SUPPLEMENTARY TABLES

Supplementary Table 1A. Genetic markers for CSS intercrosses, including genotype frequencies and physical location of each marker. For SNPs, rs#'s are provided if available. For MIT markers, the MIT# is provided, and the location of the start of the marker is provided. The P values derived from χ^2 square tests are also listed. All locations are from the 'build 37' of the mouse genome.

Chr1	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs6279250*	34861334	9	16	44	23	0.48
m2	*rs3698978*	50280311	7	21	41	23	0.90
m3	*NA*	69358085	7	18	39	28	0.23
m4	*NA*	93051201	13	25	28	26	0.035
m5	*NA*	115866540	2	24	39	27	0.41
m6	*NA*	137009748	4	23	48	17	0.46
m7	*NA*	161819366	13	25	35	19	0.38
m8	*NA*	179077988	1	26	50	15	0.17

Chr2	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs6268728*	3098242	6	20	44	19	0.85
m2	*rs6186663*	19707302	4	22	44	19	0.85
m3	*rs3709811*	37512633	8	19	44	18	0.73
m4	*rs3683801*	50982703	9	20	40	20	1.0
m5	*rs3725789*	68943607	8	21	40	20	0.98
m6	*rs6195857*	94463620	17	20	30	22	0.35
m8	*NA*	123084010	0	22	47	20	0.83
m9	*rs3659784*	127811381	0	22	46	21	0.94
m10	*NA*	143750271	0	25	46	18	0.55
m11	*rs6165476*	153378234	7	24	42	16	0.45
m12	*rs6280640*	169140117	10	24	42	13	0.18
m13	*rs3664044*	173433324	3	29	39	18	0.17

Chr3	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs3654259*	8191414	6	28	44	12	0.043
m2	*rs6345660*	17057227	10	24	45	11	0.065
m3	*rs3704796*	37877811	6	29	45	10	0.011
m4	*rs3722463*	43958542	7	30	41	12	0.020
m5	*rs3691410*	52701909	6	27	44	13	0.088
m6	*rs6408988*	65496801	6	27	42	15	0.18
m7	*NA*	76369126	9	27	39	15	0.16
m8	*NA*	87319781	11	25	39	15	0.28
m9	*rs3725719*	98835339	6	28	41	15	0.13
m10	*rs6223512*	115460765	6	26	40	18	0.42
m11	*NA*	127224122	8	26	35	21	0.31
m12	*NA*	139075990	9	24	36	21	0.54
m13	*rs3667861*	150149500	6	23	39	22	0.80
m14	*rs3705364*	153989782	6	23	38	23	0.68

Chr4	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs3673940*	10707784	1	22	47	21	0.90
m2	*rs3668108*	20937009	3	19	51	18	0.32
m3	*rs6180709*	34233990	2	23	44	22	0.98
m4	*rs6292901*	45719484	3	24	43	21	0.88
m5	*rs3718270*	62737984	1	22	50	18	0.48
m7	*rs6346428*	91018031	1	22	47	21	0.90
m8	*rs3702483*	100341635	4	19	46	22	0.78
m9	*rs3669776*	114062188	1	26	46	18	0.48
m11	*rs3660565*	154234901	2	28	44	17	0.26
m12	*rs6356815*	154901839	4	28	41	18	0.27

Chr5	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m2	*NA*	3954562	4	15	42	31	0.050
m1	*rs3720435*	6707774	6	16	42	28	0.18
m3	*NA*	28799894	3	20	40	29	0.26
m4	*rs3697876*	44762021	3	17	50	22	0.38
m5	*NA*	54280548	4	17	49	22	0.43
m6	*NA*	66895169	3	17	52	20	0.26
m7	*rs6370445*	77445413	5	19	49	19	0.50
m8	*NA*	77874807	6	20	48	18	0.53
m9	*NA*	100487351	3	24	50	15	0.20
m10	*rs4139216*	106277814	4	23	50	15	0.21
m11	*rs3710475*	124419573	3	27	47	15	0.17
m12	*rs3679356*	130062448	6	27	47	12	0.050
m13	*rs3683595*	148381541	11	18	42	21	0.85
m14	*rs13494898*	150723203	6	24	44	18	0.64

Chr6	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs6399637*	4038999	2	23	47	21	0.91
m2	*D6Mit138*	4453823	1	23	47	22	0.97
m3	*rs6206704*	24099478	2	21	49	21	0.76
m4	*D6Mit159*	29701222	1	21	50	21	0.71
m5	*rs3653923*	36326302	3	22	48	20	0.78
m6	*rs6238771*	45196664	3	20	50	20	0.57
m8	*rs3687557*	47171501	3	20	49	21	0.69
m9	*D6Mit274*	48676564	1	22	50	20	0.68
m10	*rs3704207*	51788954	3	21	47	22	0.90
m11	*rs6272774*	54130746	3	20	49	21	0.69
m12	*rs6357773*	54486887	3	20	48	22	0.78
m13	*D6Mit384*	55149860	1	20	50	22	0.68
m14	*rs3719871*	73275180	5	18	53	17	0.16
m15	*D6Mit188*	75397577	1	18	56	18	0.11
m16	*D6Mit391*	85227313	1	19	52	21	0.44
m17	*rs3678992*	86744027	1	20	51	21	0.57
m18	*D6Mit284*	92557300	1	20	51	21	0.57
m19	*D6Mit36*	104453354	1	19	47	26	0.57
m20	*rs3660181*	106576613	2	19	46	26	0.58
m21	*D6Mit287*	111954645	1	18	49	25	0.48
m22	*D6Mit254*	125306664	1	17	51	24	0.34
m23	*rs3673273*	127706085	3	15	51	24	0.18
m24	*rs3725987*	137509363	2	16	48	27	0.23
m26	*D6Mit159*	146377508	1	17	42	33	0.044
m27	*rs3726118*	146616586	1	20	39	33	0.055
m28	*rs3655959*	147672117	2	18	41	32	0.074

Chr7	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	10759214	1	21	40	26	0.57
m2	*rs6253542*	18294434	0	22	41	25	0.74
m3	*D7Mit117*	30711325	0	21	45	22	0.97
m4	*rs6317174*	31199827	2	21	44	21	0.98
m5	*rs6295036*	53518750	0	23	45	20	0.88
m6	*D7Mit145*	58658647	0	24	42	22	0.87
m7	*rs6358650*	71779376	2	24	41	21	0.82
m8	*rs6238048*	78800660	7	25	37	19	0.47
m9	*D7Mit318*	81093848	0	26	42	20	0.61
m10	*rs3685723*	87429996	2	24	43	19	0.75
m11	*rs6180537*	94396119	1	28	39	20	0.30
m12	*D7Mit301*	98732421	2	28	41	17	0.22
m13	*rs6207175*	101211976	0	27	42	19	0.44
m14	*rs3707827*	108612007	0	26	44	18	0.48
m15	*D7Mit238*	126237672	0	26	43	19	0.56
m16	*D7Mit255*	132057953	2	25	42	19	0.64
m17	*rs3669956*	141707427	2	23	39	24	0.68
m18	*rs3660122*	146762950	2	17	46	23	0.53

Chr8	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	7701082	8	24	47	13	0.13
m2	*rs3665611*	14696377	3	27	46	16	0.24
m3	*rs3696130*	18414948	2	29	44	17	0.20
m4	*rs3668791*	32235562	3	30	39	20	0.16
m5	*NA*	44323159	3	30	39	20	0.16
m6	*NA*	58256437	4	30	40	18	0.14
m7	*NA*	70778784	4	32	38	18	0.048
m8	*rs3704660*	71590932	6	31	38	17	0.057
m9	*NA*	83394568	3	30	41	18	0.15
m10	*rs6180306*	109166165	3	26	49	14	0.13

Chr9	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	6238770	1	20	38	16	0.78
m2	*rs3718348*	13273648	7	17	36	15	0.84
m3	*rs13480100*	21254586	4	17	39	15	0.67
m4	*rs13480121*	30569454	0	18	41	16	0.68
m5	*NA*	42998616	6	16	38	15	0.69
m6	*rs3674354*	45608804	6	14	41	14	0.29
m7	*NA*	55648369	8	18	34	15	0.87
m8	*NA*	67272481	3	20	36	16	0.80
m9	*NA*	78782775	1	20	38	16	0.78
m10	*NA*	91213376	18	16	25	16	0.65
m12	*NA*	102819274	2	18	37	18	0.99
m13	*NA*	112970216	4	20	30	21	0.42
m14	*rs3689641*	117065881	5	17	33	20	0.78
m15	*rs13480461*	123156563	1	19	35	20	0.89

Chr10	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	3052687	1	23	46	19	0.76
m2	*NA*	15458832	0	26	44	19	0.57
m3	*rs13480559*	27164666	0	26	41	22	0.63
m4	*rs13480605*	45532637	0	26	42	21	0.66
m5	*NA*	57864252	0	27	40	22	0.48
m6	*NA*	67650755	0	23	44	22	0.98
m7	*NA*	82456915	0	22	44	23	0.98
m8	*NA*	93796983	0	22	43	24	0.91
m9	*NA*	108194335	3	19	42	25	0.64
m10	*NA*	113663225	2	20	41	26	0.57
m11	*rs13480828*	128283020	2	30	49	8	0.0019
m12	*rs13480829*	128787461	1	32	48	8	0.0010

Chr11	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	19462224	5	18	41	22	0.82
m2	*NA*	36473611	3	20	40	23	0.85
m3	*NA*	47824182	4	17	41	24	0.55
m4	*NA*	60767164	4	21	39	22	0.90
m5	*NA*	74388242	3	17	46	20	0.55
m6	*NA*	87797367	4	17	48	17	0.30
m7	*NA*	103185048	3	20	45	18	0.71
m8	*NA*	118205023	1	21	44	20	0.94

Chr12	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs6175716*	9520029	3	15	39	32	0.024
m2	*rs3708787*	25743947	4	17	34	34	0.0061
m3	*rs3655563*	29745274	2	21	32	34	0.0069
m4	*rs6244300*	34067654	4	21	31	33	0.0082
m5	*rs3714470*	44175578	2	24	34	29	0.094
m6	*rs3679289*	57962053	7	22	34	26	0.25
m7	*NA*	67853389	2	18	40	29	0.19
m8	*NA*	77892012	1	21	42	25	0.76
m9	*NA*	89957360	0	22	42	25	0.79
m10	*rs6194601*	101176937	4	28	37	20	0.23
m11	*rs6244378*	108656482	3	30	40	16	0.083
m12	*rs3663714*	117496454	5	32	39	13	0.011

Chr13	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	17329088	5	23	32	20	0.40
m2	*rs3712759*	30912387	1	23	36	20	0.65
m3	*NA*	31360028	0	23	36	21	0.64
m4	*NA*	45626046	3	21	32	24	0.30
m5	*rs6292911*	46643637	2	20	35	23	0.59
m6	*rs13481839*	60519003	4	20	36	20	0.90
m7	*rs3701026*	69417270	1	20	38	21	0.93
m8	*NA*	76738759	4	17	38	21	0.81
m9	*NA*	90068112	2	15	43	20	0.48
m10	*NA*	117503836	0	14	49	17	0.11
m11	*rs3664641*	119994838	2	14	46	18	0.23

Chr14	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs3709957*	15597413	1	15	45	29	0.11
m2	*rs3687985*	26434864	6	14	49	21	0.17
m3	*rs3699992*	31470184	1	14	46	29	0.076
m4	*rs3704957*	52811460	2	12	51	25	0.048
m5	*rs3706792*	79390536	1	15	57	17	0.029
m6	*rs3707135*	87652871	3	15	58	14	0.0079
m7	*rs6379772*	99953391	1	18	54	17	0.13
m8	*rs3683181*	112084315	3	18	50	19	0.37
m9	*rs3665550*	119425508	1	21	47	21	0.87
m10	*rs6363142*	122444361	3	19	52	16	0.17

Chr15	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs6190892*	10404432	0	21	40	22	0.94
m2	*rs3707147*	19093422	5	21	36	21	0.79
m3	*rs3669912*	24967836	3	23	41	16	0.53
m4	*rs3692586*	42453452	0	23	39	21	0.82
m5	*rs3682404*	54262541	1	22	39	21	0.90
m6	*rs3708194*	67561558	1	23	37	22	0.67
m7	*rs6406941*	80209103	0	22	40	21	0.94
m8	*rs6288751*	91146287	0	21	41	21	0.99

Chr16	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs3722676*	7332949	0	19	44	28	0.39
m2	*rs3682490*	35819624	1	20	43	27	0.53
m3	*rs3654046*	44483805	0	21	43	27	0.59
m4	*rs3658486*	56449883	1	18	46	26	0.48
m5	*NA*	74037040	0	19	45	27	0.49

Chr17	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs3712728*	17702906	6	17	40	27	0.28
m2	*NA*	20220469	13	15	36	26	0.18
m3	*rs6357023*	35744610	5	16	41	28	0.17
m4	*rs3726018*	35771262	18	15	33	24	0.25
m5	*NA*	51584071	13	12	41	24	0.13
m6	*rs6217678*	66235348	5	13	50	22	0.10
m7	*NA*	67150414	21	12	37	20	0.33
m8	*NA*	79859508	14	13	44	19	0.24
m9	*rs3691225*	88010097	5	20	42	23	0.89
m10	*NA*	93504119	20	20	30	20	0.49

Chr18	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	3513387	2	26	50	14	0.12
m2	*rs13483221*	15408257	9	19	48	16	0.32
m3	*NA*	32717270	0	23	49	20	0.75
m4	*NA*	44614321	13	20	41	18	0.90
m5	*NA*	61794775	1	26	46	19	0.58
m6	*NA*	75054730	9	20	46	17	0.55
m7	*NA*	88445711	2	23	49	18	0.53

Chr19	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*rs6323147*	9969714	2	22	45	19	0.82
m2	*rs3681258*	27964978	1	21	56	10	0.0069
m3	*rs3706846*	37995436	1	24	53	10	0.013
m4	*rs6169063*	45603164	1	25	50	12	0.054
m5	*rs3708392*	55690780	1	24	52	11	0.027
m6	*rs3723935*	58537250	1	24	48	15	0.25

ChrX	rs# or MIT# (if available)	Location in bp (2007)	NA	BB	BA	AA	P value
m1	*NA*	5278564	0	42	-	47	0.60
m2	*NA*	45765715	0	41	-	48	0.46
m3	*rs6411410*	49412504	0	43	-	46	0.75
m4	*rs13483815*	68130578	0	49	-	40	0.34
m5	*rs3686696*	82416327	0	50	-	39	0.24
m6	*rs3699508*	103295401	1	50	-	38	0.20
m7	*rs6205221*	126830240	0	52	-	37	0.11
m8	*rs6323976*	139773177	0	50	-	39	0.24
m9	*rs3720812*	152151349	1	51	-	37	0.14
m11	*rs3673053*	162467486	1	50	-	38	0.20
m12	NA	163190188	1	50	-	38	0.20

Supplementary Table 1B. Markers used in the B6 X A/J intercross are provided. The location in the 2004 assembly and 2007 assembly (build 27) are provided. One marker on chromosome 4 mapped to only the 2004 analysis but was included in the analysis because no excessive recombination occurred between this marker and other markers on chromosome 4 (data not shown).

2004_pos	RS name(s)	2007_pos
1-3671591	rs30610098	1-3658405
1-22136158	rs31130534	1-21911999
1-40907247	rs3677272	1-40638747
1-63000406	rs30661498	1-62654433
1-101081908	rs31967942	1-103086280
1-116376810	rs30523241	1-118252818
1-155690774	rs32026431	1-157548417
1-173501172	rs31066027	1-175301166
1-192385385	rs6277122	1-194314119
2-3129136	rs33618629	2-3098565
2-20429144	rs27120251	2-20295020
2-42696217	rs33122860	2-42591746
2-62744557	rs28002552	2-62643978
2-80023310	rs28324484	2-79969408
2-102087574	rs27375660	2-102033747
2-122027187	rs33269443	2-122103900
2-143676514	rs32853364	2-143750271
2-161762189	rs27333766	2-161524576
2-181492134	rs27670658	2-181538722
3-9673584	rs6387423	3-9622963
3-27844292	rs31636604	3-27977931
3-42196443	rs3665179	3-42168694
3-66475292	rs30760009	3-66041817
3-84707728	rs31311415	3-84108613
3-103528976	rs30303620	3-103402746
3-123046608	rs6381993	3-122367462
3-158998839	rs30263084	3-158035563
4-3495096	rs27720774	4-3495096
4-22699320	rs27745520	4-22700352
4-60185456	rs13477735	4-61518987
4-79512364	rs28106227	4-80882955

4-104800190	rs28187349	4-106127154
4-132324595	rs27594533	4-133425884
4-154135071	NA	NA
5-3944283	rs31193261	5-3938277
5-24589699	rs32285801	5-26529917
5-43903241	rs33309044	5-45679420
5-90907005	rs33249065	5-92510104
5-106703942	rs33582007	5-109668667
5-127292236	rs33689749	5-130230031
5-147868794	rs3165172	5-151203465
6-3064139	rs6392909	6-3321606
6-25227130	rs52307604	6-25337408
6-43948714	rs30316067	6-43946758
6-60682722	rs30915467	6-60541414
6-86639812	rs30283204	6-86259791
6-107110538	rs30167841	6-106666678
6-128425070	rs29972952	6-127727818
6-148956716	rs30312640	6-148760171
7-3131034	rs31096534	7-3131034
7-22000936	rs31295269	7-34522873
7-40227483	rs32328308	7-60023888
7-58816998	rs31466348	7-78925064
7-77551668	rs31962679	7-97467612
7-94601983	rs31958468	7-114478889
7-113892379	rs3678246	7-133561177
7-133034540	rs31152094	7-152507460
8-33522722	rs32769508	8-35626459
8-52564351	rs32709278	8-54476318
8-68092295	rs3704053	8-71590847
8-90830486	rs33601490	8-94031516
8-109414665	rs33219858	8-112622271
8-127335507	rs33152430	8-130452279
9-8297333	rs29887009	9-8307298
9-29909942	rs30088824	9-29748832
9-46601023	rs30282496	9-46304162
9-65755275	rs29688072	9-65363311
9-104059689	rs30278935	9-104040265
9-123239895	rs29596800	9-123140595
10-3064625	rs29325124	10-3064625
10-24168756	rs29342973	10-24128649
10-67659501	rs6242461	10-67347694
10-91696200	rs29335849	10-91391138
10-108436248	rs29319568	10-

		108194131
10-128562373	rs29346747	10-127872663
11-3245029	rs26884122	11-3250244
11-20818481	rs3664865	11-20822914
11-41562800	rs29438923	11-41736567
11-82490069	rs29447499	11-82690239
11-98884034	rs29454222	11-99074225
11-117370392	rs29401815	11-117560577
12-6966739	rs13481285	12-7021189
12-27576834	rs29180162	12-33247795
12-48208329	rs29136254	12-54087593
12-71176621	rs29173065	12-76989416
12-94567240	rs29205196	12-101168125
12-114656013	rs3695641	12-120853081
13-21657828	rs29235380	13-22369573
13-40185315	rs29554010	13-40837177
13-59593019	rs29240914	13-60551422
13-95931293	rs29227075	13-99961722
13-113669666	rs29515886	13-117498011
14-9479331	rs31071846	14-13708217
14-25722967	rs6159786	14-30497456
14-53039866	rs30701326	14-61664522
14-93665732	rs30741554	14-101839948
14-116892781	rs30112843	14-124994483
15-6995276	rs13459145	15-7117980
15-26200284	rs32299863	15-26089855
15-44588295	rs31627972	15-44397300
15-68119758	rs31202853	15-67685473
15-83332522	rs32192579	15-82805161
15-102923981	rs31786273	15-102272796
16-5343733	rs4153209	16-5661854
16-26906913	rs4165503	16-27062967
16-41204697	rs4178232	16-41339263
16-61790976	rs4193306	16-61533476
16-79956413	rs6166418	16-79576183
17-3233033	rs33470793	17-3232805

17-25168944	rs33523502	17-26718524
17-53986422	rs33567983	17-55841880
17-75163657	rs29714724	17-77086271
17-93236762	rs29504100	17-94854172
18-9411109	rs3683892	18-9196200
18-27201485	rs13483264	18-26919757
18-46708088	rs29774134	18-46423449
18-67343528	rs29723033	18-66977944
18-88763180	rs30060354	18-88445711
19-8126086	rs31112038	19-9101495
19-25698132	rs30759358	19-26496830
19-43193150	rs31077420	19-43930982
X-40497516	rs31387531	X-45502408
X-61293280	rs29043614	X-66980108
X-78406226	rs29064179	X-84100707
X-97534127	rs3694287	X-103325110
X-120390061	rs29112557	X-126919889
X-133807536	rs29284868	X-140350956
X-156445441	rs31557451	X-162770708

Supplementary Table 2. Relations between parental strain and diet for five obesity-related traits.

A. Mean and standard deviation for all five traits for each strain-diet combination.

		HFSC		HFCC		LFSC		LFCC	
Trait	**Strain**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
MW (grams)	**B6**	32.85	2.84	33.32	3.67	26.44	1.44	27.06	1.27
	AJ	27.46	2.67	28.78	3.78	25.09	1.60	24.55	1.79
FW (grams)	**B6**	43.70	4.82	42.19	5.66	29.04	1.90	31.01	1.71
	AJ	31.62	3.82	30.65	4.06	27.09	1.58	26.35	2.13
EWG (grams/day)	**B6**	0.24	0.04	0.26	0.05	0.11	0.02	0.14	0.02
	AJ	0.17	0.04	0.16	0.05	0.09	0.02	0.11	0.03
FWG (grams/day)	**B6**	0.26	0.06	0.21	0.06	0.06	0.04	0.09	0.03
	AJ	0.10	0.04	0.04	0.03	0.05	0.02	0.04	0.05
WG (grams/day)	**B6**	0.25	0.04	0.24	0.05	0.09	0.02	0.12	0.02
	AJ	0.14	0.03	0.11	0.03	0.07	0.02	0.08	0.02

B. ANOVA for body weight traits in C57BL/6J and AJ on the four diets.

Mid Weight	df	Sum Sq	Mean Sq.	F value	Pr(>F)
Strain	1	1132.41	1132.41	138.9408	< 2.2e-16
Fat	1	1983.20	1983.20	243.3272	< 2.2e-16
Carbohydrate	1	0.74	0.74	0.0902	0.76412
Strain:Fat	1	240.52	240.52	29.5101	1.25E-07
Strain:Carbohydrate	1	4.00	4.00	0.4911	0.48403
Fat:Carbohydrate	1	2.03	2.03	0.2487	0.6184
Strain:Fat:Carbohydrate	1	35.56	35.56	4.3626	0.03768
Residuals	267	2176.14	8.15		

Final Weight	df	Sum Sq	Mean Sq.	F value	Pr(>F)
Strain	1	4874.8	4874.8	336.9329	< 2e-16
Fat	1	5375.8	5375.8	371.5609	< 2e-16
Carbohydate	1	10.7	10.7	0.7385	0.39091
Strain:Fat	1	1381.5	1381.5	95.4838	< 2e-16
Strain:Carbohydrate	1	3.9	3.9	0.2669	0.60586
Fat:Carbohydrate	1	69.1	69.1	4.7748	0.02975
Strain:Fat:Sugar	1	64.2	64.2	4.4399	0.03604
Residuals	267	3863.0	14.5		

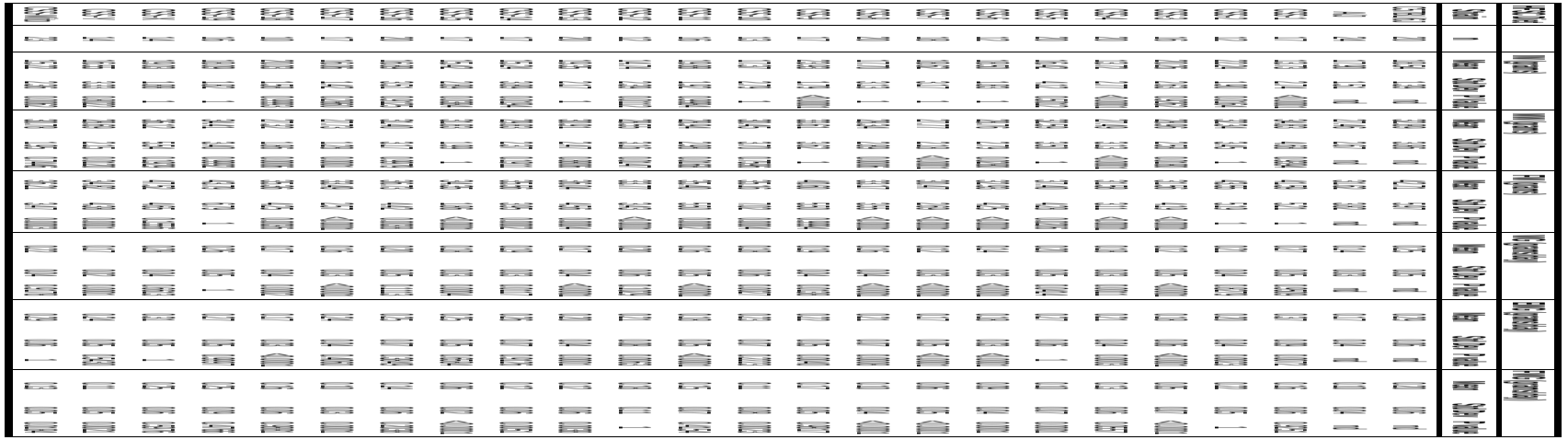
Early Weight Gain	df	Sum Sq	Mean Sq.	F value	Pr(>F)
Strain	1	0.37673	0.37673	217.1116	< 2.2e-16
Fat	1	0.96209	0.96209	554.4582	< 2.2e-16
Carbohydrate	1	0.00577	0.00577	3.3258	0.06932
Strain:Fat	1	0.14022	0.14022	80.8096	< 2.2e-16
Strain:Carbohydrate	1	0.00074	0.00074	0.4267	0.51417
Fat:Carbohydrate	1	0.04996	0.04996	28.7946	1.75E-07
Strain:Fat:Carbohydrate	1	0.00605	0.00605	3.4870	0.06295
Residuals	267	0.46329	0.00174		

Weight Gain	df	Sum Sq	Mean Sq.	F value	Pr(>F)
Strain	1	0.47108	0.47108	423.3437	< 2.2e-16
Fat	1	0.67753	0.67753	608.8731	< 2.2e-16
Carbohydrate	1	0.00122	0.00122	1.0981	0.2956
Strain:Fat	1	0.16580	0.16580	148.9996	< 2.2e-16
Strain:Carbohydrate	1	0.00237	0.00237	2.1271	0.1459
Fat:Carbohydrate	1	0.03000	0.03000	26.9558	4.13E-07
Strain:Fat:Carbohydrate	1	0.00182	0.00182	1.6367	0.2019
Residuals	267	0.29711	0.00111		

Final Weight Gain	df	Sum Sq	Mean Sq.	F value	Pr(>F)
Strain	1	0.65062	0.65062	350.5718	< 2.2e-16
Fat	1	0.39274	0.39274	211.6208	< 2.2e-16
Carbohydrate	1	0.00015	0.00015	0.0831	0.773338
Strain:Fat	1	0.22079	0.22079	118.9693	< 2.2e-16
Strain:Carbohydrate	1	0.01901	0.01901	10.2424	0.001538
Fat:Carbohydrate	1	0.01439	0.01439	7.7512	0.005751
Strain:Fat:Carbohydrate	1	0.00006	0.00006	0.0326	0.856947
Residuals	267	0.49552	0.00186		

Supplementary Table 3A. HFSC CSS survey results (O-SRV).

The mean trait value, standard deviation and P value derived from a t-test comparing each CSS to the parental C57BL/6J strain are listed. The P values reflect correction for multiple testing.



Supplementary Table 3B. **LFCC CSS survey results.**

The mean trait value, standard deviation and P value derived from a t-test comparing each CSS to the parental C57BL/6J strain are listed. The P values reflect correction for multiple testing.

LFCC Diet		IW (grams)			MW (grams)			FW (grams)			WG (grams/day)			EWG (grams/day)			FWG (grams/day)		
Strain	n	Mean	Std Dev	P value	Mean	Std Dev	P value	Mean	Std Dev	P value	Mean	Std Dev	P value	Mean	Std Dev	P value	Mean	Std Dev	P value
C57BL/6J	28	19.45	0.86	nd	27.06	1.27	nd	31.01	1.71	nd	0.12	0.02	nd	0.14	0.02	nd	0.09	0.03	nd
A/J	29	18.60	1.52	nd	24.55	1.79	nd	26.35	2.13	nd	0.08	0.02	nd	0.11	0.03	nd	0.04	0.05	nd
CSS-1	17	16.20	3.79	0.0207	28.29	1.86	0.8778	30.53	2.67	1	0.15	0.04	0.1351	0.23	0.06	<0.0001	0.05	0.04	0.0007
CSS-2	18	15.13	3.49	0.0001	26.12	1.58	0.9967	28.62	2.04	0.0349	0.14	0.03	0.8654	0.20	0.05	0.0009	0.06	0.02	0.0099
CSS-3	14	12.59	2.17	<0.0001	23.71	0.90	<0.0001	26.34	1.33	<0.0001	0.14	0.02	0.9448	0.20	0.04	0.0079	0.06	0.02	0.0542
CSS-4	18	14.87	2.25	<0.0001	24.11	2.34	0.0001	26.56	2.47	<0.0001	0.12	0.03	1	0.16	0.04	1	0.06	0.03	0.0299
CSS-5	20	15.68	2.89	0.0008	25.84	1.07	0.8308	29.34	2.12	0.4705	0.14	0.04	0.5113	0.18	0.06	0.0975	0.08	0.05	1
CSS-6	17	16.75	4.12	0.1481	26.07	1.92	0.9934	28.24	2.12	0.0060	0.12	0.03	1	0.18	0.05	0.1022	0.05	0.02	0.0002
CSS-7	15	17.64	3.18	0.9203	27.67	2.52	1	28.99	2.05	0.2742	0.11	0.04	1	0.17	0.08	0.5272	0.03	0.04	<0.0001
CSS-8	18	18.61	2.33	1	26.60	1.65	1	29.22	2.01	0.3938	0.11	0.02	1	0.15	0.04	1	0.06	0.03	0.0025
CSS-9	20	16.16	3.07	0.0087	24.46	2.54	0.0006	26.66	2.25	<0.0001	0.10	0.03	0.9982	0.14	0.05	1	0.05	0.03	0.0002
CSS-10	20	16.07	3.26	0.0061	24.23	1.91	0.0001	25.77	2.09	<0.0001	0.09	0.04	0.3777	0.14	0.07	1	0.03	0.03	<0.0001
CSS-11	21	17.43	3.32	0.5743	25.97	1.69	0.9370	27.92	1.72	0.0002	0.10	0.03	0.9941	0.15	0.04	1	0.04	0.02	<0.0001
CSS-12	17	15.56	3.51	0.0011	25.64	2.18	0.6362	28.54	1.79	0.0286	0.13	0.02	1	0.19	0.05	0.0081	0.06	0.02	0.0201
CSS-13	20	15.20	2.12	<0.0001	26.08	2.42	0.9874	28.88	2.41	0.0856	0.13	0.03	0.9962	0.18	0.05	0.0502	0.06	0.02	0.0288
CSS-14	18	18.43	2.56	1	26.31	1.72	1	28.09	1.40	0.0017	0.10	0.02	0.7034	0.14	0.04	1	0.04	0.03	<0.0001
CSS-15	19	19.75	3.94	1	28.69	2.08	0.2840	31.43	2.77	1	0.12	0.02	1	0.17	0.03	0.4528	0.06	0.03	0.1114
CSS-16	13	16.59	1.42	0.1791	26.90	1.40	1	29.41	1.23	0.8413	0.12	0.02	1	0.18	0.03	0.3398	0.05	0.02	0.0201
CSS-17	20	16.86	1.43	0.1419	25.46	1.74	0.2888	28.15	2.41	0.0015	0.11	0.03	1	0.15	0.04	1	0.06	0.03	0.0239
CSS-18	18	16.91	3.93	0.2127	25.89	2.92	0.9165	29.40	3.56	0.6282	0.13	0.03	1	0.16	0.05	0.9978	0.08	0.03	1
CSS-19	13	20.28	2.24	1	28.05	1.77	0.9990	30.80	2.54	1	0.11	0.02	1	0.14	0.04	1	0.06	0.03	0.2160
CSS-X	19	18.83	1.54	1	26.42	1.25	1	28.97	1.87	0.1459	0.10	0.02	0.9234	0.13	0.03	1	0.06	0.02	0.0020
CSS-Y	21	17.70	2.34	0.8456	26.79	2.06	1	29.05	2.21	0.0617	0.11	0.02	1	0.16	0.04	0.9628	0.05	0.02	0.0001
CSS-Mito	23	18.93	1.92	1	28.55	1.70	0.3529	31.65	2.04	1	0.13	0.03	0.9999	0.17	0.04	0.3332	0.07	0.03	0.5971

Supplementary Table 3C. **Gene-diet interactions for HFSC (O-SRV) and LFCC surveys for the growth and obesity-related traits.**

To compare the response of individual CSSs to the response of C57BL/6J to the HFSC versus LFCC diets, the effect of the HFSC diet (final weight on HFSC diet compared to final weight on LFCC diet) for each CSS was compared to that of C57BL/6J. The difference between the mean trait value for the HFSC – LFCC diets, the t-statistic derived from an unpaired t-test, and P value derived from the t-test are presented. Multiple testing was taken into account (see Materials and Methods).

	IW									WG			EWG			FWG		
Strain	(grams)	T statistic	P value	MW (grams)	T statistic	P value	FW (grams)	T statistic	P value	(grams/day)	T statistic	P value	(grams/day)	T statistic	P value	(grams/day)	T statistic	P value
C57BL/6J	-0.91	nd	nd	5.83	nd	nd	11.70	nd	nd	0.13	nd	nd	0.16	nd	nd	0.11	nd	nd
A/J	-0.70	nd	nd	2.92	nd	nd	5.27	nd	nd	0.06	nd	nd	0.06	nd	nd	0.06	nd	nd
CSS-1	-2.47	1.262	1	6.54	-0.617	1	11.06	0.41	1	0.12	0.146	1	0.14	0.568	1	0.11	-0.118	1
CSS-2	7.11	-6.182	<0.0001	6.22	-0.324	1	14.93	-1.96	0.9478	0.08	3.012	0.2328	0.00	6.278	<0.0001	0.17	-2.599	0.5192
CSS-3	7.67	-6.688	<0.0001	5.25	0.490	1	5.22	3.98	0.0133	-0.02	8.708	<0.0001	-0.01	7.061	<0.0001	-0.01	5.347	0.0001
CSS-4	-1.15	0.283	1	3.37	2.217	0.8206	5.02	4.40	0.0027	0.07	3.789	0.0263	0.05	4.614	0.0011	0.07	1.615	0.9977
CSS-5	0.73	-1.394	0.9999	6.75	-0.832	1	8.07	2.43	0.6594	0.06	4.462	0.0021	0.09	2.926	0.2814	0.02	4.270	0.0046
CSS-6	1.76	-2.041	0.9185	2.70	2.585	0.5312	4.69	4.23	0.0053	0.02	6.144	<0.0001	0.00	6.263	<0.0001	0.04	3.002	0.2377
CSS-7	0.98	-1.511	0.9995	0.10	4.949	0.0004	1.48	6.46	<0.0001	0.01	6.990	<0.0001	0.00	6.639	<0.0001	0.03	3.607	0.0475
CSS-8	-0.91	0.000	1	1.74	3.682	0.0377	3.95	5.11	0.0002	0.05	5.029	0.0002	0.06	4.410	0.0027	0.04	3.127	0.1775
CSS-9	7.77	-7.191	<0.0001	9.14	-2.952	0.2663	13.94	-1.46	0.9998	0.09	2.544	0.5648	0.07	3.790	0.0261	0.11	-0.338	1
CSS-10	1.29	-1.747	0.9816	6.22	-0.331	1	9.39	1.44	0.9998	0.09	2.493	0.6072	0.09	2.689	0.4625	0.07	1.556	0.9989
CSS-11	2.45	-2.779	0.3791	2.97	2.547	0.5624	7.49	2.74	0.4060	0.06	4.148	0.0072	0.03	5.495	<0.0001	0.10	0.233	1
CSS-12	-0.83	-0.064	1	2.91	2.409	0.6764	5.24	3.90	0.0176	0.07	3.444	0.0762	0.01	5.776	<0.0001	0.12	-0.512	1
CSS-13	4.14	-4.286	0.0044	4.83	0.917	1	7.16	3.04	0.2204	0.04	5.859	<0.0001	0.02	6.211	<0.0001	0.06	2.491	0.6167
CSS-14	-3.19	1.859	0.9747	3.52	2.038	0.9202	7.48	2.72	0.4224	0.10	2.100	0.8901	0.12	1.660	0.9962	0.08	1.492	0.9997
CSS-15	-4.33	2.813	0.3550	3.15	2.382	0.6987	2.92	5.70	<0.0001	0.06	4.470	0.0021	0.08	3.501	0.0648	0.00	5.351	0.0001
CSS-16	0.30	-0.976	1	4.50	1.161	1	7.32	2.74	0.4043	0.08	3.006	0.2358	0.06	3.866	0.0197	0.09	0.945	1
CSS-17	-0.80	-0.093	1	2.27	3.183	0.1542	5.34	4.16	0.0070	0.05	4.828	0.0006	0.09	2.905	0.2947	0.04	3.494	0.0655
CSS-18	3.11	-2.992	0.2435	1.43	3.527	0.0602	5.96	3.37	0.0940	0.04	4.979	0.0003	0.01	5.562	<0.0001	0.08	1.227	1
CSS-19	-2.20	0.991	1	6.36	-0.436	1	12.99	-0.78	1	0.15	-1.474	0.9998	0.13	1.226	1	0.19	-3.654	0.0412
CSS-X	0.20	-0.885	1	9.70	-3.324	0.1063	16.55	-4.31	0.0039	0.18	-3.143	0.1707	0.17	-0.661	1	0.19	-3.975	0.0137
CSS-Y	-1.16	0.199	1	1.89	3.427	0.0801	5.77	3.78	0.0271	0.06	4.071	0.0097	0.08	3.181	0.1548	0.06	2.333	0.7359
CSS-Mito	-3.71	2.460	0.6344	2.24	3.408	0.0846	4.56	4.35	0.0034	0.09	2.463	0.6316	0.12	1.800	0.9851	0.06	2.575	0.5391

Supplementary Table 4A. Supplementary Table 4A. HFSC CSS survey replicate – R-WOL.

The mean, standard deviation and P value derived from an unpaired t-test with comparisons to C57BL/6J are listed. The P values were corrected to account for multiple hypothesis testing.

R-WOL		IW (grams)				FW (grams)				BMI (g/cm^2)			
Strain	n	Mean	Std Dev	T statistic	P Value	Mean	Std Dev	T statistic	P Value	Mean	Std Dev	T statistic	P value
C57BL/6J	29	18.45	1.38	nd	nd	45.37	5.25	nd	nd	0.40	0.04	nd	nd
A/J	30	18.26	1.62	nd	nd	31.32	3.15	nd	nd	0.31	0.02	nd	nd
CSS-1	26	15.64	2.53	-4.218	0.0016	45.83	4.86	0.337	1	0.41	0.03	0.136	1
CSS-2	22	15.18	3.22	-4.700	0.0002	44.11	5.71	-0.886	1	0.41	0.05	0.536	1
CSS-3	16	18.37	1.58	-0.115	1	0.33	0.02	-6.580	<0.0001	0.33	0.02	-5.763	<0.0001
CSS-4	25	17.79	1.09	-0.980	1	36.23	4.18	-6.663	<0.0001	0.33	0.03	-6.557	<0.0001
CSS-5	21	16.89	3.26	-2.206	0.5905	38.99	5.49	-4.426	0.0008	0.35	0.04	-4.410	0.0008
CSS-6	24	18.25	3.25	-0.296	1	35.44	4.64	-7.158	<0.0001	0.34	0.04	-6.130	<0.0001
CSS-7	22	17.50	1.70	-1.367	0.9965	31.78	3.00	-9.556	<0.0001	0.30	0.03	-9.372	<0.0001
CSS-8	17	17.40	2.70	-1.397	0.9951	37.12	4.19	-5.369	<0.0001	0.34	0.03	-5.360	<0.0001
CSS-9	19	16.09	3.63	-3.245	0.0548	44.15	5.88	-0.824	1	0.39	0.04	-1.052	1
CSS-10	25	18.49	1.61	0.052	1	37.92	6.42	-5.431	<0.0001	0.35	0.05	-5.195	<0.0001
CSS-11	19	16.52	2.09	-2.657	0.2559	38.77	4.92	-4.448	0.0007	0.36	0.04	-3.590	0.0176
CSS-12	26	16.66	1.63	-2.690	0.2376	38.55	3.70	-5.019	<0.0001	0.37	0.03	-3.460	0.0275
CSS-13	20	16.35	2.73	-2.931	0.1321	34.48	4.31	-7.450	<0.0001	0.33	0.05	-6.727	<0.0001
CSS-14	23	17.97	2.09	-0.026	1	37.83	2.43	-5.370	<0.0001	0.35	0.02	-4.714	0.0002
CSS-15	22	17.73	3.02	-1.044	1	38.20	5.78	-5.041	<0.0001	0.35	0.04	-5.110	<0.0001
CSS-16	21	15.81	3.29	-3.741	0.0100	37.30	3.52	-5.599	<0.0001	0.34	0.03	-5.357	<0.0001
CSS-17	30	18.48	2.04	0.035	1	34.73	3.88	-8.127	<0.0001	0.32	0.03	-7.995	<0.0001
CSS-18	18	17.79	1.98	-0.893	1	44.78	6.60	-0.390	1	0.41	0.05	0.747	1
CSS-19	20	19.23	1.90	1.089	0.9999	45.28	8.30	-0.062	1	0.41	0.06	0.239	1
CSS-X	14	16.23	1.95	-2.774	0.1962	39.24	5.29	-3.744	0.0099	0.37	0.04	-2.546	0.3266
CSS-Y	18	17.95	2.87	-0.682	1	36.73	4.23	-5.725	<0.0001	0.35	0.03	-4.809	0.0001
CSS-Mito	31	18.36	2.08	-0.150	1	41.69	6.10	-2.831	0.1705	0.37	0.05	-3.207	0.0614

Supplementary Table 4B. **HFSC CSS survey replicate - R-ARC.**

The mean, standard deviation and P value derived from an unpaired t-test with comparisons to C57BL/6J are listed. The P values were corrected to account for multiple testing.

R-ARC		IW (grams)				FW (grams)				BMI (g/cm^2)			
Strain	n	Mean	Std Dev	T statistic	P Value	Mean	Std Dev	T statistic	P Value	Mean	Std Dev	T statistic	P value
C57BL/6J	20	21.73	1.21	nd	nd	46.68	3.98	nd	nd	0.41	0.04	nd	nd
A/J	6	16.82	1.09	nd	nd	30.94	2.91	nd	nd	0.29	0.03	nd	nd
CSS-1	7	19.98	1.33	-0.900	0.4084	46.78	3.90	0.93	1	0.42	0.04	-0.495	1
CSS-2	11	20.26	2.55	-2.370	0.4384	46.98	6.27	0.05	1	0.42	0.04	0.589	0.9998
CSS-3	11	18.26	1.42	-2.330	<0.0001	34.92	5.08	0.18	<0.0001	0.33	0.03	1.114	<0.0001
CSS-4	23	18.88	1.88	-5.495	<0.0001	37.22	3.48	-6.81	<0.0001	0.34	0.03	-5.815	<0.0001
CSS-5	24	18.40	1.84	-5.536	<0.0001	40.35	3.68	-6.72	0.0005	0.36	0.04	-6.522	0.0036
CSS-6	23	19.91	1.10	-6.548	0.0196	36.84	3.41	-4.54	<0.0001	0.33	0.03	-4.015	<0.0001
CSS-7	23	19.85	2.79	-3.539	0.0129	34.67	4.25	-7.00	<0.0001	0.32	0.03	-6.551	<0.0001
CSS-8	22	18.84	1.09	-3.662	<0.0001	38.15	4.30	-8.54	<0.0001	0.34	0.03	-7.752	<0.0001
CSS-9	22	20.91	1.85	-5.562	0.9525	48.37	4.87	-6.00	0.9992	0.42	0.04	-5.929	1
CSS-10	25	19.99	1.44	-1.584	0.0255	38.91	5.96	1.19	<0.0001	0.34	0.03	0.953	<0.0001
CSS-11	20	21.01	1.60	-3.459	0.9935	42.07	5.86	-5.63	0.0625	0.38	0.04	-5.946	0.2220
CSS-12	24	20.91	1.37	-1.354	0.9444	40.89	4.84	-3.17	0.0022	0.37	0.04	-2.669	0.0088
CSS-13	6	18.06	0.89	-1.608	0.0002	36.16	5.25	-4.15	0.0001	0.33	0.03	-3.783	0.0001
CSS-14	20	19.49	1.74	-4.692	0.0018	40.52	4.21	-4.91	0.0016	0.36	0.04	-4.882	0.0035
CSS-15	11	21.26	1.58	-4.213	1	42.41	6.50	-4.23	0.3367	0.37	0.04	-4.023	0.1438
CSS-16	12	19.45	1.05	-0.748	0.0112	39.68	3.05	-2.47	0.0021	0.35	0.03	-2.852	0.0010
CSS-17	24	18.74	2.44	-3.708	<0.0001	35.48	4.44	-4.16	<0.0001	0.32	0.03	-4.348	<0.0001
CSS-18	24	18.59	1.85	-5.872	<0.0001	46.91	4.89	-8.04	1	0.43	0.04	-7.889	0.7309
CSS-19	19	19.40	1.65	-6.167	0.0011	43.24	5.82	0.17	0.4368	0.39	0.04	1.968	0.9919
CSS-X	16	20.19	1.06	-4.336	0.1932	48.12	3.06	-2.33	1	0.43	0.04	-1.373	0.7891
CSS-Y	20	19.96	0.82	-2.728	0.0374	40.90	4.15	0.93	0.0043	0.37	0.04	1.891	0.0772
CSS-Mito	nd	nd	nd	-3.337	nd	nd	nd	-3.97	nd	nd	nd	-3.090	nd

Supplementary Table 5. LOD scores and adjusted P values for the intercross analysis.

The peak LOD scores and associated P values are provided for each chromosome. Light yellow is used to highlight QTLs that meet the suggestive criteria ($p<0.63$), and bright yellow is used to highlight QTLs that meet significance criteria ($p<0.05$).

	FW		MW		IW		BMI		WG		EWG		FWG	
Chromosome	LOD	P Value	LOD	P Value	LOD	P Value	LOD	P Value	LOD	P Value	LOD	P Value	LOD	P Value
1	4.465	0.054	3.568	0.292	0.710	1.000	**4.885**	**0.024**	**4.660**	**0.036**	2.884	0.723	2.232	0.988
2	0.698	1.000	0.842	1.000	1.206	1.000	1.060	1.000	1.263	1.000	2.039	0.996	1.076	1.000
3	1.460	1.000	1.036	1.000	1.083	1.000	1.280	1.000	2.280	0.990	1.784	1.000	1.688	1.000
4	2.308	0.991	1.385	1.000	2.467	0.971	2.462	0.971	1.113	1.000	0.728	1.000	1.938	0.999
5	2.280	0.979	1.749	1.000	0.996	1.000	2.197	0.988	2.003	0.998	1.876	1.000	2.873	0.718
6	3.785	0.259	3.293	0.539	2.400	0.984	**5.031**	**0.023**	4.257	0.109	2.167	0.998	4.337	0.094
7	0.844	1.000	0.653	1.000	1.905	1.000	1.987	1.000	2.818	0.840	1.633	1.000	2.330	0.989
8	0.282	1.000	0.484	1.000	2.148	0.995	0.311	1.000	0.679	1.000	1.361	1.000	0.363	1.000
9	0.569	1.000	0.486	1.000	0.307	1.000	0.726	1.000	0.935	1.000	0.504	1.000	1.217	1.000
10	3.214	0.550	**5.827**	**0.006**	3.166	0.583	2.638	0.906	3.507	0.369	**6.803**	**0.001**	1.182	1.000
11	4.025	0.114	2.270	0.974	0.721	1.000	3.918	0.143	**4.605**	**0.041**	2.589	0.866	4.165	0.091
12	1.612	1.000	2.282	0.987	1.695	1.000	1.426	1.000	1.381	1.000	1.880	1.000	1.059	1.000
13	4.139	0.151	**4.874**	**0.042**	1.812	1.000	3.264	0.535	3.393	0.456	3.093	0.648	3.242	0.548
14	0.511	1.000	0.405	1.000	0.953	1.000	0.608	1.000	0.523	1.000	0.308	1.000	1.053	1.000
15	1.005	1.000	1.499	1.000	1.897	1.000	1.134	1.000	1.008	1.000	1.758	1.000	0.388	1.000
16	0.984	1.000	1.041	1.000	1.118	1.000	0.969	1.000	0.632	1.000	0.750	1.000	0.986	1.000
17	2.721	0.860	3.477	0.382	1.945	1.000	1.986	1.000	1.953	1.000	2.277	0.989	0.667	1.000
18	1.995	0.997	2.407	0.935	0.778	1.000	1.898	0.999	1.645	1.000	2.551	0.875	1.938	0.999
19	2.208	0.993	1.815	1.000	0.887	1.000	2.089	0.998	2.320	0.982	1.371	1.000	1.964	1.000
X	1.084	1.000	0.934	1.000	0.270	1.000	1.087	1.000	1.014	1.000	0.633	1.000	1.004	1.000

Supplementary Table 6. P values for intercross vs. B6 analysis.

An unpaired t-test was used to compare the FW of each CSS intercross population to B6. The P values derived from the t-test are presented.

Chr	P value
1.0	1.0000
19.0	0.9668
9.0	0.9345
16.0	0.8748
2.0	0.7165
14.0	0.3539
11.0	0.1086
17.0	0.0064
X	0.0046
8.0	0.0019
18.0	0.0017
5.0	0.0004
15.0	0.0001
6.0	<0.0001
12.0	0.0001
10.0	<0.0001
4.0	<0.0001
3.0	<0.0001
7.0	<0.0001
13.0	<0.0001

Supplementary Table 7. Suggestive QTLs detected in the B6 X A/J intercross.

Chromosome (trait)	**QTL name**	**Location (cM)**	**1.5 LOD support interval (cM)**
6 (FW)	*Obrq3*	24	17 - 32
6 (WG)	*Obrq1*	60	0 - 88
10 (FW)	*Obrq5*	101	83 - 101
10 (BMI)	*Obrq5*	101	80 – 101
13 (IW)	*Not named*	53	34 - 74
17 (IW)	*Not named*	17	0 - 48

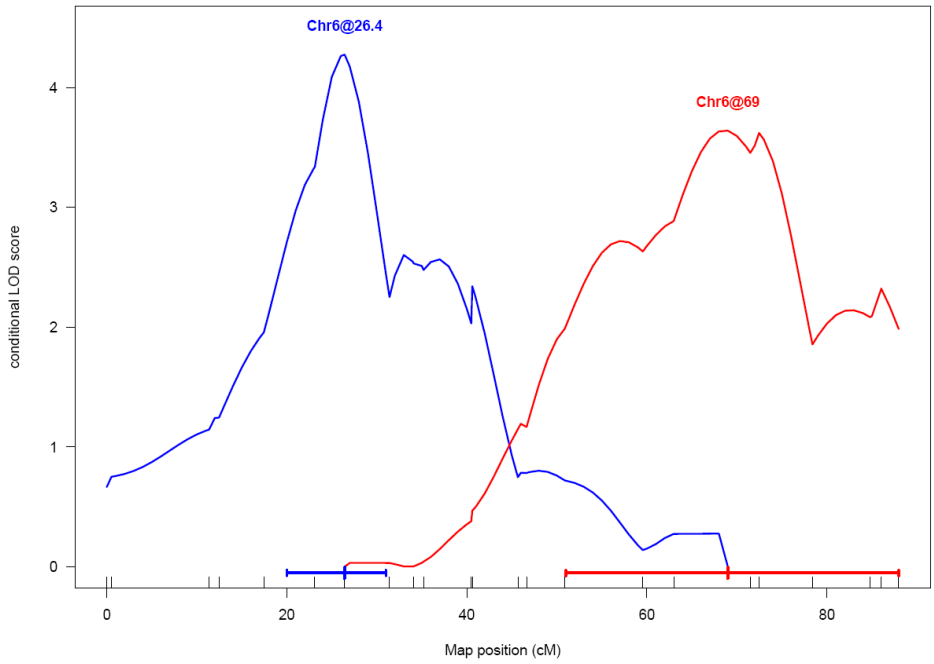
SUPPLEMENTARY FIGURES

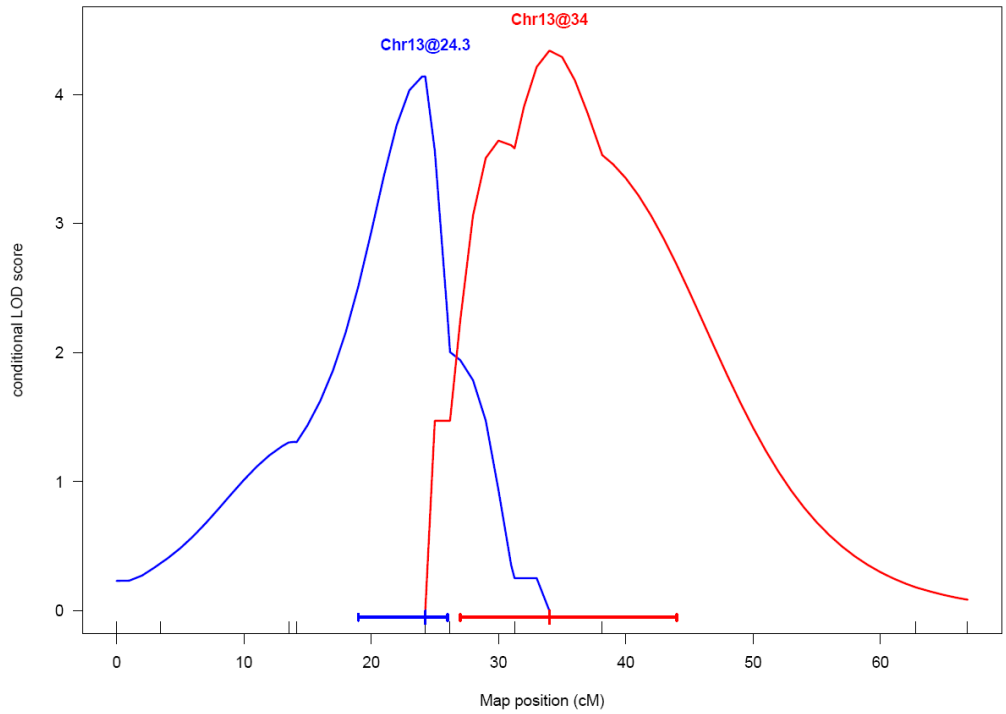
Supplementary Figure 1. Two-dimensional, two-QTL scan.

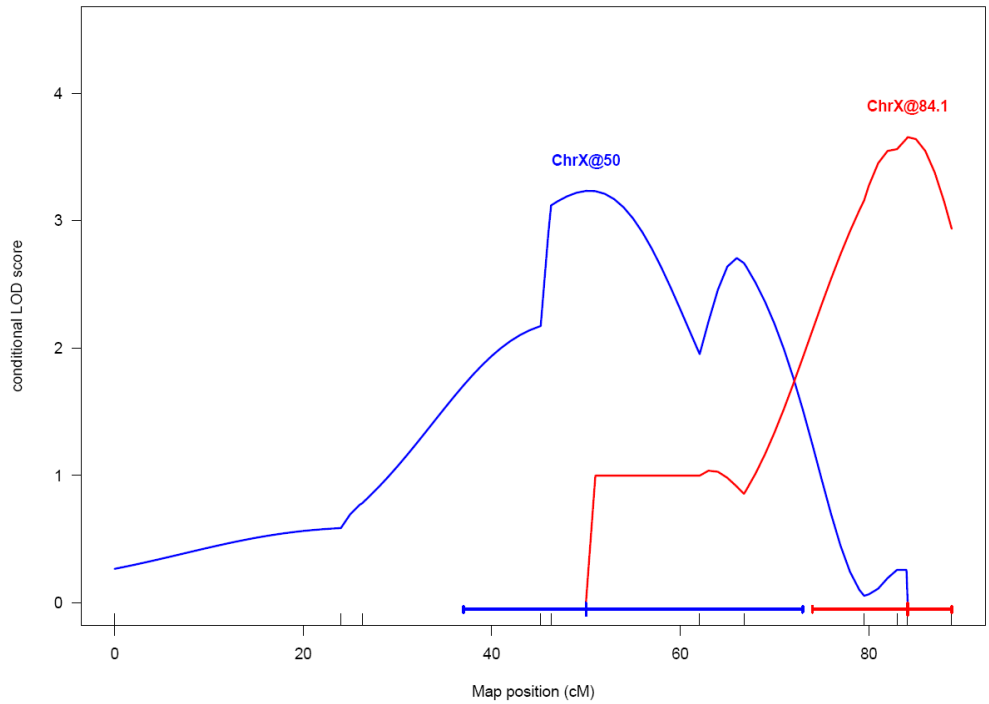
The results of the two-dimensional, two-QTL scan are provided. Each phenotype-chromosome combination is represented by a square. The upper- left triangles contain LOD scores comparing a 2-QTL additive model to the best single-QTL model; the lower-right triangles contain LOD scores comparing a 2-QTL interactive model to the best single QTL model. In the color scale at the right, the numbers to the left correspond to the upper-left triangles and the numbers to the right correspond to the lower-right triangles.

Supplementary Figure 2. Suggestive QTL pairs detected in two-dimensional, two-QTL scan. Suggestive QTL pairs were identified on chromosome 6 (FWG), 13 (FW), and X (FWG). In A, for each QTL pair, two curves are provided with each curve representing the evidence for one QTL assuming the presence of the other. In B, for each QTL pair, the mice were sorted by their genotypes at the markers with the peak LOD score. Then, the mean +/- SEM were calculated for each genotype combination and plotted.

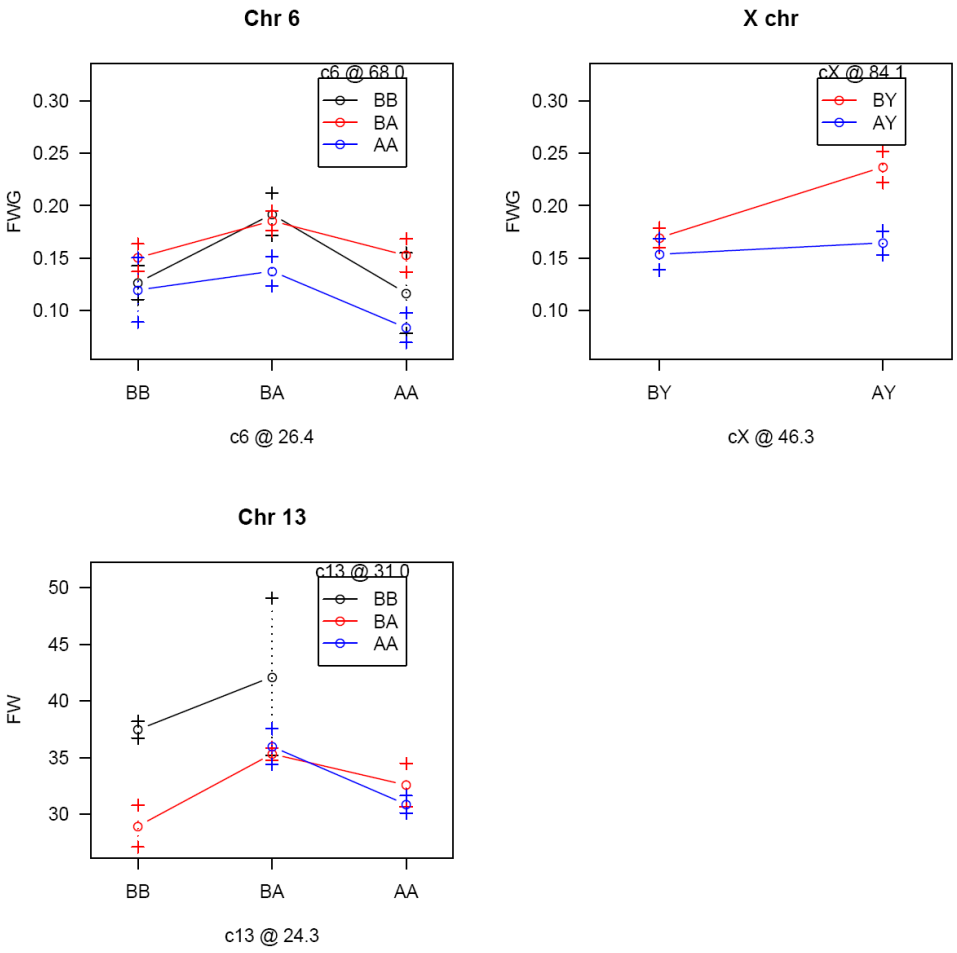
A. Two-QTL LOD Plots




Chr13@34
Chr13@24.3
conditional LOD score
0
1
2
3
4
0
10
20
30
40
50
60
Map position (cM)


ChrX@84.1
ChrX@50
conditional LOD score
0
1
2
3
4
0
20
40
60
80
Map position (cM)

B. Phenotype Plots



Supplementary Figure 3. B6 X A/J Intercross. The LOD curves for each trait (IW, FW, BMI, WG) in the B6 X A/J intercross is provided.