**Supplementary Table 4.** Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pairs. For each genotype at a locus, characters 0, 1, and 2 denote homozygous wild-type, heterozygous, and homozygous mutant genotypes, respectively. For each allele at a locus, characters 0 and 1 denote major and minor alleles, respectively. The genotypes, alleles, and allele configurations with odds ratios displayed in bold red fonts are statistically significant disease-predisposing ones. On the other hand, the genotypes, alleles, and allele configurations with odds ratios displayed in italic green fonts are statistically significant protective ones.

Supplementary Table 4a. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs429358) and *APOE* (rs7412).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs429358 | 0 | 0.3522 | 0.7460 | *0.1851* | *(0.1249-0.2744)* |
|  | 1 | 0.5087 | 0.2379 | **3.3168** | **(2.2452-4.8998)** |
|  | 2 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
| rs7412 | 0 | 0.9565 | 0.8508 | **3.8578** | **(1.8710-7.9544)** |
|  | 1 | 0.0435 | 0.1492 | *0.2592* | *(0.1257-0.5345)* |
| (rs429358, | 00 | 0.3348 | 0.6048 | *0.3288* | *(0.2262-0.4779)* |
| rs7412) | *01* | 0.0174 | 0.1411 | *0.1077* | *(0.0376-0.3082)* |
|  | 10 | 0.4826 | 0.2298 | **3.1256** | **(2.1100-4.6300)** |
|  | 11 | 0.0261 | 0.0081 | 3.2946 | (0.6582-16.4909) |
|  | 20 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
|  | Allele |  |  |  |  |
| rs429358 | 0 | 0.6065 | 0.8649 | *0.2407* | *(0.1751-0.3309)* |
|  | 1 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |
| rs7412 | 0 | 0.9783 | 0.9254 | **3.6275** | **(1.7824-7.3822)** |
|  | 1 | 0.0217 | 0.0746 | *0.2757* | *(0.1355-0.5610)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
|  | (Haplotype) |  |  |  |  |
| (rs429358, | 00 | 0.5848 | 0.7903 | *0.3737* | *(0.2810-0.4968)* |
| rs7412) | 01 | 0.0217 | 0.0746 | *0.2757* | *(0.1355-0.5610)* |
|  | 10 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |

Two-SNP SAA identified the SNP pair. The allele configurations are also haplotypes because *APOE* (rs429358) and *APOE* (rs7412) are in linkage disequilibrium.

Supplementary Table 4b. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs429358) and *ABHD1* (rs2304678).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs429358 | 0 | 0.3522 | 0.7460 | *0.1851* | *(0.1249-0.2744)* |
|  | 1 | 0.5087 | 0.2379 | **3.3168** | **(2.2452-4.8998)** |
|  | 2 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
| rs2304678 | 0 | 0.8087 | 0.6290 | **2.4930** | **(1.6421-3.7849)** |
|  | 1 | 0.1609 | 0.3387 | *0.3743* | *(0.2413-0.5807)* |
|  | 2 | 0.0304 | 0.0323 | 0.9417 | (0.3360-2.6394) |
| (rs429358, | 00 | 0.2696 | 0.4798 | *0.4001* | *(0.2727-0.5869)* |
| rs2304678) | 01 | 0.0696 | 0.2419 | *0.2343* | *(0.1305-0.4206)* |
|  | 02 | 0.0130 | 0.0242 | 0.5330 | (0.1318-2.1566) |
|  | 10 | 0.4087 | 0.1371 | **4.3503** | **(2.7815-6.8041)** |
|  | 11 | 0.0826 | 0.0927 | 0.8809 | (0.4664-1.6639) |
|  | 12 | 0.0174 | 0.0081 | 2.1770 | (0.3949-11.9999) |
|  | **20** | 0.1304 | 0.0121 | **12.2500** | **(3.6844-40.7294)** |
|  | 21 | 0.0087 | 0.0040 | 2.1667 | (0.1951-24.0560) |
|  | Allele |  |  |  |  |
| rs429358 | 0 | 0.6065 | 0.8649 | *0.2407* | *(0.1751-0.3309)* |
|  | 1 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |
| rs2304678 | 0 | 0.8891 | 0.7984 | **2.0252** | **(1.4066-2.9157)** |
|  | 1 | 0.1109 | 0.2016 | *0.4938* | *(0.3430-0.7109)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs429358, | 0-0 | 0.5293 | 0.6925 | *0.4993* | *(0.3833-0.6504)* |
| rs2304678) | 0-1 | 0.0772 | 0.1724 | *0.4015* | *(0.2654-0.6075)* |
|  | **1-0** | 0.3598 | 0.1058 | **4.7473** | **(3.3667-6.6940)** |
|  | 1-1 | 0.0337 | 0.0292 | 1.1579 | (0.5594-2.3970) |

Two-SNP SAA identified the SNP pair.

Supplementary Table 4c. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs429358) and *IL10RA* (rs2256111).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs429358 | 0 | 0.3522 | 0.7460 | *0.1851* | *(0.1249-0.2744)* |
|  | 1 | 0.5087 | 0.2379 | **3.3168** | **(2.2452-4.8998)** |
|  | 2 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
| rs2256111 | 0 | 0.1348 | 0.2782 | *0.4041* | *(0.2527-0.6462)* |
|  | 1 | 0.5261 | 0.5242 | 1.0076 | (0.7035-1.4432) |
|  | 2 | 0.3391 | 0.1976 | **2.0840** | **(1.3762-3.1560)** |
| (rs429358, | *00* | 0.0348 | 0.2097 | *0.1358* | *(0.0630-0.2930)* |
| rs2256111) | 01 | 0.1957 | 0.4032 | *0.3600* | *(0.2382-0.5440)* |
|  | 02 | 0.1217 | 0.1331 | 0.9031 | (0.5268-1.5481) |
|  | 10 | 0.0783 | 0.0645 | 1.2311 | (0.6122-2.4760) |
|  | 11 | 0.2783 | 0.1129 | **3.0293** | **(1.8601-4.9332)** |
|  | 12 | 0.1522 | 0.0605 | **2.7880** | **(1.4789-5.2562)** |
|  | 20 | 0.0217 | 0.0040 | 5.4889 | (0.6364-47.3394) |
|  | 21 | 0.0522 | 0.0081 | **6.7706** | **(1.4987-30.5879)** |
|  | **22** | 0.0652 | 0.0040 | **17.2326** | **(2.2576-131.5360)** |
|  | Allele |  |  |  |  |
| rs429358 | 0 | 0.6065 | 0.8649 | *0.2407* | *(0.1751-0.3309)* |
|  | 1 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |
| rs2256111 | 0 | 0.3978 | 0.5403 | *0.5620* | *(0.4347-0.7267)* |
|  | 1 | 0.6022 | 0.4597 | **1.7792** | **(1.3760-2.3006)** |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs429358, | 0-0 | 0.2413 | 0.4718 | *0.3561* | *(0.2700-0.4697)* |
| rs2256111) | 0-1 | 0.3652 | 0.3931 | 0.8881 | (0.6836-1.1537) |
|  | 1-0 | 0.1565 | 0.0685 | **2.5215** | **(1.6409-3.8747)** |
|  | **1-1** | 0.2370 | 0.0665 | **4.3570** | **(2.8817-6.5875)** |

Two-SNP SAA identified the SNP pair.

Supplementary Table 4d. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs429358) and *IQCN* (rs8104533).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs429358 | 0 | 0.3522 | 0.7460 | *0.1851* | *(0.1249-0.2744)* |
|  | 1 | 0.5087 | 0.2379 | **3.3168** | **(2.2452-4.8998)** |
|  | 2 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
| rs8104533 | 0 | 0.3435 | 0.3065 | 1.1840 | (0.8070-1.7372) |
|  | 1 | 0.5435 | 0.4274 | **1.5948** | **(1.1111-2.2891)** |
|  | 2 | 0.1130 | 0.2661 | *0.3515* | *(0.2141-0.5771)* |
| (rs429358, | 00 | 0.1087 | 0.2177 | *0.4381* | *(0.2623-0.7319)* |
| rs8104533) | 01 | 0.1957 | 0.3226 | *0.5108* | *(0.3354-0.7780)* |
|  | 02 | 0.0478 | 0.2056 | *0.1940* | *(0.0984-0.3827)* |
|  | 10 | 0.1870 | 0.0887 | **2.3622** | **(1.3641-4.0905)** |
|  | 11 | 0.2739 | 0.0968 | **3.5210** | **(2.1121-5.8697)** |
|  | 12 | 0.0478 | 0.0524 | 0.9080 | (0.3984-2.0694) |
|  | 20 | 0.0478 | 0.0000 | N/A | N/A |
|  | 21 | 0.0739 | 0.0081 | **9.8169** | **(2.2423-42.9787)** |
|  | 22 | 0.0174 | 0.0081 | 2.1770 | (0.3949-11.9999) |
|  | Allele |  |  |  |  |
| rs429358 | 0 | 0.6065 | 0.8649 | *0.2407* | *(0.1751-0.3309)* |
|  | 1 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |
| rs8104533 | 0 | 0.6152 | 0.5202 | **1.4749** | **(1.1401-1.9081)** |
|  | 1 | 0.3848 | 0.4798 | *0.6780* | *(0.5241-0.8771)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs429358, | 0-0 | 0.3685 | 0.4476 | *0.7201* | *(0.5557-0.9333)* |
| rs8104533) | 0-1 | 0.2380 | 0.4173 | *0.4362* | *(0.3299-0.5766)* |
|  | **1-0** | 0.2467 | 0.0726 | **4.1855** | **(2.8057-6.2440)** |
|  | 1-1 | 0.1467 | 0.0625 | **2.5796** | **(1.6515-4.0293)** |

Two-SNP SAA identified the SNP pair. All three SNPs in *IQCN* (rs8104533, rs3746186, and rs8110972) were in complete linkage disequilibrium (). Therefore, the odds ratios remained unchanged when *IQCN* (rs3746186 or rs8110972) replaced *IQCN* (rs8104533).

Supplementary Table 4e. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs429358) and *MINDY4* (rs10216063).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs429358 | 0 | 0.3522 | 0.7460 | *0.1851* | *(0.1249-0.2744)* |
|  | 1 | 0.5087 | 0.2379 | **3.3168** | **(2.2452-4.8998)** |
|  | 2 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
| rs10216063 | 0 | 0.7304 | 0.5363 | **2.3430** | **(1.5966-3.4383)** |
|  | 1 | 0.2348 | 0.3871 | *0.4858* | *(0.3264-0.7231)* |
|  | 2 | 0.0348 | 0.0766 | 0.4343 | (0.1863-1.0126) |
| (rs429358, | 00 | 0.2609 | 0.3911 | *0.5494* | *(0.3722-0.8110)* |
| rs10216063) | 01 | 0.0870 | 0.3024 | *0.2197* | *(0.1290-0.3742)* |
|  | *02* | 0.0043 | 0.0524 | *0.0789* | *(0.0102-0.6083)* |
|  | 10 | 0.3609 | 0.1371 | **3.5538** | **(2.2639-5.5788)** |
|  | 11 | 0.1174 | 0.0766 | 1.6031 | (0.8653-2.9698) |
|  | 12 | 0.0304 | 0.0242 | 1.2661 | (0.4191-3.8244) |
|  | **20** | 0.1087 | 0.0081 | **15.0000** | **(3.5110-64.0844)** |
|  | 21 | 0.0304 | 0.0081 | 3.8610 | (0.7938-18.7802) |
|  | Allele |  |  |  |  |
| rs429358 | 0 | 0.6065 | 0.8649 | *0.2407* | *(0.1751-0.3309)* |
|  | 1 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |
| rs10216063 | 0 | 0.8478 | 0.7298 | **2.0624** | **(1.4938-2.8472)** |
|  | 1 | 0.1522 | 0.2702 | *0.4849* | *(0.3512-0.6694)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs429358, | 0-0 | 0.5141 | 0.6300 | *0.6214* | *(0.4800-0.8044)* |
| rs10216063) | 0-1 | 0.0924 | 0.2349 | *0.3316* | *(0.2273-0.4838)* |
|  | **1-0** | 0.3337 | 0.0998 | **4.5175** | **(3.1777-6.4222)** |
|  | 1-1 | 0.0598 | 0.0353 | 1.7386 | (0.9416-3.2102) |

Two-SNP SAA identified the SNP pair.

Supplementary Table 4f. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs429358) and *PLAAT5* (rs940611).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs429358 | 0 | 0.3522 | 0.7460 | *0.1851* | *(0.1249-0.2744)* |
|  | 1 | 0.5087 | 0.2379 | **3.3168** | **(2.2452-4.8998)** |
|  | 2 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
| rs940611 | 0 | 0.9478 | 0.8226 | **3.9183** | **(2.0126-7.6286)** |
|  | 1 | 0.0478 | 0.1452 | *0.2958* | *(0.1467-0.5963)* |
|  | 2 | 0.0043 | 0.0323 | 0.1310 | (0.0163-1.0557) |
| (rs429358, | 00 | 0.3304 | 0.6048 | *0.3224* | *(0.2217-0.4689)* |
| rs940611) | *01* | 0.0174 | 0.1129 | *0.1391* | *(0.0480-0.4030)* |
|  | 02 | 0.0043 | 0.0282 | 0.1503 | (0.0184-1.2315) |
|  | 10 | 0.4870 | 0.2016 | **3.7586** | **(2.5098-5.6288)** |
|  | 11 | 0.0217 | 0.0323 | 0.6667 | (0.2149-2.0680) |
|  | 12 | 0.0000 | 0.0040 | N/A | N/A |
|  | 20 | 0.1304 | 0.0161 | **9.1500** | **(3.1704-26.4074)** |
|  | 21 | 0.0087 | 0.0000 | N/A | N/A |
|  | Allele |  |  |  |  |
| rs429358 | 0 | 0.6065 | 0.8649 | *0.2407* | *(0.1751-0.3309)* |
|  | 1 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |
| rs940611 | 0 | 0.9717 | 0.8952 | **4.0270** | **(2.1625-7.4993)** |
|  | 1 | 0.0283 | 0.1048 | *0.2483* | *(0.1333-0.4624)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs429358, | 0-0 | 0.5880 | 0.7702 | *0.4260* | *(0.3221-0.5635)* |
| rs940611) | *0-1* | 0.0185 | 0.0948 | *0.1798* | *(0.0856-0.3778)* |
|  | **1-0** | 0.3837 | 0.1250 | **4.3580** | **(3.1464-6.0363)** |
|  | 1-1 | 0.0098 | 0.0101 | 0.9701 | (0.2698-3.4890) |

Two-SNP SAA identified the SNP pair.

Supplementary Table 4g. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs429358) and *PXMP4* (rs910397).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs429358 | 0 | 0.3522 | 0.7460 | *0.1851* | *(0.1249-0.2744)* |
|  | 1 | 0.5087 | 0.2379 | **3.3168** | **(2.2452-4.8998)** |
|  | 2 | 0.1391 | 0.0161 | **9.8586** | **(3.4286-28.3476)** |
| rs910397 | 0 | 0.1739 | 0.3226 | *0.4421* | *(0.2868-0.6814)* |
|  | 1 | 0.5043 | 0.4960 | 1.0341 | (0.7223-1.4805) |
|  | 2 | 0.3217 | 0.1815 | **2.1399** | **(1.3987-3.2739)** |
| (rs429358, | 00 | 0.0565 | 0.2419 | *0.1877* | *(0.0999-0.3527)* |
| rs910397) | 01 | 0.1783 | 0.3669 | *0.3743* | *(0.2447-0.5725)* |
|  | 02 | 0.1174 | 0.1371 | 0.8371 | (0.4876-1.4373) |
|  | 10 | 0.0826 | 0.0806 | 1.0265 | (0.5331-1.9767) |
|  | 11 | 0.2652 | 0.1210 | **2.6229** | **(1.6213-4.2431)** |
|  | 12 | 0.1609 | 0.0363 | **5.0910** | **(2.3982-10.8072)** |
|  | 20 | 0.0348 | 0.0000 | N/A | N/A |
|  | 21 | 0.0609 | 0.0081 | **7.9722** | **(1.7917-35.4735)** |
|  | 22 | 0.0435 | 0.0081 | **5.5909** | **(1.2118-25.7949)** |
|  | Allele |  |  |  |  |
| rs429358 | 0 | 0.6065 | 0.8649 | *0.2407* | *(0.1751-0.3309)* |
|  | 1 | 0.3935 | 0.1351 | **4.1539** | **(3.0216-5.7104)** |
| rs910397 | 0 | 0.4261 | 0.5706 | *0.5588* | *(0.4324-0.7221)* |
|  | 1 | 0.5739 | 0.4294 | **1.7896** | **(1.3848-2.3127)** |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs429358, | 0-0 | 0.2533 | 0.4960 | *0.3447* | *(0.2620-0.4534)* |
| rs910397) | 0-1 | 0.3533 | 0.3690 | 0.9342 | (0.7173-1.2168) |
|  | 1-0 | 0.1728 | 0.0746 | **2.5919** | **(1.7149-3.9175)** |
|  | **1-1** | 0.2207 | 0.0605 | **4.3979** | **(2.8610-6.7603)** |

Two-SNP SAA identified the SNP pair.

Supplementary Table 4h. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ABHD1* (rs2304678) and *ADAMTS18* (rs11640912).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs2304678 | 0 | 0.8087 | 0.6290 | **2.4930** | **(1.6421-3.7849)** |
|  | 1 | 0.1609 | 0.3387 | *0.3743* | *(0.2413-0.5807)* |
|  | 2 | 0.0304 | 0.0323 | 0.9417 | (0.3360-2.6394) |
| rs11640912 | 0 | 0.4043 | 0.5000 | *0.6788* | *(0.4725-0.9753)* |
|  | 1 | 0.3957 | 0.4355 | 0.8487 | (0.5894-1.2219) |
|  | 2 | 0.2000 | 0.0645 | **3.6250** | **(1.9877-6.6109)** |
| (rs2304678, | 00 | 0.3217 | 0.3145 | 1.0339 | (0.7033-1.5197) |
| rs11640912) | 01 | 0.3217 | 0.2742 | 1.2557 | (0.8477-1.8600) |
|  | **02** | 0.1652 | 0.0403 | **4.7104** | **(2.2881-9.6973)** |
|  | *10* | 0.0652 | 0.1653 | *0.3522* | *(0.1892-0.6557)* |
|  | 11 | 0.0652 | 0.1532 | *0.3856* | *(0.2059-0.7219)* |
|  | 12 | 0.0304 | 0.0202 | 1.5256 | (0.4773-4.8759) |
|  | 20 | 0.0174 | 0.0202 | 0.8602 | (0.2281-3.2433) |
|  | 21 | 0.0087 | 0.0081 | 1.0789 | (0.1507-7.7231) |
|  | 22 | 0.0043 | 0.0040 | 1.0786 | (0.0671-17.3449) |
|  | Allele |  |  |  |  |
| rs2304678 | 0 | 0.8891 | 0.7984 | **2.0252** | **(1.4066-2.9157)** |
|  | 1 | 0.1109 | 0.2016 | *0.4938* | *(0.3430-0.7109)* |
| rs11640912 | 0 | 0.6022 | 0.7177 | *0.5953* | *(0.4543-0.7800)* |
|  | 1 | 0.3978 | 0.2823 | **1.6799** | **(1.2820-2.2014)** |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs2304678, | 0-0 | 0.5315 | 0.5726 | 0.8469 | (0.6561-1.0933) |
| rs11640912) | 0-1 | 0.3576 | 0.2258 | **1.9086** | **(1.4368-2.5355)** |
|  | *1-0* | 0.0707 | 0.1452 | *0.4477* | *(0.2897-0.6920)* |
|  | 1-1 | 0.0402 | 0.0565 | 0.7004 | (0.3838-1.2780) |

HIA identified the SNP pair.

Supplementary Table 4i. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ABHD1* (rs2304678) and *APOE* (rs7412).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs2304678 | 0 | 0.8087 | 0.6290 | **2.4930** | **(1.6421-3.7849)** |
|  | 1 | 0.1609 | 0.3387 | *0.3743* | *(0.2413-0.5807)* |
|  | 2 | 0.0304 | 0.0323 | 0.9417 | (0.3360-2.6394) |
| rs7412 | 0 | 0.9565 | 0.8508 | **3.8578** | **(1.8710-7.9544)** |
|  | 1 | 0.0435 | 0.1492 | *0.2592* | *(0.1257-0.5345)* |
| (rs2304678, | 00 | 0.7783 | 0.5242 | **3.1858** | **(2.1385-4.7461)** |
| rs7412) | 01 | 0.0304 | 0.1048 | *0.2680* | *(0.1140-0.6302)* |
|  | 10 | 0.1478 | 0.2984 | *0.4079* | *(0.2589-0.6426)* |
|  | 11 | 0.0130 | 0.0403 | 0.3145 | (0.0855-1.1575) |
|  | 20 | 0.0304 | 0.0282 | 1.0807 | (0.3732-3.1298) |
|  | 21 | 0.0000 | 0.0040 | N/A | N/A |
|  | Allele |  |  |  |  |
| rs2304678 | 0 | 0.8891 | 0.7984 | **2.0252** | **(1.4066-2.9157)** |
|  | 1 | 0.1109 | 0.2016 | *0.4938* | *(0.3430-0.7109)* |
| rs7412 | 0 | 0.9783 | 0.9254 | **3.6275** | **(1.7824-7.3822)** |
|  | 1 | 0.0217 | 0.0746 | *0.2757* | *(0.1355-0.5610)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs2304678, | 0-0 | 0.8707 | 0.7359 | **2.4158** | **(1.7236-3.3861)** |
| rs7412) | 0-1 | 0.0185 | 0.0625 | *0.2824* | *(0.1308-0.6098)* |
|  | 1-0 | 0.1076 | 0.1895 | *0.5157* | *(0.3560-0.7471)* |
|  | 1-1 | 0.0033 | 0.0121 | 0.2672 | (0.0444-1.6062) |

HIA identified the SNP pair.

Supplementary Table 4j. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ABHD1* (rs2304678) and *IL10RA* (rs2256111).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs2304678 | 0 | 0.8087 | 0.6290 | **2.4930** | **(1.6421-3.7849)** |
|  | 1 | 0.1609 | 0.3387 | *0.3743* | *(0.2413-0.5807)* |
|  | 2 | 0.0304 | 0.0323 | 0.9417 | (0.3360-2.6394) |
| rs2256111 | 0 | 0.1348 | 0.2782 | *0.4041* | *(0.2527-0.6462)* |
|  | 1 | 0.5261 | 0.5242 | 1.0076 | (0.7035-1.4432) |
|  | 2 | 0.3391 | 0.1976 | **2.0840** | **(1.3762-3.1560)** |
| (rs2304678, | 00 | 0.1130 | 0.1734 | 0.6076 | (0.3598-1.0262) |
| rs2256111) | 01 | 0.4130 | 0.3306 | 1.4246 | (0.9814-2.0679) |
|  | **02** | 0.2826 | 0.1250 | **2.7576** | **(1.7178-4.4266)** |
|  | *10* | 0.0217 | 0.0806 | *0.2533* | *(0.0935-0.6867)* |
|  | 11 | 0.1000 | 0.1855 | *0.4879* | *(0.2853-0.8346)* |
|  | 12 | 0.0391 | 0.0726 | 0.5204 | (0.2289-1.1829) |
|  | 20 | 0.0000 | 0.0242 | N/A | N/A |
|  | 21 | 0.0130 | 0.0081 | 1.6256 | (0.2692-9.8170) |
|  | 22 | 0.0174 | 0.0000 | N/A | N/A |
|  | Allele |  |  |  |  |
| rs2304678 | 0 | 0.8891 | 0.7984 | **2.0252** | **(1.4066-2.9157)** |
|  | 1 | 0.1109 | 0.2016 | *0.4938* | *(0.3430-0.7109)* |
| rs2256111 | 0 | 0.3978 | 0.5403 | *0.5620* | *(0.4347-0.7267)* |
|  | 1 | 0.6022 | 0.4597 | **1.7792** | **(1.3760-2.3006)** |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs2304678, | 0-0 | 0.3554 | 0.4254 | *0.7448* | *(0.5737-0.9670)* |
| rs2256111) | 0-1 | 0.5337 | 0.3730 | **1.9240** | **(1.4862-2.4909)** |
|  | *1-0* | 0.0424 | 0.1149 | *0.3409* | *(0.2005-0.5798)* |
|  | 1-1 | 0.0685 | 0.0867 | 0.7744 | (0.4800-1.2494) |

HIA identified the SNP pair.

Supplementary Table 4k. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ABHD1* (rs2304678) and *IQCN* (rs8104533).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs2304678 | 0 | 0.8087 | 0.6290 | **2.4930** | **(1.6421-3.7849)** |
|  | 1 | 0.1609 | 0.3387 | *0.3743* | *(0.2413-0.5807)* |
|  | 2 | 0.0304 | 0.0323 | 0.9417 | (0.3360-2.6394) |
| rs8104533 | 0 | 0.3435 | 0.3065 | 1.1840 | (0.8070-1.7372) |
|  | 1 | 0.5435 | 0.4274 | **1.5948** | **(1.1111-2.2891)** |
|  | 2 | 0.1130 | 0.2661 | *0.3515* | *(0.2141-0.5771)* |
| (rs2304678, | 00 | 0.2913 | 0.1734 | **1.9596** | **(1.2688-3.0267)** |
| rs8104533) | 01 | 0.4261 | 0.2742 | **1.9652** | **(1.3409-2.8803)** |
|  | 02 | 0.0913 | 0.1815 | *0.4533* | *(0.2608-0.7878)* |
|  | 10 | 0.0478 | 0.1210 | *0.3650* | *(0.1784-0.7467)* |
|  | 11 | 0.0957 | 0.1411 | 0.6437 | (0.3653-1.1342) |
|  | *12* | 0.0174 | 0.0766 | *0.2133* | *(0.0715-0.6369)* |
|  | 20 | 0.0043 | 0.0121 | 0.3566 | (0.0368-3.4530) |
|  | 21 | 0.0217 | 0.0121 | 1.8148 | (0.4288-7.6809) |
|  | 22 | 0.0043 | 0.0081 | 0.5371 | (0.0484-5.9635) |
|  | Allele |  |  |  |  |
| rs2304678 | 0 | 0.8891 | 0.7984 | **2.0252** | **(1.4066-2.9157)** |
|  | 1 | 0.1109 | 0.2016 | *0.4938* | *(0.3430-0.7109)* |
| rs8104533 | 0 | 0.6152 | 0.5202 | **1.4749** | **(1.1401-1.9081)** |
|  | 1 | 0.3848 | 0.4798 | *0.6780* | *(0.5241-0.8771)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs2304678, | 0-0 | 0.5522 | 0.4063 | **1.8021** | **(1.3941-2.3294)** |
| rs8104533) | 0-1 | 0.3370 | 0.3921 | 0.7878 | (0.6048-1.0261) |
|  | 1-0 | 0.0630 | 0.1139 | *0.5234* | *(0.3281-0.8349)* |
|  | 1-1 | 0.0478 | 0.0877 | *0.5225* | *(0.3077-0.8871)* |

HIA identified the SNP pair. All three SNPs in *IQCN* (rs8104533, rs3746186, and rs8110972) were in complete linkage disequilibrium (). Therefore, the odds ratios remained unchanged when *IQCN* (rs3746186 or rs8110972) replaced *IQCN* (rs8104533).

Supplementary Table 4l. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ABHD1* (rs2304678) and *MINDY4* (rs10216063).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs2304678 | 0 | 0.8087 | 0.6290 | **2.4930** | **(1.6421-3.7849)** |
|  | 1 | 0.1609 | 0.3387 | *0.3743* | *(0.2413-0.5807)* |
|  | 2 | 0.0304 | 0.0323 | 0.9417 | (0.3360-2.6394) |
| rs10216063 | 0 | 0.7304 | 0.5363 | **2.3430** | **(1.5966-3.4383)** |
|  | 1 | 0.2348 | 0.3871 | *0.4858* | *(0.3264-0.7231)* |
|  | 2 | 0.0348 | 0.0766 | 0.4343 | (0.1863-1.0126) |
| (rs2304678, | **00** | 0.6087 | 0.3427 | **2.9830** | **(2.0550-4.3301)** |
| rs10216063) | 01 | 0.1739 | 0.2500 | *0.6316* | *(0.4043-0.9865)* |
|  | 02 | 0.0261 | 0.0363 | 0.7113 | (0.2492-2.0305) |
|  | 10 | 0.1087 | 0.1734 | *0.5814* | *(0.3424-0.9874)* |
|  | *11* | 0.0478 | 0.1250 | *0.3516* | *(0.1723-0.7173)* |
|  | *12* | 0.0043 | 0.0403 | *0.1039* | *(0.0132-0.8184)* |
|  | 20 | 0.0130 | 0.0202 | 0.6423 | (0.1518-2.7184) |
|  | 21 | 0.0130 | 0.0121 | 1.0793 | (0.2156-5.4020) |
|  | 22 | 0.0043 | 0.0000 | N/A | N/A |
|  | Allele |  |  |  |  |
| rs2304678 | 0 | 0.8891 | 0.7984 | **2.0252** | **(1.4066-2.9157)** |
|  | 1 | 0.1109 | 0.2016 | *0.4938* | *(0.3430-0.7109)* |
| rs10216063 | 0 | 0.8478 | 0.7298 | **2.0624** | **(1.4938-2.8472)** |
|  | 1 | 0.1522 | 0.2702 | *0.4849* | *(0.3512-0.6694)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs2304678, | **0-0** | 0.7620 | 0.5857 | **2.2643** | **(1.7127-2.9936)** |
| rs10216063) | 0-1 | 0.1272 | 0.2127 | *0.5393* | *(0.3806-0.7642)* |
|  | 1-0 | 0.0859 | 0.1442 | *0.5577* | *(0.3696-0.8414)* |
|  | *1-1* | 0.0250 | 0.0575 | *0.4206* | *(0.2095-0.8443)* |

HIA identified the SNP pair.

Supplementary Table 4m. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ADAMTS18* (rs11640912) and *APOE* (rs7412).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs11640912 | 0 | 0.4043 | 0.5000 | *0.6788* | *(0.4725-0.9753)* |
|  | 1 | 0.3957 | 0.4355 | 0.8487 | (0.5894-1.2219) |
|  | 2 | 0.2000 | 0.0645 | **3.6250** | **(1.9877-6.6109)** |
| rs7412 | 0 | 0.9565 | 0.8508 | **3.8578** | **(1.8710-7.9544)** |
|  | 1 | 0.0435 | 0.1492 | *0.2592* | *(0.1257-0.5345)* |
| (rs11640912, | 00 | 0.3783 | 0.4153 | 0.8565 | (0.5933-1.2364) |
| rs7412) | 01 | 0.0261 | 0.0847 | *0.2895* | *(0.1147-0.7308)* |
|  | 10 | 0.3870 | 0.3710 | 1.0703 | (0.7394-1.5493) |
|  | *11* | 0.0087 | 0.0645 | *0.1272* | *(0.0289-0.5595)* |
|  | 20 | 0.1913 | 0.0645 | **3.4301** | **(1.8753-6.2740)** |
|  | 21 | 0.0087 | 0.0000 | N/A | N/A |
|  | Allele |  |  |  |  |
| rs11640912 | 0 | 0.6022 | 0.7177 | *0.5953* | *(0.4543-0.7800)* |
|  | 1 | 0.3978 | 0.2823 | **1.6799** | **(1.2820-2.2014)** |
| rs7412 | 0 | 0.9783 | 0.9254 | **3.6275** | **(1.7824-7.3822)** |
|  | 1 | 0.0217 | 0.0746 | *0.2757* | *(0.1355-0.5610)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs11640912, | 0-0 | 0.5870 | 0.6593 | *0.7344* | *(0.5648-0.9549)* |
| rs7412) | *0-1* | 0.0152 | 0.0585 | *0.2488* | *(0.1079-0.5738)* |
|  | 1-0 | 0.3913 | 0.2661 | **1.7727** | **(1.3487-2.3300)** |
|  | 1-1 | 0.0065 | 0.0161 | 0.4004 | (0.1056-1.5187) |

HIA identified the SNP pair.

Supplementary Table 4n. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ADAMTS18* (rs11640912) and *IL10RA* (rs2256111).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs11640912 | 0 | 0.4043 | 0.5000 | *0.6788* | *(0.4725-0.9753)* |
|  | 1 | 0.3957 | 0.4355 | 0.8487 | (0.5894-1.2219) |
|  | 2 | 0.2000 | 0.0645 | **3.6250** | **(1.9877-6.6109)** |
| rs2256111 | 0 | 0.1348 | 0.2782 | *0.4041* | *(0.2527-0.6462)* |
|  | 1 | 0.5261 | 0.5242 | 1.0076 | (0.7035-1.4432) |
|  | 2 | 0.3391 | 0.1976 | **2.0840** | **(1.3762-3.1560)** |
| (rs11640912, | *00* | 0.0478 | 0.1492 | *0.2864* | *(0.1424-0.5763)* |
| rs2256111) | 01 | 0.1870 | 0.2702 | *0.6212* | *(0.4024-0.9589)* |
|  | 02 | 0.1696 | 0.0806 | **2.3277** | **(1.3134-4.1256)** |
|  | 10 | 0.0652 | 0.1169 | 0.5269 | (0.2747-1.0104) |
|  | 11 | 0.2217 | 0.2258 | 0.9769 | (0.6351-1.5025) |
|  | 12 | 0.1087 | 0.0927 | 1.1930 | (0.6567-2.1674) |
|  | 20 | 0.0217 | 0.0121 | 1.8148 | (0.4288-7.6809) |
|  | **21** | 0.1174 | 0.0282 | **4.5792** | **(1.9533-10.7352)** |
|  | 22 | 0.0609 | 0.0242 | 2.6142 | (0.9872-6.9224) |
|  | Allele |  |  |  |  |
| rs11640912 | 0 | 0.6022 | 0.7177 | *0.5953* | *(0.4543-0.7800)* |
|  | 1 | 0.3978 | 0.2823 | **1.6799** | **(1.2820-2.2014)** |
| rs2256111 | 0 | 0.3978 | 0.5403 | *0.5620* | *(0.4347-0.7267)* |
|  | 1 | 0.6022 | 0.4597 | **1.7792** | **(1.3760-2.3006)** |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs11640912, | *0-0* | 0.2293 | 0.3992 | *0.4479* | *(0.3378-0.5938)* |
| rs2256111) | 0-1 | 0.3728 | 0.3185 | 1.2717 | (0.9735-1.6612) |
|  | 1-0 | 0.1685 | 0.1411 | 1.2331 | (0.8677-1.7523) |
|  | **1-1** | 0.2293 | 0.1411 | **1.8111** | **(1.2977-2.5277)** |

HIA identified the SNP pair.

Supplementary Table 4o. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ADAMTS18* (rs11640912) and *IQCN* (rs8104533).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs11640912 | 0 | 0.4043 | 0.5000 | *0.6788* | *(0.4725-0.9753)* |
|  | 1 | 0.3957 | 0.4355 | 0.8487 | (0.5894-1.2219) |
|  | 2 | 0.2000 | 0.0645 | **3.6250** | **(1.9877-6.6109)** |
| rs8104533 | 0 | 0.3435 | 0.3065 | 1.1840 | (0.8070-1.7372) |
|  | 1 | 0.5435 | 0.4274 | **1.5948** | **(1.1111-2.2891)** |
|  | 2 | 0.1130 | 0.2661 | *0.3515* | *(0.2141-0.5771)* |
| (rs11640912, | 00 | 0.1435 | 0.1411 | 1.0194 | (0.6100-1.7036) |
| rs8104533) | 01 | 0.2217 | 0.2097 | 1.0739 | (0.6943-1.6611) |
|  | *02* | 0.0391 | 0.1492 | *0.2322* | *(0.1094-0.4929)* |
|  | 10 | 0.1609 | 0.1452 | 1.1290 | (0.6857-1.8586) |
|  | 11 | 0.1826 | 0.1815 | 1.0078 | (0.6331-1.6044) |
|  | 12 | 0.0522 | 0.1089 | *0.4506* | *(0.2226-0.9121)* |
|  | 20 | 0.0391 | 0.0202 | 1.9792 | (0.6534-5.9953) |
|  | **21** | 0.1391 | 0.0363 | **4.2918** | **(2.0009-9.2057)** |
|  | 22 | 0.0217 | 0.0081 | 2.7333 | (0.5251-14.2290) |
|  | Allele |  |  |  |  |
| rs11640912 | 0 | 0.6022 | 0.7177 | *0.5953* | *(0.4543-0.7800)* |
|  | 1 | 0.3978 | 0.2823 | **1.6799** | **(1.2820-2.2014)** |
| rs8104533 | 0 | 0.6152 | 0.5202 | **1.4749** | **(1.1401-1.9081)** |
|  | 1 | 0.3848 | 0.4798 | *0.6780* | *(0.5241-0.8771)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs11640912, | 0-0 | 0.3804 | 0.3639 | 1.0733 | (0.8255-1.3954) |
| rs8104533) | *0-1* | 0.2217 | 0.3538 | *0.5203* | *(0.3906-0.6932)* |
|  | 1-0 | 0.2348 | 0.1563 | **1.6568** | **(1.1978-2.2917)** |
|  | 1-1 | 0.1630 | 0.1260 | 1.3512 | (0.9402-1.9418) |

HIA identified the SNP pair. All three SNPs in *IQCN* (rs8104533, rs3746186, and rs8110972) were in complete linkage disequilibrium (). Therefore, the odds ratios remained unchanged when *IQCN* (rs3746186 or rs8110972) replaced *IQCN* (rs8104533).

Supplementary Table 4p. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *ADAMTS18* (rs11640912) and *MINDY4* (rs10216063).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs11640912 | 0 | 0.4043 | 0.5000 | *0.6788* | *(0.4725-0.9753)* |
|  | 1 | 0.3957 | 0.4355 | 0.8487 | (0.5894-1.2219) |
|  | 2 | 0.2000 | 0.0645 | **3.6250** | **(1.9877-6.6109)** |
| rs10216063 | 0 | 0.7304 | 0.5363 | **2.3430** | **(1.5966-3.4383)** |
|  | 1 | 0.2348 | 0.3871 | *0.4858* | *(0.3264-0.7231)* |
|  | 2 | 0.0348 | 0.0766 | 0.4343 | (0.1863-1.0126) |
| (rs11640912, | 00 | 0.2913 | 0.2339 | 1.3465 | (0.8944-2.0271) |
| rs10216063) | *01* | 0.0957 | 0.2016 | *0.4188* | *(0.2446-0.7172)* |
|  | *02* | 0.0174 | 0.0645 | *0.2566* | *(0.0845-0.7794)* |
|  | 10 | 0.2957 | 0.2661 | 1.1575 | (0.7764-1.7257) |
|  | 11 | 0.0870 | 0.1573 | *0.5104* | *(0.2880-0.9043)* |
|  | 12 | 0.0130 | 0.0121 | 1.0793 | (0.2156-5.4020) |
|  | **20** | 0.1435 | 0.0363 | **4.4484** | **(2.0787-9.5195)** |
|  | 21 | 0.0522 | 0.0282 | 1.8952 | (0.7329-4.9002) |
|  | 22 | 0.0043 | 0.0000 | N/A | N/A |
|  | Allele |  |  |  |  |
| rs11640912 | 0 | 0.6022 | 0.7177 | *0.5953* | *(0.4543-0.7800)* |
|  | 1 | 0.3978 | 0.2823 | **1.6799** | **(1.2820-2.2014)** |
| rs10216063 | 0 | 0.8478 | 0.7298 | **2.0624** | **(1.4938-2.8472)** |
|  | 1 | 0.1522 | 0.2702 | *0.4849* | *(0.3512-0.6694)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs11640912, | 0-0 | 0.5087 | 0.5071 | 1.0066 | (0.7810-1.2974) |
| rs10216063) | *0-1* | 0.0935 | 0.2107 | *0.3863* | *(0.2639-0.5654)* |
|  | 1-0 | 0.3391 | 0.2228 | **1.7902** | **(1.3445-2.3838)** |
|  | 1-1 | 0.0587 | 0.0595 | 0.9861 | (0.5757-1.6890) |

HIA identified the SNP pair.

Supplementary Table 4q. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs7412) and *IL10RA* (rs2256111).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs7412 | 0 | 0.9565 | 0.8508 | **3.8578** | **(1.8710-7.9544)** |
|  | 1 | 0.0435 | 0.1492 | *0.2592* | *(0.1257-0.5345)* |
| rs2256111 | 0 | 0.1348 | 0.2782 | *0.4041* | *(0.2527-0.6462)* |
|  | 1 | 0.5261 | 0.5242 | 1.0076 | (0.7035-1.4432) |
|  | 2 | 0.3391 | 0.1976 | **2.0840** | **(1.3762-3.1560)** |
| (rs7412, | 00 | 0.1348 | 0.2379 | *0.4990* | *(0.3093-0.8050)* |
| rs2256111) | 01 | 0.5043 | 0.4315 | 1.3409 | (0.9350-1.9229) |
|  | 02 | 0.3174 | 0.1815 | **2.0975** | **(1.3701-3.2112)** |
|  | 10 | 0.0000 | 0.0403 | N/A | N/A |
|  | *11* | 0.0217 | 0.0927 | *0.2174* | *(0.0812-0.5819)* |
|  | 12 | 0.0217 | 0.0161 | 1.3556 | (0.3595-5.1111) |
|  | Allele |  |  |  |  |
| rs7412 | 0 | 0.9783 | 0.9254 | **3.6275** | **(1.7824-7.3822)** |
|  | 1 | 0.0217 | 0.0746 | *0.2757* | *(0.1355-0.5610)* |
| rs2256111 | 0 | 0.3978 | 0.5403 | *0.5620* | *(0.4347-0.7267)* |
|  | 1 | 0.6022 | 0.4597 | **1.7792** | **(1.3760-2.3006)** |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs7412, | 0-0 | 0.3924 | 0.4970 | *0.6537* | *(0.5056-0.8451)* |
| rs2256111) | 0-1 | 0.5859 | 0.4284 | **1.8874** | **(1.4596-2.4404)** |
|  | *1-0* | 0.0054 | 0.0433 | *0.1206* | *(0.0323-0.4496)* |
|  | 1-1 | 0.0163 | 0.0313 | 0.5138 | (0.2129-1.2402) |

HIA identified the SNP pair.

Supplementary Table 4r. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs7412) and *IQCN* (rs8104533).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs7412 | 0 | 0.9565 | 0.8508 | **3.8578** | **(1.8710-7.9544)** |
|  | 1 | 0.0435 | 0.1492 | *0.2592* | *(0.1257-0.5345)* |
| rs8104533 | 0 | 0.3435 | 0.3065 | 1.1840 | (0.8070-1.7372) |
|  | 1 | 0.5435 | 0.4274 | **1.5948** | **(1.1111-2.2891)** |
|  | 2 | 0.1130 | 0.2661 | *0.3515* | *(0.2141-0.5771)* |
| (rs7412, | 00 | 0.3391 | 0.2742 | 1.3584 | (0.9194-2.0069) |
| rs8104533) | 01 | 0.5043 | 0.3629 | **1.7864** | **(1.2391-2.5753)** |
|  | 02 | 0.1130 | 0.2137 | *0.4689* | *(0.2820-0.7799)* |
|  | 10 | 0.0043 | 0.0323 | 0.1310 | (0.0163-1.0557) |
|  | 11 | 0.0391 | 0.0645 | 0.5905 | (0.2556-1.3639) |
|  | 12 | 0.0000 | 0.0524 | N/A | N/A |
|  | Allele |  |  |  |  |
| rs7412 | 0 | 0.9783 | 0.9254 | **3.6275** | **(1.7824-7.3822)** |
|  | 1 | 0.0217 | 0.0746 | *0.2757* | *(0.1355-0.5610)* |
| rs8104533 | 0 | 0.6152 | 0.5202 | **1.4749** | **(1.1401-1.9081)** |
|  | 1 | 0.3848 | 0.4798 | *0.6780* | *(0.5241-0.8771)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs7412, | 0-0 | 0.6033 | 0.4879 | **1.5959** | **(1.2346-2.0630)** |
| rs8104533) | 0-1 | 0.3750 | 0.4375 | *0.7714* | *(0.5954-0.9995)* |
|  | 1-0 | 0.0120 | 0.0323 | *0.3630* | *(0.1366-0.9646)* |
|  | *1-1* | 0.0098 | 0.0423 | *0.2235* | *(0.0801-0.6236)* |

HIA identified the SNP pair. All three SNPs in *IQCN* (rs8104533, rs3746186, and rs8110972) were in complete linkage disequilibrium (). Therefore, the odds ratios remained unchanged when *IQCN* (rs3746186 or rs8110972) replaced *IQCN* (rs8104533).

Supplementary Table 4s. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *APOE* (rs7412) and *MINDY4* (rs10216063).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs7412 | 0 | 0.9565 | 0.8508 | **3.8578** | **(1.8710-7.9544)** |
|  | 1 | 0.0435 | 0.1492 | *0.2592* | *(0.1257-0.5345)* |
| rs10216063 | 0 | 0.7304 | 0.5363 | **2.3430** | **(1.5966-3.4383)** |
|  | 1 | 0.2348 | 0.3871 | *0.4858* | *(0.3264-0.7231)* |
|  | 2 | 0.0348 | 0.0766 | 0.4343 | (0.1863-1.0126) |
| (rs7412, | 00 | 0.7000 | 0.4677 | **2.6552** | **(1.8221-3.8690)** |
| rs10216063) | 01 | 0.2261 | 0.3306 | *0.5914* | *(0.3938-0.8882)* |
|  | 02 | 0.0304 | 0.0524 | 0.5674 | (0.2223-1.4482) |
|  | 10 | 0.0304 | 0.0685 | 0.4265 | (0.1736-1.0483) |
|  | *11* | 0.0087 | 0.0565 | *0.1466* | *(0.0330-0.6524)* |
|  | 12 | 0.0043 | 0.0242 | 0.1761 | (0.0210-1.4743) |
|  | Allele |  |  |  |  |
| rs7412 | 0 | 0.9783 | 0.9254 | **3.6275** | **(1.7824-7.3822)** |
|  | 1 | 0.0217 | 0.0746 | *0.2757* | *(0.1355-0.5610)* |
| rs10216063 | 0 | 0.8478 | 0.7298 | **2.0624** | **(1.4938-2.8472)** |
|  | 1 | 0.1522 | 0.2702 | *0.4849* | *(0.3512-0.6694)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs7412, | 0-0 | 0.8304 | 0.6815 | **2.2893** | **(1.6821-3.1157)** |
| rs10216063) | 0-1 | 0.1478 | 0.2440 | *0.5376* | *(0.3869-0.7471)* |
|  | 1-0 | 0.0174 | 0.0484 | *0.3481* | *(0.1548-0.7828)* |
|  | *1-1* | 0.0043 | 0.0262 | *0.1622* | *(0.0364-0.7229)* |

HIA identified the SNP pair.

Supplementary Table 4t. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *IL10RA* (rs2256111) and *IQCN* (rs8104533).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs2256111 | 0 | 0.1348 | 0.2782 | *0.4041* | *(0.2527-0.6462)* |
|  | 1 | 0.5261 | 0.5242 | 1.0076 | (0.7035-1.4432) |
|  | 2 | 0.3391 | 0.1976 | **2.0840** | **(1.3762-3.1560)** |
| rs8104533 | 0 | 0.3435 | 0.3065 | 1.1840 | (0.8070-1.7372) |
|  | 1 | 0.5435 | 0.4274 | **1.5948** | **(1.1111-2.2891)** |
|  | 2 | 0.1130 | 0.2661 | *0.3515* | *(0.2141-0.5771)* |
| (rs2256111, | 00 | 0.0478 | 0.0847 | 0.5429 | (0.2558-1.1526) |
| rs8104533) | 01 | 0.0783 | 0.0847 | 0.9178 | (0.4759-1.7701) |
|  | *02* | 0.0087 | 0.1089 | *0.0718* | *(0.0169-0.3055)* |
|  | 10 | 0.1565 | 0.1815 | 0.8371 | (0.5178-1.3534) |
|  | 11 | 0.3043 | 0.2298 | 1.4660 | (0.9749-2.2044) |
|  | 12 | 0.0652 | 0.1129 | 0.5482 | (0.2848-1.0550) |
|  | **20** | 0.1391 | 0.0403 | **3.8465** | **(1.8450-8.0190)** |
|  | 21 | 0.1609 | 0.1129 | 1.5063 | (0.8887-2.5530) |
|  | 22 | 0.0391 | 0.0444 | 0.8774 | (0.3568-2.1577) |
|  | Allele |  |  |  |  |
| rs2256111 | 0 | 0.3978 | 0.5403 | *0.5620* | *(0.4347-0.7267)* |
|  | 1 | 0.6022 | 0.4597 | **1.7792** | **(1.3760-2.3006)** |
| rs8104533 | 0 | 0.6152 | 0.5202 | **1.4749** | **(1.1401-1.9081)** |
|  | 1 | 0.3848 | 0.4798 | *0.6780* | *(0.5241-0.8771)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs2256111, | 0-0 | 0.2413 | 0.2752 | 0.8377 | (0.6264-1.1201) |
| rs8104533) | *0-1* | 0.1565 | 0.2651 | *0.5144* | *(0.3732-0.7090)* |
|  | **1-0** | 0.3739 | 0.2450 | **1.8408** | **(1.3934-2.4319)** |
|  | 1-1 | 0.2283 | 0.2147 | 1.0817 | (0.7970-1.4683) |

HIA identified the SNP pair. All three SNPs in *IQCN* (rs8104533, rs3746186, and rs8110972) were in complete linkage disequilibrium (). Therefore, the odds ratios remained unchanged when *IQCN* (rs3746186 or rs8110972) replaced *IQCN* (rs8104533).

Supplementary Table 4u. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *IL10RA* (rs2256111) and *MINDY4* (rs10216063).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs2256111 | 0 | 0.1348 | 0.2782 | *0.4041* | *(0.2527-0.6462)* |
|  | 1 | 0.5261 | 0.5242 | 1.0076 | (0.7035-1.4432) |
|  | 2 | 0.3391 | 0.1976 | **2.0840** | **(1.3762-3.1560)** |
| rs10216063 | 0 | 0.7304 | 0.5363 | **2.3430** | **(1.5966-3.4383)** |
|  | 1 | 0.2348 | 0.3871 | *0.4858* | *(0.3264-0.7231)* |
|  | 2 | 0.0348 | 0.0766 | 0.4343 | (0.1863-1.0126) |
| (rs2256111, | 00 | 0.0739 | 0.1532 | *0.4411* | *(0.2414-0.8059)* |
| rs10216063) | 01 | 0.0478 | 0.0968 | *0.4688* | *(0.2242-0.9802)* |
|  | 02 | 0.0130 | 0.0282 | 0.4550 | (0.1162-1.7810) |
|  | 10 | 0.4217 | 0.2702 | **1.9703** | **(1.3427-2.8911)** |
|  | *11* | 0.0957 | 0.2177 | *0.3800* | *(0.2230-0.6475)* |
|  | 12 | 0.0087 | 0.0363 | 0.2329 | (0.0498-1.0897) |
|  | **20** | 0.2348 | 0.1129 | **2.4107** | **(1.4657-3.9651)** |
|  | 21 | 0.0913 | 0.0726 | 1.2839 | (0.6657-2.4762) |
|  | 22 | 0.0130 | 0.0121 | 1.0793 | (0.2156-5.4020) |
|  | Allele |  |  |  |  |
| rs2256111 | 0 | 0.3978 | 0.5403 | *0.5620* | *(0.4347-0.7267)* |
|  | 1 | 0.6022 | 0.4597 | **1.7792** | **(1.3760-2.3006)** |
| rs10216063 | 0 | 0.8478 | 0.7298 | **2.0624** | **(1.4938-2.8472)** |
|  | 1 | 0.1522 | 0.2702 | *0.4849* | *(0.3512-0.6694)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs2256111, | 0-0 | 0.3326 | 0.3911 | 0.7758 | (0.5953-1.0111) |
| rs10216063) | *0-1* | 0.0652 | 0.1492 | *0.3979* | *(0.2550-0.6208)* |
|  | **1-0** | 0.5152 | 0.3387 | **2.0750** | **(1.5986-2.6932)** |
|  | 1-1 | 0.0870 | 0.1210 | 0.6921 | (0.4538-1.0553) |

HIA identified the SNP pair.

Supplementary Table 4v. Genotype, allele odds ratios, and genotype and allele configuration odds ratios for each SNP and SNP pair of *IQCN* (rs8104533) and *MINDY4* (rs10216063).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| SNP and SNP Pair | Genotype and Allele Configuration | Frequency | | Odds Ratio | 95% Confidence  Interval |
| Case | Control |
|  | Genotype |  |  |  |  |
| rs8104533 | 0 | 0.3435 | 0.3065 | 1.1840 | (0.8070-1.7372) |
|  | 1 | 0.5435 | 0.4274 | **1.5948** | **(1.1111-2.2891)** |
|  | 2 | 0.1130 | 0.2661 | *0.3515* | *(0.2141-0.5771)* |
| rs10216063 | 0 | 0.7304 | 0.5363 | **2.3430** | **(1.5966-3.4383)** |
|  | 1 | 0.2348 | 0.3871 | *0.4858* | *(0.3264-0.7231)* |
|  | 2 | 0.0348 | 0.0766 | 0.4343 | (0.1863-1.0126) |
| (rs8104533, | 00 | 0.2478 | 0.1613 | **1.7133** | **(1.0905-2.6918)** |
| rs10216063) | 01 | 0.0957 | 0.1250 | 0.7404 | (0.4151-1.3204) |
|  | 02 | 0.0000 | 0.0202 | N/A | N/A |
|  | 10 | 0.3826 | 0.2500 | **1.8592** | **(1.2568-2.7502)** |
|  | 11 | 0.1304 | 0.1492 | 0.8554 | (0.5091-1.4373) |
|  | 12 | 0.0304 | 0.0282 | 1.0807 | (0.3732-3.1298) |
|  | 20 | 0.1000 | 0.1250 | 0.7778 | (0.4390-1.3781) |
|  | *21* | 0.0087 | 0.1129 | *0.0689* | *(0.0162-0.2928)* |
|  | 22 | 0.0043 | 0.0282 | 0.1503 | (0.0184-1.2315) |
|  | Allele |  |  |  |  |
| rs8104533 | 0 | 0.6152 | 0.5202 | **1.4749** | **(1.1401-1.9081)** |
|  | 1 | 0.3848 | 0.4798 | *0.6780* | *(0.5241-0.8771)* |
| rs10216063 | 0 | 0.8478 | 0.7298 | **2.0624** | **(1.4938-2.8472)** |
|  | 1 | 0.1522 | 0.2702 | *0.4849* | *(0.3512-0.6694)* |
|  | Allele |  |  |  |  |
|  | Configuration |  |  |  |  |
| (rs8104533, | 0-0 | 0.5196 | 0.3861 | **1.7196** | **(1.3297-2.2239)** |
| rs10216063) | 0-1 | 0.0957 | 0.1341 | 0.6831 | (0.4561-1.0232) |
|  | 1-0 | 0.3283 | 0.3438 | 0.9329 | (0.7131-1.2205) |
|  | *1-1* | 0.0565 | 0.1361 | *0.3803* | *(0.2373-0.6095)* |

HIA identified the SNP pair. All three SNPs in *IQCN* (rs8104533, rs3746186, and rs8110972) were in complete linkage disequilibrium (). Therefore, the odds ratios remained unchanged when *IQCN* (rs3746186 or rs8110972) replaced *IQCN* (rs8104533).