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### *The effect of temperature on the male and female recombination landscape of barley*

Phillips, Dylan; Jenkins, Glyn; Macaulay, Malcolm; Nibau, Candida; Wnetrzak, Joanna; Fallding, Derek Stanley; Colas, Isabelle; Oakey, Helena; Waugh, Robbie; Ramsay, Luke

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**New Phytologist Supporting Information Figs S1–S6 and Tables S1–S5**

Article title: The effect of temperature on the male and female recombination landscape of barley

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The following Supporting Information is available for this article:

**Fig. S1** Comparison of 1H genetic maps across the six Bc1 populations.

**Fig. S2** Comparison of 3H genetic maps across the six Bc1 populations.

**Fig. S3** Comparison of 4H genetic maps across the six Bc1 populations.

**Fig. S4** Comparison of 5H genetic maps across the six Bc1 populations.

**Fig. S5** Comparison of 6H genetic maps across the six Bc1 populations.

**Fig. S6** Comparison of 7H genetic maps across the six Bc1 populations.

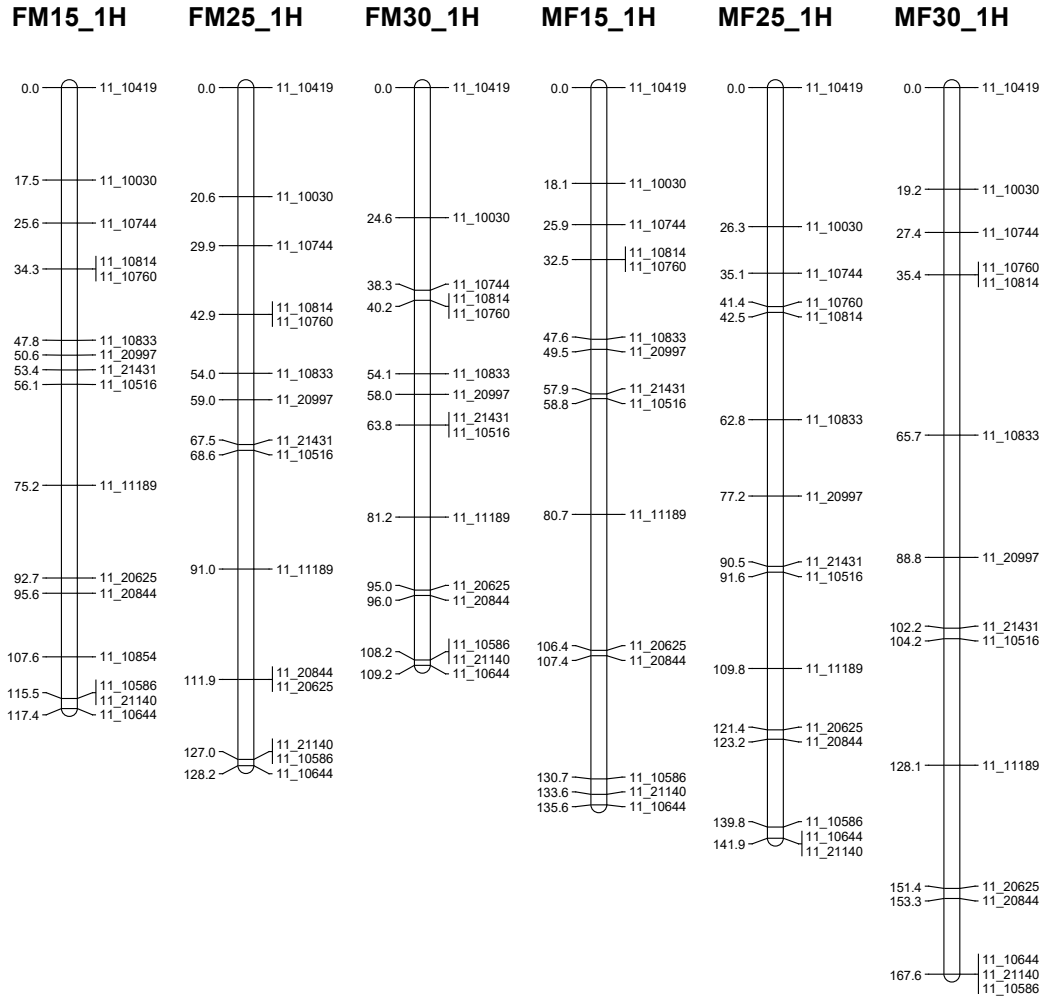
**Table S1** Segregation distortion shown of loci on chromosomes 1H–7H

**Table S2** Comparison of the observed recombination events, the relative recombination corrected for population size and the genetic length

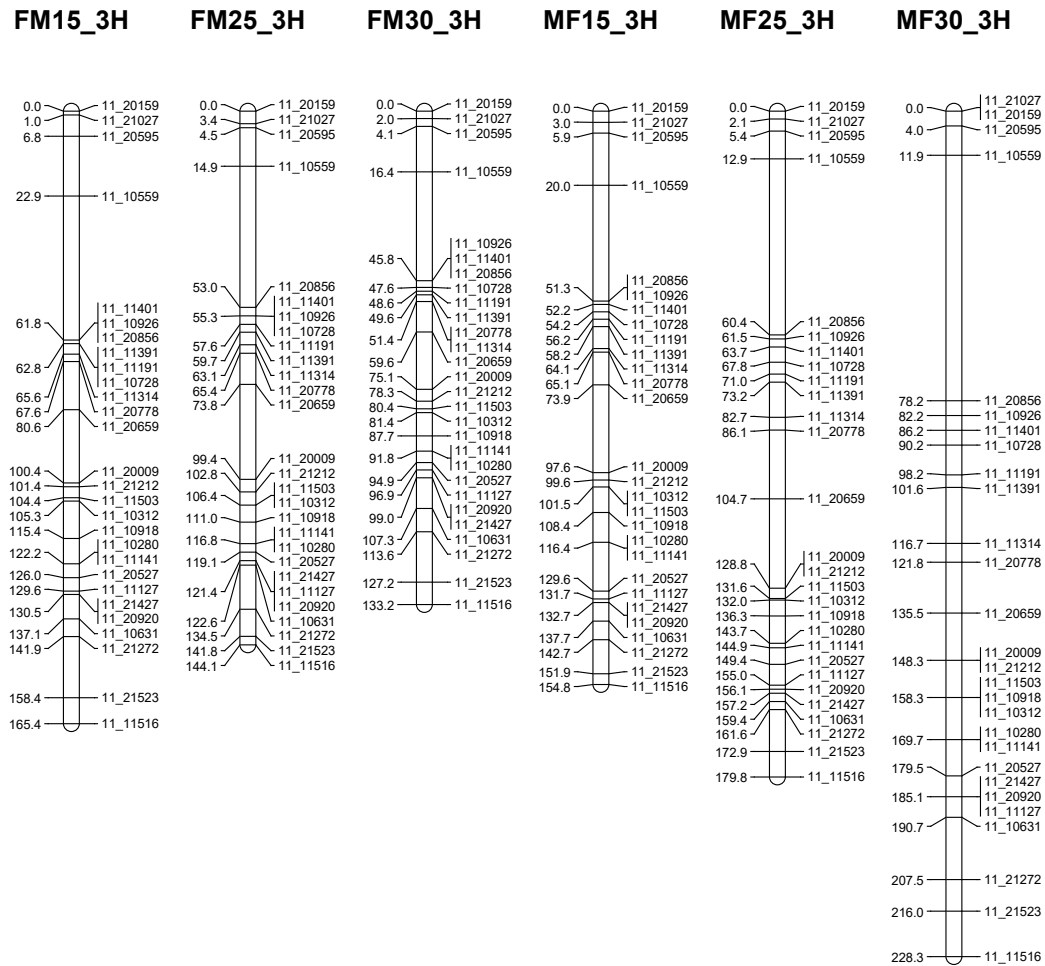
**Table S3** Wald F statistics showing recombination differences

**Table S4** Length measurements relating chromosome 2H at pachytene

**Table S5** Length measurements relating chromosome 3H at pachytene

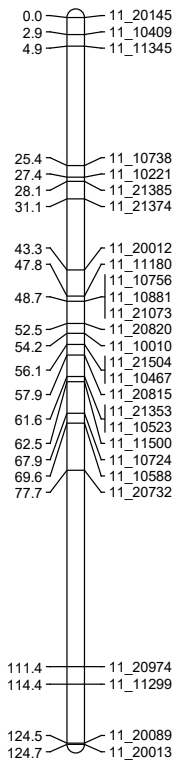


**Fig. S1** Comparison of 1H genetic maps across the six Bc1 populations. The centromere is within the interval bounded by 11\_10814 and 11\_10833.

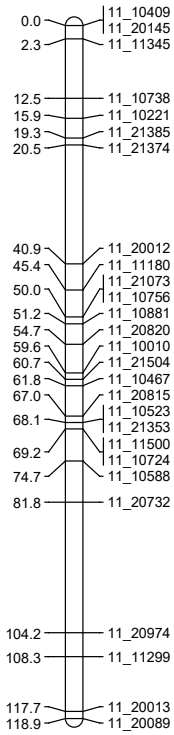


**Fig. S2** Comparison of 3H genetic maps across the six Bc1 populations. The centromere is within the interval bounded by 11\_10559 and 11\_20856.

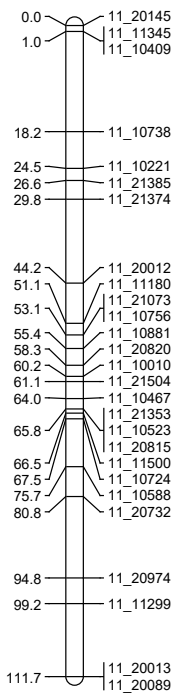
**FM15\_4H**



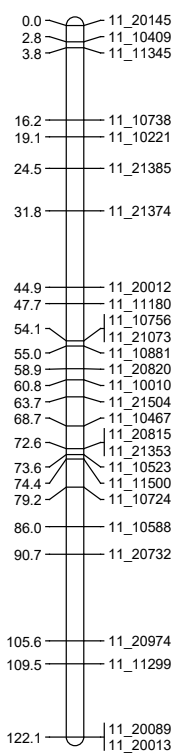
**FM25\_4H**



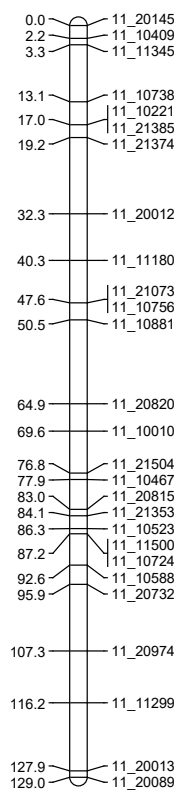
**FM30\_4H**



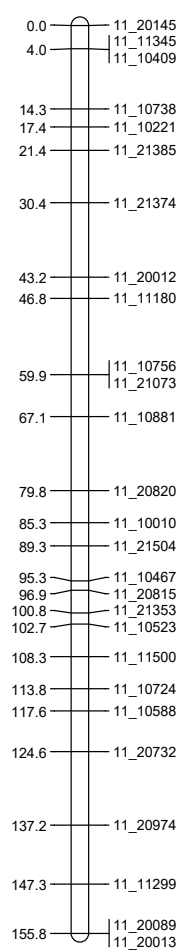
**MF15\_4H**



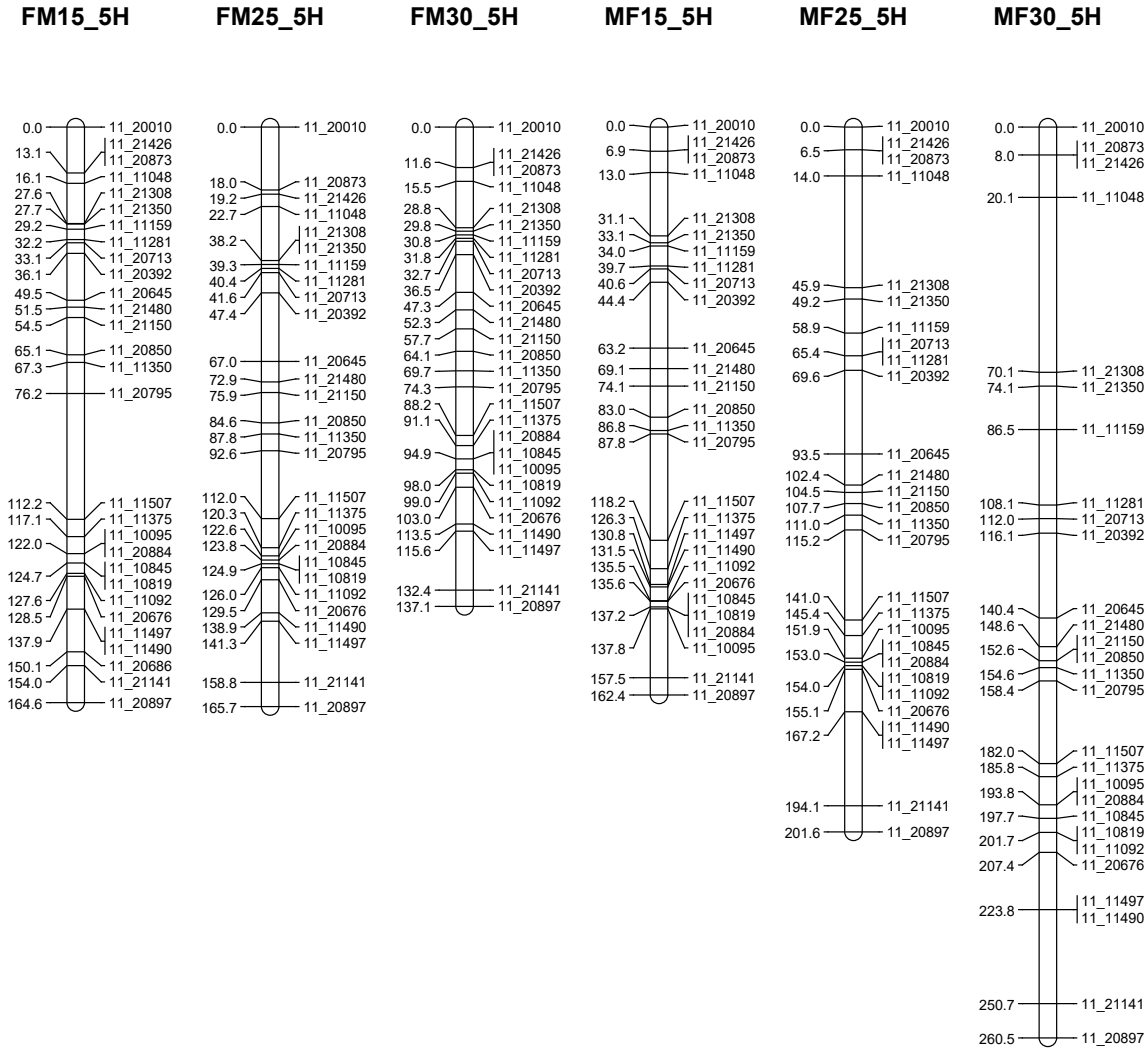
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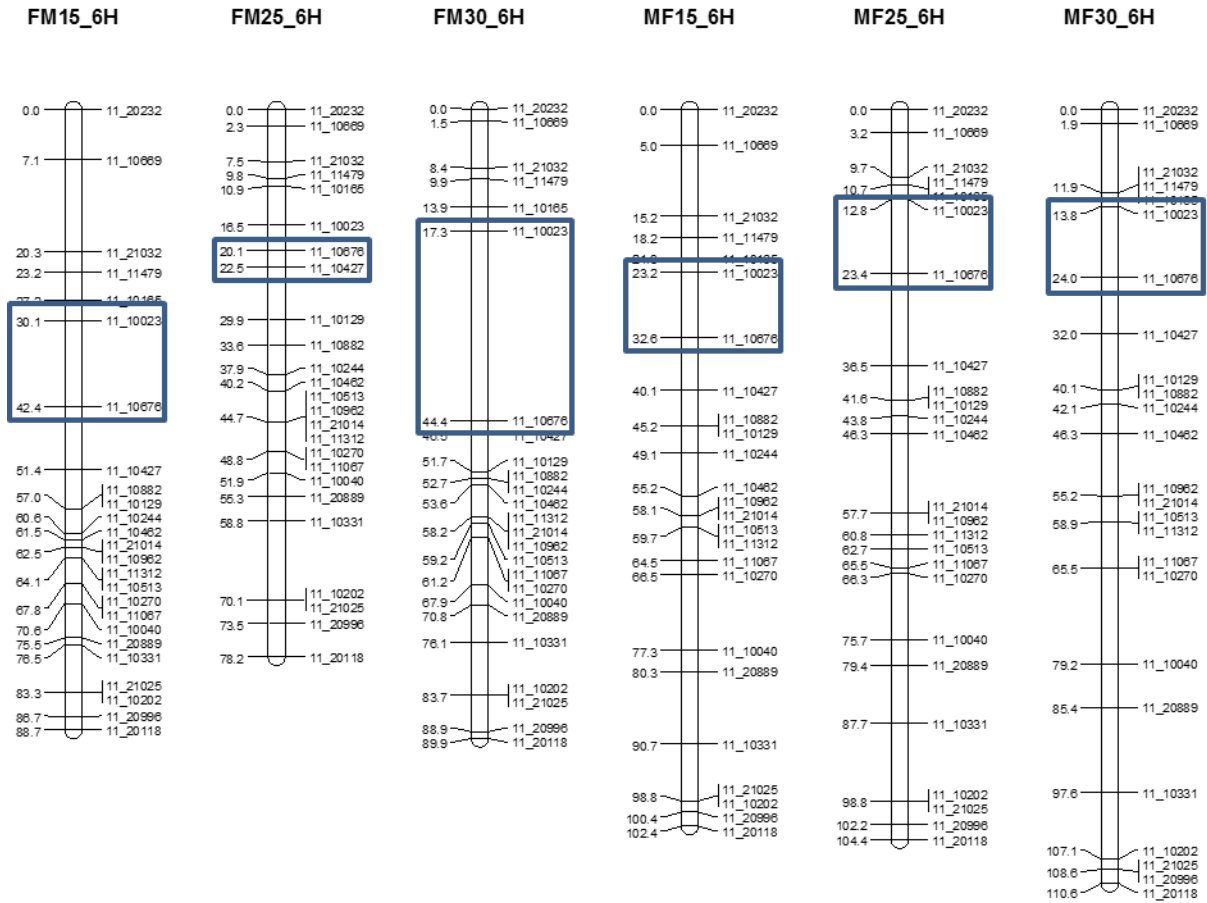
**MF30\_4H**



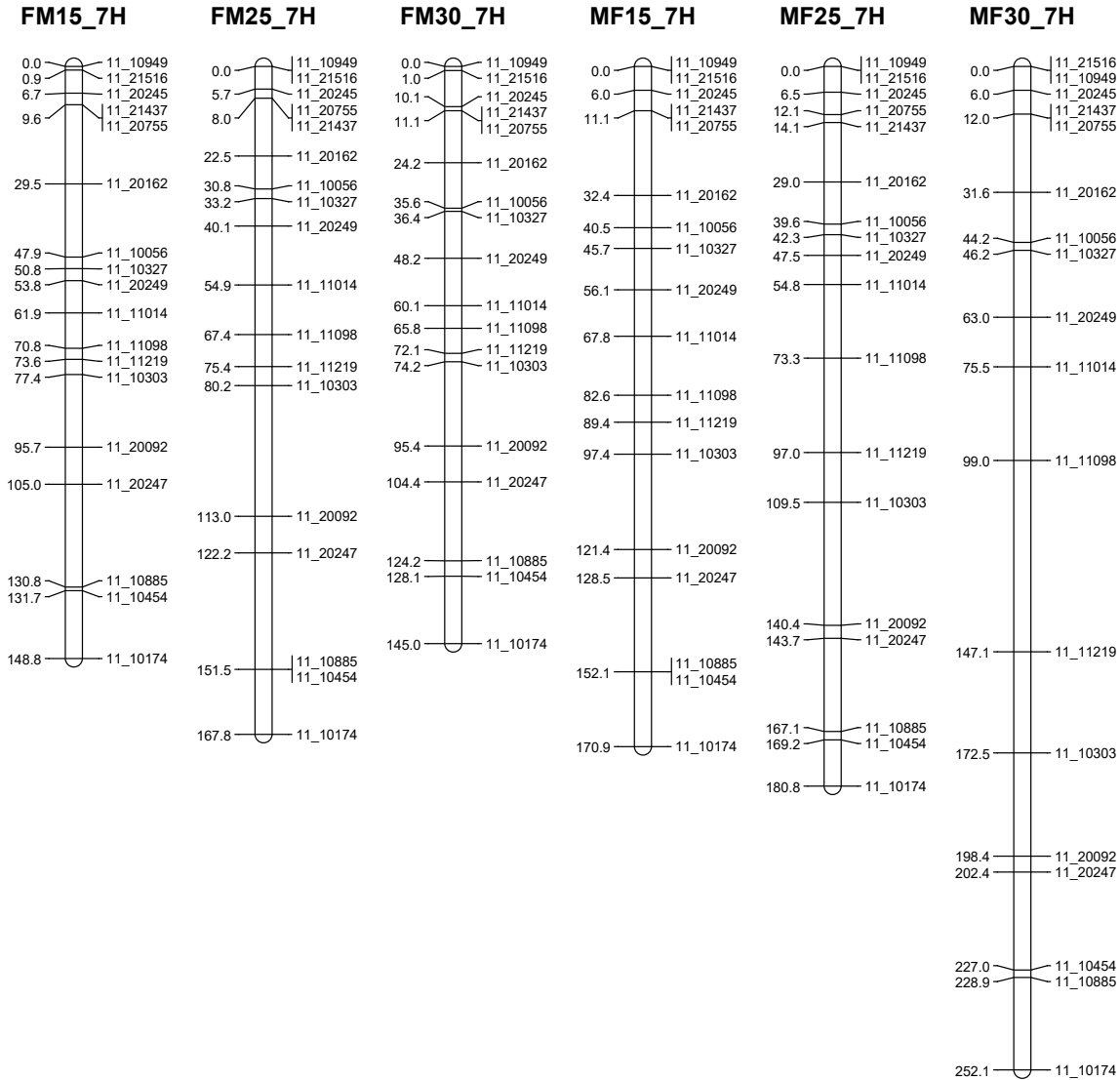
**Fig. S3** Comparison of 4H genetic maps across the six Bc1 populations. The centromere is within the interval bounded by 11\_21073 and 11\_10881.



**Fig. S4** Comparison of 5H genetic maps across the six Bc1 populations. The centromere is within the interval bounded by 11\_21350 and 11\_11159.



**Fig. S5** Comparison of 6H genetic maps across the six Bc1 populations. The centromere is within the interval bounded by 11\_21014 and 11\_10513. Blue squares bound the interval between 11\_10023 and 11\_10676.



**Fig. S6** Comparison of 7H genetic maps across the six Bc1 populations. The centromere is within the interval bounded by 11\_11098 and 11\_11219.



**Table S1** Segregation distortion shown by loci on (a) chromosomes 1H, 2H & 3H, on (b) chromosomes 4H & 5H and on (c) chromosomes 6H & 7H

**(a)**

Locus	FM15				FM25				FM30				MF15				MF25				MF30								
	a	h	-	Signif.	a	h	-	Signif.	a	h	-	Signif.	a	h	-	Signif.	a	h	-	Signif.	a	h	-	Signif.	a	h	-	Signif.	
1H																													
11_10419	55	50	0	0.2-	46	44	0	0-	50	51	0	0-	47	56	0	0.79-	49	45	0	0.2-	28	23	0	0.5-					
11_10080	56	49	0	0.5-	49	41	0	0.7-	52	49	0	0.1-	45	58	0	1.64-	43	51	0	0.7-	29	22	0	1-					
11_10744	56	49	0	0.5-	55	35	0	4.4**	51	50	0	0-	41	61	1	3.92**	41	53	0	1.5-	29	22	0	1-					
11_10760	47	58	0	1.2-	52	38	0	2.2-	53	48	0	0.3-	38	65	0	7.08***	43	51	0	0.7-	29	22	0	1-					
11_10814	47	58	0	1.2-	52	38	0	2.2-	53	48	0	0.3-	38	65	0	7.08***	42	52	0	1.1-	29	22	0	1-					
11_10833	49	56	0	0.5-	55	35	0	4.4**	57	44	0	1.7-	36	67	0	9.33****	33	61	0	8.3****	31	20	0	2.4-					
11_20997	50	55	0	0.2-	52	38	0	2.2-	53	48	0	0.3-	34	69	0	11.9*****	33	61	0	8.3****	32	19	0	3.3*					
11_21431	49	56	0	0.5-	52	38	0	2.2-	55	46	0	0.8-	37	66	0	8.17****	43	51	0	0.7-	29	22	0	1-					
11_10516	50	55	0	0.2-	53	37	0	2.8*	55	46	0	0.8-	36	67	0	9.33****	42	52	0	1.1-	28	23	0	0.5-					
11_11189	46	59	0	1.6-	45	45	0	0-	50	51	0	0-	41	62	0	4.28**	44	50	0	0.4-	20	31	0	2.4-					
11_20625	45	60	0	2.1-	43	47	0	0.2-	47	54	0	0.5-	44	59	0	2.18-	45	49	0	0.2-	26	25	0	0-					
11_20844	46	59	0	1.6-	43	47	0	0.2-	48	53	0	0.3-	43	60	0	2.81*	45	49	0	0.2-	25	26	0	0-					
11_10586	46	59	0	1.6-	46	44	0	0-	52	49	0	0.1-	51	52	0	0.01-	37	57	0	4.3**	26	25	0	0-					
11_21140	46	59	0	1.6-	46	44	0	0-	52	49	0	0.1-	52	51	0	0.01-	37	57	0	4.3**	26	25	0	0-					
11_10644	46	59	0	1.6-	45	45	0	0-	53	48	0	0.3-	52	51	0	0.01-	37	57	0	4.3**	26	25	0	0-					
2H																													
11_10943	57	48	0	0.8-	46	44	0	0-	53	48	0	0.3-	45	57	1	1.41-	43	51	0	0.7-	22	29	0	1-					
11_20394	53	52	0	0-	44	46	0	0-	53	48	0	0.3-	42	61	0	3.5*	41	53	0	1.5-	27	24	0	0.2-					
11_21261	52	53	0	0-	42	48	0	0.4-	50	51	0	0-	43	60	0	2.81*	42	52	0	1.1-	27	24	0	0.2-					
11_10891	51	54	0	0.1-	41	49	0	0.7-	53	48	0	0.3-	48	55	0	0.48-	40	54	0	2.1-	28	23	0	0.5-					
11_20864	51	54	0	0.1-	42	48	0	0.4-	52	49	0	0.1-	48	55	0	0.48-	40	54	0	2.1-	28	23	0	0.5-					
11_10525	46	59	0	1.6-	40	50	0	1.1-	46	55	0	0.8-	45	58	0	1.64-	40	54	0	2.1-	31	20	0	2.4-					
11_10837	45	60	0	2.1-	40	50	0	1.1-	46	55	0	0.8-	43	60	0	2.81*	38	56	0	3.5*	32	19	0	3.3*					
11_11054	45	60	0	2.1-	34	56	0	5.4**	52	49	0	0.1-	39	64	0	6.07**	42	52	0	1.1-	33	18	0	4.4**					
11_20748	45	60	0	2.1-	34	56	0	5.4**	55	46	0	0.8-	37	66	0	8.17****	44	50	0	0.4-	28	23	0	0.5-					
11_21399	47	58	0	1.2-	37	53	0	2.8*	54	47	0	0.5-	37	66	0	8.17****	50	44	0	0.4-	26	25	0	0-					
11_21144	47	58	0	1.2-	35	55	0	4.4**	56	45	0	1.2-	37	66	0	8.17****	47	47	0	0-	26	25	0	0-					
11_10265	48	57	0	0.8-	32	58	0	7.5****	55	46	0	0.8-	37	66	0	8.17****	47	47	0	0-	26	25	0	0-					
11_21205	49	56	0	0.5-	32	58	0	7.5****	53	48	0	0.3-	39	64	0	6.07**	50	44	0	0.4-	26	25	0	0-					
11_20667	50	55	0	0.2-	32	58	0	7.5****	53	48	0	0.3-	39	64	0	6.07**	50	44	0	0.4-	26	25	0	0-					
11_11435	48	57	0	0.8-	32	58	0	7.5****	52	49	0	0.1-	39	64	0	6.07**	51	43	0	0.7-	27	24	0	0.2-					
11_10214	49	56	0	0.5-	41	49	0	0.7-	53	48	0	0.3-	41	62	0	4.28**	54	40	0	2.1-	25	26	0	0-					
11_10988	55	50	0	0.2-	53	37	0	2.8*	52	49	0	0.1-	42	61	0	3.5*	53	41	0	1.5-	25	26	0	0-					
11_10429	57	48	0	0.8-	52	38	0	2.2-	52	49	0	0.1-	41	62	0	4.28**	53	40	1	1.8-	25	26	0	0-					
11_21315	57	48	0	0.8-	49	41	0	0.7-	53	48	0	0.3-	41	62	0	4.28**	54	40	0	2.1-	27	24	0	0.2-					
11_10109	56	49	0	0.5-	48	42	0	0.4-	56	45	0	1.2-	44	59	0	2.18-	53	41	0	1.5-	27	24	0	0.2-					
11_10656	54	51	0	0.1-	47	43	0	0.2-	57	44	0	1.7-	44	59	0	2.18-	57	37	0	4.3**	27	24	0	0.2-					
11_10383	55	50	0	0.2-	45	45	0	0-	57	44	0	1.7-	45	58	0	1.64-	57	37	0	4.3**	27	24	0	0.2-					
11_10315	50	55	0	0.2-	46	44	0	0-	58	43	0	2.2-	51	52	0	0.01-	50	44	0	0.4-	25	26	0	0-					
11_20293	46	59	0	1.6-	47	43	0	0.2-	58	43	0	2.2-	52	51	0	0.01-	51	43	0	0.7-	26	25	0	0-					
3H																													
11_20159	56	49	0	0.5-	50	40	0	1.1-	48	53	0	0.3-	50	53	0	0.09-	47	47	0	0-	22	29	0	1-					
11_21027	57	48	0	0.8-	49	41	0	0.7-	46	55	0	0.8-	49	54	0	0.24-	45	49	0	0.2-	22	29	0	1-					
11_20595	53	52	0	0-	48	42	0	0.4-	44	57	0	1.7-	48	55	0	0.48-	48	46	0	0-	24	27	0	0.2-					
11_10555	47	58	0	1.2-	45	45	0	0-	39	62	0	5.2**	50	53	0	0.09-	43	51	0	0.7-	24	27	0	0.2-					
11_20856	54	51	0	0.1-	38	52	0	2.2-	47	54	0	0.5-	53	50	0	0.09-	38	56	0	3.5*	24	27	0	0.2-					
11_10926	54	51	0	0.1-	38	52	0	2.2-	47	54	0	0.5-	53	50	0	0.09-	39	55	0	2.7*	26	25	0	0-					
11_11401	54	51	0	0.1-	38	52	0	2.2-	47	54	0	0.5-	51	51	1	0-	41	53	0	1.5-	28	23	0	0.5-					
11_10728	53	52	0	0-	38	52	0	2.2-	45	56	0	1.2-	52	51	0	0.01-	41	53	0	1.5-	28	23	0	0.5-					
11_11191	53	52	0	0-	40	50	0	1.1-	46	55	0	0.8-	49	53	1	0.16-	42	52	0	1.1-	26	25	0	0-					
11_11391	53	52	0	0-	42	48	0	0.4-	47	54	0	0.5-	50	53	0	0.09-	40	54	0	2.1-	28	23	0	0.5-					
11_11314	54	51	0	0.1-	46	44	0	0-	45	56	0	1.2-	50	53	0	0.09-	45	49	0	0.2-	24	27	0	0.2-					
11_20778	54	51	0	0.1-	46	44	0	0-	45	56	0	1.2-	49	54	0	0.24-	46	48	0	0-	25	26	0	0-					
11_20659	59	46	0	1.6-	44	46	0	0-	45	56	0	1.2-	46	57	0	1.17-	52	42	0	1.1-	27	24	0	0.2-					
11_20009	52	53	0	0-	41	49	0	0.7-	42	59	0	2.9*	61	42	0	3.5*	57	37	0	4.3**	28	23	0	0.5-					
11_21212	51	54	0	0.1-	40	50	0	1.1-	41	60	0	3.6*	61	42	0	3.5*	57	37	0	4.3**	28	23	0	0.5-					
11_10312	51	54	0	0.1-	39	51	0	1.6-	42	59	0	2.9*	61	42	0	3.5*	56	38	0	3.5*	29	22	0	1-					
11_11503	52	53	0	0-	39	51	0	1.6-	41	60	0	3.6*	61	42	0	3.5*	55	39	0	2.7*	29	22	0	1-					
11_10918	52	53	0	0-	39	51	0	1.6-	46	55	0	0.8-	60	43	0	2.81*	58	36	0	5.2**	29	22	0	1-					
11_10280	50	55	0	0.2-	38	52	0	2.2-	46	55	0	0.8-	56	47	0	0.79-	59	35	0	6.1**	29	22	0	1-					
11_11141	50	55	0	0.2-	38	52	0	2.2-	46	55	0	0.8-	56	47	0	0.79-	58	36	0	5.2**	29	22							





**Table S2** Comparison of the observed recombination events (R), the relative recombination corrected for population size (cR) and the genetic length (cM) calculated in cM using the Kosambi mapping function for each chromosome for all six backcross populations

	FM15			FM25			FM30			MF15			MF25			MF30		
	R	cR	cM	R	cR	cM	R	cR	cM	R	cR	cM	R	cR	cM	R	cR	cM
<b>1H</b>	119	113.33	117.41	111	123.33	128.16	105	103.96	109.24	135	131.07	135.57	130	138.30	141.95	82	160.78	167.57
<b>2H</b>	147	140.00	146.68	123	136.67	117.45	139	137.62	142.87	135	131.07	138.81	170	180.85	178.03	94	184.31	184.44
<b>3H</b>	167	159.05	165.35	125	138.89	144.11	134	132.67	133.16	156	151.46	154.83	158	168.09	179.77	111	217.65	228.25
<b>4H</b>	126	120.00	124.67	106	117.78	118.86	109	107.92	111.70	140	135.92	122.12	130	138.30	128.98	91	178.43	155.84
<b>5H</b>	164	156.19	164.64	140	155.56	165.73	145	143.56	137.14	176	170.87	162.39	179	190.43	201.59	121	237.25	260.46
<b>6H</b>	97	92.38	88.66	77	85.56	78.15	90	89.11	89.90	104	100.97	102.44	109	115.96	104.38	61	119.61	110.62
<b>7H</b>	160	152.38	148.78	145	161.11	167.80	144	142.57	144.99	167	162.14	170.90	168	178.72	180.78	119	233.33	252.15
	<b>980</b>	<b>933.33</b>	<b>956.19</b>	<b>827</b>	<b>918.89</b>	<b>920.26</b>	<b>866</b>	<b>857.43</b>	<b>869.00</b>	<b>1013</b>	<b>983.50</b>	<b>987.07</b>	<b>1044</b>	<b>1110.64</b>	<b>1115.48</b>	<b>679</b>	<b>1331.37</b>	<b>1359.32</b>

**Table S3** Wald F statistics showing the significance of recombination differences assigned to the fixed effects of temperature and sex (across the six populations) using intervals as a random effect for each of the seven chromosomes (significance: \*\*\*, 0; \*\*, 0.001; \*, 0.01; ., 0.05)

CHROMOSOME 1H					
	Df	Sum of Sq	Wald statistic	Pr(Chisq)	
(Intercept)	1	0.0274662	21.3715	3.784e-06	***
temp	2	0.0008576	0.6673	0.716293	
sex	1	0.0095409	7.4238	0.006437	**
temp:sex	2	0.0039141	3.0456	0.218103	
residual (MS)		0.0012852			
CHROMOSOME 2H					
	Df	Sum of Sq	Wald statistic	Pr(Chisq)	
(Intercept)	1	0.033718	30.4715	3.388e-08	***
temp	2	0.003453	3.1203	0.2101	
sex	1	0.004866	4.3971	0.0360	*
temp:sex	2	0.004291	3.8777	0.1439	
residual (MS)		0.001107			
CHROMOSOME 3H					
	Df	Sum of Sq	Wald statistic	Pr(Chisq)	
(Intercept)	1	0.0159521	17.8175	2.431e-05	***
temp	2	0.0021461	2.3971	0.301634	
sex	1	0.0070117	7.8317	0.005134	**
temp:sex	2	0.0080449	8.9857	0.011189	*
residual (MS)		0.0008953			
CHROMOSOME 4H					
	Df	Sum of Sq	Wald statistic	Pr(Chisq)	
(Intercept)	1	0.0296088	31.0730	2.485e-08	***
temp	2	0.0011812	1.2396	0.538050	
sex	1	0.0073327	7.6953	0.005537	**
temp:sex	2	0.0035257	3.7000	0.157234	
residual (MS)		0.0009529			
CHROMOSOME 5H					
	Df	Sum of Sq	Wald statistic	Pr(Chisq)	
(Intercept)	1	0.0283483	26.4245	2.74e-07	***
temp	2	0.0028012	2.6111	0.2710226	
sex	1	0.0122925	11.4583	0.0007118	***
temp:sex	2	0.0063475	5.9167	0.0519033	.
residual (MS)		0.0010728			
CHROMOSOME 6H					
	Df	Sum of Sq	Wald statistic	Pr(Chisq)	
(Intercept)	1	0.0304102	40.040	2.488e-10	***
temp	2	0.0002462	0.324	0.85035	
sex	1	0.0033534	4.415	0.03562	*
temp:sex	2	0.0006637	0.874	0.64600	
residual (MS)		0.0007595			
CHROMOSOME 7H					
	Df	Sum of Sq	Wald statistic	Pr(Chisq)	
(Intercept)	1	0.057582	30.2289	3.84e-08	***
temp	2	0.005599	2.9393	0.230001	
sex	1	0.013680	7.1817	0.007365	**
temp:sex	2	0.011739	6.1626	0.045899	*
residual (MS)		0.001905			

**Table S4** Length of the 2H SC ( $\mu\text{m}$ ) subdivided into the differing regions delimited by FISH markers at 15°C and 25°C

15°C 2H						25°C 2H					
Short arm	Long arm	5S rDNA to tip of short arm	Centromere to 5s rDNA	5s rDNA to tip of long arm	Total	Short arm	Long arm	5S rDNA to tip of short arm	Centromere to 5s rDNA	5s rDNA to tip of long arm	Total
62.514	61.816	93.223	30.709	31.107	124.33			87.611		87.611	118.463
43.003	52.053	75.09	32.087	19.966	95.056	39.84	39.179	67.486	11.533	27.646	79.019
64.966	64.733	107.2	42.234	22.499	129.699	36.925	49.745	72.149	14.521	35.224	86.67
		37.732		38.411	76.143	40.333	46.434	69.835	16.932	29.502	86.767
46.548	61.222	88.485	41.937	19.285	107.77	42.435	52.655	73.908	21.182	31.473	95.09
43.405	64.67	80.028	36.623	28.047	108.075	27.765	50.129	68.353	9.541	40.588	77.894
		46.057		15.973	62.03	31.626	43.497	60.631	14.492	29.005	75.123
		89.475		35.197	124.672	32.961	55.468	68.626	19.803	35.665	88.429
		44.231		7.627	51.858	28.417	47.893	60.964	15.346	32.547	76.31
43.278	43.447	66.652	23.374	20.073	86.725	45.658	56.372	82.253	19.777	36.595	102.03
46.196	63.241	87.973	41.777	21.464	109.437	46.213	61.261	88.699	18.775	42.486	107.474
29.404	43.421	58.213	28.809	14.612	72.825	33.328	52.527	65.159	20.696	31.831	85.855
30.304	45.657	56.696	26.392	19.265	75.961	36.7	75.898	83.868	28.73	47.168	112.598
37.1	42.945	59.992	22.892	20.053	80.045	64.561	94.854	119.321	40.094	54.76	159.415
70.697	72.133	122.88	52.183	19.95	142.83	40.499	65.57	78.388	27.681	37.889	106.069
32.812	49.211	63.373	30.561	18.65	82.023	63.687	97.171	112.139	48.719	48.452	160.858
48.471	75.627	98.005	49.534	26.093	124.098	75.863	77.447	103.882	49.428	28.019	153.31
51.961	62.313	91.192	39.231	23.082	114.274	36.617	69.755	72.814	33.558	36.197	106.372
41.291	44.901	70.586	29.295	15.606	86.192	46.525	50.621	80.226	16.92	33.701	97.146
47.465	56.052	85.705	38.24	17.812	103.517	49.466	64.956	90.417	24.005	40.951	114.422
46.196	63.241	87.973	41.777	21.464	109.437	60.273	53.212	98.148	15.337	37.875	113.485
29.404	43.421	58.213	28.809	14.612	72.825	64.561	94.854	119.321	40.094	54.76	159.415
30.304	45.657	56.696	26.392	19.265	75.961	40.499	65.57	78.388	27.681	37.889	106.069
37.1	42.945	59.992	22.892	20.053	80.045	27.87	82.314	78.112	32.072	50.242	110.184
70.697	72.133	122.88	52.183	19.95	142.83	54.3	119.721	164.238	9.783	109.938	174.021
32.812	49.211	63.373	30.561	18.65	82.023	67.932	96.731	125.717	38.946	57.785	164.663
51.568	62.477	86.769	35.201	27.276	114.045	75.863	77.447	103.882	49.428	28.019	153.31
48.471	75.627	98.005	49.534	26.093	124.098	36.617	69.755	72.814	33.558	36.197	106.372
41.291	44.901	70.586	29.295	15.606	86.192	46.525	50.621	80.226	16.92	33.701	97.146
47.465	56.052	85.705	38.24	17.812	103.517	49.466	64.956	90.417	24.005	40.951	114.422

**Table S5** Length of the 3H SC ( $\mu\text{m}$ ) subdivided into the differing regions delimited by FISH markers at 15°C and 25°C

15°C 3H						25°C 3H					
Short arm	Long arm	5S rDNA to tip of short arm	Centromere to 5s rDNA	5s rDNA to tip of long arm	Total	Short arm	Long arm	5S rDNA to tip of short arm	Centromere to 5s rDNA	5s rDNA to tip of long arm	Total
46.553	40.07	76.509	29.956	10.114	86.623			57.355		27.191	84.546
32.574	55.974	67.249	34.675	21.299	88.548	26.933	36.727	46.577	19.644	17.083	63.66
43.124	56.527	80.384	37.26	19.267	99.651	32.711	53.163	62.838	30.127	23.036	85.874
		36.833		26.994	63.827	36.049	36.904	57.959	21.91	14.994	72.953
58.205	47.356	88.083	29.878	17.478	105.561	39.419	55.447	79.087	39.668	15.779	94.866
42.201	63.139	76.327	34.126	29.013	105.34	26.027	50.65	53.651	27.624	23.026	76.677
		32.324		28.47	60.794	32.988	39.494	56.788	23.8	15.694	72.482
		71.116		25.38	96.496	38.087	47.222	69.152	31.065	16.157	85.309
		37.126		11.56	48.686	26.358	28.14	37.433	11.075	17.065	54.498
27.537	43.281	63.313	35.776	7.505	70.818	37.647	45.611	66.128	28.481	17.13	83.258
37.874	47.922	75.486	37.612	10.31	85.796	26.041	53.096	55.585	29.544	23.552	79.137
34.831	30.844	41.717	6.886	23.958	65.675	24.745	57.468	62.219	37.474	19.994	82.213
35.914	38.826	62.582	26.668	12.158	74.74	60.273	53.212	98.148	37.875	15.337	113.485
32.711	42.555	57.723	25.012	17.543	75.266	57.573	87.45	104.807	47.234	40.216	145.023
57.974	83.939	95.147	37.173	46.766	141.913	27.754	45.327	63.152	35.398	9.929	73.081
37.55	44.459	66.175	28.625	15.834	82.009	67.932	96.731	125.717	57.785	38.946	164.663
51.568	62.477	86.769	35.201	27.276	114.045	43.641	54.847	80.631	36.99	17.857	98.488
40.548	44.154	55.789	15.241	28.913	84.702	46.763	56.273	84.569	37.806	18.467	103.036
37.941	45.949	68.299	30.358	15.591	83.89	31.942	57.982	62.632	30.69	27.292	89.924
21.353	61.788	76.699	55.346	6.442	83.141	32.279	60.266	65.988	33.709	26.557	92.545
37.874	47.922	75.486	37.612	10.31	85.796	36.7	75.898	83.868	47.168	28.73	112.598
34.831	30.844	41.717	6.886	23.958	65.675	57.573	87.45	104.807	47.234	40.216	145.023
35.914	38.826	62.582	26.668	12.158	74.74	27.754	45.327	63.152	35.398	9.929	73.081
32.711	42.555	57.723	25.012	17.543	75.266	16.221	43.136	51.388	35.167	7.969	59.357
57.974	83.939	95.147	37.173	46.766	141.913	42.682	68.706	99.271	56.589	12.117	111.388
37.55	44.459	66.175	28.625	15.834	82.009	63.687	97.171	112.139	48.452	48.719	160.858
51.568	62.477	86.769	35.201	27.276	114.045	43.641	54.847	80.631	36.99	17.857	98.488
40.548	44.154	55.789	15.241	28.913	84.702	46.763	56.273	84.569	37.806	18.467	103.036
37.941	45.949	68.299	30.358	15.591	83.89	31.942	57.982	62.632	30.69	27.292	89.924
21.353	61.788	76.699	55.346	6.442	83.141	32.279	60.266	65.988	33.709	26.557	92.545