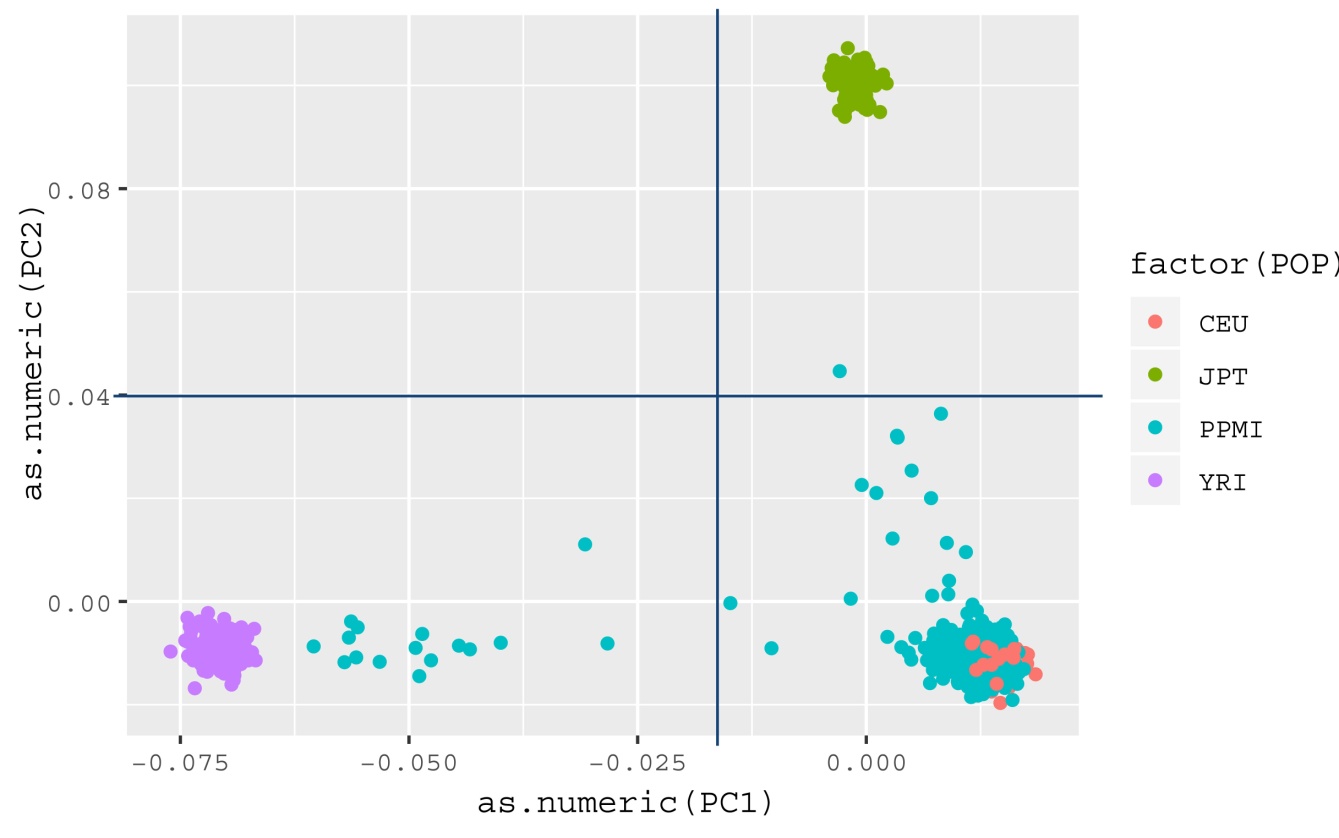
**Appendix e-1.**

**Population stratification**

In order to consider participants' ethnicity, we undertook a principal component analysis (PCA) using PPMI and HapMap genetic data.1 After PPMI and HapMap genetic data were merged, we extracted 20 leading principal components (PCs) with the '-pca' option in PLINK.2 In this PCA, PPMI NEUROX chip data (n = 619) were used, as it included all subjects who underwent 123I-FP-CIT SPECT. The PPMI participants were plotted within three HapMap ethnic groups (YRI: 30 mother-father-adult child trios from the Yoruba in Ibadan, Neigeria; CEU: 30 trios of northern and western European ancestry living in Utah from the Centre d'Etude du Polymorphisme Humain collection; JPT: 45 unrelated Japanese individuals in Tokyo, Japan) according to the two leading PCs - PC1 (x coordinate) and PC2 (y coordinate). We selected only those PPMI participants who were close to the HapMap CEU (n = 600; figure below)



After obtaining PCs from NEUROX chip data of PPMI, we conducted linear mixed model (LMM) tests to identify PCs with effects on the striatal 123I-FP-CIT SBRs. However, none of the PCs showed statistical significance. Therefore, further statistical analyses did not include PCs from the PCA of NEUROX chip data.

***References***

1. International HapMap C, Frazer KA, Ballinger DG, et al. A second generation human haplotype map of over 3.1 million SNPs. Nature 2007;449:851-861.

2. Chang CC, Chow CC, Tellier LC, Vattikuti S, Purcell SM, Lee JJ. Second-generation PLINK: rising to the challenge of larger and richer datasets. Gigascience 2015;4:7.

**Table e-1.**

**Effects of PD-risk SNPs on the caudate 123I-FP-CIT availability (1)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SNPs** | **Fixed effecta** | **Estimate** | **SE** | **t** | **uncorrected *p*** | **corrected *p*** |
| ***Main effects*** |  |  |  |  |  |  |
| rs10797576 | heterozygous alleles | -0.044547 | 0.0285777 | -1.558808 | 0.120 | 0.567 |
| rs10797576 | homozygous risk alleles | -0.007558 | 0.0943414 | -0.080115 | 0.936 | 0.997 |
| rs11060180 | heterozygous alleles | 0.0203263 | 0.034198 | 0.5943709 | 0.553 | 0.884 |
| rs11060180 | homozygous risk alleles | -0.035254 | 0.0363164 | -0.970742 | 0.332 | 0.733 |
| rs11158026 | heterozygous alleles | 0.057019 | 0.0446847 | 1.2760278 | 0.203 | 0.633 |
| rs11158026 | homozygous risk alleles | 0.0777483 | 0.0443826 | 1.7517756 | 0.081 | 0.542 |
| rs114138760 | heterozygous alleles | 0.0448243 | 0.0772104 | 0.5805477 | 0.562 | 0.888 |
| rs11724635 | heterozygous alleles | 0.0763562 | 0.0358836 | 2.1278862 | 0.034 | 0.390 |
| rs11724635 | homozygous risk alleles | 0.0458652 | 0.0374699 | 1.2240534 | 0.222 | 0.633 |
| rs118117788 | heterozygous alleles | -0.078596 | 0.055343 | -1.420163 | 0.157 | 0.567 |
| rs11868035 | heterozygous alleles | -0.052358 | 0.0447375 | -1.170347 | 0.243 | 0.635 |
| rs11868035 | homozygous risk alleles | -0.081901 | 0.0441638 | -1.854491 | 0.065 | 0.487 |
| rs12456492 | heterozygous alleles | -0.009756 | 0.0276385 | -0.352987 | 0.724 | 0.977 |
| rs12456492 | homozygous risk alleles | 0.0540832 | 0.0431413 | 1.2536294 | 0.211 | 0.633 |
| rs12637471 | heterozygous alleles | -0.044948 | 0.0827634 | -0.543085 | 0.587 | 0.907 |
| rs12637471 | homozygous risk alleles | -0.028222 | 0.0811042 | -0.347975 | 0.728 | 0.977 |
| rs14235 | heterozygous alleles | 0.0172555 | 0.028516 | 0.6051152 | 0.546 | 0.884 |
| rs14235 | homozygous risk alleles | 0.0196588 | 0.0414141 | 0.4746893 | 0.635 | 0.928 |
| rs17649553 | heterozygous alleles | -0.005832 | 0.06453 | -0.090376 | 0.928 | 0.997 |
| rs17649553 | homozygous risk alleles | -0.043378 | 0.0624233 | -0.694897 | 0.488 | 0.875 |
| rs1955337 | heterozygous alleles | -0.034417 | 0.0293832 | -1.171314 | 0.242 | 0.635 |
| rs1955337 | homozygous risk alleles | -0.06022 | 0.0979095 | -0.615057 | 0.539 | 0.884 |
| rs199347 | heterozygous alleles | -0.000231 | 0.0399131 | -0.005784 | 0.995 | 1.000 |
| rs199347 | homozygous risk alleles | -0.024652 | 0.0413856 | -0.595655 | 0.552 | 0.884 |
| rs2414739 | heterozygous alleles | -0.003337 | 0.0605701 | -0.055091 | 0.956 | 0.997 |
| rs2414739 | homozygous risk alleles | 0.0035774 | 0.0592322 | 0.0603956 | 0.952 | 0.997 |
| rs329648 | heterozygous alleles | -0.006859 | 0.0282114 | -0.243145 | 0.808 | 0.991 |
| rs329648 | homozygous risk alleles | -0.016276 | 0.0387314 | -0.42023 | 0.675 | 0.953 |
| rs34311866 | heterozygous alleles | 0.0083765 | 0.0274305 | 0.3053717 | 0.760 | 0.991 |
| rs34311866 | homozygous risk alleles | 0.0194308 | 0.0573342 | 0.3389034 | 0.735 | 0.980 |
| rs34884217 | heterozygous alleles | -0.008142 | 0.1113124 | -0.073141 | 0.942 | 0.997 |
| rs34884217 | homozygous risk alleles | -0.022545 | 0.1075093 | -0.209701 | 0.834 | 0.992 |
| rs356181 | heterozygous alleles | -0.057036 | 0.0326464 | -1.747095 | 0.082 | 0.542 |
| rs356181 | homozygous risk alleles | -0.053454 | 0.0358673 | -1.49032 | 0.137 | 0.567 |
| rs3910105 | heterozygous alleles | -0.075914 | 0.0374286 | -2.028244 | 0.043 | 0.433 |
| rs3910105 | homozygous risk alleles | -0.057248 | 0.0399653 | -1.432454 | 0.153 | 0.567 |
| rs55785911 | heterozygous alleles | 0.0020286 | 0.0409159 | 0.0495786 | 0.960 | 0.997 |
| rs55785911 | homozygous risk alleles | 0.0024416 | 0.041945 | 0.0582098 | 0.954 | 0.997 |
| rs591323 | heterozygous alleles | -0.020329 | 0.0572629 | -0.355018 | 0.723 | 0.977 |
| rs591323 | homozygous risk alleles | 0.0023417 | 0.0561317 | 0.0417171 | 0.967 | 0.997 |
| rs6430538 | heterozygous alleles | 0.0054302 | 0.0334677 | 0.162251 | 0.871 | 0.997 |
| rs6430538 | homozygous risk alleles | -0.024727 | 0.0361142 | -0.684702 | 0.494 | 0.877 |
| rs6812193 | heterozygous alleles | -0.014289 | 0.0396299 | -0.360567 | 0.719 | 0.977 |
| rs6812193 | homozygous risk alleles | -0.014292 | 0.0399979 | -0.357331 | 0.721 | 0.977 |
| rs71628662 | heterozygous alleles | 0.0337626 | 0.0696605 | 0.4846732 | 0.628 | 0.927 |
| rs76904798 | heterozygous alleles | -0.006581 | 0.0285137 | -0.230788 | 0.818 | 0.991 |
| rs76904798 | homozygous risk alleles | -0.145753 | 0.1206524 | -1.20804 | 0.228 | 0.633 |
| rs8192591 | heterozygous alleles | -0.051007 | 0.05172 | -0.986222 | 0.325 | 0.733 |
| rs823118 | heterozygous alleles | 0.0685115 | 0.0353469 | 1.9382594 | 0.053 | 0.455 |
| rs823118 | homozygous risk alleles | 0.0499527 | 0.0382664 | 1.3053942 | 0.193 | 0.612 |
| ***Interactions with disease duration*** | | | | | | |
| **rs10797576** | **heterozygous alleles** | **0.017653** | **0.003543** | **4.982654** | **< 0.001** | **< 0.001** |
| rs10797576 | homozygous risk alleles | -0.002378 | 0.0120127 | -0.197979 | 0.843 | 0.992 |
| rs11060180 | heterozygous alleles | 0.0027671 | 0.004397 | 0.6293141 | 0.529 | 0.884 |
| rs11060180 | homozygous risk alleles | 0.005531 | 0.0046733 | 1.1835374 | 0.237 | 0.633 |
| rs11158026 | heterozygous alleles | 0.0016546 | 0.0057375 | 0.288385 | 0.773 | 0.991 |
| rs11158026 | homozygous risk alleles | 0.0066991 | 0.0056669 | 1.1821558 | 0.237 | 0.633 |
| rs114138760 | heterozygous alleles | -0.015405 | 0.0094428 | -1.631418 | 0.103 | 0.567 |
| rs11724635 | heterozygous alleles | -0.005459 | 0.0044371 | -1.230203 | 0.219 | 0.633 |
| rs11724635 | homozygous risk alleles | -0.00717 | 0.0045256 | -1.58423 | 0.114 | 0.567 |
| rs118117788 | heterozygous alleles | -0.004805 | 0.007311 | -0.657229 | 0.511 | 0.884 |
| rs11868035 | heterozygous alleles | -0.004152 | 0.0052171 | -0.795839 | 0.426 | 0.844 |
| rs11868035 | homozygous risk alleles | -0.000749 | 0.0051291 | -0.146054 | 0.884 | 0.997 |
| rs12456492 | heterozygous alleles | 0.0032103 | 0.0034256 | 0.9371499 | 0.349 | 0.754 |
| rs12456492 | homozygous risk alleles | -0.015885 | 0.0056888 | -2.7923 | 0.005 | 0.126 |
| rs12637471 | heterozygous alleles | -0.015669 | 0.0079655 | -1.967123 | 0.049 | 0.455 |
| rs12637471 | homozygous risk alleles | -0.018412 | 0.007679 | -2.397686 | 0.017 | 0.249 |
| rs14235 | heterozygous alleles | -0.003573 | 0.0035762 | -0.999074 | 0.318 | 0.733 |
| rs14235 | homozygous risk alleles | -0.007339 | 0.0052386 | -1.400903 | 0.162 | 0.567 |
| rs17649553 | heterozygous alleles | 0.0134422 | 0.0080492 | 1.6699975 | 0.095 | 0.567 |
| rs17649553 | homozygous risk alleles | 0.0190005 | 0.0077244 | 2.4598011 | 0.014 | 0.249 |
| rs1955337 | heterozygous alleles | 0.004403 | 0.0036954 | 1.1914815 | 0.234 | 0.633 |
| rs1955337 | homozygous risk alleles | 0.0017376 | 0.0114736 | 0.1514423 | 0.880 | 0.997 |
| rs199347 | heterozygous alleles | 0.0105596 | 0.0052537 | 2.0099584 | 0.045 | 0.436 |
| rs199347 | homozygous risk alleles | 0.0103979 | 0.0054573 | 1.9053327 | 0.057 | 0.466 |
| rs2414739 | heterozygous alleles | 0.0107114 | 0.0074508 | 1.4376256 | 0.151 | 0.567 |
| rs2414739 | homozygous risk alleles | 0.0101684 | 0.0072525 | 1.4020583 | 0.161 | 0.567 |
| rs329648 | heterozygous alleles | -0.00072 | 0.0035891 | -0.200485 | 0.841 | 0.992 |
| rs329648 | homozygous risk alleles | 0.0070904 | 0.0046886 | 1.512281 | 0.131 | 0.567 |
| rs34311866 | heterozygous alleles | -0.005228 | 0.0034709 | -1.506347 | 0.132 | 0.567 |
| rs34311866 | homozygous risk alleles | -0.014109 | 0.007236 | -1.949782 | 0.052 | 0.455 |
| rs34884217 | heterozygous alleles | 0.0107116 | 0.0151597 | 0.7065848 | 0.480 | 0.873 |
| rs34884217 | homozygous risk alleles | 0.0137367 | 0.0147036 | 0.9342456 | 0.350 | 0.754 |
| rs356181 | heterozygous alleles | 0.0039612 | 0.0040958 | 0.9671418 | 0.334 | 0.733 |
| rs356181 | homozygous risk alleles | 0.0011003 | 0.0045636 | 0.2411009 | 0.810 | 0.991 |
| rs3910105 | heterozygous alleles | 0.006429 | 0.0045347 | 1.4177304 | 0.157 | 0.567 |
| rs3910105 | homozygous risk alleles | 0.0048525 | 0.0047835 | 1.0144396 | 0.311 | 0.733 |
| rs55785911 | heterozygous alleles | -0.000694 | 0.0051168 | -0.135628 | 0.892 | 0.997 |
| rs55785911 | homozygous risk alleles | 0.0064585 | 0.00527 | 1.2255046 | 0.221 | 0.633 |
| rs591323 | heterozygous alleles | 0.0083704 | 0.0072351 | 1.1569258 | 0.248 | 0.643 |
| rs591323 | homozygous risk alleles | 0.0073517 | 0.0070336 | 1.0452305 | 0.296 | 0.722 |
| rs6430538 | heterozygous alleles | 0.0001154 | 0.0042062 | 0.0274359 | 0.978 | 0.998 |
| rs6430538 | homozygous risk alleles | 0.00101 | 0.0045024 | 0.2243263 | 0.823 | 0.991 |
| rs6812193 | heterozygous alleles | -0.00629 | 0.0048042 | -1.309296 | 0.191 | 0.612 |
| rs6812193 | homozygous risk alleles | -0.00083 | 0.0048791 | -0.170054 | 0.865 | 0.994 |
| rs71628662 | heterozygous alleles | -0.017973 | 0.0087875 | -2.045302 | 0.041 | 0.430 |
| rs76904798 | heterozygous alleles | 0.0099854 | 0.0035151 | 2.8407168 | 0.005 | 0.126 |
| **rs76904798** | **homozygous risk alleles** | **0.087773** | **0.018323** | **4.79042** | **< 0.001** | **< 0.001** |
| rs8192591 | heterozygous alleles | 0.0034803 | 0.0068445 | 0.5084781 | 0.611 | 0.921 |
| rs823118 | heterozygous alleles | 0.0008696 | 0.0044522 | 0.1953167 | 0.845 | 0.992 |
| rs823118 | homozygous risk alleles | 0.003668 | 0.0047928 | 0.76532 | 0.444 | 0.857 |

Results of linear mixed models (LMMs) using square root transformed caudate 123I-FP-CIT availability as dependent variable; a = compared with homozygous protective alleles; corrected *p* = FDR corrected for multiple testing; SNPs in bold character = significant results after correction for multiple testing

**Table e-2.**

**Effects of PD-risk SNPs on the putaminal 123I-FP-CIT availability (1)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SNPs** | **Fixed effecta** | **Estimate** | **SE** | **t** | **uncorrected p** | **corrected p** |
| ***Main effects*** | | | | | | |
| rs10797576 | heterozygous alleles | -0.010462 | 0.0214217 | -0.488393 | 0.626 | 0.927 |
| rs10797576 | homozygous risk alleles | -0.060747 | 0.0706299 | -0.860077 | 0.390 | 0.805 |
| rs11060180 | heterozygous alleles | 0.0171895 | 0.025609 | 0.6712275 | 0.503 | 0.878 |
| rs11060180 | homozygous risk alleles | -0.006225 | 0.0271517 | -0.22927 | 0.819 | 0.991 |
| rs11158026 | heterozygous alleles | -0.003495 | 0.0335811 | -0.10408 | 0.917 | 0.997 |
| rs11158026 | homozygous risk alleles | 0.0471609 | 0.0333548 | 1.4139156 | 0.158 | 0.567 |
| rs114138760 | heterozygous alleles | 0.0349389 | 0.0577453 | 0.6050522 | 0.546 | 0.884 |
| rs11724635 | heterozygous alleles | 0.0650741 | 0.0266862 | 2.4384946 | 0.015 | 0.249 |
| rs11724635 | homozygous risk alleles | 0.0275589 | 0.0278711 | 0.9887956 | 0.323 | 0.733 |
| rs118117788 | heterozygous alleles | 0.0006431 | 0.0412807 | 0.0155783 | 0.988 | 0.998 |
| rs11868035 | heterozygous alleles | -0.016792 | 0.0331404 | -0.506685 | 0.613 | 0.921 |
| rs11868035 | homozygous risk alleles | -0.039428 | 0.0327286 | -1.204684 | 0.229 | 0.633 |
| rs12456492 | heterozygous alleles | -0.029908 | 0.0205342 | -1.456509 | 0.146 | 0.567 |
| rs12456492 | homozygous risk alleles | -0.013647 | 0.0321211 | -0.424861 | 0.671 | 0.953 |
| rs12637471 | heterozygous alleles | 0.0040217 | 0.0614002 | 0.0654991 | 0.948 | 0.997 |
| rs12637471 | homozygous risk alleles | -0.023666 | 0.0601733 | -0.393291 | 0.694 | 0.965 |
| rs14235 | heterozygous alleles | -0.018574 | 0.0211459 | -0.878375 | 0.380 | 0.801 |
| rs14235 | homozygous risk alleles | 0.008355 | 0.0307701 | 0.2715292 | 0.786 | 0.991 |
| rs17649553 | heterozygous alleles | 0.0187782 | 0.0478209 | 0.3926775 | 0.695 | 0.965 |
| rs17649553 | homozygous risk alleles | -0.001972 | 0.0462506 | -0.04264 | 0.966 | 0.997 |
| rs1955337 | heterozygous alleles | -0.005544 | 0.0219487 | -0.252591 | 0.801 | 0.991 |
| rs1955337 | homozygous risk alleles | -0.049547 | 0.0733166 | -0.675791 | 0.500 | 0.877 |
| rs199347 | heterozygous alleles | 0.016992 | 0.0298518 | 0.5692117 | 0.570 | 0.896 |
| rs199347 | homozygous risk alleles | -0.007737 | 0.0309531 | -0.249943 | 0.803 | 0.991 |
| rs2414739 | heterozygous alleles | -0.001208 | 0.0449721 | -0.026853 | 0.979 | 0.998 |
| rs2414739 | homozygous risk alleles | -0.00192 | 0.0439626 | -0.043685 | 0.965 | 0.997 |
| rs329648 | heterozygous alleles | 0.0059457 | 0.0210271 | 0.2827629 | 0.778 | 0.991 |
| rs329648 | homozygous risk alleles | 0.0031636 | 0.0287831 | 0.109912 | 0.913 | 0.997 |
| rs34311866 | heterozygous alleles | -0.01973 | 0.0205765 | -0.958864 | 0.338 | 0.740 |
| rs34311866 | homozygous risk alleles | -0.008869 | 0.0431385 | -0.205586 | 0.837 | 0.992 |
| rs34884217 | heterozygous alleles | 0.0837892 | 0.0829829 | 1.0097156 | 0.313 | 0.733 |
| rs34884217 | homozygous risk alleles | 0.0413255 | 0.080155 | 0.5155693 | 0.607 | 0.921 |
| rs356181 | heterozygous alleles | -0.040883 | 0.0243094 | -1.681785 | 0.094 | 0.567 |
| rs356181 | homozygous risk alleles | -0.036691 | 0.0267433 | -1.371984 | 0.171 | 0.580 |
| rs3910105 | heterozygous alleles | -0.017212 | 0.0280115 | -0.614468 | 0.539 | 0.884 |
| rs3910105 | homozygous risk alleles | -0.030639 | 0.0298851 | -1.02524 | 0.306 | 0.733 |
| rs55785911 | heterozygous alleles | -0.042006 | 0.0305335 | -1.375723 | 0.170 | 0.580 |
| rs55785911 | homozygous risk alleles | -0.041652 | 0.0313047 | -1.330546 | 0.184 | 0.599 |
| rs591323 | heterozygous alleles | 0.0028342 | 0.0429198 | 0.0660358 | 0.947 | 0.997 |
| rs591323 | homozygous risk alleles | 0.034359 | 0.0420565 | 0.8169727 | 0.415 | 0.835 |
| rs6430538 | heterozygous alleles | -0.00598 | 0.024985 | -0.239325 | 0.811 | 0.991 |
| rs6430538 | homozygous risk alleles | -0.015001 | 0.026934 | -0.55694 | 0.578 | 0.896 |
| rs6812193 | heterozygous alleles | -0.024103 | 0.0295764 | -0.814943 | 0.416 | 0.835 |
| rs6812193 | homozygous risk alleles | -0.02171 | 0.0298622 | -0.727023 | 0.468 | 0.863 |
| rs71628662 | heterozygous alleles | -0.002997 | 0.0517921 | -0.057865 | 0.954 | 0.997 |
| rs76904798 | heterozygous alleles | -0.013074 | 0.0213208 | -0.613205 | 0.540 | 0.884 |
| rs76904798 | homozygous risk alleles | -0.139585 | 0.0908658 | -1.536165 | 0.125 | 0.567 |
| rs8192591 | heterozygous alleles | -0.034156 | 0.0384454 | -0.888435 | 0.375 | 0.794 |
| rs823118 | heterozygous alleles | 0.042453 | 0.0264381 | 1.6057522 | 0.109 | 0.567 |
| rs823118 | homozygous risk alleles | 0.0456064 | 0.0286263 | 1.5931628 | 0.112 | 0.567 |
| ***Interaction with disease duration*** | | | | | | |
| rs10797576 | heterozygous alleles | 0.0085326 | 0.0029539 | 2.8886007 | 0.004 | 0.126 |
| rs10797576 | homozygous risk alleles | 0.0023124 | 0.0102247 | 0.2261587 | 0.821 | 0.991 |
| rs11060180 | heterozygous alleles | 0.0031981 | 0.00369 | 0.8666722 | 0.386 | 0.805 |
| rs11060180 | homozygous risk alleles | 0.0007487 | 0.0039189 | 0.1910448 | 0.849 | 0.992 |
| rs11158026 | heterozygous alleles | 0.001488 | 0.0047853 | 0.3109433 | 0.756 | 0.991 |
| rs11158026 | homozygous risk alleles | -5.89E-06 | 0.004715 | -0.001248 | 0.999 | 1.000 |
| rs114138760 | heterozygous alleles | -0.012089 | 0.0079065 | -1.528956 | 0.127 | 0.567 |
| rs11724635 | heterozygous alleles | -0.009164 | 0.0036815 | -2.489251 | 0.013 | 0.249 |
| rs11724635 | homozygous risk alleles | -0.006592 | 0.0037447 | -1.760431 | 0.079 | 0.542 |
| rs118117788 | heterozygous alleles | -0.014153 | 0.0061648 | -2.29576 | 0.022 | 0.283 |
| rs11868035 | heterozygous alleles | -0.008334 | 0.0043029 | -1.936795 | 0.053 | 0.455 |
| rs11868035 | homozygous risk alleles | -0.00647 | 0.0042346 | -1.527921 | 0.127 | 0.567 |
| rs12456492 | heterozygous alleles | 0.0074335 | 0.0028612 | 2.5980509 | 0.010 | 0.212 |
| rs12456492 | homozygous risk alleles | -0.00686 | 0.0047758 | -1.436376 | 0.151 | 0.567 |
| **rs12637471** | **heterozygous alleles** | **-0.02171** | **0.006347** | **-3.42037** | **0.001** | **0.033** |
| rs12637471 | homozygous risk alleles | -0.017236 | 0.0061032 | -2.824087 | 0.005 | 0.126 |
| rs14235 | heterozygous alleles | 0.0042156 | 0.0029973 | 1.4064497 | 0.160 | 0.567 |
| rs14235 | homozygous risk alleles | -0.003205 | 0.0044145 | -0.726087 | 0.468 | 0.863 |
| rs17649553 | heterozygous alleles | -0.00045 | 0.0067792 | -0.066355 | 0.947 | 0.997 |
| rs17649553 | homozygous risk alleles | 0.0081687 | 0.0064982 | 1.2570562 | 0.209 | 0.633 |
| rs1955337 | heterozygous alleles | 0.0038452 | 0.0030774 | 1.2495099 | 0.212 | 0.633 |
| rs1955337 | homozygous risk alleles | 0.0068628 | 0.0096746 | 0.7093589 | 0.478 | 0.873 |
| rs199347 | heterozygous alleles | 0.008354 | 0.0044067 | 1.8957434 | 0.058 | 0.467 |
| rs199347 | homozygous risk alleles | 0.0096792 | 0.0045853 | 2.1109054 | 0.035 | 0.390 |
| rs2414739 | heterozygous alleles | 0.0032149 | 0.0062753 | 0.5123196 | 0.609 | 0.921 |
| rs2414739 | homozygous risk alleles | 0.0045877 | 0.0061039 | 0.7516111 | 0.452 | 0.857 |
| rs329648 | heterozygous alleles | -0.000819 | 0.0030008 | -0.272954 | 0.785 | 0.991 |
| rs329648 | homozygous risk alleles | 0.0083461 | 0.0038904 | 2.1452809 | 0.032 | 0.390 |
| rs34311866 | heterozygous alleles | 0.0022299 | 0.0029047 | 0.7676749 | 0.443 | 0.857 |
| rs34311866 | homozygous risk alleles | -0.007522 | 0.0060782 | -1.23747 | 0.216 | 0.633 |
| rs34884217 | heterozygous alleles | -0.014439 | 0.0127868 | -1.129177 | 0.259 | 0.664 |
| rs34884217 | homozygous risk alleles | -0.006942 | 0.0123998 | -0.559863 | 0.576 | 0.896 |
| rs356181 | heterozygous alleles | 0.0036731 | 0.0034239 | 1.0728003 | 0.284 | 0.715 |
| rs356181 | homozygous risk alleles | -0.000665 | 0.0038352 | -0.17334 | 0.862 | 0.994 |
| rs3910105 | heterozygous alleles | -0.003775 | 0.0037921 | -0.99556 | 0.320 | 0.733 |
| rs3910105 | homozygous risk alleles | 0.0012116 | 0.0039938 | 0.3033833 | 0.762 | 0.991 |
| rs55785911 | heterozygous alleles | 0.0010938 | 0.0042806 | 0.2555295 | 0.798 | 0.991 |
| rs55785911 | homozygous risk alleles | 0.0061896 | 0.0044081 | 1.4041281 | 0.161 | 0.567 |
| rs591323 | heterozygous alleles | 0.0049397 | 0.0060921 | 0.8108291 | 0.418 | 0.835 |
| rs591323 | homozygous risk alleles | 0.000563 | 0.0059156 | 0.0951806 | 0.924 | 0.997 |
| rs6430538 | heterozygous alleles | 0.0037477 | 0.003521 | 1.0644021 | 0.287 | 0.719 |
| rs6430538 | homozygous risk alleles | 0.0052949 | 0.0037634 | 1.4069567 | 0.160 | 0.567 |
| rs6812193 | heterozygous alleles | -0.003917 | 0.0040376 | -0.970026 | 0.332 | 0.733 |
| rs6812193 | homozygous risk alleles | -0.000142 | 0.0041014 | -0.034687 | 0.972 | 0.997 |
| rs71628662 | heterozygous alleles | -0.017564 | 0.0074163 | -2.36832 | 0.018 | 0.249 |
| rs76904798 | heterozygous alleles | 0.0070374 | 0.0029366 | 2.3964665 | 0.017 | 0.249 |
| **rs76904798** | **homozygous risk alleles** | **0.067326** | **0.015466** | **4.353212** | **< 0.001** | **0.001** |
| rs8192591 | heterozygous alleles | -0.002509 | 0.0057758 | -0.434484 | 0.664 | 0.953 |
| rs823118 | heterozygous alleles | -0.001325 | 0.0037306 | -0.355097 | 0.723 | 0.977 |
| rs823118 | homozygous risk alleles | -0.00242 | 0.0040085 | -0.603773 | 0.546 | 0.884 |

Results of linear mixed models (LMMs) using square root transformed putaminal 123I-FP-CIT availability as dependent variable; a = compared with homozygous protective alleles; corrected *p* = FDR corrected for multiple testing; SNPs in bold character = significant results after correction for multiple testing

**Table e-3.**

**Effects of PD-risk SNPs on the caudate 123I-FP-CIT availability (2)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SNPs** | **Fixed effecta** | **Estimate** | **SE** | **t** | **uncorrected p** | **corrected p** |
| ***Main effects*** | | | | | | |
| rs10797576 | heterozygous alleles | -0.036989 | 0.0962083 | -0.384467 | 0.701 | 0.970 |
| rs10797576 | homozygous protective alleles | 0.0075582 | 0.0943414 | 0.0801152 | 0.936 | 0.997 |
| rs11060180 | heterozygous alleles | 0.0555801 | 0.0296464 | 1.8747697 | 0.062 | 0.484 |
| rs11060180 | homozygous protective alleles | 0.0352539 | 0.0363164 | 0.9707423 | 0.332 | 0.733 |
| rs11158026 | heterozygous alleles | -0.020729 | 0.0273062 | -0.759146 | 0.448 | 0.857 |
| rs11158026 | homozygous protective alleles | -0.077748 | 0.0443826 | -1.751776 | 0.081 | 0.542 |
| rs114138760 | homozygous protective alleles | -0.044824 | 0.0772104 | -0.580548 | 0.562 | 0.888 |
| rs11724635 | heterozygous alleles | 0.030491 | 0.0289689 | 1.052542 | 0.293 | 0.722 |
| rs11724635 | homozygous protective alleles | -0.045865 | 0.0374699 | -1.224053 | 0.222 | 0.633 |
| rs118117788 | homozygous protective alleles | 0.0785962 | 0.055343 | 1.4201634 | 0.157 | 0.567 |
| rs11868035 | heterozygous alleles | 0.029543 | 0.0275352 | 1.0729171 | 0.284 | 0.715 |
| rs11868035 | homozygous protective alleles | 0.0819014 | 0.0441638 | 1.8544912 | 0.065 | 0.487 |
| rs12456492 | heterozygous alleles | -0.063839 | 0.0442023 | -1.444252 | 0.150 | 0.567 |
| rs12456492 | homozygous protective alleles | -0.054083 | 0.0431413 | -1.253629 | 0.211 | 0.633 |
| rs12637471 | heterozygous alleles | -0.016725 | 0.0278813 | -0.599874 | 0.549 | 0.884 |
| rs12637471 | homozygous protective alleles | 0.0282222 | 0.0811042 | 0.3479753 | 0.728 | 0.977 |
| rs14235 | heterozygous alleles | -0.002403 | 0.0399543 | -0.060152 | 0.952 | 0.997 |
| rs14235 | homozygous protective alleles | -0.019659 | 0.0414141 | -0.474689 | 0.635 | 0.928 |
| rs17649553 | heterozygous alleles | 0.0375459 | 0.0280478 | 1.33864 | 0.182 | 0.599 |
| rs17649553 | homozygous protective alleles | 0.0433778 | 0.0624233 | 0.6948967 | 0.488 | 0.875 |
| rs1955337 | heterozygous alleles | 0.025803 | 0.0998762 | 0.2583495 | 0.796 | 0.991 |
| rs1955337 | homozygous protective alleles | 0.0602199 | 0.0979095 | 0.6150567 | 0.539 | 0.884 |
| rs199347 | heterozygous alleles | 0.0244207 | 0.0282088 | 0.8657139 | 0.387 | 0.805 |
| rs199347 | homozygous protective alleles | 0.0246516 | 0.0413856 | 0.5956553 | 0.552 | 0.884 |
| rs2414739 | heterozygous alleles | -0.006914 | 0.0273864 | -0.25247 | 0.801 | 0.991 |
| rs2414739 | homozygous protective alleles | -0.003577 | 0.0592322 | -0.060396 | 0.952 | 0.997 |
| rs329648 | heterozygous alleles | 0.0094167 | 0.0384558 | 0.2448697 | 0.807 | 0.991 |
| rs329648 | homozygous protective alleles | 0.0162761 | 0.0387314 | 0.4202298 | 0.675 | 0.953 |
| rs34311866 | heterozygous alleles | -0.011054 | 0.0587418 | -0.188184 | 0.851 | 0.992 |
| rs34311866 | homozygous protective alleles | -0.019431 | 0.0573342 | -0.338903 | 0.735 | 0.980 |
| rs34884217 | heterozygous alleles | 0.0144033 | 0.0356642 | 0.4038589 | 0.687 | 0.965 |
| rs34884217 | homozygous protective alleles | 0.0225448 | 0.1075093 | 0.209701 | 0.834 | 0.992 |
| rs356181 | heterozygous alleles | -0.003583 | 0.0305279 | -0.117353 | 0.907 | 0.997 |
| rs356181 | homozygous protective alleles | 0.0534538 | 0.0358673 | 1.4903203 | 0.137 | 0.567 |
| rs3910105 | heterozygous alleles | -0.018666 | 0.0290746 | -0.642 | 0.521 | 0.884 |
| rs3910105 | homozygous protective alleles | 0.0572485 | 0.0399653 | 1.4324537 | 0.153 | 0.567 |
| rs55785911 | heterozygous alleles | -0.000413 | 0.0280591 | -0.014721 | 0.988 | 0.998 |
| rs55785911 | homozygous protective alleles | -0.002442 | 0.041945 | -0.05821 | 0.954 | 0.997 |
| rs591323 | heterozygous alleles | -0.022671 | 0.0275623 | -0.822536 | 0.411 | 0.835 |
| rs591323 | homozygous protective alleles | -0.002342 | 0.0561317 | -0.041717 | 0.967 | 0.997 |
| rs6430538 | heterozygous alleles | 0.0301576 | 0.0301886 | 0.9989756 | 0.319 | 0.733 |
| rs6430538 | homozygous protective alleles | 0.0247275 | 0.0361142 | 0.6847021 | 0.494 | 0.877 |
| rs6812193 | heterozygous alleles | 3.25E-06 | 0.0281606 | 0.0001155 | 1.000 | 1.000 |
| rs6812193 | homozygous protective alleles | 0.0142925 | 0.0399979 | 0.3573308 | 0.721 | 0.977 |
| rs71628662 | homozygous protective alleles | -0.033763 | 0.0696605 | -0.484673 | 0.628 | 0.927 |
| rs76904798 | heterozygous alleles | 0.1391723 | 0.1219628 | 1.1411051 | 0.255 | 0.657 |
| rs76904798 | homozygous protective alleles | 0.1457529 | 0.1206524 | 1.2080399 | 0.228 | 0.633 |
| rs8192591 | homozygous protective alleles | 0.0510074 | 0.05172 | 0.9862222 | 0.325 | 0.733 |
| rs823118 | heterozygous alleles | 0.0185588 | 0.0296105 | 0.6267641 | 0.531 | 0.884 |
| rs823118 | homozygous protective alleles | -0.049953 | 0.0382664 | -1.305394 | 0.193 | 0.612 |
| ***Interaction with disease duration*** | | | | | | |
| rs10797576 | heterozygous alleles | 0.020031 | 0.0122086 | 1.6407241 | 0.101 | 0.567 |
| rs10797576 | homozygous protective alleles | 0.0023783 | 0.0120127 | 0.1979786 | 0.843 | 0.992 |
| rs11060180 | heterozygous alleles | -0.002764 | 0.0036903 | -0.748966 | 0.454 | 0.857 |
| rs11060180 | homozygous protective alleles | -0.005531 | 0.0046733 | -1.183537 | 0.237 | 0.633 |
| rs11158026 | heterozygous alleles | -0.005045 | 0.0034403 | -1.466305 | 0.143 | 0.567 |
| rs11158026 | homozygous protective alleles | -0.006699 | 0.0056669 | -1.182156 | 0.237 | 0.633 |
| rs114138760 | homozygous protective alleles | 0.0154052 | 0.0094428 | 1.6314178 | 0.103 | 0.567 |
| rs11724635 | heterozygous alleles | 0.0017111 | 0.0036513 | 0.4686206 | 0.639 | 0.930 |
| rs11724635 | homozygous protective alleles | 0.0071696 | 0.0045256 | 1.5842304 | 0.114 | 0.567 |
| rs118117788 | homozygous protective alleles | 0.004805 | 0.007311 | 0.6572289 | 0.511 | 0.884 |
| rs11868035 | heterozygous alleles | -0.003403 | 0.0035014 | -0.971852 | 0.331 | 0.733 |
| rs11868035 | homozygous protective alleles | 0.0007491 | 0.0051291 | 0.1460543 | 0.884 | 0.997 |
| **rs12456492** | **heterozygous alleles** | **0.019095** | **0.005693** | **3.354126** | **0.001** | **0.037** |
| rs12456492 | homozygous protective alleles | 0.015885 | 0.0056888 | 2.7923002 | 0.005 | 0.126 |
| rs12637471 | heterozygous alleles | 0.0027427 | 0.0035753 | 0.7671325 | 0.443 | 0.857 |
| rs12637471 | homozygous protective alleles | 0.0184118 | 0.007679 | 2.3976859 | 0.017 | 0.249 |
| rs14235 | heterozygous alleles | 0.0037659 | 0.0049805 | 0.7561368 | 0.450 | 0.857 |
| rs14235 | homozygous protective alleles | 0.0073388 | 0.0052386 | 1.4009031 | 0.162 | 0.567 |
| rs17649553 | heterozygous alleles | -0.005558 | 0.003623 | -1.534178 | 0.125 | 0.567 |
| rs17649553 | homozygous protective alleles | -0.019 | 0.0077244 | -2.459801 | 0.014 | 0.249 |
| rs1955337 | heterozygous alleles | 0.0026654 | 0.0117404 | 0.227031 | 0.820 | 0.991 |
| rs1955337 | homozygous protective alleles | -0.001738 | 0.0114736 | -0.151442 | 0.880 | 0.997 |
| rs199347 | heterozygous alleles | 0.0001617 | 0.003521 | 0.0459244 | 0.963 | 0.997 |
| rs199347 | homozygous protective alleles | -0.010398 | 0.0054573 | -1.905333 | 0.057 | 0.466 |
| rs2414739 | heterozygous alleles | 0.000543 | 0.0034569 | 0.1570811 | 0.875 | 0.997 |
| rs2414739 | homozygous protective alleles | -0.010168 | 0.0072525 | -1.402058 | 0.161 | 0.567 |
| rs329648 | heterozygous alleles | -0.00781 | 0.004645 | -1.681382 | 0.093 | 0.567 |
| rs329648 | homozygous protective alleles | -0.00709 | 0.0046886 | -1.512281 | 0.131 | 0.567 |
| rs34311866 | heterozygous alleles | 0.0088802 | 0.0074485 | 1.1922129 | 0.233 | 0.633 |
| rs34311866 | homozygous protective alleles | 0.0141085 | 0.007236 | 1.9497819 | 0.052 | 0.455 |
| rs34884217 | heterozygous alleles | -0.003025 | 0.0044756 | -0.675924 | 0.499 | 0.877 |
| rs34884217 | homozygous protective alleles | -0.013737 | 0.0147036 | -0.934246 | 0.350 | 0.754 |
| rs356181 | heterozygous alleles | 0.0028609 | 0.0038742 | 0.738466 | 0.460 | 0.863 |
| rs356181 | homozygous protective alleles | -0.0011 | 0.0045636 | -0.241101 | 0.810 | 0.991 |
| rs3910105 | heterozygous alleles | 0.0015765 | 0.0036448 | 0.4325386 | 0.665 | 0.953 |
| rs3910105 | homozygous protective alleles | -0.004853 | 0.0047835 | -1.01444 | 0.311 | 0.733 |
| rs55785911 | heterozygous alleles | -0.007152 | 0.0035114 | -2.036901 | 0.042 | 0.430 |
| rs55785911 | homozygous protective alleles | -0.006458 | 0.00527 | -1.225505 | 0.221 | 0.633 |
| rs591323 | heterozygous alleles | 0.0010188 | 0.003465 | 0.2940132 | 0.769 | 0.991 |
| rs591323 | homozygous protective alleles | -0.007352 | 0.0070336 | -1.04523 | 0.296 | 0.722 |
| rs6430538 | heterozygous alleles | -0.000895 | 0.0037623 | -0.237786 | 0.812 | 0.991 |
| rs6430538 | homozygous protective alleles | -0.00101 | 0.0045024 | -0.224326 | 0.823 | 0.991 |
| rs6812193 | heterozygous alleles | -0.00546 | 0.0035437 | -1.540872 | 0.124 | 0.567 |
| rs6812193 | homozygous protective alleles | 0.0008297 | 0.0048791 | 0.1700544 | 0.865 | 0.994 |
| rs71628662 | homozygous protective alleles | 0.017973 | 0.0087875 | 2.0453015 | 0.041 | 0.430 |
| **rs76904798** | **heterozygous alleles** | **-0.07779** | **0.018459** | **-4.2141** | **< 0.001** | **0.002** |
| **rs76904798** | **homozygous protective alleles** | **-0.08777** | **0.018323** | **-4.79042** | **< 0.001** | **< 0.001** |
| rs8192591 | homozygous protective alleles | -0.00348 | 0.0068445 | -0.508478 | 0.611 | 0.921 |
| rs823118 | heterozygous alleles | -0.002798 | 0.0037008 | -0.756164 | 0.450 | 0.857 |
| rs823118 | homozygous protective alleles | -0.003668 | 0.0047928 | -0.76532 | 0.444 | 0.857 |

Results of linear mixed models (LMMs) using square root transformed caudate 123I-FP-CIT availability as dependent variable; a = compared with homozygous risk alleles; corrected *p* = FDR corrected for multiple testing; SNPs in bold character = significant results after correction for multiple testing

**Table e-4.**

**Effects of PD-risk SNPs on the putaminal 123I-FP-CIT availability (2)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SNPs** | **Fixed effect** | **Estimate** | **SE** | **t** | **uncorrected p** | **corrected p** |
| ***Main effects*** | | | | | | |
| rs10797576 | heterozygous alleles | 0.0502849 | 0.0720199 | 0.6982086 | 0.486 | 0.875 |
| rs10797576 | homozygous protective alleles | 0.0607471 | 0.0706299 | 0.8600767 | 0.390 | 0.805 |
| rs11060180 | heterozygous alleles | 0.0234145 | 0.0221164 | 1.0586939 | 0.291 | 0.722 |
| rs11060180 | homozygous protective alleles | 0.0062251 | 0.0271517 | 0.2292695 | 0.819 | 0.991 |
| rs11158026 | heterozygous alleles | -0.050656 | 0.0204879 | -2.472487 | 0.014 | 0.249 |
| rs11158026 | homozygous protective alleles | -0.047161 | 0.0333548 | -1.413916 | 0.158 | 0.567 |
| rs114138760 | homozygous protective alleles | -0.034939 | 0.0577453 | -0.605052 | 0.546 | 0.884 |
| rs11724635 | heterozygous alleles | 0.0375153 | 0.0215444 | 1.7413004 | 0.083 | 0.542 |
| rs11724635 | homozygous protective alleles | -0.027559 | 0.0278711 | -0.988796 | 0.323 | 0.733 |
| rs118117788 | homozygous protective alleles | -0.000643 | 0.0412807 | -0.015578 | 0.988 | 0.998 |
| rs11868035 | heterozygous alleles | 0.0226359 | 0.020437 | 1.1075924 | 0.269 | 0.685 |
| rs11868035 | homozygous protective alleles | 0.0394277 | 0.0327286 | 1.2046842 | 0.229 | 0.633 |
| rs12456492 | heterozygous alleles | -0.016261 | 0.0328928 | -0.49437 | 0.621 | 0.927 |
| rs12456492 | homozygous protective alleles | 0.013647 | 0.0321211 | 0.4248612 | 0.671 | 0.953 |
| rs12637471 | heterozygous alleles | 0.0276873 | 0.0207458 | 1.3345968 | 0.183 | 0.599 |
| rs12637471 | homozygous protective alleles | 0.0236656 | 0.0601733 | 0.3932913 | 0.694 | 0.965 |
| rs14235 | heterozygous alleles | -0.026929 | 0.0296564 | -0.908034 | 0.365 | 0.780 |
| rs14235 | homozygous protective alleles | -0.008355 | 0.0307701 | -0.271529 | 0.786 | 0.991 |
| rs17649553 | heterozygous alleles | 0.0207503 | 0.0208496 | 0.995237 | 0.320 | 0.733 |
| rs17649553 | homozygous protective alleles | 0.0019721 | 0.0462506 | 0.0426402 | 0.966 | 0.997 |
| rs1955337 | heterozygous alleles | 0.0440027 | 0.0747778 | 0.5884452 | 0.557 | 0.887 |
| rs1955337 | homozygous protective alleles | 0.0495467 | 0.0733166 | 0.6757914 | 0.500 | 0.877 |
| rs199347 | heterozygous alleles | 0.0247285 | 0.0210104 | 1.176968 | 0.240 | 0.635 |
| rs199347 | homozygous protective alleles | 0.0077365 | 0.0309531 | 0.2499431 | 0.803 | 0.991 |
| rs2414739 | heterozygous alleles | 0.0007128 | 0.0204508 | 0.0348562 | 0.972 | 0.997 |
| rs2414739 | homozygous protective alleles | 0.0019205 | 0.0439626 | 0.0436847 | 0.965 | 0.997 |
| rs329648 | heterozygous alleles | 0.0027821 | 0.0285306 | 0.0975119 | 0.922 | 0.997 |
| rs329648 | homozygous protective alleles | -0.003164 | 0.0287831 | -0.109912 | 0.913 | 0.997 |
| rs34311866 | heterozygous alleles | -0.010861 | 0.0441932 | -0.24577 | 0.806 | 0.991 |
| rs34311866 | homozygous protective alleles | 0.0088687 | 0.0431385 | 0.2055864 | 0.837 | 0.992 |
| rs34884217 | heterozygous alleles | 0.0424637 | 0.0265511 | 1.5993187 | 0.111 | 0.567 |
| rs34884217 | homozygous protective alleles | -0.041325 | 0.080155 | -0.515569 | 0.607 | 0.921 |
| rs356181 | heterozygous alleles | -0.004192 | 0.0227661 | -0.184125 | 0.854 | 0.993 |
| rs356181 | homozygous protective alleles | 0.0366914 | 0.0267433 | 1.3719836 | 0.171 | 0.580 |
| rs3910105 | heterozygous alleles | 0.0134272 | 0.0216692 | 0.6196443 | 0.536 | 0.884 |
| rs3910105 | homozygous protective alleles | 0.0306394 | 0.0298851 | 1.0252402 | 0.306 | 0.733 |
| rs55785911 | heterozygous alleles | -0.000353 | 0.0209343 | -0.01688 | 0.987 | 0.998 |
| rs55785911 | homozygous protective alleles | 0.0416523 | 0.0313047 | 1.3305456 | 0.184 | 0.599 |
| rs591323 | heterozygous alleles | -0.031525 | 0.0205967 | -1.530577 | 0.127 | 0.567 |
| rs591323 | homozygous protective alleles | -0.034359 | 0.0420565 | -0.816973 | 0.415 | 0.835 |
| rs6430538 | heterozygous alleles | 0.0090211 | 0.0225079 | 0.4007965 | 0.689 | 0.965 |
| rs6430538 | homozygous protective alleles | 0.0150006 | 0.026934 | 0.5569398 | 0.578 | 0.896 |
| rs6812193 | heterozygous alleles | -0.002393 | 0.0209763 | -0.114063 | 0.909 | 0.997 |
| rs6812193 | homozygous protective alleles | 0.0217105 | 0.0298622 | 0.727023 | 0.468 | 0.863 |
| rs71628662 | homozygous protective alleles | 0.0029969 | 0.0517921 | 0.0578647 | 0.954 | 0.997 |
| rs76904798 | heterozygous alleles | 0.1265108 | 0.0918369 | 1.3775595 | 0.169 | 0.580 |
| rs76904798 | homozygous protective alleles | 0.1395848 | 0.0908658 | 1.5361648 | 0.125 | 0.567 |
| rs8192591 | homozygous protective alleles | 0.0341562 | 0.0384454 | 0.8884348 | 0.375 | 0.794 |
| rs823118 | heterozygous alleles | -0.003153 | 0.0221762 | -0.142196 | 0.887 | 0.997 |
| rs823118 | homozygous protective alleles | -0.045606 | 0.0286263 | -1.593163 | 0.112 | 0.567 |
| ***Interaction with disease duration*** | | | | | | |
| rs10797576 | heterozygous alleles | 0.0062202 | 0.0103762 | 0.5994714 | 0.549 | 0.884 |
| rs10797576 | homozygous protective alleles | -0.002312 | 0.0102247 | -0.226159 | 0.821 | 0.991 |
| rs11060180 | heterozygous alleles | 0.0024494 | 0.0030768 | 0.7960716 | 0.426 | 0.844 |
| rs11060180 | homozygous protective alleles | -0.000749 | 0.0039189 | -0.191045 | 0.849 | 0.992 |
| rs11158026 | heterozygous alleles | 0.0014938 | 0.0028756 | 0.519493 | 0.604 | 0.921 |
| rs11158026 | homozygous protective alleles | 5.89E-06 | 0.004715 | 0.0012482 | 0.999 | 1.000 |
| rs114138760 | homozygous protective alleles | 0.0120886 | 0.0079065 | 1.5289556 | 0.127 | 0.567 |
| rs11724635 | heterozygous alleles | -0.002572 | 0.0030579 | -0.841089 | 0.401 | 0.822 |
| rs11724635 | homozygous protective alleles | 0.0065922 | 0.0037447 | 1.7604314 | 0.079 | 0.542 |
| rs118117788 | homozygous protective alleles | 0.0141529 | 0.0061648 | 2.2957599 | 0.022 | 0.283 |
| rs11868035 | heterozygous alleles | -0.001864 | 0.0029331 | -0.635435 | 0.525 | 0.884 |
| rs11868035 | homozygous protective alleles | 0.0064701 | 0.0042346 | 1.5279205 | 0.127 | 0.567 |
| rs12456492 | heterozygous alleles | 0.0142934 | 0.004769 | 2.997126 | 0.003 | 0.112 |
| rs12456492 | homozygous protective alleles | 0.0068599 | 0.0047758 | 1.4363762 | 0.151 | 0.567 |
| rs12637471 | heterozygous alleles | -0.004472 | 0.0029751 | -1.502983 | 0.133 | 0.567 |
| rs12637471 | homozygous protective alleles | 0.0172359 | 0.0061032 | 2.8240873 | 0.005 | 0.126 |
| rs14235 | heterozygous alleles | 0.0074209 | 0.0041854 | 1.7730526 | 0.077 | 0.542 |
| rs14235 | homozygous protective alleles | 0.0032053 | 0.0044145 | 0.7260868 | 0.468 | 0.863 |
| rs17649553 | heterozygous alleles | -0.008618 | 0.0030451 | -2.830246 | 0.005 | 0.126 |
| rs17649553 | homozygous protective alleles | -0.008169 | 0.0064982 | -1.257056 | 0.209 | 0.633 |
| rs1955337 | heterozygous alleles | -0.003018 | 0.0098919 | -0.305052 | 0.760 | 0.991 |
| rs1955337 | homozygous protective alleles | -0.006863 | 0.0096746 | -0.709359 | 0.478 | 0.873 |
| rs199347 | heterozygous alleles | -0.001325 | 0.0029424 | -0.450356 | 0.653 | 0.946 |
| rs199347 | homozygous protective alleles | -0.009679 | 0.0045853 | -2.110905 | 0.035 | 0.390 |
| rs2414739 | heterozygous alleles | -0.001373 | 0.0028975 | -0.473787 | 0.636 | 0.928 |
| rs2414739 | homozygous protective alleles | -0.004588 | 0.0061039 | -0.751611 | 0.452 | 0.857 |
| rs329648 | heterozygous alleles | -0.009165 | 0.0038442 | -2.384176 | 0.017 | 0.249 |
| rs329648 | homozygous protective alleles | -0.008346 | 0.0038904 | -2.145281 | 0.032 | 0.390 |
| rs34311866 | heterozygous alleles | 0.0097515 | 0.0062616 | 1.5573448 | 0.120 | 0.567 |
| rs34311866 | homozygous protective alleles | 0.0075216 | 0.0060782 | 1.2374698 | 0.216 | 0.633 |
| rs34884217 | heterozygous alleles | -0.007496 | 0.003767 | -1.989996 | 0.047 | 0.447 |
| rs34884217 | homozygous protective alleles | 0.0069422 | 0.0123998 | 0.5598626 | 0.576 | 0.896 |
| rs356181 | heterozygous alleles | 0.0043379 | 0.0032453 | 1.3366808 | 0.182 | 0.599 |
| rs356181 | homozygous protective alleles | 0.0006648 | 0.0038352 | 0.1733402 | 0.862 | 0.994 |
| rs3910105 | heterozygous alleles | -0.004987 | 0.0030431 | -1.638742 | 0.102 | 0.567 |
| rs3910105 | homozygous protective alleles | -0.001212 | 0.0039938 | -0.303383 | 0.762 | 0.991 |
| rs55785911 | heterozygous alleles | -0.005096 | 0.0029324 | -1.737724 | 0.083 | 0.542 |
| rs55785911 | homozygous protective alleles | -0.00619 | 0.0044081 | -1.404128 | 0.161 | 0.567 |
| rs591323 | heterozygous alleles | 0.0043766 | 0.0028991 | 1.5096474 | 0.131 | 0.567 |
| rs591323 | homozygous protective alleles | -0.000563 | 0.0059156 | -0.095181 | 0.924 | 0.997 |
| rs6430538 | heterozygous alleles | -0.001547 | 0.0031373 | -0.493153 | 0.622 | 0.927 |
| rs6430538 | homozygous protective alleles | -0.005295 | 0.0037634 | -1.406957 | 0.160 | 0.567 |
| rs6812193 | heterozygous alleles | -0.003774 | 0.0029586 | -1.275729 | 0.202 | 0.633 |
| rs6812193 | homozygous protective alleles | 0.0001423 | 0.0041014 | 0.0346872 | 0.972 | 0.997 |
| rs71628662 | homozygous protective alleles | 0.0175643 | 0.0074163 | 2.3683203 | 0.018 | 0.249 |
| **rs76904798** | **heterozygous alleles** | **-0.06029** | **0.015578** | **-3.87018** | **< 0.001** | **0.007** |
| **rs76904798** | **homozygous protective alleles** | **-0.06733** | **0.015466** | **-4.35321** | **< 0.001** | **0.001** |
| rs8192591 | homozygous protective alleles | 0.0025095 | 0.0057758 | 0.4344837 | 0.664 | 0.953 |
| rs823118 | heterozygous alleles | 0.0010955 | 0.0030874 | 0.354829 | 0.723 | 0.977 |
| rs823118 | homozygous protective alleles | 0.0024202 | 0.0040085 | 0.6037726 | 0.546 | 0.884 |

Results of linear mixed models (LMMs) using square root transformed putaminal 123I-FP-CIT availability as dependent variable; a = compared with homozygous risk alleles; corrected *p* = FDR corrected for multiple testing; SNPs in bold character = significant results after correction for multiple testing