**Supplemental Table 1. Top 20 SNP associations for each of 13 metabolites and 2 metabolite ratios**

The 20 most statistically significant SNP associations, resulting from a two-stage test of genetic association between each of 1160 SNPs and the given metabolite. Interaction p-values, computed using a likelihood ratio test, are shown where significant interaction between genotype and case-control status was observed (p<0.01). Positive false discovery rate (pFDR) q-values were computed for 1160 SNPs within each metabolite.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Metabolite | snp | pval | interactpval | qval | Gene |
| Methionine (uM) | rs933271 | 0.000411 | 0.00160005 | 0.189459 | COMT |
| Methionine (uM) | rs2028898 | 0.000528 | NA | 0.189459 | MAT2A |
| Methionine (uM) | rs762684 | 0.000695 | NA | 0.189459 | MAT2A |
| Methionine (uM) | rs9982921 | 0.000779 | NA | 0.189459 | CBS |
| Methionine (uM) | rs1021737 | 0.002228 | NA | 0.302443 | CTH |
| Methionine (uM) | rs2075237 | 0.002559 | 0.004155148 | 0.302443 | MGST1 |
| Methionine (uM) | rs10829616 | 0.002615 | NA | 0.302443 | MGMT |
| Methionine (uM) | rs174675 | 0.002661 | 0.005674962 | 0.302443 | COMT |
| Methionine (uM) | rs17026447 | 0.003493 | 0.000500512 | 0.302443 | MAT2A |
| Methionine (uM) | rs828858 | 0.003606 | 0.00169151 | 0.302443 | MTHFD2 |
| Methionine (uM) | rs7095819 | 0.003825 | NA | 0.302443 | MGMT |
| Methionine (uM) | rs1453181 | 0.003924 | NA | 0.302443 | GCLC |
| Methionine (uM) | rs11938688 | 0.004043 | NA | 0.302443 | PGDS |
| Methionine (uM) | rs182623 | 0.005307 | NA | 0.360496 | GSTA4 |
| Methionine (uM) | rs17026396 | 0.00556 | NA | 0.360496 | MAT2A |
| Methionine (uM) | rs1052661 | 0.006851 | NA | 0.411266 | GSTA3 |
| Methionine (uM) | rs2282165 | 0.007189 | NA | 0.411266 | MGMT |
| Methionine (uM) | rs234783 | 0.007852 | NA | 0.424249 | CBS |
| Methionine (uM) | rs7087131 | 0.008819 | NA | 0.451446 | MGMT |
| Methionine (uM) | rs702462 | 0.00975 | 0.002574716 | 0.473134 | MTHFD2 |
| SAM (nM) | rs442174 | 0.000135 | 1.36E-05 | 0.156783 | GPX5 |
| SAM (nM) | rs668413 | 0.001862 | NA | 0.484328 | GSTM4 |
| SAM (nM) | rs1695 | 0.001922 | NA | 0.484328 | GSTP1 |
| SAM (nM) | rs1021737 | 0.001984 | NA | 0.484328 | CTH |
| SAM (nM) | rs542338 | 0.002088 | NA | 0.484328 | GSTM4 |
| SAM (nM) | rs10196635 | 0.00531 | NA | 0.90285 | DNMT3A |
| SAM (nM) | rs7560488 | 0.006502 | NA | 0.90285 | DNMT3A |
| SAM (nM) | rs2284659 | 0.008374 | NA | 0.90285 | SOD3 |
| SAM (nM) | rs1465825 | 0.008794 | NA | 0.90285 | DNMT3A |
| SAM (nM) | rs7103083 | 0.010336 | NA | 0.90285 | CAT |
| SAM (nM) | rs6088008 | 0.011528 | 0.00325503 | 0.90285 | DNMT3B |
| SAM (nM) | rs2053139 | 0.012375 | NA | 0.90285 | MGMT |
| SAM (nM) | rs947895 | 0.01245 | NA | 0.90285 | GSTP1 |
| SAM (nM) | rs10764900 | 0.013127 | NA | 0.90285 | MGMT |
| SAM (nM) | rs4751114 | 0.014343 | NA | 0.90285 | MGMT |
| SAM (nM) | rs2342812 | 0.015364 | 0.004266858 | 0.90285 | MAT1A |
| SAM (nM) | rs4911108 | 0.015908 | 0.004573008 | 0.90285 | DNMT3B |
| SAM (nM) | rs7587636 | 0.016839 | NA | 0.90285 | DNMT3A |
| SAM (nM) | rs921986 | 0.018257 | NA | 0.90285 | SHMT1 |
| SAM (nM) | rs9904323 | 0.018954 | NA | 0.90285 | SHMT1 |
| SAH (nM) | rs2298582 | 0.00067 | NA | 0.777507 | TYMS |
| SAH (nM) | rs2281593 | 0.001761 | 0.001363531 | 0.824968 | GSTA3 |
| SAH (nM) | rs7207306 | 0.002134 | NA | 0.824968 | SHMT1 |
| SAH (nM) | rs162027 | 0.002882 | NA | 0.835896 | MTRR |
| SAH (nM) | rs1979276 | 0.006625 | NA | 0.906202 | SHMT1 |
| SAH (nM) | rs4924849 | 0.006718 | NA | 0.906202 | SHMT1 |
| SAH (nM) | rs9421467 | 0.006853 | NA | 0.906202 | MAT1A |
| SAH (nM) | rs921986 | 0.008058 | NA | 0.906202 | SHMT1 |
| SAH (nM) | rs1801394 | 0.00836 | NA | 0.906202 | MTRR |
| SAH (nM) | rs2273028 | 0.011402 | NA | 0.906202 | SHMT1 |
| SAH (nM) | rs3783728 | 0.011642 | NA | 0.906202 | MTHFD1 |
| SAH (nM) | rs7265992 | 0.014438 | NA | 0.906202 | GSS |
| SAH (nM) | rs4820886 | 0.014629 | NA | 0.906202 | TCN2 |
| SAH (nM) | rs4924845 | 0.014688 | NA | 0.906202 | SHMT1 |
| SAH (nM) | rs6058869 | 0.015131 | NA | 0.906202 | DNMT3B |
| SAH (nM) | rs16831987 | 0.015648 | NA | 0.906202 | MTR |
| SAH (nM) | rs3852576 | 0.017109 | NA | 0.906202 | MGST1 |
| SAH (nM) | rs9621049 | 0.017875 | NA | 0.906202 | TCN2 |
| SAH (nM) | rs506008 | 0.018177 | NA | 0.906202 | GSTM4 |
| SAH (nM) | rs12939757 | 0.018671 | NA | 0.906202 | SHMT1 |
| SAM/SAH | rs2298582 | 0.000703 | NA | 0.576425 | TYMS |
| SAM/SAH | rs6722613 | 0.002246 | NA | 0.576425 | DNMT3A |
| SAM/SAH | rs17092185 | 0.002628 | NA | 0.576425 | GSS |
| SAM/SAH | rs473334 | 0.003131 | NA | 0.576425 | CTH |
| SAM/SAH | rs442174 | 0.003908 | 0.001466624 | 0.576425 | GPX5 |
| SAM/SAH | rs9421467 | 0.004124 | NA | 0.576425 | MAT1A |
| SAM/SAH | rs12987326 | 0.004157 | NA | 0.576425 | DNMT3A |
| SAM/SAH | rs7560488 | 0.004269 | NA | 0.576425 | DNMT3A |
| SAM/SAH | rs7590760 | 0.004732 | NA | 0.576425 | DNMT3A |
| SAM/SAH | rs9332939 | 0.005161 | NA | 0.576425 | MGST1 |
| SAM/SAH | rs2281593 | 0.005466 | 0.002521131 | 0.576425 | GSTA3 |
| SAM/SAH | rs3852576 | 0.006733 | NA | 0.650851 | MGST1 |
| SAM/SAH | rs7207306 | 0.008318 | NA | 0.742195 | SHMT1 |
| SAM/SAH | rs7586294 | 0.010251 | NA | 0.765417 | DNMT3A |
| SAM/SAH | rs12995245 | 0.010645 | NA | 0.765417 | DNMT3A |
| SAM/SAH | rs515064 | 0.010703 | NA | 0.765417 | CTH |
| SAM/SAH | rs7970208 | 0.01158 | NA | 0.765417 | MGST1 |
| SAM/SAH | rs16831987 | 0.012309 | NA | 0.765417 | MTR |
| SAM/SAH | rs7587636 | 0.012537 | NA | 0.765417 | DNMT3A |
| SAM/SAH | rs12999687 | 0.013784 | NA | 0.781179 | DNMT3A |
| Adenosine (uM) | rs1801394 | 0.000425 | NA | 0.254396 | MTRR |
| Adenosine (uM) | rs162027 | 0.000563 | NA | 0.254396 | MTRR |
| Adenosine (uM) | rs6749992 | 0.001545 | 0.003684808 | 0.464983 | DNMT3A |
| Adenosine (uM) | rs162037 | 0.002169 | NA | 0.489727 | MTRR |
| Adenosine (uM) | rs7590760 | 0.003288 | 0.003991253 | 0.593883 | DNMT3A |
| Adenosine (uM) | rs7586294 | 0.005807 | 0.005587608 | 0.622904 | DNMT3A |
| Adenosine (uM) | rs642934 | 0.005994 | 0.000738518 | 0.622904 | BHMT2 |
| Adenosine (uM) | rs2277108 | 0.006764 | NA | 0.622904 | GCLC |
| Adenosine (uM) | rs9913022 | 0.006913 | NA | 0.622904 | SHMT1 |
| Adenosine (uM) | rs502396 | 0.007384 | NA | 0.622904 | TYMS |
| Adenosine (uM) | rs670220 | 0.009437 | 0.00128524 | 0.622904 | BHMT2 |
| Adenosine (uM) | rs574831 | 0.010663 | NA | 0.622904 | MGMT |
| Adenosine (uM) | rs4751104 | 0.011399 | NA | 0.622904 | MGMT |
| Adenosine (uM) | rs11868708 | 0.011688 | 0.005376618 | 0.622904 | SHMT1 |
| Adenosine (uM) | rs4646316 | 0.011716 | NA | 0.622904 | COMT |
| Adenosine (uM) | rs2273029 | 0.012275 | 0.004983221 | 0.622904 | SHMT1 |
| Adenosine (uM) | rs6546045 | 0.013067 | NA | 0.622904 | DNMT3A |
| Adenosine (uM) | rs10199560 | 0.015665 | 0.002489046 | 0.622904 | MTHFD2 |
| Adenosine (uM) | rs11016884 | 0.015814 | 0.003189464 | 0.622904 | MGMT |
| Adenosine (uM) | rs6875201 | 0.016528 | NA | 0.622904 | BHMT |
| Homocysteine (uM) | rs9621049 | 0.000911 | NA | 0.468844 | TCN2 |
| Homocysteine (uM) | rs4820886 | 0.001025 | NA | 0.468844 | TCN2 |
| Homocysteine (uM) | rs2042235 | 0.001213 | NA | 0.468844 | GPX3 |
| Homocysteine (uM) | rs8177427 | 0.001646 | NA | 0.477445 | GPX3 |
| Homocysteine (uM) | rs1465825 | 0.002587 | NA | 0.586898 | DNMT3A |
| Homocysteine (uM) | rs13406935 | 0.003277 | NA | 0.586898 | MAT2A |
| Homocysteine (uM) | rs6546045 | 0.003542 | NA | 0.586898 | DNMT3A |
| Homocysteine (uM) | rs9913022 | 0.005809 | 0.005503299 | 0.761396 | SHMT1 |
| Homocysteine (uM) | rs10735234 | 0.007117 | 0.001165764 | 0.761396 | GSTM3 |
| Homocysteine (uM) | rs11135434 | 0.007265 | NA | 0.761396 | GLRX |
| Homocysteine (uM) | rs6869277 | 0.007598 | NA | 0.761396 | MAT2B |
| Homocysteine (uM) | rs10064631 | 0.007877 | NA | 0.761396 | MTRR |
| Homocysteine (uM) | rs10460566 | 0.009408 | NA | 0.817938 | DNMT3A |
| Homocysteine (uM) | rs16879236 | 0.010383 | 0.00308734 | 0.817938 | MTRR |
| Homocysteine (uM) | rs2373929 | 0.010577 | NA | 0.817938 | NOS3 |
| Homocysteine (uM) | rs4650047 | 0.012071 | NA | 0.875141 | CTH |
| Homocysteine (uM) | rs10040698 | 0.014163 | NA | 0.889625 | MAT2B |
| Homocysteine (uM) | rs2303080 | 0.014521 | 0.00954996 | 0.889625 | MTRR |
| Homocysteine (uM) | rs1078004 | 0.01602 | NA | 0.889625 | MAT2A |
| Homocysteine (uM) | rs4820887 | 0.017336 | NA | 0.889625 | TCN2 |
| Total plasma folate (ng/ml) | rs12241572 | 0.000326 | NA | 0.151328 | TRDMT1 |
| Total plasma folate (ng/ml) | rs17116779 | 0.000387 | NA | 0.151328 | GSTO1 |
| Total plasma folate (ng/ml) | rs11254397 | 0.000391 | NA | 0.151328 | TRDMT1 |
| Total plasma folate (ng/ml) | rs7085709 | 0.000555 | NA | 0.160857 | TRDMT1 |
| Total plasma folate (ng/ml) | rs10764896 | 0.00119 | 0.00115632 | 0.276171 | MGMT |
| Total plasma folate (ng/ml) | rs482843 | 0.002248 | 0.000364127 | 0.434581 | CTH |
| Total plasma folate (ng/ml) | rs442174 | 0.002799 | 0.008755918 | 0.453654 | GPX5 |
| Total plasma folate (ng/ml) | rs12150211 | 0.003182 | 0.003901369 | 0.453654 | NOS2A |
| Total plasma folate (ng/ml) | rs487773 | 0.00352 | 0.000521609 | 0.453654 | CTH |
| Total plasma folate (ng/ml) | rs663465 | 0.005417 | 0.000874469 | 0.628403 | CTH |
| Total plasma folate (ng/ml) | rs16876528 | 0.006125 | NA | 0.640931 | BHMT |
| Total plasma folate (ng/ml) | rs12438477 | 0.00663 | NA | 0.640931 | MTHFS |
| Total plasma folate (ng/ml) | rs12278098 | 0.008278 | NA | 0.669492 | GSTP1 |
| Total plasma folate (ng/ml) | rs4238512 | 0.01087 | NA | 0.669492 | MTHFS |
| Total plasma folate (ng/ml) | rs8177444 | 0.011098 | NA | 0.669492 | GPX3 |
| Total plasma folate (ng/ml) | rs12709500 | 0.011802 | 0.006779571 | 0.669492 | NOS2A |
| Total plasma folate (ng/ml) | rs12898642 | 0.011945 | NA | 0.669492 | MTHFS |
| Total plasma folate (ng/ml) | rs16876512 | 0.012063 | NA | 0.669492 | BHMT |
| Total plasma folate (ng/ml) | rs1024839 | 0.012379 | 0.009134936 | 0.669492 | MGST1 |
| Total plasma folate (ng/ml) | rs6912979 | 0.013183 | 0.002098822 | 0.669492 | SOD2 |
| Vitamin B12 (pg/ml) | rs12412853 | 0.002919 | NA | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs12247555 | 0.004422 | 0.003158646 | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs7901881 | 0.004425 | NA | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs546333 | 0.004765 | 0.001421741 | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs12703107 | 0.00513 | NA | 0.638385 | NOS3 |
| Vitamin B12 (pg/ml) | rs8111085 | 0.005544 | 0.005770089 | 0.638385 | DNMT1 |
| Vitamin B12 (pg/ml) | rs7098295 | 0.006172 | NA | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs11016857 | 0.006573 | NA | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs11235468 | 0.007781 | NA | 0.638385 | FOLR2 |
| Vitamin B12 (pg/ml) | rs11235462 | 0.008534 | NA | 0.638385 | FOLR1 |
| Vitamin B12 (pg/ml) | rs7080570 | 0.008708 | NA | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs7923750 | 0.011164 | 0.004328958 | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs2284659 | 0.011441 | NA | 0.638385 | SOD3 |
| Vitamin B12 (pg/ml) | rs2230491 | 0.012298 | NA | 0.638385 | MTHFD1 |
| Vitamin B12 (pg/ml) | rs12096821 | 0.013813 | NA | 0.638385 | MTR |
| Vitamin B12 (pg/ml) | rs7703033 | 0.014045 | NA | 0.638385 | MTRR |
| Vitamin B12 (pg/ml) | rs6482743 | 0.014394 | NA | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs10501409 | 0.0146 | NA | 0.638385 | FOLR1 |
| Vitamin B12 (pg/ml) | rs9971190 | 0.014664 | NA | 0.638385 | MGMT |
| Vitamin B12 (pg/ml) | rs7923733 | 0.017346 | NA | 0.646856 | MGMT |
| Cysteine (uM) | rs2072668 | 0.000797 | NA | 0.770943 | OGG1 |
| Cysteine (uM) | rs6482752 | 0.005912 | 0.00817875 | 0.770943 | MGMT |
| Cysteine (uM) | rs1145920 | 0.008103 | NA | 0.770943 | CTH |
| Cysteine (uM) | rs515064 | 0.00833 | NA | 0.770943 | CTH |
| Cysteine (uM) | rs2270423 | 0.009355 | NA | 0.770943 | GSTZ1 |
| Cysteine (uM) | rs10829616 | 0.010783 | 0.00194282 | 0.770943 | MGMT |
| Cysteine (uM) | rs2586154 | 0.012091 | NA | 0.770943 | MTHFS |
| Cysteine (uM) | rs11016884 | 0.012174 | 0.004593833 | 0.770943 | MGMT |
| Cysteine (uM) | rs162271 | 0.012389 | 0.003071818 | 0.770943 | MTRR |
| Cysteine (uM) | rs2230491 | 0.014041 | 0.001962559 | 0.770943 | MTHFD1 |
| Cysteine (uM) | rs2562749 | 0.016338 | NA | 0.770943 | MTHFS |
| Cysteine (uM) | rs535112 | 0.016447 | NA | 0.770943 | CTH |
| Cysteine (uM) | rs16971460 | 0.016835 | NA | 0.770943 | MTHFS |
| Cysteine (uM) | rs16995255 | 0.017254 | 0.009221199 | 0.770943 | RFC1 |
| Cysteine (uM) | rs2838540 | 0.018508 | NA | 0.770943 | DNMT3L |
| Cysteine (uM) | rs535537 | 0.018901 | NA | 0.770943 | GSTM4 |
| Cysteine (uM) | rs11096991 | 0.019132 | 0.008737387 | 0.770943 | RFC1 |
| Cysteine (uM) | rs1555906 | 0.019514 | NA | 0.770943 | GCLC |
| Cysteine (uM) | rs7590760 | 0.019893 | NA | 0.770943 | DNMT3A |
| Cysteine (uM) | rs7081756 | 0.020299 | NA | 0.770943 | MAT1A |
| CysGly (uM) | rs10802569 | 0.001603 | NA | 0.609627 | MTR |
| CysGly (uM) | rs2054287 | 0.001742 | 0.003515345 | 0.609627 | MTHFS |
| CysGly (uM) | rs1021737 | 0.002448 | NA | 0.609627 | CTH |
| CysGly (uM) | rs12354209 | 0.003852 | NA | 0.609627 | MTR |
| CysGly (uM) | rs234783 | 0.00417 | NA | 0.609627 | CBS |
| CysGly (uM) | rs4659476 | 0.005231 | NA | 0.609627 | MTR |
| CysGly (uM) | rs10925254 | 0.005313 | NA | 0.609627 | MTR |
| CysGly (uM) | rs3768142 | 0.005802 | NA | 0.609627 | MTR |
| CysGly (uM) | rs10733117 | 0.006204 | NA | 0.609627 | MTR |
| CysGly (uM) | rs7177659 | 0.007261 | NA | 0.609627 | MTHFS |
| CysGly (uM) | rs4659745 | 0.007577 | NA | 0.609627 | MTR |
| CysGly (uM) | rs706209 | 0.008085 | NA | 0.609627 | CBS |
| CysGly (uM) | rs3820571 | 0.008732 | NA | 0.609627 | MTR |
| CysGly (uM) | rs7923733 | 0.008925 | NA | 0.609627 | MGMT |
| CysGly (uM) | rs17131304 | 0.009499 | 0.004790405 | 0.609627 | CTH |
| CysGly (uM) | rs11191973 | 0.009791 | 0.002819445 | 0.609627 | GSTO1 |
| CysGly (uM) | rs10836233 | 0.010748 | 0.003015622 | 0.612982 | CAT |
| CysGly (uM) | rs7944397 | 0.011076 | 0.003108734 | 0.612982 | CAT |
| CysGly (uM) | rs12723350 | 0.01303 | 0.003356404 | 0.622832 | CTH |
| CysGly (uM) | rs2072668 | 0.013551 | NA | 0.622832 | OGG1 |
| GluCys (uM) | rs2859355 | 0.00019 | NA | 0.084554 | GPX6 |
| GluCys (uM) | rs9971190 | 0.00024 | NA | 0.084554 | MGMT |
| GluCys (uM) | rs406113 | 0.000274 | NA | 0.084554 | GPX6 |
| GluCys (uM) | rs9299872 | 0.000429 | NA | 0.099303 | MGMT |
| GluCys (uM) | rs451774 | 0.000682 | NA | 0.126209 | GPX5 |
| GluCys (uM) | rs7080570 | 0.001144 | NA | 0.155108 | MGMT |
| GluCys (uM) | rs11016857 | 0.001422 | NA | 0.155108 | MGMT |
| GluCys (uM) | rs7483 | 0.001666 | NA | 0.155108 | GSTM3 |
| GluCys (uM) | rs7923750 | 0.001671 | NA | 0.155108 | MGMT |
| GluCys (uM) | rs1003359 | 0.001935 | NA | 0.155108 | GPX6 |
| GluCys (uM) | rs7098295 | 0.001984 | NA | 0.155108 | MGMT |
| GluCys (uM) | rs1927328 | 0.002173 | NA | 0.155108 | GSTM3 |
| GluCys (uM) | rs4820887 | 0.00218 | NA | 0.155108 | TCN2 |
| GluCys (uM) | rs9982921 | 0.002667 | NA | 0.176202 | CBS |
| GluCys (uM) | rs7901881 | 0.003147 | NA | 0.177036 | MGMT |
| GluCys (uM) | rs974334 | 0.003346 | NA | 0.177036 | GPX6 |
| GluCys (uM) | rs4713167 | 0.003539 | NA | 0.177036 | GPX6 |
| GluCys (uM) | rs2859358 | 0.003733 | NA | 0.177036 | GPX6 |
| GluCys (uM) | rs492842 | 0.00377 | 0.003305203 | 0.177036 | BHMT |
| GluCys (uM) | rs600473 | 0.003948 | 0.002222101 | 0.177036 | BHMT |
| Free GSH (uM) | rs6902065 | 0.000262 | NA | 0.161837 | GSTA2 |
| Free GSH (uM) | rs2733103 | 0.000346 | 0.00605084 | 0.161837 | MTHFS |
| Free GSH (uM) | rs641019 | 0.000419 | NA | 0.161837 | GSTA3 |
| Free GSH (uM) | rs12096821 | 0.000961 | NA | 0.20924 | MTR |
| Free GSH (uM) | rs8115360 | 0.001245 | 0.002394633 | 0.20924 | DNMT3B |
| Free GSH (uM) | rs12075101 | 0.001525 | NA | 0.20924 | MTR |
| Free GSH (uM) | rs11016857 | 0.001532 | 0.008808366 | 0.20924 | MGMT |
| Free GSH (uM) | rs7071825 | 0.00159 | NA | 0.20924 | MGMT |
| Free GSH (uM) | rs1052661 | 0.001623 | NA | 0.20924 | GSTA3 |
| Free GSH (uM) | rs10795454 | 0.002583 | NA | 0.252474 | TRDMT1 |
| Free GSH (uM) | rs2181043 | 0.002678 | NA | 0.252474 | TRDMT1 |
| Free GSH (uM) | rs6119967 | 0.002702 | 0.003966989 | 0.252474 | DNMT3B |
| Free GSH (uM) | rs9463842 | 0.002918 | NA | 0.252474 | GSTA3 |
| Free GSH (uM) | rs12912711 | 0.003047 | 0.001626478 | 0.252474 | MTHFS |
| Free GSH (uM) | rs8190955 | 0.003504 | 0.006892691 | 0.267052 | GSR |
| Free GSH (uM) | rs2173962 | 0.003683 | 0.007172086 | 0.267052 | SOD1 |
| Free GSH (uM) | rs7096692 | 0.003945 | NA | 0.2692 | TRDMT1 |
| Free GSH (uM) | rs10490958 | 0.004948 | NA | 0.31885 | TRDMT1 |
| Free GSH (uM) | rs654144 | 0.005691 | NA | 0.343962 | GSTA4 |
| Free GSH (uM) | rs4751118 | 0.005942 | NA | 0.343962 | MGMT |
| Total GSH (uM) | rs3797546 | 1.49E-05 | 0.000120337 | 0.014487 | BHMT |
| Total GSH (uM) | rs16876528 | 2.75E-05 | 0.000658719 | 0.014487 | BHMT |
| Total GSH (uM) | rs12912711 | 0.00053 | 0.005292169 | 0.177243 | MTHFS |
| Total GSH (uM) | rs7787531 | 0.000672 | 0.00038538 | 0.177243 | KIAA0828 |
| Total GSH (uM) | rs10249742 | 0.000885 | NA | 0.186725 | KIAA0828 |
| Total GSH (uM) | rs6902065 | 0.001079 | NA | 0.189607 | GSTA2 |
| Total GSH (uM) | rs564250 | 0.002156 | 0.000773411 | 0.324889 | CAT |
| Total GSH (uM) | rs12075101 | 0.003349 | NA | 0.366706 | MTR |
| Total GSH (uM) | rs12090060 | 0.003906 | NA | 0.366706 | GSTM4 |
| Total GSH (uM) | rs6151599 | 0.003986 | NA | 0.366706 | DHFR |
| Total GSH (uM) | rs6495446 | 0.004344 | NA | 0.366706 | MTHFS |
| Total GSH (uM) | rs7803893 | 0.004553 | NA | 0.366706 | GSTK1 |
| Total GSH (uM) | rs7098786 | 0.004663 | NA | 0.366706 | MGMT |
| Total GSH (uM) | rs12096821 | 0.004868 | NA | 0.366706 | MTR |
| Total GSH (uM) | rs10039108 | 0.00548 | NA | 0.385264 | MAT2B |
| Total GSH (uM) | rs1256143 | 0.006335 | NA | 0.401723 | MTHFD1 |
| Total GSH (uM) | rs17061784 | 0.006476 | NA | 0.401723 | MAT2B |
| Total GSH (uM) | rs1532268 | 0.007618 | NA | 0.420794 | MTRR |
| Total GSH (uM) | rs9982921 | 0.007678 | NA | 0.420794 | CBS |
| Total GSH (uM) | rs16876470 | 0.00798 | NA | 0.420794 | BHMT2 |
| GSSG (uM) | rs1046014 | 0.002479 | 0.005960601 | 0.465967 | MTRR |
| GSSG (uM) | rs16883343 | 0.00305 | NA | 0.465967 | GSTA4 |
| GSSG (uM) | rs1537688 | 0.003634 | 0.001749327 | 0.465967 | MGMT |
| GSSG (uM) | rs6874065 | 0.003724 | 0.001572345 | 0.465967 | MAT2B |
| GSSG (uM) | rs724260 | 0.004971 | NA | 0.465967 | PGDS |
| GSSG (uM) | rs10033662 | 0.005216 | NA | 0.465967 | PGDS |
| GSSG (uM) | rs17061784 | 0.005332 | NA | 0.465967 | MAT2B |
| GSSG (uM) | rs1984685 | 0.005392 | NA | 0.465967 | BHMT2 |
| GSSG (uM) | rs8133239 | 0.005789 | NA | 0.465967 | CBS |
| GSSG (uM) | rs3827715 | 0.006738 | NA | 0.465967 | GCLM |
| GSSG (uM) | rs7133802 | 0.006774 | NA | 0.465967 | MGST1 |
| GSSG (uM) | rs17464824 | 0.007153 | NA | 0.465967 | TRDMT1 |
| GSSG (uM) | rs2289186 | 0.007396 | NA | 0.465967 | PGDS |
| GSSG (uM) | rs11548 | 0.008225 | NA | 0.465967 | GPX3 |
| GSSG (uM) | rs11097411 | 0.008253 | NA | 0.465967 | PGDS |
| GSSG (uM) | rs1024839 | 0.008951 | NA | 0.465967 | MGST1 |
| GSSG (uM) | rs769211 | 0.008977 | NA | 0.465967 | GCLM |
| GSSG (uM) | rs162029 | 0.010072 | NA | 0.465967 | MTRR |
| GSSG (uM) | rs8177433 | 0.010788 | NA | 0.465967 | GPX3 |
| GSSG (uM) | rs2975139 | 0.011812 | NA | 0.465967 | MGST1 |
| GSH/GSSG | rs2975138 | 0.000621 | NA | 0.183382 | MGST1 |
| GSH/GSSG | rs2026880 | 0.00067 | 0.007719391 | 0.183382 | DNMT3L |
| GSH/GSSG | rs16883343 | 0.000678 | NA | 0.183382 | GSTA4 |
| GSH/GSSG | rs2975139 | 0.000686 | NA | 0.183382 | MGST1 |
| GSH/GSSG | rs7294985 | 0.003067 | NA | 0.655931 | MGST1 |
| GSH/GSSG | rs6488840 | 0.005664 | NA | 0.739933 | MGST1 |
| GSH/GSSG | rs16988855 | 0.006077 | 0.002012053 | 0.739933 | TCN2 |
| GSH/GSSG | rs11056890 | 0.006771 | NA | 0.739933 | MGST1 |
| GSH/GSSG | rs2608615 | 0.007252 | 0.000990882 | 0.739933 | GSTA2 |
| GSH/GSSG | rs10925241 | 0.008704 | NA | 0.739933 | MTR |
| GSH/GSSG | rs11813056 | 0.010162 | NA | 0.739933 | MGMT |
| GSH/GSSG | rs560018 | 0.010984 | NA | 0.739933 | GSTM4 |
| GSH/GSSG | rs17025290 | 0.011911 | NA | 0.739933 | AHCYL1 |
| GSH/GSSG | rs2289186 | 0.012358 | NA | 0.739933 | PGDS |
| GSH/GSSG | rs11016884 | 0.014038 | NA | 0.739933 | MGMT |
| GSH/GSSG | rs7715062 | 0.015053 | NA | 0.739933 | MTRR |
| GSH/GSSG | rs182623 | 0.015349 | NA | 0.739933 | GSTA4 |
| GSH/GSSG | rs7910123 | 0.016367 | NA | 0.739933 | MGMT |
| GSH/GSSG | rs724260 | 0.016972 | NA | 0.739933 | PGDS |
| GSH/GSSG | rs2297518 | 0.017247 | NA | 0.739933 | NOS2A |

**Supplemental Figure 1. Q-Q plots of –log10(p-values)**

Ordered –log**10**(p-values) plotted against their expected value under the null hypothesis of no association between genotype and metabolite. Gray lines indicate 95% confidence bands.

