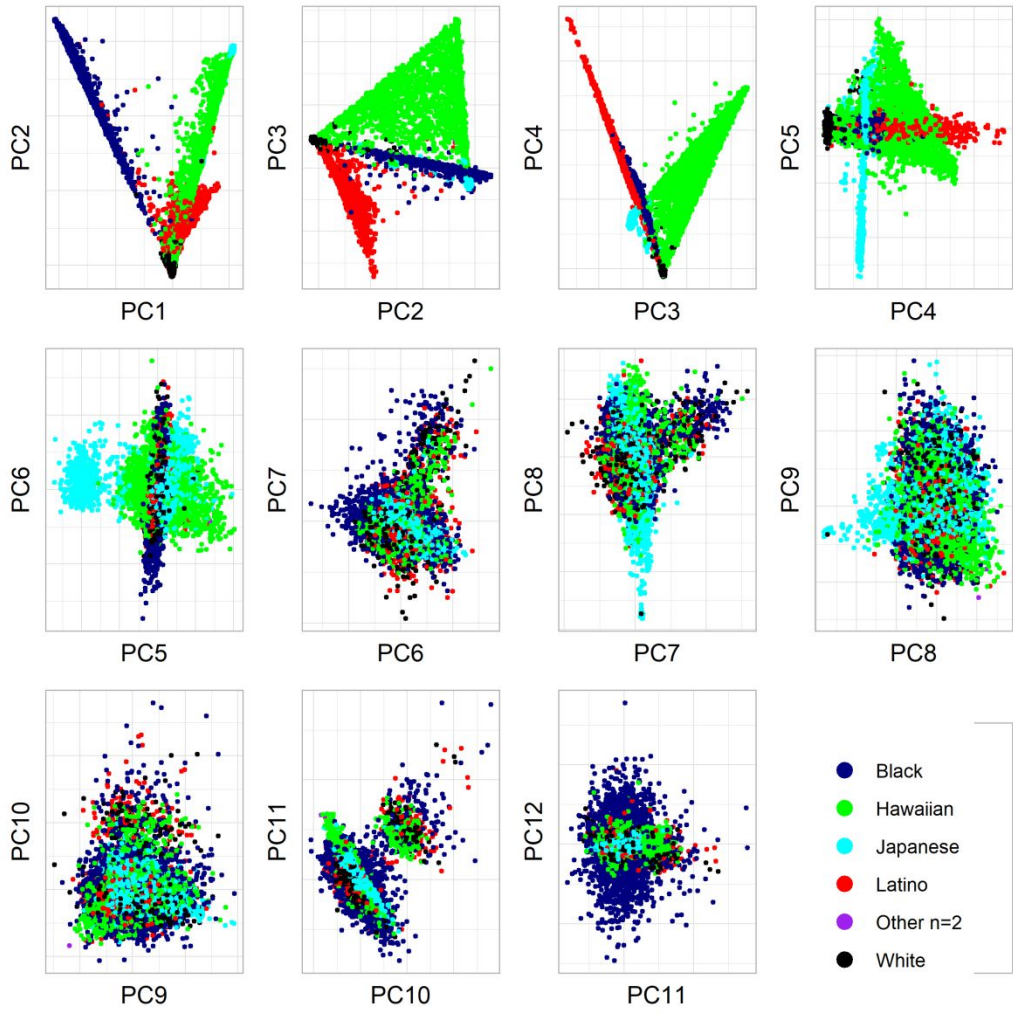
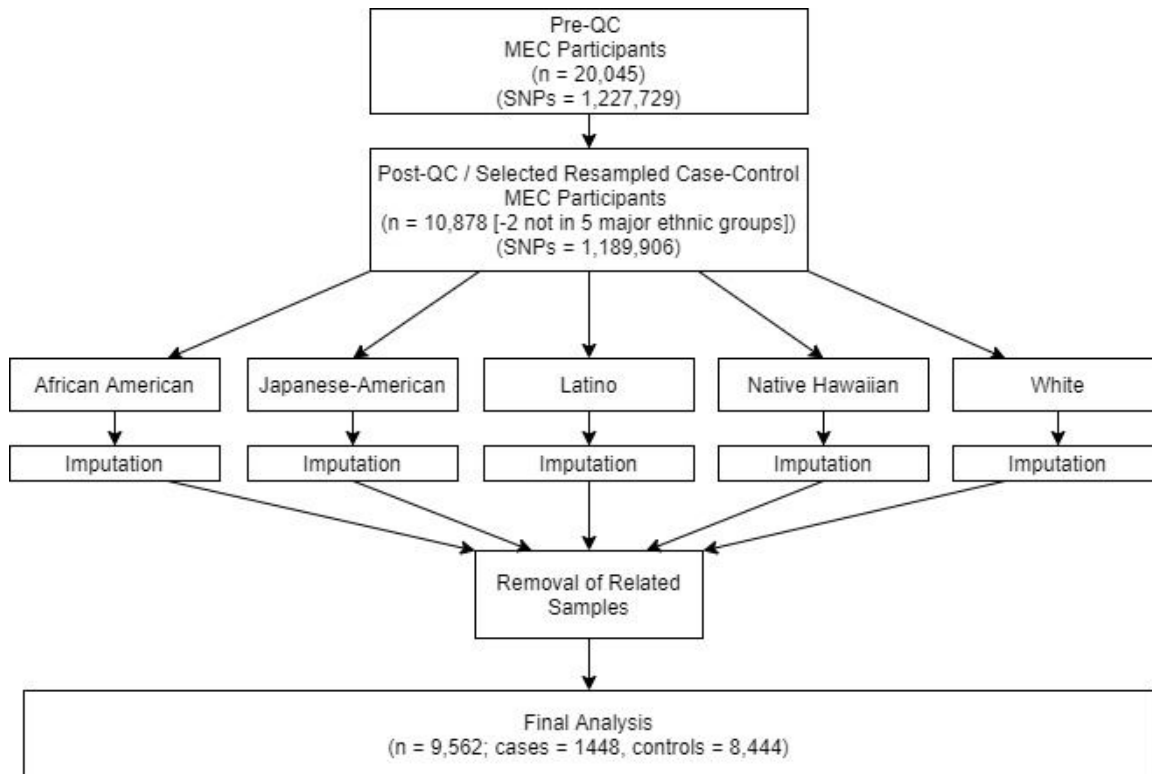


**Supplementary Figure 1. Principal component (PC) analysis plots with point color corresponding to self-reported ethnicity.**



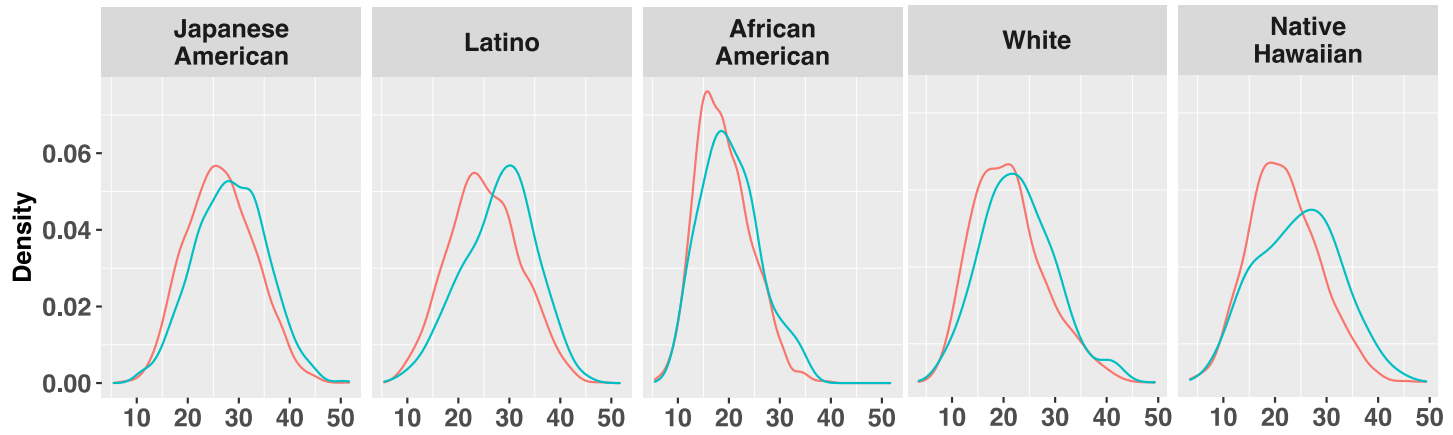
NYU

**Supplementary Figure 2. Flow diagram of the data cleaning, exclusion, and imputation for the samples in the Multiethnic Cohort.**



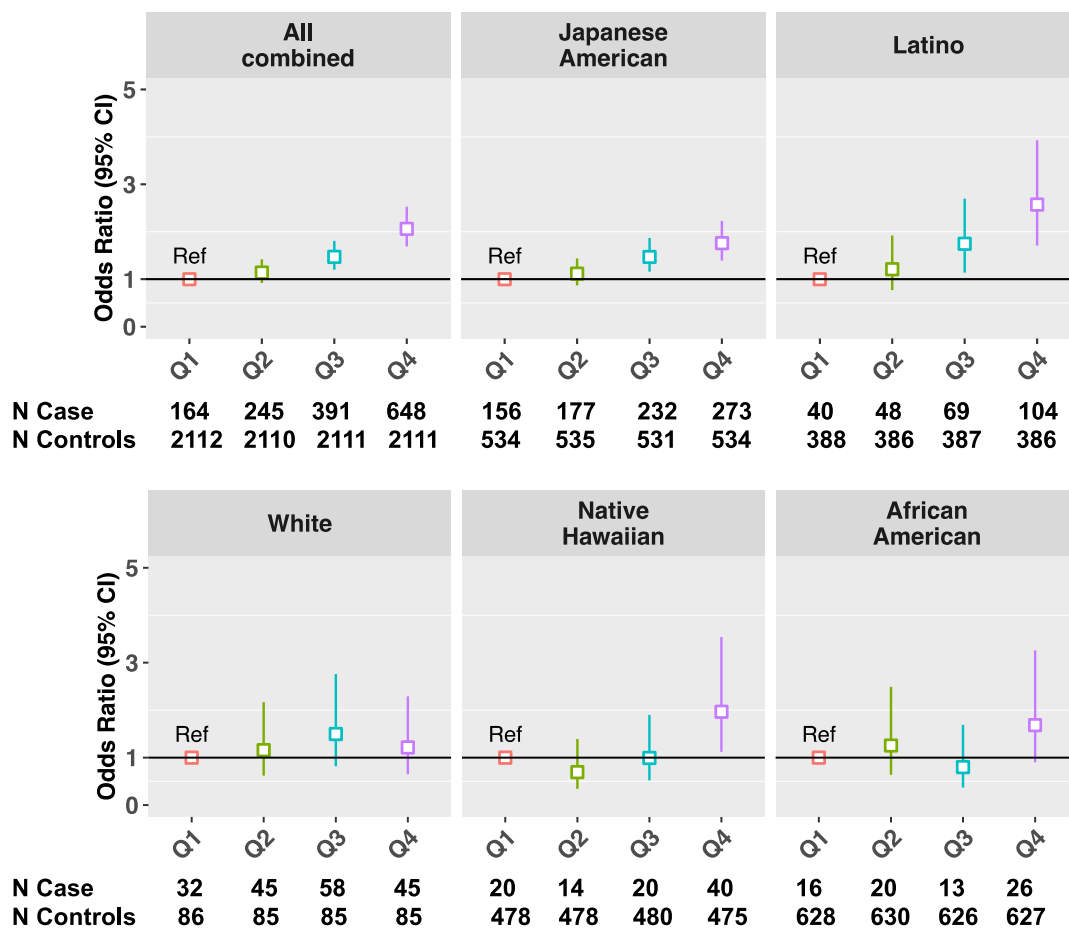
**Supplementary Figure 3. Distribution of the weighted GRS in each ethnic group.**

Control  
Case

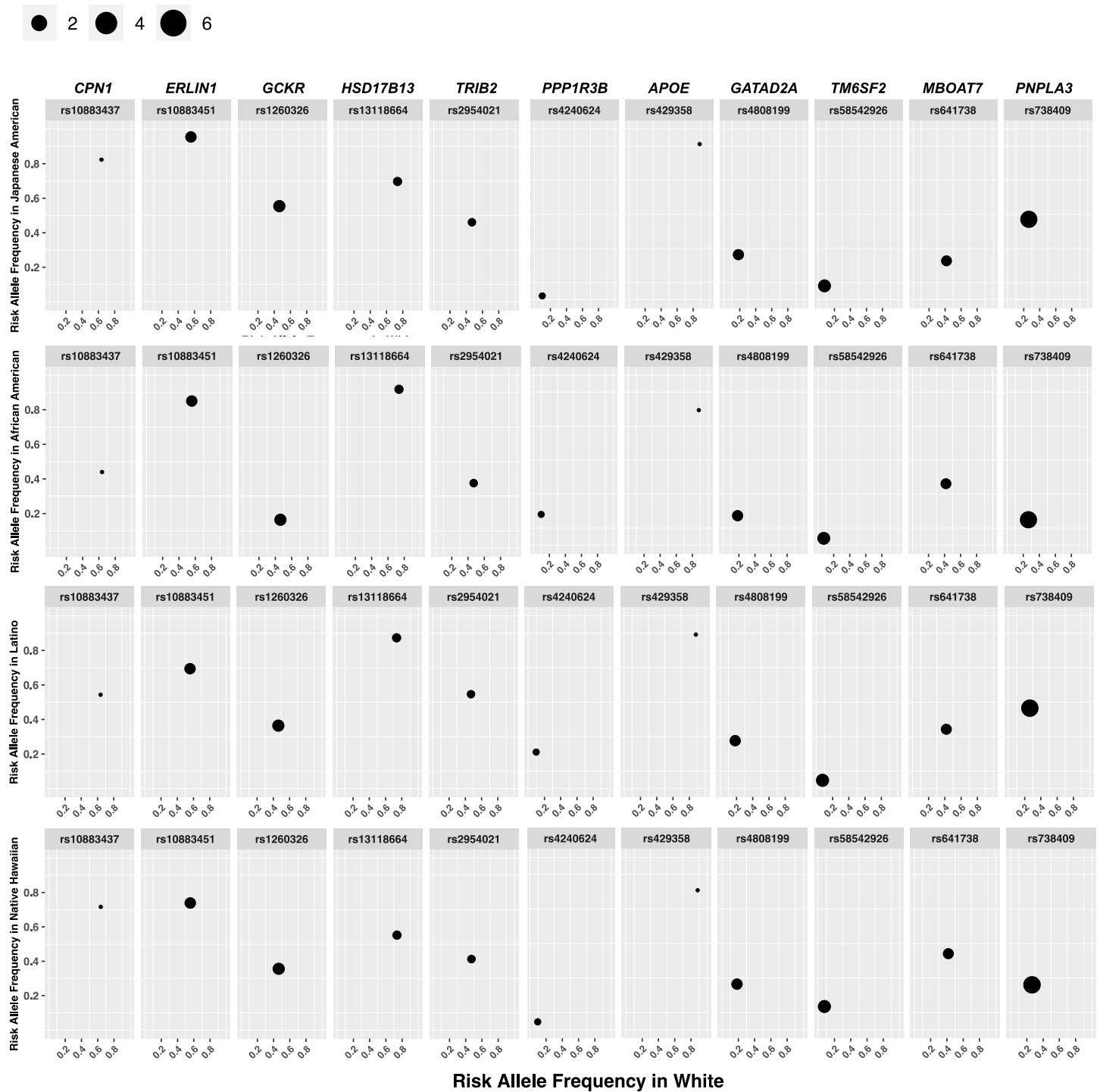


Or Review Only

**Supplementary Figure 4. Unweighted GRS and NAFLD risk in the Multiethnic Cohort, overall and by ethnicity.** GRS was categorized into quartiles:  $\leq 25\%$  (Q1; reference group),  $>25 - \leq 50\%$  (Q2),  $>50 - \leq 75\%$  (Q3) and  $>75\%$  (Q4); numbers of NAFLD cases and controls in each category were shown in the bottom of the figures.



**Supplementary Figure 5. Comparison between risk allele frequency between white and non-white (i.e., Japanese American, African American, Latino, and Native Hawaiian) for the 11 SNPs included in GRS. Point size corresponds to the weights used in computing GRS; weights were calculated as  $\beta/SE$  (obtained from the multiethnic population).**



**Supplementary Table 1. Associations between GWAS variants<sup>1</sup> and NAFLD risk by ethnicity, the Multiethnic Cohort.**

SNP	CHR	Position <sup>2</sup>	Gene	Alleles Risk/Ref	Risk allele frequency	OR (95%CI) <sup>3</sup>	P	Ethnicity
rs10883437	10	101795361	CPN1	T/A	0.64	1.13(0.82-1.56)	0.46	White
rs10883437	10	101795361	CPN1	T/A	0.72	0.81(0.58-1.15)	0.23	Native Hawaiian
rs10883437	10	101795361	CPN1	T/A	0.54	1.03(0.84-1.25)	0.80	Latino
rs10883437	10	101795361	CPN1	T/A	0.82	1.09(0.93-1.29)	0.26	Japanese American
rs10883437	10	101795361	CPN1	T/A	0.44	0.81(0.57-1.15)	0.24	African American
rs10883451	10	101924418	ERLIN1	T/C	0.56	0.92(0.68-1.25)	0.60	White
rs10883451	10	101924418	ERLIN1	T/C	0.74	1.11(0.77-1.62)	0.59	Native Hawaiian
rs10883451	10	101924418	ERLIN1	T/C	0.69	1.33(1.06-1.66)	0.01	Latino
rs10883451	10	101924418	ERLIN1	T/C	0.96	1.27(0.94-1.73)	0.13	Japanese American
rs10883451	10	101924418	ERLIN1	T/C	0.85	0.98(0.62-1.59)	0.92	African American
rs11591741	10	101976501	CHUK	G/C	0.60	0.99(0.73-1.34)	0.93	White
rs11591741	10	101976501	CHUK	G/C	0.75	1.11(0.77-1.62)	0.60	Native Hawaiian
rs11591741	10	101976501	CHUK	G/C	0.73	1.24(0.99-1.57)	0.06	Latino
rs11591741	10	101976501	CHUK	G/C	0.96	1.24(0.92-1.69)	0.17	Japanese American
rs11591741	10	101976501	CHUK	G/C	0.86	0.91(0.58-1.49)	0.69	African American
rs11597086	10	101953705	CHUK	A/C	0.61	0.99(0.73-1.35)	0.96	White
rs11597086	10	101953705	CHUK	A/C	0.75	1.11(0.77-1.63)	0.59	Native Hawaiian
rs11597086	10	101953705	CHUK	A/C	0.73	1.23(0.98-1.56)	0.07	Latino
rs11597086	10	101953705	CHUK	A/C	0.96	1.24(0.92-1.69)	0.17	Japanese American
rs11597086	10	101953705	CHUK	A/C	0.89	0.85(0.52-1.45)	0.52	African American
rs11597390	10	101861435	CPN1	G/A	0.66	0.90(0.66-1.23)	0.50	White
rs11597390	10	101861435	CPN1	G/A	0.76	1.08(0.75-1.58)	0.69	Native Hawaiian
rs11597390	10	101861435	CPN1	G/A	0.62	1.15(0.94-1.41)	0.17	Latino
rs11597390	10	101861435	CPN1	G/A	0.95	1.20(0.90-1.61)	0.23	Japanese American
rs11597390	10	101861435	CPN1	G/A	0.79	0.76(0.53-1.12)	0.16	African American
rs1260326	2	27730940	GCKR	T/C	0.46	1.34(0.98-1.82)	0.06	White
rs1260326	2	27730940	GCKR	T/C	0.36	1.24(0.90-1.70)	0.19	Native Hawaiian
rs1260326	2	27730940	GCKR	T/C	0.36	1.22(0.99-1.49)	0.06	Latino
rs1260326	2	27730940	GCKR	T/C	0.55	1.05(0.93-1.19)	0.40	Japanese American
rs1260326	2	27730940	GCKR	T/C	0.16	1.73(1.13-2.60)	0.01	African American
rs12784396	10	102027407	CWF19L1	C/T	0.60	0.99(0.73-1.34)	0.92	White
rs12784396	10	102027407	CWF19L1	C/T	0.75	1.11(0.77-1.62)	0.59	Native Hawaiian
rs12784396	10	102027407	CWF19L1	C/T	0.72	1.23(0.98-1.54)	0.08	Latino
rs12784396	10	102027407	CWF19L1	C/T	0.96	1.23(0.92-1.68)	0.17	Japanese American
rs12784396	10	102027407	CWF19L1	C/T	0.86	0.97(0.61-1.61)	0.90	African American
rs13118664	4	88239609	HSD17B13	A/T	0.74	0.86(0.60-1.22)	0.39	White
rs13118664	4	88239609	HSD17B13	A/T	0.55	1.41(1.02-1.98)	0.04	Native Hawaiian
rs13118664	4	88239609	HSD17B13	A/T	0.87	1.01(0.75-1.38)	0.96	Latino
rs13118664	4	88239609	HSD17B13	A/T	0.70	1.14(1.00-1.30)	0.05	Japanese American
rs13118664	4	88239609	HSD17B13	A/T	0.92	0.80(0.46-1.49)	0.45	African American
rs1408579	10	101912194	ERLIN1	C/T	0.56	0.91(0.67-1.23)	0.54	White
rs1408579	10	101912194	ERLIN1	C/T	0.74	1.12(0.78-1.64)	0.55	Native Hawaiian
rs1408579	10	101912194	ERLIN1	C/T	0.69	1.33(1.07-1.67)	0.01	Latino
rs1408579	10	101912194	ERLIN1	C/T	0.96	1.27(0.94-1.73)	0.13	Japanese American
rs1408579	10	101912194	ERLIN1	C/T	0.87	0.93(0.57-1.57)	0.76	African American
rs17668255	10	102000701	CWF19L1	C/T	0.60	1.00(0.73-1.36)	0.98	White
rs17668255	10	102000701	CWF19L1	C/T	0.75	1.11(0.77-1.62)	0.60	Native Hawaiian
rs17668255	10	102000701	CWF19L1	C/T	0.73	1.23(0.98-1.55)	0.08	Latino
rs17668255	10	102000701	CWF19L1	C/T	0.96	1.24(0.92-1.69)	0.17	Japanese American
rs17668255	10	102000701	CWF19L1	C/T	0.88	0.84(0.52-1.42)	0.48	African American
rs17668357	10	102003906	CWF19L1	G/C	0.60	1.00(0.73-1.36)	0.98	White
rs17668357	10	102003906	CWF19L1	G/C	0.75	1.11(0.77-1.62)	0.60	Native Hawaiian
rs17668357	10	102003906	CWF19L1	G/C	0.73	1.23(0.98-1.55)	0.08	Latino
rs17668357	10	102003906	CWF19L1	G/C	0.96	1.24(0.92-1.69)	0.17	Japanese American
rs17668357	10	102003906	CWF19L1	G/C	0.88	0.84(0.52-1.42)	0.48	African American
rs17729876	10	101999746	CWF19L1	G/A	0.60	1.00(0.73-1.36)	0.98	White
rs17729876	10	101999746	CWF19L1	G/A	0.75	1.11(0.77-1.62)	0.60	Native Hawaiian

rs17729876	10	101999746	CWF19L1	G/A	0.73	1.23(0.98-1.55)	0.08	Latino
rs17729876	10	101999746	CWF19L1	G/A	0.96	1.24(0.92-1.69)	0.17	Japanese American
rs17729876	10	101999746	CWF19L1	G/A	0.88	0.84(0.52-1.42)	0.48	African American
rs2143571	22	44391686	SAMM50	A/G	0.21	1.38(0.96-1.97)	0.08	White
rs2143571	22	44391686	SAMM50	A/G	0.24	1.16(0.81-1.63)	0.41	Native Hawaiian
rs2143571	22	44391686	SAMM50	A/G	0.31	1.29(1.05-1.58)	0.01	Latino
rs2143571	22	44391686	SAMM50	A/G	0.43	1.22(1.09-1.37)	0.001	Japanese American
rs2143571	22	44391686	SAMM50	A/G	0.34	0.89(0.61-1.27)	0.52	African American
rs2228603	19	19329924	NCAN	T/C	0.07	1.43(0.81-2.50)	0.21	White
rs2228603	19	19329924	NCAN	T/C	0.03	0.77(0.27-1.75)	0.58	Native Hawaiian
rs2228603	19	19329924	NCAN	T/C	0.03	1.29(0.69-2.25)	0.39	Latino
rs2228603	19	19329924	NCAN	T/C	0.05	1.09(0.85-1.40)	0.48	Japanese American
rs2228603	19	19329924	NCAN	T/C	0.02	0.97(0.23-2.72)	0.95	African American
rs2281135	22	44332570	PNPLA3	A/G	0.21	1.23(0.86-1.75)	0.25	White
rs2281135	22	44332570	PNPLA3	A/G	0.24	1.30(0.93-1.81)	0.12	Native Hawaiian
rs2281135	22	44332570	PNPLA3	A/G	0.42	1.56(1.28-1.90)	9.90E-06	Latino
rs2281135	22	44332570	PNPLA3	A/G	0.47	1.35(1.20-1.52)	3.93E-07	Japanese American
rs2281135	22	44332570	PNPLA3	A/G	0.16	1.25(0.80-1.90)	0.31	African American
rs2294915	22	44340904	PNPLA3	T/C	0.28	1.29(0.94-1.78)	0.11	White
rs2294915	22	44340904	PNPLA3	T/C	0.26	1.21(0.87-1.68)	0.25	Native Hawaiian
rs2294915	22	44340904	PNPLA3	T/C	0.47	1.54(1.26-1.87)	2.09E-05	Latino
rs2294915	22	44340904	PNPLA3	T/C	0.47	1.35(1.21-1.52)	2.96E-07	Japanese American
rs2294915	22	44340904	PNPLA3	T/C	0.19	1.13(0.73-1.70)	0.57	African American
rs2862954	10	101912064	ERLIN1	T/C	0.56	0.91(0.68-1.23)	0.55	White
rs2862954	10	101912064	ERLIN1	T/C	0.74	1.12(0.78-1.63)	0.54	Native Hawaiian
rs2862954	10	101912064	ERLIN1	T/C	0.69	1.32(1.06-1.66)	0.01	Latino
rs2862954	10	101912064	ERLIN1	T/C	0.95	1.26(0.94-1.72)	0.13	Japanese American
rs2862954	10	101912064	ERLIN1	T/C	0.88	0.92(0.57-1.55)	0.74	African American
rs28929474	14	94844947	SERPINA1	T/C	0.02	0.72(0.21-2.26)	0.59	White
rs28929474	14	94844947	SERPINA1	T/C	0.006	0.96(0.05-4.63)	0.97	Native Hawaiian
rs28929474	14	94844947	SERPINA1	T/C	0.005	2.79(0.85-7.97)	0.07	Latino
rs28929474	14	94844947	SERPINA1	T/C	0.0002	N/A	N/A	Japanese American
rs28929474	14	94844947	SERPINA1	T/C	0.003	2.03(0.11-11.11)	0.51	African American
rs2896019	22	44333694	PNPLA3	G/T	0.21	1.23(0.86-1.75)	0.25	White
rs2896019	22	44333694	PNPLA3	G/T	0.24	1.30(0.92-1.80)	0.12	Native Hawaiian
rs2896019	22	44333694	PNPLA3	G/T	0.42	1.57(1.29-1.91)	7.79E-06	Latino
rs2896019	22	44333694	PNPLA3	G/T	0.47	1.35(1.20-1.52)	3.92E-07	Japanese American
rs2896019	22	44333694	PNPLA3	G/T	0.17	1.11(0.71-1.69)	0.62	African American
rs2954021	8	126482077	TRIB2	A/G	0.47	1.26(0.93-1.72)	0.14	White
rs2954021	8	126482077	TRIB2	A/G	0.41	1.28(0.94-1.72)	0.11	Native Hawaiian
rs2954021	8	126482077	TRIB2	A/G	0.55	1.22(1.01-1.49)	0.04	Latino
rs2954021	8	126482077	TRIB2	A/G	0.46	1.01(0.90-1.14)	0.82	Japanese American
rs2954021	8	126482077	TRIB2	A/G	0.38	0.84(0.59-1.18)	0.32	African American
rs3747207	22	44324855	PNPLA3	A/G	0.26	1.46(1.05-2.03)	0.02	White
rs3747207	22	44324855	PNPLA3	A/G	0.26	1.22(0.88-1.68)	0.22	Native Hawaiian
rs3747207	22	44324855	PNPLA3	A/G	0.46	1.54(1.27-1.88)	1.78E-05	Latino
rs3747207	22	44324855	PNPLA3	A/G	0.47	1.38(1.22-1.55)	8.04E-08	Japanese American
rs3747207	22	44324855	PNPLA3	A/G	0.14	1.45(0.92-2.22)	0.10	African American
rs4240624	8	9184231	PPP1R3B	G/A	0.10	0.74(0.42-1.25)	0.27	White
rs4240624	8	9184231	PPP1R3B	G/A	0.05	0.77(0.29-1.64)	0.54	Native Hawaiian
rs4240624	8	9184231	PPP1R3B	G/A	0.21	1.36(1.09-1.70)	0.01	Latino
rs4240624	8	9184231	PPP1R3B	G/A	0.02	0.62(0.33-1.08)	0.11	Japanese American
rs4240624	8	9184231	PPP1R3B	G/A	0.18	1.08(0.69-1.64)	0.71	African American
rs429358	19	45411941	APOE	T/C	0.88	0.60(0.38-0.94)	0.03	White
rs429358	19	45411941	APOE	T/C	0.81	1.33(0.90-2.06)	0.17	Native Hawaiian
rs429358	19	45411941	APOE	T/C	0.89	1.18(0.86-1.66)	0.31	Latino
rs429358	19	45411941	APOE	T/C	0.91	1.00(0.81-1.24)	0.98	Japanese American
rs429358	19	45411941	APOE	T/C	0.79	1.55(0.99-2.54)	0.07	African American
rs4808199	19	19545099	GATAD2A	A/G	0.18	1.01(0.68-1.49)	0.96	White
rs4808199	19	19545099	GATAD2A	A/G	0.26	1.45(1.04-1.99)	0.02	Native Hawaiian
rs4808199	19	19545099	GATAD2A	A/G	0.28	1.03(0.83-1.26)	0.81	Latino
rs4808199	19	19545099	GATAD2A	A/G	0.26	1.19(1.05-1.35)	0.01	Japanese American
rs4808199	19	19545099	GATAD2A	A/G	0.17	1.11(0.71-1.67)	0.64	African American
rs58542926	19	19379549	TM6SF2	T/C	0.08	1.74(1.01-3.00)	0.05	White



rs58542926	19	19379549	TM6SF2	T/C	0.13	1.73(1.16-2.51)	0.01	Native Hawaiian
rs58542926	19	19379549	TM6SF2	T/C	0.05	1.14(0.71-1.77)	0.57	Latino
rs58542926	19	19379549	TM6SF2	T/C	0.08	1.30(1.06-1.58)	0.01	Japanese American
rs58542926	19	19379549	TM6SF2	T/C	0.04	0.79(0.27-1.77)	0.61	African American
rs6834314	4	88213808	HSD17B13	A/G	0.71	0.84(0.60-1.18)	0.31	White
rs6834314	4	88213808	HSD17B13	A/G	0.55	1.20(0.88-1.63)	0.26	Native Hawaiian
rs6834314	4	88213808	HSD17B13	A/G	0.86	1.01(0.77-1.35)	0.93	Latino
rs6834314	4	88213808	HSD17B13	A/G	0.66	1.12(0.99-1.27)	0.07	Japanese American
rs6834314	4	88213808	HSD17B13	A/G	0.78	1.11(0.75-1.68)	0.62	African American
rs738408	22	44324730	PNPLA3	T/C	0.26	1.46(1.05-2.04)	0.03	White
rs738408	22	44324730	PNPLA3	T/C	0.26	1.22(0.88-1.68)	0.23	Native Hawaiian
rs738408	22	44324730	PNPLA3	T/C	0.46	1.55(1.27-1.89)	1.52E-05	Latino
rs738408	22	44324730	PNPLA3	T/C	0.47	1.37(1.22-1.54)	1.63E-07	Japanese American
rs738408	22	44324730	PNPLA3	T/C	0.15	1.47(0.94-2.23)	0.08	African American
rs738409	22	44324727	PNPLA3	G/C	0.26	1.46(1.05-2.02)	0.02	White
rs738409	22	44324727	PNPLA3	G/C	0.26	1.22(0.88-1.67)	0.23	Native Hawaiian
rs738409	22	44324727	PNPLA3	G/C	0.46	1.54(1.27-1.88)	1.50E-05	Latino
rs738409	22	44324727	PNPLA3	G/C	0.47	1.37(1.22-1.54)	1.17E-07	Japanese American
rs738409	22	44324727	PNPLA3	G/C	0.15	1.46(0.93-2.21)	0.08	African American
rs780094	2	27741237	GCKR	T/C	0.46	1.24(0.91-1.68)	0.17	White
rs780094	2	27741237	GCKR	T/C	0.36	1.23(0.89-1.68)	0.20	Native Hawaiian
rs780094	2	27741237	GCKR	T/C	0.36	1.26(1.04-1.54)	0.02	Latino
rs780094	2	27741237	GCKR	T/C	0.55	1.04(0.92-1.17)	0.57	Japanese American
rs780094	2	27741237	GCKR	T/C	0.19	1.58(1.07-2.30)	0.02	African American
rs9992651	4	88232510	HSD17B13	G/A	0.73	0.84(0.59-1.19)	0.32	White
rs9992651	4	88232510	HSD17B13	G/A	0.56	1.37(0.98-1.93)	0.06	Native Hawaiian
rs9992651	4	88232510	HSD17B13	G/A	0.87	1.02(0.75-1.39)	0.92	Latino
rs9992651	4	88232510	HSD17B13	G/A	0.70	1.14(1.00-1.30)	0.05	Japanese American
rs9992651	4	88232510	HSD17B13	G/A	0.92	0.80(0.47-1.49)	0.46	African American

<sup>1</sup> Only prior GWAS SNPs at  $P < 5 \times 10^{-8}$  were included.

<sup>2</sup> Position based on GRCh38.

<sup>3</sup> Adjusted for age (continuous), sex, BMI (continuous), type 2 diabetes and principal component 1-5.



**Supplementary Table 2. Associations between previously reported genetic variants<sup>1</sup> and NAFLD risk by ethnicity, the Multiethnic Cohort.**

SNP	CHR	Position	Gene	Alleles Risk/Ref	Risk allele frequency	OR (95%CI)	P	Ethnicity
rs10401969	19	19407718	<i>SUGP1</i>	C/T	0.08	1.82(1.06-3.15)	0.03	White
rs10401969	19	19407718	<i>SUGP1</i>	C/T	0.14	1.69(1.15-2.44)	0.01	Native Hawaiian
rs10401969	19	19407718	<i>SUGP1</i>	C/T	0.06	1.26(0.83-1.86)	0.27	Latino
rs10401969	19	19407718	<i>SUGP1</i>	C/T	0.10	1.35(1.13-1.62)	0.001	Japanese American
rs10401969	19	19407718	<i>SUGP1</i>	C/T	0.16	0.78(0.46-1.24)	0.32	African American
rs11322783	19	39739153	<i>IFNL3/4</i>	C/CT	0.31	1.10(0.78-1.54)	0.59	White
rs11322783	19	39739153	<i>IFNL3/4</i>	C/CT	0.14	1.60(1.03-2.45)	0.03	Native Hawaiian
rs11322783	19	39739153	<i>IFNL3/4</i>	C/CT	0.39	0.99(0.81-1.21)	0.93	Latino
rs11322783	19	39739153	<i>IFNL3/4</i>	C/CT	0.14	0.89(0.73-1.07)	0.23	Japanese American
rs11322783	19	39739153	<i>IFNL3/4</i>	C/CT	0.57	1.03(0.72-1.48)	0.87	African American
rs12137855	1	219448378	<i>LYPLAL1</i>	C/T	0.81	1.13(0.77-1.67)	0.55	White
rs12137855	1	219448378	<i>LYPLAL1</i>	C/T	0.92	1.03(0.59-1.97)	0.92	Native Hawaiian
rs12137855	1	219448378	<i>LYPLAL1</i>	C/T	0.86	1.01(0.76-1.35)	0.96	Latino
rs12137855	1	219448378	<i>LYPLAL1</i>	C/T	0.95	1.11(0.84-1.47)	0.47	Japanese American
rs12137855	1	219448378	<i>LYPLAL1</i>	C/T	0.83	0.79(0.54-1.20)	0.25	African American
rs1227756	10	71588504	<i>COL13A1</i>	A/G	0.51	0.82(0.61-1.10)	0.19	White
rs1227756	10	71588504	<i>COL13A1</i>	A/G	0.23	0.99(0.66-1.46)	0.97	Native Hawaiian
rs1227756	10	71588504	<i>COL13A1</i>	A/G	0.41	1.07(0.88-1.32)	0.49	Latino
rs1227756	10	71588504	<i>COL13A1</i>	A/G	0.27	1.10(0.96-1.25)	0.19	Japanese American
rs1227756	10	71588504	<i>COL13A1</i>	A/G	0.38	0.99(0.69-1.42)	0.98	African American
rs12979860	19	39738787	<i>IFNL3/4</i>	C/T	0.69	0.93(0.66-1.31)	0.68	White
rs12979860	19	39738787	<i>IFNL3/4</i>	C/T	0.86	0.64(0.42-1.00)	0.05	Native Hawaiian
rs12979860	19	39738787	<i>IFNL3/4</i>	C/T	0.62	1.02(0.83-1.26)	0.83	Latino
rs12979860	19	39738787	<i>IFNL3/4</i>	C/T	0.87	1.13(0.94-1.37)	0.21	Japanese American
rs12979860	19	39738787	<i>IFNL3/4</i>	C/T	0.46	0.97(0.67-1.38)	0.86	African American
rs17580	14	94847262	<i>SERPINA1</i>	A/T	0.04	2.26(1.07-4.77)	0.03	White
rs17580	14	94847262	<i>SERPINA1</i>	A/T	0.02	0.61(0.10-2.02)	0.50	Native Hawaiian
rs17580	14	94847262	<i>SERPINA1</i>	A/T	0.04	1.21(0.74-1.89)	0.42	Latino
rs17580	14	94847262	<i>SERPINA1</i>	A/T	0.0005	N/A	N/A	Japanese American
rs17580	14	94847262	<i>SERPINA1</i>	A/T	0.01	1.03(0.16-3.54)	0.96	African American
rs1800562	6	26093141	<i>HFE</i>	G/A	0.94	0.76(0.42-1.39)	0.35	White
rs1800562	6	26093141	<i>HFE</i>	G/A	0.98	1.49(0.44-9.35)	0.59	Native Hawaiian
rs1800562	6	26093141	<i>HFE</i>	G/A	0.98	1.87(0.87-4.90)	0.15	Latino
rs1800562	6	26093141	<i>HFE</i>	G/A	0.9998	N/A	N/A	Japanese American
rs1800562	6	26093141	<i>HFE</i>	G/A	0.98	0.67(0.23-3.04)	0.54	African American
rs2642438	1	220970028	<i>MARC1</i>	G/A	0.70	0.97(0.71-1.35)	0.88	White
rs2642438	1	220970028	<i>MARC1</i>	G/A	0.49	0.93(0.65-1.32)	0.69	Native Hawaiian
rs2642438	1	220970028	<i>MARC1</i>	G/A	0.79	1.33(1.03-1.72)	0.03	Latino
rs2642438	1	220970028	<i>MARC1</i>	G/A	0.83	1.05(0.89-1.24)	0.56	Japanese American
rs2642438	1	220970028	<i>MARC1</i>	G/A	0.90	0.98(0.57-1.83)	0.94	African American
rs2954038	8	126507389	<i>TRIB1</i>	C/A	0.29	1.12(0.81-1.55)	0.48	White
rs2954038	8	126507389	<i>TRIB1</i>	C/A	0.29	1.29(0.94-1.76)	0.11	Native Hawaiian
rs2954038	8	126507389	<i>TRIB1</i>	C/A	0.25	1.24(1.00-1.54)	0.04	Latino
rs2954038	8	126507389	<i>TRIB1</i>	C/A	0.31	1.13(0.99-1.27)	0.06	Japanese American
rs2954038	8	126507389	<i>TRIB1</i>	C/A	0.12	0.82(0.45-1.40)	0.49	African American
rs2980888	8	126507308	<i>TRIB1</i>	T/C	0.29	1.13(0.81-1.55)	0.47	White
rs2980888	8	126507308	<i>TRIB1</i>	T/C	0.29	1.29(0.94-1.77)	0.11	Native Hawaiian
rs2980888	8	126507308	<i>TRIB1</i>	T/C	0.26	1.25(1.00-1.54)	0.04	Latino
rs2980888	8	126507308	<i>TRIB1</i>	T/C	0.32	1.13(1.00-1.28)	0.06	Japanese American
rs2980888	8	126507308	<i>TRIB1</i>	T/C	0.12	0.81(0.44-1.38)	0.47	African American
rs4374383	2	112770770	<i>MERTK</i>	G/A	0.61	1.06(0.77-1.48)	0.71	White
rs4374383	2	112770770	<i>MERTK</i>	G/A	0.51	1.04(0.74-1.44)	0.84	Native Hawaiian
rs4374383	2	112770770	<i>MERTK</i>	G/A	0.62	0.98(0.80-1.19)	0.80	Latino
rs4374383	2	112770770	<i>MERTK</i>	G/A	0.26	1.09(0.95-1.25)	0.22	Japanese American
rs4374383	2	112770770	<i>MERTK</i>	G/A	0.52	0.80(0.57-1.12)	0.20	African American
rs4823173	22	44328730	<i>PNPLA3</i>	A/G	0.20	1.31(0.91-1.87)	0.15	White
rs4823173	22	44328730	<i>PNPLA3</i>	A/G	0.23	1.29(0.92-1.80)	0.13	Native Hawaiian
rs4823173	22	44328730	<i>PNPLA3</i>	A/G	0.41	1.55(1.27-1.89)	1.36E-05	Latino

rs4823173	22	44328730	<i>PNPLA3</i>	A/G	0.46	1.35(1.20-1.52)	5.28E-07	Japanese American
rs4823173	22	44328730	<i>PNPLA3</i>	A/G	0.13	1.39(0.86-2.15)	0.16	African American
rs62305723	4	88231429	<i>HSD17B13</i>	G/A	0.93	1.02(0.57-1.89)	0.95	White
rs62305723	4	88231429	<i>HSD17B13</i>	G/A	0.98	0.69(0.29-2.01)	0.44	Native Hawaiian
rs62305723	4	88231429	<i>HSD17B13</i>	G/A	0.96	1.05(0.66-1.72)	0.86	Latino
rs62305723	4	88231429	<i>HSD17B13</i>	G/A	0.9990	1.07(0.14-22.17)	0.95	Japanese American
rs62305723	4	88231429	<i>HSD17B13</i>	G/A	0.98	0.78(0.27-3.26)	0.68	African American
rs641738	19	54676763	<i>MBOAT7</i>	T/C	0.42	1.24(0.89-1.72)	0.20	White
rs641738	19	54676763	<i>MBOAT7</i>	T/C	0.44	1.15(0.82-1.60)	0.43	Native Hawaiian
rs641738	19	54676763	<i>MBOAT7</i>	T/C	0.34	1.06(0.84-1.32)	0.64	Latino
rs641738	19	54676763	<i>MBOAT7</i>	T/C	0.23	1.22(1.04-1.43)	0.01	Japanese American
rs641738	19	54676763	<i>MBOAT7</i>	T/C	0.36	1.32(0.90-1.91)	0.15	African American
rs6487679	12	9371332	<i>PZP</i>	C/T	0.19	1.30(0.90-1.89)	0.16	White
rs6487679	12	9371332	<i>PZP</i>	C/T	0.13	1.11(0.72-1.65)	0.64	Native Hawaiian
rs6487679	12	9371332	<i>PZP</i>	C/T	0.12	1.06(0.78-1.42)	0.69	Latino
rs6487679	12	9371332	<i>PZP</i>	C/T	0.10	1.05(0.87-1.27)	0.60	Japanese American
rs6487679	12	9371332	<i>PZP</i>	C/T	0.23	1.20(0.81-1.74)	0.36	African American
rs72613567	4	88231392	<i>HSD17B13</i>	T/TA	0.72	0.86(0.60-1.21)	0.38	White
rs72613567	4	88231392	<i>HSD17B13</i>	T/TA	0.55	1.31(0.95-1.82)	0.11	Native Hawaiian
rs72613567	4	88231392	<i>HSD17B13</i>	T/TA	0.87	0.98(0.74-1.33)	0.92	Latino
rs72613567	4	88231392	<i>HSD17B13</i>	T/TA	0.67	1.13(1.00-1.28)	0.06	Japanese American
rs72613567	4	88231392	<i>HSD17B13</i>	T/TA	0.91	0.82(0.48-1.53)	0.52	African American
rs887304	12	3757548	<i>EFCAB4B</i>	T/C	0.28	1.27(0.89-1.81)	0.18	White
rs887304	12	3757548	<i>EFCAB4B</i>	T/C	0.10	1.38(0.83-2.21)	0.19	Native Hawaiian
rs887304	12	3757548	<i>EFCAB4B</i>	T/C	0.16	1.29(0.99-1.66)	0.05	Latino
rs887304	12	3757548	<i>EFCAB4B</i>	T/C	0.005	0.48(0.13-1.38)	0.21	Japanese American
rs887304	12	3757548	<i>EFCAB4B</i>	T/C	0.15	0.73(0.42-1.19)	0.23	African American

<sup>1</sup> NAFLD-associated SNPs reported in prior epidemiologic studies but not in the context of GWAS.

<sup>2</sup> Position based on GRCh38.

<sup>3</sup> Adjusted for age (continuous), sex, BMI (continuous), type 2 diabetes and principal component 1-5.

**Supplementary Table 3. Area under the receiver operating characteristic curve (AUC) of GRS<sup>1</sup> for NAFLD risk overall and by cirrhosis status.**

	<b>All NAFLD</b>	<b>NAFLD without cirrhosis</b>	<b>NAFLD with cirrhosis</b>
All combined	0.592 (0.574, 0.609)	0.585 (0.567, 0.604)	0.630 (0.591, 0.668)
Japanese American	0.577 (0.553, 0.601)	0.572 (0.548, 0.596)	0.652 (0.586, 0.714)
Latino	0.616 (0.578, 0.653)	0.616 (0.545, 0.683)	0.616 (0.572, 0.657)
White	0.584 (0.522, 0.644)	0.572 (0.509, 0.632)	0.639 (0.517, 0.751)
Native Hawaiian	0.603 (0.541, 0.666)	0.600 (0.529, 0.667)	0.616 (0.476, 0.743)
African American	0.572 (0.505, 0.637)	0.584 (0.508, 0.659)	0.540 (0.412, 0.662)

<sup>1</sup>GRS was analyzed as per SD increased; regression models were adjusted for age (continuous), sex, BMI (continuous), type 2 diabetes and principal component 1-5.

**Supplementary Table 4. Associations between GRS and NAFLD risk by sex, age, BMI and type 2 diabetes, the Multiethnic Cohort.**

GRS	Male				Female				$P_{\text{het}}^1$
	Ca/Co	OR	95%CI	P	Ca/Co	OR	95%CI	P	
≤25%	81/975	ref			80/1136	ref			
>25 - ≤50%	95/975	0.89	0.64-1.23	0.47	126/1136	1.17	0.86-1.6	0.33	
>50 - ≤75%	130/975	1.01	0.74-1.38	0.95	231/1136	1.64	1.23-2.2	0.0009	
>75%	252/975	1.73	1.30-2.34	0.0002	453/1136	2.51	1.9-3.35	2.01E-10	0.003
Per 1 SD GRS		1.35	1.23-1.49	2.43E-09		1.47	1.34-1.60	1.10E-17	
		Age ≤ median			Age > median				
GRS	Ca/Co	OR	95%CI	P	Ca/Co	OR	95%CI	P	
≤25%	84/1094	ref			73/1018				
>25 - ≤50%	132/1094	1.18	0.88-1.61	0.27	101/1017	1.02	0.73-1.42	0.93	
>50 - ≤75%	196/1093	1.40	1.05-1.88	0.02	160/1017	1.29	0.94-1.77	0.12	
>75%	377/1094	2.23	1.69-2.97	2.14E-08	325/1017	2.13	1.58-2.89	8.96E-07	0.75
Per 1 SD GRS		1.43	1.31-1.57	2.98E-15		1.38	1.26-1.52	2.93E-11	
		BMI ≤ median			BMI > median				
GRS	Ca/Co	OR	95%CI	P	Ca/Co	OR	95%CI	P	
≤25%	86/1052				73/1060				
>25 - ≤50%	127/1051	1.04	0.77-1.42	0.79	106/1059	1.17	0.84-1.62	0.35	
>50 - ≤75%	195/1051	1.26	0.94-1.69	0.12	173/1059	1.54	1.14-2.10	0.01	
>75%	358/1052	2.01	1.52-2.66	9.50E-07	330/1060	2.29	1.71-3.10	5.25E-08	0.89
Per 1 SD GRS		1.38	1.26-1.51	2.97E-12		1.44	1.31-1.59	2.78E-14	
		Without T2DM			With T2DM				
GRS	Ca/Co	OR	95%CI	P	Ca/Co	OR	95%CI	P	
≤25%	51/1041				108/1071				
>25 - ≤50%	84/1040	1.12	0.77-1.65	0.54	146/1071	1.05	0.80-1.39	0.71	
>50 - ≤75%	115/1040	1.26	0.88-1.83	0.21	244/1070	1.42	1.09-1.84	0.01	
>75%	245/1040	2.05	1.45-2.93	0.0001	455/1071	2.23	1.73-2.88	6.26E-10	0.56
Per 1 SD GRS		1.35	1.21-1.50	4.24E-08		1.45	1.33-1.57	3.04E-18	

<sup>1</sup> Heterogeneity test when GRS was treated as quartiles (interaction test degree of freedom 3).Median BMI was 26.68 kg/m<sup>2</sup> and median age was 66 years.