGC	46  46 NA
CRY2	1021	C/T	A3 <sup>Q</sup>	CRY1021_F CRY1021_R	AGAAGAGACCTAAGGATTGAGGAGAA CCAAGAGCCTTCAAGGATTG	50 <i>Hinf</i> I
CRY2	1452-1455 <sup>a</sup>	GCAA (A <sup>Q</sup> ) or TTCT (A <sup>S</sup> )	A <sup>S</sup>	CRYQF CRYQR  CRYSF CRYSR	GAACGTGGGATCTCTGTGCAA TCAGCCGCTAACAAAGAAAAAG  GGAACGTGGGATCTCTGTTTCT GCTTCAGCCGCTAACAAAGA	51  51 NA
CRY2	2428-2489	61 bp indel	B	CRYgtF CRYgtRb	AGCTTGATCGCTTGGACAAT ATTTGGCGCCTTGTAAGTGA	52 NA
At1g04410	162	C/T	B	Mdhgt2F Mdhgt2R	AGTATCTGGTTGTTCCCTAGATCGA AGCTGAGGAGATCTAAAGTCACA	53 <i>Cla</i> I
At1g04410	568	C/T	A1 <sup>Q</sup>	Mdh3F Mdh3R	TGGTGCTGACCAACCTGTTA TTCCCACTTATACAAAACAACCTTCTG	50 <i>Hpy</i> 188 I
At1g04420	170 <sup>b</sup>	A/C	A3 <sup>Q</sup> & A <sup>S</sup>	4420gt2F 4420gt2R	CGAATGCTCGGAGGAGAATA CTACAATTGCAGGAGATAAAGAGC	50 <i>Alu</i> I
At1g04420	612-664	53 bp indel	B	4420gt1F 4420gt1R	TGAAGAAGGAGACGCAAGGT GGTTTGCTGATATCATATACATTCG	50 NA
At1g04480	468	C/T	NA	4480gtF3 4480gtR3	GTGTATAAATACAAATCTGGTG CGTGTCGGTGGATACTTGAC	50 <i>Rsa</i> I

<sup>a</sup>Each primer pair is specific for one of the two allele types.<sup>b</sup>homoplasious polymorphism on *CRY2*-region haplotype tree (Fig.3).