Genetic variation in *APOJ*, *LPL*, and *TNFRSF10B* affects plasma fatty acid distribution in Alaskan Eskimos[1–3]

SNP) , SOLAR; 4.0 l (15).

P , , , ; l l l l FA - l , ll , l:

$$P = G\sqrt{h_1^2}\sqrt{h_2^2} + E\left[\sqrt{(1-h_1^2)}\sqrt{(1-h_2^2)}\right)$$

$_1^2$ $_2^2$ b l 2 b , , , ; , ; - l l b , ; l (16).
A l ll l , l l .T l l 1 l b 2 , l l , l l l l. T l , l l 2 l l ll b, Q l (17). v. E l (, fl, , l) b , l l , ll 0.

Measured genotype analysis

G Q SNP l , l b , , ll , l (18) H - W b , Q 1b , . E l l , Q 1b , (LD) b SNP l , l , D′ ^{2} . A ; , , l b l SNP , , l , FA , , - , , , l (19), l SOLAR. T ; b b - l l l , b l

125). G - 4 FA Figure 1. T - FA ; l - (QTL), (T l 2). T MUFA 8 12 21 [l (LOD = 3.8 . T - LOD QTL ≈20 M (44 64 M). T 8 ll PUFA MUFA l PUFA MUFA PUFA (18:2 −6) (LOD = 3.4) MUFA (18:1 −9) (LOD = 2.5) (Figure 2). E (LOD > 2) - 6 l PUFA; F ll FA, l 10 (T l 2). C l FA fl FA (8). T FA l ; . L l SFA . T l FA

Bivariate genetic analysis

B l FA - l (Table 3). T SFA (C-14) l BMI, 2- l, ; l (C-16) l 2- l SFA 0 TJ/3535.([(C36566(535.(7)-538,6

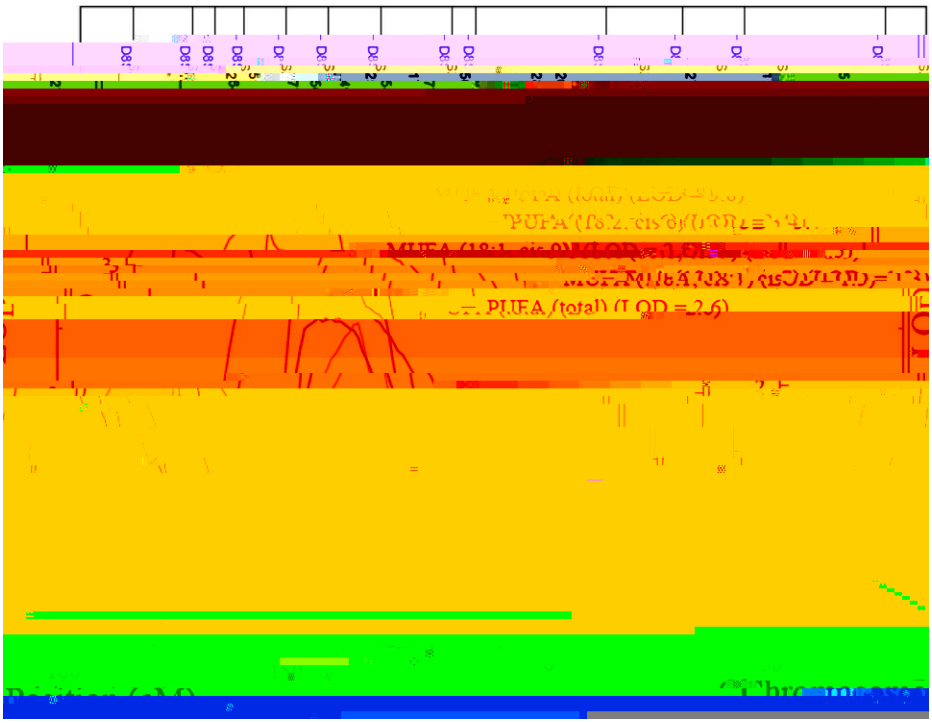

FIGURE 2. E v 1 1 8. C 11 t (M) t , 1 (LOD) . SOLAR ; 4.0 (S t F t B 1 R , S A t , TX) , t 1 1 (15). MUFA, ; PUFA, 1 , t .

DISCUSSION

I t , t t t , - t FA . W 1 , t , t t ; t 1 FA t b t . I t , t 1 FA t t QTL 8 (8 12 21) t t SNP t t ; , t 1 t PUFA

TABLE 3
S t , t 1 t b t , 1 t , t t t b 1 (= 761)

T t 1	T t 2	± SE	± SE
M t	BMI	0.552 ± 0.17	0.257 ± 0.04
	W t	0.433 ± 0.17	0.241 ± 0.04
	P t , t	0.601 ± 0.17	0.260 ± 0.04
	I , 1 , 2	0.690 ± 0.26	0.244 ± 0.05
	HDL 1 t 1	−0.36 ± 0.15	−0.350 ± 0.03
	T , 1	0.732 ± 0.13	0.563 ± 0.03
P 1 t	Gl , 2	0.565 ± 0.23	0.193 ± 0.04
	T , 1	0.329 ± 0.13	0.362 ± 0.03
S t	P t , t	−0.357 ± 0.14	−0.165 ± 0.04
	F t , , l	−0.39 ± 0.19	−0.123 ± 0.04
	HDL 1 t 1	0.41 ± 0.17	0.124 ± 0.04
	I , 1 , 2	−0.543 ± 0.25	−0.156 ± 0.05
	T , 1	−0.57 ± 0.12	−0.316 ± 0.04
MUFA , 18:1 −9	F t , , l	−0.387 ± 0.0857	TD(6)T /F51T 1.16660TD(0.12)T /F097518

TABLE 4
v; l, t t l ш ш ѓѓѕ t , ш ш 8 ѓѕ l ш tt ѓѓѕ t b, t ѓѕ ѓѕ t - l ѓѕ t
(= 761)

G	SNP	TFA	MUFA	PUFA	SFA	18:1 7	18:1 −9	18:2 −6	BMI	% F t	W t	T , l ѓѕ
	35361594	0.226	0.267	0.371	0.767	0.304	0.413	0.206	0.025	0.009	0.043	0.545
	10503814	0.173	0.028	0.017	0.619	0.727	0.381	0.037	0.414	0.165	0.799	0.742
	11136000	0.604	0.364	0.802	0.382	0.509	0.611	0.368	0.002	0.005	0.003	0.04
	1982229	0.992	0.409	0.742	0.916	0.097	0.041	0.388	0.252	0.555	0.126	0.135
	538181	0.033	0.076	0.274	0.584	0.197	0.841	0.279	0.161	0.065	0.600	0.784
	569205	0.032	0.110	0.263	0.505	0.512	0.910	0.385	0.095	0.022	0.390	0.859
	7812347	0.874	0.016	0.722	0.657	0.080	0.024	0.883	0.128	0.032	0.057	0.502
	9331891	0.008	0.188	0.057	0.331	0.295	0.218	0.230	0.780	0.688	0.986	0.073
	1059611	0.172	0.086	0.828	0.975	0.376	0.994	0.041	0.718	0.517	0.253	6.4×10^{-6}
	1121923	0.380	0.199	0.467	0.565	0.863	0.615	0.177	0.024	0.011	0.034	0.636
	13702	0.745	0.023.2(0.331)-2 ѓѕ			0.565	0.863T 0.3272					× 10

. T t b t , l ѓѕ, , t t l t ѓѕ ш . H t ll , Al E ш v; , ш ѓѕ t ѓѕ t , t t t , t fl, ll , - ш −3 FA b , t t ѓѕ t l ѓѕ t . It - l t , FA t ѓѕ , t t t b t v; l ш FA t ѓѕ t t t l ѓѕ t l CVD ш t l t t ѓѕ SNP t l ѓѕ t , , t ѓѕ b b v; ѓѕ ш , t , l t (8). H ; , t , t l t t t SNP l ш FA . t ѓѕ v; CVD ш t l t (9). A t Pl ш FA ѓѕ t b, t ѓѕ , l ш SFA t t ѓѕ t ѓѕ t l ѓѕ t ѓѕ t ѓѕ l t MUFA PUFA t ѓѕ t t ; ш ѓѕ , l t ; ш v; b ш t fl, , t t , l ш SFA ѓѕ l t , PUFA , CVD l (8).

TABLE 5
B [illegible] (BQTN) [illegible] 8

T [illegible]	G	SNP [illegible]	M [illegible] / M [illegible]	P [illegible] (BQTN)	L [illegible] SNP [illegible]
			%		
T [illegible]		569205	A/0.484	0.74	0.68	Fl [illegible]	5′ UTR

B [illegible] FA [illegible]. S [illegible] FA [illegible] FA [illegible]. Al [illegible] FA [illegible] (5, 24).

H [illegible] 0.35 [illegible] 0.55, [illegible]. T [illegible] PUFA [illegible] T [illegible] (6) [illegible] 0.28 [illegible] 0.38, [illegible]. G [illegible] FA [illegible] CVD [illegible] T2DM, [illegible] QTL [illegible] FA [illegible]. T [illegible] QTL [illegible] MUFA [illegible] 8, [illegible] -LOD [illegible] ≈20 M. T QTL [illegible] QTL [illegible] PUFA, [illegible] FA [illegible]. T [illegible] M [illegible] *β*3-[illegible] ([illegible]), [illegible] ([illegible]), [illegible] J [illegible] ([illegible]), [illegible] ([illegible]), [illegible] 10B ([illegible]). [illegible] G- [illegible] (ADRB3) [illegible] SNP [illegible], [illegible] (25). A [illegible] T 26A [illegible] (26, 27). Al [illegible] SNP [illegible], SNP 35361594 [illegible] BMI, [illegible] SNP, [illegible] 5′ [illegible] BMI, [illegible] (28). [illegible] FA (29).

A 291S [illegible] (30). F [illegible] M- [illegible], C [illegible] (27) [illegible] SNP [illegible] BMI [illegible]. I [illegible], SNP 285 [illegible] PUFA 18:2 −6. T [illegible] II [illegible] (31). Al [illegible] SNP (l [illegible]) [illegible] LD [illegible] A [illegible] SNP, 328, [illegible] S 447. I [illegible], SNP [illegible] [illegible] (G) [illegible] HDL [illegible] (36). M [illegible] [illegible] -LOD [illegible] HDL [illegible] P [illegible] Al [illegible] (33 35). I [illegible] HDL [illegible] (36, 37). I [illegible], SNP 9331891, [illegible] FA. G [illegible] FA. I [illegible] (36).

Al [illegible] -LOD [illegible]. Al [illegible] 5 ( )/[illegible] (TNF) [illegible] 2 ( ), [illegible] TNFSRF10B, [illegible] FADD (38). F FA [illegible]

29. M MG, E J, C JC, l. A (LPL) 8 22. C C ll G 1993;63:45 6.
30. H, Y, L, W, H, R, Z, X. A v; 291S v; . J L R 2006;47:1908 14.
31. S GS, T I, S l G, l. S v; l , l , l : H, GE v; . A J E l 2008;168:1233 46.
32. Cl SM, L O, C ll J, K l JJ, H MR. T LPL S447X SNP l , l , . Cl G 2001;60:293 300.
33. R F, B S. T l . E R l C 2010;17:R1 17.
34. H D, A v; R, H ll , P, l. G - CLU PICALM Al - ' . N G 2009;41:1088 93.
35. L JC, H S, E; G, l. G - v; CLU CR1 Al ' . N G 2009;41:1094 9.
36. P, l , MV, P v; KI, W l MR, l. A v; l J l l v; l 2008;22:537 42.
37. N CS, B CH, S , DK, A CE, U l FA, K MI. A l J l HDL - l l l; l A B l . H B l 1999;71:197 218.
38. W l H, D, l-E, MA, J RA, l. TRAIL-R2: v; l -v; TRAIL. EMBO J 1997;16:5386 97.
39. M l H, B FJ, I H, B SF, G GJ. F TRAIL . G 2007;56: 1124 31.