

Acceleration of genetic gain in cattle by reduction of generation interval

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Supplementary Materials

Supplementary Table 1	Genomic enhanced genetic merit analysis of fibroblast cell lines. Values for industry indexes commonly used to evaluate genetic merit of cattle.
Supplementary Table 2	<i>In vitro</i> development of embryos derived from fibroblast cell lines.

Supplementary Table 1: Genomic analysis of DNA from cell lines

Cell line ID	JPI Gen	CM Gen	NM Gen	PTAT Gen	MILK Gen	FAT Gen	PRO Gen	PL Gen	SCS Gen	DPR Gen	UDC Gen	Haplotypes
FL065	251	750	680	2.1	880	75	41	6.5	2.86	1.2	6.13	JH1T JH1 PC.N JHPT JHP PC.N
FL062	224	688	623	1.8	669	65	34	6.2	2.86	1.6	5.02	JH1T JH1 PC.N JHPT JHP PC.N
FL064	221	708	618	1	501	63	33	6	2.73	1.5	4.92	JH1T JH1 PC.N JHPT JHP PC.N
FL017	215	692	607	0.9	470	60	31	5.8	2.72	1.9	4.35	JH1T JH1 PC.N JHPT JHP PC.N
FL036	210	594	571	1.4	909	32	29	6.6	2.76	1.1	5.76	JH1T JH1 PC.N JHPT JHP PC.N
FL066	205	673	598	1.7	465	63	28	6.3	2.72	0.2	5.56	JH1T JH1 PC.N JHPT JHP PC.N
FL040	192	531	484	1.1	782	38	32	4.3	2.8	1	5	JH1T JH1 PC.N JHPT JHP PC.N
FL030	192	507	509	1.5	1191	33	32	5.6	2.8	1.1	5.22	JH1T JH1 PC.N JHPT JHP PC.N
FL067	191	646	565	1.2	237	58	24	6.1	2.78	1.2	4.81	JH1T JH1 PC.N JHPT JHP PC.N
FL038	185	562	499	1.3	507	40	28	4.8	2.81	1.2	4.43	JH1T JH1 PC.N JHPT JHP PC.N
FL022	184	508	490	1	1313	50	40	3.7	2.77	0.2	1.78	JH1T JH1 PC.N JHPT JHP PC.N
FL004	183	546	484	1.5	520	46	28	4.2	2.8	0.4	4.9	JH1T JH1 PC.N JHPT JHP PC.N
FL039	180	456	432	0.8	1240	45	41	3.4	2.89	-0.1	2.88	JH1T JH1 PC.N JHPT JHP PC.N
FL009	176	460	432	1.1	1067	30	36	4.1	2.87	0	3.89	JH1T JH1 PC.N JHPT JHP PC.N
FL010	176	524	456	1.8	474	47	28	3.7	2.79	0.4	5.2	JH1T JH1 PC.N JHPT JHP PC.N
FL056	174	593	526	0.4	490	59	27	4.6	2.73	1	2.51	JH1T JH1 PC.N JHPT JHP PC.N
FL058	174	593	526	0.4	490	59	27	4.6	2.73	1	2.51	JH1T JH1 PC.N JHPT JHP PC.N
FL033	174	499	463	1.4	809	35	30	4.1	2.82	1	3.62	JH1T JH1 PC.N JHPT JHP PC.N
FL063	173	566	512	1.4	317	50	20	5.5	2.79	1.5	4.69	JH1T JH1 PC.N JHPT JHP PC.N
FL001	171	453	453	1	1109	31	30	4.2	2.82	0.6	3.17	JH1T JH1 PC.N JHPT JHP PC.N
FL042	170	564	497	0.1	429	33	26	5.2	2.8	1.9	2.82	JH1T JH1 PC.N JHPT JHP PC.N
FL053	170	458	465	1.5	1011	24	24	5.4	2.75	1.2	5.25	JH1T JH1 PC.N JHPT JHP PC.N
FL011	169	484	423	0.9	517	29	28	4.2	2.84	1.1	5.03	JH1T JH1 PC.N JHPT JHP PC.N
FL054	168	585	496	0.2	45	47	19	4.8	2.67	1.9	3.55	JH1T JH1 PC.N JHPT JHP PC.N
FL055	168	585	496	0.2	45	47	19	4.8	2.67	1.9	3.55	JH1T JH1 PC.N JHPT JHP PC.N
FL043	165	525	459	0.3	474	31	26	4.7	2.71	1.5	2.79	JH1T JH1 PC.N JHPT JHP PC.N
FL046	165	525	459	0.3	474	31	26	4.7	2.71	1.5	2.79	JH1T JH1 PC.N JHPT JHP PC.N
FL029	164	432	447	1.7	994	33	23	5.1	2.79	0.9	5.21	JH1T JH1 PC.N JHPT JHP PC.N
FL018	161	434	435	1.8	850	36	22	4.9	2.8	1	5.5	JH1T JH1 PC.N JHPT JHP PC.N
FL006	158	453	403	0.8	635	34	29	3.1	2.85	0.7	3.06	JH1T JH1 PC.N JHPT JHP PC.N
FL016	155	510	444	0.9	261	42	21	4.6	2.81	1.2	3.53	JH1T JH1 PC.N JHPT JHP PC.N
FL008	154	462	422	0.9	404	33	21	4.3	2.92	1	4.07	JH1T JH1 PC.N JHPT JHP PC.N
FL068	153	487	450	0.8	559	49	23	4.6	2.85	0.4	3.01	JH1T JH1 PC.N JHPT JHP PC.N
FL037	153	391	390	1.1	917	22	26	4.1	2.92	1	3.61	JH1T JH1 PC.N JHPT JHP PC.N
FL069	151	477	431	0.9	582	38	25	4.1	2.77	0.9	2.72	JH1T JH1 PC.N JHPT JHP PC.N
FL057	151	523	459	0.2	255	56	21	4	2.81	1.5	1.91	JH1T JH1 PC.N JHPT JHP PC.N
FL052	150	455	450	1.7	543	25	13	5.8	2.66	1.2	5.28	JH1T JH1 PC.N JHPT JHP PC.N
FL045	149	518	488	0.2	389	29	16	6.3	2.8	1.7	2.73	JH1T JH1 PC.N JHPT JHP PC.N
FL005	149	435	392	1.2	478	36	23	3.3	2.89	0.6	3.83	JH1T JH1 PC.N JHPT JHP PC.N
FL070	149	457	418	1.2	448	46	21	3.8	2.88	0.8	4.23	JH1T JH1 PC.N JHPT JHP PC.N
FL032	140	426	380	1.1	417	30	21	3.5	2.83	1	3.37	JH1T JH1 PC.N JHPT JHP PC.N
FL007	139	364	348	1.1	794	21	26	3	2.9	0.5	3.03	JH1T JH1 PC.N JHPT JHP PC.N
FL060	138	489	438	0.3	318	40	19	4.5	2.75	1.1	1.23	JH1T JH1 PC.N JHPT JHP PC.N
FL061	138	489	438	0.3	318	40	19	4.5	2.75	1.1	1.23	JH1T JH1 PC.N JHPT JHP PC.N
FL014	138	478	434	0.4	252	33	15	5.3	2.79	1.5	2.45	JH1T JH1 PC.N JHPT JHP PC.N
FL023	134	325	354	1.4	1097	17	23	4.2	2.83	0.5	3.9	JH1T JH1 PC.N JHPT JHP PC.N
FL025	134	325	354	1.4	1097	17	23	4.2	2.83	0.5	3.9	JH1T JH1 PC.N JHPT JHP PC.N
FL073	134	461	393	1.1	207	29	19	3.7	2.72	1.3	2.27	JH1T JH1 PC.N JHPT JHP PC.N
FL035	132	452	397	1.2	18	15	10	4.9	2.74	1	5.14	JH1T JH1 PC.N JHPT JHP PC.N
FL034	132	337	306	1.1	464	22	20	2.8	2.87	0	5.04	JH1T JH1 PC.N JHPT JHP PC.N
FL050	131	331	339	1.2	904	26	22	3.5	2.82	0.8	3.87	JH1T JH1 PC.N JHPT JHP PC.N
FL048	131	383	402	1.2	605	10	10	6.1	2.77	1.4	4.69	JH1T JH1 PC.N JHPT JHP PC.N
FL020	129	404	392	1.3	433	23	13	5.2	2.77	1	4.87	JH1T JH1 PC.N JHPT JHP PC.N
FL013	128	443	395	0.7	40	22	11	5.1	2.87	1.9	3.87	JH1T JH1 PC.N JHPT JHP PC.N
FL051	122	384	396	1	610	5	11	6.1	2.69	1.1	3.54	JH1T JH1 PC.N JHPT JHP PC.N
FL041	121	422	362	0.2	141	30	17	4	2.91	1.1	1.98	JH1T JH1 PC.N JHPT JHP PC.N
FL026	121	314	340	1	766	18	14	4.7	2.84	1.1	3.94	JH1T JH1 PC.N JHPT JHP PC.N
FL024	119	322	336	1	824	15	18	4.4	2.8	0.7	3.15	JH1T JH1 PC.N JHPT JHP PC.N
FL049	119	293	308	1.1	883	12	21	4.1	2.9	0.6	3.38	JH1T JH1 PC.N JHPT JHP PC.N
FL031	119	324	288	1.1	452	20	20	2.2	2.86	0.3	3.61	JH1T JH1 PC.N JHPT JHP PC.N
FL019	116	329	321	1.3	558	17	17	4.4	2.95	0.7	4.15	JH1T JH1 PC.N JHPT JHP PC.N
FL044	116	442	389	-0.1	220	30	16	4.3	2.75	1	0.68	JH1T JH1 PC.N JHPT JHP PC.N
FL047	116	442	389	-0.1	220	30	16	4.3	2.75	1	0.68	JH1T JH1 PC.N JHPT JHP PC.N
FL072	112	372	312	0.5	177	26	16	2.6	2.71	0.7	2.37	JH1T JH1 PC.N JHPT JHP PC.N
FL059	110	398	344	-0.2	133	20	15	3.9	2.82	1.3	0.88	JH1T JH1 PC.N JHPT JHP PC.N
FL071	75	272	235	0.4	186	7	12	2.8	2.78	0.8	0.58	JH1T JH1 PC.N JHPT JHP PC.N

JPI- Jersey performance Index; CM-Cheese Merit; NM-Net Merit; PTAT- ;PRO-Protein; PL- ;SCS-Somatic Cell Score; DPR-Daughter Pregnancy Rate; UDC- Udder Cleft and Gen- General

Supplementary Table 2: *In vitro* development of embryos from established cell lines

Cell line ID	Total nuclear transfers	Number of fused couplets (%)	Number of blastocyst on day 7 (%)*
FL010	327	222 (67.9)	40 (18.0)
FL065	321	207 (64.5)	49 (23.7)
Total	648	429 (65.2)	89 (20.8)

*Blastocysts development rate was calculated from number of oocytes fused with donor somatic cell.