Table S1. Gene and minor allele frequency (MAF) of SNPs in African American and European American women without breast cancer, WCHS

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gene | Chr. | SNP | Alleles | Minor allele in EAs | MAF in EAs | Minor allele in AAs | MAF in AAs |
| MTHFR | 1 | rs4846048 | A/G | G | 0.31 | G | 0.46 |
| MTHFR | 1 | rs2184226 | A/G | G | 0.08 | G | 0.09 |
| MTHFR | 1 | rs2274976 | G/A | A | 0.03 | A | 0.04 |
| MTHFR | 1 | rs1801131 | A/C | C | 0.31 | C | 0.17 |
| MTHFR | 1 | rs1801133 | C/T | T | 0.38 | T | 0.11 |
| MTHFR | 1 | rs7533315 | C/T | T | 0.27 | T | 0.32 |
| MTHFR | 1 | rs17037396 | C/T | T | 0.08 | T | 0.10 |
| MTHFR | 1 | rs9651118 | T/C | C | 0.17 | C | 0.04 |
| MTHFR | 1 | rs17367504 | A/G | G | 0.13 | G | 0.12 |
| MTR | 1 | rs10495384 | G/T | T | 0.02 | T | 0.24 |
| MTR | 1 | rs10733117 | A/G | G | 0.43 | A | 0.46 |
| MTR | 1 | rs3795708 | T/C | C | 0.36 | C | 0.21 |
| MTR | 1 | rs6668344 | C/T | T | 0.37 | T | 0.30 |
| MTR | 1 | rs1770449 | A/G | G | 0.39 | G | 0.08 |
| MTR | 1 | rs1805087 | A/G | G | 0.21 | G | 0.26 |
| MTR | 1 | rs2275565 | C/A | A | 0.23 | A | 0.44 |
| MTR | 1 | rs1050993 | G/A | A | 0.40 | A | 0.09 |
| FTHFD | 3 | rs4646750 | A/G | G | 0.07 | G | 0.10 |
| FTHFD | 3 | rs4646745 | C/T | T | 0.21 | T | 0.21 |
| FTHFD | 3 | rs7609633 | T/A | A | 0.39 | A | 0.35 |
| FTHFD | 3 | rs13321483 | G/A | A | 0.01 | A | 0.12 |
| FTHFD | 3 | rs3772417 | C/G | G | 0.33 | G | 0.14 |
| FTHFD | 3 | rs1868127 | A/G | G | 0.49 | A | 0.32 |
| MTRR | 5 | rs1801394 | A/G | G | 0.48 | G | 0.28 |
| MTRR | 5 | rs1532268 | G/A | A | 0.36 | A | 0.25 |
| MTRR | 5 | rs162033 | C/T | T | 0.38 | C | 0.38 |
| MTRR | 5 | rs162036 | A/G | G | 0.15 | G | 0.39 |
| MTRR | 5 | rs162039 | C/T | T | 0.15 | T | 0.45 |
| MTRR | 5 | rs162049 | A/G | G | 0.23 | G | 0.13 |
| MTRR | 5 | rs10380 | C/T | T | 0.13 | T | 0.33 |
| MTRR | 5 | rs327593 | T/C | C | 0.02 | C | 0.05 |
| MTRR | 5 | rs327592 | T/C | C | 0.15 | C | 0.39 |
| MTRR | 5 | rs10520873 | A/G | G | 0.23 | G | 0.09 |
| BHMT | 5 | rs6894156 | C/T | T | 0.08 | T | 0.08 |
| BHMT | 5 | rs7700970 | C/T | T | 0.32 | T | 0.44 |
| BHMT | 5 | rs567754 | C/T | T | 0.35 | T | 0.07 |
| BHMT | 5 | rs694290 | T/C | C | 0.27 | C | 0.45 |
| BHMT | 5 | rs3733890 | G/A | A | 0.33 | A | 0.22 |
| BHMT | 5 | rs585800 | A/T | T | 0.21 | T | 0.04 |
| DHFR | 5 | rs1643638 | T/C | C | 0.30 | C | 0.28 |
| DHFR | 5 | rs1643658 | T/C | C | 0.30 | C | 0.27 |
| DHFR | 5 | rs11951910 | T/C | C | 0.11 | C | 0.20 |
| DHFR | 5 | rs11742668 | T/C | C | 0.08 | C | 0.06 |
| DHFR | 5 | rs10072026 | T/C | C | 0.09 | C | 0.45 |
| DHFR | 5 | rs1650697 | C/T | T | 0.25 | T | 0.09 |
| MTHFD1 | 14 | rs2295640 | C/G | G | 0.10 | G | 0.02 |
| MTHFD1 | 14 | rs3783728 | T/C | C | 0.09 | C | 0.02 |
| MTHFD1 | 14 | rs3783726 | G/A | A | 0.23 | A | 0.05 |
| MTHFD1 | 14 | rs2236225 | C/T | T | 0.44 | T | 0.23 |
| MTHFD1 | 14 | rs1256143 | C/T | T | 0.05 | T | 0.19 |
| SHMT1 | 17 | rs9902011 | T/C | C | 0.02 | C | 0.18 |
| SHMT1 | 17 | rs1979277 | G/A | A | 0.31 | A | 0.33 |
| SHMT1 | 17 | rs8080285 | T/G | G | 0.02 | G | 0.25 |
| SHMT1 | 17 | rs2273029 | C/T | T | 0.23 | T | 0.15 |
| SHMT1 | 17 | rs2168781 | G/C | C | 0.43 | G | 0.32 |
| SHMT1 | 17 | rs2273027 | G/A | A | 0.36 | A | 0.50 |
| SHMT1 | 17 | rs4925180 | G/A | A | 0.02 | A | 0.11 |
| TYMS | 18 | rs2853533 | G/C | C | 0.15 | C | 0.38 |
| TYMS | 18 | rs502396 | T/C | C | 0.48 | T | 0.29 |
| TYMS | 18 | rs1001761 | C/T | T | 0.46 | C | 0.23 |
| TYMS | 18 | rs16948305 | C/T | T | 0.14 | T | 0.12 |
| TYMS | 18 | rs2612100 | G/A | A | 0.33 | G | 0.36 |
| TYMS | 18 | rs2298581 | G/C | C | 0.22 | C | 0.26 |
| CBS | 21 | rs3788050 | G/T | T | 0.04 | T | 0.27 |
| CBS | 21 | rs12329764 | G/A | A | 0.07 | A | 0.25 |
| CBS | 21 | rs234706 | G/A | A | 0.35 | A | 0.25 |
| CBS | 21 | rs234715 | G/T | T | 0.23 | T | 0.14 |
| CBS | 21 | rs9982015 | T/C | C | 0.07 | C | 0.17 |
| SLC19A6 | 21 | rs3788189 | T/G | G | 0.44 | T | 0.38 |
| SLC19A7 | 21 | rs2838956 | A/G | G | 0.42 | A | 0.33 |
| SLC19A8 | 21 | rs2838958 | A/G | G | 0.46 | A | 0.25 |
| SLC19A9 | 21 | rs4819128 | T/C | C | 0.42 | T | 0.37 |
| SLC19A10 | 21 | rs12659 | C/T | T | 0.42 | T | 0.45 |
| SLC19A11 | 21 | rs3788200 | G/A | A | 0.44 | G | 0.46 |

*Abbreviations:* Chr., chromosome; AA: African American; EA: European American; MAF: minor allele frequency

**Table S2. Single nucleotide polymorphisms (SNPs) of one-carbon metabolism pathway and risk of breast cancer in European American and African American**

**women in the WCHS**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Gene** | **SNP** | **Genotype** | **European American** | | |  | **African American** | | |
| **# Case/Control** | **OR (95% CI)a,b** | ***Pc,d*** |  | **# Case/Control** | **OR (95% CI) a,b** | ***Pc,d*** |
| MTHFR | rs4846048 | AA | 300/305 | 1.00 (ref) | 0.66 |  | 174/197 | 1.00 (ref) | 0.62 |
|  |  | AG | 269/271 | 0.95 (0.75-1.22) |  |  | 287/370 | 0.87 (0.67-1.14) |  |
|  |  | GG | 57/57 | 0.93 (0.61-1.42) |  |  | 118/141 | 0.94 (0.68-1.3) |  |
|  |  | AG/GG vs. AA | 326/328 | 0.95 (0.75-1.2) | 0.66 |  | 405/511 | 0.89 (0.7-1.14) | 0.37 |
| MTHFR | rs2184226 | AA | 540/528 | 1.00 (ref) | 0.21 |  | 481/584 | 1.00 (ref) | 0.95 |
|  |  | AG | 83/104 | 0.71 (0.51-0.99) |  |  | 97/121 | 0.98 (0.72-1.32) |  |
|  |  | GG | 6/1 | 5.12 (0.59-44.1) |  |  | 3/4 | 1.17 (0.25-5.36) |  |
|  |  | AG/GG vs. AA | 89/105 | 0.76 (0.55-1.05) | 0.09 |  | 100/125 | 0.98 (0.73-1.32) | 0.92 |
| MTHFR | rs2274976 | GG | 565/580 | 1.00 (ref) | 0.21 |  | 530/636 | 1.00 (ref) | 0.50 |
|  |  | GA | 46/34 | 1.31 (0.81-2.12) |  |  | 35/46 | 0.93 (0.58-1.48) |  |
|  |  | AA | 2/1 | 2.11 (0.18-24.6) |  |  | 0/2 |  |  |
|  |  | GA/AA vs. GG | 48/35 | 1.33 (0.83-2.14) | 0.23 |  | 35/48 | 0.89 (0.56-1.41) | 0.61 |
| MTHFR | rs1801131 | AA | 295/308 | 1.00 (ref) | 0.89 |  | 389/483 | 1.00 (ref) | 0.84 |
|  |  | AC | 280/262 | 1.12 (0.88-1.43) |  |  | 172/207 | 1.03 (0.8-1.32) |  |
|  |  | CC | 54/62 | 0.9 (0.59-1.36) |  |  | 16/20 | 1 (0.5-2) |  |
|  |  | AC/CC vs. AA | 334/324 | 1.08 (0.85-1.36) | 0.52 |  | 188/227 | 1.03 (0.81-1.31) | 0.82 |
| MTHFR | rs1801133 | CC | 224/241 | 1.00 (ref) | 0.28 |  | 441/558 | 1.00 (ref) | 0.38 |
|  |  | CT | 301/298 | 1.16 (0.9-1.49) |  |  | 126/145 | 1.07 (0.81-1.41) |  |
|  |  | TT | 104/95 | 1.17 (0.82-1.66) |  |  | 10/7 | 1.7 (0.63-4.6) |  |
|  |  | CT/TT vs. CC | 405/393 | 1.16 (0.91-1.48) | 0.23 |  | 136/152 | 1.1 (0.84-1.44) | 0.50 |
| MTHFR | rs7533315 | CC | 335/342 | 1.00 (ref) | 0.53 |  | 261/321 | 1.00 (ref) | 0.83 |
|  |  | CT | 249/245 | 0.99 (0.78-1.27) |  |  | 266/325 | 1.01 (0.79-1.28) |  |
|  |  | TT | 43/48 | 0.81 (0.51-1.29) |  |  | 53/62 | 1.06 (0.7-1.6) |  |
|  |  | CT/TT vs. CC | 292/293 | 0.96 (0.76-1.22) | 0.76 |  | 319/387 | 1.01 (0.81-1.27) | 0.90 |
| MTHFR | rs17037396 | CC | 529/537 | 1.00 (ref) | 0.65 |  | 479/571 | 1.00 (ref) | 0.36 |
|  |  | CT | 90/92 | 1 (0.72-1.4) |  |  | 93/130 | 0.86 (0.64-1.16) |  |
|  |  | TT | 8/5 | 1.73 (0.54-5.49) |  |  | 6/7 | 0.93 (0.3-2.89) |  |
|  |  | CT/TT vs. CC | 98/97 | 1.04 (0.75-1.43) | 0.81 |  | 99/137 | 0.86 (0.64-1.16) | 0.32 |
| MTHFR | rs9651118 | TT | 450/424 | 1.00 (ref) | 0.69 |  | 541/650 | 1.00 (ref) | 0.16 |
|  |  | TC | 165/199 | 0.86 (0.66-1.11) |  |  | 35/56 | 0.72 (0.46-1.14) |  |
|  |  | CC | 15/10 | 1.64 (0.71-3.78) |  |  | 1/1 | 0.72 (0.04-11.79) |  |
|  |  | TC/CC vs. TT | 180/209 | 0.9 (0.7-1.16) | 0.41 |  | 36/57 | 0.72 (0.46-1.13) | 0.16 |
| MTHFR | rs17367504 | AA | 482/482 | 1.00 (ref) | 0.80 |  | 453/543 | 1.00 (ref) | 0.35 |
|  |  | AG | 137/140 | 1 (0.75-1.32) |  |  | 125/157 | 0.96 (0.73-1.26) |  |
|  |  | GG | 10/13 | 0.81 (0.34-1.92) |  |  | 2/8 | 0.25 (0.05-1.25) |  |
|  |  | AG/GG vs. AA | 147/153 | 0.98 (0.75-1.29) | 0.89 |  | 127/165 | 0.92 (0.7-1.2) | 0.54 |
| MTR | rs10495384 | GG | 603/609 | 1.00 (ref) | 0.48 |  | 338/415 | 1.00 (ref) | 0.75 |
|  |  | GT | 26/23 | 0.8 (0.42-1.5) |  |  | 210/253 | 1.02 (0.8-1.3) |  |
|  |  | TT | 0/0 |  |  |  | 30/41 | 0.84 (0.51-1.38) |  |
|  |  | GT/TT vs. GG | 26/23 | 0.8 (0.42-1.5) | 0.48 |  | 240/294 | 1 (0.79-1.25) | 0.97 |
| MTR | rs10733117 | AA | 207/209 | 1.00 (ref) | 0.57 |  | 122/159 | 1.00 (ref) | 0.63 |
|  |  | AG | 309/299 | 1.06 (0.82-1.38) |  |  | 286/333 | 1.24 (0.92-1.66) |  |
|  |  | GG | 113/126 | 0.88 (0.63-1.23) |  |  | 171/217 | 1.11 (0.81-1.53) |  |
|  |  | AG/GG vs. AA | 422/425 | 1.01 (0.79-1.29) | 0.95 |  | 457/550 | 1.19 (0.9-1.56) | 0.22 |
| MTR | rs3795708 | TT | 234/266 | 1.00 (ref) | 0.23 |  | 353/436 | 1.00 (ref) | 0.89 |
|  |  | TC | 304/277 | 1.32 (1.03-1.7) |  |  | 199/239 | 1.03 (0.81-1.31) |  |
|  |  | CC | 90/91 | 1.1 (0.77-1.58) |  |  | 29/33 | 0.99 (0.58-1.69) |  |
|  |  | TC/CC vs. TT | 394/368 | 1.27 (1-1.61) | 0.05 |  | 228/272 | 1.03 (0.81-1.29) | 0.84 |
| MTR | rs6668344 | CC | 228/260 | 1.00 (ref) | 0.21 |  | 289/353 | 1.00 (ref) | 0.33 |
|  |  | CT | 307/283 | 1.32 (1.03-1.71) |  |  | 239/278 | 1.04 (0.82-1.32) |  |
|  |  | TT | 92/91 | 1.12 (0.78-1.6) |  |  | 52/78 | 0.73 (0.49-1.09) |  |
|  |  | CT/TT vs. CC | 399/374 | 1.27 (1-1.62) | 0.05 |  | 291/356 | 0.97 (0.77-1.21) | 0.78 |
| MTR | rs1770449 | AA | 247/242 | 1.00 (ref) | 0.91 |  | 491/602 | 1.00 (ref) | 0.98 |
|  |  | AG | 284/291 | 1 (0.77-1.28) |  |  | 85/105 | 1.01 (0.73-1.4) |  |
|  |  | GG | 99/100 | 0.98 (0.69-1.38) |  |  | 2/2 | 0.9 (0.12-6.94) |  |
|  |  | AG/GG vs. AA | 383/391 | 0.99 (0.78-1.26) | 0.94 |  | 87/107 | 1.01 (0.73-1.4) | 0.97 |
| MTR | rs1805087 | AA | 410/408 | 1.00 (ref) | 0.27 |  | 325/387 | 1.00 (ref) | 0.52 |
|  |  | AG | 201/191 | 1.09 (0.85-1.41) |  |  | 215/273 | 0.95 (0.75-1.21) |  |
|  |  | GG | 19/36 | 0.45 (0.24-0.83) |  |  | 40/49 | 0.87 (0.55-1.38) |  |
|  |  | GG vs. AA/AG | 611/599 | 0.44 (0.24-0.8) | 0.01 |  | 540/660 | 0.89 (0.57-1.39) | 0.61 |
| MTR | rs2275565 | CC | 389/378 | 1.00 (ref) | 0.14 |  | 159/228 | 1.00 (ref) | 0.31 |
|  |  | CA | 206/199 | 1.01 (0.78-1.3) |  |  | 287/332 | 1.27 (0.97-1.65) |  |
|  |  | AA | 24/42 | 0.5 (0.29-0.88) |  |  | 116/146 | 1.15 (0.83-1.59) |  |
|  |  | AA vs. CC/CA | 595/577 | 0.5 (0.29-0.87) | 0.01 |  | 446/560 | 0.99 (0.75-1.31) | 0.94 |
| MTR | rs1050993 | GG | 244/240 | 1.00 (ref) | 0.65 |  | 487/589 | 1.00 (ref) | 0.74 |
|  |  | GA | 280/279 | 1.03 (0.8-1.34) |  |  | 76/107 | 0.89 (0.63-1.24) |  |
|  |  | AA | 104/114 | 0.9 (0.64-1.26) |  |  | 17/13 | 1.7 (0.79-3.65) |  |
|  |  | GA/AA vs. GG | 384/393 | 0.99 (0.78-1.26) | 0.97 |  | 93/120 | 0.97 (0.71-1.33) | 0.84 |
| FTHFD | rs4646750 | AA | 539/551 | 1.00 (ref) | 0.59 |  | 454/573 | 1.00 (ref) | 0.33 |
|  |  | AG | 89/82 | 1.07 (0.76-1.51) |  |  | 122/133 | 1.14 (0.86-1.51) |  |
|  |  | GG | 2/2 | 1.81 (0.24-13.84) |  |  | 4/4 | 1.34 (0.31-5.79) |  |
|  |  | AG/GG vs. AA | 91/84 | 1.08 (0.77-1.52) | 0.64 |  | 126/137 | 1.15 (0.87-1.51) | 0.34 |
| FTHFD | rs4646745 | CC | 387/401 | 1.00 (ref) | 0.41 |  | 376/433 | 1.00 (ref) | 0.37 |
|  |  | CT | 215/207 | 1.1 (0.85-1.41) |  |  | 179/254 | 0.8 (0.63-1.02) |  |
|  |  | TT | 28/27 | 1.16 (0.65-2.06) |  |  | 25/22 | 1.32 (0.72-2.42) |  |
|  |  | CT/TT vs. CC | 243/234 | 1.1 (0.87-1.4) | 0.42 |  | 204/276 | 0.84 (0.66-1.06) | 0.14 |
| FTHFD | rs7609633 | TT | 218/233 | 1.00 (ref) | 0.61 |  | 243/300 | 1.00 (ref) | 0.35 |
|  |  | TA | 323/305 | 1.22 (0.95-1.58) |  |  | 286/313 | 1.13 (0.89-1.44) |  |
|  |  | AA | 88/96 | 1 (0.7-1.43) |  |  | 48/93 | 0.67 (0.45-1) |  |
|  |  | AA vs. TT/TA | 541/538 | 0.89 (0.64-1.23) | 0.48 |  | 529/613 | 0.63 (0.43-0.92) | 0.02 |
| FTHFD | rs13321483 | GG | 610/621 | 1.00 (ref) | 0.69 |  | 427/548 | 1.00 (ref) | 0.08 |
|  |  | GA | 18/12 | 1.35 (0.6-3) |  |  | 138/154 | 1.2 (0.91-1.57) |  |
|  |  | AA | 0/1 |  |  |  | 14/8 | 1.86 (0.76-4.54) |  |
|  |  | GA/AA vs. GG | 18/13 | 1.26 (0.57-2.75) | 0.57 |  | 152/162 | 1.23 (0.95-1.6) | 0.12 |
| FTHFD | rs3772417 | CC | 273/291 | 1.00 (ref) | 0.81 |  | 431/533 | 1.00 (ref) | 0.95 |
|  |  | CG | 289/263 | 1.24 (0.97-1.6) |  |  | 137/157 | 1.06 (0.81-1.39) |  |
|  |  | GG | 64/79 | 0.87 (0.59-1.28) |  |  | 11/18 | 0.81 (0.37-1.76) |  |
|  |  | CG/GG vs. CC | 353/342 | 1.15 (0.91-1.46) | 0.23 |  | 148/175 | 1.04 (0.8-1.35) | 0.79 |
| FTHFD | rs1868127 | GG | 157/167 | 1.00 (ref) | 0.64 |  | 64/77 | 1.00 (ref) | 0.64 |
|  |  | GA | 321/318 | 1.11 (0.84-1.47) |  |  | 233/299 | 0.89 (0.61-1.3) |  |
|  |  | AA | 149/148 | 1.08 (0.77-1.5) |  |  | 281/331 | 1 (0.69-1.46) |  |
|  |  | GA/AA vs. GG | 470/466 | 1.1 (0.84-1.43) | 0.48 |  | 514/630 | 0.95 (0.66-1.36) | 0.76 |
| MTRR | rs1801394 | AA | 162/169 | 1.00 (ref) | 0.25 |  | 314/370 | 1.00 (ref) | 0.74 |
|  |  | AG | 323/325 | 1.12 (0.85-1.49) |  |  | 218/287 | 0.92 (0.72-1.16) |  |
|  |  | GG | 142/141 | 1.22 (0.87-1.7) |  |  | 47/53 | 1.03 (0.67-1.59) |  |
|  |  | AG/GG vs. AA | 465/466 | 1.15 (0.88-1.5) | 0.31 |  | 265/340 | 0.93 (0.74-1.17) | 0.55 |
| MTRR | rs1532268 | GG | 266/269 | 1.00 (ref) | 0.73 |  | 322/392 | 1.00 (ref) | 0.86 |
|  |  | GA | 283/269 | 1.05 (0.82-1.35) |  |  | 221/279 | 0.94 (0.74-1.19) |  |
|  |  | AA | 80/96 | 0.89 (0.62-1.27) |  |  | 37/36 | 1.22 (0.75-2) |  |
|  |  | GA/AA vs. GG | 363/365 | 1.01 (0.8-1.28) | 0.92 |  | 258/315 | 0.97 (0.78-1.22) | 0.82 |
| MTRR | rs162033 | CC | 219/247 | 1.00 (ref) | 0.26 |  | 85/98 | 1.00 (ref) | 0.63 |
|  |  | CT | 307/288 | 1.2 (0.93-1.55) |  |  | 264/337 | 0.93 (0.66-1.31) |  |
|  |  | TT | 100/96 | 1.16 (0.82-1.65) |  |  | 231/272 | 1.04 (0.73-1.47) |  |
|  |  | CT/TT vs. CC | 407/384 | 1.19 (0.94-1.52) | 0.15 |  | 495/609 | 0.98 (0.71-1.35) | 0.89 |
| MTRR | rs162036 | AA | 461/458 | 1.00 (ref) | 0.22 |  | 217/263 | 1.00 (ref) | 0.62 |
|  |  | AG | 149/160 | 0.82 (0.62-1.07) |  |  | 266/338 | 1 (0.78-1.28) |  |
|  |  | GG | 15/13 | 0.99 (0.43-2.26) |  |  | 95/107 | 1.11 (0.79-1.56) |  |
|  |  | AG/GG vs. AA | 164/173 | 0.83 (0.63-1.08) | 0.16 |  | 361/445 | 1.03 (0.81-1.3) | 0.83 |
| MTRR | rs162039 | CC | 463/459 | 1.00 (ref) | 0.24 |  | 179/213 | 1.00 (ref) | 0.57 |
|  |  | CT | 150/161 | 0.81 (0.62-1.06) |  |  | 276/358 | 0.97 (0.74-1.25) |  |
|  |  | TT | 16/13 | 1.06 (0.47-2.38) |  |  | 126/139 | 1.11 (0.81-1.54) |  |
|  |  | CT/TT vs. CC | 166/174 | 0.83 (0.63-1.08) | 0.16 |  | 402/497 | 1.01 (0.79-1.29) | 0.95 |
| MTRR | rs162049 | AA | 378/362 | 1.00 (ref) | 0.22 |  | 438/531 | 1.00 (ref) | 0.72 |
|  |  | AG | 224/238 | 0.9 (0.71-1.15) |  |  | 120/166 | 0.85 (0.64-1.11) |  |
|  |  | GG | 23/25 | 0.7 (0.38-1.31) |  |  | 16/10 | 1.64 (0.72-3.74) |  |
|  |  | AG/GG vs. AA | 247/263 | 0.88 (0.69-1.12) | 0.30 |  | 136/176 | 0.89 (0.69-1.17) | 0.41 |
| MTRR | rs10380 | CC | 485/485 | 1.00 (ref) | 0.22 |  | 253/310 | 1.00 (ref) | 0.58 |
|  |  | CT | 129/137 | 0.85 (0.64-1.13) |  |  | 260/325 | 1.04 (0.82-1.32) |  |
|  |  | TT | 11/11 | 0.74 (0.29-1.91) |  |  | 64/69 | 1.12 (0.76-1.65) |  |
|  |  | CT/TT vs. CC | 140/148 | 0.84 (0.64-1.11) | 0.23 |  | 324/394 | 1.05 (0.84-1.32) | 0.66 |
| MTRR | rs327593 | TT | 604/608 | 1.00 (ref) | 0.67 |  | 523/637 | 1.00 (ref) | 0.92 |
|  |  | TC | 25/27 | 0.88 (0.49-1.58) |  |  | 53/70 | 0.97 (0.66-1.42) |  |
|  |  | CC | 0/0 |  |  |  | 3/2 | 1.89 (0.3-12.04) |  |
|  |  | TC/CC vs. TT | 25/27 | 0.88 (0.49-1.58) | 0.67 |  | 56/72 | 0.99 (0.68-1.45) | 0.97 |
| MTRR | rs327592 | TT | 465/460 | 1.00 (ref) | 0.23 |  | 217/266 | 1.00 (ref) | 0.47 |
|  |  | TC | 149/161 | 0.81 (0.61-1.06) |  |  | 266/337 | 1.02 (0.8-1.31) |  |
|  |  | CC | 16/13 | 1.06 (0.47-2.38) |  |  | 94/104 | 1.15 (0.82-1.62) |  |
|  |  | TC/CC vs. TT | 165/174 | 0.82 (0.63-1.07) | 0.15 |  | 360/441 | 1.05 (0.83-1.33) | 0.67 |
| MTRR | rs10520873 | AA | 347/384 | 1.00 (ref) | 0.02 |  | 491/587 | 1.00 (ref) | 0.57 |
|  |  | AG | 241/209 | 1.4 (1.09-1.79) |  |  | 86/117 | 0.92 (0.67-1.26) |  |
|  |  | GG | 41/41 | 1.24 (0.77-2) |  |  | 4/5 | 0.87 (0.22-3.43) |  |
|  |  | AG/GG vs. AA | 282/250 | 1.37 (1.08-1.73) | 0.01 |  | 90/122 | 0.92 (0.67-1.25) | 0.58 |
| BHMT | rs6894156 | CC | 518/544 | 1.00 (ref) | 0.31 |  | 480/606 | 1.00 (ref) | 0.34 |
|  |  | CT | 106/85 | 1.22 (0.88-1.69) |  |  | 97/98 | 1.22 (0.89-1.67) |  |
|  |  | TT | 6/6 | 0.97 (0.3-3.16) |  |  | 2/5 | 0.6 (0.11-3.16) |  |
|  |  | CT/TT vs. CC | 112/91 | 1.2 (0.88-1.65) | 0.25 |  | 99/103 | 1.2 (0.88-1.63) | 0.26 |
| BHMT | rs7700970 | CC | 296/297 | 1.00 (ref) | 0.57 |  | 179/233 | 1.00 (ref) | 0.77 |
|  |  | CT | 270/272 | 1.01 (0.79-1.3) |  |  | 283/328 | 1.08 (0.83-1.4) |  |
|  |  | TT | 64/66 | 0.84 (0.56-1.25) |  |  | 117/149 | 1.03 (0.75-1.43) |  |
|  |  | CT/TT vs. CC | 334/338 | 0.98 (0.77-1.23) | 0.85 |  | 400/477 | 1.07 (0.84-1.36) | 0.61 |
| BHMT | rs567754 | CC | 273/267 | 1.00 (ref) | 0.97 |  | 496/618 | 1.00 (ref) | 0.60 |
|  |  | CT | 288/291 | 1.02 (0.8-1.31) |  |  | 78/86 | 1.15 (0.82-1.63) |  |
|  |  | TT | 66/74 | 0.97 (0.65-1.43) |  |  | 2/5 | 0.61 (0.11-3.26) |  |
|  |  | CT/TT vs. CC | 354/365 | 1.01 (0.8-1.28) | 0.92 |  | 80/91 | 1.13 (0.8-1.59) | 0.49 |
| BHMT | rs694290 | TT | 324/341 | 1.00 (ref) | 0.72 |  | 181/220 | 1.00 (ref) | 0.15 |
|  |  | TC | 260/243 | 1.12 (0.88-1.43) |  |  | 292/334 | 1.02 (0.79-1.32) |  |
|  |  | CC | 45/50 | 0.94 (0.6-1.48) |  |  | 107/156 | 0.77 (0.55-1.06) |  |
|  |  | TC/CC vs. TT | 305/293 | 1.09 (0.86-1.37) | 0.48 |  | 399/490 | 0.94 (0.74-1.2) | 0.62 |
| BHMT | rs3733890 | GG | 283/290 | 1.00 (ref) | 0.63 |  | 342/435 | 1.00 (ref) | 0.59 |
|  |  | GA | 280/274 | 1.02 (0.8-1.3) |  |  | 213/239 | 1.15 (0.9-1.46) |  |
|  |  | AA | 67/71 | 0.86 (0.58-1.27) |  |  | 23/35 | 0.87 (0.5-1.53) |  |
|  |  | GA/AA vs. GG | 347/345 | 0.99 (0.78-1.24) | 0.90 |  | 236/274 | 1.11 (0.88-1.4) | 0.36 |
| BHMT | rs585800 | AA | 383/388 | 1.00 (ref) | 0.36 |  | 525/649 | 1.00 (ref) | 0.43 |
|  |  | AT | 209/218 | 1.01 (0.79-1.3) |  |  | 54/55 | 1.28 (0.85-1.92) |  |
|  |  | TT | 36/27 | 1.45 (0.85-2.5) |  |  | 2/4 | 0.58 (0.1-3.25) |  |
|  |  | AT/TT vs. AA | 245/245 | 1.06 (0.84-1.35) | 0.62 |  | 56/59 | 1.23 (0.82-1.82) | 0.31 |
| DHFR | rs1643638 | TT | 317/302 | 1.00 (ref) | 0.19 |  | 280/355 | 1.00 (ref) | 0.95 |
|  |  | TC | 243/254 | 0.89 (0.7-1.15) |  |  | 245/282 | 1.1 (0.87-1.39) |  |
|  |  | CC | 52/61 | 0.78 (0.51-1.19) |  |  | 32/51 | 0.81 (0.5-1.31) |  |
|  |  | TC/CC vs. TT | 295/315 | 0.87 (0.69-1.1) | 0.25 |  | 277/333 | 1.06 (0.84-1.33) | 0.65 |
| DHFR | rs1643658 | TT | 336/317 | 1.00 (ref) | 0.16 |  | 298/377 | 1.00 (ref) | 0.77 |
|  |  | TC | 234/257 | 0.83 (0.65-1.07) |  |  | 244/276 | 1.12 (0.88-1.42) |  |
|  |  | CC | 55/60 | 0.82 (0.54-1.25) |  |  | 36/53 | 0.9 (0.57-1.43) |  |
|  |  | TC/CC vs. TT | 289/317 | 0.83 (0.66-1.05) | 0.12 |  | 280/329 | 1.08 (0.86-1.36) | 0.49 |
| DHFR | rs11951910 | TT | 508/498 | 1.00 (ref) | 0.25 |  | 378/456 | 1.00 (ref) | 0.47 |
|  |  | TC | 113/125 | 0.82 (0.61-1.11) |  |  | 189/223 | 1 (0.79-1.28) |  |
|  |  | CC | 8/9 | 0.92 (0.34-2.52) |  |  | 14/30 | 0.64 (0.33-1.24) |  |
|  |  | TC/CC vs. TT | 121/134 | 0.83 (0.62-1.11) | 0.21 |  | 203/253 | 0.96 (0.76-1.22) | 0.75 |
| DHFR | rs11742668 | TT | 553/541 | 1.00 (ref) | 0.58 |  | 528/630 | 1.00 (ref) | 0.26 |
|  |  | TC | 74/89 | 0.9 (0.63-1.27) |  |  | 49/78 | 0.77 (0.53-1.14) |  |
|  |  | CC | 3/3 | 1 (0.18-5.43) |  |  | 2/2 | 1.32 (0.18-9.91) |  |
|  |  | TC/CC vs. TT | 77/92 | 0.9 (0.64-1.27) | 0.56 |  | 51/80 | 0.79 (0.54-1.15) | 0.21 |
| DHFR | rs10072026 | TT | 526/526 | 1.00 (ref) | 0.50 |  | 167/227 | 1.00 (ref) | 0.89 |
|  |  | TC | 100/103 | 0.97 (0.71-1.34) |  |  | 301/326 | 1.24 (0.95-1.61) |  |
|  |  | CC | 3/6 | 0.34 (0.07-1.64) |  |  | 111/157 | 0.98 (0.71-1.36) |  |
|  |  | TC/CC vs. TT | 103/109 | 0.93 (0.68-1.28) | 0.68 |  | 412/483 | 1.16 (0.9-1.48) | 0.25 |
| DHFR | rs1650697 | CC | 341/344 | 1.00 (ref) | 0.89 |  | 463/564 | 1.00 (ref) | 0.84 |
|  |  | CT | 218/228 | 0.94 (0.73-1.21) |  |  | 96/115 | 0.98 (0.72-1.34) |  |
|  |  | TT | 43/38 | 1.18 (0.73-1.9) |  |  | 3/4 | 0.79 (0.17-3.7) |  |
|  |  | CT/TT vs. CC | 261/266 | 0.97 (0.77-1.24) | 0.83 |  | 99/119 | 0.98 (0.72-1.32) | 0.88 |
| MTHFD1 | rs2295640 | CC | 515/511 | 1.00 (ref) | 0.14 |  | 564/677 | 1.00 (ref) | 0.25 |
|  |  | CG | 103/109 | 0.89 (0.65-1.22) |  |  | 17/30 | 0.69 (0.36-1.3) |  |
|  |  | GG | 8/12 | 0.44 (0.17-1.14) |  |  | 0/0 |  |  |
|  |  | CG/GG vs. CC | 111/121 | 0.84 (0.62-1.14) | 0.26 |  | 17/30 | 0.69 (0.36-1.3) | 0.25 |
| MTHFD1 | rs3783728 | TT | 516/529 | 1.00 (ref) | 0.24 |  | 550/683 | 1.00 (ref) | 0.25 |
|  |  | TC | 104/101 | 1.09 (0.79-1.49) |  |  | 30/27 | 1.38 (0.8-2.39) |  |
|  |  | CC | 8/5 | 2.52 (0.79-8.08) |  |  | 0/0 |  |  |
|  |  | TC/CC vs. TT | 112/106 | 1.14 (0.84-1.55) | 0.39 |  | 30/27 | 1.38 (0.8-2.39) | 0.25 |
| MTHFD1 | rs3783726 | GG | 387/380 | 1.00 (ref) | 0.85 |  | 511/637 | 1.00 (ref) | 0.21 |
|  |  | GA | 207/220 | 0.98 (0.76-1.25) |  |  | 68/70 | 1.22 (0.84-1.76) |  |
|  |  | AA | 34/35 | 0.98 (0.58-1.64) |  |  | 1/0 |  |  |
|  |  | GA/AA vs. GG | 241/255 | 0.98 (0.77-1.24) | 0.84 |  | 69/70 | 1.24 (0.86-1.79) | 0.25 |
| MTHFD1 | rs2236225 | CC | 195/204 | 1.00 (ref) | 0.89 |  | 372/433 | 1.00 (ref) | 0.08 |
|  |  | CT | 327/304 | 1.21 (0.93-1.57) |  |  | 183/229 | 0.89 (0.7-1.14) |  |
|  |  | TT | 108/127 | 0.92 (0.65-1.29) |  |  | 26/48 | 0.63 (0.38-1.04) |  |
|  |  | CT/TT vs. CC | 435/431 | 1.12 (0.87-1.44) | 0.37 |  | 209/277 | 0.85 (0.67-1.07) | 0.17 |
| MTHFD1 | rs1256143 | CC | 566/571 | 1.00 (ref) | 0.79 |  | 397/463 | 1.00 (ref) | 0.05 |
|  |  | CT | 59/61 | 1 (0.68-1.48) |  |  | 169/221 | 0.85 (0.67-1.09) |  |
|  |  | TT | 5/3 | 1.54 (0.34-7.01) |  |  | 12/26 | 0.53 (0.26-1.08) |  |
|  |  | CT/TT vs. CC | 64/64 | 1.03 (0.7-1.51) | 0.89 |  | 181/247 | 0.82 (0.64-1.04) | 0.11 |
| SHMT1 | rs9902011 | TT | 612/610 | 1.00 (ref) | 0.13 |  | 392/490 | 1.00 (ref) | 0.70 |
|  |  | TC | 18/25 | 0.6 (0.3-1.16) |  |  | 174/192 | 1.17 (0.91-1.5) |  |
|  |  | CC | 0/0 |  |  |  | 14/28 | 0.72 (0.37-1.41) |  |
|  |  | TC/CC vs. TT | 18/25 | 0.6 (0.3-1.16) | 0.13 |  | 188/220 | 1.11 (0.87-1.42) | 0.39 |
| SHMT1 | rs1979277 | GG | 303/299 | 1.00 (ref) | 0.74 |  | 250/340 | 1.00 (ref) | 0.18 |
|  |  | GA | 263/274 | 1 (0.78-1.27) |  |  | 244/277 | 1.16 (0.91-1.48) |  |
|  |  | AA | 62/61 | 1.1 (0.73-1.66) |  |  | 82/92 | 1.21 (0.85-1.72) |  |
|  |  | GA/AA vs. GG | 325/335 | 1.02 (0.81-1.28) | 0.89 |  | 326/369 | 1.18 (0.94-1.47) | 0.16 |
| SHMT1 | rs8080285 | TT | 610/608 | 1.00 (ref) | 0.07 |  | 318/412 | 1.00 (ref) | 0.58 |
|  |  | TG | 19/27 | 0.55 (0.28-1.05) |  |  | 227/238 | 1.25 (0.98-1.59) |  |
|  |  | GG | 0/0 |  |  |  | 36/59 | 0.83 (0.53-1.31) |  |
|  |  | TG/GG vs. TT | 19/27 | 0.55 (0.28-1.05) | 0.07 |  | 263/297 | 1.17 (0.93-1.47) | 0.18 |
| SHMT1 | rs2273029 | CC | 354/381 | 1.00 (ref) | 0.57 |  | 429/513 | 1.00 (ref) | 0.34 |
|  |  | CT | 230/210 | 1.17 (0.91-1.5) |  |  | 140/179 | 0.9 (0.69-1.17) |  |
|  |  | TT | 45/43 | 0.93 (0.58-1.49) |  |  | 10/16 | 0.78 (0.34-1.77) |  |
|  |  | CT/TT vs. CC | 275/253 | 1.13 (0.89-1.43) | 0.32 |  | 150/195 | 0.89 (0.69-1.15) | 0.37 |
| SHMT1 | rs2168781 | GG | 212/207 | 1.00 (ref) | 0.99 |  | 48/82 | 1.00 (ref) | 0.04 |
|  |  | GC | 301/307 | 0.98 (0.76-1.28) |  |  | 237/294 | 1.37 (0.92-2.06) |  |
|  |  | CC | 117/121 | 1.01 (0.72-1.41) |  |  | 294/332 | 1.54 (1.03-2.31) |  |
|  |  | GC/CC vs. GG | 418/428 | 0.99 (0.77-1.27) | 0.93 |  | 531/626 | 1.46 (0.99-2.14) | 0.05 |
| SHMT1 | rs2273027 | GG | 254/265 | 1.00 (ref) | 0.72 |  | 153/193 | 1.00 (ref) | 0.93 |
|  |  | GA | 275/288 | 0.96 (0.75-1.23) |  |  | 276/329 | 1.06 (0.81-1.39) |  |
|  |  | AA | 99/82 | 1.11 (0.78-1.6) |  |  | 150/186 | 1.01 (0.74-1.38) |  |
|  |  | GA/AA vs. GG | 374/370 | 1 (0.79-1.26) | 0.97 |  | 426/515 | 1.04 (0.81-1.35) | 0.75 |
| SHMT1 | rs4925180 | GG | 610/607 | 1.00 (ref) | 0.14 |  | 426/555 | 1.00 (ref) | 0.06 |
|  |  | GA | 17/22 | 0.63 (0.31-1.27) |  |  | 138/140 | 1.34 (1.02-1.76) |  |
|  |  | AA | 0/1 |  |  |  | 3/4 | 0.92 (0.2-4.2) |  |
|  |  | GA/AA vs. GG | 17/23 | 0.6 (0.3-1.22) | 0.16 |  | 141/144 | 1.32 (1.01-1.74) | 0.04 |
| TYMS | rs2853533 | GG | 433/460 | 1.00 (ref) | 0.46 |  | 200/281 | 1.00 (ref) | 0.11 |
|  |  | GC | 180/164 | 1.12 (0.86-1.46) |  |  | 281/311 | 1.31 (1.02-1.68) |  |
|  |  | CC | 11/10 | 1.02 (0.4-2.59) |  |  | 96/115 | 1.22 (0.88-1.71) |  |
|  |  | GC/CC vs. GG | 191/174 | 1.11 (0.86-1.44) | 0.41 |  | 377/426 | 1.29 (1.02-1.63) | 0.04 |
| TYMS | rs502396 | TT | 146/159 | 1.00 (ref) | 0.12 |  | 58/68 | 1.00 (ref) | 0.86 |
|  |  | TC | 326/341 | 1.04 (0.78-1.39) |  |  | 231/284 | 0.97 (0.65-1.45) |  |
|  |  | CC | 157/135 | 1.31 (0.94-1.84) |  |  | 289/357 | 0.96 (0.65-1.43) |  |
|  |  | TC/CC vs. TT | 483/476 | 1.12 (0.85-1.47) | 0.42 |  | 520/641 | 0.97 (0.66-1.41) | 0.86 |
| TYMS | rs1001761 | CC | 144/162 | 1.00 (ref) | 0.18 |  | 27/35 | 1.00 (ref) | 0.35 |
|  |  | CT | 302/302 | 1.05 (0.78-1.4) |  |  | 169/236 | 1.03 (0.59-1.79) |  |
|  |  | TT | 131/114 | 1.29 (0.9-1.84) |  |  | 329/387 | 1.16 (0.68-1.98) |  |
|  |  | CT/TT vs. CC | 433/416 | 1.11 (0.85-1.47) | 0.45 |  | 498/623 | 1.11 (0.65-1.88) | 0.70 |
| TYMS | rs16948305 | CC | 485/468 | 1.00 (ref) | 0.19 |  | 451/548 | 1.00 (ref) | 0.92 |
|  |  | CT | 136/157 | 0.82 (0.62-1.08) |  |  | 119/154 | 0.92 (0.7-1.22) |  |
|  |  | TT | 9/10 | 0.91 (0.35-2.33) |  |  | 11/8 | 1.48 (0.57-3.82) |  |
|  |  | CT/TT vs. CC | 145/167 | 0.82 (0.63-1.08) | 0.16 |  | 130/162 | 0.95 (0.73-1.25) | 0.72 |
| TYMS | rs2612100 | GG | 246/268 | 1.00 (ref) | 0.03 |  | 77/99 | 1.00 (ref) | 0.78 |
|  |  | GA | 297/307 | 1.07 (0.83-1.36) |  |  | 257/314 | 1.09 (0.77-1.55) |  |
|  |  | AA | 85/57 | 1.68 (1.13-2.51) |  |  | 246/297 | 1.08 (0.76-1.54) |  |
|  |  | AA vs. GG/GA | 543/575 | 1.63 (1.12-2.37) | 0.01 |  | 334/413 | 1.01 (0.8-1.26) | 0.96 |
| TYMS | rs2298581 | GG | 369/386 | 1.00 (ref) | 0.27 |  | 325/385 | 1.00 (ref) | 0.78 |
|  |  | GC | 237/221 | 1.21 (0.95-1.55) |  |  | 210/279 | 0.88 (0.69-1.11) |  |
|  |  | CC | 24/28 | 0.99 (0.55-1.79) |  |  | 42/46 | 1.14 (0.72-1.8) |  |
|  |  | GC/CC vs. GG | 261/249 | 1.18 (0.93-1.5) | 0.16 |  | 252/325 | 0.91 (0.73-1.15) | 0.44 |
| CBS | rs3788050 | GG | 569/582 | 1.00 (ref) | 0.81 |  | 310/382 | 1.00 (ref) | 0.74 |
|  |  | GT | 58/51 | 1.16 (0.76-1.76) |  |  | 230/269 | 1.02 (0.8-1.29) |  |
|  |  | TT | 0/2 |  |  |  | 41/56 | 0.87 (0.56-1.35) |  |
|  |  | GT/TT vs. GG | 58/53 | 1.11 (0.73-1.68) | 0.63 |  | 271/325 | 0.99 (0.79-1.25) | 0.95 |
| CBS | rs12329764 | GG | 556/549 | 1.00 (ref) | 0.52 |  | 315/402 | 1.00 (ref) | 0.46 |
|  |  | GA | 69/79 | 0.84 (0.59-1.21) |  |  | 228/261 | 1.1 (0.87-1.4) |  |
|  |  | AA | 4/5 | 1.3 (0.34-4.98) |  |  | 37/45 | 1.09 (0.68-1.75) |  |
|  |  | GA/AA vs. GG | 73/84 | 0.86 (0.61-1.23) | 0.42 |  | 265/306 | 1.1 (0.87-1.38) | 0.41 |
| CBS | rs234706 | GG | 286/262 | 1.00 (ref) | 0.27 |  | 347/404 | 1.00 (ref) | 0.49 |
|  |  | GA | 286/303 | 0.98 (0.76-1.25) |  |  | 197/261 | 0.88 (0.69-1.12) |  |
|  |  | AA | 56/69 | 0.74 (0.49-1.12) |  |  | 37/44 | 0.99 (0.62-1.59) |  |
|  |  | GA/AA vs. GG | 342/372 | 0.93 (0.74-1.18) | 0.55 |  | 234/305 | 0.9 (0.71-1.13) | 0.34 |
| CBS | rs234715 | GG | 400/372 | 1.00 (ref) | 0.12 |  | 427/519 | 1.00 (ref) | 0.99 |
|  |  | GT | 207/232 | 0.91 (0.71-1.17) |  |  | 138/176 | 0.93 (0.71-1.21) |  |
|  |  | TT | 22/31 | 0.59 (0.33-1.07) |  |  | 15/14 | 1.4 (0.65-2.99) |  |
|  |  | GT/TT vs. GG | 229/263 | 0.87 (0.69-1.11) | 0.26 |  | 153/190 | 0.96 (0.74-1.24) | 0.77 |
| CBS | rs9982015 | TT | 556/550 | 1.00 (ref) | 0.55 |  | 395/490 | 1.00 (ref) | 0.87 |
|  |  | TC | 70/80 | 0.85 (0.59-1.22) |  |  | 172/194 | 1.12 (0.87-1.44) |  |
|  |  | CC | 4/5 | 1.3 (0.34-5) |  |  | 13/25 | 0.71 (0.35-1.43) |  |
|  |  | TC/CC vs. TT | 74/85 | 0.87 (0.61-1.24) | 0.45 |  | 185/219 | 1.07 (0.84-1.37) | 0.56 |
| SLC19A1 | rs3788189 | TT | 177/197 | 1.00 (ref) | 0.54 |  | 64/112 | 1.00 (ref) | 0.24 |
|  |  | TG | 343/315 | 1.13 (0.87-1.48) |  |  | 278/311 | 1.56 (1.09-2.23) |  |
|  |  | GG | 110/122 | 0.85 (0.6-1.2) |  |  | 238/287 | 1.42 (0.99-2.04) |  |
|  |  | TG/GG vs. TT | 453/437 | 1.05 (0.82-1.35) | 0.70 |  | 516/598 | 1.49 (1.06-2.1) | 0.02 |
| SLC19A1 | rs2838956 | AA | 198/215 | 1.00 (ref) | 0.51 |  | 59/87 | 1.00 (ref) | 0.67 |
|  |  | AG | 329/310 | 1.06 (0.82-1.38) |  |  | 256/298 | 1.27 (0.87-1.85) |  |
|  |  | GG | 99/109 | 0.84 (0.59-1.2) |  |  | 265/323 | 1.19 (0.81-1.74) |  |
|  |  | AG/GG vs. AA | 428/419 | 1.01 (0.79-1.29) | 0.97 |  | 521/621 | 1.23 (0.85-1.76) | 0.27 |
| SLC19A1 | rs2838958 | AA | 186/190 | 1.00 (ref) | 0.20 |  | 29/50 | 1.00 (ref) | 0.41 |
|  |  | AG | 321/311 | 1.01 (0.77-1.32) |  |  | 211/254 | 1.29 (0.77-2.13) |  |
|  |  | GG | 120/132 | 0.78 (0.56-1.09) |  |  | 339/404 | 1.32 (0.8-2.16) |  |
|  |  | AG/GG vs. AA | 441/443 | 0.94 (0.73-1.21) | 0.61 |  | 550/658 | 1.3 (0.8-2.12) | 0.28 |
| SLC19A1 | rs4819128 | TT | 199/214 | 1.00 (ref) | 0.53 |  | 68/104 | 1.00 (ref) | 0.29 |
|  |  | TC | 328/309 | 1.06 (0.82-1.38) |  |  | 264/314 | 1.31 (0.91-1.87) |  |
|  |  | CC | 103/112 | 0.85 (0.6-1.21) |  |  | 245/291 | 1.29 (0.9-1.86) |  |
|  |  | TC/CC vs. TT | 431/421 | 1.01 (0.79-1.29) | 0.95 |  | 509/605 | 1.3 (0.93-1.82) | 0.13 |
| SLC19A1 | rs12659 | CC | 200/214 | 1.00 (ref) | 0.46 |  | 172/220 | 1.00 (ref) | 0.94 |
|  |  | CT | 329/309 | 1.08 (0.83-1.39) |  |  | 290/343 | 1.05 (0.81-1.36) |  |
|  |  | TT | 100/112 | 0.83 (0.58-1.18) |  |  | 117/146 | 0.98 (0.71-1.35) |  |
|  |  | CT/TT vs. CC | 429/421 | 1.01 (0.79-1.29) | 0.94 |  | 407/489 | 1.03 (0.8-1.31) | 0.83 |
| SLC19A1 | rs3788200 | GG | 198/200 | 1.00 (ref) | 0.57 |  | 109/153 | 1.00 (ref) | 0.45 |
|  |  | GA | 313/314 | 0.96 (0.74-1.25) |  |  | 294/344 | 1.19 (0.88-1.61) |  |
|  |  | AA | 116/119 | 0.9 (0.64-1.27) |  |  | 175/211 | 1.16 (0.83-1.6) |  |
|  |  | GA/AA vs. GG | 429/433 | 0.95 (0.74-1.22) | 0.67 |  | 469/555 | 1.18 (0.89-1.56) | 0.25 |

a OR, odds ratio; 95%CI, 95% confidence interval

b Adjusted for age at diagnosis, education, body mass index, family history of breast cancer, history of benign breast disease, menopausal status, and proportion

of European ancestry.

c *P-*trend for genetic dose response determined by coding genotypes as having 0, 1, or 2 variant allele, which was subsequently analyzed as an ordinal variable.

d *P* for heterogeneity from dominant or recessive models.

**Table S3. Single nucleotide polymorphisms (SNPs) of one-carbon metabolism pathway and risk of breast cancer by estrogen receptor status in European American and**

**African American women in the WCHSa**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Gene** | **SNP** | **Genotype** | **European American** | | | | | | **African American** | | | | | |
|  |  |  | **Estrogen Receptor positive** | | | **Estrogen Receptor negative** | | | **Estrogen Receptor positive** | | | **Estrogen Receptor negative** | | |
| **# Case/ Control** | **OR (95% CI) b,c** | ***P*d,e** | **# Case/ Control** | **OR (95% CI) b,c** | ***P*d,e** | **# Case/ Control** | **OR (95% CI) b,c** | ***P*d,e** | **# Case/ Control** | **OR (95% CI) b,c** | ***P*d,e** |
| MTHFR | rs4846048 | AA | 172/305 | 1.00 (ref) | 0.99 | 36/305 | 1.00 (ref) | 0.75 | 88/197 | 1.00 (ref) | 0.90 | 43/197 | 1.00 (ref) | 0.61 |
|  |  | AG | 165/271 | 0.99 (0.75-1.32) |  | 35/271 | 1.15 (0.69-1.92) |  | 151/370 | 0.9 (0.65-1.24) |  | 69/370 | 0.85 (0.56-1.3) |  |
|  |  | GG | 35/57 | 1.01 (0.62-1.65) |  | 7/57 | 1.02 (0.42-2.47) |  | 64/141 | 0.99 (0.67-1.48) |  | 26/141 | 0.89 (0.52-1.53) |  |
|  |  | AG/GG vs. AA | 200/328 | 1 (0.76-1.31) | 0.99 | 42/328 | 1.13 (0.69-1.84) | 0.64 | 215/511 | 0.92 (0.68-1.25) | 0.61 | 95/511 | 0.86 (0.58-1.29) | 0.47 |
| MTHFR | rs2184226 | AA | 317/528 | 1.00 (ref) | 0.57 | 64/528 | 1.00 (ref) | 0.95 | 249/584 | 1.00 (ref) | 0.89 | 117/584 | 1.00 (ref) | 0.90 |
|  |  | AG | 53/104 | 0.78 (0.53-1.14) |  | 14/104 | 1.04 (0.55-1.97) |  | 52/121 | 1 (0.69-1.44) |  | 21/121 | 0.94 (0.56-1.57) |  |
|  |  | GG | 4/1 | 6.46 (0.68-61.34) |  | 0/1 |  |  | 2/4 | 1.48 (0.26-8.34) |  | 1/4 | 1.35 (0.15-12.44) |  |
|  |  | AG/GG vs. AA | 57/105 | 0.83 (0.57-1.21) | 0.34 | 14/105 | 1.03 (0.55-1.95) | 0.92 | 54/125 | 1.01 (0.7-1.45) | 0.96 | 22/125 | 0.95 (0.57-1.58) | 0.85 |
| MTHFR | rs2274976 | GG | 338/580 | 1.00 (ref) | 0.40 | 65/580 | 1.00 (ref) | 0.02 | 278/636 | 1.00 (ref) | 0.51 | 126/636 | 1.00 (ref) | 0.97 |
|  |  | GA | 28/34 | 1.34 (0.78-2.32) |  | 9/34 | 2.15 (0.96-4.83) |  | 17/46 | 0.91 (0.5-1.63) |  | 10/46 | 1.08 (0.52-2.24) |  |
|  |  | AA | 0/1 |  |  | 1/1 | 8.47 (0.46-156.98) |  | 0/2 |  |  | 0/2 |  |  |
|  |  | GA/AA vs. GG | 28/35 | 1.31 (0.76-2.25) | 0.34 | 10/35 | 2.33 (1.07-5.08) | 0.03 | 17/48 | 0.86 (0.48-1.55) | 0.62 | 10/48 | 1.05 (0.51-2.16) | 0.90 |
| MTHFR | rs1801131 | AA | 174/308 | 1.00 (ref) | 0.94 | 36/308 | 1.00 (ref) | 0.91 | 206/483 | 1.00 (ref) | 0.78 | 92/483 | 1.00 (ref) | 0.47 |
|  |  | AC | 170/262 | 1.14 (0.86-1.51) |  | 37/262 | 1.3 (0.79-2.15) |  | 88/207 | 1.01 (0.75-1.38) |  | 39/207 | 0.99 (0.65-1.51) |  |
|  |  | CC | 30/62 | 0.82 (0.5-1.35) |  | 5/62 | 0.63 (0.23-1.7) |  | 6/20 | 0.71 (0.27-1.86) |  | 7/20 | 1.85 (0.74-4.66) |  |
|  |  | AC/CC vs. AA | 200/324 | 1.07 (0.82-1.41) | 0.61 | 42/324 | 1.16 (0.71-1.88) | 0.56 | 94/227 | 0.99 (0.73-1.33) | 0.94 | 46/227 | 1.07 (0.72-1.59) | 0.75 |
| MTHFR | rs1801133 | CC | 134/241 | 1.00 (ref) | 0.76 | 28/241 | 1.00 (ref) | 0.80 | 233/558 | 1.00 (ref) | 0.61 | 101/558 | 1.00 (ref) | 0.20 |
|  |  | CT | 187/298 | 1.2 (0.9-1.62) |  | 37/298 | 1.12 (0.66-1.92) |  | 64/145 | 1.03 (0.73-1.46) |  | 32/145 | 1.16 (0.74-1.81) |  |
|  |  | TT | 53/95 | 0.97 (0.64-1.48) |  | 13/95 | 1.06 (0.51-2.2) |  | 5/7 | 1.6 (0.49-5.28) |  | 4/7 | 2.77 (0.76-10.07) |  |
|  |  | CT/TT vs. CC | 240/393 | 1.14 (0.86-1.52) | 0.35 | 50/393 | 1.11 (0.67-1.84) | 0.69 | 69/152 | 1.06 (0.76-1.49) | 0.73 | 36/152 | 1.23 (0.8-1.9) | 0.34 |
| MTHFR | rs7533315 | CC | 197/342 | 1.00 (ref) | 0.66 | 41/342 | 1.00 (ref) | 0.89 | 127/321 | 1.00 (ref) | 0.45 | 67/321 | 1.00 (ref) | 0.99 |
|  |  | CT | 151/245 | 1 (0.76-1.34) |  | 31/245 | 1.05 (0.63-1.75) |  | 147/325 | 1.13 (0.84-1.52) |  | 57/325 | 0.85 (0.57-1.26) |  |
|  |  | TT | 26/48 | 0.83 (0.48-1.42) |  | 5/48 | 0.83 (0.31-2.26) |  | 28/62 | 1.12 (0.68-1.86) |  | 15/62 | 1.22 (0.65-2.3) |  |
|  |  | CT/TT vs. CC | 177/293 | 0.98 (0.74-1.28) | 0.86 | 36/293 | 1.01 (0.62-1.66) | 0.96 | 175/387 | 1.13 (0.85-1.5) | 0.39 | 72/387 | 0.91 (0.63-1.32) | 0.62 |
| MTHFR | rs17037396 | CC | 316/537 | 1.00 (ref) | 0.98 | 62/537 | 1.00 (ref) | 0.19 | 254/571 | 1.00 (ref) | 0.18 | 113/571 | 1.00 (ref) | 0.94 |
|  |  | CT | 53/92 | 1 (0.68-1.47) |  | 14/92 | 1.3 (0.69-2.48) |  | 45/130 | 0.79 (0.54-1.16) |  | 23/130 | 0.94 (0.57-1.55) |  |
|  |  | TT | 3/5 | 0.98 (0.22-4.32) |  | 2/5 | 3.03 (0.54-16.87) |  | 2/7 | 0.6 (0.12-3.09) |  | 2/7 | 1.28 (0.25-6.56) |  |
|  |  | CT/TT vs. CC | 56/97 | 1 (0.68-1.45) | 0.99 | 16/97 | 1.41 (0.76-2.59) | 0.27 | 47/137 | 0.78 (0.54-1.13) | 0.19 | 25/137 | 0.96 (0.59-1.55) | 0.87 |
| MTHFR | rs9651118 | TT | 265/424 | 1.00 (ref) | 0.79 | 56/424 | 1.00 (ref) | 0.73 | 282/650 | 1.00 (ref) | 0.11 | 130/650 | 1.00 (ref) | 0.70 |
|  |  | TC | 99/199 | 0.9 (0.67-1.21) |  | 20/199 | 0.81 (0.47-1.4) |  | 17/56 | 0.66 (0.37-1.17) |  | 8/56 | 0.72 (0.33-1.58) |  |
|  |  | CC | 11/10 | 2.23 (0.91-5.5) |  | 2/10 | 1.78 (0.37-8.7) |  | 0/1 |  |  | 1/1 | 3.98 (0.24-67.17) |  |
|  |  | TC/CC vs. TT | 110/209 | 0.96 (0.72-1.29) | 0.78 | 22/209 | 0.85 (0.5-1.45) | 0.55 | 17/57 | 0.64 (0.36-1.14) | 0.13 | 9/57 | 0.79 (0.37-1.67) | 0.53 |
| MTHFR | rs17367504 | AA | 283/482 | 1.00 (ref) | 0.92 | 58/482 | 1.00 (ref) | 0.96 | 240/543 | 1.00 (ref) | 0.27 | 108/543 | 1.00 (ref) | 0.62 |
|  |  | AG | 87/140 | 1.07 (0.77-1.48) |  | 18/140 | 1.08 (0.61-1.93) |  | 61/157 | 0.9 (0.64-1.27) |  | 31/157 | 1.02 (0.65-1.6) |  |
|  |  | GG | 5/13 | 0.62 (0.21-1.83) |  | 1/13 | 0.58 (0.07-4.67) |  | 1/8 | 0.23 (0.03-1.95) |  | 0/8 |  |  |
|  |  | AG/GG vs. AA | 92/153 | 1.03 (0.75-1.41) | 0.87 | 19/153 | 1.04 (0.59-1.82) | 0.90 | 62/165 | 0.86 (0.62-1.21) | 0.40 | 31/165 | 0.96 (0.61-1.5) | 0.86 |
| MTR | rs10495384 | GG | 355/609 | 1.00 (ref) | 0.99 | 76/609 | 1.00 (ref) | 0.38 | 175/415 | 1.00 (ref) | 0.97 | 86/415 | 1.00 (ref) | 0.66 |
|  |  | GT | 19/23 | 1 (0.51-2) |  | 2/23 | 0.48 (0.09-2.47) |  | 111/253 | 1.05 (0.78-1.41) |  | 40/253 | 0.75 (0.5-1.14) |  |
|  |  | TT | 0/0 |  |  | 0/0 |  |  | 16/41 | 0.88 (0.47-1.63) |  | 12/41 | 1.22 (0.6-2.47) |  |
|  |  | GT/TT vs. GG | 19/23 | 1 (0.51-2) | 0.99 | 2/23 | 0.48 (0.09-2.47) | 0.38 | 127/294 | 1.03 (0.77-1.36) | 0.86 | 52/294 | 0.82 (0.56-1.21) | 0.32 |
| MTR | rs10733117 | AA | 124/209 | 1.00 (ref) | 0.52 | 27/209 | 1.00 (ref) | 0.34 | 66/159 | 1.00 (ref) | 0.71 | 29/159 | 1.00 (ref) | 0.53 |
|  |  | AG | 188/299 | 1.08 (0.8-1.47) |  | 40/299 | 1.03 (0.6-1.75) |  | 144/333 | 1.14 (0.79-1.63) |  | 64/333 | 1.18 (0.72-1.92) |  |
|  |  | GG | 63/126 | 0.84 (0.56-1.24) |  | 10/126 | 0.63 (0.29-1.37) |  | 92/217 | 1.09 (0.74-1.61) |  | 45/217 | 1.2 (0.71-2.02) |  |
|  |  | AG/GG vs. AA | 251/425 | 1.01 (0.76-1.34) | 0.95 | 50/425 | 0.91 (0.55-1.52) | 0.72 | 236/550 | 1.12 (0.8-1.57) | 0.51 | 109/550 | 1.18 (0.75-1.87) | 0.47 |
| MTR | rs3795708 | TT | 142/266 | 1.00 (ref) | 0.41 | 26/266 | 1.00 (ref) | 0.21 | 194/436 | 1.00 (ref) | 0.60 | 85/436 | 1.00 (ref) | 0.92 |
|  |  | TC | 180/277 | 1.27 (0.95-1.7) |  | 37/277 | 1.4 (0.81-2.42) |  | 91/239 | 0.85 (0.63-1.15) |  | 48/239 | 1.06 (0.71-1.58) |  |
|  |  | CC | 53/91 | 1.07 (0.7-1.62) |  | 13/91 | 1.48 (0.72-3.07) |  | 18/33 | 1.09 (0.59-2.03) |  | 6/33 | 0.93 (0.37-2.32) |  |
|  |  | TC/CC vs. TT | 233/368 | 1.22 (0.92-1.6) | 0.16 | 50/368 | 1.42 (0.85-2.38) | 0.18 | 109/272 | 0.88 (0.66-1.18) | 0.39 | 54/272 | 1.04 (0.71-1.54) | 0.83 |
| MTR | rs6668344 | CC | 138/260 | 1.00 (ref) | 0.37 | 25/260 | 1.00 (ref) | 0.15 | 167/353 | 1.00 (ref) | 0.04 | 64/353 | 1.00 (ref) | 0.93 |
|  |  | CT | 183/283 | 1.28 (0.96-1.72) |  | 37/283 | 1.39 (0.8-2.42) |  | 108/278 | 0.79 (0.59-1.07) |  | 63/278 | 1.29 (0.87-1.91) |  |
|  |  | TT | 54/91 | 1.08 (0.71-1.64) |  | 14/91 | 1.62 (0.79-3.32) |  | 28/78 | 0.66 (0.4-1.06) |  | 11/78 | 0.76 (0.38-1.53) |  |
|  |  | CT/TT vs. CC | 237/374 | 1.23 (0.93-1.63) | 0.14 | 51/374 | 1.45 (0.86-2.44) | 0.16 | 136/356 | 0.76 (0.57-1.01) | 0.05 | 74/356 | 1.17 (0.81-1.71) | 0.40 |
| MTR | rs1770449 | AA | 152/242 | 1.00 (ref) | 0.63 | 34/242 | 1.00 (ref) | 0.41 | 256/602 | 1.00 (ref) | 0.86 | 119/602 | 1.00 (ref) | 0.91 |
|  |  | AG | 167/291 | 0.97 (0.73-1.31) |  | 34/291 | 0.88 (0.52-1.49) |  | 45/105 | 0.99 (0.66-1.47) |  | 19/105 | 1 (0.58-1.74) |  |
|  |  | GG | 56/100 | 0.9 (0.6-1.35) |  | 10/100 | 0.73 (0.34-1.58) |  | 1/2 | 0.61 (0.05-7.18) |  | 0/2 |  |  |
|  |  | AG/GG vs. AA | 223/391 | 0.95 (0.72-1.26) | 0.74 | 44/391 | 0.84 (0.52-1.38) | 0.49 | 46/107 | 0.98 (0.65-1.46) | 0.91 | 19/107 | 0.99 (0.57-1.72) | 0.96 |
| MTR | rs1805087 | AA | 235/408 | 1.00 (ref) | 0.70 | 52/408 | 1.00 (ref) | 0.32 | 162/387 | 1.00 (ref) | 0.92 | 82/387 | 1.00 (ref) | 0.34 |
|  |  | AG | 127/191 | 1.2 (0.9-1.61) |  | 24/191 | 0.96 (0.57-1.64) |  | 118/273 | 1.03 (0.77-1.38) |  | 47/273 | 0.82 (0.55-1.23) |  |
|  |  | GG | 13/36 | 0.49 (0.24-1) |  | 2/36 | 0.33 (0.07-1.64) |  | 22/49 | 0.99 (0.57-1.72) |  | 10/49 | 0.81 (0.39-1.7) |  |
|  |  | GG vs. AA/AG | 362/599 | 0.46 (0.23-0.93) | 0.03 | 76/599 | 0.34 (0.07-1.64) | 0.18 | 280/660 | 0.98 (0.57-1.68) | 0.94 | 129/660 | 0.88 (0.42-1.81) | 0.72 |
| MTR | rs2275565 | CC | 221/378 | 1.00 (ref) | 0.47 | 47/378 | 1.00 (ref) | 0.55 | 71/228 | 1.00 (ref) | 0.03 | 37/228 | 1.00 (ref) | 0.75 |
|  |  | CA | 131/199 | 1.12 (0.83-1.5) |  | 25/199 | 0.97 (0.57-1.65) |  | 157/332 | 1.59 (1.13-2.22) |  | 70/332 | 1.24 (0.8-1.94) |  |
|  |  | AA | 15/42 | 0.53 (0.27-1.03) |  | 3/42 | 0.6 (0.17-2.08) |  | 66/146 | 1.49 (0.99-2.25) |  | 27/146 | 1.06 (0.61-1.84) |  |
|  |  | CA/AA vs. CC | 146/241 | 1.01 (0.77-1.34) | 0.92 | 28/241 | 0.91 (0.55-1.52) | 0.73 | 223/478 | 1.56 (1.13-2.14) | 0.01 | 97/478 | 1.19 (0.78-1.81) | 0.42 |
| MTR | rs1050993 | GG | 151/240 | 1.00 (ref) | 0.44 | 33/240 | 1.00 (ref) | 0.36 | 255/589 | 1.00 (ref) | 0.92 | 120/589 | 1.00 (ref) | 0.49 |
|  |  | GA | 163/279 | 0.99 (0.74-1.33) |  | 35/279 | 0.99 (0.59-1.67) |  | 38/107 | 0.81 (0.53-1.24) |  | 18/107 | 0.91 (0.52-1.59) |  |
|  |  | AA | 59/114 | 0.84 (0.56-1.24) |  | 10/114 | 0.66 (0.31-1.41) |  | 9/13 | 1.59 (0.64-3.96) |  | 1/13 | 0.46 (0.06-3.58) |  |
|  |  | GA/AA vs. GG | 222/393 | 0.94 (0.72-1.24) | 0.68 | 45/393 | 0.89 (0.54-1.46) | 0.64 | 47/120 | 0.89 (0.6-1.33) | 0.58 | 19/120 | 0.86 (0.5-1.49) | 0.59 |
| FTHFD | rs4646750 | AA | 315/551 | 1.00 (ref) | 0.32 | 71/551 | 1.00 (ref) | 0.29 | 235/573 | 1.00 (ref) | 0.21 | 110/573 | 1.00 (ref) | 0.89 |
|  |  | AG | 59/82 | 1.2 (0.82-1.76) |  | 7/82 | 0.67 (0.29-1.53) |  | 64/133 | 1.2 (0.85-1.69) |  | 29/133 | 1.09 (0.69-1.73) |  |
|  |  | GG | 1/2 | 1.55 (0.13-18.93) |  | 0/2 |  |  | 3/4 | 2.03 (0.41-9.9) |  | 0/4 |  |  |
|  |  | AG/GG vs. AA | 60/84 | 1.21 (0.82-1.77) | 0.33 | 7/84 | 0.65 (0.28-1.49) | 0.31 | 67/137 | 1.22 (0.87-1.71) | 0.25 | 29/137 | 1.07 (0.67-1.69) | 0.79 |
| FTHFD | rs4646745 | CC | 225/401 | 1.00 (ref) | 0.28 | 57/401 | 1.00 (ref) | 0.19 | 207/433 | 1.00 (ref) | 0.15 | 87/433 | 1.00 (ref) | 0.55 |
|  |  | CT | 129/207 | 1.1 (0.83-1.48) |  | 18/207 | 0.61 (0.34-1.08) |  | 81/254 | 0.65 (0.47-0.88) |  | 48/254 | 0.93 (0.63-1.37) |  |
|  |  | TT | 21/27 | 1.38 (0.73-2.61) |  | 3/27 | 0.99 (0.28-3.49) |  | 15/22 | 1.52 (0.75-3.06) |  | 3/22 | 0.69 (0.2-2.41) |  |
|  |  | CT/TT vs. CC | 150/234 | 1.14 (0.86-1.5) | 0.37 | 21/234 | 0.65 (0.38-1.11) | 0.11 | 96/276 | 0.71 (0.53-0.95) | 0.02 | 51/276 | 0.91 (0.62-1.34) | 0.63 |
| FTHFD | rs7609633 | TT | 122/233 | 1.00 (ref) | 0.31 | 26/233 | 1.00 (ref) | 0.60 | 122/300 | 1.00 (ref) | 0.40 | 66/300 | 1.00 (ref) | 0.39 |
|  |  | TA | 195/305 | 1.31 (0.97-1.77) |  | 40/305 | 1.19 (0.69-2.04) |  | 159/313 | 1.26 (0.94-1.69) |  | 58/313 | 0.85 (0.58-1.27) |  |
|  |  | AA | 57/96 | 1.13 (0.74-1.71) |  | 12/96 | 1.16 (0.55-2.44) |  | 20/93 | 0.54 (0.32-0.94) |  | 15/93 | 0.81 (0.44-1.51) |  |
|  |  | TA/AA vs. TT | 252/401 | 1.26 (0.95-1.68) | 0.11 | 52/401 | 1.18 (0.71-1.97) | 0.52 | 179/406 | 1.1 (0.83-1.46) | 0.50 | 73/406 | 0.85 (0.58-1.23) | 0.38 |
| FTHFD | rs13321483 | GG | 364/621 | 1.00 (ref) | 0.99 | 76/621 | 1.00 (ref) | 0.82 | 224/548 | 1.00 (ref) | 0.20 | 102/548 | 1.00 (ref) | 0.33 |
|  |  | GA | 10/12 | 1.12 (0.44-2.89) |  | 1/12 | 0.9 (0.11-7.29) |  | 71/154 | 1.16 (0.83-1.62) |  | 33/154 | 1.17 (0.75-1.82) |  |
|  |  | AA | 0/1 |  |  | 0/1 |  |  | 7/8 | 1.84 (0.64-5.32) |  | 3/8 | 1.75 (0.45-6.82) |  |
|  |  | GA/AA vs. GG | 10/13 | 1.06 (0.42-2.68) | 0.91 | 1/13 | 0.83 (0.1-6.66) | 0.86 | 78/162 | 1.2 (0.87-1.65) | 0.27 | 36/162 | 1.2 (0.78-1.85) | 0.40 |
| FTHFD | rs3772417 | CC | 154/291 | 1.00 (ref) | 0.45 | 34/291 | 1.00 (ref) | 0.71 | 227/533 | 1.00 (ref) | 0.96 | 102/533 | 1.00 (ref) | 0.98 |
|  |  | CG | 177/263 | 1.34 (1-1.79) |  | 34/263 | 1.13 (0.67-1.91) |  | 68/157 | 1.01 (0.73-1.42) |  | 35/157 | 1.18 (0.76-1.81) |  |
|  |  | GG | 41/79 | 0.97 (0.62-1.51) |  | 10/79 | 1.1 (0.51-2.35) |  | 7/18 | 0.91 (0.36-2.26) |  | 1/18 | 0.32 (0.04-2.49) |  |
|  |  | CG/GG vs. CC | 218/342 | 1.25 (0.95-1.64) | 0.11 | 44/342 | 1.12 (0.69-1.83) | 0.65 | 75/175 | 1 (0.73-1.39) | 0.98 | 36/175 | 1.1 (0.71-1.68) | 0.67 |
| FTHFD | rs1868127 | GG | 87/167 | 1.00 (ref) | 0.19 | 21/167 | 1.00 (ref) | 0.93 | 39/77 | 1.00 (ref) | 0.77 | 15/77 | 1.00 (ref) | 0.74 |
|  |  | GA | 185/318 | 1.14 (0.82-1.59) |  | 39/318 | 0.94 (0.53-1.67) |  | 120/299 | 0.74 (0.47-1.16) |  | 56/299 | 0.97 (0.51-1.83) |  |
|  |  | AA | 101/148 | 1.29 (0.88-1.89) |  | 18/148 | 0.97 (0.49-1.94) |  | 143/331 | 0.83 (0.53-1.29) |  | 67/331 | 1.05 (0.56-1.98) |  |
|  |  | GA/AA vs. GG | 286/466 | 1.19 (0.87-1.63) | 0.28 | 57/466 | 0.95 (0.55-1.64) | 0.85 | 263/630 | 0.78 (0.51-1.2) | 0.26 | 123/630 | 1.01 (0.56-1.85) | 0.97 |
| MTRR | rs1801394 | AA | 93/169 | 1.00 (ref) | 0.36 | 19/169 | 1.00 (ref) | 0.31 | 170/370 | 1.00 (ref) | 0.39 | 68/370 | 1.00 (ref) | 0.62 |
|  |  | AG | 199/325 | 1.19 (0.86-1.65) |  | 39/325 | 1.19 (0.65-2.16) |  | 111/287 | 0.85 (0.63-1.14) |  | 59/287 | 1.13 (0.76-1.67) |  |
|  |  | GG | 81/141 | 1.19 (0.8-1.77) |  | 19/141 | 1.44 (0.72-2.89) |  | 21/53 | 0.92 (0.53-1.6) |  | 11/53 | 1.08 (0.53-2.21) |  |
|  |  | AG/GG vs. AA | 280/466 | 1.19 (0.87-1.63) | 0.27 | 58/466 | 1.26 (0.71-2.22) | 0.43 | 132/340 | 0.86 (0.65-1.14) | 0.29 | 70/340 | 1.12 (0.77-1.63) | 0.55 |
| MTRR | rs1532268 | GG | 151/269 | 1.00 (ref) | 0.69 | 36/269 | 1.00 (ref) | 0.82 | 166/392 | 1.00 (ref) | 0.97 | 70/392 | 1.00 (ref) | 0.42 |
|  |  | GA | 182/269 | 1.18 (0.88-1.57) |  | 29/269 | 0.83 (0.49-1.41) |  | 120/279 | 0.97 (0.73-1.3) |  | 59/279 | 1.11 (0.76-1.64) |  |
|  |  | AA | 41/96 | 0.79 (0.51-1.22) |  | 13/96 | 1 (0.5-2.01) |  | 17/36 | 1.1 (0.59-2.04) |  | 9/36 | 1.34 (0.61-2.96) |  |
|  |  | GA/AA vs. GG | 223/365 | 1.08 (0.82-1.42) | 0.60 | 42/365 | 0.88 (0.54-1.43) | 0.60 | 137/315 | 0.98 (0.74-1.3) | 0.91 | 68/315 | 1.14 (0.79-1.66) | 0.49 |
| MTRR | rs162033 | CC | 127/247 | 1.00 (ref) | 0.22 | 25/247 | 1.00 (ref) | 0.14 | 43/98 | 1.00 (ref) | 0.82 | 23/98 | 1.00 (ref) | 0.82 |
|  |  | CT | 187/288 | 1.26 (0.93-1.69) |  | 37/288 | 1.3 (0.76-2.25) |  | 145/337 | 1.01 (0.66-1.53) |  | 61/337 | 0.81 (0.47-1.39) |  |
|  |  | TT | 57/96 | 1.21 (0.8-1.82) |  | 16/96 | 1.68 (0.84-3.38) |  | 115/272 | 1.04 (0.68-1.61) |  | 54/272 | 0.88 (0.51-1.53) |  |
|  |  | CT/TT vs. CC | 244/384 | 1.24 (0.94-1.65) | 0.13 | 53/384 | 1.39 (0.83-2.33) | 0.20 | 260/609 | 1.02 (0.69-1.52) | 0.91 | 115/609 | 0.84 (0.51-1.4) | 0.50 |
| MTRR | rs162036 | AA | 272/458 | 1.00 (ref) | 0.54 | 57/458 | 1.00 (ref) | 0.47 | 107/263 | 1.00 (ref) | 0.57 | 54/263 | 1.00 (ref) | 0.98 |
|  |  | AG | 89/160 | 0.86 (0.63-1.18) |  | 21/160 | 0.96 (0.55-1.67) |  | 148/338 | 1.1 (0.81-1.5) |  | 62/338 | 0.94 (0.62-1.41) |  |
|  |  | GG | 10/13 | 1.16 (0.46-2.92) |  | 0/13 |  |  | 46/107 | 1.1 (0.72-1.68) |  | 22/107 | 1.02 (0.59-1.79) |  |
|  |  | AG/GG vs. AA | 99/173 | 0.88 (0.65-1.2) | 0.41 | 21/173 | 0.91 (0.52-1.57) | 0.72 | 194/445 | 1.1 (0.83-1.47) | 0.51 | 84/445 | 0.96 (0.65-1.41) | 0.84 |
| MTRR | rs162039 | CC | 273/459 | 1.00 (ref) | 0.62 | 57/459 | 1.00 (ref) | 0.46 | 94/213 | 1.00 (ref) | 0.98 | 44/213 | 1.00 (ref) | 0.66 |
|  |  | CT | 90/161 | 0.85 (0.62-1.17) |  | 21/161 | 0.96 (0.55-1.66) |  | 150/358 | 1 (0.73-1.37) |  | 61/358 | 0.83 (0.54-1.29) |  |
|  |  | TT | 11/13 | 1.3 (0.53-3.19) |  | 0/13 |  |  | 59/139 | 1 (0.67-1.49) |  | 34/139 | 1.17 (0.7-1.94) |  |
|  |  | CT/TT vs. CC | 101/174 | 0.88 (0.65-1.2) | 0.43 | 21/174 | 0.9 (0.52-1.57) | 0.72 | 209/497 | 1 (0.74-1.35) | 0.99 | 95/497 | 0.93 (0.62-1.39) | 0.71 |
| MTRR | rs162049 | AA | 224/362 | 1.00 (ref) | 0.17 | 51/362 | 1.00 (ref) | 0.37 | 224/531 | 1.00 (ref) | 0.86 | 107/531 | 1.00 (ref) | 0.95 |
|  |  | AG | 138/238 | 0.92 (0.7-1.23) |  | 23/238 | 0.72 (0.43-1.23) |  | 69/166 | 0.95 (0.69-1.33) |  | 22/166 | 0.66 (0.4-1.08) |  |
|  |  | GG | 10/25 | 0.49 (0.22-1.1) |  | 4/25 | 0.96 (0.31-3.01) |  | 7/10 | 1.54 (0.56-4.23) |  | 7/10 | 3.24 (1.15-9.15) |  |
|  |  | AG/GG vs. AA | 148/263 | 0.88 (0.67-1.16) | 0.36 | 27/263 | 0.75 (0.45-1.25) | 0.27 | 76/176 | 0.99 (0.72-1.36) | 0.94 | 29/176 | 0.8 (0.51-1.27) | 0.35 |
| MTRR | rs10380 | CC | 286/485 | 1.00 (ref) | 0.44 | 60/485 | 1.00 (ref) | 0.42 | 126/310 | 1.00 (ref) | 0.40 | 61/310 | 1.00 (ref) | 0.87 |
|  |  | CT | 80/137 | 0.91 (0.66-1.27) |  | 17/137 | 0.91 (0.5-1.67) |  | 141/325 | 1.11 (0.83-1.49) |  | 63/325 | 1.04 (0.7-1.54) |  |
|  |  | TT | 6/11 | 0.67 (0.21-2.11) |  | 0/11 |  |  | 34/69 | 1.18 (0.74-1.9) |  | 14/69 | 1.03 (0.54-1.98) |  |
|  |  | CT/TT vs. CC | 86/148 | 0.9 (0.65-1.24) | 0.50 | 17/148 | 0.87 (0.48-1.59) | 0.65 | 175/394 | 1.12 (0.85-1.49) | 0.42 | 77/394 | 1.04 (0.71-1.51) | 0.86 |
| MTRR | rs327593 | TT | 360/608 | 1.00 (ref) | 0.80 | 74/608 | 1.00 (ref) | 0.80 | 277/637 | 1.00 (ref) | 0.45 | 124/637 | 1.00 (ref) | 0.63 |
|  |  | TC | 14/27 | 0.91 (0.46-1.83) |  | 4/27 | 1.15 (0.38-3.5) |  | 25/70 | 0.88 (0.54-1.44) |  | 14/70 | 1.09 (0.59-2.02) |  |
|  |  | CC | 0/0 |  |  | 0/0 |  |  | 0/2 |  |  | 1/2 | 2.19 (0.16-29.13) |  |
|  |  | TC/CC vs. TT | 14/27 | 0.91 (0.46-1.83) | 0.80 | 4/27 | 1.15 (0.38-3.5) | 0.80 | 25/72 | 0.85 (0.52-1.39) | 0.53 | 15/72 | 1.13 (0.62-2.05) | 0.70 |
| MTRR | rs327592 | TT | 275/460 | 1.00 (ref) | 0.58 | 57/460 | 1.00 (ref) | 0.47 | 107/266 | 1.00 (ref) | 0.46 | 54/266 | 1.00 (ref) | 0.92 |
|  |  | TC | 89/161 | 0.85 (0.62-1.16) |  | 21/161 | 0.96 (0.55-1.67) |  | 150/337 | 1.14 (0.84-1.55) |  | 60/337 | 0.94 (0.62-1.41) |  |
|  |  | CC | 11/13 | 1.29 (0.53-3.17) |  | 0/13 |  |  | 45/104 | 1.13 (0.73-1.73) |  | 22/104 | 1.08 (0.61-1.88) |  |
|  |  | TC/CC vs. TT | 100/174 | 0.88 (0.65-1.19) | 0.40 | 21/174 | 0.91 (0.52-1.57) | 0.73 | 195/441 | 1.14 (0.85-1.52) | 0.38 | 82/441 | 0.97 (0.66-1.43) | 0.87 |
| MTRR | rs10520873 | AA | 205/384 | 1.00 (ref) | 0.06 | 39/384 | 1.00 (ref) | 0.04 | 263/587 | 1.00 (ref) | 0.14 | 120/587 | 1.00 (ref) | 0.58 |
|  |  | AG | 147/209 | 1.42 (1.07-1.9) |  | 32/209 | 1.65 (0.99-2.76) |  | 39/117 | 0.77 (0.51-1.15) |  | 18/117 | 0.83 (0.48-1.44) |  |
|  |  | GG | 22/41 | 1.16 (0.65-2.05) |  | 7/41 | 1.9 (0.77-4.68) |  | 1/5 | 0.43 (0.05-3.89) |  | 1/5 | 1.11 (0.12-10.16) |  |
|  |  | AG/GG vs. AA | 169/250 | 1.38 (1.05-1.82) | 0.02 | 39/250 | 1.69 (1.04-2.76) | 0.04 | 40/122 | 0.75 (0.5-1.12) | 0.16 | 19/122 | 0.84 (0.49-1.44) | 0.54 |
| BHMT | rs6894156 | CC | 306/544 | 1.00 (ref) | 0.25 | 66/544 | 1.00 (ref) | 0.94 | 248/606 | 1.00 (ref) | 0.25 | 116/606 | 1.00 (ref) | 0.86 |
|  |  | CT | 64/85 | 1.22 (0.84-1.78) |  | 11/85 | 1 (0.5-2.02) |  | 53/98 | 1.33 (0.91-1.94) |  | 23/98 | 1.15 (0.69-1.91) |  |
|  |  | TT | 5/6 | 1.41 (0.4-4.94) |  | 1/6 | 1.16 (0.13-10.13) |  | 1/5 | 0.51 (0.06-4.59) |  | 0/5 |  |  |
|  |  | CT/TT vs. CC | 69/91 | 1.23 (0.86-1.77) | 0.25 | 12/91 | 1.02 (0.52-1.99) | 0.97 | 54/103 | 1.29 (0.89-1.87) | 0.18 | 23/103 | 1.1 (0.67-1.82) | 0.71 |
| BHMT | rs7700970 | CC | 183/297 | 1.00 (ref) | 0.12 | 42/297 | 1.00 (ref) | 0.32 | 97/233 | 1.00 (ref) | 0.45 | 39/233 | 1.00 (ref) | 0.30 |
|  |  | CT | 162/272 | 0.97 (0.73-1.29) |  | 27/272 | 0.72 (0.43-1.21) |  | 155/328 | 1.1 (0.8-1.51) |  | 65/328 | 1.13 (0.73-1.75) |  |
|  |  | TT | 30/66 | 0.6 (0.36-0.99) |  | 9/66 | 0.81 (0.36-1.8) |  | 50/149 | 0.81 (0.54-1.22) |  | 34/149 | 1.31 (0.79-2.19) |  |
|  |  | CT/TT vs. CC | 192/338 | 0.89 (0.68-1.17) | 0.40 | 36/338 | 0.74 (0.45-1.2) | 0.22 | 205/477 | 1.01 (0.75-1.36) | 0.94 | 99/477 | 1.19 (0.79-1.79) | 0.41 |
| BHMT | rs567754 | CC | 159/267 | 1.00 (ref) | 0.63 | 44/267 | 1.00 (ref) | 0.06 | 254/618 | 1.00 (ref) | 0.39 | 124/618 | 1.00 (ref) | 0.52 |
|  |  | CT | 171/291 | 1.08 (0.81-1.43) |  | 27/291 | 0.61 (0.36-1.02) |  | 45/86 | 1.28 (0.84-1.94) |  | 14/86 | 0.89 (0.48-1.68) |  |
|  |  | TT | 42/74 | 1.08 (0.69-1.69) |  | 7/74 | 0.59 (0.25-1.39) |  | 1/5 | 0.57 (0.06-5.06) |  | 0/5 |  |  |
|  |  | CT/TT vs. CC | 213/365 | 1.08 (0.82-1.42) | 0.60 | 34/365 | 0.6 (0.37-0.98) | 0.04 | 46/91 | 1.24 (0.82-1.88) | 0.30 | 14/91 | 0.85 (0.45-1.61) | 0.62 |
| BHMT | rs694290 | TT | 191/341 | 1.00 (ref) | 0.95 | 38/341 | 1.00 (ref) | 0.22 | 91/220 | 1.00 (ref) | 0.48 | 43/220 | 1.00 (ref) | 0.73 |
|  |  | TC | 160/243 | 1.14 (0.86-1.51) |  | 28/243 | 1.01 (0.59-1.72) |  | 154/334 | 1.08 (0.79-1.49) |  | 65/334 | 0.96 (0.62-1.48) |  |
|  |  | CC | 24/50 | 0.82 (0.47-1.41) |  | 11/50 | 1.92 (0.89-4.13) |  | 58/156 | 0.84 (0.56-1.25) |  | 31/156 | 0.91 (0.54-1.54) |  |
|  |  | TC/CC vs. TT | 184/293 | 1.08 (0.83-1.42) | 0.56 | 39/293 | 1.16 (0.71-1.9) | 0.54 | 212/490 | 1 (0.74-1.36) | 0.98 | 96/490 | 0.95 (0.63-1.42) | 0.79 |
| BHMT | rs3733890 | GG | 172/290 | 1.00 (ref) | 0.54 | 35/290 | 1.00 (ref) | 0.86 | 180/435 | 1.00 (ref) | 0.77 | 79/435 | 1.00 (ref) | 0.45 |
|  |  | GA | 164/274 | 1.02 (0.77-1.36) |  | 33/274 | 0.98 (0.58-1.65) |  | 109/239 | 1.1 (0.82-1.48) |  | 54/239 | 1.32 (0.89-1.94) |  |
|  |  | AA | 39/71 | 0.81 (0.51-1.28) |  | 10/71 | 1.12 (0.51-2.44) |  | 12/35 | 0.9 (0.45-1.82) |  | 5/35 | 0.82 (0.31-2.2) |  |
|  |  | GA/AA vs. GG | 203/345 | 0.97 (0.74-1.28) | 0.85 | 43/345 | 1.01 (0.62-1.65) | 0.97 | 121/274 | 1.08 (0.81-1.43) | 0.61 | 59/274 | 1.25 (0.86-1.83) | 0.24 |
| BHMT | rs585800 | AA | 222/388 | 1.00 (ref) | 0.45 | 45/388 | 1.00 (ref) | 0.08 | 268/649 | 1.00 (ref) | 0.14 | 124/649 | 1.00 (ref) | 0.24 |
|  |  | AT | 132/218 | 1.07 (0.8-1.43) |  | 23/218 | 0.89 (0.51-1.54) |  | 34/55 | 1.6 (1-2.56) |  | 14/55 | 1.46 (0.77-2.77) |  |
|  |  | TT | 19/27 | 1.26 (0.66-2.38) |  | 10/27 | 3.56 (1.56-8.15) |  | 1/4 | 0.51 (0.06-4.7) |  | 1/4 | 1.52 (0.16-14.16) |  |
|  |  | AT/TT vs. AA | 151/245 | 1.09 (0.83-1.44) | 0.53 | 33/245 | 1.16 (0.71-1.91) | 0.55 | 35/59 | 1.51 (0.95-2.39) | 0.08 | 15/59 | 1.46 (0.79-2.72) | 0.23 |
| DHFR | rs1643638 | TT | 191/302 | 1.00 (ref) | 0.08 | 31/302 | 1.00 (ref) | 0.47 | 142/355 | 1.00 (ref) | 0.49 | 61/355 | 1.00 (ref) | 0.53 |
|  |  | TC | 140/254 | 0.83 (0.62-1.12) |  | 42/254 | 1.66 (1-2.77) |  | 130/282 | 1.19 (0.89-1.6) |  | 63/282 | 1.27 (0.86-1.88) |  |
|  |  | CC | 29/61 | 0.68 (0.41-1.13) |  | 5/61 | 0.78 (0.28-2.14) |  | 19/51 | 0.98 (0.55-1.74) |  | 8/51 | 0.92 (0.41-2.06) |  |
|  |  | TC/CC vs. TT | 169/315 | 0.8 (0.61-1.06) | 0.12 | 47/315 | 1.49 (0.9-2.44) | 0.12 | 149/333 | 1.16 (0.87-1.54) | 0.30 | 71/333 | 1.22 (0.84-1.79) | 0.30 |
| DHFR | rs1643658 | TT | 206/317 | 1.00 (ref) | 0.03 | 33/317 | 1.00 (ref) | 0.47 | 152/377 | 1.00 (ref) | 0.43 | 65/377 | 1.00 (ref) | 0.39 |
|  |  | TC | 137/257 | 0.78 (0.59-1.05) |  | 39/257 | 1.49 (0.9-2.48) |  | 130/276 | 1.21 (0.9-1.61) |  | 63/276 | 1.3 (0.88-1.91) |  |
|  |  | CC | 28/60 | 0.63 (0.38-1.06) |  | 6/60 | 0.93 (0.36-2.39) |  | 20/53 | 1.01 (0.57-1.77) |  | 9/53 | 1.02 (0.48-2.2) |  |
|  |  | TC/CC vs. TT | 165/317 | 0.76 (0.57-0.99) | 0.04 | 45/317 | 1.38 (0.84-2.26) | 0.20 | 150/329 | 1.17 (0.89-1.55) | 0.26 | 72/329 | 1.25 (0.86-1.82) | 0.23 |
| DHFR | rs11951910 | TT | 310/498 | 1.00 (ref) | 0.07 | 60/498 | 1.00 (ref) | 0.78 | 200/456 | 1.00 (ref) | 0.47 | 86/456 | 1.00 (ref) | 0.93 |
|  |  | TC | 61/125 | 0.73 (0.51-1.05) |  | 17/125 | 1.14 (0.63-2.05) |  | 97/223 | 1 (0.74-1.36) |  | 49/223 | 1.12 (0.76-1.66) |  |
|  |  | CC | 3/9 | 0.58 (0.15-2.29) |  | 1/9 | 0.82 (0.1-6.95) |  | 6/30 | 0.54 (0.22-1.34) |  | 4/30 | 0.73 (0.25-2.14) |  |
|  |  | TC/CC vs. TT | 64/134 | 0.72 (0.51-1.02) | 0.07 | 18/134 | 1.11 (0.63-1.98) | 0.72 | 103/253 | 0.95 (0.71-1.28) | 0.75 | 53/253 | 1.08 (0.73-1.58) | 0.71 |
| DHFR | rs11742668 | TT | 331/541 | 1.00 (ref) | 0.46 | 65/541 | 1.00 (ref) | 0.54 | 276/630 | 1.00 (ref) | 0.38 | 122/630 | 1.00 (ref) | 0.81 |
|  |  | TC | 43/89 | 0.88 (0.58-1.32) |  | 12/89 | 1.18 (0.6-2.32) |  | 25/78 | 0.77 (0.47-1.24) |  | 15/78 | 0.99 (0.55-1.8) |  |
|  |  | CC | 1/3 | 0.57 (0.05-6.41) |  | 1/3 | 1.77 (0.15-20.44) |  | 1/2 | 1.67 (0.15-19.06) |  | 1/2 | 2.54 (0.22-29.08) |  |
|  |  | TC/CC vs. TT | 44/92 | 0.87 (0.58-1.3) | 0.49 | 13/92 | 1.2 (0.62-2.33) | 0.58 | 26/80 | 0.79 (0.49-1.26) | 0.32 | 16/80 | 1.03 (0.58-1.84) | 0.92 |
| DHFR | rs10072026 | TT | 316/526 | 1.00 (ref) | 0.43 | 61/526 | 1.00 (ref) | 0.70 | 92/227 | 1.00 (ref) | 0.68 | 34/227 | 1.00 (ref) | 0.50 |
|  |  | TC | 58/103 | 0.97 (0.66-1.41) |  | 15/103 | 1.24 (0.66-2.34) |  | 156/326 | 1.18 (0.86-1.62) |  | 76/326 | 1.52 (0.98-2.38) |  |
|  |  | CC | 1/6 | 0.14 (0.01-1.62) |  | 1/6 | 0.64 (0.06-6.5) |  | 55/157 | 0.87 (0.58-1.31) |  | 28/157 | 1.15 (0.66-1.99) |  |
|  |  | TC/CC vs. TT | 59/109 | 0.92 (0.63-1.33) | 0.64 | 16/109 | 1.19 (0.64-2.21) | 0.58 | 211/483 | 1.08 (0.8-1.46) | 0.61 | 104/483 | 1.4 (0.92-2.15) | 0.12 |
| DHFR | rs1650697 | CC | 202/344 | 1.00 (ref) | 0.72 | 45/344 | 1.00 (ref) | 0.85 | 240/564 | 1.00 (ref) | 0.68 | 115/564 | 1.00 (ref) | 0.41 |
|  |  | CT | 134/228 | 0.97 (0.72-1.3) |  | 22/228 | 0.78 (0.45-1.36) |  | 48/115 | 0.92 (0.63-1.35) |  | 20/115 | 0.85 (0.5-1.44) |  |
|  |  | TT | 26/38 | 1.23 (0.71-2.14) |  | 6/38 | 1.29 (0.5-3.28) |  | 2/4 | 0.98 (0.17-5.76) |  | 0/4 |  |  |
|  |  | CT/TT vs. CC | 160/266 | 1.01 (0.76-1.33) | 0.97 | 28/266 | 0.85 (0.51-1.43) | 0.54 | 50/119 | 0.92 (0.63-1.34) | 0.66 | 20/119 | 0.82 (0.49-1.4) | 0.47 |
| MTHFD1 | rs2295640 | CC | 311/511 | 1.00 (ref) | 0.10 | 65/511 | 1.00 (ref) | 0.22 | 295/677 | 1.00 (ref) | 0.20 | 136/677 | 1.00 (ref) | 0.48 |
|  |  | CG | 57/109 | 0.82 (0.57-1.18) |  | 13/109 | 0.86 (0.45-1.64) |  | 8/30 | 0.58 (0.25-1.33) |  | 3/30 | 0.64 (0.19-2.17) |  |
|  |  | GG | 4/12 | 0.43 (0.13-1.38) |  | 0/12 |  |  | 0/0 |  |  | 0/0 |  |  |
|  |  | CG/GG vs. CC | 61/121 | 0.77 (0.54-1.1) | 0.16 | 13/121 | 0.74 (0.39-1.42) | 0.37 | 8/30 | 0.58 (0.25-1.33) | 0.20 | 3/30 | 0.64 (0.19-2.17) | 0.48 |
| MTHFD1 | rs3783728 | TT | 311/529 | 1.00 (ref) | 0.80 | 65/529 | 1.00 (ref) | 0.86 | 285/683 | 1.00 (ref) | 0.17 | 134/683 | 1.00 (ref) | 0.93 |
|  |  | TC | 58/101 | 0.98 (0.67-1.42) |  | 13/101 | 1.14 (0.59-2.18) |  | 17/27 | 1.57 (0.83-2.99) |  | 5/27 | 1.05 (0.38-2.84) |  |
|  |  | CC | 4/5 | 1.81 (0.46-7.18) |  | 0/5 |  |  | 0/0 |  |  | 0/0 |  |  |
|  |  | TC/CC vs. TT | 62/106 | 1.01 (0.7-1.45) | 0.95 | 13/106 | 1.1 (0.58-2.11) | 0.77 | 17/27 | 1.57 (0.83-2.99) | 0.17 | 5/27 | 1.05 (0.38-2.84) | 0.93 |
| MTHFD1 | rs3783726 | GG | 224/380 | 1.00 (ref) | 0.59 | 51/380 | 1.00 (ref) | 0.21 | 263/637 | 1.00 (ref) | 0.12 | 123/637 | 1.00 (ref) | 0.48 |
|  |  | GA | 128/220 | 1.06 (0.79-1.41) |  | 26/220 | 0.89 (0.53-1.49) |  | 39/70 | 1.33 (0.86-2.06) |  | 16/70 | 1.24 (0.69-2.24) |  |
|  |  | AA | 23/35 | 1.15 (0.64-2.06) |  | 1/35 | 0.22 (0.03-1.7) |  | 1/0 |  |  | 0/0 |  |  |
|  |  | GA/AA vs. GG | 151/255 | 1.07 (0.81-1.41) | 0.64 | 27/255 | 0.8 (0.49-1.33) | 0.40 | 40/70 | 1.37 (0.89-2.11) | 0.16 | 16/70 | 1.24 (0.69-2.24) | 0.48 |
| MTHFD1 | rs2236225 | CC | 124/204 | 1.00 (ref) | 0.67 | 18/204 | 1.00 (ref) | 0.28 | 202/433 | 1.00 (ref) | 0.01 | 79/433 | 1.00 (ref) | 0.66 |
|  |  | CT | 183/304 | 1.03 (0.76-1.39) |  | 45/304 | 1.64 (0.91-2.96) |  | 91/229 | 0.82 (0.6-1.11) |  | 53/229 | 1.24 (0.84-1.84) |  |
|  |  | TT | 68/127 | 0.9 (0.61-1.33) |  | 15/127 | 1.41 (0.67-2.94) |  | 10/48 | 0.42 (0.2-0.86) |  | 7/48 | 0.85 (0.36-1.96) |  |
|  |  | CT/TT vs. CC | 251/431 | 0.99 (0.74-1.32) | 0.95 | 60/431 | 1.58 (0.9-2.78) | 0.11 | 101/277 | 0.75 (0.56-1) | 0.05 | 60/277 | 1.18 (0.81-1.71) | 0.40 |
| MTHFD1 | rs1256143 | CC | 340/571 | 1.00 (ref) | 0.69 | 73/571 | 1.00 (ref) | 0.24 | 201/463 | 1.00 (ref) | 0.22 | 95/463 | 1.00 (ref) | 0.13 |
|  |  | CT | 34/61 | 0.96 (0.6-1.52) |  | 5/61 | 0.63 (0.24-1.67) |  | 97/221 | 0.97 (0.72-1.31) |  | 41/221 | 0.84 (0.56-1.26) |  |
|  |  | TT | 1/3 | 0.47 (0.04-5.15) |  | 0/3 |  |  | 4/26 | 0.33 (0.11-0.99) |  | 2/26 | 0.32 (0.07-1.41) |  |
|  |  | CT/TT vs. CC | 35/64 | 0.93 (0.59-1.47) | 0.77 | 5/64 | 0.59 (0.22-1.55) | 0.28 | 101/247 | 0.9 (0.67-1.21) | 0.50 | 43/247 | 0.78 (0.53-1.17) | 0.24 |
| SHMT1 | rs9902011 | TT | 364/610 | 1.00 (ref) | 0.18 | 75/610 | 1.00 (ref) | 0.95 | 201/490 | 1.00 (ref) | 0.47 | 94/490 | 1.00 (ref) | 0.89 |
|  |  | TC | 11/25 | 0.58 (0.26-1.29) |  | 3/25 | 1.04 (0.3-3.64) |  | 94/192 | 1.23 (0.9-1.66) |  | 40/192 | 1.05 (0.7-1.59) |  |
|  |  | CC | 0/0 |  |  | 0/0 |  |  | 8/28 | 0.82 (0.36-1.86) |  | 5/28 | 0.97 (0.36-2.62) |  |
|  |  | TC/CC vs. TT | 11/25 | 0.58 (0.26-1.29) | 0.18 | 3/25 | 1.04 (0.3-3.64) | 0.95 | 102/220 | 1.18 (0.88-1.58) | 0.28 | 45/220 | 1.04 (0.7-1.55) | 0.84 |
| SHMT1 | rs1979277 | GG | 176/299 | 1.00 (ref) | 0.31 | 42/299 | 1.00 (ref) | 0.26 | 137/340 | 1.00 (ref) | 0.30 | 66/340 | 1.00 (ref) | 0.74 |
|  |  | GA | 153/274 | 1 (0.75-1.33) |  | 32/274 | 0.84 (0.51-1.39) |  | 115/277 | 1.01 (0.74-1.36) |  | 56/277 | 0.98 (0.66-1.46) |  |
|  |  | AA | 44/61 | 1.38 (0.88-2.18) |  | 4/61 | 0.56 (0.19-1.66) |  | 48/92 | 1.31 (0.86-1.98) |  | 16/92 | 0.89 (0.49-1.63) |  |
|  |  | GA/AA vs. GG | 197/335 | 1.07 (0.81-1.4) | 0.64 | 36/335 | 0.79 (0.49-1.29) | 0.35 | 163/369 | 1.08 (0.82-1.42) | 0.59 | 72/369 | 0.96 (0.66-1.39) | 0.83 |
| SHMT1 | rs8080285 | TT | 363/608 | 1.00 (ref) | 0.09 | 75/608 | 1.00 (ref) | 0.85 | 161/412 | 1.00 (ref) | 0.48 | 75/412 | 1.00 (ref) | 0.63 |
|  |  | TG | 11/27 | 0.5 (0.23-1.12) |  | 3/27 | 0.88 (0.25-3.11) |  | 126/238 | 1.39 (1.04-1.87) |  | 52/238 | 1.12 (0.75-1.67) |  |
|  |  | GG | 0/0 |  |  | 0/0 |  |  | 16/59 | 0.74 (0.41-1.34) |  | 12/59 | 1.09 (0.55-2.15) |  |
|  |  | TG/GG vs. TT | 11/27 | 0.5 (0.23-1.12) | 0.09 | 3/27 | 0.88 (0.25-3.11) | 0.85 | 142/297 | 1.27 (0.96-1.68) | 0.10 | 64/297 | 1.11 (0.77-1.62) | 0.57 |
| SHMT1 | rs2273029 | CC | 199/381 | 1.00 (ref) | 0.32 | 45/381 | 1.00 (ref) | 0.38 | 223/513 | 1.00 (ref) | 0.71 | 105/513 | 1.00 (ref) | 0.28 |
|  |  | CT | 152/210 | 1.42 (1.07-1.89) |  | 23/210 | 0.91 (0.53-1.56) |  | 73/179 | 0.92 (0.66-1.27) |  | 32/179 | 0.85 (0.55-1.32) |  |
|  |  | TT | 24/43 | 0.8 (0.45-1.41) |  | 10/43 | 1.78 (0.82-3.85) |  | 7/16 | 1.04 (0.41-2.64) |  | 1/16 | 0.37 (0.05-2.86) |  |
|  |  | CT/TT vs. CC | 176/253 | 1.3 (0.99-1.71) | 0.06 | 33/253 | 1.07 (0.65-1.74) | 0.79 | 80/195 | 0.93 (0.68-1.27) | 0.64 | 33/195 | 0.82 (0.53-1.26) | 0.36 |
| SHMT1 | rs2168781 | GG | 124/207 | 1.00 (ref) | 0.49 | 29/207 | 1.00 (ref) | 0.36 | 22/82 | 1.00 (ref) | 0.02 | 15/82 | 1.00 (ref) | 0.87 |
|  |  | GC | 174/307 | 1 (0.74-1.36) |  | 37/307 | 0.84 (0.5-1.43) |  | 118/294 | 1.5 (0.88-2.55) |  | 57/294 | 1.03 (0.55-1.94) |  |
|  |  | CC | 77/121 | 1.17 (0.79-1.72) |  | 12/121 | 0.72 (0.34-1.51) |  | 162/332 | 1.85 (1.1-3.11) |  | 66/332 | 1.05 (0.56-1.97) |  |
|  |  | GC/CC vs. GG | 251/428 | 1.05 (0.79-1.39) | 0.76 | 49/428 | 0.81 (0.49-1.34) | 0.41 | 280/626 | 1.68 (1.01-2.77) | 0.04 | 123/626 | 1.04 (0.58-1.89) | 0.89 |
| SHMT1 | rs2273027 | GG | 139/265 | 1.00 (ref) | 0.50 | 33/265 | 1.00 (ref) | 0.28 | 78/193 | 1.00 (ref) | 0.46 | 36/193 | 1.00 (ref) | 0.80 |
|  |  | GA | 181/288 | 1.17 (0.88-1.57) |  | 23/288 | 0.58 (0.32-1.03) |  | 136/329 | 1.05 (0.75-1.47) |  | 65/329 | 1.03 (0.65-1.61) |  |
|  |  | AA | 54/82 | 1.08 (0.7-1.64) |  | 21/82 | 1.79 (0.96-3.32) |  | 88/186 | 1.15 (0.79-1.68) |  | 37/186 | 1.07 (0.64-1.78) |  |
|  |  | GA/AA vs. GG | 235/370 | 1.15 (0.87-1.51) | 0.32 | 44/370 | 0.86 (0.53-1.41) | 0.55 | 224/515 | 1.09 (0.79-1.49) | 0.61 | 102/515 | 1.04 (0.68-1.59) | 0.85 |
| SHMT1 | rs4925180 | GG | 362/607 | 1.00 (ref) | 0.24 | 75/607 | 1.00 (ref) | 0.88 | 219/555 | 1.00 (ref) | 0.10 | 103/555 | 1.00 (ref) | 0.28 |
|  |  | GA | 11/22 | 0.65 (0.29-1.48) |  | 3/22 | 1.18 (0.33-4.2) |  | 73/140 | 1.36 (0.98-1.9) |  | 34/140 | 1.28 (0.83-1.98) |  |
|  |  | AA | 0/1 |  |  | 0/1 |  |  | 1/4 | 0.79 (0.09-7.18) |  | 1/4 | 1.23 (0.13-11.42) |  |
|  |  | GA/AA vs. GG | 11/23 | 0.63 (0.28-1.42) | 0.27 | 3/23 | 1.14 (0.32-4.03) | 0.84 | 74/144 | 1.35 (0.97-1.88) | 0.08 | 35/144 | 1.28 (0.83-1.97) | 0.27 |
| TYMS | rs2853533 | GG | 268/460 | 1.00 (ref) | 0.92 | 53/460 | 1.00 (ref) | 0.31 | 97/281 | 1.00 (ref) | 0.03 | 52/281 | 1.00 (ref) | 0.97 |
|  |  | GC | 100/164 | 1.02 (0.75-1.39) |  | 23/164 | 1.28 (0.75-2.19) |  | 149/311 | 1.46 (1.07-1.99) |  | 68/311 | 1.17 (0.78-1.76) |  |
|  |  | CC | 4/10 | 0.73 (0.21-2.53) |  | 2/10 | 1.61 (0.33-7.96) |  | 54/115 | 1.46 (0.96-2.2) |  | 19/115 | 0.9 (0.51-1.61) |  |
|  |  | GC/CC vs. GG | 104/174 | 1 (0.74-1.36) | 0.99 | 25/174 | 1.3 (0.77-2.2) | 0.33 | 203/426 | 1.46 (1.08-1.96) | 0.01 | 87/426 | 1.1 (0.75-1.62) | 0.63 |
| TYMS | rs502396 | TT | 89/159 | 1.00 (ref) | 0.37 | 15/159 | 1.00 (ref) | 0.13 | 33/68 | 1.00 (ref) | 0.75 | 13/68 | 1.00 (ref) | 0.97 |
|  |  | TC | 199/341 | 1.09 (0.78-1.52) |  | 41/341 | 1.38 (0.72-2.64) |  | 120/284 | 0.89 (0.55-1.44) |  | 54/284 | 0.92 (0.47-1.81) |  |
|  |  | CC | 86/135 | 1.2 (0.81-1.78) |  | 22/135 | 1.75 (0.85-3.6) |  | 149/357 | 0.9 (0.56-1.44) |  | 70/357 | 0.95 (0.49-1.83) |  |
|  |  | TC/CC vs. TT | 285/476 | 1.12 (0.82-1.54) | 0.47 | 63/476 | 1.49 (0.81-2.76) | 0.20 | 269/641 | 0.89 (0.57-1.41) | 0.63 | 124/641 | 0.94 (0.49-1.77) | 0.84 |
| TYMS | rs1001761 | CC | 88/162 | 1.00 (ref) | 0.50 | 18/162 | 1.00 (ref) | 0.62 | 13/35 | 1.00 (ref) | 0.38 | 7/35 | 1.00 (ref) | 0.78 |
|  |  | CT | 177/302 | 1.04 (0.74-1.45) |  | 41/302 | 1.22 (0.67-2.25) |  | 90/236 | 1.11 (0.55-2.23) |  | 44/236 | 0.94 (0.39-2.3) |  |
|  |  | TT | 74/114 | 1.16 (0.77-1.75) |  | 15/114 | 1.19 (0.56-2.51) |  | 170/387 | 1.25 (0.63-2.46) |  | 75/387 | 0.9 (0.38-2.15) |  |
|  |  | CT/TT vs. CC | 251/416 | 1.07 (0.78-1.47) | 0.68 | 56/416 | 1.21 (0.68-2.17) | 0.51 | 260/623 | 1.19 (0.61-2.33) | 0.61 | 119/623 | 0.92 (0.39-2.15) | 0.85 |
| TYMS | rs16948305 | CC | 293/468 | 1.00 (ref) | 0.14 | 58/468 | 1.00 (ref) | 0.93 | 241/548 | 1.00 (ref) | 0.54 | 110/548 | 1.00 (ref) | 0.64 |
|  |  | CT | 77/157 | 0.77 (0.56-1.07) |  | 18/157 | 0.96 (0.54-1.71) |  | 55/154 | 0.79 (0.56-1.13) |  | 27/154 | 0.85 (0.53-1.35) |  |
|  |  | TT | 5/10 | 0.83 (0.27-2.56) |  | 2/10 | 1.37 (0.28-6.64) |  | 7/8 | 1.68 (0.58-4.84) |  | 2/8 | 1.33 (0.27-6.61) |  |
|  |  | CT/TT vs. CC | 82/167 | 0.78 (0.57-1.07) | 0.12 | 20/167 | 0.99 (0.57-1.72) | 0.98 | 62/162 | 0.84 (0.6-1.18) | 0.32 | 29/162 | 0.87 (0.55-1.37) | 0.54 |
| TYMS | rs2612100 | GG | 146/268 | 1.00 (ref) | 0.11 | 32/268 | 1.00 (ref) | 0.50 | 40/99 | 1.00 (ref) | 0.70 | 16/99 | 1.00 (ref) | 0.90 |
|  |  | GA | 183/307 | 1.13 (0.85-1.51) |  | 36/307 | 1.01 (0.6-1.71) |  | 135/314 | 1.14 (0.74-1.75) |  | 64/314 | 1.23 (0.67-2.25) |  |
|  |  | AA | 45/57 | 1.48 (0.93-2.37) |  | 10/57 | 1.43 (0.65-3.15) |  | 127/297 | 1.12 (0.72-1.74) |  | 59/297 | 1.13 (0.61-2.08) |  |
|  |  | GA/AA vs. GG | 228/364 | 1.19 (0.9-1.56) | 0.23 | 46/364 | 1.08 (0.66-1.78) | 0.75 | 262/611 | 1.13 (0.75-1.7) | 0.55 | 123/611 | 1.18 (0.67-2.1) | 0.57 |
| TYMS | rs2298581 | GG | 226/386 | 1.00 (ref) | 0.81 | 46/386 | 1.00 (ref) | 0.45 | 170/385 | 1.00 (ref) | 1.00 | 77/385 | 1.00 (ref) | 0.62 |
|  |  | GC | 140/221 | 1.2 (0.9-1.59) |  | 28/221 | 1.21 (0.72-2.03) |  | 103/279 | 0.8 (0.6-1.08) |  | 53/279 | 0.94 (0.64-1.39) |  |
|  |  | CC | 9/28 | 0.58 (0.26-1.3) |  | 4/28 | 1.28 (0.42-3.95) |  | 28/46 | 1.4 (0.83-2.35) |  | 7/46 | 0.82 (0.35-1.9) |  |
|  |  | GC/CC vs. GG | 149/249 | 1.13 (0.86-1.49) | 0.39 | 32/249 | 1.21 (0.74-2) | 0.44 | 131/325 | 0.89 (0.67-1.17) | 0.39 | 60/325 | 0.92 (0.63-1.34) | 0.68 |
| CBS | rs3788050 | GG | 342/582 | 1.00 (ref) | 0.53 | 67/582 | 1.00 (ref) | 0.17 | 161/382 | 1.00 (ref) | 0.89 | 74/382 | 1.00 (ref) | 0.42 |
|  |  | GT | 31/51 | 0.94 (0.57-1.57) |  | 11/51 | 1.95 (0.94-4.07) |  | 121/269 | 1.04 (0.78-1.4) |  | 59/269 | 1.1 (0.75-1.62) |  |
|  |  | TT | 0/2 |  |  | 0/2 |  |  | 21/56 | 0.88 (0.51-1.53) |  | 6/56 | 0.48 (0.2-1.17) |  |
|  |  | GT/TT vs. GG | 31/53 | 0.9 (0.54-1.48) | 0.67 | 11/53 | 1.83 (0.88-3.81) | 0.11 | 142/325 | 1.02 (0.77-1.34) | 0.91 | 65/325 | 0.99 (0.68-1.43) | 0.95 |
| CBS | rs12329764 | GG | 330/549 | 1.00 (ref) | 0.71 | 66/549 | 1.00 (ref) | 0.84 | 171/402 | 1.00 (ref) | 0.95 | 72/402 | 1.00 (ref) | 0.39 |
|  |  | GA | 42/79 | 0.9 (0.59-1.37) |  | 12/79 | 1.17 (0.59-2.31) |  | 114/261 | 1.01 (0.76-1.36) |  | 58/261 | 1.24 (0.84-1.83) |  |
|  |  | AA | 2/5 | 1.16 (0.22-6.15) |  | 0/5 |  |  | 18/45 | 0.94 (0.52-1.71) |  | 9/45 | 1.11 (0.51-2.41) |  |
|  |  | GA/AA vs. GG | 44/84 | 0.91 (0.61-1.37) | 0.66 | 12/84 | 1.12 (0.57-2.22) | 0.74 | 132/306 | 1 (0.76-1.33) | 0.97 | 67/306 | 1.22 (0.84-1.78) | 0.29 |
| CBS | rs234706 | GG | 176/262 | 1.00 (ref) | 0.45 | 32/262 | 1.00 (ref) | 0.84 | 169/404 | 1.00 (ref) | 0.76 | 87/404 | 1.00 (ref) | 0.23 |
|  |  | GA | 162/303 | 0.92 (0.69-1.23) |  | 38/303 | 1.2 (0.72-2.02) |  | 114/261 | 1.04 (0.78-1.39) |  | 46/261 | 0.84 (0.57-1.25) |  |
|  |  | AA | 37/69 | 0.85 (0.54-1.36) |  | 6/69 | 0.71 (0.28-1.79) |  | 20/44 | 1.06 (0.6-1.89) |  | 6/44 | 0.63 (0.26-1.56) |  |
|  |  | GA/AA vs. GG | 199/372 | 0.91 (0.69-1.19) | 0.49 | 44/372 | 1.1 (0.67-1.81) | 0.71 | 134/305 | 1.04 (0.79-1.38) | 0.77 | 52/305 | 0.81 (0.55-1.19) | 0.28 |
| CBS | rs234715 | GG | 245/372 | 1.00 (ref) | 0.08 | 48/372 | 1.00 (ref) | 0.74 | 212/519 | 1.00 (ref) | 0.28 | 109/519 | 1.00 (ref) | 0.20 |
|  |  | GT | 116/232 | 0.83 (0.62-1.11) |  | 27/232 | 1.02 (0.61-1.71) |  | 79/176 | 1.05 (0.76-1.44) |  | 29/176 | 0.8 (0.51-1.26) |  |
|  |  | TT | 13/31 | 0.61 (0.31-1.23) |  | 3/31 | 0.68 (0.19-2.36) |  | 11/14 | 1.97 (0.85-4.56) |  | 1/14 | 0.38 (0.05-2.95) |  |
|  |  | GT/TT vs. GG | 129/263 | 0.8 (0.6-1.06) | 0.12 | 30/263 | 0.97 (0.59-1.6) | 0.91 | 90/190 | 1.11 (0.82-1.51) | 0.49 | 30/190 | 0.77 (0.49-1.2) | 0.25 |
| CBS | rs9982015 | TT | 330/550 | 1.00 (ref) | 0.75 | 65/550 | 1.00 (ref) | 0.62 | 211/490 | 1.00 (ref) | 0.83 | 94/490 | 1.00 (ref) | 0.99 |
|  |  | TC | 43/80 | 0.91 (0.6-1.38) |  | 13/80 | 1.29 (0.66-2.49) |  | 84/194 | 1.02 (0.75-1.4) |  | 41/194 | 1.1 (0.73-1.66) |  |
|  |  | CC | 2/5 | 1.17 (0.22-6.2) |  | 0/5 |  |  | 8/25 | 0.79 (0.34-1.82) |  | 3/25 | 0.69 (0.2-2.37) |  |
|  |  | TC/CC vs. TT | 45/85 | 0.92 (0.61-1.39) | 0.70 | 13/85 | 1.24 (0.64-2.39) | 0.53 | 92/219 | 1 (0.74-1.35) | 0.98 | 44/219 | 1.05 (0.7-1.57) | 0.80 |
| SLC19A1 | rs3788189 | TT | 105/197 | 1.00 (ref) | 0.84 | 23/197 | 1.00 (ref) | 0.23 | 27/112 | 1.00 (ref) | 0.36 | 18/112 | 1.00 (ref) | 0.65 |
|  |  | TG | 201/315 | 1.14 (0.83-1.55) |  | 45/315 | 1.11 (0.64-1.92) |  | 157/311 | 2.09 (1.3-3.35) |  | 62/311 | 1.2 (0.67-2.13) |  |
|  |  | GG | 69/122 | 0.92 (0.62-1.37) |  | 10/122 | 0.54 (0.24-1.23) |  | 119/287 | 1.64 (1.01-2.66) |  | 58/287 | 1.19 (0.66-2.13) |  |
|  |  | TG/GG vs. TT | 270/437 | 1.07 (0.8-1.44) | 0.63 | 55/437 | 0.95 (0.56-1.61) | 0.84 | 276/598 | 1.87 (1.19-2.95) | 0.01 | 120/598 | 1.19 (0.69-2.06) | 0.52 |
| SLC19A1 | rs2838956 | AA | 117/215 | 1.00 (ref) | 0.79 | 24/215 | 1.00 (ref) | 0.46 | 26/87 | 1.00 (ref) | 0.87 | 17/87 | 1.00 (ref) | 0.86 |
|  |  | AG | 193/310 | 1.07 (0.79-1.45) |  | 44/310 | 1.17 (0.68-2.01) |  | 143/298 | 1.58 (0.97-2.59) |  | 58/298 | 0.96 (0.53-1.75) |  |
|  |  | GG | 62/109 | 0.91 (0.61-1.37) |  | 10/109 | 0.65 (0.29-1.45) |  | 133/323 | 1.31 (0.79-2.15) |  | 64/323 | 0.95 (0.52-1.72) |  |
|  |  | AG/GG vs. AA | 255/419 | 1.03 (0.77-1.37) | 0.83 | 54/419 | 1.03 (0.61-1.74) | 0.91 | 276/621 | 1.44 (0.9-2.32) | 0.13 | 122/621 | 0.95 (0.54-1.68) | 0.87 |
| SLC19A1 | rs2838958 | AA | 107/190 | 1.00 (ref) | 0.50 | 24/190 | 1.00 (ref) | 0.13 | 11/50 | 1.00 (ref) | 0.55 | 10/50 | 1.00 (ref) | 0.80 |
|  |  | AG | 193/311 | 1.08 (0.79-1.48) |  | 43/311 | 1.08 (0.63-1.86) |  | 118/254 | 1.91 (0.94-3.85) |  | 48/254 | 0.8 (0.37-1.71) |  |
|  |  | GG | 74/132 | 0.85 (0.57-1.26) |  | 11/132 | 0.49 (0.22-1.08) |  | 173/404 | 1.75 (0.87-3.49) |  | 80/404 | 0.82 (0.39-1.72) |  |
|  |  | AG/GG vs. AA | 267/443 | 1.01 (0.75-1.36) | 0.96 | 54/443 | 0.89 (0.53-1.51) | 0.67 | 291/658 | 1.81 (0.92-3.59) | 0.09 | 128/658 | 0.81 (0.39-1.67) | 0.57 |
| SLC19A1 | rs4819128 | TT | 116/214 | 1.00 (ref) | 0.89 | 26/214 | 1.00 (ref) | 0.27 | 29/104 | 1.00 (ref) | 0.51 | 19/104 | 1.00 (ref) | 0.65 |
|  |  | TC | 195/309 | 1.11 (0.82-1.5) |  | 42/309 | 1.04 (0.61-1.77) |  | 153/314 | 1.78 (1.11-2.83) |  | 58/314 | 1.02 (0.58-1.82) |  |
|  |  | CC | 64/112 | 0.93 (0.62-1.39) |  | 10/112 | 0.58 (0.26-1.29) |  | 120/291 | 1.46 (0.9-2.36) |  | 60/291 | 1.12 (0.63-1.98) |  |
|  |  | TC/CC vs. TT | 259/421 | 1.06 (0.8-1.41) | 0.69 | 52/421 | 0.91 (0.55-1.53) | 0.73 | 273/605 | 1.63 (1.04-2.55) | 0.03 | 118/605 | 1.07 (0.62-1.83) | 0.81 |
| SLC19A1 | rs12659 | CC | 118/214 | 1.00 (ref) | 0.68 | 24/214 | 1.00 (ref) | 0.41 | 74/220 | 1.00 (ref) | 0.49 | 51/220 | 1.00 (ref) | 0.31 |
|  |  | CT | 196/309 | 1.1 (0.81-1.49) |  | 43/309 | 1.16 (0.67-2) |  | 172/343 | 1.46 (1.05-2.04) |  | 59/343 | 0.74 (0.48-1.12) |  |
|  |  | TT | 61/112 | 0.87 (0.58-1.31) |  | 10/112 | 0.63 (0.28-1.4) |  | 56/146 | 1.09 (0.72-1.65) |  | 28/146 | 0.8 (0.48-1.35) |  |
|  |  | CT/TT vs. CC | 257/421 | 1.04 (0.78-1.38) | 0.80 | 53/421 | 1.01 (0.6-1.71) | 0.97 | 228/489 | 1.35 (0.99-1.85) | 0.06 | 87/489 | 0.76 (0.51-1.12) | 0.16 |
| SLC19A1 | rs3788200 | GG | 112/200 | 1.00 (ref) | 0.84 | 26/200 | 1.00 (ref) | 0.26 | 51/153 | 1.00 (ref) | 0.66 | 30/153 | 1.00 (ref) | 0.92 |
|  |  | GA | 188/314 | 1.03 (0.76-1.41) |  | 40/314 | 0.91 (0.53-1.57) |  | 165/344 | 1.47 (1-2.14) |  | 65/344 | 0.97 (0.6-1.57) |  |
|  |  | AA | 73/119 | 1.04 (0.7-1.53) |  | 12/119 | 0.63 (0.3-1.34) |  | 85/211 | 1.17 (0.77-1.78) |  | 43/211 | 1.02 (0.61-1.72) |  |
|  |  | GA/AA vs. GG | 261/433 | 1.03 (0.77-1.38) | 0.82 | 52/433 | 0.83 (0.5-1.4) | 0.49 | 250/555 | 1.35 (0.94-1.94) | 0.10 | 108/555 | 0.99 (0.63-1.55) | 0.96 |

a Based on European American (71.9%) and 443 (75.9%) African American cases who had available data on ER status.

b OR, odds ratio; 95% CI, 95% confidence interval

c Adjusted for age at diagnosis, education, body mass index, family history of breast cancer, history of benign breast disease, menopausal status, and proportion of European ancestry.

d *P-*trend for genetic dose response determined by coding genotypes as having 0, 1, or 2 variant allele, which was subsequently analyzed as an ordinal variable.

e *P* for heterogeneity from dominant or recessive models.