Supplementary Table S1 Mendelian randomization results of smoking behavior on IA risk

| exposure | outcome | method | nsnp | beta | se | p-value | beta lower 95%CI | beta upper 95%CI |
|---|---|---|---|---|---|---|---|---|
| SmkAge | all IA | MR Egger | 4 | -3,120788299 | 3,326023117 | 0,447142836 | -9,639793608 | 3,398217011 |
| SmkAge | all IA | Weighted median | 4 | -0,854823528 | 0,758818053 | 0,259945584 | -2,342106912 | 0,632459857 |
| SmkAge | all IA | Inverse variance weighted | 4 | -0,613211069 | 0,845296439 | 0,468182707 | -2,269992089 | 1,043569952 |
| SmkAge | all IA | Simple mode | 4 | -1,461155495 | 1,424434703 | 0,380479401 | -4,253047513 | 1,330736524 |
| SmkAge | all IA | Weighted mode | 4 | -1,586716049 | 1,193852286 | 0,275862893 | -3,926666529 | 0,753234432 |
| CigDay | all IA | MR Egger | 14 | 1,30707005 | 0,365240064 | 0,003791589 | 0,591199525 | 2,022940575 |
| CigDay | all IA | Weighted median | 14 | 1,259089 | 0,224847838 | 2,15E-08 | 0,818387238 | 1,699790762 |
| CigDay | all IA | Inverse variance weighted | 14 | 1,060856864 | 0,226823242 | 2,91E-06 | 0,61628331 | 1,505430417 |
| CigDay | all IA | Simple mode | 14 | 0,382474819 | 0,612932077 | 0,543417379 | -0,818872052 | 1,58382169 |
| CigDay | all IA | Weighted mode | 14 | 1,283628204 | 0,237385272 | 0,000119625 | 0,81835307 | 1,748903337 |
| SmkCes | all IA | MR Egger | 3 | 17,27506515 | 24,00485351 | 0,602881839 | -29,77444774 | 64,32457803 |
| SmkCes | all IA | Weighted median | 3 | 0,472360017 | 1,846465147 | 0,798090958 | -3,146711672 | 4,091431705 |
| SmkCes | all IA | Inverse variance weighted | 3 | 1,917381599 | 3,347708033 | 0,566817655 | -4,644126146 | 8,478889344 |
| SmkCes | all IA | Simple mode | 3 | -1,992145745 | 2,588459556 | 0,521992104 | -7,065526474 | 3,081234984 |
| SmkCes | all IA | Weighted mode | 3 | -1,861402351 | 4,380498249 | 0,712238803 | -10,44717892 | 6,724374218 |
| SmkInt | all IA | MR Egger | 65 | 1,136912356 | 1,45664876 | 0,43802025 | -1,718119214 | 3,991943925 |
| SmkInt | all IA | Weighted median | 65 | 1,720127763 | 0,401601617 | 1,84E-05 | 0,932988593 | 2,507266932 |
| SmkInt | all IA | Inverse variance weighted | 65 | 1,533922859 | 0,287590363 | 9,62E-08 | 0,970245747 | 2,097599971 |
| SmkInt | all IA | Simple mode | 65 | 2,127197324 | 0,89202653 | 0,020067739 | 0,378825326 | 3,875569322 |
| SmkInt | all IA | Weighted mode | 65 | 1,789675241 | 0,693348239 | 0,012147262 | 0,430712693 | 3,148637789 |
| SmkAge | only SAH | MR Egger | 4 | -1,962054203 | 2,826787424 | 0,559407116 | -7,502557554 | 3,578449148 |
| SmkAge | only SAH | Weighted median | 4 | -0,914789194 | 0,842341144 | 0,277475467 | -2,565777836 | 0,736199449 |
| SmkAge | only SAH | Inverse variance weighted | 4 | -0,33319956 | 0,700588493 | 0,634359709 | -1,706353007 | 1,039953887 |
| SmkAge | only SAH | Simple mode | 4 | -0,932521793 | 1,012852758 | 0,425113916 | -2,9177132 | 1,052669613 |
| SmkAge | only SAH | Weighted mode | 4 | -0,939484612 | 0,978907445 | 0,407992169 | -2,858143204 | 0,97917398 |
| CigDay | only SAH | MR Egger | 14 | 1,319503045 | 0,363070494 | 0,003423701 | 0,607884876 | 2,031121214 |
| CigDay | only SAH | Weighted median | 14 | 1,220058155 | 0,270787731 | 6,62E-06 | 0,689314202 | 1,750802109 |
| CigDay | only SAH | Inverse variance weighted | 14 | 1,062000533 | 0,228430588 | 3,33E-06 | 0,61427658 | 1,509724486 |
| CigDay | only SAH | Simple mode | 14 | 0,894216301 | 0,681246356 | 0,212013454 | -0,441026557 | 2,229459159 |
| CigDay | only SAH | Weighted mode | 14 | 1,277383157 | 0,279179958 | 0,000520403 | 0,73019044 | 1,824575875 |
| SmkCes | only SAH | MR Egger | 3 | 16,83083662 | 23,14137507 | 0,599682435 | -28,52625852 | 62,18793175 |
| SmkCes | only SAH | Weighted median | 3 | 1,035907057 | 1,902249259 | 0,58604959 | -2,692501491 | 4,764315604 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SmkCes | only SAH | Inverse variance weighted | 3 | 2,143775177 | 3,205732471 | 0,503666592 | -4,139460466 | 8,42701082 |
| SmkCes | only SAH | Simple mode | 3 | -1,468302068 | 3,538206195 | 0,718433409 | -8,403186211 | 5,466582075 |
| SmkCes | only SAH | Weighted mode | 3 | 4,552800108 | 4,720712087 | 0,436585701 | -4,699795582 | 13,8053958 |
| SmkInt | only SAH | MR Egger | 65 | 2,536072261 | 1,722320984 | 0,145871513 | -0,839676868 | 5,911821389 |
| SmkInt | only SAH | Weighted median | 65 | 1,669100607 | 0,470009274 | 0,000383468 | 0,74788243 | 2,590318783 |
| SmkInt | only SAH | Inverse variance weighted | 65 | 1,383628499 | 0,341800917 | 5,16E-05 | 0,7136987 | 2,053558297 |
| SmkInt | only SAH | Simple mode | 65 | 2,03144682 | 1,008911324 | 0,048270807 | 0,053980625 | 4,008913014 |
| SmkInt | only SAH | Weighted mode | 65 | 1,923467826 | 0,897849449 | 0,035979182 | 0,163682905 | 3,683252747 |
| SmkAge | only uIA | MR Egger | 4 | -7,467590083 | 7,768571346 | 0,437853415 | -22,69398992 | 7,758809755 |
| SmkAge | only uIA | Weighted median | 4 | -1,99278178 | 1,404710564 | 0,156003336 | -4,746014485 | 0,760450925 |
| SmkAge | only uIA | Inverse variance weighted | 4 | -1,001625718 | 1,85259847 | 0,588742018 | -4,632718719 | 2,629467284 |
| SmkAge | only uIA | Simple mode | 4 | -2,866502254 | 2,591696745 | 0,349438304 | -7,946227874 | 2,213223366 |
| SmkAge | only uIA | Weighted mode | 4 | -3,127138779 | 1,840177082 | 0,187811135 | -6,733885859 | 0,4796083 |
| CigDay | only uIA | MR Egger | 14 | 1,198738008 | 0,720148932 | 0,121871214 | -0,212753899 | 2,610229914 |
| CigDay | only uIA | Weighted median | 14 | 1,256767535 | 0,444527918 | 0,004695758 | 0,385492816 | 2,128042253 |
| CigDay | only uIA | Inverse variance weighted | 14 | 1,041012694 | 0,431103913 | 0,01574556 | 0,196049024 | 1,885976364 |
| CigDay | only uIA | Simple mode | 14 | 0,759930103 | 0,98712363 | 0,455155169 | -1,174832212 | 2,694692417 |
| CigDay | only uIA | Weighted mode | 14 | 1,230308561 | 0,424177856 | 0,012397098 | 0,398919963 | 2,061697159 |
| SmkCes | only uIA | MR Egger | 3 | 18,798657 | 24,54172337 | 0,583870346 | -29,3031208 | 66,9004348 |
| SmkCes | only uIA | Weighted median | 3 | -0,727539864 | 2,591999701 | 0,778950704 | -5,807859278 | 4,352779549 |
| SmkCes | only uIA | Inverse variance weighted | 3 | 0,612952577 | 3,60830553 | 0,865110257 | -6,459326263 | 7,685231416 |
| SmkCes | only uIA | Simple mode | 3 | -4,03447961 | 4,395400019 | 0,455575516 | -12,64946365 | 4,580504427 |
| SmkCes | only uIA | Weighted mode | 3 | -4,248884448 | 5,841297288 | 0,542613551 | -15,69782713 | 7,200058238 |
| SmkInt | only uIA | MR Egger | 65 | -2,612065452 | 2,388125834 | 0,278219447 | -7,292792087 | 2,068661183 |
| SmkInt | only uIA | Weighted median | 65 | 1,588703044 | 0,67977474 | 0,01943387 | 0,256344553 | 2,921061534 |
| SmkInt | only uIA | Inverse variance weighted | 65 | 1,921447003 | 0,472852509 | 4,83E-05 | 0,994656086 | 2,84823792 |
| SmkInt | only uIA | Simple mode | 65 | 1,750129564 | 1,583861307 | 0,273306579 | -1,354238598 | 4,854497726 |
| SmkInt | only uIA | Weighted mode | 65 | 1,633762937 | 1,236315291 | 0,191046894 | -0,789415034 | 4,056940908 |

| or | or lower 95%CI | or upper 95%CI |
|---|---|---|
| 0,044122373 | 6,51E-05 | 29,91072198 |
| 0,425358248 | 0,096124898 | 1,882234918 |
| 0,54160893 | 0,103312997 | 2,839335234 |
| 0,231968082 | 0,01422083 | 3,783829242 |
| 0,204596394 | 0,019709263 | 2,123858395 |
| 3,6953307 | 1,806153642 | 7,560524564 |
| 3,522211291 | 2,266841012 | 5,472802156 |
| 2,888845275 | 1,852031806 | 4,506092713 |
| 1,465907961 | 0,440928719 | 4,873545447 |
| 3,609712768 | 2,266763561 | 5,748295274 |
| 31802807,98 | 1,17E-13 | 8,63E+27 |
| 1,603774666 | 0,042993271 | 59,82548289 |
| 6,803121826 | 0,009617931 | 4812,102336 |
| 0,136402426 | 0,000854045 | 21,78529028 |
| 0,155454476 | 2,90E-05 | 832,4508805 |
| 3,117128906 | 0,17940325 | 54,16007021 |
| 5,585242004 | 2,542095124 | 12,27134577 |
| 4,636328858 | 2,638592806 | 8,146594365 |
| 8,391315684 | 1,46056789 | 48,21013757 |
| 5,987507655 | 1,538353507 | 23,30429758 |
| 0,140569366 | 0,000551672 | 35,8179494 |
| 0,400601066 | 0,076859374 | 2,087984922 |
| 0,71662717 | 0,181526613 | 2,829086555 |
| 0,393559981 | 0,054057164 | 2,865290134 |
| 0,390829212 | 0,057375195 | 2,662256257 |
| 3,741561527 | 1,836542772 | 7,622628166 |
| 3,387384722 | 1,992348716 | 5,759220344 |
| 2,892151049 | 1,848319004 | 4,525483787 |
| 2,445418566 | 0,64337562 | 9,294837687 |
| 3,587240189 | 2,075475824 | 6,200164813 |
| 20395740,08 | 4,09E-13 | 1,02E+27 |
| 2,817660855 | 0,067711348 | 117,2508438 |

| | | |
|---|---|---|
| 8,531585153 | 0,015931445 | 4568,822627 |
| 0,230316215 | 0,000224152 | 236,649957 |
| 94,89776063 | 0,009097137 | 989936,2225 |
| 12,62996621 | 0,431850045 | 369,3783248 |
| 5,307392218 | 2,112521865 | 13,33402159 |
| 3,989350751 | 2,041528313 | 7,79559084 |
| 7,625110542 | 1,055464153 | 55,08695925 |
| 6,844653431 | 1,177840769 | 39,77556374 |
| 0,000571303 | 1,39E-10 | 2342,115254 |
| 0,136315697 | 0,008686245 | 2,13924064 |
| 0,367281859 | 0,009728275 | 13,86638109 |
| 0,056897592 | 0,000353995 | 9,145147088 |
| 0,043843063 | 0,0011899 | 1,61544151 |
| 3,315929603 | 0,80835505 | 13,60217782 |
| 3,514044083 | 1,470338749 | 8,398408751 |
| 2,832083597 | 1,216586546 | 6,592788263 |
| 2,138126766 | 0,3088708 | 14,80096553 |
| 3,422285356 | 1,490214341 | 7,859296972 |
| 145932829,5 | 1,88E-13 | 1,13E+29 |
| 0,483096011 | 0,003003854 | 77,69411769 |
| 1,845873443 | 0,00156585 | 2175,97347 |
| 0,017694886 | 3,21E-06 | 97,56359549 |
| 0,014280155 | 1,52E-07 | 1339,508772 |
| 0,073382818 | 0,000680426 | 7,914220325 |
| 4,897393102 | 1,292197882 | 18,56098012 |
| 6,830835562 | 2,70379431 | 17,25734621 |
| 5,755348314 | 0,258143771 | 128,3162251 |
| 5,123116458 | 0,454110357 | 57,79723329 |

Supplementary Table S2 Cochran's Q test results of smoking behavior on IA risk

| Exposure | Outcome | method | Q | df | pval |
|---|---|---|---|---|---|
| CigDay | all IA | MR Egger | 16,1734028 | 12 | 0,18342237 |
| CigDay | all IA | Inverse variance weighted | 17,1828593 | 13 | 0,19107909 |
| SmkInt | all IA | MR Egger | 73,8782593 | 63 | 0,16428912 |
| SmkInt | all IA | Inverse variance weighted | 73,9689568 | 64 | 0,18475676 |
| CigDay | only SAH | MR Egger | 6,54565971 | 12 | 0,88612206 |
| CigDay | only SAH | Inverse variance weighted | 7,37825432 | 13 | 0,88162124 |
| SmkInt | only SAH | MR Egger | 75,275369 | 63 | 0,13825386 |
| SmkInt | only SAH | Inverse variance weighted | 75,8324566 | 64 | 0,14785495 |
| CigDay | only uIA | MR Egger | 18,4895963 | 12 | 0,10161317 |
| CigDay | only uIA | Inverse variance weighted | 18,609915 | 13 | 0,13570376 |
| SmkInt | only uIA | MR Egger | 48,9159697 | 63 | 0,90355231 |
| SmkInt | only uIA | Inverse variance weighted | 52,6667731 | 64 | 0,8432595 |

Supplementary Table S3 Results of MR-Egger regression and MR Pleiotropy RESidual Sum and Outlier tests

| exposure | outcome | Egger intercept | se | pval | MR-PRESSO Global test RSSobs | MR-PRESSO Global test p-value |
|---|---|---|---|---|---|---|
| CigDay | all IA | -0,0111499 | 0,01288359 | 0,40377122 | 25,63326 | 0,2543333 |
| SmkInt | all IA | 0,004592066 | 0,016511949 | 0,781841992 | 76,08179 | 0,2103333 |
| CigDay | only SAH | -0,01181121 | 0,012944271 | 0,379490144 | 13,63206 | 0,701 |
| SmkInt | only SAH | -0,013325814 | 0,019515881 | 0,497224519 | 78,152 | 0,151 |
| CigDay | only uIA | -0,006890344 | 0,02465741 | 0,784662817 | 20,91812 | 0,242 |
| SmkInt | only uIA | 0,052478961 | 0,027097117 | 0,057270005 | 54,132 | 0,8553333 |

Supplementary Table S4 Genes that interacted with smoking cessation medicat

| Drug | Gene | Source |
|---|---|---|
| BUPROPION | GPRC6A | Drug Target (CMap, negative connectivity) |
| BUPROPION | ITGB4 | Drug Target (CMap, negative connectivity) |
| BUPROPION | ITSN1 | Drug Target (CMap, negative connectivity) |
| BUPROPION | ESYT1 | Drug Target (CMap, negative connectivity) |
| BUPROPION | MAST4 | Drug Target (CMap, negative connectivity) |
| BUPROPION | MAP3K5 | Drug Target (CMap, negative connectivity) |
| BUPROPION | ATP1A1 | Drug Target (CMap, negative connectivity) |
| BUPROPION | IL10 | Drug Target (CMap, negative connectivity) |
| BUPROPION | CTSK | Drug Target (CMap, negative connectivity) |
| BUPROPION | LEF1 | Drug Target (CMap, negative connectivity) |
| BUPROPION | ATG4A | Drug Target (CMap, negative connectivity) |
| BUPROPION | ZNF595 | Drug Target (CMap, negative connectivity) |
| BUPROPION | RBBP7 | Drug Target (CMap, negative connectivity) |
| BUPROPION | PRDM1 | Drug Target (CMap, negative connectivity) |
| BUPROPION | CEBPB | Drug Target (CMap, negative connectivity) |
| BUPROPION | EED | Drug Target (CMap, negative connectivity) |
| BUPROPION | S100B | Drug Target (CMap, negative connectivity) |
| BUPROPION | ATG16L1 | Drug Target (CMap, negative connectivity) |
| BUPROPION | FRAT2 | Drug Target (CMap, negative connectivity) |
| BUPROPION | CASD1 | Drug Target (CMap, negative connectivity) |
| BUPROPION | PRR7 | Drug Target (CMap, positive connectivity) |
| BUPROPION | CDKN1C | Drug Target (CMap, positive connectivity) |
| BUPROPION | WARS2 | Drug Target (CMap, positive connectivity) |
| BUPROPION | SUPT16H | Drug Target (CMap, positive connectivity) |
| BUPROPION | ZPBP2 | Drug Target (CMap, positive connectivity) |
| BUPROPION | DUT | Drug Target (CMap, positive connectivity) |
| BUPROPION | LIPH | Drug Target (CMap, positive connectivity) |
| BUPROPION | FGFR2 | Drug Target (CMap, positive connectivity) |
| BUPROPION | NR3C1 | Drug Target (CMap, positive connectivity) |
| BUPROPION | HEXB | Drug Target (CMap, positive connectivity) |
| BUPROPION | ICAM1 | Drug Target (CMap, positive connectivity) |
| BUPROPION | KARS | Drug Target (CMap, positive connectivity) |
| BUPROPION | KRT19 | Drug Target (CMap, positive connectivity) |
| BUPROPION | NAB2 | Drug Target (CMap, positive connectivity) |
| BUPROPION | PIK3R1 | Drug Target (CMap, positive connectivity) |
| BUPROPION | ANKRD49 | Drug Target (CMap, positive connectivity) |

| | | |
|---|---|---|
| BUPROPION | RET | Drug Target (CMap, positive connectivity) |
| BUPROPION | SPP1 | Drug Target (CMap, positive connectivity) |
| BUPROPION | USP32 | Drug Target (CMap, positive connectivity) |
| BUPROPION | UMODL1 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | HMGB2 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | SLC25A1 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | GPR107 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | RPS13 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | P2RY8 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | MPI | Drug Target (CMap, positive connectivity) |
| VARENICLINE | SMU1 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | PIK3CG | Drug Target (CMap, positive connectivity) |
| VARENICLINE | PAICS | Drug Target (CMap, positive connectivity) |
| VARENICLINE | FIS1 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | PGK1 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | PHACTR1 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | TLR5 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | CYB5B | Drug Target (CMap, positive connectivity) |
| VARENICLINE | PFKL | Drug Target (CMap, positive connectivity) |
| VARENICLINE | TFF2 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | FST | Drug Target (CMap, positive connectivity) |
| VARENICLINE | GPR65 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | PTP4A1 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | SMAD2 | Drug Target (CMap, positive connectivity) |
| VARENICLINE | HEATR1 | Drug Target (CMap, negative connectivity) |
| VARENICLINE | NAT10 | Drug Target (CMap, negative connectivity) |
| VARENICLINE | CHRNA4 | Drug Target (Drug Gene Interaction database) |
| VARENICLINE | CHRNB2 | Drug Target (Drug Gene Interaction database) |
| VARENICLINE | CHRNA3 | Drug Target (Drug Gene Interaction database) |
| VARENICLINE | CHRNB4 | Drug Target (Drug Gene Interaction database) |
| VARENICLINE | HYKK | Drug Target (Drug Gene Interaction database) |
| VARENICLINE | CHRNA7 | Drug Target (Drug Gene Interaction database) |
| VARENICLINE | CYP2A6 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | DBH | Drug Target (Drug Gene Interaction database) |
| BUPROPION | PRL | Drug Target (Drug Gene Interaction database) |
| BUPROPION | SLC18A2 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | SLC6A3 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | JUN | Drug Target (Drug Gene Interaction database) |

| | | |
|---|---|---|
| BUPROPION | CYP2A6 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | NAT1 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | SLC6A2 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | EPB41 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | HTR2A | Drug Target (Drug Gene Interaction database) |
| BUPROPION | DRD1 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | ANKK1 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | GALR1 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | ACE | Drug Target (Drug Gene Interaction database) |
| BUPROPION | FKBP5 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | SLC6A4 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | DRD2 | Drug Target (Drug Gene Interaction database) |
| BUPROPION | COMT | Drug Target (Drug Gene Interaction database) |
| BUPROPION | SACM1L | Drug Target (Drug Gene Interaction database) |

Supplementary Table S5 Summary-data-based Mendelian randomization results of medication targets on IA risk

| Gene | Tissue | Top SNP | Top SNP CHR | SMR Beta | SMR OR | SMR p-value |
|---|---|---|---|---|---|---|
| ACE | Nerve Tibial | rs7213524 | 17 | -0,0831178 | 0,920242736 | 0,4728549 |
| ACE | Thyroid | rs12449782 | 17 | 0,0463857 | 1,047478345 | 0,7480564 |
| ACE | Colon Transverse | rs4311 | 17 | 0,012409 | 1,012486311 | 0,8356426 |
| ACE | Blood | rs4311 | 17 | -0,0766177 | 0,926243889 | 0,8356599 |
| ACE | Skin Sun Exposed Lower leg | rs4311 | 17 | -0,0291277 | 0,971292423 | 0,8356599 |
| ACE | Skin Not Sun Exposed Suprapubic | rs4311 | 17 | -0,0275132 | 0,972861841 | 0,835681 |
| ACE | Adipose Subcutaneous | rs4311 | 17 | -0,0329889 | 0,967549299 | 0,8356838 |
| ACE | Spleen | rs2440144 | 17 | 0,00527459 | 1,005288525 | 0,9206863 |
| ACE | Lung | rs4325 | 17 | -0,00529898 | 0,994715035 | 0,9376222 |
| ACE | Cells Cultured fibroblasts | rs4344 | 17 | -0,0069093 | 0,993114514 | 0,9442996 |
| ANKK1 | Whole blood | rs11214603 | 11 | -0,16921 | 0,844331575 | 0,004852966 |
| ANKK1 | Lung | rs6277 | 11 | -0,200659 | 0,818191387 | 0,00565371 |
| ANKK1 | Colon Sigmoid | rs10891549 | 11 | -0,150474 | 0,860300098 | 0,006075508 |
| ANKK1 | Adipose Visceral Omentum | rs34601878 | 11 | -0,172313 | 0,841715675 | 0,006748397 |
| ANKK1 | Nerve Tibial | rs2186799 | 11 | -0,0836955 | 0,919711266 | 0,01365374 |
| ANKK1 | Muscle Skeletal | rs2186800 | 11 | -0,142881 | 0,866857219 | 0,01496616 |
| ANKK1 | Pancreas | rs11214589 | 11 | -0,126104 | 0,881523164 | 0,01764031 |
| ANKK1 | Liver | rs2186800 | 11 | -0,125839 | 0,881756798 | 0,01998491 |
| ANKK1 | Small Intestine Terminal Ileum | rs11214589 | 11 | -0,185943 | 0,830320922 | 0,0209619 |
| ANKK1 | Esophagus Mucosa | rs1078 | 11 | 0,201723 | 1,223509049 | 0,02107885 |
| ANKK1 | Heart Left Ventricle | rs4938012 | 11 | -0,124698 | 0,882763457 | 0,02332707 |
| ANKK1 | Heart Atrial Appendage | rs7123797 | 11 | -0,132614 | 0,875803087 | 0,02743452 |
| ANKK1 | Stomach | rs7942392 | 11 | -0,0890055 | 0,914840542 | 0,1471669 |
| ANKK1 | Artery Aorta | rs2282511 | 11 | -0,0813504 | 0,921870611 | 0,1515279 |
| ANKK1 | Blood | rs6589371 | 11 | -0,120405 | 0,886561307 | 0,1543394 |
| ANKK1 | Adipose Subcutaneous | rs6589371 | 11 | -0,0763045 | 0,926534034 | 0,1587454 |
| ANKK1 | Esophagus Muscularis | rs6589371 | 11 | -0,0827074 | 0,920620481 | 0,1598929 |
| ANKK1 | Brain Frontal Cortex BA9 | rs6589371 | 11 | -0,0429618 | 0,957947983 | 0,1601646 |
| ANKK1 | Brain Cortex | rs6589371 | 11 | -0,0491945 | 0,951995948 | 0,1602232 |
| ANKK1 | Artery Coronary | rs73572791 | 11 | -0,101719 | 0,903283339 | 0,1607228 |
| ANKK1 | Brain Cerebellum | rs6589371 | 11 | -0,0471312 | 0,95396223 | 0,1609303 |
| ANKK1 | Colon Transverse | rs6589371 | 11 | -0,0920739 | 0,912037747 | 0,1626107 |

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|---|---|---|---|---|---|---|
| ANKK1 | Brain Anterior cingulate cortex BA24 | rs6589371 | 11 | -0,0489358 | 0,952242262 | 0,1628185 |
| ANKK1 | Ovary | rs6589371 | 11 | -0,0679899 | 0,93426991 | 0,1630167 |
| ANKK1 | Spleen | rs6589371 | 11 | -0,0785586 | 0,924447886 | 0,1634021 |
| ANKK1 | Artery Tibial | rs6589371 | 11 | -0,110682 | 0,895223385 | 0,1636055 |
| ANKK1 | Brain Cerebellar Hemisphere | rs6589371 | 11 | -0,0545146 | 0,946944683 | 0,163656 |
| ANKK1 | Esophagus Gastroesophageal Junction | rs6589371 | 11 | -0,0823051 | 0,920990921 | 0,1637956 |
| ANKK1 | Testis | rs7130431 | 11 | -0,058961 | 0,942743535 | 0,176232 |
| ANKK1 | Thyroid | rs2298489 | 11 | -0,135177 | 0,873561278 | 0,1977341 |
| ANKK1 | Cells Cultured fibroblasts | rs75343922 | 11 | 0,00338591 | 1,003391649 | 0,9506788 |
| ANKRD49 | | | | | | |
| ATG16L1 | Blood | rs10192702 | 2 | 0,126469 | 1,134814271 | 0,3113544 |
| ATG16L1 | Adipose Subcutaneous | rs7559194 | 2 | -0,100108 | 0,904739701 | 0,3123163 |
| ATG16L1 | Cells Cultured fibroblasts | rs2289477 | 2 | 0,177323 | 1,194016698 | 0,3299825 |
| ATG16L1 | Skin Not Sun Exposed Suprapubic | rs6745825 | 2 | 0,0534607 | 1,054915533 | 0,3462154 |
| ATG16L1 | Testis | rs6745825 | 2 | 0,0733556 | 1,076113135 | 0,3463568 |
| ATG16L1 | Thyroid | rs56227616 | 2 | 0,148348 | 1,159916477 | 0,3664998 |
| ATG16L1 | Skin Sun Exposed Lower leg | rs6431659 | 2 | -0,0504838 | 0,950769331 | 0,4166514 |
| ATG16L1 | Nerve Tibial | rs11685932 | 2 | 0,0797998 | 1,083070215 | 0,4223416 |
| ATG16L1 | Minor Salivary Gland | rs6737398 | 2 | -0,0544811 | 0,946976407 | 0,4614773 |
| ATG16L1 | Esophagus Mucosa | rs3816234 | 2 | 0,030528 | 1,030998758 | 0,5057285 |
| ATG16L1 | Muscle Skeletal | rs7594365 | 2 | -0,0738212 | 0,928837755 | 0,6377532 |
| ATG4A | | | | | | |
| ATP1A1 | Esophagus Mucosa | rs10924046 | 1 | 0,0502706 | 1,051555609 | 0,6941962 |
| CASD1 | Testis | rs10250095 | 7 | 0,155651 | 1,168418354 | 0,07635438 |
| CASD1 | Cells Cultured fibroblasts | rs1056413 | 7 | -0,149092 | 0,861489854 | 0,2709465 |
| CASD1 | Nerve Tibial | rs3763464 | 7 | 0,0949842 | 1,099641481 | 0,4314388 |
| CASD1 | Blood | rs2301645 | 7 | 0,157224 | 1,170257722 | 0,5865914 |
| CASD1 | Thyroid | rs2301645 | 7 | 0,0395856 | 1,040379552 | 0,5866108 |
| CASD1 | Esophagus Mucosa | rs2301645 | 7 | 0,039891 | 1,040697332 | 0,5866259 |
| CASD1 | Adipose Subcutaneous | rs2301645 | 7 | 0,0611462 | 1,063054321 | 0,5870059 |
| CASD1 | Muscle Skeletal | rs2301645 | 7 | 0,0662356 | 1,068478421 | 0,587139 |
| CASD1 | Artery Tibial | rs2301645 | 7 | 0,0650816 | 1,067246108 | 0,5871688 |
| CASD1 | Esophagus Muscularis | rs2301645 | 7 | 0,0478564 | 1,049020005 | 0,5872513 |
| CASD1 | Pancreas | rs2301645 | 7 | 0,037316 | 1,038020984 | 0,5874339 |

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|---|---|---|---|---|---|---|
| CASD1 | Artery Aorta | rs2301645 | 7 | 0,0444422 | 1,045444548 | 0,5874356 |
| CASD1 | Lung | rs2301645 | 7 | 0,0777102 | 1,080809395 | 0,5877659 |
| CDKN1C | Nerve Tibial | rs17743926 | 11 | 0,106421 | 1,112290052 | 0,3283234 |
| CDKN1C | Blood | rs234854 | 11 | -0,00431688 | 0,995692424 | 0,9852252 |
| CEBPB | Blood | rs1889236 | 20 | 0,288362 | 1,334240212 | 0,100263 |
| CHRNA3 | Colon Sigmoid | rs17486278 | 15 | -0,417033 | 0,658999173 | 0,000134841 |
| CHRNA3 | Testis | rs1809415 | 15 | 0,114565 | 1,121385529 | 0,0420711 |
| CHRNA3 | Nerve Tibial | rs4886572 | 15 | -0,033988 | 0,966583104 | 0,2692013 |
| CHRNA3 | Muscle Skeletal | rs28392948 | 15 | -0,0294269 | 0,971001855 | 0,2785703 |
| CHRNA3 | Brain Nucleus accumbens basal ganglia | rs950776 | 15 | -0,0316234 | 0,96887139 | 0,2980649 |
| CHRNA3 | Brain Caudate basal ganglia | rs8023462 | 15 | -0,0262385 | 0,974102738 | 0,3167217 |
| CHRNA3 | Brain Putamen basal ganglia | rs8023462 | 15 | -0,0320717 | 0,968437143 | 0,3179268 |
| CHRNA4 | Spleen | rs58626340 | 20 | 0,050604 | 1,051906256 | 0,3249479 |
| CHRNA4 | Nerve Tibial | rs12624510 | 20 | 0,00909544 | 1,009136929 | 0,8234294 |
| CHRNA4 | Brain Putamen basal ganglia | rs12624510 | 20 | 0,0131542 | 1,013241097 | 0,8235199 |
| CHRNA4 | Brain Caudate basal ganglia | rs12624510 | 20 | 0,0157437 | 1,015868285 | 0,8235387 |
| CHRNA4 | Brain Nucleus accumbens basal ganglia | rs73157403 | 20 | -0,00514767 | 0,994865557 | 0,9417159 |
| CHRNA4 | Brain Frontal Cortex BA9 | rs73157403 | 20 | -0,00681863 | 0,993204564 | 0,9417168 |
| CHRNA4 | Liver | rs3810471 | 20 | 0,000760252 | 1,000760541 | 0,9792781 |
| CHRNA4 | Testis | rs3787142 | 20 | -0,00195481 | 0,998047099 | 0,9891448 |
| CHRNA7 | Skin Sun Exposed Lower leg | rs1425292 | 15 | 0,159855 | 1,173340724 | 0,03502589 |
| CHRNA7 | Artery Tibial | rs11639169 | 15 | 0,130642 | 1,139559746 | 0,06580833 |
| CHRNA7 | Lung | rs12440544 | 15 | 0,0659175 | 1,068138592 | 0,1984544 |
| CHRNA7 | Nerve Tibial | rs72713546 | 15 | 0,051063 | 1,052389192 | 0,2713768 |
| CHRNA7 | Pancreas | rs60109258 | 15 | -0,0406295 | 0,960184813 | 0,4193846 |
| CHRNA7 | Adipose Subcutaneous | rs16956707 | 15 | 0,0385151 | 1,039266421 | 0,4948704 |
| CHRNA7 | Thyroid | rs34959140 | 15 | 0,0307593 | 1,031237255 | 0,5377552 |
| CHRNA7 | Artery Aorta | rs28522500 | 15 | 0,0230223 | 1,023289359 | 0,6554459 |
| CHRNB2 | Blood | rs11264222 | 1 | -0,126776 | 0,880930979 | 0,4171514 |
| CHRNB2 | Whole blood | rs11264222 | 1 | -0,0773131 | 0,925600003 | 0,4197647 |
| CHRNB2 | Skin Sun Exposed Lower leg | rs4845652 | 1 | -0,0210509 | 0,979169124 | 0,7240819 |
| CHRNB2 | Skin Not Sun Exposed Suprapubic | rs4845652 | 1 | -0,0322238 | 0,968289855 | 0,7243944 |
| CHRNB2 | Esophagus Mucosa | rs4845378 | 1 | -0,00791711 | 0,992114148 | 0,8926722 |
| CHRNB4 | Esophagus Mucosa | rs4886580 | 15 | 0,170865 | 1,186330584 | 0,011763 |

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|---|---|---|---|---|---|---|
| CHRNB4 | Testis | rs12912524 | 15 | 0,172035 | 1,187719403 | 0,03357038 |
| COMT | Esophagus Mucosa | rs6269 | 22 | 0,0890194 | 1,093101862 | 0,1189013 |
| COMT | Cells Cultured fibroblasts | rs45616631 | 22 | -0,117203 | 0,889404626 | 0,169559 |
| COMT | Esophagus Muscularis | rs45616631 | 22 | -0,084457 | 0,919011172 | 0,1699839 |
| COMT | Esophagus Gastroesophageal Junction | rs45616631 | 22 | -0,0937767 | 0,910486051 | 0,1708661 |
| COMT | Adipose Visceral Omentum | rs45616631 | 22 | -0,0941894 | 0,910110371 | 0,1708991 |
| COMT | Breast Mammary Tissue | rs45616631 | 22 | -0,112093 | 0,893961115 | 0,1720169 |
| COMT | Skin Not Sun Exposed Suprapubic | rs165722 | 22 | 0,160699 | 1,174331442 | 0,1724706 |
| COMT | Heart Atrial Appendage | rs45616631 | 22 | -0,101401 | 0,903570628 | 0,1729925 |
| COMT | Brain Cerebellum | rs45616631 | 22 | -0,101748 | 0,903257144 | 0,1754376 |
| COMT | Brain Cerebellar Hemisphere | rs45616631 | 22 | -0,104632 | 0,900655903 | 0,1778803 |
| COMT | Pituitary | rs45616631 | 22 | -0,0967203 | 0,907809885 | 0,1782762 |
| COMT | Lung | rs45616631 | 22 | -0,177592 | 0,837283966 | 0,178988 |
| COMT | Nerve Tibial | rs45454096 | 22 | -0,0924522 | 0,911692789 | 0,2411545 |
| COMT | Heart Left Ventricle | rs45454096 | 22 | -0,113625 | 0,892592615 | 0,2457466 |
| COMT | Artery Tibial | rs73880021 | 22 | -0,0981649 | 0,90649941 | 0,2630384 |
| COMT | Adipose Subcutaneous | rs73880021 | 22 | -0,0826314 | 0,920690451 | 0,2633287 |
| COMT | Artery Aorta | rs73880021 | 22 | -0,0806992 | 0,922471129 | 0,2640018 |
| COMT | Colon Sigmoid | rs73880021 | 22 | -0,0915896 | 0,912479554 | 0,2662565 |
| COMT | Thyroid | rs6518591 | 22 | -0,149691 | 0,860973976 | 0,3221623 |
| COMT | Blood | rs9618717 | 22 | -0,0822992 | 0,920996355 | 0,3280404 |
| COMT | Cells EBV transformed lymphocytes | rs9618717 | 22 | -0,0404458 | 0,960361215 | 0,333378 |
| COMT | Pancreas | rs6518589 | 22 | -0,0420776 | 0,958795375 | 0,5101149 |
| COMT | Muscle Skeletal | rs6518589 | 22 | -0,103295 | 0,901860885 | 0,5117297 |
| COMT | Whole blood | rs174680 | 22 | 0,0342637 | 1,034857463 | 0,8507592 |
| CTSK | Heart Left Ventricle | rs2134688 | 1 | -0,197886 | 0,820463381 | 0,1963465 |
| CTSK | Cells Cultured fibroblasts | rs3768017 | 1 | -0,0961446 | 0,908332662 | 0,4477276 |
| CTSK | Heart Atrial Appendage | rs3768017 | 1 | -0,0772052 | 0,925699881 | 0,448499 |
| CTSK | Testis | rs72704656 | 1 | -0,0562139 | 0,945336907 | 0,5925897 |
| CTSK | Brain Cerebellar Hemisphere | rs12126004 | 1 | -0,0189864 | 0,981192706 | 0,6222927 |
| CTSK | Artery Coronary | rs7535032 | 1 | 0,0103797 | 1,010433756 | 0,8912878 |
| CTSK | Pancreas | rs12067685 | 1 | -0,00843817 | 0,991597331 | 0,9251057 |
| CTSK | Brain Cerebellum | rs11204737 | 1 | -0,00152215 | 0,998479008 | 0,9643922 |
| CTSK | Pituitary | rs11204737 | 1 | -0,00294577 | 0,997058565 | 0,9643927 |

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|---|---|---|---|---|---|---|
| CTSK | Blood | rs2089081 | 1 | 0,00079709 | 1,000797408 | 0,9821916 |
| CTSK | Whole blood | rs2039590 | 1 | 0,00107903 | 1,001079612 | 0,9857528 |
| CTSK | Artery Aorta | rs12042263 | 1 | 0,000468399 | 1,000468509 | 0,9959703 |
| CTSK | Liver | rs7534124 | 1 | 0 | 1 | 1 |
| CYB5B | Esophagus Mucosa | rs246139 | 16 | -0,258372 | 0,77230788 | 0,09426818 |
| CYB5B | Whole blood | rs246147 | 16 | 0,341883 | 1,407595599 | 0,09876287 |
| CYB5B | Skin Sun Exposed Lower leg | rs9929584 | 16 | -0,114587 | 0,891734354 | 0,5042875 |
| CYB5B | Skin Not Sun Exposed Suprapubic | rs62057899 | 16 | -0,0793842 | 0,923684976 | 0,6021572 |
| CYB5B | Blood | rs72797202 | 16 | -0,0500149 | 0,951215251 | 0,7985059 |
| CYP2A6 | Ovary | rs3797218 | 19 | 0,0716027 | 1,074228468 | 0,1180923 |
| CYP2A6 | Ovary | rs3797218 | 19 | 0,0716027 | 1,074228468 | 0,1180923 |
| DBH | Pancreas | rs2905214 | 9 | -0,0271052 | 0,973258849 | 0,5515564 |
| DBH | Thyroid | rs2905214 | 9 | -0,0611853 | 0,940648921 | 0,552668 |
| DBH | Stomach | rs491072 | 9 | -0,0297588 | 0,970679633 | 0,5614521 |
| DBH | Esophagus Mucosa | rs2519071 | 9 | 0,0325804 | 1,033116952 | 0,6694952 |
| DBH | Blood | rs2519072 | 9 | 0,060744 | 1,062626847 | 0,683823 |
| DBH | Brain Cortex | rs2519152 | 9 | -0,022177 | 0,978067102 | 0,7338887 |
| DBH | Nerve Tibial | rs9409872 | 9 | 0,010833 | 1,010891889 | 0,8532327 |
| DBH | Adipose Visceral Omentum | rs2849750 | 9 | 0,0095581 | 1,009603925 | 0,878412 |
| DBH | Colon Sigmoid | rs73548055 | 9 | 0,00321851 | 1,003223695 | 0,9601239 |
| DBH | Muscle Skeletal | rs10993778 | 9 | 0,000685493 | 1,000685728 | 0,9938149 |
| DBH | Esophagus Muscularis | rs10993775 | 9 | 0 | 1 | 1 |
| DBH | Esophagus Gastroesophageal Junction | rs10993776 | 9 | 0 | 1 | 1 |
| DRD1 | Adipose Visceral Omentum | rs6556205 | 5 | 0,060532 | 1,062401594 | 0,3065853 |
| DRD2 | Nerve Tibial | rs3802856 | 11 | -0,129825 | 0,878249111 | 0,02816802 |
| DRD2 | Kidney Cortex | rs2511052 | 11 | -0,0482538 | 0,952891912 | 0,02944601 |
| DRD2 | Minor Salivary Gland | rs2465651 | 11 | 0,0986862 | 1,103719898 | 0,0319362 |
| DRD2 | Skin Not Sun Exposed Suprapubic | rs2465651 | 11 | 0,235429 | 1,265451531 | 0,03636979 |
| DRD2 | Skin Sun Exposed Lower leg | rs7110738 | 11 | 0,139938 | 1,150202484 | 0,04116093 |
| DRD2 | Muscle Skeletal | rs7114297 | 11 | -0,0230903 | 0,977174241 | 0,6473981 |
| DRD2 | Esophagus Muscularis | rs6589381 | 11 | -0,0102596 | 0,98979285 | 0,8621287 |
| DRD2 | Esophagus Gastroesophageal Junction | rs6589381 | 11 | -0,0108529 | 0,98920578 | 0,8621484 |
| DRD2 | Stomach | rs7107293 | 11 | -0,0113515 | 0,988712685 | 0,8627939 |
| DRD2 | Adipose Subcutaneous | rs4936272 | 11 | -0,006115 | 0,993903659 | 0,9368026 |

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|---|---|---|---|---|---|---|
| DUT | Whole blood | rs76749119 | 15 | -0,0382661 | 0,962456797 | 0,2985305 |
| DUT | Blood | rs964611 | 15 | -0,0883993 | 0,915395286 | 0,3429751 |
| DUT | Skin Sun Exposed Lower leg | rs76539098 | 15 | 0,0868218 | 1,090702299 | 0,4864172 |
| EED | Cells Cultured fibroblasts | rs291203 | 11 | -0,0990501 | 0,905697331 | 0,4674494 |
| EED | Whole blood | rs11234594 | 11 | -0,0977112 | 0,906910782 | 0,4737241 |
| EED | Spleen | rs10898463 | 11 | -0,0396576 | 0,96111847 | 0,4996287 |
| EED | Brain Cerebellum | rs1874694 | 11 | 0,0227462 | 1,023006867 | 0,5514314 |
| EED | Blood | rs7942971 | 11 | -0,0767839 | 0,92608996 | 0,6105382 |
| EED | Brain Cerebellar Hemisphere | rs7942971 | 11 | 0,0280562 | 1,028453482 | 0,611726 |
| EPB41 | Blood | rs12354050 | 1 | -0,256213 | 0,773977094 | 0,2990874 |
| EPB41 | Whole blood | rs157204 | 1 | -0,257306 | 0,773131599 | 0,3234036 |
| EPB41 | Skin Sun Exposed Lower leg | rs157220 | 1 | -0,173748 | 0,840508679 | 0,421385 |
| EPB41 | Testis | rs457618 | 1 | -0,109188 | 0,896561848 | 0,4359171 |
| EPB41 | Brain Cerebellar Hemisphere | rs150085 | 1 | -0,0196938 | 0,980498856 | 0,7018459 |
| EPB41 | Brain Cerebellum | rs150085 | 1 | -0,0227601 | 0,977496957 | 0,7018889 |
| ESYT1 | Blood | rs2640569 | 12 | 0,215863 | 1,24093236 | 0,3192405 |
| FGFR2 | Colon Sigmoid | rs10788178 | 10 | 0,173823 | 1,189844945 | 0,1475228 |
| FGFR2 | Heart Atrial Appendage | rs1693679 | 10 | -0,100902 | 0,904021623 | 0,1751914 |
| FGFR2 | Blood | rs1896422 | 10 | 0,051089 | 1,052416554 | 0,3555031 |
| FGFR2 | Artery Aorta | rs7079213 | 10 | -0,0370433 | 0,963634409 | 0,5311079 |
| FGFR2 | Artery Tibial | rs10788185 | 10 | -0,0328675 | 0,967666767 | 0,6012608 |
| FGFR2 | Adipose Visceral Omentum | rs73361168 | 10 | 0,0122708 | 1,012346395 | 0,872757 |
| FIS1 | Skin Not Sun Exposed Suprapubic | rs76238898 | 7 | -0,0109358 | 0,989123778 | 0,9029415 |
| FIS1 | Esophagus Muscularis | rs76238898 | 7 | -0,0120232 | 0,98804879 | 0,902944 |
| FIS1 | Thyroid | rs74662330 | 7 | -0,0223465 | 0,977901334 | 0,9059757 |
| FIS1 | Cells Cultured fibroblasts | rs6964812 | 7 | -0,00830206 | 0,991732307 | 0,9109933 |
| FIS1 | Adipose Subcutaneous | rs6964812 | 7 | -0,0106549 | 0,989401662 | 0,9109934 |
| FIS1 | Skin Sun Exposed Lower leg | rs6964812 | 7 | -0,0104287 | 0,98962549 | 0,9109934 |
| FIS1 | Artery Tibial | rs6964812 | 7 | -0,0133966 | 0,986692735 | 0,9109939 |
| FIS1 | Nerve Tibial | rs6964812 | 7 | -0,0114635 | 0,988601956 | 0,9109939 |
| FIS1 | Lung | rs6964812 | 7 | -0,0113453 | 0,988718815 | 0,9109952 |
| FIS1 | Artery Aorta | rs6964812 | 7 | -0,00982103 | 0,990227039 | 0,9109959 |
| FIS1 | Colon Transverse | rs6964812 | 7 | -0,0107138 | 0,989343388 | 0,9109971 |
| FIS1 | Stomach | rs6964812 | 7 | -0,0112327 | 0,988830151 | 0,9109986 |

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|---|---|---|---|---|---|---|
| FIS1 | Ovary | rs6964812 | 7 | -0,00851743 | 0,991518741 | 0,911 |
| FIS1 | Cells EBV transformed lymphocytes | rs6964812 | 7 | -0,00675555 | 0,993267217 | 0,9110002 |
| FIS1 | Pancreas | rs6964812 | 7 | -0,0116836 | 0,988384388 | 0,911004 |
| FIS1 | Uterus | rs9656066 | 7 | -0,00539415 | 0,994620372 | 0,9249282 |
| FIS1 | Breast Mammary Tissue | rs6957526 | 7 | -0,0114983 | 0,988567553 | 0,9333183 |
| FIS1 | Prostate | rs6957526 | 7 | -0,00760023 | 0,992428579 | 0,9333209 |
| FIS1 | Blood | rs114756165 | 7 | -0,00415592 | 0,995852704 | 0,9368193 |
| FIS1 | Testis | rs73713820 | 7 | -0,00843744 | 0,991598055 | 0,9465263 |
| FIS1 | Artery Coronary | rs6979122 | 7 | -0,00562278 | 0,994392998 | 0,9480382 |
| FIS1 | Adipose Visceral Omentum | rs73713821 | 7 | -0,00690611 | 0,993117682 | 0,9481423 |
| FIS1 | Small Intestine Terminal Ileum | rs73713821 | 7 | -0,00672936 | 0,993293231 | 0,9481439 |
| FIS1 | Esophagus Gastroesophageal Junction | rs113045567 | 7 | -0,00277155 | 0,997232287 | 0,9788773 |
| FIS1 | Colon Sigmoid | rs113045567 | 7 | -0,0027658 | 0,997238021 | 0,9788773 |
| FIS1 | Esophagus Mucosa | rs76485948 | 7 | -0,00173895 | 0,998262561 | 0,9853757 |
| FIS1 | Whole blood | rs10241107 | 7 | -0,00229765 | 0,997704988 | 0,9902302 |
| FKBP5 | | | | | | |
| FRAT2 | Testis | rs1890966 | 10 | 0,0922014 | 1,096585652 | 0,237577 |
| FRAT2 | Brain Frontal Cortex BA9 | rs35717991 | 10 | -0,0699827 | 0,93240995 | 0,2787848 |
| FRAT2 | Esophagus Mucosa | rs12769073 | 10 | 0,104631 | 1,110300834 | 0,3528666 |
| FRAT2 | Brain Cortex | rs29001262 | 10 | -0,038042 | 0,962672508 | 0,5690365 |
| FRAT2 | Whole blood | rs10882904 | 10 | -0,0826823 | 0,920643589 | 0,6335127 |
| FRAT2 | Blood | rs11189165 | 10 | -0,0167399 | 0,983399434 | 0,6812873 |
| FRAT2 | Muscle Skeletal | rs7903562 | 10 | -0,0178006 | 0,982356895 | 0,8647227 |
| FRAT2 | Lung | rs10882900 | 10 | -0,0042968 | 0,995712418 | 0,9728437 |
| FST | Blood | rs77333810 | 5 | 0,097194 | 1,102074155 | 0,2927521 |
| GALR1 | Nerve Tibial | rs55944549 | 18 | 0,137914 | 1,147876829 | 0,1022745 |
| GALR1 | Breast Mammary Tissue | rs2850892 | 18 | -0,0810292 | 0,922166764 | 0,1338807 |
| GALR1 | Adipose Visceral Omentum | rs2850892 | 18 | -0,0727612 | 0,929822845 | 0,1340183 |
| GALR1 | Esophagus Gastroesophageal Junction | rs2850892 | 18 | -0,0848652 | 0,918636108 | 0,1367748 |
| GALR1 | Adipose Subcutaneous | rs11662010 | 18 | -0,0682115 | 0,934062898 | 0,1374073 |
| GALR1 | Esophagus Muscularis | rs72978691 | 18 | -0,0887426 | 0,915081085 | 0,1377292 |
| GALR1 | Skin Sun Exposed Lower leg | rs72978691 | 18 | -0,102836 | 0,902274934 | 0,1407092 |
| GALR1 | Thyroid | rs2850912 | 18 | -0,0787766 | 0,924246378 | 0,2422667 |
| GALR1 | Pituitary | rs2850909 | 18 | -0,001628 | 0,998373324 | 0,9775276 |

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|---|---|---|---|---|---|---|
| GPR107 | Blood | rs61456260 | 9 | -0,0238731 | 0,976409608 | 0,9524739 |
| GPR65 | Blood | rs6574976 | 14 | -0,166201 | 0,846875995 | 0,04308903 |
| GPR65 | Whole blood | rs77194943 | 14 | -0,159673 | 0,852422486 | 0,1335297 |
| GPR65 | Cells Cultured fibroblasts | rs116899835 | 14 | -0,0466648 | 0,954407261 | 0,4227271 |
| GPRC6A | | | | | | |
| HEATR1 | Testis | rs10802552 | 1 | 0,266019 | 1,304759849 | 0,04621676 |
| HEATR1 | Colon Sigmoid | rs1773451 | 1 | 0,249286 | 1,28310895 | 0,06739561 |
| HEATR1 | Esophagus Muscularis | rs1126627 | 1 | 0,219789 | 1,245813836 | 0,06961566 |
| HEATR1 | Blood | rs4233465 | 1 | 0,31351 | 1,368219145 | 0,143571 |
| HEATR1 | Muscle Skeletal | rs4233465 | 1 | 0,317087 | 1,373122028 | 0,1488923 |
| HEATR1 | Lung | rs4233465 | 1 | 0,350174 | 1,419314488 | 0,1547348 |
| HEATR1 | Esophagus Gastroesophageal Junction | rs2794763 | 1 | 0,16758 | 1,182439882 | 0,2538373 |
| HEATR1 | Brain Cerebellum | rs2853612 | 1 | 0,0672122 | 1,069522407 | 0,2745494 |
| HEATR1 | Artery Tibial | rs2853612 | 1 | 0,170071 | 1,185389011 | 0,2753318 |
| HEATR1 | Brain Cerebellar Hemisphere | rs2853612 | 1 | 0,09847 | 1,103481299 | 0,2766401 |
| HEXB | Whole blood | rs10474420 | 5 | -0,344313 | 0,708707068 | 0,01746482 |
| HEXB | Blood | rs10075142 | 5 | -0,202651 | 0,816563172 | 0,01774599 |
| HMGB2 | Blood | rs13128793 | 4 | 0,0453803 | 1,04642574 | 0,8545527 |
| HTR2A | Minor Salivary Gland | rs13378925 | 13 | -0,026005 | 0,974330218 | 0,5019048 |
| HTR2A | Artery Aorta | rs9591060 | 13 | -0,0224534 | 0,977796801 | 0,6358478 |
| HTR2A | Testis | rs9534515 | 13 | -0,0136454 | 0,986447276 | 0,7063822 |
| HTR2A | Colon Sigmoid | rs11148042 | 13 | -0,0270216 | 0,973340217 | 0,7154554 |
| HTR2A | Esophagus Mucosa | rs35186029 | 13 | -0,0258393 | 0,974491678 | 0,7654659 |
| HTR2A | Artery Tibial | rs35148622 | 13 | -0,0182359 | 0,981929368 | 0,7925509 |
| HTR2A | Lung | rs12872365 | 13 | -0,0112182 | 0,988844489 | 0,81557 |
| HTR2A | Esophagus Muscularis | rs12872365 | 13 | -0,0144385 | 0,985665235 | 0,8156011 |
| HTR2A | Adipose Subcutaneous | rs2104936 | 13 | -0,0240604 | 0,976226744 | 0,8280162 |
| HYKK | Blood | rs931794 | 15 | -2,078 | 0,125180323 | 8,73913E-05 |
| HYKK | Brain Caudate basal ganglia | rs4887062 | 15 | 0,0601549 | 1,062001038 | 0,2515964 |
| HYKK | Brain Cortex | rs2869544 | 15 | 0,0692451 | 1,07169885 | 0,2728862 |
| HYKK | Heart Left Ventricle | rs7173512 | 15 | 0,0838138 | 1,087426396 | 0,3650745 |
| ICAM1 | Blood | rs281437 | 19 | -0,206958 | 0,813053798 | 0,09755327 |
| ICAM1 | Whole blood | rs281437 | 19 | -0,254534 | 0,775277693 | 0,1076722 |
| IL10 | Whole blood | rs1518110 | 1 | 0,157079 | 1,170088047 | 0,1720145 |

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|---|---|---|---|---|---|---|
| IL10 | Blood | rs1518111 | 1 | 0,192109 | 1,211802596 | 0,1749097 |
| ITGB4 | Nerve Tibial | rs9910627 | 17 | 0,297566 | 1,346577247 | 0,04094785 |
| ITGB4 | Pancreas | rs4789223 | 17 | -0,130156 | 0,877958459 | 0,1009334 |
| ITGB4 | Stomach | rs2291031 | 17 | -0,093857 | 0,910412942 | 0,4983429 |
| ITSN1 | Brain Caudate basal ganglia | rs2244966 | 21 | 0,0699391 | 1,072442867 | 0,419055 |
| ITSN1 | Whole blood | rs2300375 | 21 | -0,0525508 | 0,94880612 | 0,505004 |
| ITSN1 | Blood | rs4817592 | 21 | -0,0231622 | 0,977103985 | 0,5182815 |
| ITSN1 | Skin Not Sun Exposed Suprapubic | rs9981693 | 21 | 0,0591803 | 1,060966516 | 0,528894 |
| ITSN1 | Skin Sun Exposed Lower leg | rs9974830 | 21 | 0,0703762 | 1,072911735 | 0,5381375 |
| ITSN1 | Artery Aorta | rs9978415 | 21 | -0,0295955 | 0,970838158 | 0,7475826 |
| ITSN1 | Artery Tibial | rs2834282 | 21 | -0,0178964 | 0,98226279 | 0,8839292 |
| ITSN1 | Cells Cultured fibroblasts | rs2246647 | 21 | -0,0178312 | 0,982326835 | 0,9192058 |
| JUN | Blood | rs2716140 | 1 | 0,124001 | 1,132017003 | 0,2169653 |
| KARS | | | | | | |
| KRT19 | Brain Cerebellar Hemisphere | rs16966660 | 17 | -0,0143433 | 0,985759075 | 0,6822692 |
| KRT19 | Thyroid | rs1823996 | 17 | -0,0345971 | 0,965994537 | 0,6994966 |
| KRT19 | Cells Cultured fibroblasts | rs9905005 | 17 | -0,00581379 | 0,994203077 | 0,943257 |
| KRT19 | Testis | rs9303313 | 17 | 0,00185411 | 1,00185583 | 0,9697082 |
| KRT19 | Esophagus Mucosa | rs9303313 | 17 | 0,00378159 | 1,003788749 | 0,9697082 |
| KRT19 | Brain Cerebellum | rs73307180 | 17 | -0,000466803 | 0,999533306 | 0,9922537 |
| LEF1 | Heart Left Ventricle | rs140355156 | 4 | -0,0724701 | 0,930093556 | 0,1876417 |
| LIPH | Cells Cultured fibroblasts | rs79952553 | 3 | 0,147525 | 1,158962259 | 0,08641804 |
| LIPH | Testis | rs55797844 | 3 | -0,148737 | 0,861795737 | 0,200535 |
| LIPH | Blood | rs79465457 | 3 | 0,152314 | 1,16452584 | 0,6739923 |
| MAP3K5 | Lung | rs6924387 | 6 | 0,117983 | 1,125224982 | 0,2117779 |
| MAP3K5 | Adipose Visceral Omentum | rs6924387 | 6 | 0,13633 | 1,146060031 | 0,214457 |
| MAP3K5 | Brain Cerebellum | rs9483947 | 6 | -0,0394352 | 0,961332246 | 0,405737 |
| MAP3K5 | Blood | rs6899530 | 6 | 0,035752 | 1,036398788 | 0,4572647 |
| MAP3K5 | Artery Tibial | rs9402828 | 6 | 0,00895783 | 1,008998071 | 0,9298252 |
| MAP3K5 | Brain Cerebellar Hemisphere | rs59122276 | 6 | 0,000382397 | 1,00038247 | 0,993617 |
| MAST4 | Thyroid | rs17283091 | 5 | 0,139231 | 1,149389578 | 0,2104774 |
| MAST4 | Nerve Tibial | rs455788 | 5 | -0,121862 | 0,885270527 | 0,3740496 |
| MAST4 | Colon Sigmoid | rs469394 | 5 | -0,0488199 | 0,952352633 | 0,4849166 |
| MAST4 | Colon Transverse | rs469394 | 5 | -0,069535 | 0,932827484 | 0,485278 |

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|---|---|---|---|---|---|---|
| MAST4 | Cells Cultured fibroblasts | rs2662226 | 5 | -0,0501316 | 0,951104251 | 0,6364256 |
| MAST4 | Pancreas | rs58331610 | 5 | 0,0382232 | 1,038963104 | 0,6755068 |
| MAST4 | Esophagus Muscularis | rs1428408 | 5 | -0,0350423 | 0,965564572 | 0,7079309 |
| MAST4 | Muscle Skeletal | rs584354 | 5 | -0,0185072 | 0,981663007 | 0,7142429 |
| MAST4 | Artery Tibial | rs250277 | 5 | -0,0231474 | 0,977118446 | 0,7174367 |
| MAST4 | Heart Left Ventricle | rs2096416 | 5 | 0,00344896 | 1,003454915 | 0,9257301 |
| MAST4 | Heart Atrial Appendage | rs2096416 | 5 | 0,00710032 | 1,007125587 | 0,925737 |
| MAST4 | Whole blood | rs10940094 | 5 | 0,00537699 | 1,005391472 | 0,9356693 |
| MAST4 | Blood | rs10471698 | 5 | 0,00264831 | 1,00265182 | 0,9642325 |
| MAST4 | Esophagus Gastroesophageal Junction | rs7735834 | 5 | -0,00196725 | 0,998034684 | 0,9799836 |
| MPI | Artery Tibial | rs12911254 | 15 | 0,16052 | 1,174121255 | 0,3041759 |
| MPI | Esophagus Muscularis | rs12901190 | 15 | 0,0994823 | 1,104598919 | 0,3284959 |
| MPI | Nerve Tibial | rs4886608 | 15 | 0,0835105 | 1,08709663 | 0,3326686 |
| MPI | Breast Mammary Tissue | rs4886608 | 15 | 0,0841835 | 1,087828492 | 0,3358238 |
| MPI | Esophagus Gastroesophageal Junction | rs4886632 | 15 | 0,0976358 | 1,102561159 | 0,3434096 |
| MPI | Brain Cerebellum | rs12912839 | 15 | 0,0760952 | 1,079065296 | 0,3541618 |
| MPI | Brain Nucleus accumbens basal ganglia | rs11072511 | 15 | 0,0532809 | 1,054725876 | 0,3583937 |
| MPI | Thyroid | rs11072511 | 15 | 0,0970878 | 1,101957121 | 0,3584038 |
| MPI | Brain Hippocampus | rs11072511 | 15 | 0,0637224 | 1,065796493 | 0,3609357 |
| MPI | Blood | rs1130741 | 15 | 0,0722162 | 1,07488771 | 0,3651804 |
| MPI | Esophagus Mucosa | rs12903205 | 15 | 0,0880441 | 1,09203628 | 0,3653341 |
| MPI | Cells Cultured fibroblasts | rs1130741 | 15 | 0,0579785 | 1,059692212 | 0,3662516 |
| MPI | Whole blood | rs1130741 | 15 | 0,105074 | 1,110792806 | 0,3668479 |
| MPI | Lung | rs1130741 | 15 | 0,117584 | 1,124776107 | 0,3676295 |
| MPI | Brain Caudate basal ganglia | rs1130741 | 15 | 0,0481371 | 1,049314506 | 0,3679345 |
| MPI | Cells EBV transformed lymphocytes | rs1130741 | 15 | 0,0548634 | 1,056396301 | 0,3709758 |
| MPI | Brain Cortex | rs11630592 | 15 | 0,0507247 | 1,052033229 | 0,3939739 |
| MPI | Testis | rs12904897 | 15 | 0,0710153 | 1,073597652 | 0,3966093 |
| MPI | Brain Putamen basal ganglia | rs7497026 | 15 | 0,047341 | 1,04847948 | 0,4041523 |
| MPI | Spleen | rs7497026 | 15 | 0,0507068 | 1,052014397 | 0,4046927 |
| MPI | Adipose Subcutaneous | rs12906946 | 15 | 0,076107 | 1,079078029 | 0,544109 |
| MPI | Brain Frontal Cortex BA9 | rs6495124 | 15 | 0,0351244 | 1,035748548 | 0,5631397 |
| MPI | Skin Sun Exposed Lower leg | rs6495126 | 15 | 0,0625045 | 1,064499249 | 0,5931276 |
| MPI | Stomach | rs7497201 | 15 | 0,0458488 | 1,046916105 | 0,6154666 |

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|---|---|---|---|---|---|---|
| MPI | Artery Aorta | rs7497201 | 15 | 0,0720359 | 1,074693925 | 0,6156613 |
| MPI | Adipose Visceral Omentum | rs11072517 | 15 | 0,0375699 | 1,038284571 | 0,654377 |
| MPI | Muscle Skeletal | rs1531162 | 15 | 0,0572483 | 1,058918707 | 0,7707782 |
| MPI | Brain Anterior cingulate cortex BA24 | rs936227 | 15 | 0,00900015 | 1,009040773 | 0,8637381 |
| MPI | Skin Not Sun Exposed Suprapubic | rs6939 | 15 | 0,00819012 | 1,008223751 | 0,9618699 |
| NAB2 | Blood | rs73338505 | 12 | -0,451335 | 0,636777486 | 0,337568 |
| NAT1 | Brain Cerebellar Hemisphere | rs6994374 | 8 | 0,0593594 | 1,061156552 | 0,1494823 |
| NAT1 | Blood | rs6998240 | 8 | -0,209392 | 0,811077231 | 0,2579933 |
| NAT10 | Adipose Subcutaneous | rs16925219 | 11 | 0,211522 | 1,235557148 | 0,203178 |
| NAT10 | Skin Sun Exposed Lower leg | rs2473932 | 11 | 0,247982 | 1,281436866 | 0,2070079 |
| NAT10 | Pancreas | rs16925219 | 11 | 0,175518 | 1,191863442 | 0,2086181 |
| NAT10 | Brain Cortex | rs2473932 | 11 | 0,104921 | 1,110622868 | 0,2087839 |
| NAT10 | Colon Transverse | rs2473932 | 11 | 0,206793 | 1,229727992 | 0,2100984 |
| NAT10 | Skin Not Sun Exposed Suprapubic | rs2473932 | 11 | 0,285138 | 1,329945548 | 0,2102163 |
| NAT10 | Stomach | rs2473932 | 11 | 0,174323 | 1,190440016 | 0,2115491 |
| NAT10 | Breast Mammary Tissue | rs2473932 | 11 | 0,240844 | 1,272322538 | 0,2118116 |
| NAT10 | Lung | rs2473932 | 11 | 0,387891 | 1,473869124 | 0,2128727 |
| NAT10 | Blood | rs2004272 | 11 | 0,132703 | 1,1419108 | 0,257839 |
| NAT10 | Esophagus Muscularis | rs112172055 | 11 | 0,16722 | 1,18201428 | 0,2624492 |
| NAT10 | Thyroid | rs112172055 | 11 | 0,167627 | 1,182495458 | 0,2628412 |
| NAT10 | Artery Tibial | rs79396490 | 11 | 0,139198 | 1,149351649 | 0,2635842 |
| NAT10 | Brain Cerebellum | rs112172055 | 11 | 0,0864932 | 1,090343953 | 0,2636476 |
| NAT10 | Cells Cultured fibroblasts | rs16925183 | 11 | 0,224616 | 1,251841917 | 0,2966838 |
| NR3C1 | Esophagus Mucosa | rs72804709 | 5 | -0,134498 | 0,874154627 | 0,1047322 |
| NR3C1 | Blood | rs4986593 | 5 | 0,413669 | 1,512356454 | 0,2866217 |
| P2RY8 | | | | | | |
| PAICS | Blood | rs1967559 | 4 | 0,168014 | 1,182953172 | 0,4442472 |
| PAICS | Thyroid | rs17051687 | 4 | 0,0054542 | 1,005469101 | 0,9624669 |
| PFKL | Skin Sun Exposed Lower leg | rs8134520 | 21 | -0,123546 | 0,883780986 | 0,1007569 |
| PFKL | Breast Mammary Tissue | rs34577649 | 21 | -0,137538 | 0,871501232 | 0,1040949 |
| PFKL | Testis | rs34577649 | 21 | -0,230387 | 0,794226177 | 0,1093406 |
| PFKL | Adipose Subcutaneous | rs2838545 | 21 | -0,114953 | 0,891408039 | 0,1193634 |
| PFKL | Skin Not Sun Exposed Suprapubic | rs2838545 | 21 | -0,135524 | 0,873258204 | 0,1208606 |
| PFKL | Adipose Visceral Omentum | rs2838545 | 21 | -0,159489 | 0,852579346 | 0,1212257 |

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|---|---|---|---|---|---|---|
| PFKL | Esophagus Mucosa | rs2838545 | 21 | -0,174164 | 0,8401591 | 0,1226927 |
| PFKL | Brain Cortex | rs2838545 | 21 | -0,0920684 | 0,912042764 | 0,1239509 |
| PFKL | Artery Aorta | rs2838545 | 21 | -0,159452 | 0,852610892 | 0,1240201 |
| PFKL | Heart Left Ventricle | rs2838545 | 21 | -0,231137 | 0,793630731 | 0,1261642 |
| PFKL | Heart Atrial Appendage | rs2838545 | 21 | -0,208922 | 0,811458527 | 0,1283831 |
| PFKL | Lung | rs3788118 | 21 | -0,110623 | 0,895276204 | 0,1295659 |
| PFKL | Artery Tibial | rs3788118 | 21 | -0,138104 | 0,871008102 | 0,1307285 |
| PFKL | Esophagus Muscularis | rs3788118 | 21 | -0,100875 | 0,904046032 | 0,1310146 |
| PFKL | Thyroid | rs3788118 | 21 | -0,176642 | 0,838079763 | 0,1320835 |
| PFKL | Esophagus Gastroesophageal Junction | rs3788118 | 21 | -0,11845 | 0,888296229 | 0,1351443 |
| PFKL | Nerve Tibial | rs2070573 | 21 | 0,131855 | 1,140942871 | 0,3396325 |
| PFKL | Whole blood | rs62220386 | 21 | 0,171993 | 1,187669519 | 0,4079131 |
| PFKL | Brain Caudate basal ganglia | rs2838549 | 21 | 0,0439168 | 1,044895416 | 0,6781635 |
| PFKL | Brain Spinal cord cervical c 1 | rs2838549 | 21 | 0,0181246 | 1,018289847 | 0,6781706 |
| PFKL | Blood | rs3761392 | 21 | -0,0131243 | 0,986961448 | 0,9038466 |
| PFKL | Colon Transverse | rs3761392 | 21 | -0,0208118 | 0,979403271 | 0,9038623 |
| PFKL | Stomach | rs3761392 | 21 | -0,0182358 | 0,981929466 | 0,9038638 |
| PFKL | Brain Cerebellum | rs3761392 | 21 | -0,010211 | 0,989840955 | 0,9038654 |
| PFKL | Muscle Skeletal | rs2071152 | 21 | 0,000523651 | 1,000523788 | 0,9947508 |
| PGK1 | | | | | | |
| PHACTR1 | Whole blood | rs1223563 | 6 | 0,196214 | 1,21678727 | 0,08428358 |
| PHACTR1 | Artery Tibial | rs9349379 | 6 | 0,081727 | 1,085159521 | 0,20703 |
| PHACTR1 | Artery Aorta | rs9349379 | 6 | 0,0981855 | 1,103167404 | 0,2100596 |
| PHACTR1 | Artery Coronary | rs9349379 | 6 | 0,0707019 | 1,073261239 | 0,2152369 |
| PHACTR1 | Blood | rs538190 | 6 | -0,0652284 | 0,936853462 | 0,3043003 |
| PHACTR1 | Muscle Skeletal | rs6920793 | 6 | -0,0882442 | 0,915537275 | 0,463759 |
| PHACTR1 | Heart Atrial Appendage | rs4236091 | 6 | 0,0470239 | 1,048147059 | 0,4973787 |
| PHACTR1 | Cells Cultured fibroblasts | rs417024 | 6 | -0,0666029 | 0,935566641 | 0,5215523 |
| PHACTR1 | Skin Not Sun Exposed Suprapubic | rs417048 | 6 | -0,0518973 | 0,949426368 | 0,6140429 |
| PHACTR1 | Adipose Subcutaneous | rs9381884 | 6 | -0,0409551 | 0,959872227 | 0,6590387 |
| PHACTR1 | Esophagus Muscularis | rs34505804 | 6 | -0,0405309 | 0,960279491 | 0,6929828 |
| PHACTR1 | Thyroid | rs17700321 | 6 | -0,0474662 | 0,953642706 | 0,715023 |
| PHACTR1 | Skin Sun Exposed Lower leg | rs412787 | 6 | -0,00721799 | 0,992807997 | 0,9491091 |
| PHACTR1 | Nerve Tibial | rs202041 | 6 | -0,00201414 | 0,997987887 | 0,9734089 |

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|---|---|---|---|---|---|---|
| PIK3CG | Blood | rs42175 | 7 | -0,470204 | 0,624874781 | 0,03249769 |
| PIK3R1 | Blood | rs4976156 | 5 | 0,290311 | 1,336843182 | 0,1095329 |
| PRDM1 | | | | | | |
| PRL | | | | | | |
| PRR7 | Colon Sigmoid | rs2545795 | 5 | -0,170469 | 0,843269231 | 0,02915791 |
| PRR7 | Cells Cultured fibroblasts | rs2545797 | 5 | 0,327075 | 1,386905491 | 0,04793613 |
| PTP4A1 | Blood | rs116293333 | 6 | -0,256159 | 0,77401889 | 0,1278961 |
| RBBP7 | | | | | | |
| RET | Lung | rs2435356 | 10 | -0,106392 | 0,899072143 | 0,2133614 |
| RET | Spleen | rs1864403 | 10 | -0,0492022 | 0,951988618 | 0,2891454 |
| RET | Cells Cultured fibroblasts | rs2251674 | 10 | -0,0743539 | 0,928343095 | 0,308753 |
| RET | Adipose Visceral Omentum | rs1864408 | 10 | -0,0852467 | 0,918285715 | 0,3112117 |
| RET | Nerve Tibial | rs12767776 | 10 | -0,0904149 | 0,913552074 | 0,3296162 |
| RET | Blood | rs2503841 | 10 | -0,159781 | 0,852330429 | 0,4363914 |
| RET | Skin Not Sun Exposed Suprapubic | rs2995411 | 10 | -0,0566107 | 0,944961871 | 0,5026814 |
| RET | Adipose Subcutaneous | rs2505990 | 10 | -0,0358574 | 0,964777861 | 0,6489754 |
| RET | Testis | rs2506013 | 10 | -0,0208505 | 0,979365369 | 0,8292173 |
| RPS13 | Lung | rs75207092 | 11 | -0,073694 | 0,928955911 | 0,7214679 |
| RPS13 | Artery Tibial | rs75207092 | 11 | -0,128457 | 0,879451378 | 0,7217431 |
| RPS13 | Skin Sun Exposed Lower leg | rs11024218 | 11 | -0,0321484 | 0,968362866 | 0,8870441 |
| RPS13 | Adipose Subcutaneous | rs11024218 | 11 | -0,0339873 | 0,96658378 | 0,8870443 |
| RPS13 | Thyroid | rs68175505 | 11 | -0,0300565 | 0,970390705 | 0,8879266 |
| RPS13 | Adipose Visceral Omentum | rs68175505 | 11 | -0,0297509 | 0,970687302 | 0,8879268 |
| RPS13 | Nerve Tibial | rs68175505 | 11 | -0,0334327 | 0,967119996 | 0,8879283 |
| RPS13 | Skin Not Sun Exposed Suprapubic | rs68175505 | 11 | -0,0281147 | 0,97227684 | 0,8879284 |
| RPS13 | Breast Mammary Tissue | rs68175505 | 11 | -0,0352405 | 0,965373216 | 0,8879322 |
| RPS13 | Esophagus Mucosa | rs68175505 | 11 | -0,042429 | 0,958458514 | 0,8879357 |
| RPS13 | Colon Transverse | rs68175505 | 11 | -0,0403374 | 0,960465323 | 0,887941 |
| RPS13 | Whole blood | rs68175505 | 11 | -0,0740858 | 0,928592017 | 0,8879428 |
| RPS13 | Blood | rs68175505 | 11 | -0,0788945 | 0,924137416 | 0,8879454 |
| RPS13 | Cells Cultured fibroblasts | rs68175505 | 11 | -0,0646987 | 0,937349844 | 0,887948 |
| RPS13 | Artery Aorta | rs68175505 | 11 | -0,0469624 | 0,954123272 | 0,8879529 |
| RPS13 | Testis | rs68175505 | 11 | -0,032647 | 0,967880161 | 0,8879535 |
| S100B | Adipose Subcutaneous | rs2839321 | 21 | -0,122291 | 0,884890828 | 0,03979347 |

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|---|---|---|---|---|---|---|
| S100B | Adipose Visceral Omentum | rs2839321 | 21 | -0,12288 | 0,884369781 | 0,04001727 |
| S100B | Breast Mammary Tissue | rs2839321 | 21 | -0,183496 | 0,832355205 | 0,04332719 |
| S100B | Skin Sun Exposed Lower leg | rs2839321 | 21 | -0,171032 | 0,842794604 | 0,04790935 |
| S100B | Skin Not Sun Exposed Suprapubic | rs2839321 | 21 | -0,205739 | 0,814045514 | 0,05205751 |
| S100B | Blood | rs11701034 | 21 | 0,00960924 | 1,009655557 | 0,7608652 |
| S100B | Whole blood | rs11701034 | 21 | 0,012406 | 1,012483274 | 0,7609351 |
| SACM1L | Testis | rs9876474 | 3 | -0,425507 | 0,653438408 | 0,04383781 |
| SACM1L | Skin Not Sun Exposed Suprapubic | rs2673038 | 3 | 0,197425 | 1,218261692 | 0,07804062 |
| SACM1L | Artery Tibial | rs2742386 | 3 | -0,301222 | 0,739913494 | 0,08055997 |
| SACM1L | Colon Transverse | rs6800556 | 3 | -0,279993 | 0,755789032 | 0,08570917 |
| SACM1L | Thyroid | rs2742462 | 3 | -0,0997842 | 0,905032703 | 0,1052814 |
| SACM1L | Adipose Subcutaneous | rs2742462 | 3 | -0,283911 | 0,752833644 | 0,1170618 |
| SACM1L | Skin Sun Exposed Lower leg | rs2742379 | 3 | 0,146231 | 1,157463531 | 0,1301744 |
| SACM1L | Blood | rs2742433 | 3 | 0,0357016 | 1,036346555 | 0,5273973 |
| SACM1L | Whole blood | rs2742433 | 3 | 0,139946 | 1,150211686 | 0,5289312 |
| SLC18A2 | Testis | rs4752051 | 10 | -0,0884825 | 0,915319129 | 0,0892237 |
| SLC18A2 | Blood | rs181440 | 10 | 0,0694011 | 1,071866048 | 0,5883812 |
| SLC18A2 | Stomach | rs363225 | 10 | -0,0140936 | 0,98600525 | 0,862716 |
| SLC25A1 | Skin Not Sun Exposed Suprapubic | rs885978 | 22 | 0,0951884 | 1,09986605 | 0,3665174 |
| SLC25A1 | Skin Sun Exposed Lower leg | rs2518840 | 22 | 0,113794 | 1,120521274 | 0,4020303 |
| SLC25A1 | Pancreas | rs698423 | 22 | 0,0628156 | 1,064830466 | 0,4586615 |
| SLC25A1 | Cells Cultured fibroblasts | rs2073740 | 22 | 0,0410918 | 1,041947752 | 0,5133435 |
| SLC25A1 | Artery Aorta | rs2073740 | 22 | 0,0638551 | 1,065937933 | 0,5149864 |
| SLC25A1 | Nerve Tibial | rs9604934 | 22 | 0,0519119 | 1,053282944 | 0,5287771 |
| SLC25A1 | Artery Tibial | rs9604934 | 22 | 0,0735728 | 1,076346892 | 0,5289525 |
| SLC25A1 | Lung | rs9604934 | 22 | 0,0584085 | 1,060147978 | 0,5290036 |
| SLC25A1 | Esophagus Gastroesophageal Junction | rs9604934 | 22 | 0,0665359 | 1,068799333 | 0,5301657 |
| SLC25A1 | Blood | rs1018764 | 22 | 0,0485909 | 1,049790793 | 0,5847011 |
| SLC25A1 | Heart Left Ventricle | rs1018764 | 22 | 0,028688 | 1,029103464 | 0,5851939 |
| SLC25A1 | Whole blood | rs1018764 | 22 | 0,0786379 | 1,081812527 | 0,5857907 |
| SLC25A1 | Esophagus Mucosa | rs9605957 | 22 | 0,0512816 | 1,052619269 | 0,6100812 |
| SLC25A1 | Colon Sigmoid | rs9605957 | 22 | 0,0449619 | 1,045988007 | 0,6103038 |
| SLC25A1 | Esophagus Muscularis | rs1091013 | 22 | 0,0460646 | 1,047142054 | 0,6473036 |
| SLC6A2 | Testis | rs11645905 | 16 | 0,0986276 | 1,103655222 | 0,2900234 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SLC6A2 | Esophagus Gastroesophageal Junction | rs55830311 | 16 | 0,07541 | 1,078326174 | 0,4717582 |
| SLC6A2 | Skin Not Sun Exposed Suprapubic | rs17841327 | 16 | -0,0122711 | 0,987803883 | 0,6943945 |
| SLC6A2 | Skin Sun Exposed Lower leg | rs17841327 | 16 | -0,0133644 | 0,986724507 | 0,6943981 |
| SLC6A2 | Adrenal Gland | rs17841327 | 16 | -0,0227125 | 0,977543487 | 0,6946241 |
| SLC6A2 | Esophagus Muscularis | rs36030 | 16 | -0,0225894 | 0,97766383 | 0,7376576 |
| SLC6A3 | Lung | rs2550946 | 5 | 0,0128614 | 1,012944464 | 0,7112296 |
| SLC6A3 | Thyroid | rs2550946 | 5 | 0,0194681 | 1,019658839 | 0,7112745 |
| SLC6A3 | Skin Not Sun Exposed Suprapubic | rs2550946 | 5 | 0,0235226 | 1,023801438 | 0,7114512 |
| SLC6A3 | Ovary | rs2550946 | 5 | 0,0156993 | 1,015823181 | 0,7115431 |
| SLC6A3 | Adipose Visceral Omentum | rs2550946 | 5 | 0,0388888 | 1,039654868 | 0,7115557 |
| SLC6A3 | Skin Sun Exposed Lower leg | rs2937650 | 5 | -0,00169298 | 0,998308452 | 0,9842947 |
| SLC6A4 | Artery Aorta | rs34622227 | 17 | 0,0204257 | 1,020635732 | 0,7254982 |
| SLC6A4 | Heart Atrial Appendage | rs12939390 | 17 | 0,025708 | 1,026041301 | 0,7288093 |
| SLC6A4 | Esophagus Muscularis | rs12947654 | 17 | 0,0209369 | 1,021157615 | 0,7391705 |
| SMAD2 | Blood | rs1792681 | 18 | 0,279597 | 1,322596698 | 0,2599843 |
| SMAD2 | Cells Cultured fibroblasts | rs8098413 | 18 | -0,0420569 | 0,958815222 | 0,5564117 |
| SMAD2 | Artery Tibial | rs8098413 | 18 | -0,0525748 | 0,948783349 | 0,5566194 |
| SMAD2 | Muscle Skeletal | rs8098413 | 18 | -0,0612137 | 0,940622207 | 0,5568508 |
| SMAD2 | Adipose Subcutaneous | rs8098413 | 18 | -0,0717557 | 0,930758252 | 0,5569092 |
| SMAD2 | Esophagus Muscularis | rs8098413 | 18 | -0,0756069 | 0,92718061 | 0,5572814 |
| SMAD2 | Nerve Tibial | rs8098413 | 18 | -0,0751137 | 0,927638008 | 0,5573167 |
| SMAD2 | Colon Sigmoid | rs8098413 | 18 | -0,0670575 | 0,935141429 | 0,5576325 |
| SMAD2 | Artery Aorta | rs8098413 | 18 | -0,0726392 | 0,929936291 | 0,5577984 |
| SMU1 | Adipose Visceral Omentum | rs13289835 | 9 | 0,164627 | 1,178953287 | 0,4085934 |
| SMU1 | Heart Atrial Appendage | rs13289835 | 9 | 0,113169 | 1,119821167 | 0,4089573 |
| SMU1 | Blood | rs10758180 | 9 | 0,0773393 | 1,080408597 | 0,4553944 |
| SMU1 | Whole blood | rs2274767 | 9 | 0,0964975 | 1,101306828 | 0,4595993 |
| SMU1 | Muscle Skeletal | rs2274767 | 9 | 0,073854 | 1,076649603 | 0,4600504 |
| SMU1 | Testis | rs2274767 | 9 | 0,0664776 | 1,068737024 | 0,4603196 |
| SMU1 | Nerve Tibial | rs2274767 | 9 | 0,0826301 | 1,086139971 | 0,4606422 |
| SMU1 | Esophagus Mucosa | rs2274767 | 9 | 0,105213 | 1,110947217 | 0,4608322 |
| SMU1 | Thyroid | rs2274767 | 9 | 0,131095 | 1,140076083 | 0,4609031 |
| SMU1 | Breast Mammary Tissue | rs10971316 | 9 | 0,0662193 | 1,068461005 | 0,4756407 |
| SMU1 | Skin Not Sun Exposed Suprapubic | rs10971316 | 9 | 0,105819 | 1,111620655 | 0,4757958 |

| | | | | | | |
|---|---|---|---|---|---|---|
| SMU1 | Artery Aorta | rs10971316 | 9 | 0,0842187 | 1,087866784 | 0,4762238 |
| SMU1 | Artery Tibial | rs7872744 | 9 | 0,0615612 | 1,06349558 | 0,4775028 |
| SMU1 | Esophagus Gastroesophageal Junction | rs7872744 | 9 | 0,0974636 | 1,102371315 | 0,4796385 |
| SMU1 | Adipose Subcutaneous | rs7043066 | 9 | 0,0656979 | 1,067904055 | 0,4862354 |
| SMU1 | Cells Cultured fibroblasts | rs1537040 | 9 | 0,0631228 | 1,065157633 | 0,529207 |
| SMU1 | Skin Sun Exposed Lower leg | rs1537040 | 9 | 0,0908393 | 1,09509301 | 0,52958 |
| SMU1 | Lung | rs76124374 | 9 | -0,0397954 | 0,960986037 | 0,8313544 |
| SMU1 | Colon Transverse | rs76124374 | 9 | -0,0337671 | 0,966796645 | 0,8313641 |
| SMU1 | Stomach | rs76124374 | 9 | -0,0309719 | 0,969502816 | 0,8313652 |
| SMU1 | Esophagus Muscularis | rs76124374 | 9 | -0,042119 | 0,958755682 | 0,8313697 |
| SPP1 | Testis | rs11938899 | 4 | -0,0672551 | 0,934956663 | 0,01644859 |
| SPP1 | Spleen | rs12644436 | 4 | -0,0921783 | 0,911942536 | 0,03119282 |
| SPP1 | Whole blood | rs1471400 | 4 | -0,114114 | 0,892156244 | 0,1358768 |
| SPP1 | Thyroid | rs17013569 | 4 | -0,101075 | 0,90386524 | 0,1567483 |
| SPP1 | Artery Tibial | rs1471401 | 4 | -0,0923457 | 0,911789889 | 0,1923875 |
| SPP1 | Esophagus Muscularis | rs28357094 | 4 | 0,0794578 | 1,082699869 | 0,202545 |
| SPP1 | Esophagus Gastroesophageal Junction | rs28357094 | 4 | 0,064169 | 1,066272584 | 0,2030866 |
| SPP1 | Nerve Tibial | rs1471403 | 4 | -0,071123 | 0,931347329 | 0,2055039 |
| SPP1 | Adipose Subcutaneous | rs1471403 | 4 | -0,105343 | 0,900015764 | 0,209196 |
| SPP1 | Adipose Visceral Omentum | rs5024096 | 4 | -0,0521825 | 0,94915563 | 0,4350662 |
| SPP1 | Blood | rs2853749 | 4 | 0,0176056 | 1,017761492 | 0,7134333 |
| SPP1 | Esophagus Mucosa | rs2853749 | 4 | 0,0189656 | 1,019146589 | 0,7137593 |
| SPP1 | Pancreas | rs1381949 | 4 | -0,00472207 | 0,995289061 | 0,937407 |
| SUPT16H | | | | | | |
| TFF2 | Thyroid | rs178740 | 21 | 0,0344557 | 1,035056174 | 0,4810781 |
| TLR5 | Blood | rs851180 | 1 | 0,033411 | 1,033975416 | 0,8033879 |
| UMODL1 | Pituitary | rs11701944 | 21 | 0,0492979 | 1,050533258 | 0,1934567 |
| UMODL1 | Blood | rs55787571 | 21 | 0,261039 | 1,298278297 | 0,2403712 |
| UMODL1 | Lung | rs55999015 | 21 | 0,029866 | 1,030316462 | 0,2468694 |
| UMODL1 | Thyroid | rs35520919 | 21 | 0,030804 | 1,031283353 | 0,2633748 |
| UMODL1 | Spleen | rs35520919 | 21 | 0,0260609 | 1,026403455 | 0,2648827 |
| UMODL1 | Small Intestine Terminal Ileum | rs66994219 | 21 | 0,0629927 | 1,065019065 | 0,3495447 |
| UMODL1 | Testis | rs220287 | 21 | -0,0277351 | 0,972645987 | 0,5193931 |
| USP32 | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| WARS2 | Blood | rs2148150 | 1 | 0,0315237 | 1,032025834 | 0,4402205 |
| WARS2 | Skin Sun Exposed Lower leg | rs12086 | 1 | 0,0081964 | 1,008230082 | 0,7463216 |
| WARS2 | Thyroid | rs12086 | 1 | 0,00816014 | 1,008193525 | 0,7463265 |
| WARS2 | Nerve Tibial | rs12086 | 1 | 0,00914451 | 1,009186449 | 0,7463304 |
| WARS2 | Lung | rs12086 | 1 | 0,010006 | 1,010056227 | 0,7463385 |
| WARS2 | Esophagus Mucosa | rs12086 | 1 | 0,0113782 | 1,011443178 | 0,74634 |
| WARS2 | Breast Mammary Tissue | rs12086 | 1 | 0,0089917 | 1,009032247 | 0,7463493 |
| WARS2 | Adipose Visceral Omentum | rs12086 | 1 | 0,0118839 | 1,011954794 | 0,7463508 |
| WARS2 | Colon Transverse | rs12086 | 1 | 0,0113843 | 1,011449348 | 0,7463519 |
| WARS2 | Stomach | rs12086 | 1 | 0,0137052 | 1,013799547 | 0,7463637 |
| WARS2 | Pancreas | rs12086 | 1 | 0,0125638 | 1,012643056 | 0,7463831 |
| WARS2 | Heart Left Ventricle | rs12086 | 1 | 0,0175299 | 1,01768445 | 0,7463891 |
| WARS2 | Prostate | rs12086 | 1 | 0,0080576 | 1,00809015 | 0,7464009 |
| WARS2 | Minor Salivary Gland | rs12086 | 1 | 0,00804435 | 1,008076793 | 0,7464141 |
| WARS2 | Spleen | rs12086 | 1 | 0,00932418 | 1,009367786 | 0,7464146 |
| WARS2 | Ovary | rs12086 | 1 | 0,0111465 | 1,011208854 | 0,7464982 |
| WARS2 | Cells EBV transformed lymphocytes | rs12086 | 1 | 0,00984416 | 1,009892773 | 0,7464989 |
| WARS2 | Whole blood | rs2765543 | 1 | 0,0303601 | 1,030825667 | 0,7881654 |
| WARS2 | Brain Cerebellum | rs2794315 | 1 | 0,00436954 | 1,0043791 | 0,8407526 |
| WARS2 | Pituitary | rs2794315 | 1 | 0,00552471 | 1,005539999 | 0,8407588 |
| WARS2 | Brain Cortex | rs2794315 | 1 | 0,00456815 | 1,0045786 | 0,8407602 |
| WARS2 | Brain Hypothalamus | rs2794315 | 1 | 0,00595773 | 1,005975513 | 0,8407725 |
| WARS2 | Testis | rs78641692 | 1 | -0,00876249 | 0,991275789 | 0,8543107 |
| WARS2 | Muscle Skeletal | rs2645291 | 1 | 0,00452106 | 1,004531295 | 0,8896457 |
| WARS2 | Skin Not Sun Exposed Suprapubic | rs2645291 | 1 | 0,00390754 | 1,003915184 | 0,8896458 |
| WARS2 | Adrenal Gland | rs2645291 | 1 | 0,00466123 | 1,00467211 | 0,8896513 |
| WARS2 | Brain Cerebellar Hemisphere | rs2645291 | 1 | 0,00311987 | 1,003124742 | 0,8896521 |
| WARS2 | Brain Nucleus accumbens basal ganglia | rs2645291 | 1 | 0,0047399 | 1,004751151 | 0,889655 |
| WARS2 | Brain Putamen basal ganglia | rs2645291 | 1 | 0,00357669 | 1,003583094 | 0,8896551 |
| WARS2 | Small Intestine Terminal Ileum | rs2645291 | 1 | 0,0053058 | 1,005319901 | 0,8896588 |
| WARS2 | Liver | rs2645291 | 1 | 0,00730341 | 1,007330145 | 0,8896651 |
| WARS2 | Brain Substantia nigra | rs2645291 | 1 | 0,00414146 | 1,004150048 | 0,8896661 |
| WARS2 | Vagina | rs2645291 | 1 | 0,00493778 | 1,004949991 | 0,889671 |
| WARS2 | Adipose Subcutaneous | rs2645303 | 1 | 0,00348171 | 1,003487778 | 0,9085793 |

| | | | | | | |
|---|---|---|---|---|---|---|
| WARS2 | Cells Cultured fibroblasts | rs2645303 | 1 | 0,00490659 | 1,004918647 | 0,9085798 |
| WARS2 | Artery Tibial | rs2645303 | 1 | 0,0040396 | 1,00404777 | 0,9085798 |
| WARS2 | Artery Aorta | rs2645303 | 1 | 0,00417638 | 1,004185113 | 0,9085815 |
| WARS2 | Heart Atrial Appendage | rs2645303 | 1 | 0,00364549 | 1,003652143 | 0,9085815 |
| WARS2 | Esophagus Muscularis | rs2645303 | 1 | 0,00481011 | 1,004821697 | 0,9085815 |
| WARS2 | Esophagus Gastroesophageal Junction | rs2645303 | 1 | 0,00455965 | 1,004570061 | 0,9085816 |
| WARS2 | Brain Frontal Cortex BA9 | rs2645303 | 1 | 0,00259364 | 1,002597006 | 0,9085825 |
| WARS2 | Colon Sigmoid | rs2645303 | 1 | 0,00430997 | 1,004319271 | 0,9085827 |
| WARS2 | Artery Coronary | rs2645303 | 1 | 0,00422221 | 1,004231136 | 0,9085835 |
| WARS2 | Brain Caudate basal ganglia | rs2645303 | 1 | 0,00352137 | 1,003527577 | 0,9085837 |
| WARS2 | Brain Anterior cingulate cortex BA24 | rs2645303 | 1 | 0,00307364 | 1,003078368 | 0,9085843 |
| WARS2 | Brain Hippocampus | rs2645303 | 1 | 0,00342636 | 1,003432237 | 0,9085851 |
| WARS2 | Brain Spinal cord cervical c 1 | rs2645303 | 1 | 0,00289113 | 1,002895313 | 0,9085873 |
| WARS2 | Adipose Visceral Omentum | rs2645303 | 1 | 0,00322765 | 1,003232864 | 0,9085875 |
| WARS2 | Brain Amygdala | rs2645303 | 1 | 0,00322765 | 1,003232864 | 0,9085875 |
| ZNF595 | | | | | | |
| ZPBP2 | Testis | rs12232497 | 17 | -0,101612 | 0,903379995 | 0,3218243 |

Supplementary Table S6 Summary-data-based Mendelian randomization results of *HYKK* on IA, smoking behavior, CRP level and 5-hydroxylysine level risks

| Gene | Outcome | Top SNP | TopSNP CHR | topSNP BP | A1 | A2 | Freq | GWAS beta | GWAS se | GWAS p-value | eQTL beta | eQTL se |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HYKK | SmkAge | rs931794 | 15 | 78826180 | G | A | 0,380368 | 0,00607 | 0,00315 | 0,111 | -0,0547641 | 0,00920869 |
| HYKK | CigDay | rs931794 | 15 | 78826180 | G | A | 0,380368 | 0,014 | 0,00256 | 1,04E-08 | -0,0547641 | 0,00920869 |
| HYKK | SmkCes | rs931794 | 15 | 78826180 | G | A | 0,380368 | 0,0897 | 0,00293 | 2,19E-205 | -0,0547641 | 0,00920869 |
| HYKK | SmkInt | rs931794 | 15 | 78826180 | G | A | 0,380368 | -0,00441 | 0,00186 | 0,00962 | -0,0547641 | 0,00920869 |
| HYKK | ALL IA | rs931794 | 15 | 78826180 | G | A | 0,380368 | 0,1138 | 0,0218 | 1,866E-07 | -0,0547641 | 0,00920869 |
| HYKK | Only uIA | rs931794 | 15 | 78826180 | G | A | 0,380368 | 0,0994 | 0,0406 | 0,01443 | -0,0547641 | 0,00920869 |
| HYKK | Only SAH | rs931794 | 15 | 78826180 | G | A | 0,380368 | 0,1157 | 0,0251 | 0,000004182 | -0,0547641 | 0,00920869 |
| HYKK | CRP level | rs931794 | 15 | 78826180 | G | A | 0,380368 | 0,0129519 | 0,00212943 | 1,18439E-09 | -0,0547641 | 0,00920869 |
| HYKK | 5-hydroxylysine level | rs931794 | 15 | 78826180 | G | A | 0,380368 | -0,0384851 | 0,0160682 | 0,0166154 | -0,0547641 | 0,00920869 |

| eQTL p-value | SMR Beta | SMR se | SMR p-value | HEIDI p-value | HEIDI nsnp |
|---|---|---|---|---|---|
| 2,731E-09 | -0,110839 | 0,0604637 | 0,06678003 | 0,05601998 | 20 |
| 2,731E-09 | -0,255642 | 0,0635062 | 5,68634E-05 | 0,4637417 | 20 |
| 2,731E-09 | -1,63793 | 0,28057 | 5,28711E-09 | 0,2337858 | 20 |
| 2,731E-09 | 0,0805272 | 0,0365636 | 0,02763798 | 0,4172888 | 20 |
| 2,731E-09 | -2,078 | 0,529675 | 8,73913E-05 | 0,7573754 | 20 |
| 2,731E-09 | -1,81506 | 0,801728 | 0,02357826 | 0,7399377 | 20 |
| 2,731E-09 | -2,1127 | 0,579889 | 0,000269188 | 0,7620882 | 20 |
| 2,731E-09 | -0,236504 | 0,055619 | 2,11674E-05 | 0,3520409 | 20 |
| 2,731E-09 | 0,702743 | 0,316309 | 0,02630384 | 2,87089E-06 | 20 |

Supplementary Table S7 Colocalization analysis of the *HYKK* locus between gene expressio

| Trait 1 | Trait 2 | Most likely SNP | PP.H4 |
|---|---|---|---|
| 5-hydroxylysine level | all IA | - | - |
| 5-hydroxylysine level | only SAH | - | - |
| 5-hydroxylysine level | only uIA | - | - |
| CigDay | all IA | rs10519203 | 0,999 |
| CigDay | only SAH | rs10519203 | 0,995 |
| CigDay | only uIA | rs10519203 | 0,818 |
| SmkInt | all IA | rs10519203 | 0,03 |
| SmkInt | only SAH | rs10519203 | 0,017 |
| SmkInt | only uIA | rs12911436 | 0,007 |
| CRP level | all IA | rs10519203 | 0,95 |
| CRP level | only SAH | rs11852372 | 0,97 |
| CRP level | only uIA | rs11852372 | 0,366 |
| *HYKK* expression in blood | all IA | rs10519203 | 0,989 |
| *HYKK* expression in blood | only SAH | rs10519203 | 0,983 |
| *HYKK* expression in blood | only uIA | rs10519203 | 0,506 |
| *HYKK* expression in blood | CigDay | rs10519203 | 0,989 |
| *HYKK* expression in blood | SmkInt | - | - |
| *HYKK* expression in blood | CRP level | rs11852372 | 0,986 |
| *HYKK* expression in blood | 5-hydroxylysine level | - | - |

Supplementary Table S8 Mendelian randomization results of CRP level and 5-hydroxylysine level on IA risk

| exposure | outcome | method | nsnp | beta | se | p-value | beta lower 95%CI |
|---|---|---|---|---|---|---|---|
| CRP level | All IA | MR Egger | 214 | 0,154646031 | 0,155601947 | 0,321425663 | -0,150333785 |
| CRP level | All IA | Weighted median | 214 | 0,097843819 | 0,134605122 | 0,467290149 | -0,16598222 |
| CRP level | All IA | Inverse variance weighted | 214 | 0,100030659 | 0,088260121 | 0,257062307 | -0,072959179 |
| CRP level | All IA | Simple mode | 214 | -0,367842058 | 0,264542168 | 0,165832612 | -0,886344707 |
| CRP level | All IA | Weighted mode | 214 | 0,061106038 | 0,13537489 | 0,652172163 | -0,204228747 |
| CRP level | Only uIA | MR Egger | 214 | 0,116367102 | 0,237130603 | 0,62412498 | -0,34840888 |
| CRP level | Only uIA | Weighted median | 214 | 0,192043584 | 0,223136718 | 0,389428448 | -0,245304382 |
| CRP level | Only uIA | Inverse variance weighted | 214 | 0,053770094 | 0,135207419 | 0,690861679 | -0,211236448 |
| CRP level | Only uIA | Simple mode | 214 | -0,592155191 | 0,529162736 | 0,264382703 | -1,629314153 |
| CRP level | Only uIA | Weighted mode | 214 | 0,265161843 | 0,24184397 | 0,274134385 | -0,208852338 |
| CRP level | Only SAH | MR Egger | 214 | 0,202994492 | 0,172107215 | 0,239534844 | -0,13433565 |
| CRP level | Only SAH | Weighted median | 214 | 0,142623175 | 0,15601262 | 0,36062376 | -0,16316156 |
| CRP level | Only SAH | Inverse variance weighted | 214 | 0,107024114 | 0,097385542 | 0,271779699 | -0,083851549 |
| CRP level | Only SAH | Simple mode | 214 | -0,502887699 | 0,338543939 | 0,138905048 | -1,166433819 |
| CRP level | Only SAH | Weighted mode | 214 | 0,116329864 | 0,136862622 | 0,396293143 | -0,151920876 |
| 5-hydroxylysine level | All IA | Wald ratio | 1 | 0,139300318 | 0,066366405 | 0,035820574 | 0,009222165 |
| 5-hydroxylysine level | Only SAH | Wald ratio | 1 | 0,160731137 | 0,076563326 | 0,035788455 | 0,010667017 |
| 5-hydroxylysine level | Only uIA | Wald ratio | 1 | 0,064638113 | 0,124437009 | 0,603450845 | -0,179258425 |

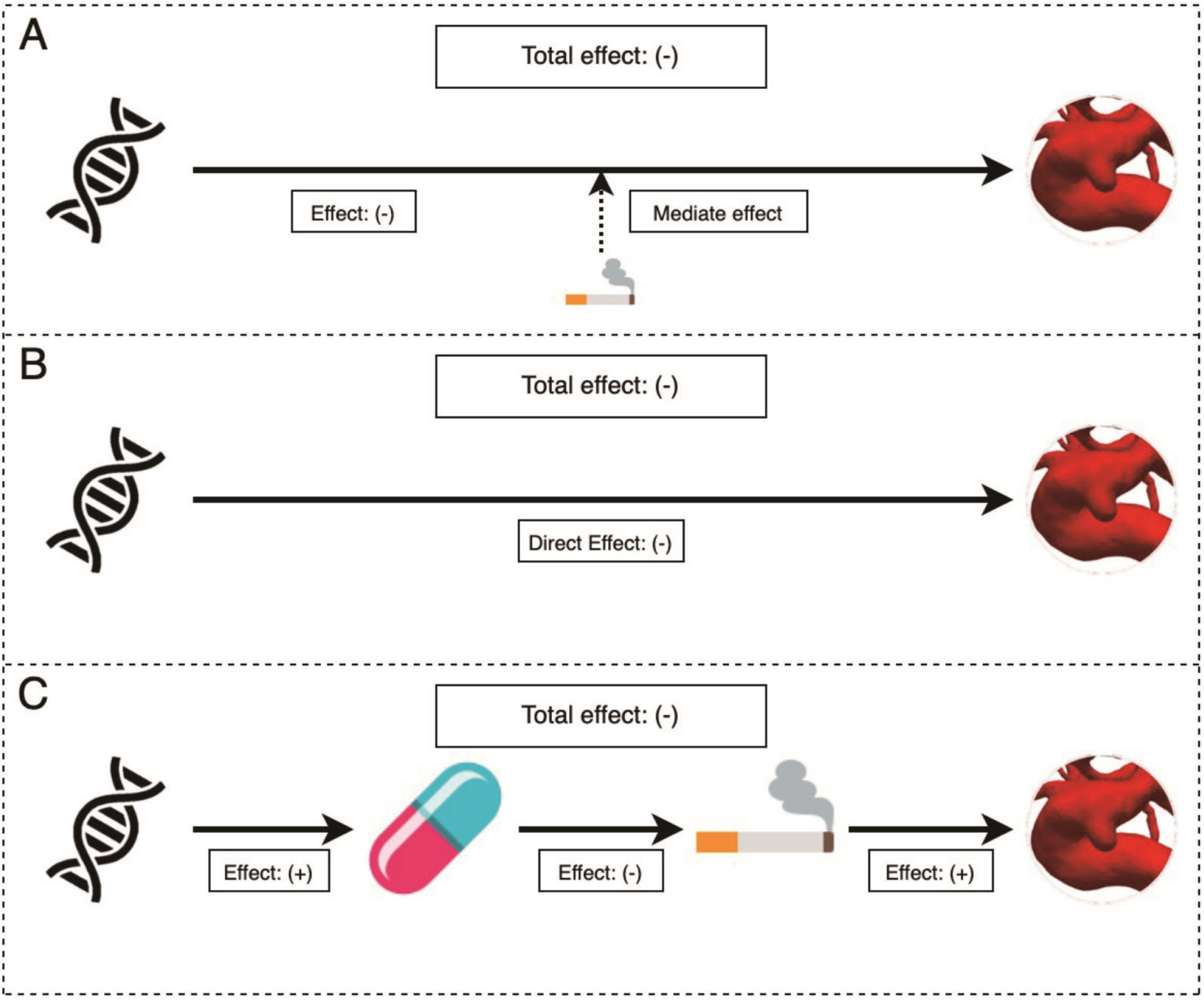
| beta upper 95%CI | or | or lower 95%CI | or upper 95%CI |
|---|---|---|---|
| 0,459625848 | 1,16724472 | 0,860420733 | 1,583481411 |
| 0,361669857 | 1,102790536 | 0,847061295 | 1,435724869 |
| 0,273020497 | 1,105204802 | 0,929638778 | 1,313927176 |
| 0,15066059 | 0,692226504 | 0,412159566 | 1,162601993 |
| 0,326440823 | 1,063011628 | 0,815275858 | 1,386026226 |
| 0,581143085 | 1,123408202 | 0,705810225 | 1,788081192 |
| 0,629391551 | 1,211723328 | 0,782466333 | 1,876468496 |
| 0,318776636 | 1,055241968 | 0,80958262 | 1,375444066 |
| 0,445003771 | 0,55313389 | 0,196063998 | 1,56049608 |
| 0,739176023 | 1,303641944 | 0,811515057 | 2,094209224 |
| 0,540324635 | 1,225065721 | 0,874296558 | 1,716564028 |
| 0,44840791 | 1,153295129 | 0,849453939 | 1,565817278 |
| 0,297899776 | 1,112961092 | 0,919567757 | 1,347026777 |
| 0,16065842 | 0,604781708 | 0,311475742 | 1,174283789 |
| 0,384580604 | 1,123366369 | 0,85905625 | 1,4689981 |
| 0,269378472 | 1,149469255 | 1,00926482 | 1,309150524 |
| 0,310795256 | 1,174369181 | 1,010724112 | 1,364509818 |
| 0,308534651 | 1,066772903 | 0,835889857 | 1,361428683 |

Supplementary Table S9 Mendelian randomization results of HYKK and CigDay on IA risk using rs7164594 only as instruments

| Exposure | Outcome | Method | Nsnp | Beta | SE | p-value | beta lower 95%CI | beta upper 95%CI |
|---|---|---|---|---|---|---|---|---|
| HYKK only rs7164594 | All IA | Wald ratio | 1 | -2,078003656 | 0,398070999 | 1,78746E-07 | -2,858222814 | -1,297784498 |
| HYKK only rs7164594 | Only SAH | Wald ratio | 1 | -2,945110135 | 0,783361083 | 0,000170198 | -4,480497857 | -1,409722412 |
| HYKK only rs7164594 | Only uIA | Wald ratio | 1 | -2,172666976 | 1,258290799 | 0,084224947 | -4,638916942 | 0,29358299 |
| CigDay only rs7164594 | All IA | Wald ratio | 1 | 1,405874499 | 0,332443258 | 2,3482E-05 | 0,754285714 | 2,057463284 |
| CigDay only rs7164594 | Only SAH | Wald ratio | 1 | 1,44058745 | 0,38317757 | 0,000170198 | 0,689559413 | 2,191615487 |
| CigDay only rs7164594 | Only uIA | Wald ratio | 1 | 1,062750334 | 0,615487316 | 0,084224947 | -0,143604806 | 2,269105474 |

| or | or lower 95%CI | or upper 95%CI |
|---|---|---|
| 0,125179865 | 0,057370628 | 0,273136257 |
| 0,052596267 | 0,011327772 | 0,244211064 |
| 0,113873514 | 0,009668163 | 1,341224483 |
| 4,079092346 | 2,126092343 | 7,826092039 |
| 4,223175993 | 1,992837321 | 8,949659504 |
| 2,8943204 | 0,866230009 | 9,67074621 |

**Fig 4. Associations between varenicline, the HYKK gene, smoking behavior, and intracranial aneurysm.**



STROBE Statement—checklist of items that should be included in reports of observational studies

| | Item No | Recommendation |
|---|---|---|
| **Title and abstract** | 1 | (*a*) Indicate the study's design with a commonly used term in the title or the abstract |
| | | (*b*) Provide in the abstract an informative and balanced summary of what was done and what was found |
| **Introduction** | | |
| Background/rationale | 2 | Explain the scientific background and rationale for the investigation being reported |
| Objectives | 3 | State specific objectives, including any prespecified hypotheses |
| **Methods** | | |
| Study design | 4 | Present key elements of study design early in the paper |
| Setting | 5 | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection |
| Participants | 6 | (*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up<br>*Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls<br>*Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants |
| | | (*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed<br>*Case-control study*—For matched studies, give matching criteria and the number of controls per case |
| Variables | 7 | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable |
| Data sources/ measurement | 8* | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group |
| Bias | 9 | Describe any efforts to address potential sources of bias |
| Study size | 10 | Explain how the study size was arrived at |
| Quantitative variables | 11 | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why |
| Statistical methods | 12 | (*a*) Describe all statistical methods, including those used to control for confounding |
| | | (*b*) Describe any methods used to examine subgroups and interactions |
| | | (*c*) Explain how missing data were addressed |
| | | (*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed<br>*Case-control study*—If applicable, explain how matching of cases and controls was addressed<br>*Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy |
| | | (*e*) Describe any sensitivity analyses |

Continued on next page

| | | |
|---|---|---|
| **Results** | | |
| Participants | 13* | (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed |
| | | (b) Give reasons for non-participation at each stage |
| | | (c) Consider use of a flow diagram |
| Descriptive data | 14* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders |
| | | (b) Indicate number of participants with missing data for each variable of interest |
| | | (c) *Cohort study*—Summarise follow-up time (eg, average and total amount) |
| Outcome data | 15* | *Cohort study*—Report numbers of outcome events or summary measures over time |
| | | *Case-control study*—Report numbers in each exposure category, or summary measures of exposure |
| | | *Cross-sectional study*—Report numbers of outcome events or summary measures |
| Main results | 16 | (*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included |
| | | (*b*) Report category boundaries when continuous variables were categorized |
| | | (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period |
| Other analyses | 17 | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses |
| **Discussion** | | |
| Key results | 18 | Summarise key results with reference to study objectives |
| Limitations | 19 | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias |
| Interpretation | 20 | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence |
| Generalisability | 21 | Discuss the generalisability (external validity) of the study results |
| **Other information** | | |
| Funding | 22 | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based |

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.