

Supplementary Table S1: Summary of the linkage map for the Atlantic herring

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99075523	1	1,126,864	0.0	0.0	0.0
AX-99002030	1	1,193,573	0.0	0.0	0.0
AX-99173750	1	1,194,724	0.0	0.0	0.0
AX-99131767	1	1,194,741	0.0	0.1	0.0
AX-99000979	1	2,263,039	1.3	2.2	1.7
AX-99154948	1	2,832,900	3.2	6.0	4.2
AX-99152108	1	4,477,080	12.7	28.2	16.5
AX-99001185	1	4,692,283	14.7	34.6	20.4
AX-99144448	1	5,353,551	20.9	47.0	27.9
AX-99091189	1	5,675,202	23.9	52.7	31.4
AX-99111379	1	5,911,605	23.9	52.7	31.4
AX-99158742	1	7,958,189	34.0	76.9	44.7
AX-99148331	1	8,160,431	34.0	76.9	44.7
AX-99160616	1	8,407,176	34.0	76.9	44.7
AX-99073812	1	9,014,031	34.0	76.9	44.7
AX-99031653	1	10,213,902	35.1	76.9	45.4
AX-99123103	1	12,384,415	35.1	76.9	45.4
AX-98990535	1	12,767,529	35.1	76.9	45.4
AX-99038071	1	14,435,586	35.1	76.9	45.4
AX-99031759	1	15,512,315	35.1	76.9	45.4
AX-99128857	1	16,561,974	35.1	76.9	45.4
AX-99161864	1	17,223,465	35.1	76.9	45.4
AX-99106089	1	18,375,359	35.1	76.9	45.4
AX-99065587	1	19,128,824	35.1	76.9	45.4
AX-99022208	1	20,784,042	35.1	76.9	45.4
AX-99014160	1	21,528,399	35.1	76.9	45.4
AX-99071842	1	23,387,628	35.1	76.9	45.4
AX-99073707	1	25,108,142	35.1	76.9	45.4
AX-99111283	1	25,973,295	36.2	76.9	46.1
AX-99002752	1	27,188,381	37.2	76.9	46.8
AX-98995762	1	28,019,126	37.2	76.9	46.8
AX-99072850	1	29,230,333	37.2	76.9	46.8
AX-99148549	1	29,854,425	37.2	76.9	46.8
AX-99170512	1	32,986,667	37.2	76.9	46.8
AX-99140780	1	33,066,047	37.2	76.9	46.8
AX-99029846	2	528,943	65.4	46.0	57.9
AX-99063184	2	3,351,007	65.4	46.0	57.9
AX-98999071	2	4,871,210	65.4	46.0	57.9
AX-99062566	2	5,193,269	65.4	46.0	57.9
AX-98999560	2	7,482,504	60.1	46.0	54.1
AX-99036053	2	8,049,838	60.1	42.3	51.6
AX-99062749	2	9,370,838	60.1	40.9	50.6
AX-99102050	2	10,239,682	50.5	19.4	34.7
AX-99009895	2	10,392,518	48.3	15.0	31.4
AX-99159351	2	14,291,126	32.7	3.2	17.8
AX-99137175	2	14,788,938	32.7	3.2	17.8
AX-99159926	2	15,743,192	32.7	3.2	17.8
AX-99034525	2	16,902,680	32.7	3.2	17.8

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99043480	2	17,877,122	32.7	3.2	17.8
AX-99000995	2	19,091,135	32.7	3.2	17.8
AX-99135828	2	21,162,174	32.7	3.2	17.8
AX-99069817	2	22,526,884	32.7	3.2	17.8
AX-99071246	2	22,675,898	29.5	2.0	15.7
AX-99117810	2	25,483,606	27.4	1.2	14.4
AX-99149148	2	26,140,421	24.2	0.0	12.3
AX-99068909	2	27,498,830	24.2	0.0	12.3
AX-99142532	2	28,306,323	13.8	0.0	6.8
AX-99012896	2	29,343,077	13.2	0.0	5.9
AX-99053977	2	30,139,298	13.2	0.0	5.9
AX-99114985	2	32,673,970	0.0	0.0	0.0
AX-99121171	2	32,679,550	0.0	0.0	0.0
AX-99071833	3	226,354	0.0	0.0	0.0
AX-99124681	3	2,700,081	0.0	4.6	3.9
AX-98990788	3	3,397,761	0.0	4.6	3.9
AX-99040213	3	5,518,762	20.3	14.6	17.5
AX-99126032	3	5,936,453	20.3	14.6	17.5
AX-99094155	3	7,661,877	24.8	16.6	20.9
AX-99016913	3	8,686,525	24.8	16.6	20.9
AX-99025777	3	9,533,196	24.8	16.6	20.9
AX-99138510	3	10,491,004	24.8	16.6	20.9
AX-99029830	3	11,879,906	24.8	16.6	20.9
AX-99120363	3	13,020,701	24.8	16.6	20.9
AX-99010342	3	14,432,461	24.8	16.6	20.9
AX-98991358	3	15,169,150	24.8	16.6	20.9
AX-99023699	3	15,858,648	24.8	16.6	20.9
AX-99089689	3	17,170,228	24.8	16.6	20.9
AX-99073194	3	18,257,167	24.8	16.6	20.9
AX-99130493	3	18,999,625	24.8	16.6	20.9
AX-99098636	3	19,927,865	24.8	16.6	20.9
AX-99097628	3	20,441,082	30.5	23.6	26.9
AX-99018716	3	22,661,000	34.4	28.2	30.9
AX-98996100	3	27,319,705	46.7	59.5	55.4
AX-99093223	3	29,488,017	63.8	62.1	61.3
AX-99013031	3	30,757,826	63.8	62.1	61.3
AX-99019194	3	31,922,669	65.7	73.6	64.8
AX-99072646	3	32,179,812	67.2	73.6	75.7
AX-99134950	4	173,219	0.0	0.0	0.0
AX-99101463	4	673,953	0.0	2.7	1.2
AX-99120190	4	1,326,393	0.0	2.7	1.2
AX-99142382	4	2,876,090	9.9	11.7	10.6
AX-99102540	4	6,295,223	46.3	40.5	43.6
AX-99117842	4	7,288,141	52.5	46.6	49.6
AX-99062279	4	8,243,489	52.5	46.6	49.7
AX-99087940	4	9,351,242	52.5	46.6	49.7
AX-99128182	4	11,524,108	54.4	51.0	52.9
AX-99100252	4	12,652,408	56.2	55.4	56.0
AX-99118661	4	12,968,716	56.2	55.4	56.0

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99155880	4	14,363,198	56.2	55.4	56.0
AX-99079916	4	15,850,431	56.2	55.4	56.0
AX-99004008	4	17,146,688	56.2	55.4	56.0
AX-99138136	4	18,076,193	56.2	55.4	56.0
AX-99019732	4	18,286,215	56.2	55.4	56.0
AX-99049434	4	20,359,204	56.2	55.4	56.0
AX-99042474	4	20,979,205	56.2	55.4	56.0
AX-99128050	4	21,862,735	56.2	55.4	56.0
AX-99077320	4	23,279,630	58.9	59.6	59.2
AX-99145400	4	31,429,698	61.5	63.7	62.4
AX-99108916	4	31,994,902	61.5	63.7	62.4
AX-99101778	5	55,930	0.0	0.0	0.0
AX-99053214	5	1,741,330	0.0	0.0	0.0
AX-99130986	5	3,689,338	0.0	0.0	0.0
AX-99107223	5	4,167,377	0.0	0.0	0.0
AX-99019868	5	4,954,922	3.5	0.0	2.3
AX-99003809	5	7,112,871	5.2	0.0	3.5
AX-98997399	5	8,944,741	5.8	0.2	3.8
AX-99112553	5	9,783,983	5.8	0.2	3.8
AX-99034682	5	12,788,992	5.8	0.2	3.8
AX-99058419	5	13,158,155	5.8	0.2	3.8
AX-99096972	5	13,766,961	8.5	1.1	5.7
AX-99142089	5	14,706,839	8.6	1.1	5.7
AX-98992915	5	15,413,951	8.6	1.1	5.7
AX-99108567	5	17,967,252	8.6	1.1	5.7
AX-99042513	5	19,858,217	11.9	3.0	8.4
AX-99007715	5	21,939,378	11.9	3.0	8.4
AX-99113904	5	24,615,101	29.5	29.6	30.7
AX-99150345	5	26,253,594	33.6	35.2	35.6
AX-99100863	5	27,193,515	36.9	39.5	39.4
AX-99159342	5	28,485,476	42.9	47.8	46.8
AX-99123056	5	29,508,606	43.0	47.8	46.8
AX-99078073	5	30,157,048	43.0	47.8	46.8
AX-99142903	6	196,577	0.0	0.0	0.0
AX-99012795	6	1,715,464	3.0	0.0	1.2
AX-99041148	6	4,149,193	6.9	3.2	4.4
AX-99029207	6	7,661,340	19.8	8.2	15.0
AX-99085864	6	8,945,045	19.8	15.4	15.3
AX-99109242	6	10,079,947	19.8	15.4	15.3
AX-99037037	6	10,628,417	19.8	15.4	15.3
AX-99128990	6	13,765,299	24.0	16.0	19.8
AX-99029129	6	14,845,440	24.0	16.0	19.8
AX-99006550	6	15,166,274	24.0	16.0	19.8
AX-99015601	6	16,253,806	24.0	16.0	19.8
AX-99104327	6	16,760,929	24.0	16.0	19.8
AX-99137511	6	19,054,121	24.0	16.0	19.8
AX-99162319	6	19,520,789	24.0	16.0	19.8
AX-99106086	6	21,865,593	25.8	17.8	21.3
AX-99054005	6	23,058,344	25.8	17.8	21.3

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AX-99049326	6	23,962,999	25.8	17.8	21.3
AX-99018064	6	24,506,763	30.2	21.0	24.9
AX-99054993	6	25,998,237	30.2	21.0	24.9
AX-99030874	6	26,647,250	30.2	21.0	24.9
AX-99073301	6	31,449,567	30.2	81.6	85.5
AX-99035850	7	730,027	0.0	0.0	0.0
AX-99114686	7	1,688,557	0.0	0.0	0.0
AX-99069946	7	3,194,742	0.0	0.0	0.0
AX-99064135	7	3,347,941	0.0	0.0	0.0
AX-99118716	7	4,573,919	0.0	0.0	0.0
AX-98998606	7	7,020,658	0.0	0.0	0.0
AX-99149606	7	8,253,023	0.0	0.0	0.0
AX-99038097	7	10,533,019	8.5	1.1	4.8
AX-99066496	7	10,921,365	8.5	1.1	4.8
AX-99038194	7	12,119,496	8.5	1.1	4.8
AX-99137095	7	13,371,433	8.5	1.1	4.8
AX-99027997	7	13,938,446	8.5	1.1	4.8
AX-99157846	7	15,300,262	8.5	1.1	4.8
AX-99059305	7	15,879,773	8.5	1.1	4.8
AX-99154970	7	17,353,620	9.6	3.3	6.2
AX-99093878	7	17,855,201	9.6	3.3	6.2
AX-99026575	7	19,373,475	9.6	3.3	6.2
AX-99170585	7	19,555,335	10.6	4.6	7.4
AX-99039727	7	22,322,104	11.7	5.8	8.5
AX-99135703	7	25,786,997	27.0	26.0	25.8
AX-99106621	7	26,045,283	27.3	26.3	26.0
AX-99015596	7	27,009,759	33.4	32.2	31.9
AX-99174283	7	29,036,376	33.4	51.1	50.8
AX-99102496	8	598,955	0.0	0.0	0.0
AX-99081488	8	2,494,351	0.0	0.0	0.0
AX-99046656	8	3,472,102	0.0	0.0	0.0
AX-99017622	8	10,435,632	0.0	0.0	0.0
AX-99126514	8	10,946,172	0.0	0.0	0.0
AX-99045757	8	12,159,962	0.0	0.0	0.0
AX-99001429	8	12,554,345	0.0	1.0	0.7
AX-99172996	8	14,035,225	0.0	2.1	1.4
AX-99137263	8	15,113,285	0.0	2.1	1.4
AX-99112718	8	15,768,303	0.0	2.1	1.4
AX-99136195	8	16,634,415	0.0	2.1	1.4
AX-99083932	8	17,517,537	2.1	3.2	3.0
AX-99055339	8	18,603,935	2.1	3.2	3.0
AX-99052782	8	19,777,007	2.1	5.5	4.1
AX-99039405	8	23,195,491	2.1	5.5	4.1
AX-99079271	8	24,194,558	10.6	17.4	13.5
AX-99093928	8	25,445,962	14.7	23.7	18.5
AX-99046439	8	26,152,080	15.9	25.6	19.8
AX-99038447	8	27,789,746	31.6	75.8	48.9
AX-99092178	8	29,070,134	33.7	79.3	51.7
AX-99011295	8	29,802,983	56.8	85.4	57.8

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AX-99070717	8	30,600,486	56.8	85.5	57.9
AX-99114268	9	5,205,624	0.0	0.0	0.0
AX-99055415	9	5,248,544	0.0	0.0	0.0
AX-99062534	9	6,151,237	0.0	0.0	0.0
AX-99005476	9	7,503,009	0.0	0.0	0.0
AX-99077310	9	8,896,820	0.0	0.0	0.0
AX-99108467	9	9,402,948	0.0	0.0	0.0
AX-99053071	9	11,422,522	0.0	0.0	0.0
AX-99002330	9	12,111,604	0.0	0.0	0.0
AX-99033832	9	12,855,264	0.0	0.0	0.0
AX-99058441	9	13,333,191	0.0	6.7	3.3
AX-99063349	9	14,239,607	0.0	6.7	3.3
AX-99034657	9	15,970,370	0.0	6.7	3.3
AX-99116872	9	16,656,286	0.0	6.7	3.3
AX-99133259	9	17,301,642	0.0	6.7	3.3
AX-99076389	9	17,866,617	5.8	11.7	8.5
AX-99168484	9	19,162,661	5.8	11.7	8.5
AX-99043965	9	20,629,873	5.8	11.7	8.5
AX-99102620	9	21,492,955	11.9	16.2	13.7
AX-99116099	9	22,389,238	14.0	18.0	15.7
AX-99021109	9	23,219,539	14.0	18.0	15.7
AX-99067244	9	23,471,273	16.1	19.8	17.7
AX-99063625	9	24,506,622	23.5	25.8	24.6
AX-99026257	9	25,282,890	25.7	29.4	27.2
AX-99940887	9	25,498,402	25.7	29.5	27.2
AX-99941470	9	26,430,716	36.3	38.5	37.4
AX-99168950	9	30,470,924	106.1	38.5	107.1
AX-99127074	10	333,228	0.0	0.0	0.0
AX-99051493	10	1,136,779	0.0	0.0	0.0
AX-99137224	10	3,006,100	16.1	13.4	15.0
AX-99087564	10	3,960,290	23.8	20.0	22.3
AX-99032325	10	4,599,254	42.4	34.9	39.2
AX-99105588	10	6,732,781	43.2	35.7	39.8
AX-99109908	10	8,945,827	47.7	38.9	44.0
AX-99063319	10	9,979,070	47.7	38.9	44.0
AX-99108046	10	10,629,237	47.7	38.9	44.0
AX-99161074	10	12,144,160	48.7	42.8	46.1
AX-99126767	10	13,432,842	48.7	42.8	46.1
AX-99070235	10	14,002,982	48.7	42.8	46.1
AX-99066767	10	14,955,524	48.7	42.8	46.1
AX-99107825	10	15,610,453	48.7	42.8	46.1
AX-99131963	10	18,291,587	48.7	42.8	46.1
AX-99015904	10	19,602,542	49.4	42.8	46.8
AX-99033152	10	21,574,754	49.8	42.8	47.2
AX-99159366	10	21,922,515	49.8	42.8	47.2
AX-99087599	10	22,589,231	49.8	42.8	47.2
AX-99079341	10	24,411,946	54.2	42.8	51.6
AX-99049681	10	25,250,389	54.2	42.8	51.6
AX-99100047	10	26,447,661	56.5	42.8	53.9

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AX-98995740	10	26,803,621	56.5	42.8	53.9
AX-99118919	10	27,521,490	60.9	42.8	58.3
AX-99074796	10	28,526,878	63.1	42.8	60.5
AX-99116994	10	29,012,634	63.1	42.8	60.5
AX-99058362	10	29,018,838	63.1	42.8	60.5
AX-99119109	11	1,221,699	0.0	0.0	0.0
AX-99155557	11	3,151,491	0.0	0.0	0.0
AX-99014958	11	4,640,994	3.2	0.0	2.1
AX-99108378	11	6,292,890	3.2	0.0	2.1
AX-99119108	11	6,818,652	3.2	0.0	2.1
AX-99048949	11	7,347,367	4.8	0.0	2.9
AX-99107284	11	8,954,515	6.3	0.0	3.7
AX-99011915	11	9,126,866	6.3	0.0	3.7
AX-99103005	11	10,796,811	6.6	0.0	3.9
AX-99001501	11	11,521,164	6.9	0.0	4.0
AX-99085604	11	12,095,097	7.1	0.0	4.1
AX-99004248	11	14,314,881	7.4	0.0	4.3
AX-98993815	11	14,986,503	7.4	0.0	4.3
AX-99022171	11	15,719,544	7.4	0.0	4.3
AX-99100280	11	17,840,091	7.4	0.0	4.3
AX-99038666	11	20,753,623	11.7	4.7	9.2
AX-99043597	11	21,153,577	13.8	7.0	11.7
AX-99083485	11	21,212,616	13.8	13.8	14.4
AX-99104810	11	21,755,093	13.8	13.8	14.4
AX-99108923	11	23,312,523	16.1	20.6	19.3
AX-99030820	11	24,986,538	28.0	31.9	29.9
AX-99021351	11	25,443,345	28.0	31.9	29.9
AX-99139452	11	25,477,747	28.0	31.9	29.9
AX-99021289	11	25,482,711	28.0	31.9	29.9
AX-99097302	11	25,490,535	28.0	31.9	29.9
AX-99146396	11	25,495,667	28.0	31.9	29.9
AX-99135550	11	27,054,985	54.2	45.5	48.6
AX-99046771	11	27,209,257	54.2	45.5	48.6
AX-99016099	11	29,096,542	54.2	45.5	48.6
AX-99172022	11	29,124,181	60.3	45.5	54.8
AX-99041304	12	200,091	0.0	0.0	0.0
AX-99148820	12	1,801,248	0.0	0.0	0.0
AX-99130281	12	2,279,532	4.0	0.0	2.1
AX-99048507	12	3,139,968	6.1	0.0	3.6
AX-99121773	12	4,824,710	6.2	0.0	3.6
AX-99060074	12	6,029,130	6.3	0.0	3.6
AX-99036655	12	7,083,625	6.3	0.0	3.6
AX-99047366	12	7,579,228	6.3	0.0	3.6
AX-99051546	12	9,105,121	14.2	0.0	8.8
AX-99095658	12	11,243,950	18.1	0.0	12.0
AX-99120645	12	11,898,778	19.2	0.0	12.8
AX-98992861	12	15,459,892	19.2	0.0	12.8
AX-99168386	12	15,803,545	19.2	0.0	12.8
AX-99056180	12	16,871,287	19.2	0.0	12.8

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99135324	12	17,993,898	20.2	2.3	14.3
AX-99104194	12	19,123,087	20.2	2.3	14.3
AX-99172002	12	20,048,366	20.2	2.3	14.3
AX-99064876	12	22,225,509	20.2	2.3	14.3
AX-99164289	12	23,151,494	20.2	2.3	14.3
AX-99061653	12	23,419,963	20.2	2.3	14.3
AX-99023370	12	24,191,399	20.2	2.3	14.3
AX-99107640	12	25,238,272	20.2	2.3	14.3
AX-99030252	12	27,178,570	36.8	70.9	52.7
AX-99941022	12	28,043,582	36.8	70.9	52.7
AX-99065320	12	28,395,403	42.8	70.9	54.9
AX-99941511	12	29,109,445	42.8	70.9	54.9
AX-99172859	12	29,637,188	85.8	70.9	79.9
AX-99080076	13	1,233,975	0.0	0.0	0.0
AX-99163548	13	1,848,840	4.5	0.0	4.5
AX-99060584	13	3,194,041	4.5	0.0	4.5
AX-98993443	13	4,339,031	4.5	0.0	4.5
AX-99103865	13	5,646,626	4.5	0.0	4.5
AX-99115710	13	6,120,832	4.5	0.0	4.5
AX-99071407	13	7,818,860	4.5	0.0	4.5
AX-99082388	13	8,296,697	4.5	0.0	4.5
AX-99102597	13	9,327,182	4.5	0.0	4.5
AX-99091032	13	10,986,289	4.5	0.0	4.5
AX-99077006	13	12,334,947	4.5	0.5	4.9
AX-99160105	13	15,714,040	4.5	1.1	5.2
AX-99105898	13	16,150,475	4.5	1.1	5.2
AX-99155724	13	18,072,516	4.5	1.1	5.2
AX-99065598	13	19,205,567	4.5	1.1	5.2
AX-99032501	13	19,494,174	4.5	3.3	6.2
AX-99144778	13	20,679,809	4.5	3.3	6.2
AX-99074723	13	22,776,041	7.5	5.2	9.2
AX-99150293	13	25,058,818	21.8	19.6	23.6
AX-99010977	13	28,002,883	55.0	56.2	57.0
AX-99941035	13	28,702,382	60.7	62.2	62.8
AX-99110647	13	29,564,088	91.7	96.1	94.0
AX-99048624	14	1,858,994	0.0	0.0	0.0
AX-98995399	14	5,396,842	14.4	17.6	16.2
AX-99111907	14	6,198,027	22.5	27.2	25.2
AX-99032324	14	6,491,759	22.5	27.2	25.2
AX-99050693	14	7,380,753	22.5	27.2	25.2
AX-99109761	14	7,981,599	28.8	35.3	31.3
AX-99023146	14	8,819,376	28.8	37.9	32.5
AX-99113143	14	9,537,909	28.8	42.3	34.7
AX-99033814	14	11,447,874	28.8	47.9	38.0
AX-99171003	14	13,864,224	30.9	47.9	39.9
AX-99153329	14	14,089,433	30.9	47.9	39.9
AX-98997168	14	15,284,741	30.9	47.9	39.9
AX-99029467	14	15,751,194	30.9	47.9	39.9
AX-99024912	14	16,431,157	30.9	47.9	39.9

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99051610	14	19,892,278	30.9	47.9	39.9
AX-99117529	14	22,001,847	30.9	47.9	39.9
AX-99057706	14	22,124,805	33.7	49.0	42.1
AX-99114325	14	22,376,834	36.4	50.2	44.4
AX-99138483	14	27,279,712	36.4	50.2	44.4
AX-99095079	14	27,466,125	36.4	50.2	44.4
AX-99071562	14	27,948,698	36.4	50.2	44.4
AX-98995211	14	28,903,593	36.4	50.2	44.4
AX-99007017	15	449,773	0.0	0.0	0.0
AX-99134538	15	3,075,351	4.0	0.0	4.0
AX-99110836	15	3,293,167	4.0	0.0	4.0
AX-99041745	15	4,597,021	4.7	0.0	4.3
AX-98999699	15	5,805,361	6.0	0.0	5.0
AX-99125534	15	6,367,681	9.8	0.0	6.9
AX-98998006	15	6,951,995	11.4	0.0	7.6
AX-99074821	15	7,774,579	11.8	0.0	7.9
AX-99130334	15	9,343,763	12.3	0.0	8.1
AX-99146585	15	9,572,121	13.7	0.0	8.8
AX-99086472	15	11,067,599	13.7	0.0	8.8
AX-99120188	15	12,508,610	13.7	0.0	8.8
AX-99046116	15	12,931,825	13.7	0.0	8.8
AX-99059078	15	13,920,549	13.7	0.0	8.8
AX-99138677	15	14,562,866	13.7	0.0	8.8
AX-99103265	15	15,125,355	13.7	0.0	8.8
AX-99029086	15	16,391,448	14.9	0.7	9.6
AX-99031167	15	17,226,869	15.6	1.1	10.2
AX-99175478	15	17,552,421	15.6	1.1	10.2
AX-99010459	15	18,573,474	23.4	3.7	15.7
AX-99157809	15	19,242,225	25.3	4.3	17.1
AX-99108458	15	21,280,900	36.7	8.0	25.1
AX-99145515	15	21,345,594	36.7	8.0	25.1
AX-99094459	15	24,627,976	53.1	31.9	45.4
AX-99149080	15	27,396,151	64.8	48.0	59.4
AX-99091918	15	27,736,555	64.8	50.2	60.4
AX-99129638	15	28,267,926	64.8	50.2	60.4
AX-99174519	16	5,089	0.0	0.0	0.0
AX-99080387	16	159,639	0.0	51.4	51.4
AX-99121304	16	656,067	0.0	51.4	51.4
AX-99129640	16	1,967,704	0.0	55.8	55.8
AX-99078293	16	3,723,210	0.0	69.5	69.5
AX-99135201	16	4,703,358	0.0	86.4	86.4
AX-99017288	16	6,792,969	2.2	88.6	88.6
AX-99119591	16	6,803,638	2.2	88.6	88.6
AX-99017850	16	6,803,767	2.2	88.6	88.6
AX-99096454	16	6,807,098	2.2	88.6	88.6
AX-99017364	16	7,421,299	2.2	88.6	88.6
AX-99162264	16	7,977,621	2.2	88.6	88.6
AX-99155350	16	8,322,209	2.2	89.8	89.3
AX-99120422	16	8,367,273	2.2	90.7	89.9

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99077903	16	9,174,554	2.2	90.7	89.9
AX-99174551	16	10,045,749	6.1	92.9	92.9
AX-98994499	16	10,733,547	8.8	95.0	95.1
AX-99158604	16	12,987,182	8.8	95.0	95.1
AX-99041421	16	14,049,039	8.8	95.0	95.1
AX-99117715	16	14,339,919	8.8	95.0	95.1
AX-99122631	16	15,314,933	8.8	95.0	95.1
AX-99001461	16	16,976,526	8.8	95.0	95.1
AX-99071966	16	18,637,493	8.8	95.0	95.1
AX-99128570	16	19,807,810	8.8	95.0	95.1
AX-99058095	16	20,759,102	8.8	95.0	95.1
AX-99032492	16	21,904,554	8.8	95.0	95.1
AX-99139981	16	22,279,426	8.8	95.0	95.1
AX-99170338	16	23,966,483	8.8	95.0	95.1
AX-99078388	16	24,167,368	8.8	95.0	95.1
AX-99941434	16	25,725,380	8.8	95.0	95.1
AX-99099633	16	27,077,130	8.8	95.0	95.1
AX-99076720	16	27,123,598	8.8	95.0	95.1
AX-98999528	16	27,439,487	8.8	95.0	95.1
AX-99096108	17	679,100	0.0	0.0	0.0
AX-99031183	17	933,585	0.0	0.0	0.0
AX-99079050	17	3,161,776	0.0	0.0	0.0
AX-99055116	17	3,705,499	0.0	0.0	0.0
AX-98991356	17	5,313,381	0.0	0.0	0.0
AX-99163559	17	5,451,554	1.1	0.0	0.5
AX-99135957	17	7,256,535	1.1	0.0	0.5
AX-99015425	17	8,755,601	1.1	0.0	0.5
AX-98999562	17	9,267,514	1.1	0.0	0.5
AX-99106575	17	10,519,737	1.1	0.0	0.5
AX-99009304	17	11,506,580	1.1	0.0	0.5
AX-99089608	17	12,644,546	1.5	0.5	1.1
AX-99039944	17	14,094,658	1.9	1.1	1.5
AX-99115885	17	18,583,138	5.2	5.3	5.4
AX-99101513	17	20,074,539	5.8	6.1	6.1
AX-99017116	17	21,406,981	22.9	24.7	24.3
AX-99143552	17	23,397,900	37.6	35.8	35.3
AX-99941228	17	24,689,665	49.3	47.4	46.7
AX-99011447	17	25,299,233	49.3	47.4	46.7
AX-99110016	17	25,871,510	49.3	47.4	46.7
AX-99091301	17	27,119,440	51.2	47.4	48.8
AX-99014050	17	27,549,552	51.2	68.6	56.6
AX-99101512	17	27,549,619	51.2	68.6	56.6
AX-98992784	18	300,416	0.0	0.0	0.0
AX-99050759	18	1,552,744	0.1	0.0	0.1
AX-99097202	18	2,808,119	25.4	34.7	30.3
AX-99132088	18	3,462,744	27.4	36.8	32.4
AX-99038545	18	5,090,014	27.4	36.8	32.4
AX-99165604	18	5,161,298	27.4	36.8	32.4
AX-99106416	18	6,560,906	31.8	50.5	41.2

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99050318	18	6,812,085	31.8	50.5	41.2
AX-99063277	18	7,980,667	34.0	56.7	45.3
AX-99043095	18	9,522,534	34.1	56.7	45.4
AX-98998515	18	10,395,394	36.3	58.8	47.5
AX-99174116	18	11,450,382	36.3	58.8	47.5
AX-99129124	18	11,989,478	36.3	58.8	47.5
AX-99041523	18	13,740,272	36.3	58.8	47.5
AX-99130752	18	16,065,525	41.5	58.8	47.5
AX-99120033	18	16,790,024	42.8	59.1	48.6
AX-99026537	18	18,431,616	43.7	59.3	49.5
AX-99099851	18	20,091,402	44.7	59.6	50.3
AX-99038535	18	21,369,266	45.7	59.8	51.3
AX-99147738	18	21,694,806	45.7	59.8	51.3
AX-99105469	18	23,087,091	45.7	59.8	51.3
AX-99011357	18	23,572,203	45.7	59.8	51.3
AX-99020358	18	24,415,329	45.7	59.8	51.3
AX-99023290	18	25,001,009	45.7	59.8	51.3
AX-99121469	18	25,558,576	45.7	59.8	51.3
AX-99112550	19	463,486	0.0	0.0	0.0
AX-99120724	19	463,982	0.0	0.0	0.0
AX-99037546	19	539,019	0.0	0.0	0.0
AX-99121986	19	1,354,544	1.2	2.0	1.7
AX-99149736	19	1,551,918	2.5	4.0	3.3
AX-99031932	19	6,270,033	10.9	18.9	15.3
AX-99096304	19	6,376,399	12.9	21.1	18.0
AX-99130593	19	6,401,186	12.9	21.1	18.0
AX-98996956	19	6,404,430	12.9	21.1	18.0
AX-99045172	19	6,404,573	12.9	21.1	18.0
AX-99174323	19	6,489,793	14.9	37.8	26.3
AX-99169559	19	6,545,766	14.9	37.8	26.3
AX-99127927	19	7,208,107	14.9	37.8	26.3
AX-99171510	19	8,891,698	18.4	49.8	32.4
AX-99088044	19	12,424,323	23.6	69.7	42.0
AX-99099481	19	14,663,575	25.3	75.4	45.0
AX-99040846	19	15,671,115	27.0	81.0	48.0
AX-99093945	19	16,676,647	27.0	81.0	48.0
AX-99149964	19	18,132,981	27.0	81.0	48.0
AX-99143042	19	18,998,856	27.0	81.0	48.0
AX-99118499	19	20,029,162	30.2	81.0	49.7
AX-99099729	19	20,544,543	30.2	81.0	49.7
AX-99010164	19	21,398,220	30.2	81.0	49.7
AX-99057314	19	23,629,653	32.1	81.0	50.8
AX-99126617	19	25,090,010	35.0	81.0	52.2
AX-99115860	19	26,400,383	35.0	81.0	52.2
AX-99149267	20	529,562	0.0	0.0	0.0
AX-99029865	20	1,204,080	0.0	0.0	0.0
AX-99147912	20	3,314,071	6.0	13.7	9.6
AX-99159941	20	4,466,377	6.0	13.7	9.6
AX-99112693	20	5,493,600	12.1	22.6	17.7

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99082221	20	5,963,197	12.1	22.6	17.7
AX-99112847	20	7,212,452	14.1	27.3	21.1
AX-99097468	20	7,734,691	18.1	37.4	28.1
AX-99002948	20	8,960,383	24.1	49.2	36.4
AX-99168241	20	11,134,250	28.0	55.9	41.5
AX-99060369	20	12,046,434	29.2	55.9	42.1
AX-99062079	20	12,394,903	29.2	55.9	42.1
AX-99032710	20	13,255,515	29.2	55.9	42.1
AX-99114056	20	14,562,560	29.2	55.9	42.1
AX-99006930	20	14,732,566	29.2	55.9	42.1
AX-99090217	20	16,299,679	29.2	55.9	42.1
AX-99164908	20	16,774,517	29.2	55.9	42.1
AX-99125085	20	17,285,277	29.2	55.9	42.1
AX-99121139	20	18,615,858	31.4	57.0	43.5
AX-99006944	20	19,204,784	31.4	57.0	43.5
AX-99167083	20	20,102,009	31.4	57.0	43.5
AX-99941383	20	24,744,502	45.1	71.0	57.5
AX-99038178	20	26,424,088	46.9	73.1	59.5
AX-99088349	20	26,646,686	49.6	73.1	62.4
AX-99119779	21	461,566	0.0	0.0	0.0
AX-99091957	21	461,688	0.0	0.0	0.0
AX-99035037	21	2,186,446	0.5	0.0	0.2
AX-99137355	21	3,676,980	2.1	0.0	0.7
AX-99095899	21	6,061,072	4.1	0.0	1.4
AX-99073625	21	6,841,415	4.1	0.0	1.4
AX-99173303	21	7,319,259	5.8	0.0	1.8
AX-99018613	21	8,365,207	7.4	0.0	2.1
AX-99167987	21	10,090,515	7.4	0.0	2.1
AX-99129261	21	10,312,268	7.4	0.0	2.1
AX-99166411	21	11,248,667	7.4	0.0	2.1
AX-99064240	21	14,001,457	7.4	0.0	2.1
AX-99120313	21	15,294,387	7.4	0.0	2.1
AX-99030785	21	15,855,139	10.5	5.3	8.6
AX-99029993	21	18,466,554	12.0	6.8	10.3
AX-99095696	21	20,886,908	24.1	40.3	26.8
AX-99117294	21	22,261,372	24.1	40.3	26.8
AX-99058059	21	22,680,123	24.1	40.3	26.8
AX-99068863	21	24,942,354	24.1	40.3	26.8
AX-99171473	22	246,187	0.0	0.0	0.0
AX-99001264	22	1,464,806	0.0	0.0	0.0
AX-99120891	22	3,738,674	0.0	12.2	12.2
AX-99076127	22	4,348,379	0.0	15.8	15.8
AX-99116368	22	5,236,782	0.0	17.6	17.6
AX-99142689	22	5,573,778	0.0	17.6	17.6
AX-99136469	22	6,974,321	0.0	17.6	17.6
AX-99071535	22	7,464,384	0.0	17.6	17.6
AX-99106495	22	8,820,007	0.0	17.6	17.6
AX-99121656	22	9,571,055	0.0	18.6	18.3
AX-99128729	22	10,431,632	0.0	18.6	18.3

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99105394	22	10,859,696	0.0	18.6	18.3
AX-99143101	22	11,524,739	0.0	18.6	18.3
AX-99047826	22	12,759,057	1.9	18.6	19.6
AX-99019431	22	13,438,034	1.9	18.6	19.6
AX-99129218	22	14,013,681	1.9	18.6	19.6
AX-99127276	22	15,014,920	7.1	21.8	22.7
AX-99129601	22	15,736,397	7.1	21.8	22.7
AX-99166923	22	17,413,366	7.2	21.8	22.7
AX-99003411	22	17,493,664	7.2	21.8	22.7
AX-99063791	22	17,538,287	7.2	21.8	22.7
AX-99065194	22	18,742,585	10.0	30.8	29.6
AX-99135247	22	19,426,426	13.9	36.9	34.3
AX-99096569	22	20,840,130	24.2	60.0	50.6
AX-99121389	22	20,857,311	24.2	60.0	50.6
AX-99000614	22	21,748,336	24.2	60.0	50.6
AX-98991022	22	21,758,128	25.2	62.0	52.1
AX-99113384	22	21,806,317	25.2	62.0	52.1
AX-99941486	22	22,115,209	28.8	62.1	52.3
AX-99090146	22	22,602,833	36.9	66.0	59.5
AX-99115441	22	22,923,120	36.9	66.0	59.5
AX-99010186	22	23,297,746	36.9	66.0	59.5
AX-99124515	22	23,669,737	36.9	66.0	59.5
AX-99124129	22	25,256,249	36.9	66.0	60.6
AX-99116004	23	728,057	0.0	0.0	0.0
AX-99036140	23	855,028	0.0	0.0	0.0
AX-99173714	23	2,275,794	16.6	0.0	8.6
AX-99072834	23	4,326,507	16.6	0.0	8.6
AX-99092042	23	6,848,467	21.2	0.0	11.0
AX-99072527	23	7,795,189	21.2	0.0	11.0
AX-99107215	23	9,367,143	21.2	0.0	11.0
AX-99059031	23	15,669,688	47.5	12.1	27.7
AX-99093987	23	16,491,334	47.5	12.1	27.7
AX-99053066	23	17,064,577	47.5	12.1	27.7
AX-99076493	23	17,541,704	47.5	12.1	27.7
AX-99134816	23	20,172,421	85.9	42.4	60.9
AX-99116878	23	20,172,438	85.9	42.4	60.9
AX-99058124	23	20,172,466	85.9	42.4	60.9
AX-98998296	23	20,181,496	85.9	42.4	60.9
AX-99167200	23	20,204,663	85.9	42.4	60.9
AX-99067302	23	20,249,595	85.9	42.4	60.9
AX-98992863	23	20,639,619	85.9	42.4	60.9
AX-99020858	23	20,723,673	85.9	42.4	60.9
AX-99036115	23	20,727,938	85.9	42.4	60.9
AX-99039610	23	20,728,042	85.9	42.4	60.9
AX-99096433	23	20,729,420	85.9	42.4	60.9
AX-99034168	23	20,766,865	85.9	81.2	99.7
AX-99094991	23	25,259,825	85.9	82.0	100.8
AX-99104018	24	1,026,823	0.0	0.0	0.0
AX-99019440	24	1,098,286	0.0	0.0	0.0

SNP	Chromosome	Genomic position (bp)	Female map (cM)	Male map (cM)	Sex average map (cM)
AX-99941125	24	1,403,684	0.0	0.0	0.0
AX-99090355	24	5,671,074	35.5	7.1	20.6
AX-99001550	24	6,113,693	35.5	14.3	25.2
AX-99050162	24	6,702,472	45.4	19.6	32.1
AX-99110109	24	8,706,191	47.5	20.8	33.6
AX-99056920	24	13,625,795	47.5	21.0	33.7
AX-99092428	24	13,795,773	74.1	35.1	51.9
AX-99092748	24	17,332,891	76.3	36.5	53.6
AX-99047523	24	18,631,334	78.5	37.9	55.3
AX-99026891	25	120,069	0.0	0.0	0.0
AX-99054391	25	1,282,587	0.0	0.0	0.0
AX-99135573	25	1,808,069	0.0	0.0	0.0
AX-99018343	25	6,512,876	8.1	45.4	23.6
AX-99131620	25	6,698,071	8.1	45.4	23.6
AX-99046767	25	8,889,246	25.6	55.0	37.1
AX-98995235	25	9,464,426	25.6	55.0	37.1
AX-99058651	25	9,472,218	25.6	55.0	37.1
AX-99140527	25	9,659,737	25.6	55.0	37.1
AX-99011115	25	10,308,484	53.7	62.4	54.1
AX-99149280	25	12,930,944	53.8	62.4	54.2
AX-99015531	25	13,352,556	53.8	62.4	54.2
AX-99141777	25	14,122,508	53.8	62.4	54.2
AX-99033070	25	14,881,978	53.8	66.9	56.4
AX-99130862	26	224,364	0.0	0.0	0.0
AX-99015391	26	1,797,497	0.0	0.0	0.0
AX-99004070	26	4,991,078	12.2	0.0	12.2
AX-99167814	26	8,419,044	20.3	8.0	20.3
AX-99101460	26	8,572,562	22.3	10.0	22.3
AX-98991830	26	8,932,441	26.3	13.9	26.3
AX-99078107	26	9,673,188	36.2	23.8	36.1
AX-99130928	26	9,968,854	36.2	23.8	36.1
AX-99027853	26	10,942,413	57.6	23.8	57.5
AX-99169685	26	11,616,106	57.6	23.8	57.5