

Supplementary information

Whole genome re-sequencing reveals recent signatures of selection in three strains of farmed Nile tilapia (*Oreochromis niloticus*)

María I. Cádiz¹², María E. López³¹, Diego Díaz-Domínguez⁴, Giovanna Cáceres¹², Grazyella M. Yoshida¹, Daniel Gomez-Uchida^{5.6}, José M. Yáñez^{1,6*}.

¹ Facultad de Ciencias Veterinarias y Pecuarias, Universidad de Chile, Avenida Santa Rosa 11735, 8820808, La Pintana, Santiago, Chile

² Programa de Doctorado en Ciencias Silvoagropecuarias y Veterinarias, Campus Sur, Universidad de Chile, Santa Rosa 11315, La Pintana, Santiago, Chile. CP: 8820808.

³ Department of Animal Breeding and Genetics, Swedish University of Agricultural Sciences, Uppsala, Sweden.

⁴ Departamento de Ciencias de la Computación, Universidad de Chile.

⁵ Facultad de Ciencias Naturales y Oceanográficas, Universidad de Concepción, Concepción, Chile.

⁶ Núcleo Milenio INVASAL, Concepción, Chile

*jmayanez@uchile.cl +56-2 29785533 (Corresponding Author).

Supplementary Table S6. List of all genes detected by FST method.

<i>LG</i>	<i>Initial pos.</i>	<i>Final pos.</i>	<i>Fst</i>	<i>Gene symbol</i>	<i>Gene name</i>	<i>Fst pair</i>
NC 031970.2	1450001	1456151	0.278567	aldh4a1	aldehyde dehydrogenase 4 family member A1	AB
NC 031970.2	1457073	1573914	0.278567	rnf123	E3 ubiquitin-protein ligase RNF123	AB
NC 031970.2	1500334	1511978	0.278567	amigo3	adhesion molecule with Ig like domain 3	AB
NC 031970.2	1577939	1581356	0.278567	LOC100704836	nuclear factor 7%2C brain-like	AB
NC 031970.2	1619478	1700000	0.278567	LOC100705106	metabotropic glutamate receptor 7	AB
NC 031970.2	1811582	1813889	0.278551	LOC100705371	nuclear factor 7%2C ovary-like	AB
NC 031970.2	2018833	2025568	0.279528	LOC109201209	C-type lectin lectoxin-Lio3-like	AB
NC 031970.2	2091314	2100000	0.28043	nien1	nicolin 1	AB
NC 031970.2	2173449	2175000	0.289934	LOC109196940	E3 ubiquitin-protein ligase TRIM21-like	AB
NC 031970.2	2432598	2475000	0.280473	dag1	dystroglycan	AB
NC 031970.2	2709137	2725000	0.288342	LOC100707129	poly(rC)-binding protein 4	AB
NC 031979.2	39800001	39810365	0.29983	LOC100694109	mannan-binding lectin serine protease 1	AB
NC 031979.2	39812093	39816625	0.29983	LOC100694381	coagulation factor IX	AB
NC 031979.2	39819137	39836154	0.29983	abcf3	ATP binding cassette subfamily F member 3	AB
NC 031979.2	39838716	39858311	0.29983	lrch3	leucine rich repeats and calponin homology domain containing 3%2C	AB
NC 031979.2	39860915	39864953	0.29983	rpl35a	60S ribosomal protein L35a	AB
NC 031979.2	39877706	39897917	0.29983	abcc5	ATP binding cassette subfamily C member 5%2C	AB
NC 031979.2	39901373	39909014	0.29983	LOC100695440	aminopeptidase RNPEPL1	AB
NC 031979.2	39909132	39936159	0.29983	LOC100695702	segment polarity protein dishevelled homolog DVL-3	AB
NC 031979.2	39945101	39964366	0.29983	LOC100696228	matrix metalloproteinase-23	AB
NC 031979.2	39967639	39969647	0.29983	LOC100711345	stress-associated endoplasmic reticulum protein 1	AB
NC 031979.2	39971189	39979524	0.29983	eif2a	eukaryotic translation initiation factor 2A	AB
NC 031979.2	39983942	39987015	0.291507	LOC112842090	translation initiation factor IF-2-like	AB
NC 031979.2	39998789	40006829	0.291507	LOC102076535	P2Y purinoceptor 14	AB
NC 031979.2	40013885	40016120	0.291507	LOC100696762	dual specificity protein phosphatase 14	AB
NC 031979.2	40016000	40023944	0.291507	polr2d	DNA-directed RNA polymerase II subunit RPB4	AB
NC 031979.2	40045898	40047694	0.291507	LOC102078165	olfactory receptor 10A6-like	AB
NC 031979.2	40059391	40060317	0.291507	LOC100697300	olfactory receptor 490-like	AB
NC 031979.2	40091339	40093756	0.291507	LOC100697563	olfactory receptor 142-like	AB
NC 031979.2	40097174	40098151	0.291507	LOC100697835	olfactory receptor 10A3-like	AB
NC 031979.2	40119684	40125000	0.308242	LOC100699398	E3 ubiquitin-protein ligase rififylin	AB
NC 031979.2	40131048	40141628	0.291507	eif4h	eukaryotic translation initiation factor 4H	AB
NC 031979.2	40143954	40150000	0.301402	LOC100699668	anoctamin-7	AB
NC 031979.2	40177319	40198758	0.291507	LOC102076712	scavenger receptor cysteine-rich type 1 protein M130	AB
NC 031979.2	40210824	40215365	0.291507	LOC100699935	P2Y purinoceptor 14	AB

NC 031979.2	40243498	40250000	0.29275	ece2	endothelin converting enzyme 2%2C	AB
NC 031979.2	6608493	6644659	0.294713	eif4g1	eukaryotic translation initiation factor 4 gamma 1	AB
NC 031979.2	6617810	6617876	0.294713	LOC112842299	small nucleolar RNA SNORD66	AB
NC 031979.2	6645206	6658230	0.294713	psmd2	26S proteasome non-ATPase regulatory subunit 2	AB
NC 031979.2	6658669	6670188	0.294713	LOC100705895	putative serine protease K12H4.7	AB
NC 031979.2	6671853	6678815	0.294713	serpine2	glia-derived nexin	AB
NC 031979.2	6739630	6750383	0.279557	wdfy1	WD repeat and FYVE domain containing 1	AB
NC 031979.2	6750883	6769041	0.279557	LOC100699243	dehydrogenase/reductase SDR family member 12	AB
NC 031979.2	6770093	6776142	0.279557	ap1s3	AP-1 complex subunit sigma-3	AB
NC 031979.2	6775867	6779753	0.279557	scg2	secretogranin II	AB
NC 031979.2	6822709	6824825	0.279557	kcne4	potassium voltage-gated channel subfamily E member 4	AB
NC 031979.2	6827694	6850000	0.294713	acsl3	acyl-CoA synthetase long chain family member 3%2C	AB
NC 031979.2	6895408	6900000	0.305999	sgpp2	sphingosine-1-phosphate phosphatase 2	AB
NC 031979.2	6920185	6925000	0.28951	pax3	paired box 3%2C	AB
NC 031981.2	35226398	35233993	0.276478	pfkfb3	6-phosphofructo-2-kinase/fructose-2%2C6-biphosphatase 3%2C	AB
NC 031981.2	35245614	35261911	0.276478	rbm17	RNA binding motif protein 17%2C	AB
NC 031981.2	35261940	35273651	0.276478	il15ra	interleukin 15 receptor subunit alpha%2C	AB
NC 031981.2	35278687	35305539	0.276478	LOC100696399	interleukin-15 receptor subunit alpha	AB
NC 031981.2	35311528	35342572	0.276478	fbh1	F-box DNA helicase 1	AB
NC 031981.2	35343139	35352812	0.276478	nudt5	ADP-sugar pyrophosphatase	AB
NC 031981.2	35351683	35365465	0.276478	cdc123	cell division cycle 123%2C	AB
NC 031981.2	35368251	35400000	0.276478	camk1d	calcium/calmodulin dependent protein kinase ID	AB
NC 031981.2	35462612	35472896	0.291135	ccdc3	coiled-coil domain containing 3	AB
NC 031981.2	35475279	35482056	0.291135	optn	optineurin	AB
NC 031981.2	35482523	35494353	0.291135	mcm10	minichromosome maintenance 10 replication initiation factor%2C	AB
NC 031981.2	35494821	35500000	0.323052	ucma	unique cartilage matrix-associated protein	AB
NC 031981.2	35509896	35516113	0.291135	phyh	phytanoyl-CoA 2-hydroxylase	AB
NC 031981.2	35517049	35525000	0.29638	LOC100690600	cyclin-dependent kinase 17	AB
NC 031981.2	37325001	37334486	0.275763	aldh1l2	aldehyde dehydrogenase 1 family member L2%2C	AB
NC 031981.2	37334646	37338968	0.275763	lg17h12orf45	linkage group 17 C12orf45 homolog	AB
NC 031981.2	37346949	37383399	0.275763	slc41a2	solute carrier family 41 member 2	AB
NC 031981.2	37404844	37490445	0.275763	chst11	carbohydrate sulfotransferase 11	AB
NC 031981.2	37502746	37513626	0.275763	txnrd1	thioredoxin reductase 1%2C	AB
NC 031981.2	37511743	37522324	0.275763	nfyb	nuclear transcription factor Y subunit beta	AB
NC 031981.2	37514048	37517165	0.275763	LOC102079836	zinc finger BED domain-containing protein 1-like	AB
NC 031981.2	37535090	37537188	0.275763	LOC100534419	inward rectifier potassium channel 13	AB
NC 031981.2	37571597	37575000	0.275763	podxl	podocalyxin	AB

NC 031983.2	22464784	22481556	0.275871	dcaf5	DDB1 and CUL4 associated factor 5%2C	AB
NC 031983.2	22483925	22548125	0.275871	pacs2	phosphofurin acidic cluster sorting protein 2	AB
NC 031983.2	22551593	22557364	0.275871	srsf5	serine and arginine rich splicing factor 5%2C	AB
NC 031983.2	22559248	22569804	0.275871	LOC100707081	deubiquitinase DESI2	AB
NC 031983.2	22570741	22574316	0.275871	synj2bp	synaptojanin 2 binding protein%2C	AB
NC 031983.2	22575546	22582657	0.275871	LOC100706816	galectin-3	AB
NC 031983.2	22582444	22591044	0.275871	LOC100706545	glia maturation factor beta	AB
NC 031983.2	22594332	22600883	0.275871	cnih1	cornichon family AMPA receptor auxiliary protein 1%2C	AB
NC 031983.2	22602093	22608094	0.275871	cdkn3	cyclin dependent kinase inhibitor 3	AB
NC 031983.2	22617728	22627429	0.275871	slc39a8	solute carrier family 39 member 8	AB
NC 031983.2	22628094	22630565	0.275871	nat8	N-acetyltransferase 8	AB
NC 031983.2	22647591	22667007	0.275871	LOC100706014	dynactin subunit 1	AB
NC 031983.2	22668234	22682136	0.275871	alms1	ALMS1%2C centrosome and basal body associated protein%2C	AB
NC 031983.2	22691926	22700000	0.275871	kcnk5	potassium channel subfamily K member 5	AB
NC 031983.2	22713809	22717109	0.289561	LOC109195789	mucin-19	AB
NC 031983.2	22738815	22750000	0.293762	LOC100705492	potassium channel subfamily K member 17	AB
NC 031983.2	22755852	22759525	0.295094	LOC100705223	potassium channel subfamily K member 16-like	AB
NC 031983.2	22763945	22775000	0.295094	kif6	kinesin family member 6%2C	AB
NC 031983.2	22865516	22875000	0.299584	LOC100694327	disheveled-associated activator of morphogenesis 2	AB
NC 031983.2	2525001	2542605	0.281726	adck1	aarF domain containing kinase 1%2C	AB
NC 031983.2	2549120	2557224	0.281726	snx6	sorting nexin 6	AB
NC 031983.2	2558670	2567177	0.281726	psma3	proteasome subunit alpha 3	AB
NC 031983.2	2566216	2566295	0.281726	LOC112843212	small nucleolar RNA SNORD53/SNORD92	AB
NC 031983.2	2568288	2607768	0.281726	arid4a	AT-rich interaction domain 4A%2C	AB
NC 031983.2	2697537	2704009	0.281726	LOC100699342	cofilin-2	AB
NC 031983.2	2708809	2743734	0.281726	baz1a	bromodomain adjacent to zinc finger domain 1A%2C	AB
NC 031983.2	2750350	2764217	0.281726	jkamp	JNK1/MAPK8 associated membrane protein	AB
NC 031983.2	2768198	2775000	0.281726	fam241a	family with sequence similarity 241 member A	AB
NC 031983.2	4600001	4793539	0.289155	npas3	neuronal PAS domain protein 3%2C	AB
NC 031983.2	4818030	4850000	0.289155	akap6	A-kinase anchor protein 6	AB
NC 031983.2	5039268	5050000	0.358247	arhgap5	Rho GTPase activating protein 5%2C	AB
NC 031983.2	5128702	5136207	0.39945	nubpl	iron-sulfur protein NUBPL	AB
NC 031983.2	5137326	5148536	0.39945	LOC100692408	histone-lysine N-methyltransferase 2B	AB
NC 031983.2	5183108	5187102	0.39945	yipf6	Yip1 domain family member 6	AB
NC 031983.2	5187516	5191369	0.39945	snape1	small nuclear RNA activating complex polypeptide 1	AB
NC 031983.2	5192658	5200000	0.414881	syt16	synaptotagmin 16%2C	AB
NC 031983.2	5241818	5250000	0.400526	sgpp1	sphingosine-1-phosphate phosphatase 1	AB

NC 031983.2	5271626	5274116	0.404111	wdr89	WD repeat-containing protein 89	AB
NC 031983.2	5278950	5300000	0.426801	ppp2r5e	protein phosphatase 2 regulatory subunit B'epsilon%2C	AB
NC 031983.2	5359054	5375000	0.438692	kcnh5	potassium voltage-gated channel subfamily H member 5	AB
NC 031983.2	5555297	5562573	0.300539	gphb5	glycoprotein hormone beta 5	AB
NC 031983.2	5648495	5650000	0.389543	syne2	nesprin-2	AB
NC 031983.2	5694519	5700000	0.377338	esr2	estrogen receptor 2	AB
NC 031983.2	5903562	5925000	0.350431	LOC100699141	protein jagged-2	AB
NC 031983.2	6144111	6150000	0.386448	LOC100698875	transcription factor IIIB 90 kDa subunit	AB
NC 031983.2	6233175	6237557	0.315885	LOC100694622	BTB/POZ domain-containing protein 6-B	AB
NC 031983.2	6286840	6297551	0.314018	LOC109196000	transcription factor IIIB 90 kDa subunit	AB
NC 031983.2	6340720	6350000	0.34119	zfyve21	zinc finger FYVE domain-containing protein 21	AB
NC 031983.2	6353066	6375000	0.319421	kle1	kinesin light chain 1	AB
NC 031983.2	6397364	6400000	0.315885	apopt1	apoptogenic 1%2C mitochondrial	AB
NC 031983.2	6401222	6416626	0.290669	bag5	BAG family molecular chaperone regulator 5	AB
NC 031983.2	6456681	6461654	0.290669	ckb	creatine kinase B%2C	AB
NC 031983.2	6462322	6475000	0.321522	mark3	MAP/microtubule affinity-regulating kinase 3	AB
NC 031983.2	6510522	6519626	0.290669	EIF5	eukaryotic translation initiation factor 5	AB
NC 031983.2	6519638	6524760	0.290669	VPS29	VPS29%2C retromer complex component%2C	AB
NC 031983.2	6526329	6533583	0.290669	LOC100694421	protein FAM216A	AB
NC 031983.2	6546982	6550000	0.306183	LOC100693880	tumor necrosis factor alpha-induced protein 2	AB
NC 031983.2	6568125	6574917	0.290669	LOC109195943	tumor necrosis factor alpha-induced protein 2	AB
NC 031983.2	6577583	6589500	0.290669	LOC109195942	tumor necrosis factor alpha-induced protein 2	AB
NC 031983.2	6577583	6600000	0.290669	LOC100693617	tumor necrosis factor alpha-induced protein 2	AB
NC 031983.2	6800001	6822741	0.28451	LOC109195940	tumor necrosis factor alpha-induced protein 2	AB
NC 031983.2	6851676	6865280	0.28451	LOC100691460	protein LBH	AB
NC 031983.2	6866677	6894204	0.28451	LOC100691190	protein AHNAK2	AB
NC 031983.2	6905527	6910380	0.28451	SERTAD1	SERTA domain containing 1%2C	AB
NC 031983.2	6915335	6921744	0.28451	CDCA4	cell division cycle associated 4%2C	AB
NC 031983.2	6927520	6932522	0.28451	LOC100693443	activator of 90 kDa heat shock protein ATPase homolog 1	AB
NC 031983.2	6932144	6938851	0.28451	LOC102077187	DR1-associated corepressor homolog	AB
NC 031983.2	6942574	6967751	0.28451	LOC100690925	Ia-related protein 1B	AB
NC 031983.2	6972302	6980075	0.28451	PGRMC2	membrane-associated progesterone receptor component 2	AB
NC 031983.2	6981947	6990344	0.28451	LOC100692897	acetylserotonin O-methyltransferase	AB
NC 031983.2	6991156	7005586	0.28451	LOC100690654	protein Jade-1	AB
NC 031983.2	7007189	7021874	0.28451	NSD2	histone-lysine N-methyltransferase NSD2	AB
NC 031983.2	7023979	7048379	0.28451	LETM1	leucine zipper and EF-hand containing transmembrane protein 1%2C	AB
NC 031983.2	7108812	7125000	0.34465	FGFR3	fibroblast growth factor receptor 3	AB

NC 031983.2	7315333	7317930	0.277684	LOC100692627	HRAS-like suppressor 3	AB
NC 031983.2	7332472	7335092	0.277684	foxi3	forkhead box protein I3	AB
NC 031983.2	7369889	7371736	0.277684	LOC100692083	complement factor D	AB
NC 031983.2	7371398	7375000	0.290961	LOC102082980	GTPase IMAP family member 8	AB
NC 031983.2	7376658	7400000	0.287481	lg19h20orf194	linkage group 19 C20orf194 homolog	AB
NC 031983.2	7402978	7409121	0.277684	ky	kyphoscoliosis peptidase	AB
NC 031983.2	7413479	7425000	0.277684	slc4a11	sodium bicarbonate transporter-like protein 11	AB
NC 031983.2	7575001	7590233	0.281043	eif2ak3	eukaryotic translation initiation factor 2 alpha kinase 3	AB
NC 031983.2	7593408	7724317	0.281043	atrn	attractin	AB
NC 031983.2	7734189	7825000	0.281043	gfra4	GDNF family receptor alpha 4%2C	AB
NC 031983.2	8075486	8080062	0.275953	ap5s1	AP-5 complex subunit sigma-1	AB
NC 031983.2	8089420	8096583	0.275953	cdc25b	M-phase inducer phosphatase 2	AB
NC 031983.2	8120161	8121185	0.275953	LOC100710855	homeobox protein notochord-like	AB
NC 031983.2	8124634	8125000	0.281575	LOC100691274	homeobox protein EMX1	AB
NC 031983.2	8136960	8162853	0.275953	sfxn5	sideroflexin 5%2C	AB
NC 031983.2	8163809	8175000	0.275953	LOC100710586	rab11 family-interacting protein 1	AB
NC 031983.2	8230297	8231343	0.291761	LOC102082380	probable G-protein coupled receptor 151	AB
NC 031983.2	8254099	8261535	0.291761	mavs	mitochondrial antiviral signaling protein	AB
NC 031983.2	8262300	8268435	0.291761	LOC100710057	pantothenate kinase 3	AB
NC 031983.2	8269860	8299958	0.291761	lox13	lysyl oxidase homolog 3	AB
NC 031983.2	8302601	8304329	0.291761	mrps26	28S ribosomal protein S26%2C mitochondrial	AB
NC 031983.2	8305903	8308928	0.291761	LOC102080515	neurofilament light polypeptide	AB
NC 031983.2	8312083	8313897	0.291761	LOC100690744	nanos homolog 1	AB
NC 031983.2	8350364	8370547	0.291761	rab3gap2	rab3 GTPase-activating protein non-catalytic subunit	AB
NC 031983.2	8625001	8631016	0.27632	mthfd1	C-1-tetrahydrofolate synthase%2C cytoplasmic	AB
NC 031983.2	8633885	8634949	0.27632	LOC102077281	putative glycine-rich cell wall structural protein 1	AB
NC 031983.2	8672691	8686268	0.27632	ccdc9b	coiled-coil domain containing 9B%2C	AB
NC 031983.2	8689492	8692150	0.27632	inafm2	InaF motif containing 2	AB
NC 031983.2	8692349	8716539	0.27632	plcb2	1-phosphatidylinositol 4%2C5-bisphosphate phosphodiesterase beta-2	AB
NC 031983.2	8727034	8729210	0.27632	ankrd63	ankyrin repeat domain 63	AB
NC 031983.2	8729276	8746894	0.27632	pak6	p21 (RAC1) activated kinase 6%2C	AB
NC 031983.2	8750172	8754935	0.27632	bub1b	BUB1 mitotic checkpoint serine/threonine kinase B	AB
NC 031983.2	8754951	8759237	0.27632	zfyve19	abscission/NoCut checkpoint regulator	AB
NC 031983.2	8758967	8766425	0.27632	LOC100709168	protein phosphatase 1 regulatory subunit 14B	AB
NC 031983.2	8765099	8778695	0.27632	spint1	kunitz-type protease inhibitor 1	AB
NC 031983.2	8782932	8813783	0.27632	LOC102075671	pleckstrin homology domain-containing family G member 3	AB
NC 031983.2	8815260	8823173	0.27632	LOC100708898	neuroglobin	AB

NC 031983.2	8823028	8825247	0.27632	srp14	signal recognition particle 14	AB
NC 031983.2	8826552	8831437	0.27632	pld4	phospholipase D family member 4%2C	AB
NC 031983.2	8831535	8850087	0.27632	LOC100705500	centrosomal protein of 170 kDa protein B	AB
NC 031983.2	8853917	8875000	0.27632	akt1	AKT serine/threonine kinase 1%2C	AB
NC 031983.2	8891487	8898582	0.278362	LOC100704967	zinc finger and BTB domain-containing protein 18.2	AB
NC 031983.2	8901841	8905751	0.278362	siva1	apoptosis regulatory protein Siva	AB
NC 031983.2	8906016	8910153	0.278362	adssl1	adenylosuccinate synthase like 1	AB
NC 031983.2	8910373	8918968	0.278362	LOC100704696	inverted formin-2	AB
NC 031983.2	8918830	8924770	0.278362	LOC102082255	inverted formin-2	AB
NC 031983.2	8929742	8950000	0.278371	dnajc17	DnaJ heat shock protein family (Hsp40) member C17	AB
NC 031983.2	8952422	8956080	0.278362	LOC102081895	cdc42 effector protein 3	AB
NC 031983.2	8971587	8973902	0.278362	gchfr	GTP cyclohydrolase 1 feedback regulatory protein	AB
NC 031983.2	9005604	9007794	0.278362	cyp1c1	cytochrome P450 1C1	AB
NC 031983.2	9026964	9044735	0.278362	LOC112843138	adhesion G-protein coupled receptor G5-like	AB
NC 031983.2	9048024	9050000	0.278362	LOC106098435	adhesion G-protein coupled receptor G5	AB
NC 031983.2	9075667	9080943	0.279823	LOC102082013	adhesion G-protein coupled receptor G5	AB
NC 031983.2	9103359	9115260	0.279823	bmf	Bcl2 modifying factor%2C	AB
NC 031983.2	9169778	9175000	0.292969	LOC100704430	cysteine-rich motor neuron 1 protein	AB
NC 031970.2	23625001	23625090	0.240534	pfdn5	prefoldin subunit 5	BC
NC 031970.2	23625918	23637624	0.240534	LOC100703415	la-related protein 4	BC
NC 031970.2	23637756	23644865	0.240534	LOC100703691	cyclic AMP-dependent transcription factor ATF-7	BC
NC 031970.2	23646930	23689971	0.240534	LOC100703959	disco-interacting protein 2 homolog B-A	BC
NC 031970.2	23694138	23699897	0.240534	LOC100702880	cyclic AMP-dependent transcription factor ATF-1	BC
NC 031970.2	23699477	23702799	0.240534	LOC100703146	methyltransferase-like protein 7A	BC
NC 031970.2	23703087	23705952	0.240534	LOC100703416	methyltransferase-like protein 7A	BC
NC 031970.2	23713022	23760040	0.240534	LOC100704230	sodium channel protein type 8 subunit alpha	BC
NC 031970.2	23764347	23777882	0.240534	LOC100704499	putative fidgetin-like protein 2	BC
NC 031970.2	23785508	23816992	0.240534	LOC100704768	electroneutral sodium bicarbonate exchanger 1	BC
NC 031970.2	23818421	23825972	0.240534	LOC100705039	tubulin monoglycylase TTLL3	BC
NC 031970.2	23827487	23831213	0.240534	LOC100703692	class E basic helix-loop-helix protein 40	BC
NC 031970.2	23834724	23875000	0.240534	LOC100704142	inositol 1%2C4%2C5-trisphosphate receptor type 1	BC
NC 031970.2	24050001	24122680	0.245159	LOC100706902	low-density lipoprotein receptor-related protein 1	BC
NC 031970.2	24135307	24161279	0.245159	LOC100707164	RNA-binding motif%2C single-stranded-interacting protein 2	BC
NC 031970.2	24165978	24169656	0.242985	LOC100707431	protein lifeguard 2	BC
NC 031970.2	24174918	24186085	0.242985	LOC100707699	nuclear receptor subfamily 1 group D member 1	BC
NC 031970.2	24188689	24237248	0.242985	LOC100707970	retinoic acid receptor gamma	BC
NC 031970.2	24238460	24244847	0.242985	LOC100708241	calcium-binding and coiled-coil domain-containing protein 1	BC

NC 031970.2	24245593	24248939	0.242985	smug1	single-strand selective monofunctional uracil DNA glycosylase	BC
NC 031970.2	24249852	24274074	0.242985	LOC100709046	gastrula zinc finger protein XICGF57.1	BC
NC 031970.2	24278005	24291577	0.242985	LOC100709320	LIM domain and actin-binding protein 1	BC
NC 031970.2	24292280	24300000	0.245159	LOC100705130	SPRY domain-containing protein 3	BC
NC 031970.2	24315568	24318012	0.242985	LOC100709587	insulin-like growth factor-binding protein 5	BC
NC 031970.2	24320058	24330900	0.242985	LOC100705399	phosphatidylinositol 5-phosphate 4-kinase type-2 gamma	BC
NC 031970.2	24334591	24358990	0.242985	LOC100709858	arf-GAP with GTPase%2C ANK repeat and PH domain-containing protein 1	BC
NC 031970.2	24361636	24374088	0.242985	cdk4	cyclin dependent kinase 4%2C	BC
NC 031970.2	24383563	24393343	0.242985	LOC100705835	E3 ubiquitin-protein ligase MARCH9	BC
NC 031970.2	24394052	24400000	0.242985	mettl1	methyltransferase like 1%2C	BC
NC 031970.2	25150001	25153503	0.242945	rassf5	Ras association domain family member 5%2C	BC
NC 031970.2	25155447	25168577	0.242945	ikbke	inhibitor of nuclear factor kappa B kinase subunit epsilon%2C	BC
NC 031970.2	25169799	25222831	0.242945	srgap2	SLIT-ROBO Rho GTPase activating protein 2%2C	BC
NC 031970.2	25223279	25228222	0.241418	fam72a	family with sequence similarity 72 member A	BC
NC 031970.2	25363459	25400000	0.242945	LOC100712178	forkhead box protein P4	BC
NC 031970.2	25462435	25475000	0.263788	LOC102079463	myoD family inhibitor domain-containing protein	BC
NC 031970.2	25533889	25550000	0.267455	LOC100696335	transcription factor EB	BC
NC 031970.2	25565138	25571583	0.241395	tmem183a	transmembrane protein 183A	BC
NC 031970.2	25574874	25575000	0.280868	LOC100689731	liprin-alpha-2	BC
NC 031970.2	25640809	25643049	0.241395	myog	myogenin	BC
NC 031970.2	25651277	25658755	0.241395	mdm4	MDM4%2C p53 regulator%2C	BC
NC 031970.2	25659719	25675000	0.262928	LOC100696864	sortilin	BC
NC 031970.2	25679275	25683697	0.241395	psma5	proteasome subunit alpha 5	BC
NC 031970.2	25684685	25698070	0.241395	LOC100697129	matrix remodeling-associated protein 8	BC
NC 031970.2	25698352	25700000	0.251016	LOC100690808	period circadian protein homolog 3	BC
NC 031970.2	25715160	25724427	0.241395	vamp3	vesicle associated membrane protein 3	BC
NC 031970.2	25747139	25750000	0.255567	LOC100697400	coiled-coil domain-containing protein 3	BC
NC 031970.2	25769603	25775000	0.263237	LOC100697666	calcium/calmodulin-dependent protein kinase type 1	BC
NC 031970.2	25811085	25822144	0.243377	nek4	NIMA related kinase 4%2C	BC
NC 031970.2	25822412	25823871	0.243377	spcs1	signal peptidase complex subunit 1	BC
NC 031970.2	25824008	25825000	0.247157	glt8d1	glycosyltransferase 8 domain containing 1	BC
NC 031970.2	25829219	25834430	0.243377	gnl3	G protein nucleolar 3	BC
NC 031970.2	25832503	25832586	0.243377	LOC112847018	small nucleolar RNA SNORA47	BC
NC 031970.2	25836329	25841730	0.243377	LOC102076585	zinc finger and SCAN domain-containing protein 22	BC
NC 031971.2	19762034	19762888	0.259217	LOC109202638	spore coat protein SP96-like	BC
NC 031971.2	19765509	19766395	0.259217	LOC109202646	spore coat protein SP96-like	BC
NC 031971.2	19769904	19770824	0.259217	LOC102080116	spore coat protein SP96-like	BC

NC 031971.2	19834545	19836898	0.259217	LOC100709362	resuscitation-promoting factor RpfA	BC
NC 031971.2	19845659	19848292	0.259217	LOC100709631	nischarin	BC
NC 031971.2	19849045	19854092	0.259217	LOC100709902	cyclic nucleotide-gated channel rod photoreceptor subunit alpha	BC
NC 031971.2	19867280	19888355	0.259217	tacr3a	neuromedin-K receptor-like	BC
NC 031971.2	19927523	19936639	0.259217	bdh2	3-hydroxybutyrate dehydrogenase 2%2C	BC
NC 031971.2	19936918	19950502	0.259217	LOC100695067	sodium/hydrogen exchanger 9B2	BC
NC 031971.2	19950478	19954439	0.259217	cisd2	CDGSH iron sulfur domain 2	BC
NC 031971.2	19956390	19976480	0.259217	suc1g1	succinate--CoA ligase [ADP/GDP-forming] subunit alpha%2C mitochondrial	BC
NC 031971.2	20260717	20262821	0.290969	LOC106098902	zinc finger BED domain-containing protein 4	BC
NC 031971.2	20352880	20375000	0.301232	ctnna2	catenin alpha 2%2C	BC
NC 031971.2	20474025	20475000	0.304628	lrrtm1	leucine rich repeat transmembrane neuronal 1	BC
NC 031971.2	20785493	20795315	0.284015	adra1d	adrenoceptor alpha 1D%2C	BC
NC 031971.2	20795490	20800000	0.350094	LOC100695334	5-hydroxytryptamine receptor 4-like	BC
NC 031971.2	20844300	20850000	0.323476	mettl14	N6-adenosine-methyltransferase non-catalytic subunit	BC
NC 031971.2	20859537	20875000	0.314748	prss12	neurotrypsin	BC
NC 031971.2	20884433	20900000	0.328308	LOC100695867	bifunctional heparan sulfate N-deacetylase/N-sulfotransferase 4	BC
NC 031971.2	21015585	21025000	0.284015	ugt8	2-hydroxyacylsphingosine 1-beta-galactosyltransferase	BC
NC 031971.2	21051108	21067997	0.246743	spock3	SPARC (osteonectin)%2C cwcv and kazal like domains proteoglycan 3%2C	BC
NC 031971.2	21073685	21075000	0.280745	LOC100689789	choline transporter-like protein 1	BC
NC 031971.2	21093704	21100000	0.280868	LOC100696392	rho GTPase-activating protein 7	BC
NC 031971.2	21186101	21198674	0.24193	lonrf1	LON peptidase N-terminal domain and RING finger protein 1	BC
NC 031971.2	21197768	21200000	0.249326	LOC100696923	calcium-binding protein 2	BC
NC 031971.2	21227195	21250000	0.250465	LOC100690058	double C2-like domain-containing protein beta	BC
NC 031971.2	21282453	21287967	0.24193	serping1	C1 inhibitor precursor	BC
NC 031971.2	21290835	21299147	0.24193	tmem134	transmembrane protein 134	BC
NC 031971.2	21302754	21307181	0.24193	aip	AH receptor-interacting protein	BC
NC 031971.2	21307514	21312310	0.24193	cdk2ap2	cyclin dependent kinase 2 associated protein 2	BC
NC 031971.2	21355114	21358601	0.240639	LOC109202441	serine/threonine-protein kinase pim-2-like	BC
NC 031971.2	21365778	21368852	0.240639	LOC109202442	serine/threonine-protein kinase pim-1-like	BC
NC 031971.2	21376425	21384812	0.240639	LOC106098749	serine/threonine-protein kinase pim-1	BC
NC 031971.2	21385836	21391881	0.240639	LOC102080289	serine/threonine-protein kinase pim-1	BC
NC 031971.2	21394596	21430135	0.240639	gpr83	G protein-coupled receptor 83	BC
NC 031971.2	21442605	21452098	0.240639	ankrd49	ankyrin repeat domain 49%2C	BC
NC 031971.2	21481064	21503762	0.240605	LOC109194342	nucleoporin NUP159	BC
NC 031971.2	21530812	21538855	0.240605	LOC102079525	E3 ubiquitin-protein ligase ZFP91	BC
NC 031971.2	21542912	21579480	0.240605	rbm47	RNA-binding protein 47	BC
NC 031971.2	21594744	21600000	0.240639	LOC102081304	putative methyltransferase NSUN7	BC

NC 031971.2	21616038	21625000	0.241204	apbb2	amyloid beta precursor protein binding family B member 2%2C	BC
NC 031971.2	21624239	21625000	0.241204	LOC102078215	trichohyalin-like	BC
NC 031971.2	21674917	21675000	0.242685	haspin	histone H3 associated protein kinase%2C	BC
NC 031971.2	21687943	21700000	0.240605	LOC100695321	protein FAM184B	BC
NC 031971.2	21723740	21725000	0.241486	ncapg	condensin complex subunit 3	BC
NC 031971.2	22200001	22227871	0.256085	klhl5	kelch like family member 5%2C	BC
NC 031971.2	22236220	22248803	0.256085	fam114a1	family with sequence similarity 114 member A1	BC
NC 031971.2	22253504	22260203	0.248754	klf3	Krueppel-like factor 3	BC
NC 031971.2	22300061	22346230	0.248754	LOC100690481	TBC1 domain family member 1	BC
NC 031971.2	22346708	22358780	0.248754	pgm2	phosphoglucomutase 2%2C	BC
NC 031971.2	22360647	22412826	0.248754	zcchc7	zinc finger CCHC domain-containing protein 7	BC
NC 031971.2	22422003	22450000	0.256085	pax5	paired box 5%2C	BC
NC 031971.2	22488720	22498199	0.248754	melk	maternal embryonic leucine zipper kinase	BC
NC 031974.2	1358045	1363779	0.253034	LOC102083260	zinc finger protein 708-like	BC
NC 031974.2	1448802	1498361	0.253034	LOC102080698	zinc finger protein 100	BC
NC 031974.2	1488863	1500687	0.253034	LOC112847916	zinc finger protein 271-like	BC
NC 031974.2	1513817	1523236	0.253034	LOC109197793	zinc finger protein 271	BC
NC 031974.2	1546591	1559309	0.253034	LOC109197792	zinc finger protein 239-like	BC
NC 031974.2	1564373	1575000	0.253034	LOC102076992	zinc finger protein 726-like	BC
NC 031974.2	1594876	1600000	0.266301	LOC102080789	zinc finger protein 708	BC
NC 031974.2	1612019	1625000	0.294183	LOC100701940	zinc finger protein 729	BC
NC 031974.2	22903440	22909200	0.248155	LOC100691259	beta-1%2C4-galactosyltransferase 1	BC
NC 031974.2	22910240	22918304	0.248155	amer2	APC membrane recruitment protein 2	BC
NC 031974.2	22924985	22935649	0.248155	mtmr6	myotubularin related protein 6	BC
NC 031974.2	22937582	22951047	0.248155	nup58	nucleoporin 58%2C	BC
NC 031974.2	22952193	22961207	0.248155	ropn11	rhophilin associated tail protein 1 like%2C	BC
NC 031974.2	22966444	22980997	0.248155	LOC100691622	ankyrin repeat domain-containing protein 33B	BC
NC 031974.2	22985975	22997733	0.248155	dap	death associated protein	BC
NC 031974.2	23009899	23050000	0.253424	LOC100692066	catenin delta-2	BC
NC 031974.2	29754311	29802734	0.249732	znf438	zinc finger protein 438	BC
NC 031974.2	29819884	29868139	0.245406	zeb1	zinc finger E-box-binding homeobox 1	BC
NC 031974.2	29890456	29950000	0.259209	arhgap12	Rho GTPase activating protein 12%2C	BC
NC 031974.2	29966499	29975000	0.269262	LOC100706139	kinesin-1 heavy chain	BC
NC 031974.2	29994614	29999500	0.245406	LOC106098166	protein ZBED8-like	BC
NC 031974.2	30008103	30025000	0.245406	LOC100711398	glucose-fructose oxidoreductase domain-containing protein 1	BC
NC 031974.2	32950001	32984972	0.250245	sspo	SCO-spondin	BC
NC 031974.2	32985254	33200000	0.250245	LOC102075990	potassium voltage-gated channel subfamily H member 2	BC

NC 031974.2	33229962	33275000	0.241848	LOC100711676	microtubule-associated protein 4	BC
NC 031974.2	33475001	33486303	0.265389	LOC106098735	NACHT%2C LRR and PYD domains-containing protein 4E-like	BC
NC 031974.2	33475001	33725000	0.265389	LOC112847800	syncytin-A-like	BC
NC 031974.2	33510576	33565936	0.265389	LOC100690049	phospholipid phosphatase-related protein type 4	BC
NC 031974.2	33587517	33713298	0.254598	plppr5	phospholipid phosphatase related 5%2C	BC
NC 031974.2	33763526	33775000	0.281274	snx7	sorting nexin 7	BC
NC 031975.2	33573486	33584467	0.253112	mat2b	methionine adenosyltransferase 2 subunit beta	BC
NC 031975.2	33605730	33613444	0.248001	slc23a1	solute carrier family 23 member 1	BC
NC 031975.2	33620686	33624325	0.248001	pwwp2a	PWWP domain-containing protein 2A	BC
NC 031975.2	33636814	33662177	0.248001	LOC100695173	solute carrier family 22 member 6	BC
NC 031975.2	33665716	33670340	0.248001	LOC100710536	deoxycytidine kinase	BC
NC 031975.2	33674436	33677392	0.248001	pfdn1	prefoldin subunit 1	BC
NC 031975.2	33679689	33696210	0.248001	ttc1	tetratricopeptide repeat domain 1%2C	BC
NC 031975.2	33707754	33750768	0.245382	tmprss15	enteropeptidase	BC
NC 031975.2	33752065	33775000	0.253112	LOC100710555	macrophage colony-stimulating factor 1 receptor 2	BC
NC 031975.2	33787354	33800000	0.267157	LOC100709470	platelet-derived growth factor receptor beta	BC
NC 031975.2	33867756	33875000	0.251166	LOC100699870	gap junction Cx32.2 protein	BC
NC 031975.2	33964404	33967131	0.241599	LOC100692936	complement C1q tumor necrosis factor-related protein 3	BC
NC 031975.2	33971602	33974578	0.241599	LOC106097028	complement C1q tumor necrosis factor-related protein 3	BC
NC 031975.2	34016527	34020462	0.241599	LOC100693484	complement C1q-like protein 4	BC
NC 031979.2	33151954	33155346	0.245643	LOC109194655	serine/threonine-protein phosphatase 6 regulatory ankyrin repeat subunit A-like	BC
NC 031979.2	33156196	33157228	0.245643	LOC109204954	biotinidase-like	BC
NC 031979.2	33162143	33164612	0.245643	LOC109204953	sodium/calcium exchanger 2-like	BC
NC 031979.2	33189981	33191688	0.245643	LOC109204952	sodium/calcium exchanger 2-like	BC
NC 031979.2	33196198	33198438	0.245643	LOC112842087	biotinidase-like	BC
NC 031979.2	33231119	33235663	0.245643	LOC109194398	tubulin alpha chain-like	BC
NC 031979.2	33237936	33257534	0.245643	LOC109204951	echinoderm microtubule-associated protein-like 1	BC
NC 031979.2	33269086	33280460	0.245643	prdm10	PR domain zinc finger protein 10	BC
NC 031979.2	33288899	33340975	0.245643	aplp2	amyloid beta precursor like protein 2%2C	BC
NC 031979.2	33341696	33353878	0.245643	st14	suppression of tumorigenicity 14	BC
NC 031979.2	33354888	33367842	0.245643	dhx34	DExH-box helicase 34	BC
NC 031979.2	33367978	33375000	0.245643	spred3	sprouty related EVH1 domain containing 3	BC
NC 031981.2	11250001	11363157	0.244749	plxna4	plexin A4%2C	BC
NC 031981.2	11398064	11473565	0.244749	LOC100697147	MICOS complex subunit MIC19	BC
NC 031981.2	11478811	11500000	0.244749	exoc4	exocyst complex component 4	BC
NC 031981.2	11616278	11631435	0.251779	lrguk	leucine rich repeats and guanylate kinase domain containing%2C	BC
NC 031981.2	11657440	11675000	0.251779	LOC100708618	collagen alpha-1(VII) chain	BC

NC 031981.2	11723046	11725000	0.263686	LOC100696616	urocortin-3	BC
NC 031981.2	11727178	11734889	0.260732	copg2	coatomer protein complex subunit gamma 2	BC
NC 031981.2	11735031	11739385	0.260732	mest	mesoderm specific transcript%2C	BC
NC 031981.2	11741721	11750000	0.272363	atp2b1	ATPase plasma membrane Ca2+ transporting 1%2C	BC
NC 031981.2	11932802	11950000	0.267201	st8sia1	ST8 alpha-N-acetyl-neuraminide alpha-2%2C8-sialyltransferase 1	BC
NC 031981.2	11959972	11962771	0.244046	LOC100694855	troponin I%2C slow skeletal muscle	BC
NC 031981.2	11980775	12000000	0.249129	iqsec3	IQ motif and SEC7 domain-containing protein 3	BC
NC 031981.2	12101533	12115389	0.245592	LOC100708075	sodium- and chloride-dependent GABA transporter 1	BC
NC 031981.2	12124052	12140707	0.245592	LOC100707806	sodium- and chloride-dependent GABA transporter 2	BC
NC 031981.2	12141861	12148840	0.245592	LOC100707536	poly [ADP-ribose] polymerase 11	BC
NC 031981.2	12149226	12151210	0.245592	LOC100707277	poly [ADP-ribose] polymerase 11-like	BC
NC 031981.2	12157866	12221803	0.245592	LOC100707010	transmembrane and TPR repeat-containing protein 2	BC
NC 031981.2	12229148	12245919	0.245592	mettl25	methyltransferase like 25%2C	BC
NC 031981.2	12246216	12248242	0.245592	ccdc59	coiled-coil domain containing 59	BC
NC 031981.2	12248484	12250000	0.25972	LOC100706208	ras and EF-hand domain-containing protein homolog	BC
NC 031981.2	12259428	12273058	0.245592	LOC100705938	protein arginine N-methyltransferase 8-B	BC
NC 031981.2	12276501	12278892	0.245592	LOC100705677	E3 ubiquitin-protein ligase TRIM39	BC
NC 031981.2	12281855	12300000	0.253333	LOC100694590	tetraspanin-11	BC
NC 031981.2	12387088	12400000	0.255072	LOC100694323	semaphorin-3A	BC
NC 031981.2	12436350	12450000	0.266095	LOC100705413	protein piccolo	BC
NC 031981.2	12493877	12575000	0.242322	LOC100705144	voltage-dependent calcium channel subunit alpha-2/delta-1	BC
NC 031981.2	12825001	12871937	0.250122	snd1	staphylococcal nuclease and tudor domain containing 1%2C	BC
NC 031981.2	13120147	13125000	0.259444	LOC100704338	leptin-B-like	BC
NC 031981.2	13143536	13150000	0.266983	prrt4	proline rich transmembrane protein 4	BC
NC 031981.2	13164831	13175000	0.246541	LOC100693341	inosine-5'-monophosphate dehydrogenase 1b	BC
NC 031981.2	13177483	13215380	0.240527	LOC109194165	sortilin	BC
NC 031981.2	13215883	13222605	0.240527	fam3c	family with sequence similarity 3 member C	BC
NC 031981.2	13281265	13289952	0.240527	btgl	BTG anti-proliferation factor 1	BC
NC 031981.2	13390993	13410890	0.240527	dcn	decorin	BC
NC 031981.2	13421991	13425000	0.240527	lum	lumican	BC
NC 031981.2	13431667	13437420	0.241728	kera	keratocan	BC
NC 031981.2	13472927	13475000	0.247704	LOC106098228	probable E3 ubiquitin-protein ligase DTX2	BC
NC 031981.2	13476798	13490643	0.241728	scyl2	SCY1 like pseudokinase 2%2C	BC
NC 031981.2	13491420	13496336	0.241728	depdc4	DEP domain containing 4	BC
NC 031981.2	13496649	13500000	0.241728	tcp11l2	T-complex protein 11-like protein 2	BC
NC 031981.2	13505750	13525000	0.242409	apaf1	apoptotic peptidase activating factor 1	BC
NC 031981.2	13575087	13600000	0.24605	anks1b	ankyrin repeat and sterile alpha motif domain containing 1B%2C	BC

NC 031983.2	6144111	6266139	0.243854	LOC100698875	transcription factor IIIB 90 kDa subunit	BC
NC 031983.2	6233175	6237557	0.243854	LOC100694622	BTB/POZ domain-containing protein 6-B	BC
NC 031983.2	6286840	6297551	0.243854	LOC109196000	transcription factor IIIB 90 kDa subunit	BC
NC 031983.2	6851676	6865280	0.249764	LOC100691460	protein LBH	BC
NC 031983.2	6866677	6894204	0.249764	LOC100691190	protein AHNAK2	BC
NC 031983.2	6905527	6910380	0.247149	sertad1	SERTA domain containing 1%2C	BC
NC 031983.2	6915335	6921744	0.247149	cdca4	cell division cycle associated 4%2C	BC
NC 031983.2	6927520	6932522	0.247149	LOC100693443	activator of 90 kDa heat shock protein ATPase homolog 1	BC
NC 031983.2	6932144	6938851	0.247149	LOC102077187	dr1-associated corepressor homolog	BC
NC 031983.2	6942574	6967751	0.247149	LOC100690925	la-related protein 1B	BC
NC 031983.2	6972302	6980075	0.247149	pgrmc2	membrane-associated progesterone receptor component 2	BC
NC 031983.2	6981947	6990344	0.247149	LOC100692897	acetylserotonin O-methyltransferase	BC
NC 031983.2	6991156	7005586	0.247149	LOC100690654	protein Jade-1	BC
NC 031983.2	7007189	7021874	0.247149	nsd2	histone-lysine N-methyltransferase NSD2	BC
NC 031983.2	7023979	7048379	0.247149	letm1	leucine zipper and EF-hand containing transmembrane protein 1%2C	BC
NC 031983.2	7108812	7125000	0.247149	fgfr3	fibroblast growth factor receptor 3	BC
NC 031983.2	8125001	8134376	0.257545	LOC100691274	homeobox protein EMX1	BC
NC 031983.2	8136960	8162853	0.257545	sfxn5	sideroflexin 5%2C	BC
NC 031983.2	8163809	8202789	0.257545	LOC100710586	rab11 family-interacting protein 1	BC
NC 031983.2	8230297	8231343	0.257545	LOC102082380	probable G-protein coupled receptor 151	BC
NC 031983.2	8254099	8261535	0.257545	mavs	mitochondrial antiviral signaling protein	BC
NC 031983.2	8262300	8268435	0.257545	LOC100710057	pantothenate kinase 3	BC
NC 031983.2	8269860	8299958	0.257545	lox13	lysyl oxidase homolog 3	BC
NC 031983.2	8302601	8304329	0.257545	mrps26	28S ribosomal protein S26%2C mitochondrial	BC
NC 031983.2	8305903	8308928	0.257545	LOC102080515	neurofilament light polypeptide	BC
NC 031983.2	8312083	8313897	0.257545	LOC100690744	nanos homolog 1	BC
NC 031983.2	8350364	8370547	0.257545	rab3gap2	rab3 GTPase-activating protein non-catalytic subunit	BC
NC 031966.2	27475001	27532538	0.25981	frmpd3	FERM and PDZ domain containing 3%2C	CA
NC 031966.2	27543111	27546975	0.254147	prps1	phosphoribosyl pyrophosphate synthetase 1%2C	CA
NC 031966.2	27549757	27553073	0.254147	slc25a53	solute carrier family 25 member 53	CA
NC 031966.2	27561471	27571751	0.254147	LOC100690556	SLAIN motif-containing protein-like	CA
NC 031966.2	27572162	27578728	0.254147	znf711	zinc finger protein 711	CA
NC 031966.2	27584022	27587733	0.254147	LOC106096447	BTB/POZ domain-containing protein KCTD12	CA
NC 031966.2	27593581	27601295	0.254147	LOC100690288	proline-rich receptor-like protein kinase PERK13	CA
NC 031966.2	27640196	27643956	0.254147	LOC100698667	rho-related GTP-binding protein RhoG	CA
NC 031966.2	27649260	27659385	0.254147	LOC102076457	FH2 domain-containing protein 1	CA
NC 031966.2	27681739	27694605	0.254147	ogt	O-linked N-acetylglucosamine (GlcNAc) transferase%2C	CA

NC 031966.2	27695706	27705835	0.254147	LOC100690020	acidic repeat-containing protein	CA
NC 031966.2	27709051	27712606	0.254147	LOC112841944	olfactory receptor 2T3-like	CA
NC 031966.2	27712726	27715748	0.254147	LOC100689752	caltractin	CA
NC 031966.2	27717292	27723423	0.254147	nsdhl	NAD(P) dependent steroid dehydrogenase-like	CA
NC 031966.2	27742012	27748387	0.254147	fut11	alpha-(1%2C3)-fucosyltransferase 11	CA
NC 031966.2	27747535	27750000	0.254147	LOC100697336	ras-related protein Rab-9B	CA
NC 031966.2	27752465	27763025	0.290179	LOC100697062	myelin proteolipid protein	CA
NC 031966.2	27764513	27767799	0.290179	LOC102077653	protocadherin-20	CA
NC 031966.2	27768903	27772663	0.290179	LOC100696796	regulator of cell cycle RGCC	CA
NC 031966.2	27787345	27800000	0.306803	nlgn3	neuroligin 3%2C	CA
NC 031966.2	28028735	28050000	0.268526	LOC100695922	glutamate receptor 3	CA
NC 031966.2	28157911	28170303	0.286976	eda	ectodysplasin A%2C	CA
NC 031966.2	28170578	28173314	0.286976	LOC100695394	tumor necrosis factor ligand superfamily member 13B	CA
NC 031966.2	28173428	28175000	0.287349	LOC100695129	leucine-rich repeat-containing protein 32	CA
NC 031966.2	28184872	28188597	0.286976	LOC102079731	gap junction beta-1 protein	CA
NC 031966.2	28188961	28192214	0.286976	LOC100694863	gap junction alpha-3 protein	CA
NC 031966.2	28197602	28199689	0.286976	vma21	VMA21%2C vacuolar ATPase assembly factor	CA
NC 031966.2	28213049	28223814	0.306785	LOC100694598	melatonin receptor type 1B	CA
NC 031966.2	28231079	28250000	0.328164	neur11b	E3 ubiquitin-protein ligase NEURL1B	CA
NC 031966.2	28269649	28272971	0.257527	duspl	dual specificity phosphatase 1	CA
NC 031966.2	28277554	28297275	0.257527	ergic1	endoplasmic reticulum-Golgi intermediate compartment protein 1	CA
NC 031966.2	28297202	28300000	0.31738	flt4	fms related tyrosine kinase 4%2C	CA
NC 031966.2	28313194	28325000	0.317868	LOC100693249	neuropeptide Y receptor type 2	CA
NC 031966.2	28351204	28357304	0.257527	LOC100693524	zinc-binding protein A33	CA
NC 031966.2	28366450	28371467	0.257527	prelid1	PRELI domain containing 1	CA
NC 031966.2	28371657	28375000	0.318794	mxd3	MAX dimerization protein 3%2C	CA
NC 031966.2	28376692	28391315	0.257527	fam193b	family with sequence similarity 193 member B%2C	CA
NC 031966.2	28392335	28400000	0.319912	ddx41	DEAD-box helicase 41	CA
NC 031966.2	28400739	28406143	0.257527	dok3	docking protein 3	CA
NC 031966.2	28406149	28407761	0.257527	LOC100710497	neurogenin-2	CA
NC 031966.2	32050001	32051735	0.26795	LOC100710804	integrator complex subunit 6	CA
NC 031966.2	32051904	32055552	0.26795	mospd1	motile sperm domain containing 1	CA
NC 031966.2	32058613	32068458	0.26795	fam122b	family with sequence similarity 122B%2C	CA
NC 031966.2	32065590	32065746	0.26795	LOC112842510	small nucleolar RNA U109	CA
NC 031966.2	32070599	32079075	0.26795	hpert1	hypoxanthine phosphoribosyltransferase 1	CA
NC 031966.2	32083543	32094483	0.26795	phf6	PHD finger protein 6	CA
NC 031966.2	32093973	32102942	0.26795	LOC100696750	calcium-binding protein 39	CA

NC 031966.2	32109179	32300000	0.26795	LOC102075906	glypican-3	CA
NC 031966.2	32320256	32350000	0.2634	LOC100696204	glypican-6	CA
NC 031966.2	32353321	32369172	0.259654	LOC100696469	bromodomain-containing protein 8	CA
NC 031966.2	32369414	32371079	0.259654	LOC100696738	DNA damage-inducible transcript 4-like protein	CA
NC 031966.2	32375470	32387439	0.259654	tmem173	stimulator of interferon genes protein	CA
NC 031966.2	32393456	32400000	0.259654	LOC100697276	serine/threonine-protein phosphatase 2B catalytic subunit alpha	CA
NC 031970.2	6500001	6552158	0.251409	ppplr16b	protein phosphatase 1 regulatory inhibitor subunit 16B	CA
NC 031970.2	6569782	6593841	0.251409	arhgap40	Rho GTPase activating protein 40%2C	CA
NC 031970.2	6624201	6628934	0.251409	LOC100693191	vesicular inhibitory amino acid transporter	CA
NC 031970.2	6629890	6637093	0.251409	LOC100694808	serine/threonine-protein kinase Aurora-2	CA
NC 031970.2	6639297	6645719	0.251409	prelid3b	PRELI domain containing 3B	CA
NC 031970.2	6646943	6650751	0.251409	LOC100698256	tubulin beta chain	CA
NC 031970.2	6657447	6693349	0.251409	LOC100710082	guanine nucleotide-binding protein G(s) subunit alpha	CA
NC 031970.2	6697149	6709814	0.251409	ipo9	importin 9	CA
NC 031970.2	6712285	6722509	0.251409	shisa4	protein shisa-4	CA
NC 031970.2	6724410	6731984	0.251409	lmod1	leiomodlin 1	CA
NC 031970.2	6732852	6738327	0.251409	timml7a	mitochondrial import inner membrane translocase subunit Tim17-A	CA
NC 031970.2	6739382	6750000	0.251409	LOC100692376	ras-related protein Rap-1A	CA
NC 031970.2	6794196	6800000	0.26446	inka2	PAK4-inhibitor INKA2	CA
NC 031970.2	8492310	8496182	0.258601	LOC109202229	N-acetyltransferase 8	CA
NC 031970.2	8528116	8529486	0.258601	LOC100693555	N-acetyltransferase 8-like	CA
NC 031970.2	8540426	8543267	0.258601	LOC100703648	adenosine receptor A3	CA
NC 031970.2	8570390	8700000	0.258601	LOC100704187	solute carrier family 12 member 5	CA
NC 031970.2	8746596	8750000	0.276614	ncoa5	nuclear receptor coactivator 5	CA
NC 031970.2	8757252	8762496	0.26732	LOC100694535	F-actin-capping protein subunit alpha-1	CA
NC 031970.2	8764201	8775000	0.270177	LOC100704454	putative helicase mov-10-B.1	CA
NC 031970.2	8779079	8795510	0.26732	LOC100694803	rho-related GTP-binding protein RhoA-D	CA
NC 031970.2	8798499	8800000	0.287793	LOC100704721	protein phosphatase 1H	CA
NC 031970.2	8827772	8850000	0.282391	LOC100704992	protein FAM19A2	CA
NC 031971.2	19100001	19106317	0.26719	LOC100698506	N-acyl-aromatic-L-amino acid amidohydrolase (carboxylate-forming) B	CA
NC 031971.2	19112139	19117047	0.26719	tacr3b	neuromedin-K receptor-like	CA
NC 031971.2	19119421	19121908	0.26719	LOC100709532	ecto-ADP-ribosyltransferase 4	CA
NC 031971.2	19123000	19128461	0.26719	primpol	DNA-directed primase/polymerase protein	CA
NC 031971.2	19128542	19147977	0.26719	LOC100709803	long-chain-fatty-acid--CoA ligase 1	CA
NC 031971.2	19153935	19156329	0.26052	helt	hairy and enhancer of split-related protein HELT	CA
NC 031971.2	19182706	19184955	0.257826	slc25a4	ADP/ATP translocase 1	CA
NC 031971.2	19185343	19194057	0.257826	cfap97	cilia and flagella associated protein 97%2C	CA

NC 031971.2	19195822	19201851	0.257826	ufsp2	UFM1 specific peptidase 2%2C	CA
NC 031971.2	19210632	19221243	0.257826	gucyl1a1	guanylate cyclase 1 soluble subunit alpha 1	CA
NC 031971.2	19222091	19241452	0.257826	gucyl1b1	guanylate cyclase 1 soluble subunit beta 1	CA
NC 031971.2	19245641	19246781	0.257826	fabp2	fatty acid binding protein 2	CA
NC 031971.2	19246879	19273124	0.257826	LOC100699853	inactive ubiquitin carboxyl-terminal hydrolase 53	CA
NC 031971.2	19276647	19280883	0.257826	LOC100711322	myozenin-2	CA
NC 031971.2	19281766	19291401	0.257826	LOC102079281	synaptopodin-2	CA
NC 031971.2	19298783	19303338	0.257826	LOC100700121	solute carrier family 22 member 7	CA
NC 031971.2	19303405	19314624	0.257826	LOC100700394	solute carrier family 22 member 7	CA
NC 031971.2	19316471	19321073	0.257826	LOC102078086	solute carrier family 22 member 7	CA
NC 031971.2	19321323	19326566	0.257826	LOC109202510	pre-mRNA-splicing factor ATP-dependent RNA helicase DHX15	CA
NC 031971.2	19327076	19328073	0.257826	LOC109202456	solute carrier family 22 member 7-like	CA
NC 031971.2	19329911	19335004	0.257826	LOC106098904	solute carrier family 22 member 7	CA
NC 031971.2	19335142	19345204	0.257826	LOC100706682	pre-mRNA-splicing factor ATP-dependent RNA helicase DHX15	CA
NC 031971.2	19346822	19348350	0.257826	sod3	extracellular superoxide dismutase [Cu-Zn]	CA
NC 031971.2	19347872	19350000	0.26719	LOC100691566	coiled-coil domain-containing protein 149	CA
NC 031971.2	19358931	19364958	0.25709	LOC100691835	leucine-rich repeat LGI family member 2	CA
NC 031971.2	19393293	19400000	0.26052	mttp	microsomal triglyceride transfer protein	CA
NC 031971.2	19413256	19424483	0.251163	LOC100707215	tetraspanin-5	CA
NC 031971.2	19426821	19442596	0.251163	acer2	alkaline ceramidase 2	CA
NC 031971.2	19444583	19449023	0.251163	rps6	40S ribosomal protein S6	CA
NC 031971.2	19454131	19456861	0.251163	LOC100692918	perilipin-2	CA
NC 031971.2	19456977	19470318	0.251163	LOC100707927	WD40 repeat-containing protein SMU1	CA
NC 031971.2	19470146	19475000	0.274657	LOC100708200	dnaJ homolog subfamily A member 1	CA
NC 031971.2	19478657	19482546	0.251163	aptx	aprataxin	CA
NC 031971.2	19484825	19487834	0.251163	LOC100693190	dentin sialophosphoprotein	CA
NC 031971.2	19491147	19498409	0.251163	LOC100693466	SPARC-like protein 1	CA
NC 031971.2	19503630	19506471	0.251163	LOC100693995	class E vacuolar protein-sorting machinery protein HSE1-like	CA
NC 031971.2	19614181	19615065	0.251163	LOC109202643	spore coat protein SP96-like	CA
NC 031971.2	19620281	19621195	0.251163	LOC102079162	spore coat protein SP65-like	CA
NC 031971.2	19748878	19749901	0.251667	LOC109202652	spore coat protein SP96-like	CA
NC 031971.2	19762034	19762888	0.251667	LOC109202638	spore coat protein SP96-like	CA
NC 031971.2	19765509	19766395	0.251667	LOC109202646	spore coat protein SP96-like	CA
NC 031971.2	19769904	19770824	0.251667	LOC102080116	spore coat protein SP96-like	CA
NC 031971.2	19834545	19836898	0.251667	LOC100709362	resuscitation-promoting factor RpfA	CA
NC 031971.2	19845659	19848292	0.251667	LOC100709631	nischarin	CA
NC 031971.2	19849045	19854092	0.251667	LOC100709902	cyclic nucleotide-gated channel rod photoreceptor subunit alpha	CA

NC 031971.2	19867280	19888355	0.251667	tacr3a	neuromedin-K receptor-like	CA
NC 031971.2	19927523	19936639	0.274695	bdh2	3-hydroxybutyrate dehydrogenase 2%2C	CA
NC 031971.2	19936918	19950000	0.274695	LOC100695067	sodium/hydrogen exchanger 9B2	CA
NC 031971.2	19950478	19954439	0.286152	cisd2	CDGSH iron sulfur domain 2	CA
NC 031971.2	19956390	19975000	0.286152	suc1g1	succinate--CoA ligase [ADP/GDP-forming] subunit alpha%2C mitochondrial	CA
NC 031971.2	20260717	20262821	0.373816	LOC106098902	zinc finger BED domain-containing protein 4	CA
NC 031971.2	20352880	20375000	0.385564	ctnna2	catenin alpha 2%2C	CA
NC 031971.2	20474025	20475000	0.398559	lrrtm1	leucine rich repeat transmembrane neuronal 1	CA
NC 031971.2	20785493	20795315	0.348205	adrald	adrenoceptor alpha 1D%2C	CA
NC 031971.2	20795490	20800000	0.373742	LOC100695334	5-hydroxytryptamine receptor 4-like	CA
NC 031971.2	20844300	20850000	0.348205	mettl14	N6-adenosine-methyltransferase non-catalytic subunit	CA
NC 031971.2	20859537	20875000	0.364436	prss12	neurotrypsin	CA
NC 031971.2	20884433	20900000	0.374249	LOC100695867	bifunctional heparan sulfate N-deacetylase/N-sulfotransferase 4	CA
NC 031971.2	21015585	21025000	0.368492	ugt8	2-hydroxyacylsphingosine 1-beta-galactosyltransferase	CA
NC 031971.2	21051108	21067997	0.373033	spock3	SPARC (osteonectin)%2C cwcv and kazal like domains proteoglycan 3%2C	CA
NC 031971.2	21073685	21075000	0.379108	LOC100689789	choline transporter-like protein 1	CA
NC 031971.2	21093704	21100000	0.381779	LOC100696392	rho GTPase-activating protein 7	CA
NC 031971.2	21186101	21198674	0.355566	lonrf1	LON peptidase N-terminal domain and RING finger protein 1	CA
NC 031971.2	21197768	21200000	0.373491	LOC100696923	calcium-binding protein 2	CA
NC 031971.2	21227195	21250000	0.374988	LOC100690058	double C2-like domain-containing protein beta	CA
NC 031971.2	21282453	21287967	0.355566	serping1	C1 inhibitor precursor	CA
NC 031971.2	21290835	21299147	0.355566	tmem134	transmembrane protein 134	CA
NC 031971.2	21302754	21307181	0.355566	aip	AH receptor-interacting protein	CA
NC 031971.2	21307514	21312310	0.355566	cdk2ap2	cyclin dependent kinase 2 associated protein 2	CA
NC 031971.2	21342210	21345677	0.355566	LOC109202440	serine/threonine-protein kinase pim-1	CA
NC 031971.2	21355114	21358601	0.355566	LOC109202441	serine/threonine-protein kinase pim-2-like	CA
NC 031971.2	21365778	21368852	0.355566	LOC109202442	serine/threonine-protein kinase pim-1-like	CA
NC 031971.2	21376425	21384812	0.355566	LOC106098749	serine/threonine-protein kinase pim-1	CA
NC 031971.2	21385836	21391881	0.355566	LOC102080289	serine/threonine-protein kinase pim-1	CA
NC 031971.2	21394596	21400000	0.355566	gpr83	G protein-coupled receptor 83	CA
NC 031971.2	21442605	21450000	0.361299	ankrd49	ankyrin repeat domain 49%2C	CA
NC 031971.2	21481064	21500000	0.368137	LOC109194342	nucleoporin NUP159	CA
NC 031971.2	21530812	21538855	0.373114	LOC102079525	E3 ubiquitin-protein ligase ZFP91	CA
NC 031971.2	21542912	21550000	0.373114	rbm47	RNA-binding protein 47	CA
NC 031971.2	21594744	21600000	0.382515	LOC102081304	putative methyltransferase NSUN7	CA
NC 031971.2	21616038	21625000	0.385407	apbb2	amyloid beta precursor protein binding family B member 2%2C	CA
NC 031971.2	21624239	21625000	0.385407	LOC102078215	trichohyalin-like	CA

NC 031971.2	21674917	21675000	0.386938	haspin	histone H3 associated protein kinase%2C	CA
NC 031971.2	21687943	21700000	0.385883	LOC100695321	protein FAM184B	CA
NC 031971.2	21723740	21725000	0.386643	ncapg	condensin complex subunit 3	CA
NC 031971.2	21742358	21750000	0.384357	lcorl	ligand dependent nuclear receptor corepressor like%2C	CA
NC 031971.2	21883711	21900000	0.382075	slit2	slit homolog 2 protein	CA
NC 031971.2	21983356	21995190	0.261327	LOC100694526	intelectin	CA
NC 031971.2	21997670	22000000	0.330956	LOC100693983	intelectin	CA
NC 031971.2	22010686	22013722	0.261327	LOC100693716	D(1A) dopamine receptor-like	CA
NC 031971.2	22021056	22025000	0.32287	LOC100693455	neuronal acetylcholine receptor subunit alpha-9-I	CA
NC 031971.2	22032577	22038104	0.261327	rhoh	ras homolog family member H	CA
NC 031971.2	22040317	22050000	0.309867	n4bp2	NEDD4 binding protein 2%2C	CA
NC 031971.2	22054687	22075000	0.300942	pds5a	PDS5 cohesin associated factor A%2C	CA
NC 031971.2	22081734	22088520	0.261327	ube2k	ubiquitin conjugating enzyme E2 K%2C	CA
NC 031971.2	22087903	22100000	0.288772	smim14	small integral membrane protein 14	CA
NC 031971.2	22102343	22110003	0.261327	map9	microtubule associated protein 9%2C	CA
NC 031971.2	22113114	22120147	0.261327	ugdh	UDP-glucose 6-dehydrogenase	CA
NC 031971.2	22120200	22125000	0.272584	lias	lipoic acid synthetase	CA
NC 031971.2	22127440	22133221	0.261327	rpl9	60S ribosomal protein L9	CA
NC 031971.2	22134879	22145004	0.261327	rfc1	replication factor C subunit 1	CA
NC 031971.2	22146022	22150000	0.261327	wdr19	WD repeat domain 19%2C	CA
NC 031971.2	22200001	22227871	0.251063	klhl5	kelch like family member 5%2C	CA
NC 031971.2	22236220	22248803	0.251063	fam114a1	family with sequence similarity 114 member A1	CA
NC 031971.2	22253504	22260203	0.251063	klf3	Krueppel-like factor 3	CA
NC 031971.2	22300061	22346230	0.251063	LOC100690481	TBC1 domain family member 1	CA
NC 031971.2	22346708	22358780	0.251063	pgm2	phosphoglucomutase 2%2C	CA
NC 031971.2	22360647	22412826	0.251063	zcche7	zinc finger CCHC domain-containing protein 7	CA
NC 031971.2	22422003	22450000	0.251063	pax5	paired box 5%2C	CA
NC 031973.2	5874717	5882454	0.257603	LOC100707365	ORM1-like protein 3	CA
NC 031973.2	5961356	6100000	0.257603	LOC100702192	thyroid hormone receptor alpha-B	CA
NC 031973.2	6137935	6147793	0.252763	dhx8	ATP-dependent RNA helicase DHX8	CA
NC 031973.2	6155433	6175000	0.261392	etv4	ETS translocation variant 4	CA
NC 031973.2	6260821	6271043	0.253867	meox1	homeobox protein MOX-1	CA
NC 031980.2	37800001	37836769	0.251458	LOC100694711	receptor-type tyrosine-protein phosphatase F	CA
NC 031980.2	37901403	37915605	0.251458	hyi	hydroxypyruvate isomerase (putative)%2C	CA
NC 031980.2	37920137	37929753	0.251458	LOC109194886	KICSTOR complex protein SZT2	CA
NC 031980.2	37981140	37983299	0.251458	LOC109199849	coiled-coil domain-containing protein 106-like	CA
NC 031980.2	37996761	38006331	0.251458	LOC100703129	sorting nexin-9	CA

NC 031980.2	38047974	38050000	0.251458	LOC109199852	NLR family CARD domain-containing protein 3-like	CA
NC 031980.2	38105991	38116678	0.270709	LOC100703676	atypical chemokine receptor 3	CA
NC 031980.2	38131112	38141971	0.283569	LOC100702862	melanophilin	CA
NC 031981.2	13500001	13504821	0.253049	tcp11l2	T-complex protein 11-like protein 2	CA
NC 031981.2	13505750	13553800	0.253049	apaf1	apoptotic peptidase activating factor 1	CA
NC 031981.2	13575087	13750000	0.253049	anks1b	ankyrin repeat and sterile alpha motif domain containing 1B%2C	CA
NC 031981.2	13837618	13870172	0.251126	uhrf1bp1l	UHRF1 binding protein 1 like%2C	CA
NC 031981.2	13872810	13875786	0.251126	ckap4	cytoskeleton associated protein 4	CA
NC 031981.2	13877108	13883463	0.251126	ikbip	IKBKB interacting protein%2C	CA
NC 031981.2	13884618	13896939	0.251126	arfgap3	ADP ribosylation factor GTPase activating protein 3%2C	CA
NC 031981.2	13898412	13919434	0.251126	pacsin2	protein kinase C and casein kinase substrate in neurons 2%2C	CA
NC 031981.2	13921483	13925000	0.251126	ttll1	probable tubulin polyglutamylase TTLL1	CA
NC 031981.2	35226398	35233993	0.255845	pfkfb3	6-phosphofructo-2-kinase/fructose-2%2C6-biphosphatase 3%2C	CA
NC 031981.2	35245614	35261911	0.255845	rbm17	RNA binding motif protein 17%2C	CA
NC 031981.2	35261940	35273651	0.255845	il15ra	interleukin 15 receptor subunit alpha%2C	CA
NC 031981.2	35278687	35305539	0.252236	LOC100696399	interleukin-15 receptor subunit alpha	CA
NC 031981.2	35311528	35342572	0.252236	fbh1	F-box DNA helicase 1	CA
NC 031981.2	35343139	35352812	0.252236	nudt5	ADP-sugar pyrophosphatase	CA
NC 031981.2	35351683	35365465	0.252236	cdc123	cell division cycle 123%2C	CA
NC 031981.2	35368251	35400000	0.268307	camk1d	calcium/calmodulin dependent protein kinase ID	CA
NC 031981.2	35462612	35472896	0.252236	ccdc3	coiled-coil domain containing 3	CA
NC 031981.2	35475279	35482056	0.252236	optn	optineurin	CA
NC 031981.2	35482523	35494353	0.252236	mcm10	minichromosome maintenance 10 replication initiation factor%2C	CA
NC 031981.2	35494821	35500000	0.271054	ucma	unique cartilage matrix-associated protein	CA
NC 031981.2	35509896	35516113	0.252236	phyh	phytanoyl-CoA 2-hydroxylase	CA
NC 031981.2	35517049	35525000	0.252236	LOC100690600	cyclin-dependent kinase 17	CA

LG: Linkage group

initial pos: initial position

final pos: final position

Fst pair: pairs of strains compared in the Fst method (AB, BC and CA)