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## Supplementary methods

### Courage-PD international consortium

The Courage-PD (COmprehensive Unbiased Risk Factor Assessment for Genetics and Environment in Parkinson's Disease) international consortium pooled individual-level data from 35 studies on Parkinson's disease from different populations worldwide and used the same array to genotype participants.

The Geo-PD (Genetic Epidemiology Of Parkinson's disease; <https://geopd.biomedinfo.org/>) consortium represents one of the components of Courage-PD. This consortium aims at conducting collaborative studies on genetic susceptibility in Parkinson's disease; one of its main features is that participating sites are distributed in the five continents, therefore representing a highly diverse population. In addition, several other studies from Europe contributed to Courage-PD. Parkinson's disease was diagnosed using standard criteria (United Kingdom Parkinson's Disease Society Brain Bank - UKPDSBB, Gelb, Bower).<sup>1-3</sup>

All studies were approved by local ethical committees following the procedures of each country, and material transfer agreements were set up between participating sites and the University of Tübingen (Germany).

According to the study's consortium agreement, participating sites contributed DNA and demographic/environmental data. DNAs (25µl of DNA at a concentration of 50 to 100 ng/µl) were shipped for quality control to University of Tübingen (Germany) and genotyped in a central laboratory in Munich (Institute of Human Genetics, Helmholtz Zentrum, Germany). The samples from two sites (Gasser, Morris/Wood) were genotyped at the Laboratory of Neurogenetics (National Institute on Aging, National Institutes of Health, Bethesda, USA). Demographic data were harmonized and collected using a standardized form and cleaned at Inserm U1018 (Villejuif, France).

In a previous study on the relation between genetically-predicted smoking and PD (7369 cases, 7018 controls), we excluded samples overlapping with iPDGC (to allow for an independent replication) and participants with a positive family history of PD or with Mendelian PD mutations (to avoid dilution of effects of environmental exposures).<sup>4</sup> For the present analyses whose main objective was to examine the interaction between genetically-predicted smoking and *HLA-DRB1*, we retained samples overlapping with iPDGC and those with familial PD in order to increase the sample size and the statistical power to detect an interaction, as the number of participants required to detect interactions is larger than for main effects. Analyses are therefore based on 26 studies with at least 50 cases or controls of European descent (12424 cases, 9480 controls; Supplementary Table 1).

### Genotyping

The Neurochip chip was used to genotype all the samples.<sup>5</sup> Briefly, this chip is a custom-designed array containing a tagging variant backbone with good genome-wide resolution of about 306,670, complemented with a manually curated custom content comprised of 179,467 variants implicated in diverse neurological diseases, including Parkinson's disease.

Genotyping was performed with an automated protocol according to the manufacturer's instructions (Illumina, San Diego, CA, USA). All arrays were scanned with an Illumina iScan and raw data were analyzed with the Illumina Beeline and GenomeStudio software packages using the manifest file `Neuro_Consortium_20013217_A1.bpm`. Clustering was performed in GenomeStudio with the GenTrain cluster 2.0 algorithm. Genotypes were post-processed with zCall (DOI: 10.1093/bioinformatics/bts479) to improve detection of rare alleles.

### Quality control

Genotyped data exported from Genome Studio to PLINK format were used for quality control and downstream analysis. The pooled dataset from the 35 sites consists of 27,538 subjects. Phenotypic data were missing for 245 subjects and three sites were removed as they only included cases, leaving 26,535 subjects (14,859 cases, 11,431 controls) for quality control using "COMRARE" an automated pipeline under development at the University of Tübingen. The pipeline uses PLINK (<https://www.cog-genomics.org/plink>) and R scripts (R Foundation for Statistical Computing, Vienna, Austria) and the following steps were implemented separately for each site:

*I- Per individual quality control:*

- Identification of individuals with elevated missing genotyping rates or outlying heterozygosity rate: individuals with a genotype failure rate  $\geq 4\%$  or heterozygosity rate  $\pm 4$  standard deviations from the mean were excluded.

- Identification of Individuals with discordant sex information: the homozygosity rate was calculated for X-linked SNPs for each individual and compared to the expected rate. Participants for whom phenotypic and genotypic sex were discordant were removed.
- Identification of duplicated or related Individuals: pairs of individuals with an identity by descent (IBD) greater than 0.185 were removed.
- Eigensoft software was used to compute principal components in order to correct for population stratification by merging our dataset with HapMap.<sup>6,7</sup> A scatter plot of the first two principal components was used to identify outliers in each study.

#### 2- Per marker quality control:

- Identification of markers with high missing data rate: a call-rate threshold of 96% was used and SNPs with a lower rate were removed.
- SNPs with a significant ( $P < 10^{-5}$ ) difference in rates of missing values between cases and controls were removed.
- We excluded variants with a minor allele frequency (MAF)  $< 5 \times 10^{-8}$  and those in Hardy-Weinberg disequilibrium ( $P < 5 \times 10^{-8}$ ).

## Imputation

After QC, we used the HRC/1000G imputation preparation and checking tool (<https://www.well.ox.ac.uk/~wrayner/tools/HRC-1000G-check-bim-v4.3.0.zip>) to check for Ref/Alt allele assignments, incorrect strands, deviation from allele frequency, and palindromic SNPs. Imputation of autosomal variants was performed separately for each dataset based on based on 271,398 to 373,664 SNPs in each study, through the Michigan Imputation server using the HRC reference panel and the GRCh37/hg19 assembly with a  $R^2$  filter of 0.3. The mean of the number of SNPs available in each study after imputation was 13,710,549 (SD=2,986,478).

## Imputation of HLA alleles

Sequence-based typing of *HLA* alleles is considered the gold standard for *HLA* typing, but is time-consuming and cost-prohibitive for research purposes. An alternative approach that has considerably developed over the past 10 years is SNP-based imputation of *HLA* alleles. These methods take advantage of the extended haplotype structure within the *HLA* region to predict *HLA* alleles using dense SNP genotypes such as those available in GWAS datasets and require access to large and ethnically diverse training datasets including both SNP and sequenced *HLA* alleles.<sup>8</sup>

Four-digit alleles of *HLA* class I (*HLA-A*, *HLA-B*, *HLA-C*) and II (*HLA-DPBI*, *HLA-DQAI*, *HLA-DQBI*, *HLA-DRBI*) genes were imputed based on GWAS data using the HIBAG R package (R Foundation for Statistical Computing, Vienna, Austria) separately in each of the 26 Courage-PD studies including European individuals (12,424 cases, 9,480 controls; Supplementary Table 2) using the European reference panel provided by HIBAG.<sup>8,9</sup> Given the results of previous studies that highlighted *HLA* class II genes in PD, the remainder of our analyses focused on these genes. Two-digit alleles (e.g., *HLA-DRBI*\*04) were derived by combining four-digit alleles (e.g., *HLA-DRBI*\*04:01, *HLA-DRBI*\*04:02, etc.).

Allelic imputation probabilities were high in all studies and comparable between cases and controls. As recommended in the original publication, we retained alleles with an imputation probability greater than 50% as this threshold represents the best compromise between accuracy and call rate.<sup>8</sup> At this threshold, HIBAG prediction accuracies ranged from 94.8% to 99.2% for four-digit alleles for individuals of European descent, with call rates between 90.1% and 98.8%.<sup>8</sup> A study that imputed *HLA* alleles in Europeans using HIBAG with a 50% threshold compared the results of *HLA-DRBI* imputation to high throughput *HLA* sequencing in 380 PD samples from Norway.<sup>10</sup> There was good agreement between imputed and sequenced alleles: for *HLA-DRBI*\*04:01 alleles, sensitivity was 96% and specificity was 91%; for *HLA-DRBI*\*04:04 alleles, sensitivity was 97% and specificity was 92%; for *HLA-DRBI*\*04 alleles, agreement was excellent (sensitivity, 98%; specificity, 96%).<sup>10</sup> In our study, on average, 3% of participants were excluded from the analyses due to an allelic imputation probability  $\leq 50\%$ ; depending on the gene, the number of cases included in the analyses ranged from 11,343 to 12,341 and the number of controls from 8,595 to 9,417. In sensitivity analyses based on a more stringent probability threshold of 80%, we verified that associations between *HLA* alleles and PD remained stable although the number of cases and controls decreased by ~29%.

## Haplotype and amino acid imputation of the HLA region

Imputation of *A~B~C~DRB1~DQB1* haplotypes and amino-acids (AA) was performed separately in each of the 26 Courage-PD studies including European individuals using Easy-HLA (<https://hla.univ-nantes.fr/>).<sup>11</sup> Easy-HLA implements a computational and statistical method of HLA haplotypes inference based on a published reference population containing over 600,000 haplotypes to upgrade missing or partial HLA information; it also provides additional functional annotations including AA of proteins coded by *HLA* alleles.

Subjects with allelic or haplotypic imputation probabilities  $\leq 50\%$  were excluded from subsequent analyses ( $\sim 15\%$ ) which are therefore based on 10,613 cases and 8,056 controls. As for *HLA* alleles, we restricted our analyses to *HLA* class II genes and defined *HLA-DRB1~HLA-DQB1* haplotypes ( $n=89$ ).

We determined *HLA-DRB1* alleles that carried the shared epitope (SE), a five AA sequence motif in positions 70-74 of *HLA-DR $\beta$*  chains encoded by *HLA-DRB1* alleles, using the IPD-IMGT/*HLA* database (Release 3.44.0, <https://www.ebi.ac.uk/ipd/imgt/hla/>).

## Statistical analyses

### Association between *HLA* and Parkinson's disease

We identified SNPs located in the *HLA* region between positions chr6:28,477,895 and chr6:33,448,264. Of 38,946 SNPs available in the *HLA* region, we selected 29,515 SNPs available in  $\geq 20$  studies. In addition to SNPs with a minor allele frequency (MAF)  $< 1\%$  and in Hardy-Weinberg disequilibrium ( $P < 5 \times 10^{-8}$ ), we also excluded those with low imputation quality ( $r^2 < 0.8$ ). We examined their association with Parkinson's disease in each study under an additive model using logistic regression adjusted for sex and the first four principal components (PC) using PLINK software (v1.9).<sup>12</sup> We used the GWAMA software<sup>13</sup> to pool summary statistics according to a fixed ( $I^2 \leq 25\%$ ) or random ( $I^2 > 25\%$ ) effects model and to calculate ORs and their 95% CI.

Allele frequencies of *HLA* class II genes, haplotypes, and AA were estimated in cases and controls per study and then meta-analysed to estimate pooled frequencies.

The association of Parkinson's disease with alleles of *HLA* class II genes, *DRB1~DQB1* haplotypes, and AA encoded by *HLA-DRB1* and *HLA-DQB1* was estimated under a dominant model using logistic regression adjusted for study, sex, and the first four principal components (PC). Alleles and haplotypes with a pooled frequency  $\leq 0.005$  in controls were excluded from the analyses. A total of 64 alleles of *HLA* class II genes (39 were available in 26 studies and 25 in 18-25 studies) and 24 *DRB1~DQB1* haplotypes (12 were available in 26 studies and 12 in 18-25 studies) were considered. We selected 247 AA available in at least 20 studies whose frequency in controls was  $\geq 0.005$  and  $\leq 0.995$  (226 available in 26 studies); after independent analyses for each AA, we used a backward stepwise selection procedure starting from a model including all AA and their two-way interactions. We also estimated Spearman correlations between AA significantly associated with Parkinson's disease in controls.

For all of the analyses described above, we accounted for multiple testing by calculating adjusted P-values (q-values) based on the false discovery rate (FDR) and considered those  $\leq 0.05$  as statistically significant.<sup>14</sup>

In order to assess the independent and joint effects of SE and VII, we constructed a four-class categorical variable corresponding to the combination of these two variables (dominant model); the interaction between the two variables was tested by including a multiplicative interaction term in the model. Given the absence of a significant interaction, we then ran a multivariable model including SE and VII to estimate their independent effects.

### Interaction between *HLA-DRB1* and genetically-predicted smoking initiation: stratified two-sample Mendelian randomisation

For our Mendelian randomization analysis, we excluded the Elbaz site as it was included in the initial study that showed an interaction between rs660895 and cigarette smoking in Parkinson's disease.<sup>15</sup>

Mendelian randomization uses genetic variants, mostly SNPs, associated with an exposure to estimate its causal effect on an outcome. In two-sample Mendelian randomization, the SNP-exposure and SNP-outcome association estimated (beta and SE) come from two independent samples. To be valid instrumental variable (IV), the SNPs must verify three assumptions: (i) they must be associated the exposure, (ii) they must not be directly associated with the outcome except through the exposure and (iii) they must not be associated with unmeasured confounders of the exposure-outcome association.<sup>16</sup>

After clumping to retain independent SNPs ( $r^2 > 0.001$ , genomic region=10,000 kb, based on European ancestry reference data from the 1000 Genomes Project), we selected a total of 203 SNPs associated with smoking initiation

in the GWAS and Sequencing of Alcohol and Nicotine use consortium (GSCAN),<sup>17</sup> of which 3 were not available in Courage-PD and 18 were excluded (palindromic SNPs with a minor allelic frequency  $\geq 0.42$ ;  $MAF < 0.01$ ; SNPs not available in at least 17 studies), leaving 182 SNPs for our Mendelian randomization analyses (F-statistic=205.75; **Supplementary table 2**); these SNPs explain 3% ( $R^2$ ) of the variance of the exposure (smoking initiation).<sup>4, 18</sup> Of these SNPs, 7 (3.8%) were genotyped and 175 (96.2%) were imputed; when genotyped SNPs were available, we selected them in priority.

We estimated associations between each of the 182 SNPs and PD in strata defined by *HLA-DRB1* (V11, rs660895, *HLA-DRB1\*04*). For each site, logistic regression adjusted for sex and the first four principal components was performed for each SNP under an additive genetic model (number of alleles for genotyped SNPs, dosage for imputed SNPs) using PLINK software (version 1.9).<sup>12</sup> Effects size and standard errors from the 26 studies were meta-analysed using the GWAMA software.<sup>13</sup> Those with low heterogeneity across studies ( $I^2 \leq 25\%$ ) were combined using a fixed-effect model, while we used a random-effects model for SNPs with high heterogeneity ( $I^2 > 25\%$ ).

We used the random effects inverse-variance weighted (IVW)<sup>19</sup> approach in two strata defined by *HLA-DRB1* (V11, rs660895, *HLA-DRB1\*04*), based on summary statistics corresponding to the association between SNPs and Parkinson's disease in Courage-PD, and the association between SNPs and smoking initiation in GSCAN. Heterogeneity between IVs was tested using the Cochran's Q-statistic. Compared to analyses stratified by V11 or *HLA-DRB1\*04* that relied on imputation of *HLA* alleles, analyses stratified by rs660895 did not require *HLA* imputation and are based on a larger number of cases and controls.

In sensitivity analyses, we used other MR approaches less sensitive to pleiotropic effects.<sup>18, 20</sup> The weighted median-method provides consistent estimates if at least 50% of the SNPs are valid instruments.<sup>21</sup> The weighted mode-based method uses the causal estimate from each SNP to calculate the modal estimate. The largest group of variants with the same causal estimate in the asymptotic limit are considered valid instruments.<sup>22</sup> MR-PRESSO allows to detect outliers (global test), to compute an estimate corrected for horizontal pleiotropy after removing them (if p-global test  $< 0.05$ ), and to test the difference between the original and updated estimates (distortion test).<sup>23</sup> The MR-Egger method can detect directional pleiotropy and provide corrected effect estimates, but it requires the strong and non-verifiable InSIDE (INstrument Strength Independent of Direct Effect) assumption and in some situations can lead to biased estimates and inflated Type I error.<sup>24</sup> We used the  $I^2_{GX}$  statistic to quantify the strength of regression dilution bias in SNP-exposure association estimates for MR-Egger, with values  $< 90\%$  indicating violation of the NOME (No Measurement Error) assumption.<sup>25</sup> There was no evidence of directional pleiotropy in any strata ( $P > 0.30$ ) but  $I^2_{GX}$  was of 0.66 in our study. For these reasons, we chose to use MR-Lasso instead, another robust method in which an individual intercept is included for each SNP, thus allowing to detect individual pleiotropic SNPs rather than testing for global directional pleiotropy (as MR-Egger does).<sup>26</sup> The penalty term in Lasso regression shrinks the intercepts and forces some of them to be 0; genetic variants whose intercept is 0 are considered as valid instruments and used in the analysis, while the others are considered as pleiotropic variants and are excluded. The degree of shrinkage is determined by the value of the tuning parameter  $\lambda$ . MR-Lasso is less sensitive than MR-Egger to violations of the InSIDE assumption.

We also searched for pleiotropic SNPs associated with PD or with exposures associated with PD (body mass index, alcohol drinking, coffee drinking) at a genome-wide significant level using the Phenoscanner database and phenoscanner R package to examine whether some SNPs were associated with PD or with environmental exposures associated with PD.<sup>27, 28</sup> We identified 7 SNPs associated with alcohol drinking and 26 SNPs associated with BMI (2 in common), and repeated the analyses after excluding 31 SNPs.

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**Supplementary table I Characteristics of cases and controls of European ancestry from the Courage-PD consortium by study site (after quality control)**

Continent	Principal investigator	Country	Status	N	Sex (%)		Age at study			Age at PD onset			Age at diagnosis			Disease duration	
					Male	Female	Mean	SD	MD	Mean	SD	MD	Mean	SD	MD	Mean	SD
<b>Africa</b>	Bardien/Carr	South Africa	Cases	170	61.2	38.8	68.7	10.6		60	11.9		60	11.9		8.7	6.4
			Controls	85	56.5	43.5	51.1	12.7		-	-		-	-			
<b>North America</b>	Farrer	Canada	Cases	389	65.6	34.4	67.7	10.3	1	56.5	11.1	1	59	11	130	11.2	6.2
			Controls	409	31.8	68.2	69.4	12.4		-	-		-	-			
	Rogaeva/Lang	Canada	Cases	215	66	34	63.6	12.4	6	54	12.2	6				9.6	5.9
			Controls	153	37.9	62.1	73.8	8.6		-	-		-	-			
<b>Australia</b>	Mellick	Australia	Cases	480	64	36	68.3	9.3		59.1	11.3		60.7	10.7	13	9.2	7
			Controls	508	45.3	54.7	66.9	9.6		-	-		-	-			
<b>Europe</b>	Aasly	Norway	Cases	510	60	40	77.7	11.6		60.5	11					17.2	5.7
			Controls	509	54.8	45.2	73	14.1	79	-	-		-	-			
	Annesi	Italy	Cases	93	64.5	35.5	66.5	9		59.2	10.1		66.5	9		7.3	5.6
			Controls	94	45.7	54.3	58.2	20.3		-	-		-	-			
	Brice/Corvol/Lesage	France	Cases	851	58.4	41.6	60.7	10.9	32	51.9	11.1	32				8.8	6.2
			Controls	280	56.4	43.6	62.4	10.7		-	-		-	-			
	Carmine Belin/Ran	Sweden	Cases	286	61.5	38.5	67.4	10.3		59.4	11.1					8.1	6.1
			Controls	629	55.2	44.8	66.5	10.4	597	-	-		-	-			
	Chartier-Harlin/Mutez	France	Cases	370	54.3	45.7	64.3	9		52.7	10.5		53.8	10.2		11.6	5.9
			Controls	228	39.9	60.1	59.9	12.6		-	-		-	-			
	Deutschländer	Germany	Cases	285	61.8	38.2	69.4	9.9		60.4	11.5		59	11.1	213	9.1	6.5
			Controls	46	30.4	69.6	66	10.3		-	-		-	-			
	Duga/Cilia	Italy	Cases	1391	59.2	40.8	65.8	10.8		59.1	11.2		60.7	11		6.7	5.6
			Controls	1370	33.7	66.3	61.9	10.9		-	-		-	-			
	Elbaz	France	Cases	455	59.8	40.2	70.1	7.4		64.9	7.7		65.8	7.5	1	5.2	4.1
			Controls	1066	59.2	40.8	69.8	7.6		-	-		-	-			
Ferreira	Portugal	Cases	415	57.1	42.9	69	10.1		57.9	11.9		59.5	11.9		11.2	7.6	
		Controls	67	25.4	74.6	47.1	17.8		-	-		-	-				
Gasser/Sharma	Germany	Cases	1664	62.7	37.3	65.1	10.3		59.6	10.9		60.7	10.5	948	5.5	5.6	
		Controls	1070	50.7	49.3	60.7	7.4		-	-		-	-				
Hadjigeorgiou	Greece	Cases	283	48.4	51.6	67.9	10.3		63.1	10.1		64	10.2		4.8	4.4	
		Controls	314	47.1	52.9	69.8	8.7		-	-		-	-				
Koks/Taba	Estonia	Cases	216	39.8	60.2	73	8.2		66.8	9.8					6.2	5.3	
		Controls	170	41.8	58.2	72.3	10.2		-	-		-	-				
Krüger	Luxembourg	Cases	333	67.3	32.7	67.4	11.2		59.7	13		61.9	12.1	17	7.2	6.6	
		Controls	360	55.8	44.2	58.1	11.9		-	-		-	-				

Continent	Principal investigator	Country	Status	N	Sex (%)		Age at study			Age at PD onset			Age at diagnosis			Disease duration	
					Male	Female	Mean	SD	MD	Mean	SD	MD	Mean	SD	MD	Mean	SD
	Morris/Wood	United Kingdom	Cases	1389	67.6	32.4											
			Controls	579	24.7	75.3				-	-		-	-			
	Pastor/Diez-Fairen	Spain	Cases	499	57.1	42.9	67	10.6	2	58.9	11.9	2				8.1	6.8
			Controls	338	40.8	59.2	66	11.3		-	-		-	-			
	Puschmann	Sweden	Cases	110	62.7	37.3	68.8	10.6		60.5	10.6		47		109	8.2	5.4
			Controls	105	29.5	70.5	66.7	8.9		-	-		-	-			
	Stefanis/Simitsi	Greece	Cases	242	61.6	38.4	67.1	13.5		60.7	13.6		61.3	12.7	68	6.4	6.7
			Controls	181	35.9	64.1	67	9.6		-	-		-	-			
	Toft	Norway	Cases	480	62.9	37.1	65.7	8.9		55.9	11.3		54.4	10	144	9.8	6.7
			Controls	442	55.7	44.3	62	11.1		-	-		-	-			
	Tolosa	Spain	Cases	309	60.5	39.5	66	10.6		58.5	11.3					7.6	6.2
			Controls	68	16.2	83.8	62.3	12.1	8	-	-		-	-			
	Valente	Italy	Cases	326	62.3	37.7	67	12.1	7	55.3	10.9	7	59	7.9	239	11.7	8
			Controls	54	38.9	61.1	78.4	9.6		-	-		-	-			
	Wirdefeldt	Sweden	Cases	65	53.8	46.2	75.7	8.1		66.6	9.9					8.6	5.5
			Controls	171	45.6	54.4	73.6	9.8		-	-		-	-			
	Zimprich	Austria	Cases	598	63.4	36.6	66.8	11.3		58.8	11.3					8	0
			Controls	184	40.8	59.2			184	-	-		-	-			
	<b>Total</b>		<b>Cases</b>	<b>12424</b>													
			<b>Controls</b>	<b>9480</b>													

Abbreviation: MD = missing data; SD = standard deviation.

Duration of disease = age at study - age at PD onset. Missing values are the same as those for age at study.



**Supplementary table 2 SNPs used for Mendelian randomization analyses: individual associations with smoking initiation and Parkinson's disease**

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)					I <sup>2</sup> (%)	R <sup>2</sup>	
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE			P-value
<b>VII: 0 residue</b>														
rs1008078	1:91189731	T/C	0.40	0.023	0.003	1.63E-18	25	14228	0.40	-0.006	0.040	8.83E-01	44.5	2.50E-04
rs1022376	2:22067213	T/C	0.48	0.015	0.003	1.66E-08	25	14228	0.51	0.003	0.027	9.09E-01	0.0	1.09E-04
rs10233018	7:117523709	G/A	0.52	0.025	0.003	4.77E-22	25	14228	0.50	0.005	0.027	8.43E-01	0.0	3.03E-04
rs10279261	7:133589846	G/A	0.38	0.019	0.003	6.05E-13	25	14228	0.39	0.015	0.028	6.05E-01	0.0	1.68E-04
rs1030015*	7:78139581	T/G	0.52	0.014	0.003	2.15E-08	25	14228	0.52	-0.016	0.030	5.96E-01	12.8	1.02E-04
rs10490159	2:51341259	T/C	0.39	0.017	0.003	3.86E-11	25	14228	0.39	-0.033	0.027	2.28E-01	0.0	1.42E-04
rs1050847	16:87443734	C/T	0.44	0.015	0.003	7.37E-09	25	14228	0.47	0.026	0.027	3.49E-01	0.0	1.08E-04
rs10789369	1:73824909	A/G	0.38	0.023	0.003	3.39E-19	25	14228	0.43	-0.010	0.036	7.91E-01	30.6	2.60E-04
rs10853981	19:4965064	A/G	0.33	0.015	0.003	4.88E-08	25	14228	0.31	-0.035	0.029	2.24E-01	0.0	9.67E-05
rs10858334	9:137989785	G/C	0.14	0.023	0.004	1.18E-09	25	14228	0.14	-0.044	0.040	2.66E-01	0.0	1.26E-04
rs10885480	10:115378364	T/C	0.72	0.019	0.003	3.83E-11	25	14228	0.73	0.003	0.030	9.29E-01	0.0	1.42E-04
rs10914684	1:33795572	G/A	0.68	0.016	0.003	6.32E-09	25	14228	0.67	-0.012	0.028	6.85E-01	0.0	1.09E-04
rs10945141	6:69470709	A/G	0.26	0.018	0.003	3.59E-10	25	14228	0.26	-0.011	0.030	7.03E-01	0.0	1.28E-04
rs10953957	7:121954709	A/G	0.39	0.014	0.003	3.66E-08	25	14228	0.39	0.018	0.028	5.18E-01	19.5	9.84E-05
rs10966092	9:23831658	T/C	0.73	0.020	0.003	1.12E-12	25	14228	0.73	0.037	0.030	2.17E-01	0.0	1.64E-04
rs11057005	12:16748721	A/G	0.56	0.016	0.003	9.12E-10	25	14228	0.58	-0.027	0.028	3.43E-01	15.7	1.22E-04
rs1106363	11:131966264	T/C	0.34	0.017	0.003	9.20E-11	25	14228	0.36	-0.009	0.028	7.35E-01	0.0	1.36E-04
rs11076962	16:5811367	C/T	0.28	0.018	0.003	1.20E-10	25	14228	0.26	0.031	0.030	3.06E-01	1.6	1.35E-04
rs1108130	13:100648356	A/T	0.21	0.024	0.003	1.57E-14	25	14228	0.20	-0.039	0.034	2.48E-01	3.5	1.92E-04
rs1109480	12:121083279	G/A	0.62	0.017	0.003	1.84E-10	25	14228	0.62	-0.030	0.028	2.83E-01	0.0	1.32E-04
rs11128203	3:71064431	A/T	0.53	0.020	0.003	1.29E-15	12	5540	Excluded for MR					
rs11162019	1:87913176	C/T	0.64	0.015	0.003	5.06E-09	25	14228	0.65	-0.017	0.036	6.38E-01	26.4	1.11E-04
rs1116690	4:143510148	G/A	0.74	0.016	0.003	2.16E-08	23	13789	0.71	0.037	0.031	2.35E-01	0.0	1.02E-04
rs1126757*	19:55879872	T/C	0.47	0.014	0.003	2.92E-08	25	14213	0.47	-0.014	0.026	6.00E-01	0.0	1.00E-04
rs112725451	4:68017710	T/C	0.17	0.026	0.003	1.65E-14	25	14228	0.17	0.018	0.048	7.10E-01	37.2	1.91E-04
rs113230003	19:18460956	G/A	0.74	0.019	0.003	1.05E-10	25	14228	0.76	0.051	0.032	1.16E-01	0.0	1.35E-04
rs1139897	16:720986	G/A	0.77	0.024	0.003	1.77E-15	24	14078	0.78	0.023	0.033	4.82E-01	23.5	2.06E-04
rs1150668	6:28129789	T/G	0.58	0.019	0.003	8.54E-13	25	14228	0.58	-0.014	0.028	6.11E-01	0.0	1.67E-04
rs11594623	10:103960351	C/T	0.23	0.027	0.003	7.45E-20	25	14228	0.21	-0.034	0.032	2.96E-01	1.0	2.70E-04
rs1160685	4:94052854	G/C	0.45	0.015	0.003	2.31E-09	25	14228	0.48	Excluded for MR				
rs11611651	12:133380790	A/G	0.09	0.027	0.005	2.05E-09	25	14228	0.08	-0.062	0.049	2.10E-01	0.0	1.17E-04
rs11642231	16:89608702	G/A	0.63	0.016	0.003	3.44E-09	25	14228	0.67	0.058	0.029	4.44E-02	0.0	1.13E-04
rs11713899	3:2365026	C/A	0.17	0.019	0.003	3.15E-08	24	13788	0.17	-0.030	0.036	4.10E-01	0.0	9.93E-05
rs6050446†	20:25195509	G/C	0.95	0.054	0.008	8.80E-13	21	13057	0.98	-0.110	0.094	2.41E-01	12.9	2.81E-04
rs117657830	16:75766873	A/G	0.96	0.038	0.006	3.18E-09	25	14228	0.96	-0.017	0.068	8.06E-01	0.0	1.14E-04
rs11768481	7:96629103	C/A	0.66	0.019	0.003	5.23E-12	7	4162	Excluded for MR					

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs117734003	19:51129745	C/G	0.07	0.030	0.005	2.57E-09	17	9835	Excluded for MR						
rs11783093	8:27425349	C/T	0.84	0.047	0.003	2.07E-41	25	14228	0.84	-0.015	0.036	6.79E-01	18.0	5.91E-04	
rs11791671	9:3398679	T/C	0.07	0.028	0.005	4.24E-08	25	14228	0.06	0.032	0.056	5.75E-01	24.1	9.74E-05	
rs118202	6:111658371	G/T	0.19	0.037	0.003	1.90E-29	25	14228	0.19	-0.084	0.051	9.83E-02	42.1	4.12E-04	
rs1187820	3:173072584	C/T	0.56	0.014	0.003	2.69E-08	25	14228	0.56	0.032	0.029	2.71E-01	17.2	1.00E-04	
rs12022778	1:50603995	C/A	0.20	0.027	0.003	3.18E-17	25	14228	0.19	-0.006	0.034	8.54E-01	0.0	2.32E-04	
rs12027999	1:154206358	T/C	0.88	0.024	0.004	5.33E-10	25	14228	0.89	-0.004	0.044	9.34E-01	0.0	1.25E-04	
rs12130857	1:7791461	G/A	0.68	0.018	0.003	3.65E-11	25	14228	0.69	-0.043	0.029	1.35E-01	0.0	1.42E-04	
rs12195240	6:98636905	A/G	0.28	0.025	0.003	1.08E-18	25	14228	0.29	0.018	0.029	5.33E-01	0.0	2.53E-04	
rs12244388	10:104640052	A/G	0.35	0.026	0.003	4.31E-22	25	14228	0.37	-0.054	0.028	5.32E-02	0.0	3.03E-04	
rs12474587	2:162802993	T/G	0.43	0.024	0.003	4.83E-21	25	14228	0.40	0.034	0.027	2.18E-01	0.0	2.88E-04	
rs12517438	5:30842054	G/T	0.54	0.015	0.003	1.89E-09	25	14228	0.52	0.013	0.027	6.15E-01	0.0	1.17E-04	
rs12633090	3:83241365	G/C	0.82	0.023	0.003	3.16E-12	24	13788	0.81	0.057	0.045	2.00E-01	28.7	1.58E-04	
rs12714017	2:80999398	C/T	0.51	0.015	0.003	3.65E-09	25	14228	0.52	-0.003	0.027	8.98E-01	0.0	1.18E-04	
rs12739243	1:210302043	T/C	0.78	0.021	0.003	4.45E-12	25	14228	0.78	0.023	0.040	5.63E-01	25.2	1.56E-04	
rs12878369	14:28346502	A/C	0.41	0.017	0.003	1.60E-11	25	14228	0.42	-0.056	0.027	4.01E-02	0.0	1.48E-04	
rs12918191	16:50945156	A/G	0.76	0.020	0.003	3.14E-11	25	14228	0.76	0.001	0.031	9.70E-01	0.0	1.43E-04	
rs1291821	10:11133823	G/A	0.53	0.014	0.003	1.39E-08	25	14228	0.54	-0.049	0.027	7.15E-02	1.9	1.05E-04	
rs13007361	2:166250244	A/G	0.21	0.018	0.003	2.29E-08	25	14228	0.21	0.039	0.032	2.24E-01	0.0	1.01E-04	
rs13110073	4:147797913	T/C	0.60	0.025	0.003	3.24E-21	25	14228	0.62	-0.057	0.027	3.52E-02	0.0	2.90E-04	
rs13261666	8:59814666	G/T	0.48	0.020	0.003	4.36E-15	25	14228	0.48	-0.008	0.027	7.58E-01	0.0	2.00E-04	
rs13392222	2:100672408	A/C	0.86	0.023	0.004	1.93E-10	25	14228	0.87	0.034	0.040	4.04E-01	0.0	1.31E-04	
rs13437771	7:99071478	A/G	0.84	0.027	0.004	1.39E-14	25	14228	0.85	-0.031	0.037	4.05E-01	5.3	1.93E-04	
rs1373178	18:49967811	T/G	0.41	0.020	0.003	4.16E-15	25	14228	0.42	-0.029	0.027	2.86E-01	0.0	2.00E-04	
rs1381287	14:98597552	T/C	0.47	0.018	0.003	1.81E-12	25	14228	0.49	0.018	0.027	4.98E-01	0.0	1.62E-04	
rs1381775	11:42442826	T/C	0.29	0.016	0.003	2.79E-08	25	14228	0.29	-0.033	0.030	2.62E-01	0.0	1.00E-04	
rs1385108	5:154839646	T/C	0.24	0.019	0.003	3.84E-10	25	14228	0.23	-0.026	0.032	4.19E-01	0.0	1.27E-04	
rs13906	12:49952394	C/T	0.89	0.025	0.004	1.98E-09	25	14228	0.89	-0.043	0.043	3.19E-01	0.0	1.17E-04	
rs1435672	15:36399479	C/T	0.56	0.014	0.003	3.82E-08	25	14228	0.53	0.015	0.027	5.78E-01	0.0	9.80E-05	
rs1445649	2:155682556	C/T	0.54	0.021	0.003	8.48E-16	25	14228	0.54	-0.021	0.027	4.28E-01	0.0	2.10E-04	
rs1449012	3:159048333	C/T	0.54	0.015	0.003	1.77E-09	25	14228	0.53	0.012	0.027	6.60E-01	13.2	1.18E-04	
rs147052174	1:179783167	T/G	0.02	0.062	0.010	2.30E-10	10	6981	Excluded for MR						
rs1514176	1:74991596	G/A	0.42	0.019	0.003	7.67E-14	25	14228	0.43	-0.009	0.027	7.48E-01	0.0	1.81E-04	
rs1549979	3:85460131	C/T	0.38	0.025	0.003	8.80E-21	24	13788	0.38	0.051	0.028	6.97E-02	5.0	2.85E-04	
rs160631	6:52895230	T/G	0.27	0.017	0.003	1.87E-09	25	14228	0.28	0.020	0.030	5.09E-01	22.6	1.17E-04	
rs16826827	2:147825689	T/C	0.88	0.022	0.004	9.17E-09	25	14228	0.88	0.042	0.041	3.10E-01	0.0	1.07E-04	
rs1713676*	11:113660576	A/G	0.48	0.017	0.003	5.38E-11	25	14228	0.47	-0.004	0.026	8.67E-01	0.0	1.40E-04	
rs1714521	3:158284861	A/C	0.59	0.016	0.003	3.07E-10	25	14228	0.61	0.013	0.038	7.25E-01	36.9	1.29E-04	
rs17197663	13:38172867	G/A	0.88	0.022	0.004	2.06E-08	25	14228	0.87	0.073	0.040	6.63E-02	0.0	1.02E-04	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs17229285	2:199523122	C/T	0.50	0.015	0.003	1.27E-09	25	14228	0.52	0.032	0.041	4.38E-01	46.5	1.20E-04
rs1733760	10:56698174	C/T	0.51	0.015	0.003	6.70E-09	25	14228	0.49	0.047	0.027	8.42E-02	0.0	1.09E-04
rs1737329	6:163807748	G/C	0.74	0.017	0.003	5.08E-09	25	14228	0.72	0.030	0.041	4.74E-01	33.4	1.11E-04
rs17554906	6:92226609	C/G	0.44	0.014	0.003	3.14E-08	25	14228	0.42	Excluded for MR				
rs1772572	13:81191176	C/A	0.68	0.017	0.003	5.62E-10	25	14228	0.68	-0.043	0.028	1.24E-01	0.0	1.25E-04
rs1811739	14:77529375	A/G	0.25	0.018	0.003	5.97E-10	25	14228	0.25	0.001	0.031	9.61E-01	23.8	1.25E-04
rs1889571	1:32195819	G/T	0.13	0.022	0.004	4.19E-09	25	14228	0.12	0.050	0.041	2.22E-01	0.0	1.12E-04
rs1901477	2:104126983	G/A	0.51	0.030	0.003	2.07E-31	25	14228	0.52	0.014	0.040	7.28E-01	46.4	4.63E-04
rs2010921	11:132098205	A/G	0.31	0.017	0.003	2.47E-10	25	14228	0.31	-0.013	0.029	6.58E-01	0.0	1.30E-04
rs2063976	8:91096366	C/T	0.34	0.020	0.003	7.45E-14	25	14228	0.34	0.007	0.028	7.99E-01	0.0	1.81E-04
rs2155646	11:112912811	C/T	0.40	0.038	0.003	9.44E-48	25	14228	0.40	-0.007	0.027	8.04E-01	0.0	6.85E-04
rs2173019	5:167614971	A/T	0.18	0.028	0.003	2.98E-17	25	14228	0.17	0.012	0.035	7.33E-01	9.9	2.32E-04
rs221988	3:64234307	A/C	0.62	0.015	0.003	1.43E-08	24	13788	0.62	0.007	0.029	8.09E-01	1.8	1.05E-04
rs2279829	3:147106319	C/T	0.78	0.017	0.003	2.05E-08	25	14228	0.80	0.007	0.034	8.37E-01	6.0	1.02E-04
rs2289791	15:67476952	G/T	0.75	0.018	0.003	2.01E-09	12	5540	Excluded for MR					
rs2319545	3:147719648	A/C	0.15	0.023	0.004	8.30E-11	25	14228	0.13	-0.024	0.040	5.55E-01	5.5	1.37E-04
rs2378662	9:86707289	A/G	0.54	0.015	0.003	2.67E-09	25	14228	0.53	0.016	0.028	5.64E-01	15.8	1.15E-04
rs2526390	3:50192760	T/C	0.33	0.020	0.003	3.62E-14	24	13788	0.34	-0.001	0.029	9.62E-01	0.0	1.86E-04
rs2587507*	17:77790135	T/C	0.50	0.015	0.003	8.69E-09	25	14224	0.51	-0.011	0.026	6.85E-01	0.0	1.07E-04
rs2710634	2:32808804	T/C	0.48	0.018	0.003	3.36E-12	25	14228	0.50	-0.021	0.027	4.30E-01	0.0	1.57E-04
rs2796793	10:36634124	A/G	0.45	0.014	0.003	1.55E-08	24	13416	0.43	0.060	0.040	1.27E-01	42.1	1.04E-04
rs281296	15:47685010	A/G	0.36	0.025	0.003	1.59E-20	25	14228	0.37	-0.029	0.028	3.06E-01	0.0	2.80E-04
rs28441558	17:7803118	T/C	0.94	0.036	0.006	1.24E-10	17	9835	Excluded for MR					
rs2901785	1:174104743	G/A	0.55	0.017	0.003	1.47E-11	25	14228	0.54	-0.002	0.027	9.49E-01	1.8	1.48E-04
rs290601	8:115374642	T/C	0.27	0.016	0.003	1.14E-08	25	14228	0.27	-0.001	0.030	9.81E-01	3.8	1.06E-04
rs2925128	14:98362355	T/C	0.39	0.017	0.003	3.67E-10	25	14228	0.39	-0.052	0.027	5.72E-02	3.8	1.34E-04
rs2939756	11:41436297	G/A	0.52	0.016	0.003	7.45E-10	25	14228	0.55	-0.008	0.035	8.31E-01	32.6	1.23E-04
rs3218116	6:41901763	C/T	0.74	0.020	0.003	1.05E-11	25	14228	0.76	0.039	0.031	2.16E-01	0.0	1.50E-04
rs329124	5:133865452	A/G	0.57	0.016	0.003	1.96E-10	25	14228	0.57	-0.021	0.027	4.30E-01	9.0	1.31E-04
rs34342129	18:5872472	T/C	0.49	0.014	0.003	2.13E-08	25	14228	0.50	-0.021	0.027	4.45E-01	0.0	1.02E-04
rs34399632	2:137571174	G/A	0.23	0.019	0.003	1.46E-10	25	14228	0.18	-0.068	0.035	5.22E-02	0.0	1.33E-04
rs34553878	9:134334588	G/A	0.11	0.025	0.004	1.17E-09	17	10167	Excluded for MR					
rs35375873	5:43190647	G/C	0.89	0.027	0.004	3.29E-11	17	9835	Excluded for MR					
rs35656245	1:190957480	A/G	0.28	0.016	0.003	2.23E-08	25	14228	0.29	0.008	0.029	7.89E-01	3.1	1.02E-04
rs359247	2:60477052	T/A	0.64	0.022	0.003	9.89E-17	25	14228	0.61	-0.018	0.028	5.27E-01	15.3	2.24E-04
rs3764351	17:37824339	G/A	0.34	0.015	0.003	3.89E-08	25	14228	0.37	-0.028	0.040	4.78E-01	36.3	9.80E-05
rs3810496	20:62406886	C/T	0.62	0.016	0.003	1.54E-09	24	14087	0.62	-0.020	0.029	5.01E-01	4.8	1.19E-04
rs3811038	2:113240183	C/T	0.28	0.019	0.003	1.58E-11	25	14228	0.29	-0.011	0.030	7.07E-01	7.1	1.47E-04
rs3820277	1:18436657	G/T	0.47	0.019	0.003	1.57E-13	25	14228	0.50	-0.042	0.027	1.14E-01	11.8	1.77E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs3847244	9:3025368	T/C	0.47	0.019	0.003	2.60E-13	25	14228	0.47	-0.024	0.028	3.75E-01	0.0	1.74E-04
rs3850736	8:64912021	G/C	0.47	0.019	0.003	6.43E-14	25	14228	0.46	Excluded for MR				
rs3934797	4:112467612	G/A	0.82	0.021	0.003	1.12E-10	25	14228	0.83	0.006	0.036	8.66E-01	0.0	1.35E-04
rs4044321	5:166989513	A/G	0.36	0.023	0.003	1.75E-17	25	14228	0.37	-0.018	0.028	5.36E-01	0.0	2.35E-04
rs4140932	4:15458598	T/A	0.57	0.014	0.003	4.89E-08	25	14228	0.57	Excluded for MR				
rs42417	5:94198290	T/C	0.69	0.017	0.003	8.27E-10	25	14228	0.70	-0.042	0.043	3.31E-01	42.1	1.22E-04
rs4264267	13:38359676	T/C	0.53	0.015	0.003	6.82E-09	25	14228	0.52	-0.001	0.027	9.63E-01	12.9	1.09E-04
rs4310804	15:96858409	C/G	0.75	0.018	0.003	7.55E-10	22	11576	0.77	0.013	0.038	7.22E-01	0.7	1.23E-04
rs4326350	8:10763655	C/G	0.51	0.018	0.003	5.16E-12	25	14228	0.53	Excluded for MR				
rs4476253	18:25253297	G/A	0.76	0.018	0.003	5.78E-10	25	14228	0.76	-0.007	0.032	8.15E-01	10.9	1.25E-04
rs45444697	1:155034632	G/C	0.21	0.020	0.003	2.72E-10	25	14228	0.20	-0.015	0.034	6.73E-01	0.0	1.30E-04
rs4674993	2:226332033	A/G	0.80	0.024	0.003	4.85E-14	25	14228	0.81	0.001	0.034	9.77E-01	0.0	1.84E-04
rs4727189	7:88442568	C/T	0.34	0.015	0.003	3.00E-08	25	14228	0.36	0.041	0.027	1.37E-01	0.0	9.97E-05
rs4752018	10:118678712	A/C	0.23	0.019	0.003	4.42E-10	25	14228	0.23	0.032	0.031	3.02E-01	20.7	1.26E-04
rs4759229	12:56474480	G/A	0.66	0.016	0.003	6.53E-09	24	14087	0.65	0.026	0.030	3.73E-01	0.0	1.09E-04
rs4790874	17:1995177	T/C	0.53	0.017	0.003	8.43E-12	25	14228	0.54	-0.043	0.027	1.15E-01	0.0	1.52E-04
rs4818005	21:40588819	G/A	0.42	0.020	0.003	1.09E-14	25	14228	0.43	-0.049	0.027	7.10E-02	0.0	2.03E-04
rs4822102	22:42698430	C/T	0.38	0.017	0.003	2.78E-10	25	14228	0.38	0.006	0.035	8.65E-01	28.0	1.29E-04
rs4837631	9:122061948	C/T	0.55	0.015	0.003	2.03E-09	25	14228	0.58	0.015	0.028	5.82E-01	0.0	1.17E-04
rs4877285	9:81354129	G/A	0.33	0.018	0.003	2.10E-11	25	14228	0.36	-0.049	0.029	8.81E-02	0.0	1.46E-04
rs4912332	1:58815243	T/C	0.49	0.014	0.003	2.94E-08	25	14228	0.47	-0.016	0.027	5.38E-01	14.1	9.97E-05
rs540860	11:121530888	G/A	0.54	0.018	0.003	5.75E-12	25	14228	0.52	0.024	0.027	3.66E-01	0.0	1.54E-04
rs55786907	13:59871584	G/A	0.16	0.019	0.003	1.84E-08	25	14228	0.17	-0.031	0.036	3.88E-01	15.3	1.03E-04
rs58400863	4:31184484	G/A	0.65	0.020	0.003	4.89E-14	25	14228	0.64	0.004	0.028	8.93E-01	8.8	1.84E-04
rs59537158	4:28246049	T/C	0.21	0.022	0.003	4.62E-13	25	14228	0.20	0.010	0.034	7.79E-01	0.0	1.70E-04
rs6073075	20:42015801	T/A	0.18	0.019	0.003	2.44E-08	25	14228	0.19	-0.004	0.035	9.15E-01	0.0	1.01E-04
rs61533748	2:22582968	C/T	0.38	0.017	0.003	2.82E-11	25	14228	0.37	0.019	0.028	4.86E-01	1.4	1.44E-04
rs61886926	11:64133552	C/T	0.62	0.018	0.003	7.30E-12	25	14228	0.64	-0.011	0.037	7.70E-01	32.9	1.52E-04
rs61959481	13:55834929	G/A	0.79	0.020	0.003	7.95E-11	25	14228	0.79	-0.024	0.033	4.63E-01	0.0	1.37E-04
rs62007780	15:78025464	G/T	0.58	0.016	0.003	7.48E-10	25	14228	0.59	0.016	0.027	5.59E-01	0.0	1.23E-04
rs62193862	2:202843875	A/G	0.10	0.024	0.004	1.99E-08	14	8264	Excluded for MR					
rs62246017	3:71483084	G/A	0.68	0.016	0.003	3.03E-09	24	13788	0.67	-0.061	0.031	4.62E-02	21.2	1.14E-04
rs62340589	4:176875795	C/G	0.20	0.017	0.003	4.31E-08	25	14228	0.20	-0.062	0.034	6.78E-02	16.2	9.74E-05
rs6265*	11:27679916	C/T	0.81	0.029	0.003	2.81E-19	25	14228	0.80	0.002	0.033	9.43E-01	0.0	2.62E-04
rs6437769	3:107997514	T/C	0.58	0.014	0.003	3.74E-08	24	13788	0.59	0.010	0.028	7.11E-01	12.7	9.84E-05
rs6438436	3:117822149	T/C	0.82	0.025	0.003	5.33E-14	24	13788	0.82	0.041	0.036	2.55E-01	16.7	1.84E-04
rs644740	11:65561468	C/T	0.54	0.014	0.003	3.67E-08	25	14228	0.54	0.007	0.027	8.00E-01	0.0	9.84E-05
rs6452785	5:87685500	C/T	0.53	0.027	0.003	4.69E-26	25	14228	0.51	-0.022	0.027	4.10E-01	0.0	3.60E-04
rs6497840	16:25351633	A/G	0.71	0.023	0.003	2.01E-15	25	14228	0.69	-0.028	0.029	3.42E-01	9.8	2.15E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs6568832	6:97702876	A/G	0.75	0.019	0.003	1.74E-10	25	14228	0.74	0.013	0.031	6.83E-01	10.1	1.32E-04
rs67050670	18:39297254	A/G	0.77	0.020	0.003	2.34E-11	25	14228	0.75	0.037	0.031	2.36E-01	1.9	1.45E-04
rs6731872	2:624205	G/T	0.83	0.032	0.003	5.35E-21	25	14228	0.80	0.005	0.034	8.95E-01	0.0	2.87E-04
rs6750529	2:182027603	T/C	0.74	0.020	0.003	9.26E-12	25	14228	0.75	-0.033	0.031	2.81E-01	0.0	1.51E-04
rs6756212	2:146140132	C/T	0.47	0.034	0.003	3.49E-40	25	14228	0.46	-0.034	0.027	2.01E-01	21.9	5.71E-04
rs67777803	17:27323322	G/T	0.83	0.025	0.003	3.18E-13	25	14228	0.84	-0.025	0.036	4.87E-01	0.0	1.72E-04
rs6874731	5:80263865	G/T	0.48	0.015	0.003	1.83E-09	25	14228	0.47	-0.006	0.043	8.81E-01	53.2	1.17E-04
rs6890961	5:166778503	C/T	0.38	0.019	0.003	2.13E-13	25	14228	0.41	-0.054	0.029	6.05E-02	0.0	1.75E-04
rs6936160	6:100347745	T/C	0.70	0.020	0.003	4.20E-13	25	14228	0.69	-0.006	0.029	8.49E-01	0.0	1.70E-04
rs6948707	7:1870794	G/T	0.42	0.024	0.003	4.24E-21	25	14228	0.41	0.014	0.037	7.18E-01	37.6	2.89E-04
rs6986430	8:93048104	T/C	0.78	0.024	0.003	1.99E-15	25	14228	0.77	0.029	0.031	3.47E-01	0.0	2.05E-04
rs7024924	9:8282399	C/T	0.17	0.019	0.003	1.90E-08	25	14228	0.17	0.000	0.035	9.94E-01	10.4	1.03E-04
rs7072776	10:22032942	A/G	0.29	0.022	0.003	5.66E-15	24	13416	0.33	0.011	0.030	7.11E-01	0.0	1.98E-04
rs7134009	12:75263193	T/C	0.71	0.016	0.003	4.30E-08	25	14228	0.70	-0.020	0.029	4.81E-01	0.4	1.02E-04
rs71367544	18:77574374	T/C	0.20	0.021	0.003	8.54E-11	25	14228	0.17	0.014	0.035	7.00E-01	0.0	1.37E-04
rs71592686	5:60121271	C/T	0.27	0.021	0.003	3.85E-13	25	14228	0.27	0.018	0.030	5.37E-01	0.0	1.71E-04
rs71602617	4:136406155	C/T	0.78	0.018	0.003	2.10E-08	25	14228	0.79	0.030	0.033	3.64E-01	0.0	1.07E-04
rs72780746	5:103929588	T/C	0.83	0.026	0.003	2.05E-14	25	14228	0.81	-0.021	0.034	5.42E-01	5.1	1.90E-04
rs72836318	17:44121579	T/C	0.75	0.017	0.003	7.00E-09	25	14228	0.75	-0.090	0.032	4.56E-03	0.0	1.09E-04
rs72938304	18:53661743	G/A	0.89	0.027	0.004	1.36E-11	25	14228	0.88	0.028	0.042	5.06E-01	22.3	1.48E-04
rs748832	3:16851202	G/A	0.37	0.017	0.003	6.60E-11	24	13788	0.35	0.069	0.028	1.35E-02	0.9	1.38E-04
rs75919030	17:50193197	T/C	0.73	0.021	0.003	3.35E-13	25	14228	0.74	-0.006	0.030	8.53E-01	11.7	1.72E-04
rs7598402	2:50735943	C/G	0.51	0.015	0.003	7.38E-09	25	14228	0.50	Excluded for MR				
rs7631379	3:181409057	C/T	0.21	0.021	0.003	3.94E-11	25	14228	0.19	-0.020	0.050	6.83E-01	38.7	1.42E-04
rs76608582	19:4474725	C/A	0.95	0.035	0.006	4.88E-09	NA in Courage-PD							
rs7696257	4:137474783	A/G	0.37	0.015	0.003	6.78E-09	25	14228	0.36	-0.007	0.028	8.09E-01	0.0	1.09E-04
rs77215829	12:112618346	A/C	0.87	0.024	0.004	2.02E-10	19	10031	0.87	0.044	0.051	3.83E-01	4.6	1.32E-04
rs77283305	7:132593831	G/A	0.69	0.015	0.003	3.91E-08	25	14228	0.70	-0.035	0.037	3.44E-01	28.1	9.80E-05
rs7743165	6:67521222	G/T	0.50	0.019	0.003	4.15E-14	25	14228	0.47	-0.049	0.027	7.22E-02	21.9	1.85E-04
rs7809303	7:69484366	G/A	0.68	0.021	0.003	3.48E-15	25	14228	0.70	-0.030	0.029	2.90E-01	2.0	2.01E-04
rs7836565	8:52569449	C/T	0.28	0.016	0.003	4.36E-08	25	14228	0.29	0.064	0.030	3.41E-02	0.0	9.74E-05
rs7920501	10:10043159	T/A	0.54	0.016	0.003	1.25E-09	25	14228	0.53	Excluded for MR				
rs7921378	10:63674885	G/C	0.52	0.023	0.003	6.10E-20	25	14228	0.53	Excluded for MR				
rs7929518	11:85980958	G/A	0.77	0.019	0.003	2.55E-10	25	14228	0.77	-0.080	0.041	5.01E-02	30.0	1.30E-04
rs7943721	11:73309393	G/A	0.17	0.021	0.003	3.58E-10	NA in Courage-PD							
rs7969559	12:69655167	A/G	0.29	0.017	0.003	1.53E-09	25	14228	0.33	-0.013	0.039	7.34E-01	32.7	1.18E-04
rs8005334	14:79563654	G/T	0.36	0.017	0.003	3.44E-10	25	14228	0.34	-0.014	0.028	6.17E-01	5.7	1.28E-04
rs80054503	1:72900406	T/C	0.88	0.024	0.004	3.10E-09	NA in Courage-PD							
rs8096225	18:36921851	C/A	0.70	0.016	0.003	2.63E-08	25	14228	0.69	0.003	0.029	9.27E-01	0.0	1.01E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs876793	1:237852083	T/C	0.65	0.018	0.003	5.69E-11	25	14228	0.66	0.022	0.037	5.51E-01	28.7	1.46E-04
rs9288999	3:114147927	A/G	0.74	0.017	0.003	1.50E-09	24	13788	0.73	0.003	0.031	9.31E-01	0.0	1.18E-04
rs9302604	16:69576894	G/A	0.44	0.019	0.003	3.29E-13	25	14228	0.43	-0.011	0.028	6.83E-01	0.0	1.72E-04
rs9323328*	14:58653514	A/G	0.46	0.014	0.003	2.55E-08	25	14228	0.45	-0.031	0.026	2.31E-01	0.0	1.01E-04
rs9423279	10:125680419	C/G	0.36	0.019	0.003	3.06E-12	1	648	Excluded for MR					
rs951740	1:44011737	A/G	0.62	0.030	0.003	3.82E-29	25	14228	0.61	-0.030	0.028	2.79E-01	0.0	4.09E-04
rs9540731*	13:66949370	C/T	0.49	0.018	0.003	3.42E-12	25	14228	0.50	-0.035	0.030	2.42E-01	12.9	1.57E-04
rs9545155	13:80191873	T/C	0.52	0.016	0.003	3.04E-10	25	14228	0.53	0.010	0.027	7.08E-01	0.0	1.29E-04
rs9826984	3:131945722	G/A	0.46	0.014	0.003	3.87E-08	24	13788	0.44	-0.011	0.028	6.91E-01	14.0	9.80E-05
rs9922607	16:17570220	C/T	0.80	0.022	0.003	3.42E-12	25	14228	0.80	-0.052	0.034	1.24E-01	15.9	1.57E-04
rs9941217	16:18050926	C/G	0.65	0.019	0.003	3.50E-12	25	14228	0.67	0.009	0.029	7.51E-01	0.0	1.57E-04
<b>VII: 1 or 2 residues</b>														
rs1008078	1:91189731	T/C	0.40	0.023	0.003	1.63E-18	25	4500	0.42	-0.056	0.048	2.44E-01	0.0	2.50E-04
rs1022376	2:22067213	T/C	0.48	0.015	0.003	1.66E-08	25	4500	0.49	0.026	0.049	5.93E-01	15.3	1.09E-04
rs10233018	7:117523709	G/A	0.52	0.025	0.003	4.77E-22	24	4475	0.50	-0.007	0.047	8.81E-01	0.0	3.03E-04
rs10279261	7:133589846	G/A	0.38	0.019	0.003	6.05E-13	25	4500	0.40	-0.070	0.050	1.56E-01	0.0	1.68E-04
rs1030015*	7:78139581	T/G	0.52	0.014	0.003	2.15E-08	25	4500	0.50	0.032	0.052	5.41E-01	12.0	1.02E-04
rs10490159	2:51341259	T/C	0.39	0.017	0.003	3.86E-11	24	4475	0.38	0.064	0.049	1.91E-01	9.0	1.42E-04
rs1050847	16:87443734	C/T	0.44	0.015	0.003	7.37E-09	25	4500	0.47	-0.036	0.049	4.72E-01	0.0	1.08E-04
rs10789369	1:73824909	A/G	0.38	0.023	0.003	3.39E-19	25	4500	0.42	-0.054	0.049	2.70E-01	0.0	2.60E-04
rs10853981	19:4965064	A/G	0.33	0.015	0.003	4.88E-08	25	4500	0.32	0.030	0.052	5.67E-01	17.9	9.67E-05
rs10858334	9:137989785	G/C	0.14	0.023	0.004	1.18E-09	25	4500	0.13	0.017	0.072	8.17E-01	11.2	1.26E-04
rs10885480	10:115378364	T/C	0.72	0.019	0.003	3.83E-11	25	4500	0.72	-0.007	0.054	8.91E-01	2.3	1.42E-04
rs10914684	1:33795572	G/A	0.68	0.016	0.003	6.32E-09	25	4500	0.67	0.074	0.052	1.52E-01	14.9	1.09E-04
rs10945141	6:69470709	A/G	0.26	0.018	0.003	3.59E-10	25	4500	0.26	0.035	0.054	5.16E-01	9.9	1.28E-04
rs10953957	7:121954709	A/G	0.39	0.014	0.003	3.66E-08	25	4500	0.39	0.029	0.049	5.49E-01	0.0	9.84E-05
rs10966092	9:23831658	T/C	0.73	0.020	0.003	1.12E-12	25	4500	0.73	-0.044	0.053	4.02E-01	0.0	1.64E-04
rs11057005	12:16748721	A/G	0.56	0.016	0.003	9.12E-10	25	4500	0.59	-0.097	0.050	5.35E-02	11.3	1.22E-04
rs1106363	11:131966264	T/C	0.34	0.017	0.003	9.20E-11	25	4500	0.36	-0.041	0.050	4.04E-01	0.0	1.36E-04
rs11076962	16:5811367	C/T	0.28	0.018	0.003	1.20E-10	25	4500	0.28	-0.065	0.054	2.28E-01	19.2	1.35E-04
rs1108130	13:100648356	A/T	0.21	0.024	0.003	1.57E-14	24	4460	0.21	0.044	0.059	4.61E-01	0.0	1.92E-04
rs1109480	12:121083279	G/A	0.62	0.017	0.003	1.84E-10	25	4500	0.62	-0.042	0.050	4.04E-01	0.0	1.32E-04
rs11128203	3:71064431	A/T	0.53	0.020	0.003	1.29E-15	12	2439	Excluded for MR					
rs11162019	1:87913176	C/T	0.64	0.015	0.003	5.06E-09	25	4500	0.65	0.003	0.068	9.62E-01	33.4	1.11E-04
rs1116690	4:143510148	G/A	0.74	0.016	0.003	2.16E-08	23	4435	0.72	-0.015	0.057	7.90E-01	7.1	1.02E-04
rs1126757*	19:55879872	T/C	0.47	0.014	0.003	2.92E-08	25	4496	0.47	0.006	0.047	8.97E-01	0.0	1.00E-04
rs112725451	4:68017710	T/C	0.17	0.026	0.003	1.65E-14	25	4500	0.18	-0.061	0.063	3.35E-01	1.6	1.91E-04
rs113230003	19:18460956	G/A	0.74	0.019	0.003	1.05E-10	25	4500	0.77	-0.049	0.058	3.99E-01	16.0	1.35E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs1139897	16:720986	G/A	0.77	0.024	0.003	1.77E-15	24	4422	0.77	0.033	0.059	5.72E-01	19.4	2.06E-04
rs1150668	6:28129789	T/G	0.58	0.019	0.003	8.54E-13	25	4500	0.62	-0.050	0.050	3.21E-01	0.0	1.67E-04
rs11594623	10:103960351	C/T	0.23	0.027	0.003	7.45E-20	25	4500	0.22	-0.009	0.057	8.71E-01	0.0	2.70E-04
rs1160685	4:94052854	G/C	0.45	0.015	0.003	2.31E-09	25	4500	0.47	Excluded for MR				
rs11611651	12:133380790	A/G	0.09	0.027	0.005	2.05E-09	23	4337	0.08	-0.105	0.090	2.42E-01	0.0	1.17E-04
rs11642231	16:89608702	G/A	0.63	0.016	0.003	3.44E-09	25	4500	0.65	0.110	0.051	3.05E-02	22.8	1.13E-04
rs11713899	3:2365026	C/A	0.17	0.019	0.003	3.15E-08	25	4500	0.17	0.050	0.063	4.28E-01	0.0	9.93E-05
rs6050446†	20:25195509	G/C	0.95	0.054	0.008	8.80E-13	17	3882	0.97	0.094	0.167	5.72E-01	0.0	2.81E-04
rs117657830	16:75766873	A/G	0.96	0.038	0.006	3.18E-09	24	4460	0.96	-0.132	0.126	2.96E-01	0.0	1.14E-04
rs11768481	7:96629103	C/A	0.66	0.019	0.003	5.23E-12	7	1949	Excluded for MR					
rs117734003	19:51129745	C/G	0.07	0.030	0.005	2.57E-09	17	3623	Excluded for MR					
rs11783093	8:27425349	C/T	0.84	0.047	0.003	2.07E-41	25	4500	0.83	0.022	0.064	7.29E-01	1.0	5.91E-04
rs11791671	9:3398679	T/C	0.07	0.028	0.005	4.24E-08	25	4500	0.07	-0.045	0.100	6.55E-01	8.2	9.74E-05
rs118202	6:111658371	G/T	0.19	0.037	0.003	1.90E-29	25	4500	0.21	-0.144	0.061	1.84E-02	0.0	4.12E-04
rs1187820	3:173072584	C/T	0.56	0.014	0.003	2.69E-08	24	4475	0.57	-0.006	0.052	9.16E-01	0.0	1.00E-04
rs12022778	1:50603995	C/A	0.20	0.027	0.003	3.18E-17	25	4500	0.19	0.058	0.084	4.92E-01	35.3	2.32E-04
rs12027999	1:154206358	T/C	0.88	0.024	0.004	5.33E-10	23	4435	0.89	-0.055	0.079	4.89E-01	8.3	1.25E-04
rs12130857	1:7791461	G/A	0.68	0.018	0.003	3.65E-11	25	4500	0.68	-0.003	0.052	9.60E-01	0.0	1.42E-04
rs12195240	6:98636905	A/G	0.28	0.025	0.003	1.08E-18	25	4500	0.29	-0.012	0.053	8.25E-01	5.7	2.53E-04
rs12244388	10:104640052	A/G	0.35	0.026	0.003	4.31E-22	25	4500	0.35	-0.009	0.049	8.52E-01	9.6	3.03E-04
rs12474587	2:162802993	T/G	0.43	0.024	0.003	4.83E-21	25	4500	0.40	0.082	0.050	1.00E-01	0.0	2.88E-04
rs12517438	5:30842054	G/T	0.54	0.015	0.003	1.89E-09	25	4500	0.52	0.001	0.048	9.82E-01	0.0	1.17E-04
rs12633090	3:83241365	G/C	0.82	0.023	0.003	3.16E-12	24	4475	0.80	0.088	0.061	1.52E-01	0.0	1.58E-04
rs12714017	2:80999398	C/T	0.51	0.015	0.003	3.65E-09	24	4475	0.51	-0.010	0.067	8.80E-01	37.1	1.18E-04
rs12739243	1:210302043	T/C	0.78	0.021	0.003	4.45E-12	25	4500	0.78	0.085	0.081	2.95E-01	37.3	1.56E-04
rs12878369	14:28346502	A/C	0.41	0.017	0.003	1.60E-11	25	4500	0.41	0.046	0.048	3.42E-01	0.5	1.48E-04
rs12918191	16:50945156	A/G	0.76	0.020	0.003	3.14E-11	25	4500	0.76	-0.023	0.056	6.74E-01	0.0	1.43E-04
rs1291821	10:11133823	G/A	0.53	0.014	0.003	1.39E-08	25	4500	0.53	0.087	0.049	7.40E-02	0.0	1.05E-04
rs13007361	2:166250244	A/G	0.21	0.018	0.003	2.29E-08	25	4500	0.20	0.020	0.058	7.35E-01	0.0	1.01E-04
rs13110073	4:147797913	T/C	0.60	0.025	0.003	3.24E-21	25	4500	0.61	-0.049	0.049	3.24E-01	2.8	2.90E-04
rs13261666	8:59814666	G/T	0.48	0.020	0.003	4.36E-15	25	4500	0.48	0.026	0.048	5.82E-01	0.8	2.00E-04
rs13392222	2:100672408	A/C	0.86	0.023	0.004	1.93E-10	24	4460	0.86	0.064	0.071	3.65E-01	12.4	1.31E-04
rs13437771	7:99071478	A/G	0.84	0.027	0.004	1.39E-14	25	4500	0.85	-0.015	0.067	8.25E-01	0.0	1.93E-04
rs1373178	18:49967811	T/G	0.41	0.020	0.003	4.16E-15	25	4500	0.43	-0.001	0.071	9.86E-01	39.3	2.00E-04
rs1381287	14:98597552	T/C	0.47	0.018	0.003	1.81E-12	25	4500	0.48	-0.010	0.048	8.42E-01	9.0	1.62E-04
rs1381775	11:42442826	T/C	0.29	0.016	0.003	2.79E-08	25	4500	0.29	0.025	0.053	6.34E-01	0.0	1.00E-04
rs1385108	5:154839646	T/C	0.24	0.019	0.003	3.84E-10	25	4500	0.22	0.137	0.056	1.43E-02	0.0	1.27E-04
rs13906	12:49952394	C/T	0.89	0.025	0.004	1.98E-09	25	4500	0.88	0.041	0.075	5.84E-01	2.3	1.17E-04
rs1435672	15:36399479	C/T	0.56	0.014	0.003	3.82E-08	25	4500	0.54	0.029	0.048	5.53E-01	0.0	9.80E-05

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs1445649	2:155682556	C/T	0.54	0.021	0.003	8.48E-16	25	4500	0.53	-0.027	0.048	5.80E-01	0.0	2.10E-04	
rs1449012	3:159048333	C/T	0.54	0.015	0.003	1.77E-09	25	4500	0.55	-0.056	0.049	2.49E-01	0.0	1.18E-04	
rs147052174	1:179783167	T/G	0.02	0.062	0.010	2.30E-10	13	2627	Excluded for MR						
rs1514176	1:74991596	G/A	0.42	0.019	0.003	7.67E-14	25	4500	0.43	-0.004	0.048	9.34E-01	0.0	1.81E-04	
rs1549979	3:85460131	C/T	0.38	0.025	0.003	8.80E-21	25	4500	0.40	-0.114	0.048	1.80E-02	0.0	2.85E-04	
rs160631	6:52895230	T/G	0.27	0.017	0.003	1.87E-09	25	4500	0.28	0.033	0.054	5.46E-01	0.0	1.17E-04	
rs16826827	2:147825689	T/C	0.88	0.022	0.004	9.17E-09	25	4500	0.88	-0.066	0.075	3.81E-01	0.0	1.07E-04	
rs1713676*	11:113660576	A/G	0.48	0.017	0.003	5.38E-11	25	4500	0.48	0.023	0.047	6.22E-01	0.0	1.40E-04	
rs1714521	3:158284861	A/C	0.59	0.016	0.003	3.07E-10	25	4500	0.60	0.008	0.048	8.65E-01	4.5	1.29E-04	
rs17197663	13:38172867	G/A	0.88	0.022	0.004	2.06E-08	25	4500	0.88	0.010	0.073	8.95E-01	0.0	1.02E-04	
rs17229285	2:199523122	C/T	0.50	0.015	0.003	1.27E-09	25	4500	0.51	0.025	0.048	5.98E-01	0.0	1.20E-04	
rs1733760	10:56698174	C/T	0.51	0.015	0.003	6.70E-09	25	4500	0.51	0.024	0.062	7.01E-01	25.4	1.09E-04	
rs1737329	6:163807748	G/C	0.74	0.017	0.003	5.08E-09	25	4500	0.73	0.011	0.056	8.41E-01	0.4	1.11E-04	
rs17554906	6:92226609	C/G	0.44	0.014	0.003	3.14E-08	25	4500	0.43	Excluded for MR					
rs1772572	13:81191176	C/A	0.68	0.017	0.003	5.62E-10	25	4500	0.68	-0.030	0.051	5.57E-01	0.0	1.25E-04	
rs1811739	14:77529375	A/G	0.25	0.018	0.003	5.97E-10	25	4500	0.24	0.093	0.056	9.74E-02	22.0	1.25E-04	
rs1889571	1:32195819	G/T	0.13	0.022	0.004	4.19E-09	25	4500	0.12	0.029	0.072	6.92E-01	10.3	1.12E-04	
rs1901477	2:104126983	G/A	0.51	0.030	0.003	2.07E-31	25	4500	0.51	0.032	0.048	5.06E-01	1.1	4.63E-04	
rs2010921	11:132098205	A/G	0.31	0.017	0.003	2.47E-10	25	4500	0.30	0.093	0.053	7.94E-02	0.0	1.30E-04	
rs2063976	8:91096366	C/T	0.34	0.020	0.003	7.45E-14	25	4500	0.34	0.008	0.051	8.79E-01	12.6	1.81E-04	
rs2155646	11:112912811	C/T	0.40	0.038	0.003	9.44E-48	25	4500	0.39	0.039	0.048	4.23E-01	0.0	6.85E-04	
rs2173019	5:167614971	A/T	0.18	0.028	0.003	2.98E-17	25	4500	0.16	0.115	0.064	7.17E-02	0.0	2.32E-04	
rs221988	3:64234307	A/C	0.62	0.015	0.003	1.43E-08	25	4500	0.63	-0.020	0.050	6.90E-01	0.0	1.05E-04	
rs2279829	3:147106319	C/T	0.78	0.017	0.003	2.05E-08	25	4500	0.79	-0.076	0.059	2.00E-01	10.1	1.02E-04	
rs2289791	15:67476952	G/T	0.75	0.018	0.003	2.01E-09	12	2439	Excluded for MR						
rs2319545	3:147719648	A/C	0.15	0.023	0.004	8.30E-11	25	4500	0.13	0.013	0.071	8.52E-01	0.0	1.37E-04	
rs2378662	9:86707289	A/G	0.54	0.015	0.003	2.67E-09	25	4500	0.53	0.049	0.049	3.17E-01	0.0	1.15E-04	
rs2526390	3:50192760	T/C	0.33	0.020	0.003	3.62E-14	25	4500	0.33	-0.006	0.050	8.99E-01	0.0	1.86E-04	
rs2587507*	17:77790135	T/C	0.50	0.015	0.003	8.69E-09	24	4458	0.51	-0.044	0.060	4.62E-01	28.0	1.07E-04	
rs2710634	2:32808804	T/C	0.48	0.018	0.003	3.36E-12	25	4500	0.51	-0.109	0.049	2.56E-02	2.5	1.57E-04	
rs2796793	10:36634124	A/G	0.45	0.014	0.003	1.55E-08	24	4278	0.44	0.018	0.049	7.15E-01	0.0	1.04E-04	
rs281296	15:47685010	A/G	0.36	0.025	0.003	1.59E-20	25	4500	0.37	-0.080	0.050	1.10E-01	0.8	2.80E-04	
rs28441558	17:7803118	T/C	0.94	0.036	0.006	1.24E-10	16	3555	Excluded for MR						
rs2901785	1:174104743	G/A	0.55	0.017	0.003	1.47E-11	25	4500	0.54	0.072	0.049	1.36E-01	6.5	1.48E-04	
rs290601	8:115374642	T/C	0.27	0.016	0.003	1.14E-08	25	4500	0.27	-0.032	0.072	6.55E-01	33.8	1.06E-04	
rs2925128	14:98362355	T/C	0.39	0.017	0.003	3.67E-10	25	4500	0.37	0.133	0.063	3.47E-02	26.3	1.34E-04	
rs2939756	11:41436297	G/A	0.52	0.016	0.003	7.45E-10	24	4475	0.54	0.018	0.048	7.05E-01	0.0	1.23E-04	
rs3218116	6:41901763	C/T	0.74	0.020	0.003	1.05E-11	25	4500	0.77	-0.075	0.056	1.84E-01	0.0	1.50E-04	
rs329124	5:133865452	A/G	0.57	0.016	0.003	1.96E-10	25	4500	0.58	-0.103	0.048	3.22E-02	0.0	1.31E-04	



SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs34342129	18:5872472	T/C	0.49	0.014	0.003	2.13E-08	25	4500	0.51	-0.044	0.049	3.75E-01	4.1	1.02E-04	
rs34399632	2:137571174	G/A	0.23	0.019	0.003	1.46E-10	25	4500	0.20	0.063	0.077	4.13E-01	25.4	1.33E-04	
rs34553878	9:134334588	G/A	0.11	0.025	0.004	1.17E-09	17	3715	Excluded for MR						
rs35375873	5:43190647	G/C	0.89	0.027	0.004	3.29E-11	17	3623	Excluded for MR						
rs35656245	1:190957480	A/G	0.28	0.016	0.003	2.23E-08	25	4500	0.29	0.085	0.052	1.05E-01	0.0	1.02E-04	
rs359247	2:60477052	T/A	0.64	0.022	0.003	9.89E-17	25	4500	0.61	-0.018	0.049	7.09E-01	0.0	2.24E-04	
rs3764351	17:37824339	G/A	0.34	0.015	0.003	3.89E-08	24	4432	0.35	0.063	0.051	2.18E-01	0.0	9.80E-05	
rs3810496	20:62406886	C/T	0.62	0.016	0.003	1.54E-09	24	4475	0.60	0.066	0.051	1.97E-01	0.7	1.19E-04	
rs3811038	2:113240183	C/T	0.28	0.019	0.003	1.58E-11	25	4500	0.28	-0.023	0.074	7.62E-01	35.2	1.47E-04	
rs3820277	1:18436657	G/T	0.47	0.019	0.003	1.57E-13	25	4500	0.50	-0.062	0.048	1.90E-01	0.0	1.77E-04	
rs3847244	9:3025368	T/C	0.47	0.019	0.003	2.60E-13	25	4500	0.47	-0.011	0.049	8.19E-01	0.0	1.74E-04	
rs3850736	8:64912021	G/C	0.47	0.019	0.003	6.43E-14	25	4500	0.47	Excluded for MR					
rs3934797	4:112467612	G/A	0.82	0.021	0.003	1.12E-10	25	4500	0.82	0.031	0.065	6.35E-01	1.1	1.35E-04	
rs4044321	5:166989513	A/G	0.36	0.023	0.003	1.75E-17	24	4475	0.37	-0.023	0.051	6.58E-01	0.0	2.35E-04	
rs4140932	4:15458598	T/A	0.57	0.014	0.003	4.89E-08	25	4500	0.58	Excluded for MR					
rs42417	5:94198290	T/C	0.69	0.017	0.003	8.27E-10	25	4500	0.69	-0.034	0.053	5.25E-01	0.0	1.22E-04	
rs4264267	13:38359676	T/C	0.53	0.015	0.003	6.82E-09	25	4500	0.54	-0.014	0.049	7.74E-01	0.0	1.09E-04	
rs4310804	15:96858409	C/G	0.75	0.018	0.003	7.55E-10	22	4008	0.76	0.148	0.064	2.13E-02	0.0	1.23E-04	
rs4326350	8:10763655	C/G	0.51	0.018	0.003	5.16E-12	25	4500	0.53	Excluded for MR					
rs4476253	18:25253297	G/A	0.76	0.018	0.003	5.78E-10	25	4500	0.77	-0.016	0.057	7.78E-01	0.0	1.25E-04	
rs45444697	1:155034632	G/C	0.21	0.020	0.003	2.72E-10	25	4500	0.20	-0.018	0.060	7.67E-01	0.0	1.30E-04	
rs4674993	2:226332033	A/G	0.80	0.024	0.003	4.85E-14	25	4500	0.81	0.065	0.061	2.91E-01	0.0	1.84E-04	
rs4727189	7:88442568	C/T	0.34	0.015	0.003	3.00E-08	25	4500	0.34	0.069	0.050	1.63E-01	0.0	9.97E-05	
rs4752018	10:118678712	A/C	0.23	0.019	0.003	4.42E-10	25	4500	0.23	0.006	0.057	9.11E-01	4.0	1.26E-04	
rs4759229	12:56474480	G/A	0.66	0.016	0.003	6.53E-09	24	4475	0.65	-0.035	0.052	5.03E-01	6.9	1.09E-04	
rs4790874	17:1995177	T/C	0.53	0.017	0.003	8.43E-12	24	4432	0.52	0.069	0.049	1.60E-01	2.1	1.52E-04	
rs4818005	21:40588819	G/A	0.42	0.020	0.003	1.09E-14	24	4475	0.43	-0.029	0.048	5.41E-01	0.0	2.03E-04	
rs4822102	22:42698430	C/T	0.38	0.017	0.003	2.78E-10	24	4475	0.38	0.077	0.049	1.18E-01	14.6	1.29E-04	
rs4837631	9:122061948	C/T	0.55	0.015	0.003	2.03E-09	24	4475	0.56	0.058	0.049	2.36E-01	20.1	1.17E-04	
rs4877285	9:81354129	G/A	0.33	0.018	0.003	2.10E-11	25	4500	0.36	-0.074	0.067	2.68E-01	28.5	1.46E-04	
rs4912332	1:58815243	T/C	0.49	0.014	0.003	2.94E-08	25	4500	0.47	0.095	0.048	4.97E-02	0.0	9.97E-05	
rs540860	11:121530888	G/A	0.54	0.018	0.003	5.75E-12	25	4500	0.52	0.052	0.048	2.81E-01	0.0	1.54E-04	
rs55786907	13:59871584	G/A	0.16	0.019	0.003	1.84E-08	25	4500	0.16	-0.026	0.065	6.85E-01	0.0	1.03E-04	
rs58400863	4:31184484	G/A	0.65	0.020	0.003	4.89E-14	25	4500	0.64	0.021	0.050	6.83E-01	0.0	1.84E-04	
rs59537158	4:28246049	T/C	0.21	0.022	0.003	4.62E-13	25	4500	0.22	-0.097	0.060	1.07E-01	0.0	1.70E-04	
rs6073075	20:42015801	T/A	0.18	0.019	0.003	2.44E-08	25	4500	0.18	-0.008	0.064	8.96E-01	0.0	1.01E-04	
rs61533748	2:22582968	C/T	0.38	0.017	0.003	2.82E-11	24	4475	0.38	-0.012	0.050	8.04E-01	18.6	1.44E-04	
rs61886926	11:64133552	C/T	0.62	0.018	0.003	7.30E-12	25	4500	0.63	-0.037	0.049	4.54E-01	0.0	1.52E-04	
rs61959481	13:55834929	G/A	0.79	0.020	0.003	7.95E-11	25	4500	0.78	0.073	0.079	3.61E-01	33.8	1.37E-04	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs62007780	15:78025464	G/T	0.58	0.016	0.003	7.48E-10	25	4500	0.61	-0.098	0.067	1.43E-01	33.7	1.23E-04	
rs62193862	2:202843875	A/G	0.10	0.024	0.004	1.99E-08	14	3176	Excluded for MR						
rs62246017	3:71483084	G/A	0.68	0.016	0.003	3.03E-09	25	4500	0.69	-0.081	0.054	1.33E-01	16.7	1.14E-04	
rs62340589	4:176875795	C/G	0.20	0.017	0.003	4.31E-08	25	4500	0.20	-0.008	0.061	9.00E-01	0.0	9.74E-05	
rs6265*	11:27679916	C/T	0.81	0.029	0.003	2.81E-19	25	4500	0.81	0.004	0.066	9.48E-01	9.1	2.62E-04	
rs6437769	3:107997514	T/C	0.58	0.014	0.003	3.74E-08	25	4500	0.59	-0.083	0.049	9.02E-02	0.0	9.84E-05	
rs6438436	3:117822149	T/C	0.82	0.025	0.003	5.33E-14	25	4500	0.81	0.067	0.063	2.89E-01	0.0	1.84E-04	
rs644740	11:65561468	C/T	0.54	0.014	0.003	3.67E-08	25	4500	0.54	0.050	0.047	2.91E-01	0.0	9.84E-05	
rs6452785	5:87685500	C/T	0.53	0.027	0.003	4.69E-26	25	4500	0.52	0.001	0.049	9.80E-01	0.0	3.60E-04	
rs6497840	16:25351633	A/G	0.71	0.023	0.003	2.01E-15	25	4500	0.69	-0.025	0.053	6.34E-01	19.4	2.15E-04	
rs6568832	6:97702876	A/G	0.75	0.019	0.003	1.74E-10	25	4500	0.74	-0.033	0.055	5.55E-01	12.7	1.32E-04	
rs67050670	18:39297254	A/G	0.77	0.020	0.003	2.34E-11	25	4500	0.74	0.146	0.055	8.02E-03	15.3	1.45E-04	
rs6731872	2:624205	G/T	0.83	0.032	0.003	5.35E-21	25	4500	0.81	0.010	0.092	9.17E-01	40.1	2.87E-04	
rs6750529	2:182027603	T/C	0.74	0.020	0.003	9.26E-12	24	4475	0.76	0.026	0.056	6.40E-01	0.0	1.51E-04	
rs6756212	2:146140132	C/T	0.47	0.034	0.003	3.49E-40	25	4500	0.46	0.048	0.048	3.24E-01	0.0	5.71E-04	
rs67777803	17:27323322	G/T	0.83	0.025	0.003	3.18E-13	24	4432	0.83	0.052	0.065	4.18E-01	2.1	1.72E-04	
rs6874731	5:80263865	G/T	0.48	0.015	0.003	1.83E-09	25	4500	0.48	-0.003	0.047	9.48E-01	0.0	1.17E-04	
rs6890961	5:166778503	C/T	0.38	0.019	0.003	2.13E-13	25	4500	0.40	-0.014	0.068	8.37E-01	31.9	1.75E-04	
rs6936160	6:100347745	T/C	0.70	0.020	0.003	4.20E-13	25	4500	0.68	0.052	0.053	3.29E-01	23.6	1.70E-04	
rs6948707	7:1870794	G/T	0.42	0.024	0.003	4.24E-21	25	4500	0.40	0.043	0.048	3.71E-01	0.0	2.89E-04	
rs6986430	8:93048104	T/C	0.78	0.024	0.003	1.99E-15	25	4500	0.76	0.164	0.074	2.62E-02	29.0	2.05E-04	
rs7024924	9:8282399	C/T	0.17	0.019	0.003	1.90E-08	24	4475	0.16	0.020	0.064	7.58E-01	0.0	1.03E-04	
rs7072776	10:22032942	A/G	0.29	0.022	0.003	5.66E-15	24	4278	0.33	-0.060	0.071	3.94E-01	27.9	1.98E-04	
rs7134009	12:75263193	T/C	0.71	0.016	0.003	4.30E-08	25	4500	0.71	0.032	0.053	5.48E-01	18.5	1.02E-04	
rs71367544	18:77574374	T/C	0.20	0.021	0.003	8.54E-11	25	4500	0.18	0.095	0.063	1.31E-01	20.8	1.37E-04	
rs71592686	5:60121271	C/T	0.27	0.021	0.003	3.85E-13	25	4500	0.26	0.030	0.053	5.71E-01	0.0	1.71E-04	
rs71602617	4:136406155	C/T	0.78	0.018	0.003	2.10E-08	25	4500	0.79	-0.018	0.059	7.57E-01	10.3	1.07E-04	
rs72780746	5:103929588	T/C	0.83	0.026	0.003	2.05E-14	25	4500	0.82	0.002	0.063	9.68E-01	19.9	1.90E-04	
rs72836318	17:44121579	T/C	0.75	0.017	0.003	7.00E-09	24	4432	0.76	-0.087	0.057	1.29E-01	15.2	1.09E-04	
rs72938304	18:53661743	G/A	0.89	0.027	0.004	1.36E-11	25	4500	0.89	-0.001	0.077	9.95E-01	0.0	1.48E-04	
rs748832	3:16851202	G/A	0.37	0.017	0.003	6.60E-11	25	4500	0.36	0.017	0.049	7.28E-01	0.0	1.38E-04	
rs75919030	17:50193197	T/C	0.73	0.021	0.003	3.35E-13	24	4432	0.73	0.041	0.055	4.56E-01	0.0	1.72E-04	
rs7598402	2:50735943	C/G	0.51	0.015	0.003	7.38E-09	25	4500	0.51	Excluded for MR					
rs7631379	3:181409057	C/T	0.21	0.021	0.003	3.94E-11	24	4475	0.21	-0.158	0.087	7.02E-02	35.3	1.42E-04	
rs76608582	19:4474725	C/A	0.95	0.035	0.006	4.88E-09	NA in Courage-PD								
rs7696257	4:137474783	A/G	0.37	0.015	0.003	6.78E-09	25	4500	0.35	-0.034	0.071	6.34E-01	35.3	1.09E-04	
rs77215829	12:112618346	A/C	0.87	0.024	0.004	2.02E-10	19	3599	0.86	0.098	0.084	2.42E-01	18.6	1.32E-04	
rs77283305	7:132593831	G/A	0.69	0.015	0.003	3.91E-08	25	4500	0.70	0.022	0.052	6.77E-01	0.0	9.80E-05	
rs7743165	6:67521222	G/T	0.50	0.019	0.003	4.15E-14	25	4500	0.48	-0.005	0.048	9.17E-01	5.5	1.85E-04	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs7809303	7:69484366	G/A	0.68	0.021	0.003	3.48E-15	25	4500	0.68	0.071	0.050	1.55E-01	0.0	2.01E-04
rs7836565	8:52569449	C/T	0.28	0.016	0.003	4.36E-08	25	4500	0.28	0.048	0.055	3.84E-01	11.7	9.74E-05
rs7920501	10:10043159	T/A	0.54	0.016	0.003	1.25E-09	25	4500	0.53	Excluded for MR				
rs7921378	10:63674885	G/C	0.52	0.023	0.003	6.10E-20	25	4500	0.52	Excluded for MR				
rs7929518	11:85980958	G/A	0.77	0.019	0.003	2.55E-10	25	4500	0.77	-0.072	0.056	1.97E-01	7.7	1.30E-04
rs7943721	11:73309393	G/A	0.17	0.021	0.003	3.58E-10	NA in Courage-PD							
rs7969559	12:69655167	A/G	0.29	0.017	0.003	1.53E-09	25	4500	0.31	0.067	0.053	2.07E-01	5.5	1.18E-04
rs8005334	14:79563654	G/T	0.36	0.017	0.003	3.44E-10	25	4500	0.35	-0.021	0.050	6.67E-01	0.0	1.28E-04
rs80054503	1:72900406	T/C	0.88	0.024	0.004	3.10E-09	NA in Courage-PD							
rs8096225	18:36921851	C/A	0.70	0.016	0.003	2.63E-08	25	4500	0.70	-0.015	0.053	7.80E-01	8.0	1.01E-04
rs876793	1:237852083	T/C	0.65	0.018	0.003	5.69E-11	25	4500	0.66	0.032	0.050	5.28E-01	12.5	1.46E-04
rs9288999	3:114147927	A/G	0.74	0.017	0.003	1.50E-09	25	4500	0.74	-0.038	0.055	4.87E-01	8.0	1.18E-04
rs9302604	16:69576894	G/A	0.44	0.019	0.003	3.29E-13	25	4500	0.43	-0.045	0.049	3.63E-01	24.0	1.72E-04
rs9323328*	14:58653514	A/G	0.46	0.014	0.003	2.55E-08	25	4500	0.46	0.018	0.048	7.05E-01	0.0	1.01E-04
rs9423279	10:125680419	C/G	0.36	0.019	0.003	3.06E-12	1	331	Excluded for MR					
rs951740	1:44011737	A/G	0.62	0.030	0.003	3.82E-29	25	4500	0.62	-0.043	0.050	3.90E-01	0.0	4.09E-04
rs9540731*	13:66949370	C/T	0.49	0.018	0.003	3.42E-12	25	4499	0.49	-0.051	0.049	2.92E-01	4.4	1.57E-04
rs9545155	13:80191873	T/C	0.52	0.016	0.003	3.04E-10	25	4500	0.52	0.037	0.049	4.53E-01	13.8	1.29E-04
rs9826984	3:131945722	G/A	0.46	0.014	0.003	3.87E-08	25	4500	0.45	0.025	0.048	6.07E-01	12.5	9.80E-05
rs9922607	16:17570220	C/T	0.80	0.022	0.003	3.42E-12	25	4500	0.80	0.088	0.078	2.61E-01	25.8	1.57E-04
rs9941217	16:18050926	C/G	0.65	0.019	0.003	3.50E-12	25	4500	0.66	0.026	0.068	6.99E-01	31.7	1.57E-04
<b>rs660895: 0 allele</b>														
rs1008078	1:91189731	T/C	0.40	0.023	0.003	1.63E-18	25	14341	0.40	-0.013	0.039	7.46E-01	43.3	2.50E-04
rs1022376	2:22067213	T/C	0.48	0.015	0.003	1.66E-08	25	14341	0.51	-0.011	0.026	6.65E-01	0.0	1.09E-04
rs10233018	7:117523709	G/A	0.52	0.025	0.003	4.77E-22	25	14341	0.50	-0.011	0.026	6.84E-01	0.0	3.03E-04
rs10279261	7:133589846	G/A	0.38	0.019	0.003	6.05E-13	25	14341	0.39	0.007	0.027	8.00E-01	0.0	1.68E-04
rs1030015*	7:78139581	T/G	0.52	0.014	0.003	2.15E-08	25	14341	0.52	-0.016	0.029	5.84E-01	10.2	1.02E-04
rs10490159	2:51341259	T/C	0.39	0.017	0.003	3.86E-11	25	14341	0.39	-0.029	0.026	2.63E-01	0.0	1.42E-04
rs1050847	16:87443734	C/T	0.44	0.015	0.003	7.37E-09	25	14341	0.48	0.015	0.027	5.83E-01	0.0	1.08E-04
rs10789369	1:73824909	A/G	0.38	0.023	0.003	3.39E-19	25	14341	0.43	-0.008	0.027	7.51E-01	20.9	2.60E-04
rs10853981	19:4965064	A/G	0.33	0.015	0.003	4.88E-08	25	14341	0.31	-0.045	0.028	1.07E-01	0.0	9.67E-05
rs10858334	9:137989785	G/C	0.14	0.023	0.004	1.18E-09	25	14341	0.14	-0.032	0.039	4.07E-01	0.0	1.26E-04
rs10885480	10:115378364	T/C	0.72	0.019	0.003	3.83E-11	25	14341	0.73	0.009	0.030	7.66E-01	0.0	1.42E-04
rs10914684	1:33795572	G/A	0.68	0.016	0.003	6.32E-09	25	14341	0.67	-0.021	0.028	4.43E-01	0.0	1.09E-04
rs10945141	6:69470709	A/G	0.26	0.018	0.003	3.59E-10	25	14341	0.26	-0.009	0.029	7.68E-01	0.0	1.28E-04
rs10953957	7:121954709	A/G	0.39	0.014	0.003	3.66E-08	25	14341	0.39	0.043	0.027	1.09E-01	2.3	9.84E-05
rs10966092	9:23831658	T/C	0.73	0.020	0.003	1.12E-12	25	14341	0.73	0.015	0.029	6.00E-01	0.0	1.64E-04
rs11057005	12:16748721	A/G	0.56	0.016	0.003	9.12E-10	25	14341	0.58	-0.033	0.027	2.32E-01	24.0	1.22E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs1106363	11:131966264	T/C	0.34	0.017	0.003	9.20E-11	25	14341	0.37	-0.015	0.027	5.71E-01	0.0	1.36E-04
rs11076962	16:5811367	C/T	0.28	0.018	0.003	1.20E-10	25	14341	0.26	0.042	0.029	1.56E-01	0.0	1.35E-04
rs1108130	13:100648356	A/T	0.21	0.024	0.003	1.57E-14	25	14341	0.20	-0.055	0.033	9.43E-02	0.0	1.92E-04
rs1109480	12:121083279	G/A	0.62	0.017	0.003	1.84E-10	25	14341	0.62	-0.035	0.027	1.88E-01	0.0	1.32E-04
rs11128203	3:71064431	A/T	0.53	0.020	0.003	1.29E-15	12	5260	Excluded for MR					
rs11162019	1:87913176	C/T	0.64	0.015	0.003	5.06E-09	25	14341	0.65	-0.021	0.039	5.97E-01	41.7	1.11E-04
rs1116690	4:143510148	G/A	0.74	0.016	0.003	2.16E-08	23	13858	0.71	0.037	0.031	2.30E-01	0.0	1.02E-04
rs1126757*	19:55879872	T/C	0.47	0.014	0.003	2.92E-08	24	14204	0.47	-0.017	0.026	5.30E-01	0.0	1.00E-04
rs112725451	4:68017710	T/C	0.17	0.026	0.003	1.65E-14	25	14341	0.17	0.022	0.043	6.13E-01	26.7	1.91E-04
rs113230003	19:18460956	G/A	0.74	0.019	0.003	1.05E-10	25	14341	0.76	0.056	0.031	7.59E-02	4.4	1.35E-04
rs1139897	16:720986	G/A	0.77	0.024	0.003	1.77E-15	24	14205	0.78	0.042	0.032	1.85E-01	20.6	2.06E-04
rs1150668	6:28129789	T/G	0.58	0.019	0.003	8.54E-13	25	14341	0.58	0.014	0.027	5.96E-01	0.0	1.67E-04
rs11594623	10:103960351	C/T	0.23	0.027	0.003	7.45E-20	25	14341	0.21	-0.036	0.031	2.52E-01	0.0	2.70E-04
rs1160685	4:94052854	G/C	0.45	0.015	0.003	2.31E-09	25	14341	0.48	Excluded for MR				
rs11611651	12:133380790	A/G	0.09	0.027	0.005	2.05E-09	25	14341	0.08	-0.108	0.048	2.30E-02	0.0	1.17E-04
rs11642231	16:89608702	G/A	0.63	0.016	0.003	3.44E-09	25	14341	0.68	0.029	0.028	3.06E-01	0.0	1.13E-04
rs11713899	3:2365026	C/A	0.17	0.019	0.003	3.15E-08	25	14341	0.17	-0.009	0.035	7.91E-01	0.0	9.93E-05
rs6050446†	20:25195509	G/C	0.95	0.054	0.008	8.80E-13	20	12663	0.98	-0.082	0.093	3.78E-01	0.0	2.81E-04
rs117657830	16:75766873	A/G	0.96	0.038	0.006	3.18E-09	25	14341	0.96	-0.053	0.066	4.25E-01	0.0	1.14E-04
rs11768481	7:96629103	C/A	0.66	0.019	0.003	5.23E-12	7	3933	Excluded for MR					
rs117734003	19:51129745	C/G	0.07	0.030	0.005	2.57E-09	17	9566	Excluded for MR					
rs11783093	8:27425349	C/T	0.84	0.047	0.003	2.07E-41	25	14341	0.84	-0.014	0.035	6.82E-01	0.0	5.91E-04
rs11791671	9:3398679	T/C	0.07	0.028	0.005	4.24E-08	25	14341	0.07	0.002	0.054	9.68E-01	18.2	9.74E-05
rs118202	6:111658371	G/T	0.19	0.037	0.003	1.90E-29	25	14341	0.19	-0.070	0.034	3.82E-02	21.9	4.12E-04
rs1187820	3:173072584	C/T	0.56	0.014	0.003	2.69E-08	25	14341	0.56	0.030	0.037	4.25E-01	31.8	1.00E-04
rs12022778	1:50603995	C/A	0.20	0.027	0.003	3.18E-17	25	14341	0.19	-0.002	0.033	9.47E-01	0.0	2.32E-04
rs12027999	1:154206358	T/C	0.88	0.024	0.004	5.33E-10	25	14341	0.90	-0.007	0.043	8.71E-01	21.2	1.25E-04
rs12130857	1:7791461	G/A	0.68	0.018	0.003	3.65E-11	25	14341	0.69	-0.013	0.028	6.29E-01	0.0	1.42E-04
rs12195240	6:98636905	A/G	0.28	0.025	0.003	1.08E-18	25	14341	0.29	-0.018	0.028	5.11E-01	5.1	2.53E-04
rs12244388	10:104640052	A/G	0.35	0.026	0.003	4.31E-22	25	14341	0.37	-0.054	0.027	4.60E-02	0.0	3.03E-04
rs12474587	2:162802993	T/G	0.43	0.024	0.003	4.83E-21	25	14341	0.39	0.042	0.027	1.12E-01	0.0	2.88E-04
rs12517438	5:30842054	G/T	0.54	0.015	0.003	1.89E-09	25	14341	0.52	0.009	0.026	7.22E-01	0.0	1.17E-04
rs12633090	3:83241365	G/C	0.82	0.023	0.003	3.16E-12	25	14341	0.81	0.033	0.033	3.20E-01	20.0	1.58E-04
rs12714017	2:80999398	C/T	0.51	0.015	0.003	3.65E-09	25	14341	0.52	0.009	0.026	7.29E-01	0.0	1.18E-04
rs12739243	1:210302043	T/C	0.78	0.021	0.003	4.45E-12	25	14341	0.78	0.030	0.039	4.43E-01	26.7	1.56E-04
rs12878369	14:28346502	A/C	0.41	0.017	0.003	1.60E-11	25	14341	0.42	-0.043	0.026	1.03E-01	0.0	1.48E-04
rs12918191	16:50945156	A/G	0.76	0.020	0.003	3.14E-11	25	14341	0.76	-0.010	0.030	7.49E-01	0.0	1.43E-04
rs1291821	10:11133823	G/A	0.53	0.014	0.003	1.39E-08	25	14341	0.54	-0.035	0.026	1.81E-01	8.2	1.05E-04
rs13007361	2:166250244	A/G	0.21	0.018	0.003	2.29E-08	25	14341	0.21	0.025	0.031	4.19E-01	0.0	1.01E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs13110073	4:147797913	T/C	0.60	0.025	0.003	3.24E-21	25	14341	0.62	-0.056	0.026	3.21E-02	6.5	2.90E-04	
rs13261666	8:59814666	G/T	0.48	0.020	0.003	4.36E-15	25	14341	0.48	-0.001	0.026	9.76E-01	10.8	2.00E-04	
rs13392222	2:100672408	A/C	0.86	0.023	0.004	1.93E-10	25	14341	0.87	0.031	0.039	4.23E-01	0.0	1.31E-04	
rs13437771	7:99071478	A/G	0.84	0.027	0.004	1.39E-14	25	14341	0.85	-0.012	0.048	8.10E-01	32.7	1.93E-04	
rs1373178	18:49967811	T/G	0.41	0.020	0.003	4.16E-15	25	14341	0.42	-0.044	0.027	1.01E-01	0.0	2.00E-04	
rs1381287	14:98597552	T/C	0.47	0.018	0.003	1.81E-12	25	14341	0.49	0.018	0.026	4.79E-01	0.0	1.62E-04	
rs1381775	11:42442826	T/C	0.29	0.016	0.003	2.79E-08	25	14341	0.29	-0.038	0.029	1.86E-01	0.0	1.00E-04	
rs1385108	5:154839646	T/C	0.24	0.019	0.003	3.84E-10	25	14341	0.23	-0.026	0.031	3.96E-01	0.0	1.27E-04	
rs13906	12:49952394	C/T	0.89	0.025	0.004	1.98E-09	25	14341	0.89	-0.063	0.042	1.35E-01	0.0	1.17E-04	
rs1435672	15:36399479	C/T	0.56	0.014	0.003	3.82E-08	25	14341	0.54	-0.004	0.026	8.79E-01	0.0	9.80E-05	
rs1445649	2:155682556	C/T	0.54	0.021	0.003	8.48E-16	25	14341	0.53	-0.005	0.026	8.48E-01	0.0	2.10E-04	
rs1449012	3:159048333	C/T	0.54	0.015	0.003	1.77E-09	25	14341	0.53	0.006	0.034	8.48E-01	28.8	1.18E-04	
rs147052174	1:179783167	T/G	0.02	0.062	0.010	2.30E-10	11	7047	Excluded for MR						
rs1514176	1:74991596	G/A	0.42	0.019	0.003	7.67E-14	25	14341	0.43	-0.011	0.027	6.90E-01	0.5	1.81E-04	
rs1549979	3:85460131	C/T	0.38	0.025	0.003	8.80E-21	25	14341	0.38	0.036	0.027	1.71E-01	0.0	2.85E-04	
rs160631	6:52895230	T/G	0.27	0.017	0.003	1.87E-09	25	14341	0.28	0.033	0.029	2.51E-01	12.5	1.17E-04	
rs16826827	2:147825689	T/C	0.88	0.022	0.004	9.17E-09	25	14341	0.88	0.023	0.040	5.70E-01	8.6	1.07E-04	
rs1713676*	11:113660576	A/G	0.48	0.017	0.003	5.38E-11	25	14341	0.47	0.008	0.028	7.82E-01	8.2	1.40E-04	
rs1714521	3:158284861	A/C	0.59	0.016	0.003	3.07E-10	25	14341	0.61	0.008	0.038	8.23E-01	41.6	1.29E-04	
rs17197663	13:38172867	G/A	0.88	0.022	0.004	2.06E-08	25	14341	0.87	0.052	0.038	1.74E-01	1.8	1.02E-04	
rs17229285	2:199523122	C/T	0.50	0.015	0.003	1.27E-09	25	14341	0.52	0.016	0.036	6.56E-01	34.7	1.20E-04	
rs1733760	10:56698174	C/T	0.51	0.015	0.003	6.70E-09	25	14341	0.50	0.025	0.026	3.50E-01	0.0	1.09E-04	
rs1737329	6:163807748	G/C	0.74	0.017	0.003	5.08E-09	25	14341	0.72	0.019	0.041	6.52E-01	36.2	1.11E-04	
rs17554906	6:92226609	C/G	0.44	0.014	0.003	3.14E-08	25	14341	0.42	Excluded for MR					
rs1772572	13:81191176	C/A	0.68	0.017	0.003	5.62E-10	25	14341	0.68	-0.022	0.027	4.12E-01	0.0	1.25E-04	
rs1811739	14:77529375	A/G	0.25	0.018	0.003	5.97E-10	25	14341	0.25	-0.010	0.045	8.28E-01	44.7	1.25E-04	
rs1889571	1:32195819	G/T	0.13	0.022	0.004	4.19E-09	25	14341	0.12	0.025	0.040	5.27E-01	0.0	1.12E-04	
rs1901477	2:104126983	G/A	0.51	0.030	0.003	2.07E-31	25	14341	0.52	-0.001	0.037	9.76E-01	41.3	4.63E-04	
rs2010921	11:132098205	A/G	0.31	0.017	0.003	2.47E-10	25	14341	0.31	-0.006	0.028	8.24E-01	0.0	1.30E-04	
rs2063976	8:91096366	C/T	0.34	0.020	0.003	7.45E-14	25	14341	0.33	0.016	0.028	5.55E-01	0.0	1.81E-04	
rs2155646	11:112912811	C/T	0.40	0.038	0.003	9.44E-48	25	14341	0.39	-0.005	0.027	8.52E-01	0.0	6.85E-04	
rs2173019	5:167614971	A/T	0.18	0.028	0.003	2.98E-17	25	14341	0.17	0.030	0.034	3.81E-01	4.8	2.32E-04	
rs221988	3:64234307	A/C	0.62	0.015	0.003	1.43E-08	25	14341	0.62	0.007	0.028	8.10E-01	0.0	1.05E-04	
rs2279829	3:147106319	C/T	0.78	0.017	0.003	2.05E-08	25	14341	0.80	-0.008	0.033	8.14E-01	8.7	1.02E-04	
rs2289791	15:67476952	G/T	0.75	0.018	0.003	2.01E-09	12	5260	Excluded for MR						
rs2319545	3:147719648	A/C	0.15	0.023	0.004	8.30E-11	25	14341	0.13	0.006	0.039	8.84E-01	0.0	1.37E-04	
rs2378662	9:86707289	A/G	0.54	0.015	0.003	2.67E-09	25	14341	0.53	0.013	0.027	6.29E-01	19.0	1.15E-04	
rs2526390	3:50192760	T/C	0.33	0.020	0.003	3.62E-14	25	14341	0.33	0.004	0.028	8.71E-01	2.6	1.86E-04	
rs2587507*	17:77790135	T/C	0.50	0.015	0.003	8.69E-09	25	14338	0.51	-0.013	0.026	6.28E-01	0.0	1.07E-04	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs2710634	2:32808804	T/C	0.48	0.018	0.003	3.36E-12	25	14341	0.50	-0.023	0.026	3.81E-01	0.0	1.57E-04
rs2796793	10:36634124	A/G	0.45	0.014	0.003	1.55E-08	24	13527	0.42	0.063	0.041	1.25E-01	48.9	1.04E-04
rs281296	15:47685010	A/G	0.36	0.025	0.003	1.59E-20	25	14341	0.37	-0.014	0.027	5.96E-01	0.0	2.80E-04
rs28441558	17:7803118	T/C	0.94	0.036	0.006	1.24E-10	17	9566	Excluded for MR					
rs2901785	1:174104743	G/A	0.55	0.017	0.003	1.47E-11	25	14341	0.55	-0.017	0.026	5.11E-01	0.5	1.48E-04
rs290601	8:115374642	T/C	0.27	0.016	0.003	1.14E-08	25	14341	0.27	-0.008	0.029	7.80E-01	0.0	1.06E-04
rs2925128	14:98362355	T/C	0.39	0.017	0.003	3.67E-10	25	14341	0.39	-0.072	0.034	3.32E-02	27.8	1.34E-04
rs2939756	11:41436297	G/A	0.52	0.016	0.003	7.45E-10	25	14341	0.56	-0.009	0.032	7.76E-01	25.3	1.23E-04
rs3218116	6:41901763	C/T	0.74	0.020	0.003	1.05E-11	25	14341	0.76	0.020	0.030	5.01E-01	0.0	1.50E-04
rs329124	5:133865452	A/G	0.57	0.016	0.003	1.96E-10	25	14341	0.57	-0.011	0.026	6.70E-01	0.0	1.31E-04
rs34342129	18:5872472	T/C	0.49	0.014	0.003	2.13E-08	25	14341	0.50	-0.032	0.026	2.23E-01	0.0	1.02E-04
rs34399632	2:137571174	G/A	0.23	0.019	0.003	1.46E-10	25	14341	0.18	-0.051	0.034	1.37E-01	0.0	1.33E-04
rs34553878	9:134334588	G/A	0.11	0.025	0.004	1.17E-09	17	9944	Excluded for MR					
rs35375873	5:43190647	G/C	0.89	0.027	0.004	3.29E-11	17	9566	Excluded for MR					
rs3556245	1:190957480	A/G	0.28	0.016	0.003	2.23E-08	25	14341	0.29	0.001	0.028	9.85E-01	0.0	1.02E-04
rs359247	2:60477052	T/A	0.64	0.022	0.003	9.89E-17	25	14341	0.61	-0.009	0.027	7.34E-01	10.3	2.24E-04
rs3764351	17:37824339	G/A	0.34	0.015	0.003	3.89E-08	25	14341	0.37	-0.042	0.040	2.95E-01	39.8	9.80E-05
rs3810496	20:62406886	C/T	0.62	0.016	0.003	1.54E-09	24	14178	0.62	-0.055	0.038	1.54E-01	33.5	1.19E-04
rs3811038	2:113240183	C/T	0.28	0.019	0.003	1.58E-11	25	14341	0.28	-0.018	0.029	5.35E-01	22.9	1.47E-04
rs3820277	1:18436657	G/T	0.47	0.019	0.003	1.57E-13	25	14341	0.50	-0.052	0.026	4.24E-02	17.5	1.77E-04
rs3847244	9:3025368	T/C	0.47	0.019	0.003	2.60E-13	25	14341	0.48	-0.046	0.027	8.34E-02	0.0	1.74E-04
rs3850736	8:64912021	G/C	0.47	0.019	0.003	6.43E-14	25	14341	0.46	Excluded for MR				
rs3934797	4:112467612	G/A	0.82	0.021	0.003	1.12E-10	25	14341	0.82	0.019	0.035	6.00E-01	18.6	1.35E-04
rs4044321	5:166989513	A/G	0.36	0.023	0.003	1.75E-17	25	14341	0.37	-0.011	0.028	7.01E-01	0.0	2.35E-04
rs4140932	4:15458598	T/A	0.57	0.014	0.003	4.89E-08	25	14341	0.58	Excluded for MR				
rs42417	5:94198290	T/C	0.69	0.017	0.003	8.27E-10	25	14341	0.70	-0.047	0.039	2.29E-01	32.7	1.22E-04
rs4264267	13:38359676	T/C	0.53	0.015	0.003	6.82E-09	25	14341	0.52	-0.017	0.026	5.26E-01	11.1	1.09E-04
rs4310804	15:96858409	C/G	0.75	0.018	0.003	7.55E-10	22	11421	0.77	-0.021	0.037	5.67E-01	8.2	1.23E-04
rs4326350	8:10763655	C/G	0.51	0.018	0.003	5.16E-12	25	14341	0.53	Excluded for MR				
rs4476253	18:25253297	G/A	0.76	0.018	0.003	5.78E-10	25	14341	0.76	0.002	0.031	9.42E-01	19.6	1.25E-04
rs45444697	1:155034632	G/C	0.21	0.020	0.003	2.72E-10	25	14341	0.20	-0.031	0.033	3.49E-01	0.0	1.30E-04
rs4674993	2:226332033	A/G	0.80	0.024	0.003	4.85E-14	25	14341	0.80	-0.013	0.033	6.99E-01	1.7	1.84E-04
rs4727189	7:88442568	C/T	0.34	0.015	0.003	3.00E-08	25	14341	0.36	0.047	0.027	7.51E-02	8.8	9.97E-05
rs4752018	10:118678712	A/C	0.23	0.019	0.003	4.42E-10	25	14341	0.24	0.026	0.030	3.98E-01	6.6	1.26E-04
rs4759229	12:56474480	G/A	0.66	0.016	0.003	6.53E-09	24	14178	0.65	0.014	0.029	6.38E-01	0.0	1.09E-04
rs4790874	17:1995177	T/C	0.53	0.017	0.003	8.43E-12	25	14341	0.54	-0.057	0.026	3.02E-02	0.0	1.52E-04
rs4818005	21:40588819	G/A	0.42	0.020	0.003	1.09E-14	25	14341	0.43	-0.017	0.026	5.16E-01	2.9	2.03E-04
rs4822102	22:42698430	C/T	0.38	0.017	0.003	2.78E-10	25	14341	0.38	0.019	0.039	6.22E-01	41.0	1.29E-04
rs4837631	9:122061948	C/T	0.55	0.015	0.003	2.03E-09	25	14341	0.58	0.011	0.027	6.68E-01	0.0	1.17E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs4877285	9:81354129	G/A	0.33	0.018	0.003	2.10E-11	25	14341	0.37	-0.067	0.028	1.71E-02	0.0	1.46E-04	
rs4912332	1:58815243	T/C	0.49	0.014	0.003	2.94E-08	25	14341	0.47	0.005	0.026	8.58E-01	23.4	9.97E-05	
rs540860	11:121530888	G/A	0.54	0.018	0.003	5.75E-12	25	14341	0.52	0.036	0.026	1.57E-01	0.0	1.54E-04	
rs55786907	13:59871584	G/A	0.16	0.019	0.003	1.84E-08	25	14341	0.17	-0.018	0.034	6.01E-01	13.2	1.03E-04	
rs58400863	4:31184484	G/A	0.65	0.020	0.003	4.89E-14	25	14341	0.64	-0.007	0.027	8.03E-01	3.3	1.84E-04	
rs59537158	4:28246049	T/C	0.21	0.022	0.003	4.62E-13	25	14341	0.20	-0.009	0.034	7.85E-01	10.7	1.70E-04	
rs6073075	20:42015801	T/A	0.18	0.019	0.003	2.44E-08	25	14341	0.20	-0.014	0.034	6.88E-01	8.0	1.01E-04	
rs61533748	2:22582968	C/T	0.38	0.017	0.003	2.82E-11	25	14341	0.37	0.007	0.027	8.01E-01	1.2	1.44E-04	
rs61886926	11:64133552	C/T	0.62	0.018	0.003	7.30E-12	25	14341	0.64	-0.026	0.027	3.27E-01	20.0	1.52E-04	
rs61959481	13:55834929	G/A	0.79	0.020	0.003	7.95E-11	25	14341	0.79	-0.017	0.032	5.89E-01	0.0	1.37E-04	
rs62007780	15:78025464	G/T	0.58	0.016	0.003	7.48E-10	25	14341	0.59	-0.004	0.026	8.82E-01	0.0	1.23E-04	
rs62193862	2:202843875	A/G	0.10	0.024	0.004	1.99E-08	14	8025	Excluded for MR						
rs62246017	3:71483084	G/A	0.68	0.016	0.003	3.03E-09	25	14341	0.67	-0.042	0.029	1.51E-01	11.4	1.14E-04	
rs62340589	4:176875795	C/G	0.20	0.017	0.003	4.31E-08	25	14341	0.19	-0.028	0.043	5.20E-01	29.5	9.74E-05	
rs6265*	11:27679916	C/T	0.81	0.029	0.003	2.81E-19	25	14341	0.80	-0.007	0.032	8.20E-01	0.0	2.62E-04	
rs6437769	3:107997514	T/C	0.58	0.014	0.003	3.74E-08	25	14341	0.59	-0.008	0.026	7.71E-01	17.0	9.84E-05	
rs6438436	3:117822149	T/C	0.82	0.025	0.003	5.33E-14	25	14341	0.82	0.035	0.034	3.12E-01	12.4	1.84E-04	
rs644740	11:65561468	C/T	0.54	0.014	0.003	3.67E-08	25	14341	0.54	0.011	0.026	6.66E-01	0.0	9.84E-05	
rs6452785	5:87685500	C/T	0.53	0.027	0.003	4.69E-26	25	14341	0.51	-0.008	0.026	7.47E-01	0.0	3.60E-04	
rs6497840	16:25351633	A/G	0.71	0.023	0.003	2.01E-15	25	14341	0.69	-0.025	0.029	3.73E-01	0.0	2.15E-04	
rs6568832	6:97702876	A/G	0.75	0.019	0.003	1.74E-10	25	14341	0.75	0.016	0.030	5.90E-01	6.0	1.32E-04	
rs67050670	18:39297254	A/G	0.77	0.020	0.003	2.34E-11	25	14341	0.75	0.029	0.030	3.35E-01	0.0	1.45E-04	
rs6731872	2:624205	G/T	0.83	0.032	0.003	5.35E-21	25	14341	0.80	0.021	0.033	5.15E-01	0.0	2.87E-04	
rs6750529	2:182027603	T/C	0.74	0.020	0.003	9.26E-12	25	14341	0.75	-0.026	0.030	3.80E-01	0.0	1.51E-04	
rs6756212	2:146140132	C/T	0.47	0.034	0.003	3.49E-40	25	14341	0.46	-0.040	0.026	1.25E-01	13.6	5.71E-04	
rs67777803	17:27323322	G/T	0.83	0.025	0.003	3.18E-13	25	14341	0.84	-0.023	0.044	6.03E-01	25.5	1.72E-04	
rs6874731	5:80263865	G/T	0.48	0.015	0.003	1.83E-09	25	14341	0.47	-0.009	0.039	8.10E-01	44.7	1.17E-04	
rs6890961	5:166778503	C/T	0.38	0.019	0.003	2.13E-13	25	14341	0.40	-0.029	0.028	2.96E-01	0.0	1.75E-04	
rs6936160	6:100347745	T/C	0.70	0.020	0.003	4.20E-13	25	14341	0.69	-0.001	0.028	9.71E-01	0.0	1.70E-04	
rs6948707	7:1870794	G/T	0.42	0.024	0.003	4.24E-21	25	14341	0.40	0.006	0.035	8.64E-01	33.1	2.89E-04	
rs6986430	8:93048104	T/C	0.78	0.024	0.003	1.99E-15	25	14341	0.77	0.028	0.030	3.57E-01	0.0	2.05E-04	
rs7024924	9:8282399	C/T	0.17	0.019	0.003	1.90E-08	25	14341	0.17	-0.014	0.034	6.90E-01	0.0	1.03E-04	
rs7072776	10:22032942	A/G	0.29	0.022	0.003	5.66E-15	24	13527	0.33	0.001	0.030	9.79E-01	0.0	1.98E-04	
rs7134009	12:75263193	T/C	0.71	0.016	0.003	4.30E-08	25	14341	0.70	-0.001	0.028	9.84E-01	0.0	1.02E-04	
rs71367544	18:77574374	T/C	0.20	0.021	0.003	8.54E-11	25	14341	0.17	0.037	0.034	2.77E-01	0.0	1.37E-04	
rs71592686	5:60121271	C/T	0.27	0.021	0.003	3.85E-13	25	14341	0.26	0.030	0.029	3.08E-01	0.0	1.71E-04	
rs71602617	4:136406155	C/T	0.78	0.018	0.003	2.10E-08	25	14341	0.80	0.027	0.032	4.04E-01	0.0	1.07E-04	
rs72780746	5:103929588	T/C	0.83	0.026	0.003	2.05E-14	25	14341	0.81	0.003	0.043	9.38E-01	29.6	1.90E-04	
rs72836318	17:44121579	T/C	0.75	0.017	0.003	7.00E-09	25	14341	0.75	-0.081	0.030	7.58E-03	0.0	1.09E-04	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs72938304	18:53661743	G/A	0.89	0.027	0.004	1.36E-11	25	14341	0.88	0.015	0.041	7.08E-01	13.4	1.48E-04
rs748832	3:16851202	G/A	0.37	0.017	0.003	6.60E-11	25	14341	0.35	0.047	0.027	8.15E-02	0.0	1.38E-04
rs75919030	17:50193197	T/C	0.73	0.021	0.003	3.35E-13	25	14341	0.74	0.003	0.029	9.11E-01	0.0	1.72E-04
rs7598402	2:50735943	C/G	0.51	0.015	0.003	7.38E-09	25	14341	0.51	Excluded for MR				
rs7631379	3:181409057	C/T	0.21	0.021	0.003	3.94E-11	25	14341	0.19	-0.019	0.049	7.01E-01	38.9	1.42E-04
rs76608582	19:4474725	C/A	0.95	0.035	0.006	4.88E-09	NA in Courage-PD							
rs7696257	4:137474783	A/G	0.37	0.015	0.003	6.78E-09	25	14341	0.36	-0.012	0.027	6.56E-01	0.0	1.09E-04
rs77215829	12:112618346	A/C	0.87	0.024	0.004	2.02E-10	19	9827	0.87	0.045	0.050	3.66E-01	9.4	1.32E-04
rs77283305	7:132593831	G/A	0.69	0.015	0.003	3.91E-08	25	14341	0.70	-0.028	0.036	4.43E-01	28.0	9.80E-05
rs7743165	6:67521222	G/T	0.50	0.019	0.003	4.15E-14	25	14341	0.47	-0.055	0.035	1.17E-01	33.7	1.85E-04
rs7809303	7:69484366	G/A	0.68	0.021	0.003	3.48E-15	25	14341	0.70	-0.035	0.028	2.14E-01	0.0	2.01E-04
rs7836565	8:52569449	C/T	0.28	0.016	0.003	4.36E-08	25	14341	0.29	0.067	0.029	2.10E-02	0.0	9.74E-05
rs7920501	10:10043159	T/A	0.54	0.016	0.003	1.25E-09	25	14341	0.53	Excluded for MR				
rs7921378	10:63674885	G/C	0.52	0.023	0.003	6.10E-20	25	14341	0.53	Excluded for MR				
rs7929518	11:85980958	G/A	0.77	0.019	0.003	2.55E-10	25	14341	0.77	-0.044	0.030	1.52E-01	24.4	1.30E-04
rs7943721	11:73309393	G/A	0.17	0.021	0.003	3.58E-10	NA in Courage-PD							
rs7969559	12:69655167	A/G	0.29	0.017	0.003	1.53E-09	25	14341	0.33	-0.019	0.036	6.02E-01	27.1	1.18E-04
rs8005334	14:79563654	G/T	0.36	0.017	0.003	3.44E-10	25	14341	0.35	-0.017	0.027	5.24E-01	0.0	1.28E-04
rs80054503	1:72900406	T/C	0.88	0.024	0.004	3.10E-09	NA in Courage-PD							
rs8096225	18:36921851	C/A	0.70	0.016	0.003	2.63E-08	25	14341	0.70	-0.020	0.028	4.82E-01	0.0	1.01E-04
rs876793	1:237852083	T/C	0.65	0.018	0.003	5.69E-11	25	14341	0.66	0.045	0.028	1.08E-01	16.3	1.46E-04
rs9288999	3:114147927	A/G	0.74	0.017	0.003	1.50E-09	25	14341	0.73	0.013	0.029	6.67E-01	0.0	1.18E-04
rs9302604	16:69576894	G/A	0.44	0.019	0.003	3.29E-13	25	14341	0.43	-0.008	0.027	7.71E-01	0.0	1.72E-04
rs9323328*	14:58653514	A/G	0.46	0.014	0.003	2.55E-08	25	14341	0.45	-0.036	0.026	1.71E-01	0.0	1.01E-04
rs9423279	10:125680419	C/G	0.36	0.019	0.003	3.06E-12	1	606	Excluded for MR					
rs951740	1:44011737	A/G	0.62	0.030	0.003	3.82E-29	25	14341	0.61	-0.009	0.027	7.22E-01	0.0	4.09E-04
rs9540731*	13:66949370	C/T	0.49	0.018	0.003	3.42E-12	25	14340	0.50	-0.042	0.030	1.58E-01	13.3	1.57E-04
rs9545155	13:80191873	T/C	0.52	0.016	0.003	3.04E-10	25	14341	0.53	0.002	0.026	9.35E-01	0.0	1.29E-04
rs9826984	3:131945722	G/A	0.46	0.014	0.003	3.87E-08	25	14341	0.44	-0.005	0.026	8.44E-01	0.0	9.80E-05
rs9922607	16:17570220	C/T	0.80	0.022	0.003	3.42E-12	25	14341	0.80	-0.011	0.033	7.36E-01	23.2	1.57E-04
rs9941217	16:18050926	C/G	0.65	0.019	0.003	3.50E-12	25	14341	0.68	0.022	0.028	4.37E-01	0.0	1.57E-04
<b>rs660895: 1 or 2 alleles</b>														
rs1008078	1:91189731	T/C	0.40	0.023	0.003	1.63E-18	25	6042	0.41	-0.051	0.041	2.06E-01	1.3	2.50E-04
rs1022376	2:22067213	T/C	0.48	0.015	0.003	1.66E-08	24	6018	0.49	0.082	0.040	4.13E-02	23.5	1.09E-04
rs10233018	7:117523709	G/A	0.52	0.025	0.003	4.77E-22	25	6042	0.50	0.024	0.040	5.53E-01	0.0	3.03E-04
rs10279261	7:133589846	G/A	0.38	0.019	0.003	6.05E-13	25	6042	0.39	0.038	0.055	4.84E-01	29.2	1.68E-04
rs1030015*	7:78139581	T/G	0.52	0.014	0.003	2.15E-08	25	6042	0.51	0.012	0.050	8.03E-01	24.1	1.02E-04
rs10490159	2:51341259	T/C	0.39	0.017	0.003	3.86E-11	24	6018	0.38	0.049	0.041	2.34E-01	15.5	1.42E-04



SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs1050847	16:87443734	C/T	0.44	0.015	0.003	7.37E-09	24	6018	0.47	-0.027	0.041	5.16E-01	2.6	1.08E-04	
rs10789369	1:73824909	A/G	0.38	0.023	0.003	3.39E-19	25	6042	0.42	-0.039	0.041	3.49E-01	2.1	2.60E-04	
rs10853981	19:4965064	A/G	0.33	0.015	0.003	4.88E-08	24	6018	0.31	0.002	0.044	9.57E-01	14.4	9.67E-05	
rs10858334	9:137989785	G/C	0.14	0.023	0.004	1.18E-09	24	6018	0.13	0.046	0.083	5.77E-01	35.9	1.26E-04	
rs10885480	10:115378364	T/C	0.72	0.019	0.003	3.83E-11	25	6042	0.72	0.006	0.045	9.03E-01	0.0	1.42E-04	
rs10914684	1:33795572	G/A	0.68	0.016	0.003	6.32E-09	25	6042	0.67	0.035	0.055	5.31E-01	27.5	1.09E-04	
rs10945141	6:69470709	A/G	0.26	0.018	0.003	3.59E-10	24	6018	0.26	0.044	0.045	3.23E-01	0.0	1.28E-04	
rs10953957	7:121954709	A/G	0.39	0.014	0.003	3.66E-08	25	6042	0.39	0.002	0.041	9.61E-01	0.0	9.84E-05	
rs10966092	9:23831658	T/C	0.73	0.020	0.003	1.12E-12	25	6042	0.73	-0.002	0.044	9.59E-01	0.0	1.64E-04	
rs11057005	12:16748721	A/G	0.56	0.016	0.003	9.12E-10	25	6042	0.58	-0.040	0.042	3.38E-01	0.0	1.22E-04	
rs1106363	11:131966264	T/C	0.34	0.017	0.003	9.20E-11	25	6042	0.36	-0.007	0.041	8.68E-01	14.8	1.36E-04	
rs11076962	16:5811367	C/T	0.28	0.018	0.003	1.20E-10	25	6042	0.28	-0.071	0.045	1.11E-01	5.6	1.35E-04	
rs1108130	13:100648356	A/T	0.21	0.024	0.003	1.57E-14	24	6018	0.21	0.014	0.050	7.79E-01	0.0	1.92E-04	
rs1109480	12:121083279	G/A	0.62	0.017	0.003	1.84E-10	25	6042	0.62	-0.040	0.042	3.41E-01	0.0	1.32E-04	
rs11128203	3:71064431	A/T	0.53	0.020	0.003	1.29E-15	12	3141	Excluded for MR						
rs11162019	1:87913176	C/T	0.64	0.015	0.003	5.06E-09	25	6042	0.65	0.009	0.042	8.30E-01	20.2	1.11E-04	
rs1116690	4:143510148	G/A	0.74	0.016	0.003	2.16E-08	23	5958	0.72	-0.009	0.047	8.49E-01	23.3	1.02E-04	
rs1126757*	19:55879872	T/C	0.47	0.014	0.003	2.92E-08	24	6013	0.47	0.028	0.049	5.68E-01	23.5	1.00E-04	
rs112725451	4:68017710	T/C	0.17	0.026	0.003	1.65E-14	24	6018	0.18	-0.045	0.052	3.90E-01	12.1	1.91E-04	
rs113230003	19:18460956	G/A	0.74	0.019	0.003	1.05E-10	25	6042	0.76	-0.005	0.048	9.11E-01	0.0	1.35E-04	
rs1139897	16:720986	G/A	0.77	0.024	0.003	1.77E-15	24	5942	0.77	0.024	0.049	6.20E-01	0.0	2.06E-04	
rs1150668	6:28129789	T/G	0.58	0.019	0.003	8.54E-13	25	6042	0.62	-0.102	0.042	1.55E-02	22.6	1.67E-04	
rs11594623	10:103960351	C/T	0.23	0.027	0.003	7.45E-20	25	6042	0.22	-0.014	0.048	7.77E-01	10.2	2.70E-04	
rs1160685	4:94052854	G/C	0.45	0.015	0.003	2.31E-09	25	6042	0.48	Excluded for MR					
rs11611651	12:133380790	A/G	0.09	0.027	0.005	2.05E-09	25	6042	0.08	-0.017	0.075	8.20E-01	0.0	1.17E-04	
rs11642231	16:89608702	G/A	0.63	0.016	0.003	3.44E-09	25	6042	0.65	0.125	0.042	3.18E-03	8.4	1.13E-04	
rs11713899	3:2365026	C/A	0.17	0.019	0.003	3.15E-08	25	6042	0.17	-0.006	0.053	9.10E-01	0.0	9.93E-05	
rs6050446†	20:25195509	G/C	0.95	0.054	0.008	8.80E-13	17	5235	0.97	0.004	0.134	9.74E-01	0.0	2.81E-04	
rs117657830	16:75766873	A/G	0.96	0.038	0.006	3.18E-09	25	6042	0.96	0.057	0.104	5.85E-01	0.0	1.14E-04	
rs11768481	7:96629103	C/A	0.66	0.019	0.003	5.23E-12	7	2483	Excluded for MR						
rs117734003	19:51129745	C/G	0.07	0.030	0.005	2.57E-09	17	4773	Excluded for MR						
rs11783093	8:27425349	C/T	0.84	0.047	0.003	2.07E-41	24	6018	0.84	-0.009	0.054	8.73E-01	7.8	5.91E-04	
rs11791671	9:3398679	T/C	0.07	0.028	0.005	4.24E-08	25	6042	0.07	0.028	0.084	7.36E-01	9.6	9.74E-05	
rs118202	6:111658371	G/T	0.19	0.037	0.003	1.90E-29	25	6042	0.21	-0.116	0.052	2.51E-02	0.0	4.12E-04	
rs1187820	3:173072584	C/T	0.56	0.014	0.003	2.69E-08	25	6042	0.57	0.007	0.043	8.77E-01	0.0	1.00E-04	
rs12022778	1:50603995	C/A	0.20	0.027	0.003	3.18E-17	25	6042	0.18	0.066	0.067	3.24E-01	29.6	2.32E-04	
rs12027999	1:154206358	T/C	0.88	0.024	0.004	5.33E-10	24	6018	0.89	-0.084	0.065	1.95E-01	8.3	1.25E-04	
rs12130857	1:7791461	G/A	0.68	0.018	0.003	3.65E-11	25	6042	0.69	-0.021	0.043	6.32E-01	0.0	1.42E-04	
rs12195240	6:98636905	A/G	0.28	0.025	0.003	1.08E-18	25	6042	0.28	0.060	0.044	1.74E-01	0.0	2.53E-04	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs12244388	10:104640052	A/G	0.35	0.026	0.003	4.31E-22	25	6042	0.35	-0.020	0.041	6.27E-01	4.8	3.03E-04
rs12474587	2:162802993	T/G	0.43	0.024	0.003	4.83E-21	25	6042	0.40	0.046	0.042	2.70E-01	0.0	2.88E-04
rs12517438	5:30842054	G/T	0.54	0.015	0.003	1.89E-09	24	6018	0.51	0.003	0.040	9.44E-01	0.0	1.17E-04
rs12633090	3:83241365	G/C	0.82	0.023	0.003	3.16E-12	24	6018	0.80	0.090	0.051	7.54E-02	13.7	1.58E-04
rs12714017	2:80999398	C/T	0.51	0.015	0.003	3.65E-09	25	6042	0.51	-0.020	0.059	7.31E-01	42.7	1.18E-04
rs12739243	1:210302043	T/C	0.78	0.021	0.003	4.45E-12	25	6042	0.78	0.078	0.061	1.98E-01	26.6	1.56E-04
rs12878369	14:28346502	A/C	0.41	0.017	0.003	1.60E-11	25	6042	0.42	-0.033	0.040	4.14E-01	18.2	1.48E-04
rs12918191	16:50945156	A/G	0.76	0.020	0.003	3.14E-11	25	6042	0.76	0.021	0.047	6.51E-01	0.0	1.43E-04
rs1291821	10:11133823	G/A	0.53	0.014	0.003	1.39E-08	24	6018	0.54	0.044	0.041	2.77E-01	11.4	1.05E-04
rs13007361	2:166250244	A/G	0.21	0.018	0.003	2.29E-08	24	6018	0.20	0.065	0.049	1.81E-01	0.0	1.01E-04
rs13110073	4:147797913	T/C	0.60	0.025	0.003	3.24E-21	24	6018	0.61	-0.009	0.041	8.19E-01	3.7	2.90E-04
rs13261666	8:59814666	G/T	0.48	0.020	0.003	4.36E-15	24	6018	0.48	-0.002	0.040	9.63E-01	0.0	2.00E-04
rs13392222	2:100672408	A/C	0.86	0.023	0.004	1.93E-10	25	6042	0.86	0.058	0.077	4.56E-01	29.1	1.31E-04
rs13437771	7:99071478	A/G	0.84	0.027	0.004	1.39E-14	25	6042	0.85	-0.062	0.056	2.67E-01	0.0	1.93E-04
rs1373178	18:49967811	T/G	0.41	0.020	0.003	4.16E-15	25	6042	0.42	-0.014	0.041	7.42E-01	16.3	2.00E-04
rs1381287	14:98597552	T/C	0.47	0.018	0.003	1.81E-12	25	6042	0.48	0.013	0.040	7.46E-01	15.1	1.62E-04
rs1381775	11:42442826	T/C	0.29	0.016	0.003	2.79E-08	25	6042	0.29	0.032	0.045	4.67E-01	0.0	1.00E-04
rs1385108	5:154839646	T/C	0.24	0.019	0.003	3.84E-10	24	6018	0.22	0.065	0.047	1.68E-01	0.0	1.27E-04
rs13906	12:49952394	C/T	0.89	0.025	0.004	1.98E-09	25	6042	0.88	0.014	0.063	8.27E-01	0.0	1.17E-04
rs1435672	15:36399479	C/T	0.56	0.014	0.003	3.82E-08	25	6042	0.53	0.054	0.040	1.84E-01	16.4	9.80E-05
rs1445649	2:155682556	C/T	0.54	0.021	0.003	8.48E-16	24	6018	0.54	-0.039	0.040	3.33E-01	0.0	2.10E-04
rs1449012	3:159048333	C/T	0.54	0.015	0.003	1.77E-09	25	6042	0.54	-0.014	0.040	7.22E-01	0.0	1.18E-04
rs147052174	1:179783167	T/G	0.02	0.062	0.010	2.30E-10	15	3709	Excluded for MR					
rs1514176	1:74991596	G/A	0.42	0.019	0.003	7.67E-14	24	6018	0.43	0.024	0.041	5.55E-01	0.0	1.81E-04
rs1549979	3:85460131	C/T	0.38	0.025	0.003	8.80E-21	24	6018	0.40	-0.090	0.040	2.57E-02	0.0	2.85E-04
rs160631	6:52895230	T/G	0.27	0.017	0.003	1.87E-09	25	6042	0.29	0.017	0.045	7.06E-01	0.0	1.17E-04
rs16826827	2:147825689	T/C	0.88	0.022	0.004	9.17E-09	25	6042	0.88	Excluded for MR				
rs1713676*	11:113660576	A/G	0.48	0.017	0.003	5.38E-11	24	6018	0.47	0.031	0.040	4.44E-01	0.0	1.40E-04
rs1714521	3:158284861	A/C	0.59	0.016	0.003	3.07E-10	24	6018	0.60	-0.006	0.040	8.78E-01	0.0	1.29E-04
rs17197663	13:38172867	G/A	0.88	0.022	0.004	2.06E-08	24	6018	0.87	0.042	0.084	6.17E-01	35.9	1.02E-04
rs17229285	2:199523122	C/T	0.50	0.015	0.003	1.27E-09	25	6042	0.51	0.007	0.040	8.62E-01	0.0	1.20E-04
rs1733760	10:56698174	C/T	0.51	0.015	0.003	6.70E-09	25	6042	0.50	0.020	0.041	6.31E-01	0.0	1.09E-04
rs1737329	6:163807748	G/C	0.74	0.017	0.003	5.08E-09	25	6042	0.74	-0.011	0.047	8.21E-01	17.0	1.11E-04
rs17554906	6:92226609	C/G	0.44	0.014	0.003	3.14E-08	24	6018	0.43	Excluded for MR				
rs1772572	13:81191176	C/A	0.68	0.017	0.003	5.62E-10	25	6042	0.69	-0.047	0.042	2.66E-01	0.0	1.25E-04
rs1811739	14:77529375	A/G	0.25	0.018	0.003	5.97E-10	25	6042	0.24	0.063	0.065	3.31E-01	36.9	1.25E-04
rs1889571	1:32195819	G/T	0.13	0.022	0.004	4.19E-09	25	6042	0.12	0.080	0.061	1.88E-01	2.6	1.12E-04
rs1901477	2:104126983	G/A	0.51	0.030	0.003	2.07E-31	25	6042	0.51	0.060	0.040	1.36E-01	4.6	4.63E-04
rs2010921	11:132098205	A/G	0.31	0.017	0.003	2.47E-10	25	6042	0.29	0.071	0.044	1.06E-01	0.0	1.30E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs2063976	8:91096366	C/T	0.34	0.020	0.003	7.45E-14	25	6042	0.34	-0.002	0.042	9.67E-01	0.0	1.81E-04	
rs2155646	11:112912811	C/T	0.40	0.038	0.003	9.44E-48	25	6042	0.39	0.055	0.040	1.76E-01	0.0	6.85E-04	
rs2173019	5:167614971	A/T	0.18	0.028	0.003	2.98E-17	25	6042	0.16	0.088	0.053	9.77E-02	0.0	2.32E-04	
rs221988	3:64234307	A/C	0.62	0.015	0.003	1.43E-08	25	6042	0.62	0.006	0.042	8.82E-01	22.3	1.05E-04	
rs2279829	3:147106319	C/T	0.78	0.017	0.003	2.05E-08	25	6042	0.79	0.014	0.050	7.82E-01	9.1	1.02E-04	
rs2289791	15:67476952	G/T	0.75	0.018	0.003	2.01E-09	12	3141	Excluded for MR						
rs2319545	3:147719648	A/C	0.15	0.023	0.004	8.30E-11	25	6042	0.13	0.037	0.060	5.36E-01	0.0	1.37E-04	
rs2378662	9:86707289	A/G	0.54	0.015	0.003	2.67E-09	25	6042	0.53	0.068	0.041	9.51E-02	0.0	1.15E-04	
rs2526390	3:50192760	T/C	0.33	0.020	0.003	3.62E-14	25	6042	0.34	-0.008	0.042	8.41E-01	0.0	1.86E-04	
rs2587507*	17:77790135	T/C	0.50	0.015	0.003	8.69E-09	25	6039	0.51	-0.032	0.050	5.25E-01	23.1	1.07E-04	
rs2710634	2:32808804	T/C	0.48	0.018	0.003	3.36E-12	25	6042	0.50	-0.050	0.041	2.20E-01	0.0	1.57E-04	
rs2796793	10:36634124	A/G	0.45	0.014	0.003	1.55E-08	24	5725	0.43	0.032	0.041	4.33E-01	0.0	1.04E-04	
rs281296	15:47685010	A/G	0.36	0.025	0.003	1.59E-20	24	6018	0.37	-0.071	0.042	9.22E-02	4.6	2.80E-04	
rs28441558	17:7803118	T/C	0.94	0.036	0.006	1.24E-10	17	4773	Excluded for MR						
rs2901785	1:174104743	G/A	0.55	0.017	0.003	1.47E-11	25	6042	0.54	0.090	0.040	2.57E-02	23.8	1.48E-04	
rs290601	8:115374642	T/C	0.27	0.016	0.003	1.14E-08	24	6018	0.27	-0.035	0.045	4.31E-01	9.5	1.06E-04	
rs2925128	14:98362355	T/C	0.39	0.017	0.003	3.67E-10	25	6042	0.37	0.088	0.041	3.26E-02	4.0	1.34E-04	
rs2939756	11:41436297	G/A	0.52	0.016	0.003	7.45E-10	25	6042	0.54	-0.016	0.040	6.98E-01	6.6	1.23E-04	
rs3218116	6:41901763	C/T	0.74	0.020	0.003	1.05E-11	24	6018	0.77	-0.087	0.047	6.62E-02	0.0	1.50E-04	
rs329124	5:133865452	A/G	0.57	0.016	0.003	1.96E-10	25	6042	0.58	-0.041	0.040	3.07E-01	0.0	1.31E-04	
rs34342129	18:5872472	T/C	0.49	0.014	0.003	2.13E-08	24	6018	0.51	-0.066	0.054	2.20E-01	32.9	1.02E-04	
rs34399632	2:137571174	G/A	0.23	0.019	0.003	1.46E-10	24	6018	0.20	0.038	0.065	5.62E-01	28.3	1.33E-04	
rs34553878	9:134334588	G/A	0.11	0.025	0.004	1.17E-09	17	4901	Excluded for MR						
rs35375873	5:43190647	G/C	0.89	0.027	0.004	3.29E-11	17	4773	Excluded for MR						
rs35656245	1:190957480	A/G	0.28	0.016	0.003	2.23E-08	25	6042	0.28	0.054	0.044	2.15E-01	0.0	1.02E-04	
rs359247	2:60477052	T/A	0.64	0.022	0.003	9.89E-17	25	6042	0.62	-0.049	0.042	2.35E-01	11.4	2.24E-04	
rs3764351	17:37824339	G/A	0.34	0.015	0.003	3.89E-08	25	6042	0.36	0.057	0.043	1.82E-01	0.0	9.80E-05	
rs3810496	20:62406886	C/T	0.62	0.016	0.003	1.54E-09	24	6018	0.61	0.057	0.043	1.90E-01	19.3	1.19E-04	
rs3811038	2:113240183	C/T	0.28	0.019	0.003	1.58E-11	25	6042	0.27	0.034	0.062	5.82E-01	35.6	1.47E-04	
rs3820277	1:18436657	G/T	0.47	0.019	0.003	1.57E-13	25	6042	0.50	-0.039	0.040	3.37E-01	0.0	1.77E-04	
rs3847244	9:3025368	T/C	0.47	0.019	0.003	2.60E-13	25	6042	0.47	0.001	0.041	9.86E-01	0.0	1.74E-04	
rs3850736	8:64912021	G/C	0.47	0.019	0.003	6.43E-14	25	6042	0.46	Excluded for MR					
rs3934797	4:112467612	G/A	0.82	0.021	0.003	1.12E-10	25	6042	0.83	-0.042	0.054	4.36E-01	0.0	1.35E-04	
rs4044321	5:166989513	A/G	0.36	0.023	0.003	1.75E-17	25	6042	0.36	-0.007	0.043	8.70E-01	0.0	2.35E-04	
rs4140932	4:15458598	T/A	0.57	0.014	0.003	4.89E-08	24	6018	0.57	Excluded for MR					
rs42417	5:94198290	T/C	0.69	0.017	0.003	8.27E-10	25	6042	0.69	-0.029	0.045	5.24E-01	0.0	1.22E-04	
rs4264267	13:38359676	T/C	0.53	0.015	0.003	6.82E-09	24	6018	0.53	0.020	0.041	6.28E-01	0.0	1.09E-04	
rs4310804	15:96858409	C/G	0.75	0.018	0.003	7.55E-10	22	5296	0.76	0.131	0.054	1.52E-02	0.0	1.23E-04	
rs4326350	8:10763655	C/G	0.51	0.018	0.003	5.16E-12	25	6042	0.53	Excluded for MR					

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs4476253	18:25253297	G/A	0.76	0.018	0.003	5.78E-10	24	6018	0.77	-0.043	0.048	3.75E-01	0.0	1.25E-04	
rs45444697	1:155034632	G/C	0.21	0.020	0.003	2.72E-10	25	6042	0.20	-0.009	0.051	8.54E-01	0.0	1.30E-04	
rs4674993	2:226332033	A/G	0.80	0.024	0.003	4.85E-14	24	6018	0.81	0.027	0.052	6.08E-01	13.6	1.84E-04	
rs4727189	7:88442568	C/T	0.34	0.015	0.003	3.00E-08	25	6042	0.35	0.035	0.041	3.96E-01	15.2	9.97E-05	
rs4752018	10:118678712	A/C	0.23	0.019	0.003	4.42E-10	24	6018	0.22	0.001	0.066	9.91E-01	37.4	1.26E-04	
rs4759229	12:56474480	G/A	0.66	0.016	0.003	6.53E-09	24	6018	0.64	-0.018	0.043	6.76E-01	0.0	1.09E-04	
rs4790874	17:1995177	T/C	0.53	0.017	0.003	8.43E-12	25	6042	0.52	0.043	0.041	2.95E-01	0.0	1.52E-04	
rs4818005	21:40588819	G/A	0.42	0.020	0.003	1.09E-14	25	6042	0.44	-0.058	0.040	1.51E-01	12.2	2.03E-04	
rs4822102	22:42698430	C/T	0.38	0.017	0.003	2.78E-10	25	6042	0.38	0.087	0.041	3.27E-02	0.0	1.29E-04	
rs4837631	9:122061948	C/T	0.55	0.015	0.003	2.03E-09	24	6018	0.56	0.045	0.041	2.67E-01	0.0	1.17E-04	
rs4877285	9:81354129	G/A	0.33	0.018	0.003	2.10E-11	25	6042	0.35	-0.052	0.044	2.36E-01	2.8	1.46E-04	
rs4912332	1:58815243	T/C	0.49	0.014	0.003	2.94E-08	25	6042	0.48	0.047	0.041	2.51E-01	0.0	9.97E-05	
rs540860	11:121530888	G/A	0.54	0.018	0.003	5.75E-12	25	6042	0.52	0.048	0.040	2.25E-01	0.0	1.54E-04	
rs55786907	13:59871584	G/A	0.16	0.019	0.003	1.84E-08	25	6042	0.16	-0.016	0.055	7.74E-01	10.9	1.03E-04	
rs58400863	4:31184484	G/A	0.65	0.020	0.003	4.89E-14	25	6042	0.64	0.012	0.042	7.74E-01	0.0	1.84E-04	
rs59537158	4:28246049	T/C	0.21	0.022	0.003	4.62E-13	24	6018	0.21	-0.057	0.051	2.58E-01	0.0	1.70E-04	
rs6073075	20:42015801	T/A	0.18	0.019	0.003	2.44E-08	25	6042	0.18	0.036	0.053	4.92E-01	0.0	1.01E-04	
rs61533748	2:22582968	C/T	0.38	0.017	0.003	2.82E-11	25	6042	0.38	-0.015	0.041	7.13E-01	1.6	1.44E-04	
rs61886926	11:64133552	C/T	0.62	0.018	0.003	7.30E-12	25	6042	0.63	-0.008	0.041	8.56E-01	24.2	1.52E-04	
rs61959481	13:55834929	G/A	0.79	0.020	0.003	7.95E-11	25	6042	0.78	0.017	0.049	7.26E-01	19.8	1.37E-04	
rs62007780	15:78025464	G/T	0.58	0.016	0.003	7.48E-10	25	6042	0.60	-0.036	0.059	5.42E-01	40.8	1.23E-04	
rs62193862	2:202843875	A/G	0.10	0.024	0.004	1.99E-08	14	4159	Excluded for MR						
rs62246017	3:71483084	G/A	0.68	0.016	0.003	3.03E-09	25	6042	0.69	-0.065	0.059	2.74E-01	31.4	1.14E-04	
rs62340589	4:176875795	C/G	0.20	0.017	0.003	4.31E-08	24	6018	0.20	-0.022	0.051	6.60E-01	0.0	9.74E-05	
rs6265*	11:27679916	C/T	0.81	0.029	0.003	2.81E-19	25	6042	0.80	0.030	0.051	5.53E-01	0.0	2.62E-04	
rs6437769	3:107997514	T/C	0.58	0.014	0.003	3.74E-08	24	6018	0.59	-0.038	0.041	3.59E-01	0.0	9.84E-05	
rs6438436	3:117822149	T/C	0.82	0.025	0.003	5.33E-14	25	6042	0.81	0.079	0.053	1.37E-01	0.0	1.84E-04	
rs644740	11:65561468	C/T	0.54	0.014	0.003	3.67E-08	25	6042	0.54	0.030	0.040	4.49E-01	0.0	9.84E-05	
rs6452785	5:87685500	C/T	0.53	0.027	0.003	4.69E-26	25	6042	0.52	-0.040	0.040	3.24E-01	0.0	3.60E-04	
rs6497840	16:25351633	A/G	0.71	0.023	0.003	2.01E-15	25	6042	0.70	-0.033	0.044	4.62E-01	0.0	2.15E-04	
rs6568832	6:97702876	A/G	0.75	0.019	0.003	1.74E-10	25	6042	0.74	-0.057	0.047	2.20E-01	10.9	1.32E-04	
rs67050670	18:39297254	A/G	0.77	0.020	0.003	2.34E-11	25	6042	0.74	0.128	0.046	5.68E-03	0.0	1.45E-04	
rs6731872	2:624205	G/T	0.83	0.032	0.003	5.35E-21	24	6018	0.81	-0.008	0.053	8.74E-01	20.0	2.87E-04	
rs6750529	2:182027603	T/C	0.74	0.020	0.003	9.26E-12	25	6042	0.76	-0.007	0.068	9.21E-01	41.7	1.51E-04	
rs6756212	2:146140132	C/T	0.47	0.034	0.003	3.49E-40	24	6018	0.46	0.001	0.040	9.81E-01	0.0	5.71E-04	
rs67777803	17:27323322	G/T	0.83	0.025	0.003	3.18E-13	24	6018	0.83	0.037	0.054	4.95E-01	19.6	1.72E-04	
rs6874731	5:80263865	G/T	0.48	0.015	0.003	1.83E-09	24	6018	0.47	0.010	0.040	8.03E-01	0.0	1.17E-04	
rs6890961	5:166778503	C/T	0.38	0.019	0.003	2.13E-13	24	6018	0.40	-0.030	0.054	5.78E-01	26.4	1.75E-04	
rs6936160	6:100347745	T/C	0.70	0.020	0.003	4.20E-13	25	6042	0.68	0.042	0.044	3.31E-01	3.2	1.70E-04	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs6948707	7:1870794	G/T	0.42	0.024	0.003	4.24E-21	25	6042	0.41	0.005	0.040	9.06E-01	0.0	2.89E-04
rs6986430	8:93048104	T/C	0.78	0.024	0.003	1.99E-15	24	6018	0.76	0.117	0.047	1.28E-02	8.7	2.05E-04
rs7024924	9:8282399	C/T	0.17	0.019	0.003	1.90E-08	24	6018	0.17	0.023	0.053	6.69E-01	0.0	1.03E-04
rs7072776	10:22032942	A/G	0.29	0.022	0.003	5.66E-15	24	5725	0.33	-0.010	0.063	8.78E-01	36.0	1.98E-04
rs7134009	12:75263193	T/C	0.71	0.016	0.003	4.30E-08	25	6042	0.71	-0.019	0.044	6.66E-01	13.0	1.02E-04
rs71367544	18:77574374	T/C	0.20	0.021	0.003	8.54E-11	24	6018	0.18	0.008	0.052	8.86E-01	5.4	1.37E-04
rs71592686	5:60121271	C/T	0.27	0.021	0.003	3.85E-13	25	6042	0.26	0.049	0.045	2.72E-01	0.0	1.71E-04
rs71602617	4:136406155	C/T	0.78	0.018	0.003	2.10E-08	25	6042	0.79	0.018	0.049	7.11E-01	0.0	1.07E-04
rs72780746	5:103929588	T/C	0.83	0.026	0.003	2.05E-14	25	6042	0.82	-0.051	0.052	3.27E-01	0.0	1.90E-04
rs72836318	17:44121579	T/C	0.75	0.017	0.003	7.00E-09	25	6042	0.76	-0.098	0.060	1.02E-01	26.2	1.09E-04
rs72938304	18:53661743	G/A	0.89	0.027	0.004	1.36E-11	25	6042	0.89	-0.021	0.064	7.41E-01	0.0	1.48E-04
rs748832	3:16851202	G/A	0.37	0.017	0.003	6.60E-11	25	6042	0.35	0.063	0.042	1.29E-01	0.0	1.38E-04
rs75919030	17:50193197	T/C	0.73	0.021	0.003	3.35E-13	24	6018	0.73	0.057	0.045	2.07E-01	0.0	1.72E-04
rs7598402	2:50735943	C/G	0.51	0.015	0.003	7.38E-09	25	6042	0.51					Excluded for MR
rs7631379	3:181409057	C/T	0.21	0.021	0.003	3.94E-11	25	6042	0.20					Excluded for MR
rs76608582	19:4474725	C/A	0.95	0.035	0.006	4.88E-09								NA in Courage-PD
rs7696257	4:137474783	A/G	0.37	0.015	0.003	6.78E-09	25	6042	0.34	-0.002	0.043	9.54E-01	0.0	1.09E-04
rs77215829	12:112618346	A/C	0.87	0.024	0.004	2.02E-10	19	4735	0.87	0.058	0.096	5.45E-01	33.8	1.32E-04
rs77283305	7:132593831	G/A	0.69	0.015	0.003	3.91E-08	25	6042	0.70	0.006	0.043	8.93E-01	0.0	9.80E-05
rs7743165	6:67521222	G/T	0.50	0.019	0.003	4.15E-14	25	6042	0.48	-0.064	0.052	2.26E-01	30.0	1.85E-04
rs7809303	7:69484366	G/A	0.68	0.021	0.003	3.48E-15	25	6042	0.68	0.023	0.042	5.83E-01	0.0	2.01E-04
rs7836565	8:52569449	C/T	0.28	0.016	0.003	4.36E-08	24	6018	0.29	0.068	0.045	1.31E-01	0.0	9.74E-05
rs7920501	10:10043159	T/A	0.54	0.016	0.003	1.25E-09	25	6042	0.52					Excluded for MR
rs7921378	10:63674885	G/C	0.52	0.023	0.003	6.10E-20	25	6042	0.53					Excluded for MR
rs7929518	11:85980958	G/A	0.77	0.019	0.003	2.55E-10	25	6042	0.77	-0.026	0.047	5.79E-01	0.0	1.30E-04
rs7943721	11:73309393	G/A	0.17	0.021	0.003	3.58E-10								NA in Courage-PD
rs7969559	12:69655167	A/G	0.29	0.017	0.003	1.53E-09	25	6042	0.32	0.014	0.044	7.46E-01	0.0	1.18E-04
rs8005334	14:79563654	G/T	0.36	0.017	0.003	3.44E-10	25	6042	0.35	-0.023	0.042	5.80E-01	0.0	1.28E-04
rs80054503	1:72900406	T/C	0.88	0.024	0.004	3.10E-09								NA in Courage-PD
rs8096225	18:36921851	C/A	0.70	0.016	0.003	2.63E-08	25	6042	0.69	0.025	0.044	5.65E-01	0.0	1.01E-04
rs876793	1:237852083	T/C	0.65	0.018	0.003	5.69E-11	25	6042	0.66	0.018	0.043	6.73E-01	1.5	1.46E-04
rs9288999	3:114147927	A/G	0.74	0.017	0.003	1.50E-09	24	6018	0.74	-0.031	0.047	5.01E-01	0.0	1.18E-04
rs9302604	16:69576894	G/A	0.44	0.019	0.003	3.29E-13	25	6042	0.43	-0.035	0.041	3.97E-01	21.3	1.72E-04
rs9323328*	14:58653514	A/G	0.46	0.014	0.003	2.55E-08	25	6042	0.45	0.081	0.051	1.10E-01	24.8	1.01E-04
rs9423279	10:125680419	C/G	0.36	0.019	0.003	3.06E-12	1	413						Excluded for MR
rs951740	1:44011737	A/G	0.62	0.030	0.003	3.82E-29	25	6042	0.61	-0.051	0.041	2.20E-01	0.0	4.09E-04
rs9540731*	13:66949370	C/T	0.49	0.018	0.003	3.42E-12	24	6017	0.49	-0.022	0.051	6.67E-01	29.3	1.57E-04
rs9545155	13:80191873	T/C	0.52	0.016	0.003	3.04E-10	25	6042	0.52	0.044	0.041	2.75E-01	0.0	1.29E-04
rs9826984	3:131945722	G/A	0.46	0.014	0.003	3.87E-08	25	6042	0.45	0.057	0.040	1.63E-01	14.8	9.80E-05

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs9922607	16:17570220	C/T	0.80	0.022	0.003	3.42E-12	25	6042	0.80	0.003	0.051	9.55E-01	20.3	1.57E-04
rs9941217	16:18050926	C/G	0.65	0.019	0.003	3.50E-12	25	6042	0.66	0.036	0.062	5.64E-01	41.6	1.57E-04
<b>HLA-DRB1*04: 0 allele</b>														
rs1008078	1:91189731	T/C	0.40	0.023	0.003	1.63E-18	25	14500	0.40	-0.001	0.038	9.89E-01		2.50E-04
rs1022376	2:22067213	T/C	0.48	0.015	0.003	1.66E-08	25	14500	0.51	0.002	0.027	9.44E-01		1.09E-04
rs10233018	7:117523709	G/A	0.52	0.025	0.003	4.77E-22	25	14500	0.50	0.006	0.027	8.35E-01		3.03E-04
rs10279261	7:133589846	G/A	0.38	0.019	0.003	6.05E-13	25	14500	0.39	0.005	0.028	8.67E-01		1.68E-04
rs1030015*	7:78139581	T/G	0.52	0.014	0.003	2.15E-08	25	14500	0.52	-0.015	0.027	5.92E-01		1.02E-04
rs10490159	2:51341259	T/C	0.39	0.017	0.003	3.86E-11	25	14500	0.39	-0.033	0.027	2.16E-01		1.42E-04
rs1050847	16:87443734	C/T	0.44	0.015	0.003	7.37E-09	25	14500	0.48	0.017	0.027	5.42E-01		1.08E-04
rs10789369	1:73824909	A/G	0.38	0.023	0.003	3.39E-19	25	14500	0.43	-0.010	0.036	7.71E-01		2.60E-04
rs10853981	19:4965064	A/G	0.33	0.015	0.003	4.88E-08	25	14500	0.31	-0.037	0.029	1.92E-01		9.67E-05
rs10858334	9:137989785	G/C	0.14	0.023	0.004	1.18E-09	25	14500	0.14	-0.037	0.040	3.43E-01		1.26E-04
rs10885480	10:115378364	T/C	0.72	0.019	0.003	3.83E-11	25	14500	0.73	0.000	0.030	9.94E-01		1.42E-04
rs10914684	1:33795572	G/A	0.68	0.016	0.003	6.32E-09	25	14500	0.67	-0.014	0.028	6.31E-01		1.09E-04
rs10945141	6:69470709	A/G	0.26	0.018	0.003	3.59E-10	25	14500	0.26	-0.014	0.030	6.42E-01		1.28E-04
rs10953957	7:121954709	A/G	0.39	0.014	0.003	3.66E-08	25	14500	0.39	0.010	0.027	7.10E-01		9.84E-05
rs10966092	9:23831658	T/C	0.73	0.020	0.003	1.12E-12	25	14500	0.73	0.024	0.030	4.20E-01		1.64E-04
rs11057005	12:16748721	A/G	0.56	0.016	0.003	9.12E-10	25	14500	0.58	-0.033	0.028	2.44E-01		1.22E-04
rs1106363	11:131966264	T/C	0.34	0.017	0.003	9.20E-11	25	14500	0.36	-0.012	0.027	6.65E-01		1.36E-04
rs11076962	16:5811367	C/T	0.28	0.018	0.003	1.20E-10	25	14500	0.26	0.026	0.030	3.80E-01		1.35E-04
rs1108130	13:100648356	A/T	0.21	0.024	0.003	1.57E-14	25	14500	0.20	-0.038	0.034	2.56E-01		1.92E-04
rs1109480	12:121083279	G/A	0.62	0.017	0.003	1.84E-10	25	14500	0.62	-0.027	0.027	3.18E-01		1.32E-04
rs11128203	3:71064431	A/T	0.53	0.020	0.003	1.29E-15	12	5562	Excluded for MR					
rs11162019	1:87913176	C/T	0.64	0.015	0.003	5.06E-09	25	14500	0.66	-0.027	0.028	3.41E-01		1.11E-04
rs1116690	4:143510148	G/A	0.74	0.016	0.003	2.16E-08	23	14054	0.71	0.032	0.031	3.12E-01		1.02E-04
rs1126757*	19:55879872	T/C	0.47	0.014	0.003	2.92E-08	25	14485	0.47	-0.012	0.026	6.53E-01		1.00E-04
rs112725451	4:68017710	T/C	0.17	0.026	0.003	1.65E-14	25	14500	0.17	0.022	0.048	6.49E-01		1.91E-04
rs113230003	19:18460956	G/A	0.74	0.019	0.003	1.05E-10	25	14500	0.76	0.045	0.032	1.58E-01		1.35E-04
rs1139897	16:720986	G/A	0.77	0.024	0.003	1.77E-15	24	14347	0.78	0.018	0.042	6.64E-01		2.06E-04
rs1150668	6:28129789	T/G	0.58	0.019	0.003	8.54E-13	25	14500	0.58	-0.007	0.027	7.85E-01		1.67E-04
rs11594623	10:103960351	C/T	0.23	0.027	0.003	7.45E-20	25	14500	0.21	-0.033	0.032	3.11E-01		2.70E-04
rs1160685	4:94052854	G/C	0.45	0.015	0.003	2.31E-09	25	14500	0.48	Excluded for MR				
rs11611651	12:133380790	A/G	0.09	0.027	0.005	2.05E-09	25	14500	0.08	-0.076	0.049	1.19E-01		1.17E-04
rs11642231	16:89608702	G/A	0.63	0.016	0.003	3.44E-09	25	14500	0.68	0.053	0.029	6.43E-02		1.13E-04
rs11713899	3:2365026	C/A	0.17	0.019	0.003	3.15E-08	25	14500	0.17	-0.036	0.035	3.10E-01		9.93E-05
rs6050446†	20:25195509	G/C	0.95	0.054	0.008	8.80E-13	21	13282	0.98	-0.118	0.094	2.09E-01		2.81E-04
rs117657830	16:75766873	A/G	0.96	0.038	0.006	3.18E-09	25	14500	0.96	-0.036	0.068	6.01E-01		1.14E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs11768481	7:96629103	C/A	0.66	0.019	0.003	5.23E-12	7	4184	Excluded for MR					
rs117734003	19:51129745	C/G	0.07	0.030	0.005	2.57E-09	17	9934	Excluded for MR					
rs11783093	8:27425349	C/T	0.84	0.047	0.003	2.07E-41	25	14500	0.84	-0.010	0.036	7.79E-01		5.91E-04
rs11791671	9:3398679	T/C	0.07	0.028	0.005	4.24E-08	25	14500	0.06	0.020	0.071	7.81E-01		9.74E-05
rs118202	6:111658371	G/T	0.19	0.037	0.003	1.90E-29	25	14500	0.19	-0.081	0.049	9.92E-02		4.12E-04
rs1187820	3:173072584	C/T	0.56	0.014	0.003	2.69E-08	25	14500	0.56	0.039	0.029	1.76E-01		1.00E-04
rs12022778	1:50603995	C/A	0.20	0.027	0.003	3.18E-17	25	14500	0.19	-0.011	0.034	7.51E-01		2.32E-04
rs12027999	1:154206358	T/C	0.88	0.024	0.004	5.33E-10	25	14500	0.89	-0.003	0.043	9.37E-01		1.25E-04
rs12130857	1:7791461	G/A	0.68	0.018	0.003	3.65E-11	25	14500	0.69	-0.041	0.029	1.51E-01		1.42E-04
rs12195240	6:98636905	A/G	0.28	0.025	0.003	1.08E-18	25	14500	0.29	0.008	0.029	7.77E-01		2.53E-04
rs12244388	10:104640052	A/G	0.35	0.026	0.003	4.31E-22	25	14500	0.37	-0.056	0.027	4.02E-02		3.03E-04
rs12474587	2:162802993	T/G	0.43	0.024	0.003	4.83E-21	25	14500	0.40	0.040	0.027	1.38E-01		2.88E-04
rs12517438	5:30842054	G/T	0.54	0.015	0.003	1.89E-09	25	14500	0.52	0.010	0.027	7.10E-01		1.17E-04
rs12633090	3:83241365	G/C	0.82	0.023	0.003	3.16E-12	25	14500	0.81	0.063	0.045	1.68E-01		1.58E-04
rs12714017	2:80999398	C/T	0.51	0.015	0.003	3.65E-09	25	14500	0.52	-0.008	0.027	7.50E-01		1.18E-04
rs12739243	1:210302043	T/C	0.78	0.021	0.003	4.45E-12	25	14500	0.78	0.026	0.040	5.14E-01		1.56E-04
rs12878369	14:28346502	A/C	0.41	0.017	0.003	1.60E-11	25	14500	0.42	-0.055	0.027	3.90E-02		1.48E-04
rs12918191	16:50945156	A/G	0.76	0.020	0.003	3.14E-11	25	14500	0.76	0.007	0.031	8.30E-01		1.43E-04
rs1291821	10:11133823	G/A	0.53	0.014	0.003	1.39E-08	25	14500	0.54	-0.053	0.027	4.80E-02		1.05E-04
rs13007361	2:166250244	A/G	0.21	0.018	0.003	2.29E-08	25	14500	0.21	0.035	0.032	2.80E-01		1.01E-04
rs13110073	4:147797913	T/C	0.60	0.025	0.003	3.24E-21	25	14500	0.62	-0.054	0.027	4.30E-02		2.90E-04
rs13261666	8:59814666	G/T	0.48	0.020	0.003	4.36E-15	25	14500	0.48	-0.012	0.027	6.43E-01		2.00E-04
rs13392222	2:100672408	A/C	0.86	0.023	0.004	1.93E-10	25	14500	0.87	0.041	0.040	3.06E-01		1.31E-04
rs13437771	7:99071478	A/G	0.84	0.027	0.004	1.39E-14	25	14500	0.85	-0.032	0.037	3.88E-01		1.93E-04
rs1373178	18:49967811	T/G	0.41	0.020	0.003	4.16E-15	25	14500	0.42	-0.033	0.027	2.26E-01		2.00E-04
rs1381287	14:98597552	T/C	0.47	0.018	0.003	1.81E-12	25	14500	0.49	0.012	0.027	6.41E-01		1.62E-04
rs1381775	11:42442826	T/C	0.29	0.016	0.003	2.79E-08	25	14500	0.29	-0.040	0.029	1.79E-01		1.00E-04
rs1385108	5:154839646	T/C	0.24	0.019	0.003	3.84E-10	25	14500	0.23	-0.026	0.031	4.17E-01		1.27E-04
rs13906	12:49952394	C/T	0.89	0.025	0.004	1.98E-09	25	14500	0.89	-0.041	0.043	3.34E-01		1.17E-04
rs1435672	15:36399479	C/T	0.56	0.014	0.003	3.82E-08	25	14500	0.54	0.007	0.027	8.01E-01		9.80E-05
rs1445649	2:155682556	C/T	0.54	0.021	0.003	8.48E-16	25	14500	0.54	-0.022	0.026	4.10E-01		2.10E-04
rs1449012	3:159048333	C/T	0.54	0.015	0.003	1.77E-09	25	14500	0.53	0.006	0.027	8.35E-01		1.18E-04
rs147052174	1:179783167	T/G	0.02	0.062	0.010	2.30E-10	10	7049	Excluded for MR					
rs1514176	1:74991596	G/A	0.42	0.019	0.003	7.67E-14	25	14500	0.43	-0.008	0.027	7.74E-01		1.81E-04
rs1549979	3:85460131	C/T	0.38	0.025	0.003	8.80E-21	25	14500	0.38	0.044	0.027	1.07E-01		2.85E-04
rs160631	6:52895230	T/G	0.27	0.017	0.003	1.87E-09	25	14500	0.29	0.014	0.030	6.48E-01		1.17E-04
rs16826827	2:147825689	T/C	0.88	0.022	0.004	9.17E-09	25	14500	0.88	0.032	0.041	4.39E-01		1.07E-04
rs1713676*	11:113660576	A/G	0.48	0.017	0.003	5.38E-11	25	14500	0.47	-0.010	0.026	7.12E-01		1.40E-04
rs1714521	3:158284861	A/C	0.59	0.016	0.003	3.07E-10	25	14500	0.61	0.013	0.037	7.23E-01		1.29E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs17197663	13:38172867	G/A	0.88	0.022	0.004	2.06E-08	25	14500	0.87	0.074	0.039	5.82E-02		1.02E-04
rs17229285	2:199523122	C/T	0.50	0.015	0.003	1.27E-09	25	14500	0.52	0.036	0.040	3.70E-01		1.20E-04
rs1733760	10:56698174	C/T	0.51	0.015	0.003	6.70E-09	25	14500	0.49	0.044	0.027	1.04E-01		1.09E-04
rs1737329	6:163807748	G/C	0.74	0.017	0.003	5.08E-09	25	14500	0.72	0.031	0.038	4.28E-01		1.11E-04
rs17554906	6:92226609	C/G	0.44	0.014	0.003	3.14E-08	25	14500	0.42	Excluded for MR				
rs1772572	13:81191176	C/A	0.68	0.017	0.003	5.62E-10	25	14500	0.68	-0.040	0.028	1.46E-01		1.25E-04
rs1811739	14:77529375	A/G	0.25	0.018	0.003	5.97E-10	25	14500	0.25	0.004	0.031	8.92E-01		1.25E-04
rs1889571	1:32195819	G/T	0.13	0.022	0.004	4.19E-09	25	14500	0.12	0.038	0.041	3.47E-01		1.12E-04
rs1901477	2:104126983	G/A	0.51	0.030	0.003	2.07E-31	25	14500	0.52	0.012	0.039	7.66E-01		4.63E-04
rs2010921	11:132098205	A/G	0.31	0.017	0.003	2.47E-10	25	14500	0.31	-0.011	0.029	7.12E-01		1.30E-04
rs2063976	8:91096366	C/T	0.34	0.020	0.003	7.45E-14	25	14500	0.34	0.006	0.028	8.45E-01		1.81E-04
rs2155646	11:112912811	C/T	0.40	0.038	0.003	9.44E-48	25	14500	0.39	-0.007	0.027	8.03E-01		6.85E-04
rs2173019	5:167614971	A/T	0.18	0.028	0.003	2.98E-17	25	14500	0.17	0.020	0.035	5.61E-01		2.32E-04
rs221988	3:64234307	A/C	0.62	0.015	0.003	1.43E-08	25	14500	0.62	0.012	0.028	6.66E-01		1.05E-04
rs2279829	3:147106319	C/T	0.78	0.017	0.003	2.05E-08	25	14500	0.80	0.009	0.033	7.91E-01		1.02E-04
rs2289791	15:67476952	G/T	0.75	0.018	0.003	2.01E-09	12	5562	Excluded for MR					
rs2319545	3:147719648	A/C	0.15	0.023	0.004	8.30E-11	25	14500	0.13	-0.029	0.040	4.73E-01		1.37E-04
rs2378662	9:86707289	A/G	0.54	0.015	0.003	2.67E-09	25	14500	0.53	0.017	0.027	5.43E-01		1.15E-04
rs2526390	3:50192760	T/C	0.33	0.020	0.003	3.62E-14	25	14500	0.33	0.006	0.028	8.22E-01		1.86E-04
rs2587507*	17:77790135	T/C	0.50	0.015	0.003	8.69E-09	25	14496	0.51	-0.013	0.026	6.07E-01		1.07E-04
rs2710634	2:32808804	T/C	0.48	0.018	0.003	3.36E-12	25	14500	0.50	-0.022	0.027	4.17E-01		1.57E-04
rs2796793	10:36634124	A/G	0.45	0.014	0.003	1.55E-08	24	13673	0.43	0.063	0.039	1.06E-01		1.04E-04
rs281296	15:47685010	A/G	0.36	0.025	0.003	1.59E-20	25	14500	0.37	-0.023	0.028	4.12E-01		2.80E-04
rs28441558	17:7803118	T/C	0.94	0.036	0.006	1.24E-10	17	9934	Excluded for MR					
rs2901785	1:174104743	G/A	0.55	0.017	0.003	1.47E-11	25	14500	0.54	-0.003	0.027	8.97E-01		1.48E-04
rs290601	8:115374642	T/C	0.27	0.016	0.003	1.14E-08	25	14500	0.27	-0.005	0.030	8.63E-01		1.06E-04
rs2925128	14:98362355	T/C	0.39	0.017	0.003	3.67E-10	25	14500	0.39	-0.055	0.027	4.26E-02		1.34E-04
rs2939756	11:41436297	G/A	0.52	0.016	0.003	7.45E-10	25	14500	0.55	-0.012	0.034	7.28E-01		1.23E-04
rs3218116	6:41901763	C/T	0.74	0.020	0.003	1.05E-11	25	14500	0.76	0.036	0.031	2.52E-01		1.50E-04
rs329124	5:133865452	A/G	0.57	0.016	0.003	1.96E-10	25	14500	0.57	-0.024	0.027	3.60E-01		1.31E-04
rs34342129	18:5872472	T/C	0.49	0.014	0.003	2.13E-08	25	14500	0.50	-0.022	0.027	4.14E-01		1.02E-04
rs34399632	2:137571174	G/A	0.23	0.019	0.003	1.46E-10	25	14500	0.18	-0.062	0.035	7.43E-02		1.33E-04
rs34553878	9:134334588	G/A	0.11	0.025	0.004	1.17E-09	17	10303	Excluded for MR					
rs35375873	5:43190647	G/C	0.89	0.027	0.004	3.29E-11	17	9934	Excluded for MR					
rs35656245	1:190957480	A/G	0.28	0.016	0.003	2.23E-08	25	14500	0.29	0.006	0.029	8.25E-01		1.02E-04
rs359247	2:60477052	T/A	0.64	0.022	0.003	9.89E-17	25	14500	0.61	-0.011	0.028	6.89E-01		2.24E-04
rs3764351	17:37824339	G/A	0.34	0.015	0.003	3.89E-08	25	14500	0.37	-0.020	0.040	6.21E-01		9.80E-05
rs3810496	20:62406886	C/T	0.62	0.016	0.003	1.54E-09	24	14354	0.62	-0.023	0.029	4.40E-01		1.19E-04
rs3811038	2:113240183	C/T	0.28	0.019	0.003	1.58E-11	25	14500	0.29	-0.013	0.030	6.69E-01		1.47E-04



SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs3820277	1:18436657	G/T	0.47	0.019	0.003	1.57E-13	25	14500	0.50	-0.044	0.026	9.26E-02		1.77E-04
rs3847244	9:3025368	T/C	0.47	0.019	0.003	2.60E-13	25	14500	0.47	-0.030	0.027	2.67E-01		1.74E-04
rs3850736	8:64912021	G/C	0.47	0.019	0.003	6.43E-14	25	14500	0.46	Excluded for MR				
rs3934797	4:112467612	G/A	0.82	0.021	0.003	1.12E-10	25	14500	0.83	0.009	0.036	8.04E-01		1.35E-04
rs4044321	5:166989513	A/G	0.36	0.023	0.003	1.75E-17	25	14500	0.37	-0.012	0.028	6.60E-01		2.35E-04
rs4140932	4:15458598	T/A	0.57	0.014	0.003	4.89E-08	25	14500	0.57	Excluded for MR				
rs42417	5:94198290	T/C	0.69	0.017	0.003	8.27E-10	25	14500	0.70	-0.031	0.041	4.54E-01		1.22E-04
rs4264267	13:38359676	T/C	0.53	0.015	0.003	6.82E-09	25	14500	0.52	-0.009	0.027	7.37E-01		1.09E-04
rs4310804	15:96858409	C/G	0.75	0.018	0.003	7.55E-10	22	11724	0.77	0.014	0.037	7.04E-01		1.23E-04
rs4326350	8:10763655	C/G	0.51	0.018	0.003	5.16E-12	25	14500	0.53	Excluded for MR				
rs4476253	18:25253297	G/A	0.76	0.018	0.003	5.78E-10	25	14500	0.76	-0.001	0.031	9.67E-01		1.25E-04
rs45444697	1:155034632	G/C	0.21	0.020	0.003	2.72E-10	25	14500	0.20	-0.014	0.034	6.91E-01		1.30E-04
rs4674993	2:226332033	A/G	0.80	0.024	0.003	4.85E-14	25	14500	0.80	0.007	0.034	8.43E-01		1.84E-04
rs4727189	7:88442568	C/T	0.34	0.015	0.003	3.00E-08	25	14500	0.36	0.040	0.027	1.38E-01		9.97E-05
rs4752018	10:118678712	A/C	0.23	0.019	0.003	4.42E-10	25	14500	0.23	0.035	0.031	2.66E-01		1.26E-04
rs4759229	12:56474480	G/A	0.66	0.016	0.003	6.53E-09	24	14354	0.65	0.018	0.029	5.46E-01		1.09E-04
rs4790874	17:1995177	T/C	0.53	0.017	0.003	8.43E-12	25	14500	0.54	-0.046	0.027	9.20E-02		1.52E-04
rs4818005	21:40588819	G/A	0.42	0.020	0.003	1.09E-14	25	14500	0.43	-0.044	0.027	9.97E-02		2.03E-04
rs4822102	22:42698430	C/T	0.38	0.017	0.003	2.78E-10	25	14500	0.38	0.009	0.035	8.07E-01		1.29E-04
rs4837631	9:122061948	C/T	0.55	0.015	0.003	2.03E-09	25	14500	0.58	0.008	0.027	7.65E-01		1.17E-04
rs4877285	9:81354129	G/A	0.33	0.018	0.003	2.10E-11	25	14500	0.36	-0.052	0.029	7.03E-02		1.46E-04
rs4912332	1:58815243	T/C	0.49	0.014	0.003	2.94E-08	25	14500	0.47	-0.008	0.026	7.71E-01		9.97E-05
rs540860	11:121530888	G/A	0.54	0.018	0.003	5.75E-12	25	14500	0.52	0.026	0.026	3.16E-01		1.54E-04
rs55786907	13:59871584	G/A	0.16	0.019	0.003	1.84E-08	25	14500	0.17	-0.030	0.035	3.99E-01		1.03E-04
rs58400863	4:31184484	G/A	0.65	0.020	0.003	4.89E-14	25	14500	0.64	0.008	0.028	7.76E-01		1.84E-04
rs59537158	4:28246049	T/C	0.21	0.022	0.003	4.62E-13	25	14500	0.20	0.009	0.034	8.00E-01		1.70E-04
rs6073075	20:42015801	T/A	0.18	0.019	0.003	2.44E-08	25	14500	0.19	-0.003	0.035	9.40E-01		1.01E-04
rs61533748	2:22582968	C/T	0.38	0.017	0.003	2.82E-11	25	14500	0.37	0.023	0.028	4.07E-01		1.44E-04
rs61886926	11:64133552	C/T	0.62	0.018	0.003	7.30E-12	25	14500	0.64	-0.017	0.035	6.30E-01		1.52E-04
rs61959481	13:55834929	G/A	0.79	0.020	0.003	7.95E-11	25	14500	0.79	-0.025	0.032	4.39E-01		1.37E-04
rs62007780	15:78025464	G/T	0.58	0.016	0.003	7.48E-10	25	14500	0.59	0.013	0.027	6.38E-01		1.23E-04
rs62193862	2:202843875	A/G	0.10	0.024	0.004	1.99E-08	14	8357	Excluded for MR					
rs62246017	3:71483084	G/A	0.68	0.016	0.003	3.03E-09	25	14500	0.68	-0.056	0.030	6.08E-02		1.14E-04
rs62340589	4:176875795	C/G	0.20	0.017	0.003	4.31E-08	25	14500	0.20	-0.051	0.034	1.31E-01		9.74E-05
rs6265*	11:27679916	C/T	0.81	0.029	0.003	2.81E-19	25	14500	0.80	-0.001	0.032	9.85E-01		2.62E-04
rs6437769	3:107997514	T/C	0.58	0.014	0.003	3.74E-08	25	14500	0.59	0.002	0.027	9.43E-01		9.84E-05
rs6438436	3:117822149	T/C	0.82	0.025	0.003	5.33E-14	25	14500	0.82	0.045	0.035	2.00E-01		1.84E-04
rs644740	11:65561468	C/T	0.54	0.014	0.003	3.67E-08	25	14500	0.54	0.004	0.026	8.71E-01		9.84E-05
rs6452785	5:87685500	C/T	0.53	0.027	0.003	4.69E-26	25	14500	0.51	-0.019	0.026	4.74E-01		3.60E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs6497840	16:25351633	A/G	0.71	0.023	0.003	2.01E-15	25	14500	0.69	-0.024	0.029	4.14E-01		2.15E-04
rs6568832	6:97702876	A/G	0.75	0.019	0.003	1.74E-10	25	14500	0.74	0.020	0.031	5.23E-01		1.32E-04
rs67050670	18:39297254	A/G	0.77	0.020	0.003	2.34E-11	25	14500	0.75	0.038	0.031	2.15E-01		1.45E-04
rs6731872	2:624205	G/T	0.83	0.032	0.003	5.35E-21	25	14500	0.80	0.006	0.034	8.70E-01		2.87E-04
rs6750529	2:182027603	T/C	0.74	0.020	0.003	9.26E-12	25	14500	0.75	-0.032	0.030	2.94E-01		1.51E-04
rs6756212	2:146140132	C/T	0.47	0.034	0.003	3.49E-40	25	14500	0.46	-0.036	0.026	1.77E-01		5.71E-04
rs67777803	17:27323322	G/T	0.83	0.025	0.003	3.18E-13	25	14500	0.84	-0.015	0.036	6.67E-01		1.72E-04
rs6874731	5:80263865	G/T	0.48	0.015	0.003	1.83E-09	25	14500	0.47	-0.009	0.043	8.29E-01		1.17E-04
rs6890961	5:166778503	C/T	0.38	0.019	0.003	2.13E-13	25	14500	0.40	-0.045	0.028	1.14E-01		1.75E-04
rs6936160	6:100347745	T/C	0.70	0.020	0.003	4.20E-13	25	14500	0.69	0.000	0.029	9.91E-01		1.70E-04
rs6948707	7:1870794	G/T	0.42	0.024	0.003	4.24E-21	25	14500	0.41	0.016	0.036	6.65E-01		2.89E-04
rs6986430	8:93048104	T/C	0.78	0.024	0.003	1.99E-15	25	14500	0.77	0.034	0.031	2.68E-01		2.05E-04
rs7024924	9:8282399	C/T	0.17	0.019	0.003	1.90E-08	25	14500	0.17	0.005	0.035	8.81E-01		1.03E-04
rs7072776	10:22032942	A/G	0.29	0.022	0.003	5.66E-15	24	13673	0.33	0.021	0.030	4.94E-01		1.98E-04
rs7134009	12:75263193	T/C	0.71	0.016	0.003	4.30E-08	25	14500	0.70	-0.018	0.029	5.36E-01		1.02E-04
rs71367544	18:77574374	T/C	0.20	0.021	0.003	8.54E-11	25	14500	0.17	0.027	0.035	4.45E-01		1.37E-04
rs71592686	5:60121271	C/T	0.27	0.021	0.003	3.85E-13	25	14500	0.27	0.021	0.030	4.76E-01		1.71E-04
rs71602617	4:136406155	C/T	0.78	0.018	0.003	2.10E-08	25	14500	0.79	0.031	0.033	3.48E-01		1.07E-04
rs72780746	5:103929588	T/C	0.83	0.026	0.003	2.05E-14	25	14500	0.81	-0.019	0.034	5.70E-01		1.90E-04
rs72836318	17:44121579	T/C	0.75	0.017	0.003	7.00E-09	25	14500	0.75	-0.087	0.031	5.08E-03		1.09E-04
rs72938304	18:53661743	G/A	0.89	0.027	0.004	1.36E-11	25	14500	0.88	0.022	0.042	6.02E-01		1.48E-04
rs748832	3:16851202	G/A	0.37	0.017	0.003	6.60E-11	25	14500	0.35	0.063	0.027	2.20E-02		1.38E-04
rs75919030	17:50193197	T/C	0.73	0.021	0.003	3.35E-13	25	14500	0.74	-0.008	0.030	8.01E-01		1.72E-04
rs7598402	2:50735943	C/G	0.51	0.015	0.003	7.38E-09	25	14500	0.50				Excluded for MR	
rs7631379	3:181409057	C/T	0.21	0.021	0.003	3.94E-11	25	14500	0.19	-0.023	0.052	6.64E-01		1.42E-04
rs76608582	19:4474725	C/A	0.95	0.035	0.006	4.88E-09							NA in Courage-PD	
rs7696257	4:137474783	A/G	0.37	0.015	0.003	6.78E-09	25	14500	0.36	-0.011	0.028	6.92E-01		1.09E-04
rs77215829	12:112618346	A/C	0.87	0.024	0.004	2.02E-10	19	10133	0.87	0.043	0.051	4.00E-01		1.32E-04
rs77283305	7:132593831	G/A	0.69	0.015	0.003	3.91E-08	25	14500	0.70	-0.030	0.037	4.22E-01		9.80E-05
rs7743165	6:67521222	G/T	0.50	0.019	0.003	4.15E-14	25	14500	0.47	-0.049	0.027	6.62E-02		1.85E-04
rs7809303	7:69484366	G/A	0.68	0.021	0.003	3.48E-15	25	14500	0.70	-0.030	0.028	2.92E-01		2.01E-04
rs7836565	8:52569449	C/T	0.28	0.016	0.003	4.36E-08	25	14500	0.29	0.065	0.030	2.92E-02		9.74E-05
rs7920501	10:10043159	T/A	0.54	0.016	0.003	1.25E-09	25	14500	0.53				Excluded for MR	
rs7921378	10:63674885	G/C	0.52	0.023	0.003	6.10E-20	25	14500	0.53				Excluded for MR	
rs7929518	11:85980958	G/A	0.77	0.019	0.003	2.55E-10	25	14500	0.77	-0.078	0.041	5.57E-02		1.30E-04
rs7943721	11:73309393	G/A	0.17	0.021	0.003	3.58E-10							NA in Courage-PD	
rs7969559	12:69655167	A/G	0.29	0.017	0.003	1.53E-09	25	14500	0.33	-0.007	0.037	8.48E-01		1.18E-04
rs8005334	14:79563654	G/T	0.36	0.017	0.003	3.44E-10	25	14500	0.35	-0.016	0.028	5.71E-01		1.28E-04
rs80054503	1:72900406	T/C	0.88	0.024	0.004	3.10E-09							NA in Courage-PD	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs8096225	18:36921851	C/A	0.70	0.016	0.003	2.63E-08	25	14500	0.70	0.006	0.029	8.43E-01		1.01E-04
rs876793	1:237852083	T/C	0.65	0.018	0.003	5.69E-11	25	14500	0.66	0.036	0.029	2.04E-01		1.46E-04
rs9288999	3:114147927	A/G	0.74	0.017	0.003	1.50E-09	25	14500	0.73	0.001	0.030	9.78E-01		1.18E-04
rs9302604	16:69576894	G/A	0.44	0.019	0.003	3.29E-13	25	14500	0.43	-0.015	0.027	5.77E-01		1.72E-04
rs9323328*	14:58653514	A/G	0.46	0.014	0.003	2.55E-08	25	14500	0.45	-0.039	0.026	1.33E-01		1.01E-04
rs9423279	10:125680419	C/G	0.36	0.019	0.003	3.06E-12	1	657	Excluded for MR					
rs951740	1:44011737	A/G	0.62	0.030	0.003	3.82E-29	25	14500	0.61	-0.026	0.027	3.45E-01		4.09E-04
rs9540731*	13:66949370	C/T	0.49	0.018	0.003	3.42E-12	25	14500	0.50	-0.036	0.029	2.21E-01		1.57E-04
rs9545155	13:80191873	T/C	0.52	0.016	0.003	3.04E-10	25	14500	0.53	0.008	0.027	7.73E-01		1.29E-04
rs9826984	3:131945722	G/A	0.46	0.014	0.003	3.87E-08	25	14500	0.44	-0.006	0.027	8.16E-01		9.80E-05
rs9922607	16:17570220	C/T	0.80	0.022	0.003	3.42E-12	25	14500	0.80	-0.045	0.034	1.78E-01		1.57E-04
rs9941217	16:18050926	C/G	0.65	0.019	0.003	3.50E-12	25	14500	0.67	0.012	0.029	6.68E-01		1.57E-04
<b>HLA-DRB1*04: 1 or 2 alleles</b>														
rs1008078	1:91189731	T/C	0.40	0.023	0.003	1.63E-18	23	3982	0.42	-0.049	0.051	3.38E-01		2.50E-04
rs1022376	2:22067213	T/C	0.48	0.015	0.003	1.66E-08	23	3982	0.49	0.038	0.051	4.55E-01		1.09E-04
rs10233018	7:117523709	G/A	0.52	0.025	0.003	4.77E-22	23	3982	0.50	0.001	0.050	9.87E-01		3.03E-04
rs10279261	7:133589846	G/A	0.38	0.019	0.003	6.05E-13	23	3982	0.39	-0.049	0.053	3.54E-01		1.68E-04
rs1030015*	7:78139581	T/G	0.52	0.014	0.003	2.15E-08	23	3982	0.50	0.014	0.058	8.05E-01		1.02E-04
rs10490159	2:51341259	T/C	0.39	0.017	0.003	3.86E-11	24	3998	0.38	0.061	0.052	2.41E-01		1.42E-04
rs1050847	16:87443734	C/T	0.44	0.015	0.003	7.37E-09	23	3982	0.46	0.002	0.053	9.65E-01		1.08E-04
rs10789369	1:73824909	A/G	0.38	0.023	0.003	3.39E-19	23	3982	0.42	-0.074	0.052	1.53E-01		2.60E-04
rs10853981	19:4965064	A/G	0.33	0.015	0.003	4.88E-08	23	3982	0.32	0.053	0.073	4.74E-01		9.67E-05
rs10858334	9:137989785	G/C	0.14	0.023	0.004	1.18E-09	23	3982	0.13	0.009	0.077	9.10E-01		1.26E-04
rs10885480	10:115378364	T/C	0.72	0.019	0.003	3.83E-11	23	3982	0.71	0.006	0.056	9.21E-01		1.42E-04
rs10914684	1:33795572	G/A	0.68	0.016	0.003	6.32E-09	23	3982	0.68	0.085	0.055	1.21E-01		1.09E-04
rs10945141	6:69470709	A/G	0.26	0.018	0.003	3.59E-10	23	3982	0.27	0.058	0.057	3.04E-01		1.28E-04
rs10953957	7:121954709	A/G	0.39	0.014	0.003	3.66E-08	23	3982	0.38	0.061	0.051	2.38E-01		9.84E-05
rs10966092	9:23831658	T/C	0.73	0.020	0.003	1.12E-12	23	3982	0.73	-0.030	0.056	5.86E-01		1.64E-04
rs11057005	12:16748721	A/G	0.56	0.016	0.003	9.12E-10	23	3982	0.59	-0.081	0.053	1.26E-01		1.22E-04
rs1106363	11:131966264	T/C	0.34	0.017	0.003	9.20E-11	23	3982	0.36	-0.044	0.053	4.07E-01		1.36E-04
rs11076962	16:5811367	C/T	0.28	0.018	0.003	1.20E-10	23	3982	0.28	-0.057	0.057	3.12E-01		1.35E-04
rs1108130	13:100648356	A/T	0.21	0.024	0.003	1.57E-14	22	3951	0.21	0.055	0.063	3.81E-01		1.92E-04
rs1109480	12:121083279	G/A	0.62	0.017	0.003	1.84E-10	23	3982	0.62	-0.028	0.053	5.99E-01		1.32E-04
rs11128203	3:71064431	A/T	0.53	0.020	0.003	1.29E-15	11	2241	Excluded for MR					
rs11162019	1:87913176	C/T	0.64	0.015	0.003	5.06E-09	23	3982	0.65	0.041	0.075	5.80E-01		1.11E-04
rs1116690	4:143510148	G/A	0.74	0.016	0.003	2.16E-08	22	3951	0.72	0.011	0.060	8.49E-01		1.02E-04
rs1126757*	19:55879872	T/C	0.47	0.014	0.003	2.92E-08	23	3978	0.47	-0.002	0.054	9.78E-01		1.00E-04
rs112725451	4:68017710	T/C	0.17	0.026	0.003	1.65E-14	24	3998	0.18	Excluded for MR				

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs113230003	19:18460956	G/A	0.74	0.019	0.003	1.05E-10	23	3982	0.76	-0.030	0.062	6.30E-01		1.35E-04
rs1139897	16:720986	G/A	0.77	0.024	0.003	1.77E-15	22	3908	0.77	0.040	0.062	5.19E-01		2.06E-04
rs1150668	6:28129789	T/G	0.58	0.019	0.003	8.54E-13	23	3982	0.62	-0.072	0.053	1.78E-01		1.67E-04
rs11594623	10:103960351	C/T	0.23	0.027	0.003	7.45E-20	23	3982	0.22	-0.007	0.061	9.06E-01		2.70E-04
rs1160685	4:94052854	G/C	0.45	0.015	0.003	2.31E-09	24	3998	0.46				Excluded for MR	
rs11611651	12:133380790	A/G	0.09	0.027	0.005	2.05E-09	21	3844	0.08	-0.051	0.096	5.95E-01		1.17E-04
rs11642231	16:89608702	G/A	0.63	0.016	0.003	3.44E-09	23	3982	0.64	0.114	0.068	9.40E-02		1.13E-04
rs11713899	3:2365026	C/A	0.17	0.019	0.003	3.15E-08	23	3982	0.17	0.072	0.067	2.85E-01		9.93E-05
rs6050446†	20:25195509	G/C	0.95	0.054	0.008	8.80E-13	16	3493	0.97	0.092	0.175	5.98E-01		2.81E-04
rs117657830	16:75766873	A/G	0.96	0.038	0.006	3.18E-09	22	3951	0.96	-0.094	0.133	4.79E-01		1.14E-04
rs11768481	7:96629103	C/A	0.66	0.019	0.003	5.23E-12	7	1842					Excluded for MR	
rs117734003	19:51129745	C/G	0.07	0.030	0.005	2.57E-09	16	3315					Excluded for MR	
rs11783093	8:27425349	C/T	0.84	0.047	0.003	2.07E-41	23	3982	0.83	0.004	0.068	9.55E-01		5.91E-04
rs11791671	9:3398679	T/C	0.07	0.028	0.005	4.24E-08	23	3982	0.07	-0.025	0.106	8.17E-01		9.74E-05
rs118202	6:111658371	G/T	0.19	0.037	0.003	1.90E-29	23	3982	0.21	-0.140	0.065	2.99E-02		4.12E-04
rs1187820	3:173072584	C/T	0.56	0.014	0.003	2.69E-08	23	3982	0.57	-0.018	0.055	7.50E-01		1.00E-04
rs12022778	1:50603995	C/A	0.20	0.027	0.003	3.18E-17	23	3982	0.19	0.070	0.091	4.46E-01		2.32E-04
rs12027999	1:154206358	T/C	0.88	0.024	0.004	5.33E-10	23	3967	0.89				Excluded for MR	
rs12130857	1:7791461	G/A	0.68	0.018	0.003	3.65E-11	23	3982	0.69	0.001	0.055	9.85E-01		1.42E-04
rs12195240	6:98636905	A/G	0.28	0.025	0.003	1.08E-18	23	3982	0.28	0.019	0.056	7.28E-01		2.53E-04
rs12244388	10:104640052	A/G	0.35	0.026	0.003	4.31E-22	24	3998	0.34	0.022	0.052	6.78E-01		3.03E-04
rs12474587	2:162802993	T/G	0.43	0.024	0.003	4.83E-21	23	3982	0.40	0.077	0.053	1.48E-01		2.88E-04
rs12517438	5:30842054	G/T	0.54	0.015	0.003	1.89E-09	23	3982	0.52	0.006	0.051	9.11E-01		1.17E-04
rs12633090	3:83241365	G/C	0.82	0.023	0.003	3.16E-12	23	3982	0.80	0.099	0.064	1.22E-01		1.58E-04
rs12714017	2:80999398	C/T	0.51	0.015	0.003	3.65E-09	23	3982	0.51	-0.009	0.077	9.02E-01		1.18E-04
rs12739243	1:210302043	T/C	0.78	0.021	0.003	4.45E-12	23	3982	0.78	0.077	0.087	3.73E-01		1.56E-04
rs12878369	14:28346502	A/C	0.41	0.017	0.003	1.60E-11	24	3998	0.41	0.037	0.051	4.75E-01		1.48E-04
rs12918191	16:50945156	A/G	0.76	0.020	0.003	3.14E-11	23	3982	0.76	-0.045	0.060	4.48E-01		1.43E-04
rs1291821	10:11133823	G/A	0.53	0.014	0.003	1.39E-08	22	3951	0.53	0.081	0.051	1.14E-01		1.05E-04
rs13007361	2:166250244	A/G	0.21	0.018	0.003	2.29E-08	23	3982	0.20	0.037	0.063	5.49E-01		1.01E-04
rs13110073	4:147797913	T/C	0.60	0.025	0.003	3.24E-21	23	3982	0.61	-0.027	0.052	5.99E-01		2.90E-04
rs13261666	8:59814666	G/T	0.48	0.020	0.003	4.36E-15	23	3982	0.48	0.040	0.051	4.30E-01		2.00E-04
rs13392222	2:100672408	A/C	0.86	0.023	0.004	1.93E-10	22	3951	0.86	0.024	0.075	7.44E-01		1.31E-04
rs13437771	7:99071478	A/G	0.84	0.027	0.004	1.39E-14	23	3982	0.85	-0.030	0.071	6.68E-01		1.93E-04
rs1373178	18:49967811	T/G	0.41	0.020	0.003	4.16E-15	23	3982	0.42	-0.021	0.073	7.73E-01		2.00E-04
rs1381287	14:98597552	T/C	0.47	0.018	0.003	1.81E-12	23	3982	0.48	-0.007	0.051	8.94E-01		1.62E-04
rs1381775	11:42442826	T/C	0.29	0.016	0.003	2.79E-08	23	3982	0.29	0.063	0.056	2.63E-01		1.00E-04
rs1385108	5:154839646	T/C	0.24	0.019	0.003	3.84E-10	23	3982	0.22	0.162	0.060	6.60E-03		1.27E-04
rs13906	12:49952394	C/T	0.89	0.025	0.004	1.98E-09	23	3982	0.88	0.027	0.080	7.33E-01		1.17E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs1435672	15:36399479	C/T	0.56	0.014	0.003	3.82E-08	23	3982	0.53	0.044	0.051	3.88E-01		9.80E-05
rs1445649	2:155682556	C/T	0.54	0.021	0.003	8.48E-16	24	3998	0.53	Excluded for MR				
rs1449012	3:159048333	C/T	0.54	0.015	0.003	1.77E-09	23	3982	0.54	-0.049	0.051	3.45E-01		1.18E-04
rs147052174	1:179783167	T/G	0.02	0.062	0.010	2.30E-10	12	2372	Excluded for MR					
rs1514176	1:74991596	G/A	0.42	0.019	0.003	7.67E-14	23	3982	0.43	-0.012	0.052	8.16E-01		1.81E-04
rs1549979	3:85460131	C/T	0.38	0.025	0.003	8.80E-21	23	3982	0.40	-0.110	0.051	3.26E-02		2.85E-04
rs160631	6:52895230	T/G	0.27	0.017	0.003	1.87E-09	24	3998	0.28	0.033	0.058	5.63E-01		1.17E-04
rs16826827	2:147825689	T/C	0.88	0.022	0.004	9.17E-09	23	3982	0.89	-0.068	0.080	3.95E-01		1.07E-04
rs1713676*	11:113660576	A/G	0.48	0.017	0.003	5.38E-11	23	3982	0.48	0.014	0.056	8.07E-01		1.40E-04
rs1714521	3:158284861	A/C	0.59	0.016	0.003	3.07E-10	23	3982	0.60	0.007	0.051	8.83E-01		1.29E-04
rs17197663	13:38172867	G/A	0.88	0.022	0.004	2.06E-08	24	3998	0.88	0.013	0.077	8.70E-01		1.02E-04
rs17229285	2:199523122	C/T	0.50	0.015	0.003	1.27E-09	23	3982	0.51	0.012	0.050	8.09E-01		1.20E-04
rs1733760	10:56698174	C/T	0.51	0.015	0.003	6.70E-09	23	3982	0.51	0.013	0.052	8.01E-01		1.09E-04
rs1737329	6:163807748	G/C	0.74	0.017	0.003	5.08E-09	23	3982	0.73	0.002	0.060	9.67E-01		1.11E-04
rs17554906	6:92226609	C/G	0.44	0.014	0.003	3.14E-08	23	3982	0.44	Excluded for MR				
rs1772572	13:81191176	C/A	0.68	0.017	0.003	5.62E-10	24	3998	0.68	-0.044	0.054	4.10E-01		1.25E-04
rs1811739	14:77529375	A/G	0.25	0.018	0.003	5.97E-10	23	3982	0.24	0.093	0.074	2.07E-01		1.25E-04
rs1889571	1:32195819	G/T	0.13	0.022	0.004	4.19E-09	23	3982	0.12	0.063	0.077	4.14E-01		1.12E-04
rs1901477	2:104126983	G/A	0.51	0.030	0.003	2.07E-31	23	3982	0.51	0.051	0.051	3.12E-01		4.63E-04
rs2010921	11:132098205	A/G	0.31	0.017	0.003	2.47E-10	23	3982	0.29	0.102	0.056	6.91E-02		1.30E-04
rs2063976	8:91096366	C/T	0.34	0.020	0.003	7.45E-14	23	3982	0.34	0.033	0.054	5.39E-01		1.81E-04
rs2155646	11:112912811	C/T	0.40	0.038	0.003	9.44E-48	23	3982	0.39	0.036	0.051	4.78E-01		6.85E-04
rs2173019	5:167614971	A/T	0.18	0.028	0.003	2.98E-17	23	3982	0.16	0.116	0.068	8.84E-02		2.32E-04
rs221988	3:64234307	A/C	0.62	0.015	0.003	1.43E-08	23	3982	0.63	-0.021	0.053	6.99E-01		1.05E-04
rs2279829	3:147106319	C/T	0.78	0.017	0.003	2.05E-08	23	3982	0.79	-0.099	0.062	1.11E-01		1.02E-04
rs2289791	15:67476952	G/T	0.75	0.018	0.003	2.01E-09	11	2241	Excluded for MR					
rs2319545	3:147719648	A/C	0.15	0.023	0.004	8.30E-11	23	3982	0.13	0.018	0.076	8.12E-01		1.37E-04
rs2378662	9:86707289	A/G	0.54	0.015	0.003	2.67E-09	23	3982	0.53	0.065	0.052	2.09E-01		1.15E-04
rs2526390	3:50192760	T/C	0.33	0.020	0.003	3.62E-14	23	3982	0.33	-0.002	0.053	9.67E-01		1.86E-04
rs2587507*	17:77790135	T/C	0.50	0.015	0.003	8.69E-09	23	3980	0.50	-0.021	0.060	7.21E-01		1.07E-04
rs2710634	2:32808804	T/C	0.48	0.018	0.003	3.36E-12	23	3982	0.50	-0.115	0.052	2.60E-02		1.57E-04
rs2796793	10:36634124	A/G	0.45	0.014	0.003	1.55E-08	22	3785	0.44	0.013	0.052	8.01E-01		1.04E-04
rs281296	15:47685010	A/G	0.36	0.025	0.003	1.59E-20	23	3982	0.37	-0.103	0.054	5.44E-02		2.80E-04
rs28441558	17:7803118	T/C	0.94	0.036	0.006	1.24E-10	16	3315	Excluded for MR					
rs2901785	1:174104743	G/A	0.55	0.017	0.003	1.47E-11	23	3982	0.55	0.091	0.052	7.75E-02		1.48E-04
rs290601	8:115374642	T/C	0.27	0.016	0.003	1.14E-08	23	3982	0.27	-0.024	0.081	7.69E-01		1.06E-04
rs2925128	14:98362355	T/C	0.39	0.017	0.003	3.67E-10	23	3982	0.37	0.150	0.053	4.32E-03		1.34E-04
rs2939756	11:41436297	G/A	0.52	0.016	0.003	7.45E-10	23	3982	0.53	0.046	0.051	3.60E-01		1.23E-04
rs3218116	6:41901763	C/T	0.74	0.020	0.003	1.05E-11	23	3982	0.77	-0.084	0.059	1.57E-01		1.50E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs329124	5:133865452	A/G	0.57	0.016	0.003	1.96E-10	23	3982	0.58	-0.087	0.051	8.52E-02		1.31E-04
rs34342129	18:5872472	T/C	0.49	0.014	0.003	2.13E-08	24	3998	0.51	-0.049	0.052	3.44E-01		1.02E-04
rs34399632	2:137571174	G/A	0.23	0.019	0.003	1.46E-10	24	3998	0.21	Excluded for MR				
rs34553878	9:134334588	G/A	0.11	0.025	0.004	1.17E-09	17	3451	Excluded for MR					
rs35375873	5:43190647	G/C	0.89	0.027	0.004	3.29E-11	16	3315	Excluded for MR					
rs35656245	1:190957480	A/G	0.28	0.016	0.003	2.23E-08	22	3951	0.28	0.108	0.055	5.08E-02		1.02E-04
rs359247	2:60477052	T/A	0.64	0.022	0.003	9.89E-17	23	3982	0.62	-0.033	0.052	5.34E-01		2.24E-04
rs3764351	17:37824339	G/A	0.34	0.015	0.003	3.89E-08	23	3982	0.36	0.053	0.054	3.30E-01		9.80E-05
rs3810496	20:62406886	C/T	0.62	0.016	0.003	1.54E-09	23	3982	0.60	0.089	0.054	1.00E-01		1.19E-04
rs3811038	2:113240183	C/T	0.28	0.019	0.003	1.58E-11	23	3982	0.27	-0.022	0.078	7.76E-01		1.47E-04
rs3820277	1:18436657	G/T	0.47	0.019	0.003	1.57E-13	23	3982	0.51	-0.051	0.051	3.12E-01		1.77E-04
rs3847244	9:3025368	T/C	0.47	0.019	0.003	2.60E-13	23	3982	0.47	-0.006	0.052	9.05E-01		1.74E-04
rs3850736	8:64912021	G/C	0.47	0.019	0.003	6.43E-14	23	3982	0.46	Excluded for MR				
rs3934797	4:112467612	G/A	0.82	0.021	0.003	1.12E-10	23	3982	0.83	0.003	0.069	9.61E-01		1.35E-04
rs4044321	5:166989513	A/G	0.36	0.023	0.003	1.75E-17	23	3982	0.36	-0.029	0.054	5.97E-01		2.35E-04
rs4140932	4:15458598	T/A	0.57	0.014	0.003	4.89E-08	23	3982	0.58	Excluded for MR				
rs42417	5:94198290	T/C	0.69	0.017	0.003	8.27E-10	23	3982	0.69	-0.065	0.056	2.47E-01		1.22E-04
rs4264267	13:38359676	T/C	0.53	0.015	0.003	6.82E-09	23	3982	0.54	0.006	0.052	9.06E-01		1.09E-04
rs4310804	15:96858409	C/G	0.75	0.018	0.003	7.55E-10	21	3630	0.76	Excluded for MR				
rs4326350	8:10763655	C/G	0.51	0.018	0.003	5.16E-12	23	3982	0.53	Excluded for MR				
rs4476253	18:25253297	G/A	0.76	0.018	0.003	5.78E-10	24	3998	0.77	-0.027	0.061	6.52E-01		1.25E-04
rs45444697	1:155034632	G/C	0.21	0.020	0.003	2.72E-10	23	3982	0.20	-0.009	0.064	8.83E-01		1.30E-04
rs4674993	2:226332033	A/G	0.80	0.024	0.003	4.85E-14	24	3998	0.81	Excluded for MR				
rs4727189	7:88442568	C/T	0.34	0.015	0.003	3.00E-08	23	3982	0.34	0.080	0.053	1.28E-01		9.97E-05
rs4752018	10:118678712	A/C	0.23	0.019	0.003	4.42E-10	24	3998	0.23	0.008	0.060	8.93E-01		1.26E-04
rs4759229	12:56474480	G/A	0.66	0.016	0.003	6.53E-09	23	3982	0.64	-0.023	0.055	6.83E-01		1.09E-04
rs4790874	17:1995177	T/C	0.53	0.017	0.003	8.43E-12	23	3982	0.52	0.087	0.052	9.16E-02		1.52E-04
rs4818005	21:40588819	G/A	0.42	0.020	0.003	1.09E-14	23	3982	0.44	-0.051	0.051	3.17E-01		2.03E-04
rs4822102	22:42698430	C/T	0.38	0.017	0.003	2.78E-10	23	3982	0.39	0.078	0.052	1.31E-01		1.29E-04
rs4837631	9:122061948	C/T	0.55	0.015	0.003	2.03E-09	23	3982	0.56	0.075	0.052	1.46E-01		1.17E-04
rs4877285	9:81354129	G/A	0.33	0.018	0.003	2.10E-11	23	3982	0.36	-0.084	0.055	1.30E-01		1.46E-04
rs4912332	1:58815243	T/C	0.49	0.014	0.003	2.94E-08	23	3982	0.48	0.071	0.052	1.67E-01		9.97E-05
rs540860	11:121530888	G/A	0.54	0.018	0.003	5.75E-12	23	3982	0.53	0.048	0.051	3.40E-01		1.54E-04
rs55786907	13:59871584	G/A	0.16	0.019	0.003	1.84E-08	23	3982	0.16	-0.024	0.069	7.33E-01		1.03E-04
rs58400863	4:31184484	G/A	0.65	0.020	0.003	4.89E-14	23	3982	0.65	0.001	0.054	9.88E-01		1.84E-04
rs59537158	4:28246049	T/C	0.21	0.022	0.003	4.62E-13	24	3998	0.22	Excluded for MR				
rs6073075	20:42015801	T/A	0.18	0.019	0.003	2.44E-08	23	3982	0.19	-0.010	0.067	8.79E-01		1.01E-04
rs61533748	2:22582968	C/T	0.38	0.017	0.003	2.82E-11	23	3982	0.38	-0.026	0.053	6.17E-01		1.44E-04
rs61886926	11:64133552	C/T	0.62	0.018	0.003	7.30E-12	23	3982	0.63	-0.052	0.052	3.19E-01		1.52E-04

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)								
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>	
rs61959481	13:55834929	G/A	0.79	0.020	0.003	7.95E-11	23	3982	0.78	0.025	0.062	6.89E-01		1.37E-04	
rs62007780	15:78025464	G/T	0.58	0.016	0.003	7.48E-10	23	3982	0.61	-0.106	0.079	1.79E-01		1.23E-04	
rs62193862	2:202843875	A/G	0.10	0.024	0.004	1.99E-08	14	2977	Excluded for MR						
rs62246017	3:71483084	G/A	0.68	0.016	0.003	3.03E-09	23	3982	0.70	-0.118	0.057	3.90E-02		1.14E-04	
rs62340589	4:176875795	C/G	0.20	0.017	0.003	4.31E-08	23	3982	0.20	-0.016	0.064	8.06E-01		9.74E-05	
rs6265*	11:27679916	C/T	0.81	0.029	0.003	2.81E-19	23	3982	0.81	-0.008	0.070	9.09E-01		2.62E-04	
rs6437769	3:107997514	T/C	0.58	0.014	0.003	3.74E-08	24	3998	0.59	Excluded for MR					
rs6438436	3:117822149	T/C	0.82	0.025	0.003	5.33E-14	23	3982	0.81	0.058	0.067	3.87E-01		1.84E-04	
rs644740	11:65561468	C/T	0.54	0.014	0.003	3.67E-08	23	3982	0.53	0.080	0.050	1.14E-01		9.84E-05	
rs6452785	5:87685500	C/T	0.53	0.027	0.003	4.69E-26	23	3982	0.53	-0.020	0.052	7.03E-01		3.60E-04	
rs6497840	16:25351633	A/G	0.71	0.023	0.003	2.01E-15	24	3998	0.69	-0.026	0.056	6.37E-01		2.15E-04	
rs6568832	6:97702876	A/G	0.75	0.019	0.003	1.74E-10	23	3982	0.74	-0.076	0.059	1.96E-01		1.32E-04	
rs67050670	18:39297254	A/G	0.77	0.020	0.003	2.34E-11	23	3982	0.74	0.167	0.074	2.41E-02		1.45E-04	
rs6731872	2:624205	G/T	0.83	0.032	0.003	5.35E-21	24	3998	0.82	Excluded for MR					
rs6750529	2:182027603	T/C	0.74	0.020	0.003	9.26E-12	23	3982	0.75	0.036	0.059	5.46E-01		1.51E-04	
rs6756212	2:146140132	C/T	0.47	0.034	0.003	3.49E-40	23	3982	0.46	0.041	0.051	4.20E-01		5.71E-04	
rs67777803	17:27323322	G/T	0.83	0.025	0.003	3.18E-13	24	3998	0.83	0.037	0.068	5.89E-01		1.72E-04	
rs6874731	5:80263865	G/T	0.48	0.015	0.003	1.83E-09	23	3982	0.48	-0.017	0.050	7.28E-01		1.17E-04	
rs6890961	5:166778503	C/T	0.38	0.019	0.003	2.13E-13	24	3998	0.41	-0.068	0.079	3.88E-01		1.75E-04	
rs6936160	6:100347745	T/C	0.70	0.020	0.003	4.20E-13	23	3982	0.68	0.074	0.073	3.15E-01		1.70E-04	
rs6948707	7:1870794	G/T	0.42	0.024	0.003	4.24E-21	23	3982	0.40	0.023	0.051	6.54E-01		2.89E-04	
rs6986430	8:93048104	T/C	0.78	0.024	0.003	1.99E-15	23	3982	0.75	0.172	0.076	2.30E-02		2.05E-04	
rs7024924	9:8282399	C/T	0.17	0.019	0.003	1.90E-08	23	3982	0.16	0.008	0.067	9.06E-01		1.03E-04	
rs7072776	10:22032942	A/G	0.29	0.022	0.003	5.66E-15	22	3785	0.33	-0.073	0.058	2.13E-01		1.98E-04	
rs7134009	12:75263193	T/C	0.71	0.016	0.003	4.30E-08	23	3982	0.72	0.002	0.069	9.74E-01		1.02E-04	
rs71367544	18:77574374	T/C	0.20	0.021	0.003	8.54E-11	23	3982	0.18	0.044	0.066	5.11E-01		1.37E-04	
rs71592686	5:60121271	C/T	0.27	0.021	0.003	3.85E-13	23	3982	0.26	0.039	0.057	4.89E-01		1.71E-04	
rs71602617	4:136406155	C/T	0.78	0.018	0.003	2.10E-08	23	3982	0.79	-0.028	0.077	7.17E-01		1.07E-04	
rs72780746	5:103929588	T/C	0.83	0.026	0.003	2.05E-14	23	3982	0.82	-0.004	0.066	9.52E-01		1.90E-04	
rs72836318	17:44121579	T/C	0.75	0.017	0.003	7.00E-09	23	3982	0.76	-0.086	0.061	1.57E-01		1.09E-04	
rs72938304	18:53661743	G/A	0.89	0.027	0.004	1.36E-11	23	3982	0.89	0.003	0.081	9.70E-01		1.48E-04	
rs748832	3:16851202	G/A	0.37	0.017	0.003	6.60E-11	23	3982	0.36	0.010	0.052	8.42E-01		1.38E-04	
rs75919030	17:50193197	T/C	0.73	0.021	0.003	3.35E-13	23	3982	0.73	0.042	0.057	4.62E-01		1.72E-04	
rs7598402	2:50735943	C/G	0.51	0.015	0.003	7.38E-09	23	3982	0.52	Excluded for MR					
rs7631379	3:181409057	C/T	0.21	0.021	0.003	3.94E-11	23	3982	0.21	-0.185	0.087	3.37E-02		1.42E-04	
rs76608582	19:4474725	C/A	0.95	0.035	0.006	4.88E-09	NA in Courage-PD								
rs7696257	4:137474783	A/G	0.37	0.015	0.003	6.78E-09	23	3982	0.34	-0.021	0.054	6.94E-01		1.09E-04	
rs77215829	12:112618346	A/C	0.87	0.024	0.004	2.02E-10	18	3281	0.86	0.103	0.120	3.91E-01		1.32E-04	
rs77283305	7:132593831	G/A	0.69	0.015	0.003	3.91E-08	23	3982	0.70	0.022	0.055	6.87E-01		9.80E-05	

SNP	Chr:Pos(GRCh37)	EA/BA	Smoking initiation (GSCAN)				Parkinson's disease (Courage-PD)							
			EAF	Beta	SE	P-value	N studies	N samples	EAF	Beta	SE	P-value	I <sup>2</sup> (%)	R <sup>2</sup>
rs7743165	6:67521222	G/T	0.50	0.019	0.003	4.15E-14	23	3982	0.48	0.004	0.051	9.39E-01		1.85E-04
rs7809303	7:69484366	G/A	0.68	0.021	0.003	3.48E-15	23	3982	0.67	0.068	0.053	1.95E-01		2.01E-04
rs7836565	8:52569449	C/T	0.28	0.016	0.003	4.36E-08	23	3982	0.28	0.054	0.058	3.50E-01		9.74E-05
rs7920501	10:10043159	T/A	0.54	0.016	0.003	1.25E-09	23	3982	0.52				Excluded for MR	
rs7921378	10:63674885	G/C	0.52	0.023	0.003	6.10E-20	23	3982	0.52				Excluded for MR	
rs7929518	11:85980958	G/A	0.77	0.019	0.003	2.55E-10	23	3982	0.77	-0.067	0.060	2.63E-01		1.30E-04
rs7943721	11:73309393	G/A	0.17	0.021	0.003	3.58E-10							NA in Courage-PD	
rs7969559	12:69655167	A/G	0.29	0.017	0.003	1.53E-09	23	3982	0.30	0.058	0.056	3.06E-01		1.18E-04
rs8005334	14:79563654	G/T	0.36	0.017	0.003	3.44E-10	23	3982	0.35	-0.023	0.053	6.65E-01		1.28E-04
rs80054503	1:72900406	T/C	0.88	0.024	0.004	3.10E-09							NA in Courage-PD	
rs8096225	18:36921851	C/A	0.70	0.016	0.003	2.63E-08	23	3982	0.70	0.020	0.072	7.83E-01		1.01E-04
rs876793	1:237852083	T/C	0.65	0.018	0.003	5.69E-11	23	3982	0.66	-0.003	0.053	9.48E-01		1.46E-04
rs9288999	3:114147927	A/G	0.74	0.017	0.003	1.50E-09	23	3982	0.74	-0.053	0.059	3.74E-01		1.18E-04
rs9302604	16:69576894	G/A	0.44	0.019	0.003	3.29E-13	23	3982	0.42	-0.054	0.052	3.02E-01		1.72E-04
rs9323328*	14:58653514	A/G	0.46	0.014	0.003	2.55E-08	23	3982	0.45	0.043	0.051	3.92E-01		1.01E-04
rs9423279	10:125680419	C/G	0.36	0.019	0.003	3.06E-12	1	307					Excluded for MR	
rs951740	1:44011737	A/G	0.62	0.030	0.003	3.82E-29	23	3982	0.62	-0.059	0.053	2.58E-01		4.09E-04
rs9540731*	13:66949370	C/T	0.49	0.018	0.003	3.42E-12	24	3997	0.49	-0.019	0.055	7.25E-01		1.57E-04
rs9545155	13:80191873	T/C	0.52	0.016	0.003	3.04E-10	23	3982	0.52	0.039	0.052	4.51E-01		1.29E-04
rs9826984	3:131945722	G/A	0.46	0.014	0.003	3.87E-08	23	3982	0.45	0.025	0.051	6.29E-01		9.80E-05
rs9922607	16:17570220	C/T	0.80	0.022	0.003	3.42E-12	23	3982	0.80	0.066	0.086	4.44E-01		1.57E-04
rs9941217	16:18050926	C/G	0.65	0.019	0.003	3.50E-12	23	3982	0.66	0.041	0.071	5.60E-01		1.57E-04

MR estimates stratified by HLA-DRB1 are based on SNP-smoking and SNP-PD associations from this table; samples from the Elbaz study were excluded for analyses in Courage-PD.

GSCAN, GWAS and Sequencing Consortium of Alcohol and Nicotine use.

NA, not available; EA/BA, effect allele/base allele; EAF, effect allele frequency; SE, standard error.

R<sup>2</sup> is the proportion of the variance of the exposure explained by the genetic variant according to the formula:  $2 \times \text{Betaexposure}^2 \times \text{EAFexposure} \times (1 - \text{EAFexposure})$ .

\*SNPs genotyped.

†Proxy used in Courage-PD: rs117495226.



**Supplementary table 3 SNPs in the HLA region associated with Parkinson's disease**

<b>SNP</b>	<b>Position</b>	<b>EA</b>	<b>OA</b>	<b>EAF</b>	<b>N studies</b>	<b>OR (95% CI)</b>	<b>FDR q-value</b>
rs35265698	32561334	G	C	0.139	26	0.86 (0.81-0.92)	5.8×10 <sup>-3</sup>
rs2760985	32566398	A	G	0.133	26	0.86 (0.80-0.91)	5.8×10 <sup>-3</sup>
rs687308	32567256	T	C	0.134	26	0.86 (0.80-0.91)	5.8×10 <sup>-3</sup>
rs601945	32573415	G	A	0.134	26	0.85 (0.80-0.91)	5.8×10 <sup>-3</sup>
rs560530	32577222	A	G	0.151	26	0.86 (0.81-0.92)	5.8×10 <sup>-3</sup>
rs532965	32577973	G	T	0.136	26	0.86 (0.80-0.91)	5.8×10 <sup>-3</sup>
rs504594	32578772	A	C	0.133	26	0.86 (0.80-0.91)	5.8×10 <sup>-3</sup>
rs3997872	32580617	A	T	0.134	26	0.86 (0.81-0.92)	5.8×10 <sup>-3</sup>
rs3129751	32582189	C	A	0.134	26	0.86 (0.80-0.91)	5.8×10 <sup>-3</sup>
rs3104413	32582650	G	C	0.137	25	0.85 (0.79-0.91)	5.8×10 <sup>-3</sup>
rs6931277	32583357	T	A	0.151	21	0.84 (0.78-0.90)	5.8×10 <sup>-3</sup>
rs9271608	32591588	G	A	0.151	21	0.83 (0.78-0.90)	5.8×10 <sup>-3</sup>
rs9268543	32384801	T	A	0.131	26	0.86 (0.81-0.92)	8.8×10 <sup>-3</sup>
rs510205	32584693	G	C	0.168	24	0.87 (0.82-0.92)	8.8×10 <sup>-3</sup>
rs3997868	32578590	G	A	0.164	26	0.88 (0.83-0.93)	0.01
rs660895	32577380	G	A	0.172	26	0.88 (0.84-0.93)	0.02
rs521539	32581973	A	G	0.168	26	0.88 (0.83-0.93)	0.02
rs2395175	32405026	A	G	0.132	26	0.87 (0.81-0.93)	0.03
rs3997869	32578632	T	C	0.233	26	0.90 (0.85-0.94)	0.03

EA, effect allele. OA, other allele. EAF, effect allele frequency in controls. OR, odds ratio. CI, confidence interval. FDR, false discovery rate. ORs are computed under an additive model. SNPs are ordered by increasing q-value and position. All SNPs were all located near HLA class II genes, 17 near *HLA-DRB1* and two (rs9268543, rs2395175) near *HLA-DRA*.

**Supplementary table 4 Association of alleles of HLA class II genes and and HLA-DRBI~HLA-DQBI haplotypes with Parkinson's disease**

Allele/haplotype	N studies	N controls +	N cases +	F <sub>controls</sub>	F <sub>cases</sub>	OR (95% CI)	FDR q-value
<b>HLA alleles</b>							
HLA-DPBI*01:01	26	854	1123	0.045	0.046	1.00 (0.91-1.11)	0.96
HLA-DPBI*02:01	26	2371	3172	0.140	0.144	1.02 (0.96-1.09)	0.55
HLA-DPBI*03:01	26	1652	2060	0.090	0.086	0.96 (0.89-1.03)	0.31
HLA-DPBI*04:01	26	6173	8068	0.437	0.434	1.02 (0.96-1.08)	0.57
HLA-DPBI*04:02	26	2125	2839	0.123	0.127	1.01 (0.95-1.09)	0.70
HLA-DPBI*05:01	24	367	456	0.019	0.018	0.97 (0.84-1.13)	0.69
HLA-DPBI*09:01	20	120	137	0.006	0.005	0.78 (0.60-1.01)	0.12
HLA-DPBI*10:01	26	389	467	0.019	0.017	0.86 (0.75-1.00)	0.12
HLA-DPBI*11:01	22	359	494	0.018	0.022	1.04 (0.89-1.21)	0.63
HLA-DPBI*13:01	25	405	487	0.020	0.019	0.87 (0.75-1.00)	0.12
HLA-DPBI*14:01	23	269	348	0.013	0.014	1.05 (0.88-1.24)	0.61
HLA-DPBI*15:01	24	127	169	0.006	0.006	1.09 (0.85-1.39)	0.51
HLA-DPBI*16:01	20	106	121	0.005	0.005	0.91 (0.69-1.21)	0.52
HLA-DPBI*17:01	25	268	424	0.012	0.016	1.12 (0.95-1.32)	0.26
HLA-DPBI*19:01	23	125	148	0.006	0.005	0.94 (0.73-1.22)	0.65
HLA-DPBI*104:01	26	355	446	0.017	0.018	0.93 (0.80-1.08)	0.33
HLA-DQAI*01:01	26	1782	2470	0.101	0.105	1.07 (1.00-1.15)	0.12
HLA-DQAI*01:02	26	3364	4411	0.199	0.206	1.04 (0.98-1.10)	0.27
HLA-DQAI*01:03	26	1363	1766	0.075	0.075	0.98 (0.90-1.06)	0.60
HLA-DQAI*01:04	26	670	828	0.032	0.032	0.95 (0.85-1.06)	0.37
HLA-DQAI*01:05	25	188	204	0.009	0.007	0.79 (0.64-0.98)	0.10
HLA-DQAI*02:01	26	2158	3003	0.122	0.126	1.00 (0.94-1.07)	0.91
<b>HLA-DQAI*03:01</b>	<b>26</b>	<b>1567</b>	<b>1774</b>	<b>0.089</b>	<b>0.076</b>	<b>0.86 (0.80-0.93)</b>	<b>7.7×10<sup>-3</sup></b>
HLA-DQAI*03:02	18	162	212	0.009	0.008	1.05 (0.84-1.31)	0.66
<b>HLA-DQAI*03:03</b>	<b>25</b>	<b>924</b>	<b>1061</b>	<b>0.050</b>	<b>0.042</b>	<b>0.86 (0.78-0.95)</b>	<b>0.02</b>
HLA-DQAI*04:01	26	556	713	0.028	0.027	1.01 (0.90-1.15)	0.82
HLA-DQAI*05:01	26	1922	2580	0.107	0.109	1.02 (0.95-1.10)	0.52
HLA-DQAI*05:05	26	2663	3660	0.158	0.165	1.05 (0.98-1.12)	0.26
HLA-DQBI:02:01	26	1923	2583	0.106	0.109	1.02 (0.95-1.10)	0.51
HLA-DQBI:02:02	26	1688	2317	0.093	0.095	0.98 (0.91-1.05)	0.53
HLA-DQBI:03:01	26	3481	4574	0.208	0.206	0.98 (0.92-1.04)	0.53
<b>HLA-DQBI:03:02</b>	<b>26</b>	<b>1642</b>	<b>1905</b>	<b>0.093</b>	<b>0.082</b>	<b>0.87 (0.81-0.94)</b>	<b>7.7×10<sup>-3</sup></b>
HLA-DQBI:03:03	26	681	976	0.036	0.038	1.09 (0.98-1.21)	0.22
HLA-DQBI:04:02	26	585	756	0.030	0.029	1.01 (0.89-1.14)	0.90
HLA-DQBI:05:01	26	1995	2716	0.113	0.116	1.04 (0.97-1.12)	0.29
HLA-DQBI:05:02	24	582	781	0.029	0.032	1.07 (0.95-1.21)	0.29
HLA-DQBI:05:03	26	679	838	0.032	0.033	0.95 (0.85-1.06)	0.38
HLA-DQBI:06:01	21	137	198	0.007	0.008	1.05 (0.83-1.33)	0.68
HLA-DQBI:06:02	26	2020	2652	0.109	0.116	1.03 (0.96-1.10)	0.44
HLA-DQBI:06:03	26	1286	1660	0.070	0.069	0.98 (0.90-1.06)	0.62
HLA-DQBI:06:04	26	678	897	0.035	0.036	1.06 (0.95-1.18)	0.33
HLA-DQBI:06:09	21	178	207	0.009	0.008	0.90 (0.72-1.11)	0.33
HLA-DRBI*01:01	26	1427	1948	0.083	0.087	1.08 (0.99-1.17)	0.13
HLA-DRBI*01:02	26	251	389	0.012	0.016	1.03 (0.87-1.23)	0.73

Allele/haplotype	N studies	N controls +	N cases +	F <sub>controls</sub>	F <sub>cases</sub>	OR (95% CI)	FDR q-value
HLA-DRB1*03:01	26	1877	2524	0.113	0.115	1.02 (0.95-1.10)	0.61
<b>HLA-DRB1*04:01</b>	<b>26</b>	<b>1210</b>	<b>1400</b>	<b>0.069</b>	<b>0.06</b>	<b>0.88 (0.81-0.97)</b>	<b>0.04</b>
HLA-DRB1*04:02	24	163	193	0.008	0.008	0.78 (0.62-0.98)	0.10
<b>HLA-DRB1*04:04</b>	<b>26</b>	<b>452</b>	<b>459</b>	<b>0.026</b>	<b>0.020</b>	<b>0.80 (0.70-0.93)</b>	<b>0.02</b>
HLA-DRB1*04:05	20	98	172	0.005	0.007	1.23 (0.94-1.61)	0.22
HLA-DRB1*04:07	22	126	121	0.007	0.004	0.73 (0.56-0.96)	0.10
HLA-DRB1*07:01	26	2095	2923	0.128	0.132	1.00 (0.94-1.07)	0.94
HLA-DRB1*08:01	25	497	636	0.028	0.026	1.01 (0.89-1.15)	0.87
HLA-DRB1*09:01	18	148	196	0.009	0.008	1.05 (0.84-1.32)	0.66
HLA-DRB1*10:01	25	206	224	0.011	0.009	0.80 (0.65-0.98)	0.10
HLA-DRB1*11:01	26	1374	1958	0.079	0.084	1.08 (1.00-1.18)	0.12
HLA-DRB1*11:04	26	429	581	0.021	0.025	1.02 (0.89-1.17)	0.76
HLA-DRB1*12:01	24	282	389	0.016	0.016	1.08 (0.91-1.27)	0.39
HLA-DRB1*13:01	26	1181	1532	0.069	0.068	0.98 (0.09-1.07)	0.73
HLA-DRB1*13:02	26	847	1070	0.049	0.047	0.99 (0.89-1.09)	0.79
HLA-DRB1*13:03	25	190	265	0.010	0.011	0.97 (0.79-1.19)	0.77
HLA-DRB1*14:01	26	641	803	0.033	0.034	0.96 (0.85-1.08)	0.48
HLA-DRB1*15:01	26	2066	2764	0.124	0.132	1.04 (0.97-1.12)	0.29
HLA-DRB1*15:02	21	132	191	0.007	0.008	1.06 (0.84-1.34)	0.64
HLA-DRB1*16:01	24	457	620	0.023	0.027	1.09 (0.95-1.24)	0.29
<b>HLA-DRB1~HLA-DQB1 haplotypes</b>							
01:01~05:01	26	1263	1714	0.082	0.085	1.08 (0.99-1.17)	0.08
01:02~05:01	26	235	358	0.013	0.017	1.05 (0.88-1.25)	0.58
03:01~02:01	26	1781	2356	0.116	0.118	1.02 (0.95-1.10)	0.54
<b>04:01~03:01</b>	<b>23</b>	<b>490</b>	<b>557</b>	<b>0.031</b>	<b>0.025</b>	<b>0.86 (0.75-0.98)</b>	<b>0.03</b>
04:01~03:02	24	676	776	0.044	0.035	0.91 (0.81-1.02)	0.10
<b>04:02~03:02</b>	<b>24</b>	<b>140</b>	<b>165</b>	<b>0.009</b>	<b>0.008</b>	<b>0.76 (0.61-0.96)</b>	<b>0.02</b>
<b>04:04~03:02</b>	<b>26</b>	<b>423</b>	<b>426</b>	<b>0.027</b>	<b>0.020</b>	<b>0.81 (0.70-0.94)</b>	<b>5.8×10<sup>-3</sup></b>
<b>04:07~03:01</b>	<b>22</b>	<b>122</b>	<b>117</b>	<b>0.007</b>	<b>0.005</b>	<b>0.73 (0.56-0.96)</b>	<b>0.02</b>
07:01~02:01	26	1511	2031	0.099	0.100	0.95 (0.88-1.03)	0.21
07:01~03:03	26	471	701	0.029	0.033	1.10 (0.97-1.25)	0.14
08:01~04:02	25	437	563	0.027	0.025	1.01 (0.89-1.16)	0.84
09:01~03:03	18	128	172	0.008	0.008	1.03 (0.81-1.32)	0.78
10:01~05:01	24	181	198	0.011	0.009	0.84 (0.68-1.04)	0.11
11:01~03:01	26	1160	1656	0.076	0.079	1.06 (0.97-1.15)	0.19
11:04~03:01	26	373	507	0.021	0.025	1.02 (0.88-1.18)	0.78
12:01~03:01	24	242	342	0.015	0.016	1.13 (0.95-1.35)	0.16
13:01~06:03	26	1026	1290	0.065	0.064	0.97 (0.89-1.07)	0.55
13:02~06:04	26	592	778	0.037	0.038	1.06 (0.94-1.19)	0.31
13:02~06:09	21	151	185	0.009	0.008	0.95 (0.76-1.19)	0.65
13:03~03:01	25	176	237	0.010	0.011	0.96 (0.78-1.18)	0.68
14:01~05:03	26	542	675	0.032	0.034	0.96 (0.85-1.09)	0.56
15:01~06:02	26	1814	2414	0.114	0.123	1.04 (0.97-1.12)	0.29
15:02~06:01	21	128	175	0.008	0.008	1.04 (0.82-1.32)	0.76
16:01~05:02	24	377	521	0.021	0.026	1.09 (0.94-1.26)	0.24

F<sub>controls</sub>, pooled frequency of allele in controls; F<sub>cases</sub>, pooled frequency of allele in cases.

Odds ratios (OR) and 95% confidence intervals (CI) are computed under a dominant model adjusted for sex, study, and four principal components. Significant alleles and haplotypes are highlighted in bold characters.

**Supplementary table 5 Association between amino acids in the HLA class II region and Parkinson's disease**

<b>Amino acid</b>	<b>N studies</b>	<b>N controls +</b>	<b>N cases +</b>	<b>F<sub>controls</sub></b>	<b>F<sub>cases</sub></b>	<b>OR (95% CI)</b>	<b>FDR q-value</b>
DQBI_-24_A	26	7495	9842	0.814	0.810	0.99 (0.84-1.17)	0.93
DQBI_-24_S	26	2571	3439	0.184	0.189	1.04 (0.98-1.12)	0.29
DQBI_-18_D	26	5258	6930	0.429	0.435	1.06 (0.99-1.14)	0.19
DQBI_-18_G	26	6340	8326	0.570	0.564	0.97 (0.89-1.05)	0.41
DQBI_-15_A	26	5039	6729	0.410	0.415	1.01 (0.94-1.07)	0.88
DQBI_-15_V	26	6436	8427	0.589	0.584	1.05 (0.97-1.14)	0.31
DQBI_-14_P	22	129	175	0.008	0.008	0.98 (0.77-1.25)	0.88
DQBI_-7_A	26	7382	9736	0.780	0.776	1.13 (0.98-1.30)	0.19
DQBI_-7_S	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_-6_I	26	2571	3439	0.184	0.189	1.04 (0.98-1.12)	0.29
DQBI_-6_M	26	7495	9842	0.814	0.810	0.99 (0.84-1.17)	0.93
DQBI_-3_S	26	5258	6930	0.429	0.435	1.06 (0.99-1.14)	0.19
DQBI_-3_T	26	6340	8326	0.570	0.564	0.97 (0.89-1.05)	0.41
DQBI_-2_L	26	3318	4363	0.238	0.244	1.04 (0.97-1.11)	0.31
DQBI_-2_P	26	6340	8326	0.570	0.564	0.97 (0.89-1.05)	0.41
DQBI_-2_S	26	2571	3439	0.184	0.189	1.04 (0.98-1.12)	0.29
DQBI_-1_L	26	5258	6930	0.429	0.435	1.06 (0.99-1.14)	0.19
DQBI_-1_V	26	6340	8326	0.570	0.564	0.97 (0.89-1.05)	0.41
DQBI_6_P	22	129	175	0.008	0.008	0.98 (0.77-1.25)	0.88
DQBI_12_F	26	2234	2959	0.146	0.154	1.05 (0.97-1.12)	0.29
DQBI_12_L	22	129	175	0.008	0.008	0.98 (0.77-1.25)	0.88
DQBI_12_Y	26	7596	9947	0.844	0.836	0.86 (0.70-1.04)	0.22
DQBI_16_A	26	2671	3526	0.189	0.191	0.98 (0.92-1.05)	0.57
DQBI_16_G	26	7553	9884	0.811	0.809	0.95 (0.8-1.14)	0.61
DQBI_17_L	26	2571	3439	0.184	0.189	1.04 (0.98-1.12)	0.29
DQBI_17_M	26	7499	9845	0.816	0.811	0.98 (0.84-1.16)	0.85
DQBI_29_G	26	2966	3939	0.216	0.219	1.04 (0.97-1.11)	0.31
DQBI_29_L	26	6473	8476	0.589	0.587	0.98 (0.90-1.07)	0.63
DQBI_29_Y	26	2671	3526	0.189	0.191	0.98 (0.92-1.05)	0.57
DQBI_31_S	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_31_T	26	7384	9738	0.781	0.777	1.13 (0.98-1.31)	0.19
DQBI_33_H	26	3891	5114	0.296	0.298	1.03 (0.97-1.10)	0.35
DQBI_33_S	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_33_Y	26	5695	7483	0.482	0.476	1.00 (0.93-1.07)	0.97
DQBI_40_D	22	129	175	0.008	0.008	0.98 (0.77-1.25)	0.88
DQBI_40_I	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_40_Y	26	7354	9693	0.772	0.767	1.12 (0.97-1.28)	0.22
DQBI_41_A	26	6409	8411	0.584	0.576	1.01 (0.93-1.09)	0.84
DQBI_41_V	26	5107	6851	0.416	0.424	1.03 (0.97-1.11)	0.33
DQBI_48_E	26	2573	3392	0.180	0.181	0.98 (0.92-1.05)	0.55
DQBI_48_G	26	7585	9925	0.820	0.819	0.93 (0.77-1.12)	0.44
DQBI_49_E	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_49_V	26	7384	9738	0.781	0.777	1.13 (0.98-1.31)	0.19
DQBI_50_F	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_50_Y	26	7384	9738	0.781	0.777	1.13 (0.98-1.31)	0.19
DQBI_55_L	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_55_P	26	7384	9738	0.781	0.777	1.13 (0.98-1.31)	0.19

<b>Amino acid</b>	<b>N studies</b>	<b>N controls +</b>	<b>N cases +</b>	<b>F<sub>controls</sub></b>	<b>F<sub>cases</sub></b>	<b>OR (95% CI)</b>	<b>FDR q-value</b>
DQBI_56_L	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_56_Q	26	5332	7032	0.438	0.444	1.06 (0.99-1.14)	0.19
DQBI_58_L	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_58_P	26	4082	5269	0.308	0.299	0.95 (0.89-1.01)	0.19
DQBI_58_R	26	5606	7362	0.469	0.475	1.06 (0.99-1.13)	0.22
DQBI_59_L	26	472	615	0.029	0.028	1.02 (0.89-1.16)	0.78
DQBI_59_P	26	7788	10221	0.971	0.972	0.98 (0.41-2.35)	0.96
DQBI_60_A	26	4112	5283	0.311	0.301	0.93 (0.88-1.00)	0.17
DQBI_60_D	26	5767	7638	0.486	0.492	1.03 (0.96-1.11)	0.40
DQBI_60_S	25	475	646	0.026	0.033	1.08 (0.94-1.23)	0.31
DQBI_60_V	26	2356	3158	0.165	0.168	1.05 (0.98-1.12)	0.26
DQBI_69_D	26	3569	4785	0.261	0.264	1.00 (0.94-1.07)	0.90
DQBI_69_E	26	7238	9524	0.739	0.736	1.07 (0.95-1.21)	0.31
DQBI_70_I	26	3569	4785	0.261	0.264	1.00 (0.94-1.07)	0.90
DQBI_70_V	26	7238	9524	0.739	0.736	1.07 (0.95-1.21)	0.31
DQBI_73_E	26	493	636	0.030	0.029	1.00 (0.88-1.14)	0.97
DQBI_73_G	26	4806	6343	0.378	0.385	1.05 (0.99-1.13)	0.20
DQBI_73_R	26	6492	8491	0.590	0.585	0.96 (0.88-1.04)	0.33
DQBI_74_A	26	2552	3424	0.183	0.188	1.05 (0.98-1.12)	0.26
DQBI_74_D	26	493	636	0.030	0.029	1.00 (0.88-1.14)	0.97
DQBI_74_K	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_74_T	26	6288	8214	0.562	0.556	0.98 (0.91-1.06)	0.67
DQBI_77_A	26	3083	4172	0.219	0.223	1.01 (0.95-1.08)	0.72
DQBI_77_E	26	6288	8214	0.562	0.556	0.98 (0.91-1.06)	0.67
DQBI_77_S	26	2966	3939	0.216	0.219	1.04 (0.97-1.11)	0.31
DQBI_78_L	26	6288	8214	0.562	0.556	0.98 (0.91-1.06)	0.67
DQBI_78_V	26	5337	7110	0.438	0.444	1.02 (0.96-1.10)	0.48
DQBI_80_R	26	5039	6751	0.407	0.414	1.03 (0.97-1.10)	0.34
DQBI_80_T	26	6471	8486	0.593	0.586	1.00 (0.92-1.09)	0.92
DQBI_87_E	26	5332	7032	0.438	0.444	1.06 (0.99-1.14)	0.19
DQBI_87_Q	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_88_L	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_88_V	26	5332	7032	0.438	0.444	1.06 (0.99-1.14)	0.19
DQBI_89_A	26	4901	6474	0.388	0.395	1.05 (0.99-1.12)	0.21
DQBI_89_E	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_89_G	26	748	957	0.047	0.047	1.02 (0.92-1.14)	0.67
DQBI_90_F	26	2854	3754	0.197	0.204	1.03 (0.96-1.10)	0.42
DQBI_90_L	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_90_Y	26	3180	4213	0.235	0.239	1.05 (0.98-1.11)	0.29
DQBI_92_G	26	5332	7032	0.438	0.444	1.06 (0.99-1.14)	0.19
DQBI_92_T	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_93_I	26	5332	7032	0.438	0.444	1.06 (0.99-1.14)	0.19
DQBI_93_T	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_119_I	26	2571	3439	0.184	0.189	1.04 (0.98-1.12)	0.29
DQBI_119_V	26	7499	9845	0.816	0.811	0.98 (0.84-1.16)	0.85
DQBI_128_A	26	6292	8261	0.562	0.556	0.97 (0.89-1.05)	0.40
DQBI_128_G	26	3424	4495	0.248	0.254	1.03 (0.97-1.10)	0.33
DQBI_128_S	26	2571	3439	0.184	0.189	1.04 (0.98-1.12)	0.29
DQBI_129_H	25	475	646	0.026	0.033	1.08 (0.94-1.23)	0.31
DQBI_129_Q	25	7778	10212	0.974	0.967	0.85 (0.45-1.59)	0.60
DQBI_133_Q	26	748	957	0.047	0.047	1.02 (0.92-1.14)	0.67

Amino acid	N studies	N controls +	N cases +	F <sub>controls</sub>	F <sub>cases</sub>	OR (95% CI)	FDR q-value
DQBI_133_R	26	7780	10205	0.953	0.953	0.67 (0.36-1.27)	0.29
DQBI_143_A	26	6922	9153	0.661	0.670	1.07 (0.96-1.18)	0.29
DQBI_143_T	26	4386	5711	0.339	0.330	0.96 (0.90-1.03)	0.31
DQBI_170_H	26	2671	3526	0.189	0.191	0.98 (0.92-1.05)	0.57
DQBI_170_R	26	7553	9884	0.811	0.809	0.95 (0.80-1.14)	0.61
DQBI_185_N	26	4386	5711	0.339	0.330	0.96 (0.90-1.03)	0.31
DQBI_185_S	26	6922	9153	0.661	0.670	1.07 (0.96-1.18)	0.29
DQBI_188_I	26	2241	2836	0.159	0.146	0.96 (0.89-1.03)	0.29
DQBI_188_T	26	7562	9982	0.841	0.854	1.17 (0.97-1.42)	0.20
DQBI_200_N	22	129	175	0.008	0.008	0.98 (0.77-1.25)	0.88
DQBI_206_I	26	6340	8326	0.570	0.564	0.97 (0.89-1.05)	0.41
DQBI_206_V	26	5258	6930	0.429	0.435	1.06 (0.99-1.14)	0.19
DQBI_223_H	26	6284	8253	0.561	0.555	0.97 (0.89-1.05)	0.41
DQBI_223_R	26	5332	7032	0.438	0.444	1.06 (0.99-1.14)	0.19
DQBI_224_H	26	6284	8253	0.561	0.555	0.97 (0.89-1.05)	0.43
DQBI_224_Q	26	5332	7032	0.438	0.444	1.06 (0.99-1.14)	0.19
DQBI_227_Q	26	7495	9842	0.814	0.810	0.99 (0.84-1.17)	0.93
DQBI_227_R	26	2571	3439	0.184	0.189	1.04 (0.98-1.12)	0.29
DRBI_-25_K	26	6176	8075	0.545	0.543	0.97 (0.90-1.05)	0.42
DRBI_-25_R	26	5447	7169	0.454	0.457	1.01 (0.94-1.08)	0.88
<b>DRBI_-24_F</b>	<b>26</b>	<b>1892</b>	<b>2159</b>	<b>0.128</b>	<b>0.111</b>	<b>0.84 (0.78-0.91)</b>	<b>1.4×10<sup>-4</sup></b>
DRBI_-24_L	26	7637	10087	0.871	0.889	1.29 (1.02-1.64)	0.17
DRBI_-17_A	26	7203	9443	0.727	0.715	0.94 (0.84-1.06)	0.33
<b>DRBI_-17_T</b>	<b>26</b>	<b>3667</b>	<b>4995</b>	<b>0.273</b>	<b>0.285</b>	<b>1.10 (1.03-1.17)</b>	<b>0.03</b>
DRBI_-16_A	26	6176	8075	0.545	0.543	0.97 (0.90-1.05)	0.41
DRBI_-16_V	26	5447	7169	0.454	0.457	1.01 (0.94-1.08)	0.88
DRBI_-I_A	26	7645	10031	0.867	0.857	0.88 (0.70-1.10)	0.31
DRBI_-I_S	26	2012	2721	0.133	0.143	1.07 (0.99-1.14)	0.19
DRBI_4_Q	26	2064	2827	0.139	0.142	0.99 (0.93-1.07)	0.87
DRBI_4_R	26	7648	10019	0.861	0.858	0.96 (0.77-1.21)	0.75
DRBI_9_E	26	6458	8354	0.585	0.569	0.93 (0.85-1.01)	0.19
DRBI_9_W	26	5054	6846	0.407	0.423	1.07 (1.01-1.15)	0.17
DRBI_10_E	24	182	198	0.011	0.009	0.81 (0.65-1.01)	0.19
DRBI_10_Q	26	6176	8075	0.545	0.543	0.97 (0.9-1.05)	0.42
DRBI_10_Y	26	5344	7071	0.442	0.446	1.03 (0.96-1.10)	0.46
DRBI_11_G	26	1951	2675	0.131	0.134	0.99 (0.92-1.06)	0.74
DRBI_11_L	26	1566	2150	0.106	0.111	1.06 (0.98-1.15)	0.22
DRBI_11_P	26	2364	3215	0.163	0.174	1.08 (1.01-1.16)	0.14
DRBI_11_S	26	5344	7071	0.442	0.446	1.03 (0.96-1.10)	0.46
<b>DRBI_11_V</b>	<b>26</b>	<b>2051</b>	<b>2338</b>	<b>0.141</b>	<b>0.121</b>	<b>0.84 (0.78-0.90)</b>	<b>1.1×10<sup>-4</sup></b>
DRBI_12_K	26	6256	8177	0.558	0.554	0.97 (0.89-1.05)	0.42
DRBI_12_T	26	5344	7071	0.442	0.446	1.03 (0.96-1.10)	0.46
DRBI_13_F	26	1834	2490	0.126	0.129	1.05 (0.98-1.13)	0.29
DRBI_13_G	26	741	995	0.047	0.048	1.04 (0.94-1.16)	0.46
<b>DRBI_13_H</b>	<b>26</b>	<b>1892</b>	<b>2159</b>	<b>0.128</b>	<b>0.111</b>	<b>0.84 (0.78-0.91)</b>	<b>1.4×10<sup>-4</sup></b>
DRBI_13_R	26	2364	3215	0.163	0.174	1.08 (1.01-1.16)	0.14
DRBI_13_S	26	4888	6496	0.392	0.396	1.03 (0.97-1.10)	0.36
DRBI_13_Y	26	1951	2675	0.131	0.134	0.99 (0.92-1.06)	0.74
DRBI_14_E	26	7665	10041	0.869	0.866	0.95 (0.75-1.21)	0.70
DRBI_14_K	26	1951	2675	0.131	0.134	0.99 (0.92-1.06)	0.74
DRBI_16_H	26	7771	10203	0.953	0.952	1.06 (0.61-1.84)	0.83

Amino acid	N studies	N controls +	N cases +	F <sub>controls</sub>	F <sub>cases</sub>	OR (95% CI)	FDR q-value
DRBI_16_Y	26	741	995	0.047	0.048	1.04 (0.94-1.16)	0.46
DRBI_25_Q	26	1951	2675	0.131	0.134	0.99 (0.92-1.06)	0.74
DRBI_25_R	26	7665	10041	0.869	0.866	0.95 (0.75-1.21)	0.70
DRBI_26_F	26	7248	9501	0.737	0.734	0.93 (0.83-1.05)	0.31
DRBI_26_L	26	1935	2648	0.134	0.138	1.06 (0.99-1.14)	0.19
DRBI_26_Y	26	1897	2516	0.125	0.127	1.02 (0.95-1.10)	0.52
DRBI_28_D	26	7159	9395	0.724	0.718	1.05 (0.94-1.18)	0.38
DRBI_28_E	26	3582	4905	0.268	0.274	1.04 (0.98-1.11)	0.29
DRBI_30_C	26	1566	2150	0.106	0.111	1.06 (0.98-1.15)	0.22
DRBI_30_H	24	243	343	0.015	0.016	1.09 (0.92-1.31)	0.33
DRBI_30_L	26	1951	2675	0.131	0.134	0.99 (0.92-1.06)	0.74
DRBI_30_R	24	182	198	0.011	0.009	0.81 (0.65-1.01)	0.19
DRBI_30_Y	26	7159	9395	0.724	0.718	1.05 (0.94-1.18)	0.38
DRBI_31_F	26	7649	10066	0.874	0.871	1.15 (0.91-1.45)	0.31
DRBI_31_I	26	1679	2307	0.114	0.118	1.07 (0.99-1.15)	0.19
DRBI_31_V	24	182	198	0.011	0.009	0.81 (0.65-1.01)	0.19
DRBI_32_H	26	4021	5201	0.303	0.298	0.99 (0.93-1.05)	0.73
DRBI_32_Y	26	7073	9328	0.697	0.702	1.01 (0.91-1.13)	0.86
<b>DRBI_33_H</b>	<b>26</b>	<b>1892</b>	<b>2159</b>	<b>0.128</b>	<b>0.111</b>	<b>0.84 (0.78-0.91)</b>	<b>1.4×10<sup>-4</sup></b>
DRBI_33_N	26	7637	10087	0.872	0.889	1.29 (1.02-1.64)	0.17
DRBI_37_F	26	2420	3262	0.167	0.168	0.98 (0.92-1.05)	0.59
DRBI_37_L	24	243	343	0.015	0.016	1.09 (0.92-1.31)	0.33
DRBI_37_N	26	3378	4426	0.244	0.242	1.02 (0.95-1.08)	0.61
<b>DRBI_37_S</b>	<b>26</b>	<b>3669</b>	<b>5001</b>	<b>0.273</b>	<b>0.285</b>	<b>1.10 (1.03-1.17)</b>	<b>0.03</b>
DRBI_37_Y	26	3906	4977	0.294	0.279	0.93 (0.87-0.99)	0.14
DRBI_38_A	24	182	198	0.011	0.009	0.81 (0.65-1.01)	0.19
DRBI_38_L	24	243	343	0.015	0.016	1.09 (0.92-1.31)	0.33
DRBI_38_V	26	7789	10229	0.974	0.974	1.17 (0.41-3.29)	0.77
DRBI_40_F	24	7796	10235	0.989	0.991	0.83 (0.06-10.99)	0.89
DRBI_40_Y	24	182	198	0.011	0.009	0.81 (0.65-1.01)	0.19
DRBI_47_F	26	5830	7750	0.499	0.512	1.07 (0.99-1.15)	0.19
DRBI_47_Y	26	5831	7550	0.501	0.488	0.92 (0.86-0.99)	0.16
DRBI_57_A	26	547	677	0.032	0.033	0.95 (0.84-1.08)	0.43
DRBI_57_D	26	7317	9608	0.761	0.755	1.07 (0.94-1.22)	0.33
DRBI_57_S	26	728	994	0.045	0.048	1.02 (0.92-1.14)	0.66
DRBI_57_V	26	2260	3116	0.155	0.161	1.01 (0.95-1.09)	0.68
DRBI_58_A	26	7719	10103	0.893	0.887	0.76 (0.56-1.02)	0.19
DRBI_58_E	26	1549	2164	0.107	0.113	1.05 (0.97-1.14)	0.31
DRBI_60_H	26	547	677	0.032	0.033	0.95 (0.84-1.08)	0.43
DRBI_60_S	26	2260	3116	0.155	0.161	1.01 (0.95-1.09)	0.68
DRBI_60_Y	26	7497	9838	0.809	0.805	1.05 (0.89-1.23)	0.57
DRBI_67_F	26	2339	3222	0.168	0.178	1.06 (0.99-1.14)	0.19
DRBI_67_I	26	5322	7102	0.438	0.444	1.02 (0.96-1.09)	0.52
DRBI_67_L	26	4946	6250	0.392	0.375	0.92 (0.86-0.98)	0.14
DRBI_70_D	26	5485	7288	0.471	0.472	0.99 (0.92-1.06)	0.82
DRBI_70_Q	26	5675	7339	0.473	0.475	0.97 (0.9-1.04)	0.35
DRBI_70_R	26	839	1027	0.052	0.051	0.94 (0.85-1.04)	0.30
DRBI_71_A	26	2012	2721	0.133	0.143	1.07 (0.99-1.14)	0.19
DRBI_71_E	26	1961	2504	0.135	0.130	0.97 (0.90-1.04)	0.40
DRBI_71_K	26	2912	3698	0.200	0.193	0.96 (0.90-1.03)	0.31
DRBI_71_R	26	5882	7847	0.527	0.528	1.02 (0.95-1.10)	0.55

Amino acid	N studies	N controls +	N cases +	F <sub>controls</sub>	F <sub>cases</sub>	OR (95% CI)	FDR q-value
DRBI_73_A	26	7294	9589	0.749	0.745	1.07 (0.95-1.22)	0.31
DRBI_73_G	26	3474	4732	0.251	0.255	1.03 (0.96-1.09)	0.42
DRBI_74_A	26	6868	9050	0.661	0.660	1.07 (0.97-1.18)	0.26
DRBI_74_E	26	835	1011	0.052	0.050	0.93 (0.84-1.03)	0.26
DRBI_74_L	26	506	666	0.031	0.031	1.02 (0.90-1.16)	0.78
DRBI_74_Q	26	1951	2675	0.131	0.134	0.99 (0.92-1.06)	0.74
DRBI_74_R	26	1788	2365	0.118	0.119	1.02 (0.94-1.10)	0.64
DRBI_77_N	26	1788	2365	0.118	0.119	1.02 (0.94-1.10)	0.64
DRBI_77_T	26	7691	10093	0.882	0.881	0.97 (0.74-1.27)	0.83
DRBI_78_V	26	2064	2827	0.139	0.142	0.99 (0.93-1.07)	0.87
DRBI_78_Y	26	7648	10019	0.861	0.858	0.96 (0.77-1.21)	0.75
DRBI_85_A	26	470	695	0.030	0.034	1.08 (0.95-1.23)	0.31
DRBI_85_V	26	7779	10223	0.970	0.966	1.95 (0.93-4.11)	0.19
DRBI_86_G	26	6165	8083	0.539	0.539	0.98 (0.91-1.06)	0.56
DRBI_86_V	26	5533	7181	0.461	0.461	0.98 (0.91-1.05)	0.49
DRBI_96_E	26	1566	2150	0.106	0.111	1.06 (0.98-1.15)	0.22
DRBI_96_H	26	6405	8561	0.585	0.591	1.06 (0.97-1.15)	0.29
DRBI_96_Q	26	2519	3378	0.176	0.185	1.06 (0.99-1.13)	0.19
<b>DRBI_96_Y</b>	<b>26</b>	<b>1892</b>	<b>2159</b>	<b>0.128</b>	<b>0.111</b>	<b>0.84 (0.78-0.91)</b>	<b>1.4×10<sup>-4</sup></b>
<b>DRBI_98_E</b>	<b>26</b>	<b>3667</b>	<b>4613</b>	<b>0.271</b>	<b>0.255</b>	<b>0.89 (0.84-0.95)</b>	<b>6.4×10<sup>-3</sup></b>
DRBI_98_K	26	7199	9496	0.729	0.745	1.10 (0.98-1.24)	0.20
<b>DRBI_104_A</b>	<b>26</b>	<b>3667</b>	<b>4613</b>	<b>0.271</b>	<b>0.255</b>	<b>0.89 (0.84-0.95)</b>	<b>6.4×10<sup>-3</sup></b>
DRBI_104_S	26	7199	9496	0.729	0.745	1.10 (0.98-1.24)	0.20
DRBI_112_H	26	7788	10216	0.968	0.967	0.48 (0.21-1.11)	0.19
DRBI_112_Y	26	547	677	0.032	0.033	0.95 (0.84-1.08)	0.43
<b>DRBI_120_N</b>	<b>26</b>	<b>2051</b>	<b>2338</b>	<b>0.141</b>	<b>0.121</b>	<b>0.84 (0.78-0.9)</b>	<b>1.1×10<sup>-4</sup></b>
DRBI_120_S	26	7613	10066	0.859	0.879	1.33 (1.07-1.67)	0.12
DRBI_133_L	26	2364	3215	0.163	0.174	1.08 (1.01-1.16)	0.14
DRBI_133_R	26	7569	9950	0.837	0.826	0.97 (0.80-1.16)	0.71
DRBI_140_A	26	5135	6951	0.415	0.431	1.08 (1.01-1.15)	0.17
DRBI_140_T	26	6458	8354	0.585	0.569	0.93 (0.85-1.01)	0.19
DRBI_142_M	26	2364	3215	0.163	0.174	1.08 (1.01-1.16)	0.14
DRBI_142_V	26	7569	9950	0.837	0.826	0.97 (0.80-1.16)	0.71
DRBI_149_H	26	5344	7071	0.442	0.446	1.03 (0.96-1.10)	0.46
DRBI_149_Q	26	6256	8177	0.558	0.554	0.97 (0.89-1.05)	0.42
DRBI_166_Q	24	182	198	0.011	0.009	0.81 (0.65-1.01)	0.19
DRBI_166_R	24	7796	10235	0.989	0.991	0.83 (0.06-10.99)	0.89
<b>DRBI_180_L</b>	<b>26</b>	<b>1892</b>	<b>2159</b>	<b>0.128</b>	<b>0.111</b>	<b>0.84 (0.78-0.91)</b>	<b>1.4×10<sup>-4</sup></b>
DRBI_180_V	26	7637	10087	0.872	0.889	1.29 (1.02-1.64)	0.17
DRBI_181_M	26	2219	2997	0.151	0.153	0.98 (0.91-1.05)	0.55
DRBI_181_T	26	7620	9989	0.849	0.847	1.02 (0.83-1.26)	0.84
DRBI_189_R	26	7784	10220	0.969	0.969	1.28 (0.58-2.79)	0.54
DRBI_189_S	26	506	666	0.031	0.031	1.02 (0.90-1.16)	0.78
DRBI_231_P	24	182	198	0.011	0.009	0.81 (0.65-1.01)	0.19
DRBI_231_Q	24	7796	10235	0.989	0.991	0.83 (0.06-10.99)	0.89
DRBI_233_R	26	5055	6697	0.409	0.414	1.02 (0.96-1.09)	0.47
DRBI_233_T	26	6486	8486	0.591	0.586	0.97 (0.89-1.05)	0.46

F<sub>controls</sub>, pooled frequency of alleles in controls; F<sub>cases</sub>, pooled frequency of alleles in cases.

Odds ratios (OR) and 95% confidence intervals (CI) are computed under a dominant model adjusted for sex, study, and four principal components. Significant amino-acids are highlighted in bold characters.

<sup>a</sup> Amino acids finally retained after using backwards selection for a model including 11 amino-acids associated with PD in univariate analyses and all their 2x2 interactions.



**Supplementary table 6 Independent and joint associations of amino-acids V11 and H13 or H33 encoded by *HLA-DRBI* and Parkinson's disease**

DRBI_13_H or		N controls	N cases	OR (95% CI)	P
DRBI_11_V	DRBI_33_H <sup>a</sup>				
-	-	5746	7899	1.00 (ref.)	--
+	-	159	179	0.82 (0.65-1.03)	0.09
-	+	0	0	--	--
+	+	1892	2159	0.84 (0.78-0.90)	4.9×10 <sup>-6</sup>

Odds ratios (OR) and 95% confidence intervals (CI) are computed under a dominant model adjusted for sex, study, and four principal components.

<sup>a</sup> DRBI\_13\_H and DRBI\_33\_H are in perfect LD.

While no participants carried H13/H33 in the absence of V11, some participants carried V11 in the absence of H13(H33). Compared to V11-H13(H33)-, the association was similar for V11+H13(H33)- (OR=0.82) and V11+H13(H33)+ (OR=0.84); thus, H13(H33) had no effect among V11 carriers (OR=1.03, 95% CI=0.81-1.30, P=0.84).

**Supplementary table 7 Independent and joint associations of the shared epitope (SE) and VII with Parkinson's disease**

SE	VII	N controls	N cases	OR (95% CI)	P	P <sub>Interaction</sub>
-	-	4995	6837	1.00 (ref.)	-	
+	-	1435	2026	1.04 (0.96-1.13)	0.34	
-	+	287	308	0.74 (0.62-0.88)	8.6×10 <sup>-4</sup>	
+	+	1968	2275	0.86 (0.80-0.93)	1.0×10 <sup>-4</sup>	0.29

**Multiadjusted**

SE+ vs. SE-	1.06 (0.98-1.14)	0.13
VII+ vs. VII-	0.81 (0.74-0.88)	6.3×10 <sup>-7</sup>

Odds ratios (OR) and 95% confidence intervals (CI) are computed under a dominant model adjusted for sex, study, and four principal components.

The OR comparing SE+VII+ to SE-VII+ is 1.16 (95% CI=0.97-1.39, P=0.11).

The OR comparing SE+VII+ to SE-VII- is 0.83 (95% CI=0.75-0.91, P=1.2×10<sup>-4</sup>).

The following alleles carried both the SE and VII: *HLA-DRB1\*04:01*, *HLA-DRB1\*04:04*, *HLA-DRB1\*04:05*, *HLA-DRB1\*04:08*, *HLA-DRB1\*10:01*.

The following alleles carried the SE only: *HLA-DRB1\*01:01*, *HLA-DRB1\*01:02*.

The following alleles carried VII only: *HLA-DRB1\*04:02*, *HLA-DRB1\*04:03*, *HLA-DRB1\*04:06*, *HLA-DRB1\*04:07*.

**Supplementary table 8 Mendelian randomization analysis of the relation between genetically-predicted smoking initiation and Parkinson's disease stratified by *HLA-DRB1*: exclusion of 31 pleiotropic SNPs**

<i>HLA-DRB1</i>	0 allele or AA residue			1/2 alleles or AA residues			Interaction OR (95% CI) <sup>c</sup>	P
	OR per 1-SD increase in the prevalence of ever smoking (95% CI)	P	P-het.	OR per 1-SD increase in the prevalence of ever smoking (95% CI)	P	P-het.		
<b>Valine 11<sup>a</sup></b>	6383 controls, 8812 cases			2212 controls, 2531 cases				
Inverse variance weighted	0.73 (0.56-0.94)	0.01	0.77	1.42 (0.90-2.25)	0.13	0.37	1.96 (1.16-3.30)	0.01
Weighted median	0.69 (0.46-1.02)	0.06		1.46 (0.74-2.88)	0.28		2.13 (0.98-4.64)	0.06
Weighted mode	0.46 (0.17-1.19)	0.11		3.50 (0.55-22.0)	0.18		7.68 (1.03-57.2)	0.05
MR-Lasso	No invalid SNP ( $\lambda=0.22$ )			1.54 (0.98-2.44)	0.06 <sup>d</sup>		2.12 (1.25-3.58)	5.0×10 <sup>-3</sup>
MR-PRESSO			0.63			0.48		
<b>rs660895-G<sup>b</sup></b>	6498 controls, 8903 cases			2982 controls, 3521 cases				
Inverse variance weighted	0.72 (0.56-0.92)	0.01	0.88	1.46 (0.99-2.14)	0.06	0.35	2.02 (1.28-3.19)	3.0×10 <sup>-3</sup>
Weighted median	0.67 (0.46-0.96)	0.03		1.21 (0.68-2.15)	0.51		1.82 (0.92-3.59)	0.08
Weighted mode	0.58 (0.22-1.52)	0.27		1.39 (0.30-6.46)	0.67		2.40 (0.43-13.25)	0.34
MR-Lasso	No invalid SNP ( $\lambda=0.19$ )			1.40 (0.95-2.05)	0.09 <sup>e</sup>		1.94 (1.23-3.06)	4.3×10 <sup>-3</sup>
MR-PRESSO			0.88			0.31		
<b><i>HLA-DRB1</i>*04<sup>a</sup></b>	6563 controls, 9014 cases			2032 controls, 2329 cases				
Inverse variance weighted	0.73 (0.57-0.94)	0.01	0.81	1.41 (0.86-2.31)	0.17	0.55	1.94 (1.11-3.37)	0.02
Weighted median	0.64 (0.44-0.94)	0.02		1.47 (0.70-3.12)	0.31		2.30 (0.99-5.34)	0.06
Weighted mode	0.52 (0.21-1.31)	0.17		2.00 (0.30-13.25)	0.48		3.82 (0.51-28.77)	0.21
MR-Lasso	No invalid SNP ( $\lambda=0.20$ )			1.41 (0.86-2.31)	0.17 <sup>f</sup>		1.94 (1.11-3.37)	0.02
MR-PRESSO			0.70			0.67		

OR, odds ratio; CI, confidence interval; AA, amino acid; P-het., P for heterogeneity;  $\lambda$ , tuning parameter for MR-Lasso.

Valine 11 amino-acids and *HLA-DRB1*\*04 alleles were determined using imputation of HLA alleles and amino-acids based on SNPs from the HLA region.

After excluding 31 pleiotropic SNPs, analyses are based on 151 SNPs.

<sup>a</sup> Total number: 8595 controls, 11343 cases.

<sup>b</sup> Total number: 9480 controls, 12424 cases.

<sup>c</sup> The interaction OR represents the OR in carriers of 1/2 alleles or AA residues divided by the OR in carriers of 0 allele or AA residue.

<sup>d</sup> Number of invalid SNPs=3;  $\lambda=0.19$ .

<sup>e</sup> Number of invalid SNPs=5;  $\lambda=0.21$ .

<sup>f</sup> Number of invalid SNPs=7;  $\lambda=0.23$ .

**Supplementary table 9 *In silico* prediction of binding affinity of HLA-DRB1 alleles to alpha-synuclein derived peptides**

<b>Binding affinity (nM)</b>	<b>Category</b>	<b>Mean</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>	<b>P 25th</b>	<b>P 50th</b>	<b>P 75th</b>
<b><u>All HLA-DRB1 alleles (n=607)</u></b>								
<b>All peptides</b>	0 HC-VII-	5856	5998	31	34583	1461	3788	8120
	1 HC-VII+	6971	5484	76	26950	2507	5645	10161
	2 HC+VII-	8202	6900	47	35140	2843	6046	11711
	3 HC+VII-	7185	5815	63	28642	2620	5606	10228
<b>Y39</b>	0 HC-VII-	2426	2908	31	23497	653	1533	3145
	1 HC-VII+	4465	2734	614	12178	2487	3398	6835
	2 HC+VII-	4152	3912	97	27407	1457	3156	4870
	3 HC+VII-	3667	2588	535	13589	1613	2490	6315
<b><u>HLA-DRB1 alleles observed in Courage-PD (n=34)</u></b>								
<b>All peptides</b>	0 HC-VII-	6205	6772	42	34583	1455	3661	8222
	1 HC-VII+	6723	5394	116	25050	2342	5393	9655
	2 HC+VII-	8457	7526	47	35140	2810	5818	11923
	3 HC+VII-	6899	5734	97	26245	2440	5429	9782
<b>Y39</b>	0 HC-VII-	2610	4617	97	23497	703	1262	2130
	1 HC-VII+	4607	2942	959	8834	3075	3398	8131
	2 HC+VII-	4038	5383	365	27407	1457	2592	3964
	3 HC+VII-	3601	2495	726	6742	1809	2490	6378

SD, standard deviation; P, percentile; HC, homocitrullination of alpha-synuclein derived peptides; VII, valine at position 11 of the protein encoded by HLA-DRB1 alleles. We assessed the binding affinity of HLA-DRB1 alleles to peptides derived from alpha-synuclein using NetMHCIIpan 4.0.

**Supplementary table 10 *In silico* prediction of binding and non-binding alpha-synuclein derived peptides**

N (%)	Category			
	0 HC-V11-	1 HC-V11+	2 HC+V11-	3 HC+V11+
<b>All HLA-DRB1 alleles (n=607)<sup>a</sup></b>				
<b>Binder</b>	6874 (13.82)	1087 (12.72)	1762 (3.54)	843 (9.87)
<b>Non-binder</b>	42854 (86.18)	7457 (87.28)	47966 (96.46)	7701 (90.13)
<b>OR binder vs. non-binder (95% CI)</b>	1.00 (ref)	0.91 (0.85-0.97) <i>P</i> =0.0062	0.23 (0.22-0.24) <i>P</i> <1.0×10 <sup>-50</sup>	0.68 (0.63-0.74) <i>P</i> =3.6×10 <sup>-23</sup>
<b>HLA-DRB1 alleles observed in Courage-PD (n=34)<sup>b</sup></b>				
<b>Binder</b>	348 (14.5)	118 (13.66)	95 (3.96)	85 (9.84)
<b>Non-binder</b>	2052 (85.5)	746 (86.34)	2305 (96.04)	779 (90.16)
<b>OR binder vs. non-binder (95% CI)</b>	1.00 (ref)	0.93 (0.75-1.17) <i>P</i> =0.54	0.24 (0.19-0.31) <i>P</i> =3.1×10 <sup>-32</sup>	0.64 (0.50-0.83) <i>P</i> =5.8×10 <sup>-4</sup>

HC, homocitrullination of alpha-synuclein derived peptides: V11, valine at position 11 encoded by HLA-DRB1 alleles.

The percentage of binding peptides was determined using NetMHCIIpan 4.0.

Odds ratios (OR) and 95% confidence intervals (CI) computed using multinomial logistic regression.

<sup>a</sup> OR<sub>3 vs. 1</sub>=0.75 (95% CI=0.68-0.83; *P*=4.0×10<sup>-9</sup>). OR<sub>3 vs. 2</sub>=2.98 (95% CI=2.74-3.25; *P*<1.0×10<sup>-50</sup>). Interaction OR=3.28 (95% CI=2.94-3.66; *P*<1.0×10<sup>-50</sup>).

<sup>b</sup> OR<sub>3 vs. 1</sub>=0.69 (95% CI=0.51-0.93; *P*=0.01). OR<sub>3 vs. 2</sub>=2.65 (95% CI=1.95-3.59; *P*=3.3×10<sup>-10</sup>). Interaction OR=2.84 (95% CI=1.95-4.14; *P*=6.3×10<sup>-8</sup>).