

Genetic variation in *APOJ*, *LPL*, and *TNFRSF10B* affects plasma fatty acid distribution in Alaskan Eskimos¹⁻³

1. 1994-1998, CVD 30-40%
Al-N (25-54)
U.S. (9). S. 1
Al-N US
(9). G.

SNP (15), $V = \text{SOLAR}^V; \dots 4.0 \dots$

P (16), $V = \dots$

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

(16)

...

...

...

Measured genotype analysis

G (18) ...

125). Genetic analysis of 4 FA traits (Table 2). The QTL for total FA (LOD = 3.8) was located on chromosome 1 at approximately 20 Mb (44-64 Mb). The QTL for MUFA (LOD = 3.4) and PUFA (LOD = 2.5) were also located on chromosome 1 at approximately 20 Mb (44-64 Mb). The QTL for SFA (LOD = 2.5) was located on chromosome 1 at approximately 20 Mb (44-64 Mb). The QTL for PUFA (LOD = 3.4) and MUFA (LOD = 2.5) were also located on chromosome 1 at approximately 20 Mb (44-64 Mb). The QTL for SFA (LOD = 2.5) was located on chromosome 1 at approximately 20 Mb (44-64 Mb).

Figure 1. The QTL for total FA, MUFA, PUFA, and SFA. The QTL for total FA (LOD = 3.8) was located on chromosome 1 at approximately 20 Mb (44-64 Mb). The QTL for MUFA (LOD = 3.4) and PUFA (LOD = 2.5) were also located on chromosome 1 at approximately 20 Mb (44-64 Mb). The QTL for SFA (LOD = 2.5) was located on chromosome 1 at approximately 20 Mb (44-64 Mb).

Bivariate genetic analysis

Bivariate genetic analysis was conducted to evaluate the genetic relationships between total FA, MUFA, PUFA, and SFA. The results are presented in Table 3. The correlations between total FA and MUFA, PUFA, and SFA were 0.45, 0.38, and 0.32, respectively. The correlations between MUFA and PUFA, and SFA were 0.25 and 0.28, respectively. The correlations between PUFA and SFA were 0.22. The correlations between total FA and SFA were 0.35. The correlations between MUFA and SFA were 0.28. The correlations between PUFA and SFA were 0.22.

1,115 SNP
SNP LD (>90%) SNP . T^v

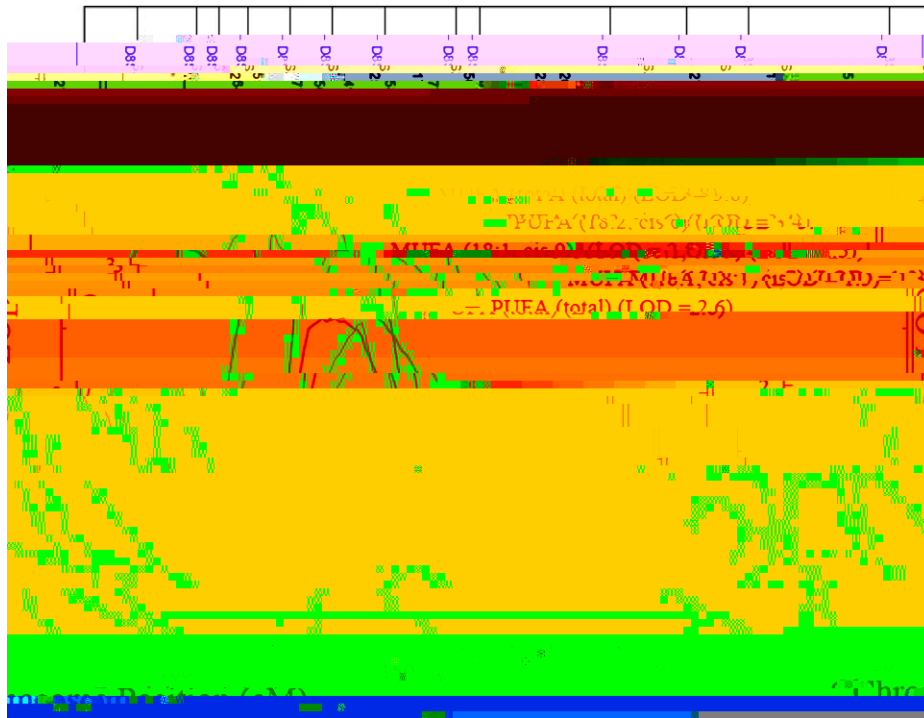


FIGURE 2. $-\log_{10}(P)$ values for SNPs associated with lipid traits in 8.C mice (M) (n = 15). SOLAR: 4.0 (S, F, B, IR, S, A, TX). (15). MUFA, $\mu\text{mol}/\text{mol}$; PUFA, $\mu\text{mol}/\text{mol}$.

DISCUSSION

In this study, we identified a QTL for PUFA on chromosome 8 (8.12-21) that is associated with PUFA. This QTL is associated with PUFA, but not with other lipid traits. This QTL is associated with PUFA, but not with other lipid traits. This QTL is associated with PUFA, but not with other lipid traits.

TABLE 3

Summary statistics for lipid traits in 8.C mice (n = 761)

Trait	Trait	β ± SE	β ± SE
Metabolic	BMI	0.552 ± 0.17	0.257 ± 0.04
	Weight	0.433 ± 0.17	0.241 ± 0.04
	Plasma TG	0.601 ± 0.17	0.260 ± 0.04
	LDL-C	0.690 ± 0.26	0.244 ± 0.05
	HDL-C	-0.36 ± 0.15	-0.350 ± 0.03
Plasma	TG	0.732 ± 0.13	0.563 ± 0.03
	Glucose	0.565 ± 0.23	0.193 ± 0.04
Statistical	TG	0.329 ± 0.13	0.362 ± 0.03
	Plasma TG	-0.357 ± 0.14	-0.165 ± 0.04
	Fasting glucose	-0.39 ± 0.19	-0.123 ± 0.04
	HDL-C	0.41 ± 0.17	0.124 ± 0.04
	LDL-C	-0.543 ± 0.25	-0.156 ± 0.05
MUFA, 18:1 -9	TG	-0.57 ± 0.12	-0.316 ± 0.04
	Fasting glucose	-0.387 ± 0.083	0.037

TABLE 4

β; l 1 μ 0.5 μ 8 0.5 1 μ 0.5 0.5 1 0.5

(= 761)

G	SNP	TFA	MUFA	PUFA	SFA	18:1 7	18:1 -9	18:2 -6	BMI	% Fat	W	T . l . 0.5
	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 0.5			0.565	0.863T 0.3272					× 10

T t b t 1.5 t 1 t 0.5 μ H t ll , Al E μ v; μ 0.5

0.5 t t t fl ll μ -3 FA b t t 0.5 t 1.5 t It

l t , FA t 0.5 t b t v 1 μ FA t v; t 1 0.5 t 1 CVD μ t t t t t

0.5 SNP t 1 0.5 t t v; μ t l t (8). H v; t

t 1 t SNP 1 μ FA t v; CVD μ t t t t t (9). A t

PI μ FA 0.5 t b t 0.5 1 μ SFA t t t 0.5 t 1 0.5 t t 0.5 t t

MUFA PUFA t t 0.5 t t μ 1 t t μ v; b μ t fl t

t 1 μ SFA 0.5 1 t t PUFA CVD 1 (8).

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I G 2001;60:293 300.
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E R I C 2010;17:R1 17.
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N I G, 2009;41:1088 93.
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I CLU I CR I A I M -
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