Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eMethods.

Phenotype definition

In the UKB, diurnal preference was defined by the answer to the question “Do you consider yourself to be?” with one of six possible answers: “Definitely a ‘morning’ person”, “More a ‘morning’ than ‘evening’ person”, “More an ‘evening’ than a ‘morning’ person”, “Definitely an ‘evening’ person”, “Do not know” or “Prefer not to answer”[1]. This question is similar to the last question of the Morningness-Eveningness Questionnaire, a widely used tool to assess diurnal preference[2]. Those reporting definitely being a morning person or ‘more a morning than evening person’ were classified as reporting morning diurnal preference, and vice versa for evening preference.

Diurnal preference in the 23andMe cohort was assessed through the question “Are you naturally a night person or a morning person?” This question was presented twice, with answers in one instance including “Night owl”, “Early bird” and “Neither”, and answers for the second instance including “Night person”, “Morning person”, “Neither”, “It depends” and “I’m not sure”. 23andMe participants with inconsistent or neutral responses across both questions were excluded, and individuals with one neutral and one non-neutral response were coded based on their non-neutral response. The referent group comprised participants reporting evening preference (*n*=127,622), while those reporting morning preference were coded as the exposure group (*n*=120,478).

Data harmonization and identification of proxies

For each of the diurnal preference-associated variants we extracted genetic associations with MDD from the PGC-UKB meta-analysis. When genetic variants were not available in the MDD GWAS, we used biallelic proxies in high linkage disequilibrium as measured in the European sample of the 1000 Genomes Project (r^2>0.90, 7 proxies listed in eTable 2). These datasets were aligned to the same effect allele, assuming orientation to the forward strand in all datasets.

Sensitivity analyses

We performed a series of sensitivity analyses to assess the impact of bias attributable to horizontal pleiotropy, residual linkage-disequilibrium between variants, and variant weighting.

Horizontal pleiotropy

To assess sensitivity of results to horizontal pleiotropy, we first considered a set of model-based analyses that each relax distinct assumptions regarding pleiotropy. We used the following models: robust, penalized IVW[3], weighted median[4], Bayesian-weighted MR[5], MR-RAPS[6], and MR-Egger[7]. The intercept from the Egger model can be used for a statistical test for pleiotropy in the analysis. Second, we conducted analyses investigating the influence of pleiotropic outlier variants using the MR-PRESSO[8] and RadialMR[9] methods[10]. Third, we removed variants from the diurnal preference genetic instrument that were associated with one of the following self-reported sleep phenotypes in UKB at varying *P* value thresholds ($5x10^{-8}$, $5x10^{-5}$, and $5x10^{-3}$): sleep duration[11] (*n*=446,118), short sleep duration (106,192 cases / 305,742 controls), long sleep duration (34,184 cases / 305,742 controls), insomnia symptoms[12] (129,270 cases / 108,352 controls), napping (*n*=452,633), and daytime sleepiness[13]

(*n*=452,071). To examine sensitivity to single outlying variants, we performed a leave-one-out analysis, systematically removing a single variant in the genetic instrument and re-estimating IVW effects[10]. Finally, we created scatter and funnel plots to visually inspect the data for strong influence by single variants, or for systemic bias across multiple variants[10].

Residual linkage-disequilibrium

To determine whether residual correlations between variants influenced our results, we used a stricter clumping threshold (10Mb clumping window, r^2=0.001) to further prune the set of diurnal preference variants previously reported as independent[1]. This pruned set of variants was only considered as a sensitivity analysis because variants were already selected to be independent in the initial GWAS[1].

Variant weighting

Although all included diurnal preference variants were genome-wide significant in meta-analysis, we performed an analysis using only variants attaining genome-wide significance in 23andMe to strengthen the case for independence of the exposure and outcome datasets, and to assess for potential bias due to weak instruments.

The 23andMe GWAS did not use linear mixed models to derive their genetic associations and the genetic association estimates may therefore be biased by residual population stratification[1]. We therefore performed analyses using instrument weights from

the entire UK Biobank sample (with associations estimated using the BOLT linear mixed model software[14]). We tested this genetic instrument against the PGC outcome dataset to minimize exposure-outcome sample overlap.

To minimize the potential for associations of the genetic variants with diurnal preference to be confounded by comorbid working patterns or psychiatric disease, we used genetic associations from the UKB excluding participants reporting any of the following: shift or night shift work, taking medication for sleep or psychiatric disorders, an ICD-10 or self-reported diagnosis of MDD, schizophrenia, bipolar disorder, anxiety disorders or mood disorder[1]. This approach is analogous to prior MR investigations that aimed to minimize confounding of variant associations by comorbidities[15]. As above, we tested this genetic instrument against the PGC outcome dataset to minimize exposure-outcome sample overlap.

Assessing for a reverse causal effect of liability to MDD on diurnal preference

We assessed for bias due to reverse causality by testing the effect of MDD genetic liability (using the PGC-UKB) on morning diurnal preference in UK Biobank (binary trait; n=449,734[1]). We identified genetic proxies for liability to MDD as genome-wide significant genetic variants ($P<5\times10^{-8}$) that were present in the diurnal preference dataset, and which were independent (pair-wise $r^2<0.001$). This approach identified 50 independent variants for use as genetic proxies for MDD liability in MR analyses.

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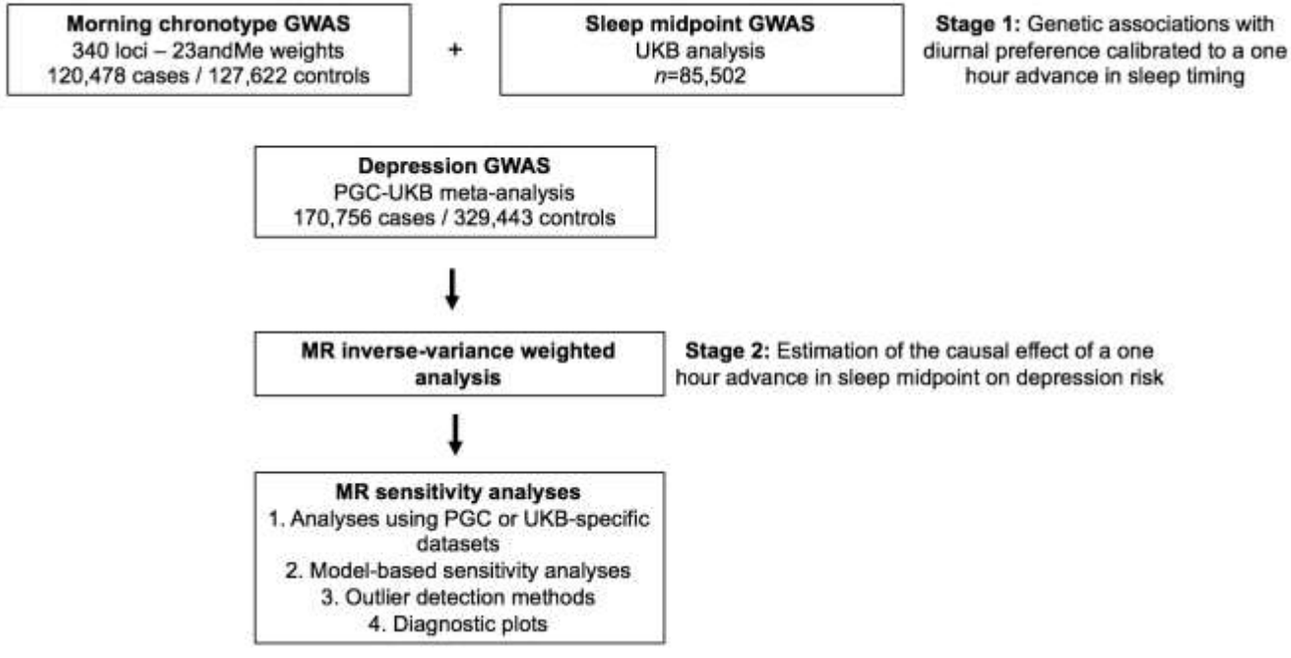
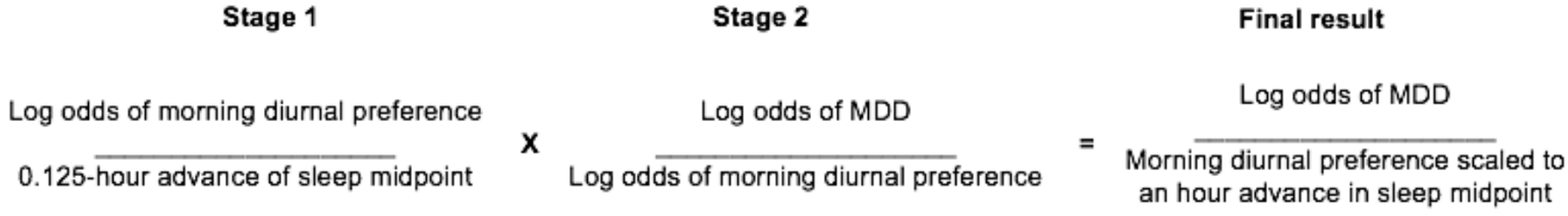
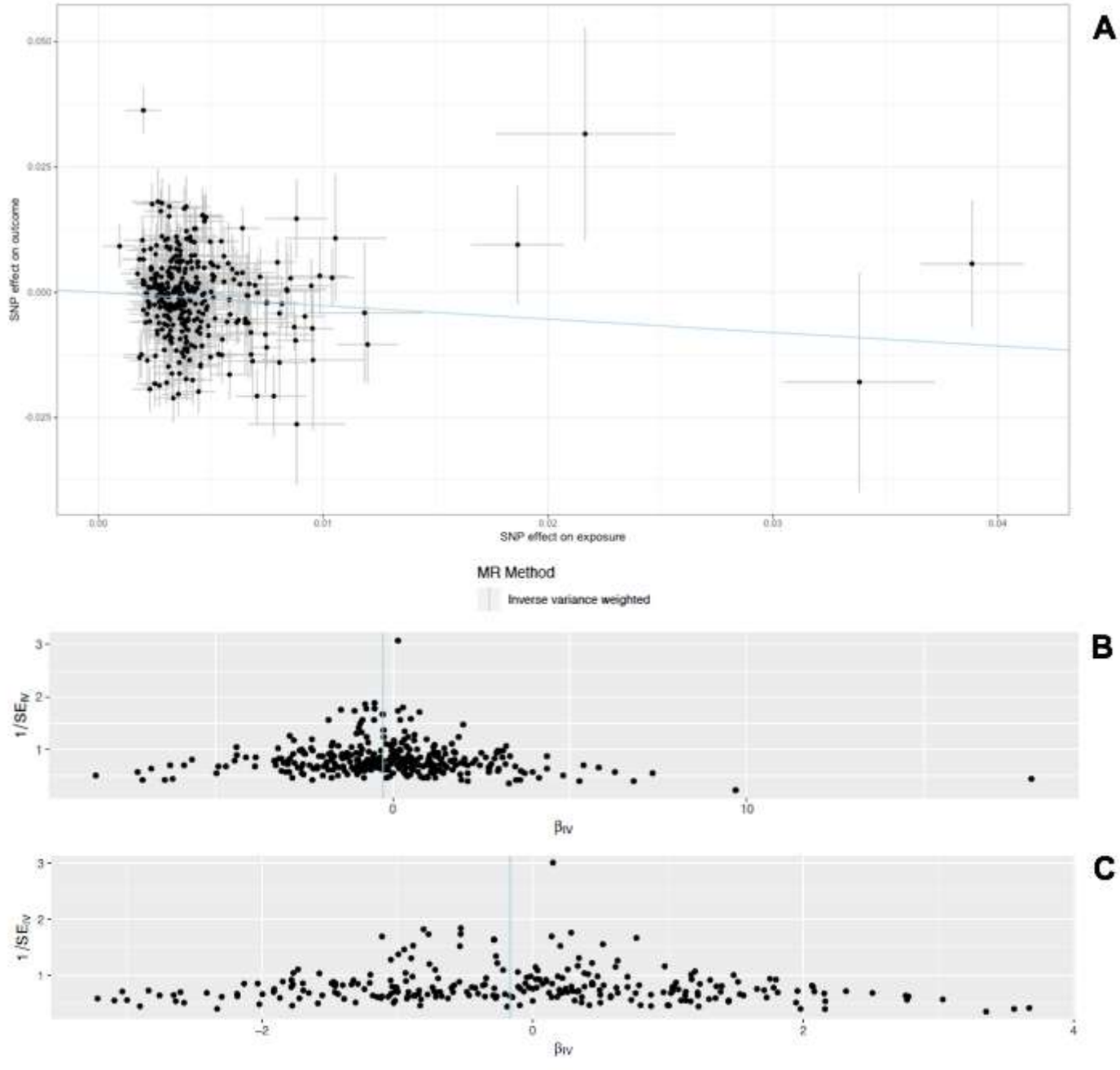
eFigure 1. Workflow of Mendelian randomization analyses. The Psychiatric Genomics Consortium (PGC) dataset included 45,369 cases and 97,250 controls), while the UK Biobank (UKB) dataset included 113,769 cases and 208,811 controls.



eFigure 2. Graphical portrayal of Mendelian randomization scaling method.



eFigure 3. Graphical assessment of bias in the primary Mendelian randomization analysis. (A) Scatter plot of SNP effects on morning diurnal preference (scaled to hour earlier sleep midpoint) plotted against SNP effect on log-odds of depression in PGC-UKB. Each point represents one of the variants proxying diurnal preference, with the bars representing standard errors of SNP effect estimates on the diurnal preference exposure and the MDD outcome. The diagonal line represents the inverse-variance weighted regression line, and the slope of this line represents the causal effect of diurnal preference on MDD, scaled to an hour earlier sleep midpoint. **(B)** Funnel plot of causal effect estimates (x-axis) plotted against 1/square root (standard error of causal effect estimates) using all SNPs proxying diurnal preference. In the absence of unbalanced horizontal pleiotropy, the points should fall symmetrically on either side of the origin. **(C)** Funnel plot of causal effect estimates plotted against 1/square root of the standard error of causal effect estimates using SNPs remaining after RadialMR pruning of potentially pleiotropic outlier SNPs. In the absence of unbalanced horizontal pleiotropy, the points should fall symmetrically on either side of the origin.



eTable 1. Genetic associations of all 340 genetic variants with morning diurnal preference in the 23andMe sample. EA: effect allele; OA: other allele.

SNP	EA	OA	EA frequency	Beta	Standard error	P value
rs909757	T	C	0.630	0.020	0.006	1.05E-03
rs61773390	T	G	0.193	0.077	0.008	6.29E-24
rs12065331	T	C	0.313	-0.030	0.007	5.35E-06
rs17448682	T	C	0.234	0.035	0.007	8.35E-07
rs10917513	T	C	0.648	-0.035	0.006	2.88E-08
rs10916892	T	C	0.620	-0.037	0.006	2.40E-09
rs2506089	T	G	0.568	0.028	0.006	1.21E-05
rs12140153	T	G	0.089	-0.068	0.012	1.44E-08
rs11208844	A	G	0.141	-0.032	0.008	1.84E-04
rs12040629	A	G	0.160	0.084	0.008	7.07E-25
rs11588913	A	G	0.404	-0.021	0.006	5.68E-04
rs5016898	T	C	0.424	-0.029	0.006	1.31E-06
rs72720396	A	G	0.774	-0.037	0.007	4.94E-07
rs481214	A	T	0.606	0.020	0.006	1.22E-03
rs11165655	A	G	0.528	-0.029	0.006	1.63E-06
rs17575798	A	G	0.192	-0.034	0.008	9.47E-06
rs6690292	T	C	0.729	-0.025	0.007	1.64E-04
rs11102807	A	G	0.536	-0.019	0.006	1.64E-03
rs9436119	A	G	0.384	0.053	0.006	9.87E-17
rs6665637	A	G	0.280	-0.027	0.007	1.09E-04
rs115073088	A	G	0.975	-0.077	0.018	2.71E-05
rs975025	T	C	0.076	-0.052	0.011	6.50E-06
rs1144566	T	C	0.029	0.312	0.018	3.20E-65
rs1221502	A	C	0.739	0.023	0.007	8.22E-04
rs4657983	A	G	0.651	-0.031	0.006	7.38E-07
rs6429233	A	G	0.457	0.022	0.006	2.82E-04

rs13011556	C	G	0.762	-0.025	0.007	5.27E-04
rs62124718	A	G	0.895	-0.057	0.010	1.01E-08
rs72796401	A	T	0.190	0.029	0.008	1.35E-04
rs6718511	A	G	0.557	0.026	0.006	2.27E-05
rs11678584	A	T	0.860	-0.041	0.009	2.70E-06
rs848552	C	G	0.476	-0.033	0.006	5.11E-08
rs7602499	T	C	0.354	0.026	0.006	4.34E-05
rs75120545	T	C	0.032	0.085	0.018	2.93E-06
rs6544906	A	C	0.562	0.030	0.006	6.65E-07
rs17396357	T	C	0.382	0.032	0.006	1.88E-07
rs12470914	A	T	0.101	0.069	0.010	1.01E-11
rs4672458	T	C	0.476	-0.018	0.006	2.48E-03
rs13414393	T	C	0.541	-0.021	0.006	3.50E-04
rs10175975	T	C	0.185	0.016	0.008	3.37E-02
rs359248	T	G	0.456	-0.038	0.006	3.13E-10
rs812925	C	G	0.646	-0.031	0.006	5.38E-07
rs113851554	T	G	0.057	-0.067	0.014	2.18E-06
rs2706762	T	C	0.150	-0.045	0.008	7.00E-08
rs12464387	A	G	0.464	-0.024	0.006	8.17E-05
rs6727752	A	G	0.357	0.023	0.007	4.50E-04
rs10520176	T	C	0.493	0.039	0.006	3.06E-10
rs11681299	T	C	0.284	0.035	0.007	1.02E-07
rs34509802	A	G	0.179	0.051	0.008	2.37E-10
rs76064513	T	C	0.134	0.042	0.009	3.70E-06
rs77248969	A	G	0.112	-0.034	0.009	1.16E-04
rs28380327	A	T	0.632	0.052	0.006	8.21E-17
rs2166559	T	C	0.861	-0.025	0.009	4.01E-03
rs747003	T	C	0.609	0.017	0.006	4.53E-03
rs13004345	T	C	0.648	-0.026	0.006	3.87E-05
rs6433478	T	C	0.460	-0.035	0.006	6.85E-09

rs4666682	A	G	0.180	-0.029	0.008	1.56E-04
rs11677484	T	G	0.257	0.018	0.007	9.81E-03
rs1064213	A	G	0.483	0.065	0.006	1.99E-27
rs184033703	A	G	0.059	0.054	0.013	1.98E-05
rs80271258	T	C	0.084	-0.096	0.011	1.48E-18
rs62182135	A	C	0.329	-0.026	0.006	4.77E-05
rs35346733	A	G	0.194	-0.032	0.008	2.99E-05
rs111261826	A	C	0.679	-0.031	0.006	1.31E-06
rs149611468	T	C	0.989	0.174	0.032	5.00E-08
rs6794796	A	G	0.290	0.021	0.007	1.34E-03
rs9817910	A	G	0.558	-0.016	0.006	6.16E-03
rs73050286	T	C	0.782	0.030	0.007	3.36E-05
rs2362775	T	C	0.534	-0.008	0.006	2.07E-01
rs114848860	A	T	0.974	-0.095	0.021	4.29E-06
rs78580841	T	C	0.069	0.046	0.012	2.10E-04
rs12636669	T	C	0.080	0.071	0.011	1.69E-10
rs17007397	C	G	0.580	0.026	0.006	2.10E-05
rs7626335	A	C	0.331	-0.041	0.006	9.21E-11
rs7429614	T	G	0.416	0.046	0.006	4.00E-14
rs12631477	T	C	0.798	0.028	0.007	1.69E-04
rs1449403	A	G	0.123	0.055	0.009	3.13E-09
rs34967119	A	G	0.496	0.023	0.006	1.28E-04
rs1398346	T	C	0.867	0.033	0.009	1.46E-04
rs1800828	C	G	0.751	0.016	0.007	2.33E-02
rs72950188	T	C	0.924	0.054	0.011	1.36E-06
rs72966564	T	C	0.251	-0.020	0.007	7.79E-03
rs13065394	T	G	0.286	-0.024	0.007	3.02E-04
rs4550782	T	G	0.666	0.029	0.006	4.16E-06
rs7649164	T	G	0.575	0.024	0.006	1.20E-04
rs6440833	A	G	0.464	0.029	0.006	1.41E-06

rs35588117	A	G	0.102	-0.033	0.010	1.29E-03
rs1599374	A	G	0.516	0.037	0.006	4.34E-10
rs3850174	A	T	0.258	-0.039	0.007	2.53E-08
rs301218	A	G	0.392	-0.032	0.006	1.02E-07
rs9836621	T	C	0.522	-0.040	0.006	1.21E-11
rs1468945	A	G	0.785	-0.036	0.007	9.81E-07
rs3796618	A	T	0.529	-0.020	0.006	8.43E-04
rs4690085	A	G	0.535	-0.015	0.006	1.38E-02
rs4698678	C	G	0.279	0.038	0.007	2.26E-08
rs1502249	A	G	0.522	0.022	0.006	3.02E-04
rs6838677	A	C	0.669	-0.022	0.006	5.24E-04
rs4860734	A	G	0.290	0.024	0.007	2.00E-04
rs6816922	A	C	0.538	-0.022	0.006	1.86E-04
rs6846730	T	C	0.235	-0.029	0.007	3.82E-05
rs2850979	T	C	0.760	-0.022	0.007	1.48E-03
rs7700110	A	G	0.257	0.031	0.007	8.01E-06
rs17455138	T	C	0.766	0.041	0.007	7.25E-09
rs4241964	T	G	0.522	-0.023	0.006	1.88E-04
rs938836	A	G	0.467	-0.027	0.006	1.09E-05
rs72729847	T	C	0.801	-0.036	0.007	1.27E-06
rs9997394	A	G	0.287	-0.031	0.007	2.30E-06
rs10058356	T	C	0.696	-0.018	0.007	6.20E-03
rs7701529	A	T	0.239	-0.029	0.007	2.82E-05
rs7721608	T	G	0.465	0.030	0.006	5.00E-07
rs66507804	T	C	0.799	-0.038	0.008	5.51E-07
rs4269995	T	C	0.251	-0.047	0.007	1.09E-11
rs77960	A	G	0.330	0.016	0.006	1.12E-02
rs1559253	A	G	0.359	0.036	0.006	1.05E-08
rs17140201	A	G	0.172	-0.024	0.008	3.22E-03
rs13172141	A	T	0.569	0.028	0.006	5.01E-06

rs67988891	C	G	0.682	-0.031	0.006	1.27E-06
rs2901796	A	G	0.398	0.026	0.006	2.68E-05
rs42210	C	G	0.712	-0.031	0.007	3.34E-06
rs12518401	A	G	0.384	-0.034	0.007	2.04E-07
rs465670	T	C	0.540	0.023	0.006	1.38E-04
rs9394154	C	G	0.436	-0.019	0.006	1.72E-03
rs9381812	A	G	0.705	-0.070	0.007	9.63E-27
rs1811899	T	C	0.790	-0.037	0.007	2.89E-07
rs9465253	T	C	0.280	0.026	0.007	8.48E-05
rs766406	T	G	0.641	-0.034	0.006	4.01E-08
rs605203	A	C	0.653	-0.020	0.007	1.79E-03
rs13203140	T	C	0.635	-0.029	0.006	2.79E-06
rs3923809	A	G	0.695	-0.029	0.006	6.07E-06
rs12206814	C	G	0.487	0.017	0.007	1.08E-02
rs2396004	A	G	0.435	0.025	0.006	2.29E-05
rs3857599	A	C	0.166	0.019	0.008	1.88E-02
rs2653349	A	G	0.207	0.074	0.008	9.08E-23
rs9476310	T	C	0.510	0.032	0.006	8.61E-08
rs1931814	A	G	0.479	0.031	0.006	1.84E-07
rs2881955	T	C	0.279	0.028	0.007	3.14E-05
rs12195792	A	T	0.272	0.047	0.007	1.49E-12
rs11154718	T	C	0.430	-0.027	0.006	5.63E-06
rs60616179	A	G	0.944	0.031	0.013	1.78E-02
rs4535583	T	C	0.699	0.027	0.007	3.49E-05
rs9496643	G	A	0.733	-0.023	0.007	6.04E-04
rs2050185	A	G	0.625	0.018	0.006	2.74E-03
rs9479402	T	C	0.988	-0.272	0.027	6.75E-24
rs9347926	A	T	0.441	0.032	0.006	1.64E-07
rs9348050	T	C	0.486	0.019	0.006	1.49E-03
rs4027217	A	C	0.217	-0.024	0.007	8.71E-04

rs10237162	T	C	0.723	0.050	0.007	8.94E-14
rs10951325	T	C	0.632	0.037	0.006	2.47E-09
rs6967481	T	C	0.501	0.036	0.006	2.52E-09
rs4236237	A	C	0.599	-0.031	0.006	4.42E-07
rs2944831	A	G	0.295	0.025	0.007	2.02E-04
rs3807651	A	T	0.494	0.022	0.006	2.99E-04
rs10254050	C	G	0.191	-0.076	0.008	3.64E-24
rs4729854	A	T	0.470	-0.056	0.007	6.26E-16
rs6961970	A	C	0.239	0.038	0.007	1.48E-07
rs17302081	T	C	0.441	0.014	0.006	1.97E-02
rs6968240	A	C	0.417	0.033	0.006	9.69E-08
rs62465218	A	C	0.146	-0.039	0.009	4.97E-06
rs6958557	T	G	0.607	0.035	0.006	9.06E-09
rs113161209	A	G	0.077	0.039	0.011	4.42E-04
rs2072413	T	C	0.262	-0.024	0.007	8.48E-04
rs62479736	T	G	0.292	0.026	0.007	1.14E-04
rs35524253	A	G	0.354	0.047	0.006	8.57E-14
rs2979139	A	G	0.505	-0.030	0.006	5.57E-07
rs2322605	A	G	0.468	-0.025	0.006	3.35E-05
rs71523448	C	G	0.079	-0.063	0.012	6.25E-08
rs6993892	T	C	0.616	-0.037	0.006	1.45E-09
rs6468316	T	C	0.471	-0.015	0.006	1.45E-02
rs7845620	A	C	0.834	-0.058	0.008	5.72E-13
rs10109566	A	G	0.485	-0.022	0.006	2.74E-04
rs34054660	A	G	0.575	0.033	0.006	3.93E-08
rs187028	A	T	0.315	-0.028	0.007	1.94E-05
rs16939162	A	G	0.830	0.033	0.008	4.04E-05
rs6988733	T	C	0.349	0.025	0.006	5.80E-05
rs7006885	A	G	0.288	0.050	0.007	4.66E-14
rs3100052	A	G	0.389	0.021	0.006	6.77E-04

rs2737245	T	G	0.275	0.035	0.007	3.01E-07
rs1871729	A	G	0.682	-0.026	0.006	4.02E-05
rs6477309	T	C	0.666	0.035	0.006	3.78E-08
rs2844016	T	C	0.294	0.031	0.007	3.86E-06
rs308521	T	C	0.604	0.031	0.006	5.09E-07
rs4878734	A	T	0.511	0.016	0.006	5.83E-03
rs6560218	T	C	0.518	-0.021	0.006	5.42E-04
rs62553781	T	C	0.033	-0.060	0.018	7.07E-04
rs12378543	T	C	0.384	-0.022	0.006	3.22E-04
rs555784	A	T	0.380	-0.029	0.006	3.69E-06
rs295268	T	C	0.740	-0.026	0.007	1.16E-04
rs3138490	A	T	0.515	0.023	0.006	1.30E-04
rs10759208	T	C	0.614	-0.026	0.006	2.18E-05
rs11788633	C	G	0.655	0.029	0.006	3.39E-06
rs10818834	T	C	0.730	0.026	0.007	7.91E-05
rs10988239	T	C	0.512	-0.016	0.006	9.61E-03
rs12380242	T	C	0.506	-0.016	0.006	7.06E-03
rs28458909	T	C	0.123	-0.072	0.010	2.92E-12
rs497338	T	C	0.288	0.029	0.007	6.46E-06
rs66617308	T	C	0.671	0.017	0.006	7.89E-03
rs9416744	A	C	0.260	0.044	0.007	8.45E-11
rs11597421	A	G	0.497	-0.026	0.006	2.39E-05
rs12249410	T	G	0.108	-0.031	0.010	1.40E-03
rs17712705	A	G	0.327	-0.029	0.006	5.73E-06
rs2298117	T	C	0.448	-0.018	0.006	2.75E-03
rs10762434	C	G	0.775	0.033	0.007	3.68E-06
rs2648721	T	G	0.704	-0.021	0.007	1.29E-03
rs11186842	T	A	0.277	0.027	0.007	4.36E-05
rs1163238	A	G	0.389	-0.018	0.006	2.86E-03
rs7900191	T	C	0.404	-0.018	0.006	3.20E-03

rs11200159	A	C	0.655	-0.023	0.006	3.86E-04
rs3808964	T	G	0.633	0.015	0.006	1.25E-02
rs9664044	T	C	0.232	-0.025	0.007	4.89E-04
rs10830107	A	G	0.792	0.031	0.007	2.03E-05
rs76518095	T	C	0.077	0.046	0.012	7.76E-05
rs12771973	A	G	0.248	-0.028	0.007	7.15E-05
rs10832648	A	C	0.199	-0.030	0.007	4.74E-05
rs10742179	A	G	0.263	0.039	0.007	1.15E-08
rs4923541	T	C	0.510	0.028	0.006	2.45E-06
rs621421	T	C	0.626	-0.029	0.006	3.09E-06
rs11032362	A	G	0.094	0.079	0.010	3.79E-15
rs7111582	A	G	0.896	-0.048	0.010	8.68E-07
rs10838687	T	G	0.792	0.045	0.007	1.12E-09
rs12808544	A	C	0.241	-0.034	0.007	8.82E-07
rs662094	A	G	0.494	0.036	0.006	1.93E-09
rs1278402	A	G	0.736	0.038	0.007	2.15E-08
rs1508608	A	G	0.320	0.040	0.006	2.85E-10
rs4121878	C	G	0.501	0.024	0.006	7.27E-05
rs17577073	A	C	0.564	0.028	0.006	3.12E-06
rs2514214	A	G	0.269	0.026	0.007	1.33E-04
rs4936290	A	C	0.658	-0.019	0.007	3.68E-03
rs3867239	A	G	0.376	0.032	0.006	2.30E-07
rs74357745	A	G	0.880	0.021	0.009	2.34E-02
rs7943634	T	C	0.308	-0.020	0.007	1.66E-03
rs11062167	A	G	0.543	0.029	0.006	1.39E-06
rs1799464	A	G	0.287	-0.025	0.007	2.72E-04
rs12298405	T	C	0.330	-0.024	0.006	1.82E-04
rs2433634	A	C	0.724	-0.028	0.007	4.45E-05
rs11611435	T	C	0.556	0.023	0.006	1.94E-04
rs13377754	T	C	0.610	0.055	0.006	6.15E-19

rs1843888	A	G	0.543	0.060	0.006	1.46E-23
rs247929	C	G	0.508	0.036	0.006	2.83E-09
rs7975791	T	C	0.038	0.054	0.016	7.53E-04
rs4761989	T	C	0.868	-0.037	0.009	2.29E-05
rs7299922	A	G	0.639	0.023	0.006	4.57E-04
rs487722	T	G	0.208	0.026	0.008	6.98E-04
rs10877962	T	C	0.408	0.049	0.006	8.23E-16
rs711098	A	C	0.398	0.033	0.006	4.89E-08
rs10777221	T	C	0.596	-0.028	0.006	3.02E-06
rs7304278	A	G	0.283	-0.030	0.007	6.84E-06
rs7298532	T	C	0.721	0.025	0.007	1.51E-04
rs3955311	T	C	0.149	0.031	0.009	2.03E-04
rs80097534	T	G	0.097	-0.024	0.011	2.73E-02
rs9597241	A	C	0.811	0.037	0.008	1.53E-06
rs12871550	A	G	0.323	0.032	0.006	7.51E-07
rs9571526	T	G	0.771	-0.032	0.007	8.15E-06
rs2593487	A	G	0.336	-0.035	0.006	6.05E-08
rs495593	A	G	0.738	0.032	0.007	1.94E-06
rs45597035	A	G	0.647	-0.023	0.006	3.06E-04
rs9573980	A	G	0.966	0.150	0.017	1.36E-19
rs1886205	A	C	0.760	0.034	0.007	1.50E-06
rs9558942	T	C	0.672	-0.032	0.006	4.05E-07
rs3815983	T	C	0.360	-0.025	0.006	9.23E-05
rs1163628	A	C	0.857	-0.033	0.009	9.68E-05
rs61990287	A	C	0.274	0.027	0.007	8.34E-05
rs2878172	A	G	0.569	-0.030	0.006	8.50E-07
rs962961	T	C	0.331	-0.025	0.006	5.47E-05
rs6573308	T	C	0.394	0.026	0.006	1.60E-05
rs7143933	T	G	0.262	0.034	0.007	5.12E-07
rs2978382	T	C	0.585	0.021	0.006	4.89E-04

rs4903203	A	G	0.324	0.027	0.006	2.79E-05
rs12436039	T	C	0.880	0.048	0.009	1.59E-07
rs4550384	T	G	0.758	0.028	0.007	8.03E-05
rs710284	T	C	0.580	0.025	0.006	4.10E-05
rs11845599	A	G	0.635	-0.034	0.006	7.53E-08
rs59986227	C	G	0.749	-0.029	0.007	3.74E-05
rs12442008	T	C	0.259	0.035	0.007	1.47E-07
rs4775086	A	G	0.236	-0.030	0.007	2.62E-05
rs12442674	A	C	0.730	0.040	0.008	5.37E-07
rs1873958	A	G	0.409	0.041	0.006	9.56E-12
rs72773411	A	G	0.153	0.035	0.009	4.79E-05
rs12445235	C	G	0.410	-0.024	0.006	8.86E-05
rs2304467	C	G	0.607	-0.020	0.006	1.32E-03
rs11641239	T	C	0.285	0.017	0.007	9.18E-03
rs7203707	A	C	0.519	-0.016	0.006	8.11E-03
rs4785296	C	G	0.231	0.029	0.007	3.55E-05
rs3743794	A	G	0.607	-0.021	0.006	8.08E-04
rs12927162	A	G	0.728	0.066	0.007	3.02E-22
rs1421085	T	C	0.594	-0.044	0.006	4.08E-13
rs2550298	T	C	0.381	-0.043	0.006	8.77E-12
rs8044054	T	C	0.388	0.031	0.006	2.66E-07
rs72790386	T	G	0.034	0.071	0.017	4.83E-05
rs17604349	A	G	0.185	-0.044	0.008	4.34E-09
rs1061032	T	G	0.094	0.065	0.010	8.61E-11
rs11545787	A	G	0.248	-0.071	0.007	4.43E-23
rs12950382	A	G	0.720	0.027	0.007	5.00E-05
rs4365329	A	T	0.538	-0.025	0.006	2.96E-05
rs2011528	T	C	0.825	-0.029	0.008	1.39E-04
rs3760381	A	G	0.254	0.030	0.007	1.09E-05
rs7225002	A	G	0.592	-0.021	0.006	6.21E-04

rs12600452	A	G	0.202	0.034	0.008	5.54E-06
rs12051	A	G	0.612	-0.033	0.006	7.98E-08
rs55846845	A	G	0.518	-0.021	0.006	4.15E-04
rs72829706	A	G	0.960	0.053	0.015	5.78E-04
rs8072058	A	T	0.781	-0.031	0.007	1.29E-05
rs412000	C	G	0.555	-0.025	0.006	2.91E-05
rs58681483	A	G	0.918	0.055	0.010	1.23E-07
rs72841368	A	T	0.810	-0.030	0.008	6.64E-05
rs2916148	A	G	0.452	0.033	0.006	6.69E-08
rs2580160	A	G	0.555	0.024	0.006	5.76E-05
rs62082402	T	G	0.194	0.060	0.011	5.25E-08
rs1788784	A	G	0.344	-0.043	0.006	1.14E-11
rs1013987	T	C	0.403	-0.022	0.006	3.31E-04
rs4419127	A	G	0.662	0.060	0.006	1.13E-21
rs9950528	A	G	0.651	-0.025	0.006	5.33E-05
rs12969848	T	C	0.531	0.036	0.006	1.37E-09
rs9956387	A	T	0.495	-0.018	0.006	2.62E-03
rs4800998	A	T	0.183	0.057	0.008	4.56E-13
rs9964420	A	C	0.298	-0.064	0.007	1.42E-21
rs11152350	A	C	0.467	-0.029	0.006	1.13E-06
rs34329963	T	C	0.113	-0.039	0.010	3.84E-05
rs1025601	T	C	0.386	-0.016	0.006	7.61E-03
rs10402849	T	C	0.200	0.020	0.008	7.23E-03
rs36055559	A	G	0.166	-0.046	0.010	9.49E-06
rs7248205	T	C	0.600	0.032	0.006	2.90E-07
rs9636202	A	G	0.266	-0.023	0.007	8.26E-04
rs73026775	A	G	0.125	-0.041	0.010	7.89E-05
rs4804951	A	G	0.331	0.021	0.006	1.02E-03
rs56113850	T	C	0.423	-0.031	0.006	4.30E-07
rs58876439	A	G	0.067	0.053	0.012	9.84E-06

rs11670534	T	C	0.161	-0.026	0.008	1.61E-03
rs6131805	T	G	0.402	0.026	0.006	2.56E-05
rs6131942	A	G	0.418	-0.033	0.006	4.93E-08
rs1474754	A	G	0.264	-0.029	0.007	2.22E-05
rs6047481	A	T	0.671	0.025	0.006	9.85E-05
rs1737893	T	C	0.381	-0.028	0.006	6.11E-06
rs2072727	T	C	0.433	0.033	0.006	3.01E-08
rs57236847	C	G	0.603	0.030	0.006	1.09E-06
rs695459	T	C	0.391	-0.019	0.006	1.66E-03
rs28459838	T	C	0.237	0.032	0.008	2.13E-05
rs118047999	C	G	0.246	0.036	0.007	2.97E-07
rs139911	T	C	0.572	-0.024	0.006	5.10E-05
rs9611597	A	T	0.837	0.040	0.009	2.32E-06
rs6007594	A	G	0.264	-0.026	0.007	1.39E-04

eTable 2. Lead variants associated with diurnal preference that were not available in the PGC-UKB MDD GWAS ('Original SNP') and identified proxy SNP. 'NA' is listed when no proxies meeting our criteria were identified.

Original SNP	Proxy SNP	r2 value
rs2506089	NA	NA
rs77248969	NA	NA
rs41290656	NA	NA
rs111867612	rs35588117	0.94
rs12518401	NA	NA
rs486416	rs605203	1
rs9496623	rs9496643	0.99
rs2396719	rs6961970	0.98
rs2072413	NA	NA
rs28458909	NA	NA
rs61875203	rs11186842	0.99
rs3782860	rs11062167	0.92
rs7959983	rs10777221	0.92
rs7225002	NA	NA
rs36055559	NA	NA

eTable 3. Associations of available diurnal preference genetic variants with major depressive disorder in the PGC-UKB meta-analysis. EA: effect allele; OA: other allele

SNP	EA	OA	EA frequency	Beta	Standard error	P value
rs2072727	T	C	0.437	0.001	0.004	8.38E-01
rs17575798	A	G	0.192	-0.001	0.005	8.59E-01
rs6816922	A	C	0.538	-0.016	0.004	1.65E-04
rs6429233	A	G	0.457	-0.006	0.004	1.58E-01
rs2737245	T	G	0.279	-0.002	0.005	6.36E-01
rs766406	T	G	0.633	-0.013	0.004	4.23E-03
rs6690292	T	C	0.728	0.001	0.005	8.58E-01
rs11845599	A	G	0.633	0.000	0.005	9.90E-01
rs605203	A	C	0.648	0.018	0.005	5.79E-05
rs1843888	A	G	0.547	-0.011	0.004	1.12E-02
rs10109566	A	G	0.489	0.019	0.004	1.66E-05
rs2944831	A	G	0.296	-0.005	0.005	3.20E-01
rs62182135	A	C	0.329	0.008	0.005	9.43E-02
rs4550782	T	G	0.667	-0.001	0.005	8.25E-01
rs9636202	A	G	0.268	-0.018	0.005	3.45E-04
rs4878734	A	T	0.514	0.002	0.004	6.38E-01
rs1508608	A	G	0.321	0.006	0.005	1.99E-01
rs12298405	T	C	0.326	0.006	0.005	1.72E-01
rs11032362	A	G	0.093	0.003	0.007	6.58E-01
rs4269995	T	C	0.251	0.016	0.005	9.50E-04
rs495593	A	G	0.742	0.002	0.005	7.59E-01
rs11788633	C	G	0.651	0.007	0.005	1.04E-01
rs2881955	T	C	0.279	-0.003	0.005	5.15E-01
rs4241964	T	G	0.525	0.001	0.004	7.63E-01
rs10742179	A	G	0.262	0.015	0.005	2.10E-03
rs75120545	T	C	0.033	0.011	0.013	4.04E-01

rs12600452	A	G	0.204	0.010	0.005	5.99E-02
rs848552	C	G	0.474	0.000	0.004	9.64E-01
rs12808544	A	C	0.241	0.006	0.005	2.66E-01
rs1163238	A	G	0.390	0.006	0.004	1.89E-01
rs11186842	A	T	0.724	-0.005	0.005	3.06E-01
rs497338	T	C	0.285	0.001	0.005	8.76E-01
rs17604349	A	G	0.180	0.013	0.006	2.51E-02
rs72950188	T	C	0.925	-0.001	0.008	9.35E-01
rs13203140	T	C	0.640	0.002	0.005	7.25E-01
rs7111582	A	G	0.897	-0.005	0.007	5.22E-01
rs66617308	T	C	0.671	-0.006	0.005	1.92E-01
rs12140153	T	G	0.094	0.000	0.008	9.74E-01
rs812925	C	G	0.646	-0.005	0.005	2.96E-01
rs3923809	A	G	0.694	-0.006	0.005	2.08E-01
rs1221502	A	C	0.738	0.011	0.005	2.19E-02
rs60616179	A	G	0.944	-0.009	0.010	3.47E-01
rs2653349	A	G	0.212	-0.005	0.005	3.65E-01
rs12442674	A	C	0.728	-0.013	0.005	9.53E-03
rs35346733	A	G	0.194	0.007	0.006	1.83E-01
rs149611468	T	C	0.989	0.032	0.021	1.36E-01
rs6440833	A	G	0.463	-0.014	0.004	1.21E-03
rs962961	T	C	0.329	-0.017	0.005	1.87E-04
rs7304278	A	G	0.279	0.005	0.005	3.53E-01
rs6047481	A	T	0.671	0.011	0.005	2.02E-02
rs12051	A	G	0.611	0.004	0.004	3.40E-01
rs17302081	T	C	0.442	0.004	0.004	3.93E-01
rs5016898	T	C	0.427	0.005	0.004	2.33E-01
rs62082402	T	G	0.194	-0.002	0.006	7.22E-01
rs412000	C	G	0.555	-0.001	0.004	8.23E-01
rs4027217	A	C	0.213	0.009	0.005	8.66E-02

rs118047999	C	G	0.252	-0.008	0.005	1.04E-01
rs62553781	T	C	0.034	0.008	0.012	4.79E-01
rs3867239	A	G	0.378	-0.011	0.004	1.17E-02
rs4236237	A	C	0.596	0.006	0.004	1.44E-01
rs1144566	T	C	0.030	0.006	0.013	6.53E-01
rs6958557	T	G	0.609	0.003	0.004	5.00E-01
rs6968240	A	C	0.426	0.000	0.004	9.34E-01
rs9950528	A	G	0.652	0.015	0.005	1.17E-03
rs7299922	A	G	0.633	0.001	0.005	8.19E-01
rs35524253	A	G	0.357	-0.002	0.005	7.39E-01
rs1468945	A	G	0.786	-0.002	0.005	7.12E-01
rs6560218	T	C	0.518	0.001	0.004	8.66E-01
rs6988733	T	C	0.349	-0.005	0.005	2.54E-01
rs2396004	A	G	0.435	0.003	0.004	4.52E-01
rs6718511	A	G	0.557	-0.010	0.004	2.79E-02
rs1474754	A	G	0.265	-0.001	0.005	8.10E-01
rs62465218	A	C	0.148	0.009	0.006	1.55E-01
rs10951325	T	C	0.635	-0.011	0.005	1.74E-02
rs11678584	A	T	0.861	-0.004	0.006	5.75E-01
rs10058356	T	C	0.697	0.002	0.005	6.94E-01
rs13065394	T	G	0.289	0.003	0.005	5.64E-01
rs711098	A	C	0.403	0.005	0.004	2.73E-01
rs621421	T	C	0.623	-0.005	0.004	2.76E-01
rs1013987	T	C	0.407	0.000	0.004	9.26E-01
rs9479402	T	C	0.990	0.018	0.022	4.14E-01
rs1025601	T	C	0.386	-0.008	0.005	6.04E-02
rs7143933	T	G	0.265	0.001	0.005	9.08E-01
rs9956387	A	T	0.495	-0.001	0.004	8.50E-01
rs7649164	T	G	0.576	-0.002	0.005	6.09E-01
rs2050185	A	G	0.628	-0.019	0.005	1.53E-05

rs72729847	T	C	0.802	-0.006	0.005	2.56E-01
rs6794796	A	G	0.288	0.004	0.005	4.32E-01
rs4535583	T	C	0.692	-0.003	0.005	4.85E-01
rs6838677	A	C	0.672	0.002	0.005	7.18E-01
rs3815983	T	C	0.360	0.007	0.005	1.46E-01
rs11062167	A	G	0.535	-0.001	0.004	7.63E-01
rs12445235	C	G	0.409	0.001	0.004	8.97E-01
rs74357745	A	G	0.880	0.018	0.007	6.27E-03
rs10988239	T	C	0.508	-0.002	0.004	5.82E-01
rs115073088	A	G	0.976	0.014	0.014	3.39E-01
rs481214	A	T	0.604	0.003	0.005	5.40E-01
rs7626335	A	C	0.331	0.001	0.005	8.19E-01
rs12436039	T	C	0.880	0.003	0.007	7.03E-01
rs11165655	A	G	0.526	0.020	0.004	4.25E-06
rs73050286	T	C	0.782	-0.003	0.005	6.32E-01
rs2550298	T	C	0.380	0.012	0.005	5.93E-03
rs9436119	A	G	0.390	-0.006	0.004	1.66E-01
rs80097534	T	G	0.100	-0.010	0.007	1.53E-01
rs2878172	A	G	0.570	-0.002	0.004	6.69E-01
rs34967119	A	G	0.495	0.001	0.004	7.51E-01
rs10830107	A	G	0.797	-0.003	0.005	6.19E-01
rs11681299	T	C	0.287	-0.008	0.005	1.03E-01
rs1163628	A	C	0.857	-0.006	0.006	3.14E-01
rs9496643	A	G	0.291	0.000	0.005	9.30E-01
rs11152350	A	C	0.467	-0.010	0.004	2.72E-02
rs13377754	T	C	0.611	-0.012	0.004	5.05E-03
rs12464387	A	G	0.468	0.012	0.004	8.03E-03
rs9836621	T	C	0.520	0.000	0.004	9.73E-01
rs2593487	A	G	0.337	0.011	0.005	1.72E-02
rs10832648	A	C	0.197	-0.003	0.005	6.01E-01

rs73026775	A	G	0.127	-0.005	0.007	4.21E-01
rs77960	A	G	0.327	0.036	0.005	2.36E-15
rs17396357	T	C	0.379	0.000	0.004	9.33E-01
rs9347926	A	T	0.445	-0.010	0.004	2.30E-02
rs2850979	T	C	0.761	0.000	0.005	9.92E-01
rs2166559	T	C	0.861	-0.015	0.006	1.42E-02
rs11611435	T	C	0.554	0.003	0.004	4.77E-01
rs72720396	A	G	0.770	0.006	0.005	2.71E-01
rs2433634	A	C	0.721	-0.011	0.005	2.05E-02
rs4800998	A	T	0.186	-0.021	0.006	2.07E-04
rs80271258	T	C	0.086	0.010	0.008	1.75E-01
rs6477309	T	C	0.665	0.013	0.005	5.65E-03
rs6573308	T	C	0.391	-0.003	0.004	5.39E-01
rs4761989	T	C	0.867	0.002	0.006	7.34E-01
rs34509802	A	G	0.178	0.002	0.006	7.78E-01
rs10402849	T	C	0.203	0.003	0.005	6.48E-01
rs2580160	A	G	0.553	-0.003	0.004	4.78E-01
rs9416744	A	C	0.258	-0.009	0.005	5.61E-02
rs1800828	C	G	0.749	0.010	0.005	3.63E-02
rs9571526	T	G	0.769	0.012	0.005	2.10E-02
rs2648721	T	G	0.703	-0.001	0.005	8.62E-01
rs9997394	A	G	0.291	-0.001	0.005	8.22E-01
rs7943634	T	C	0.310	0.013	0.005	6.19E-03
rs4657983	A	G	0.653	0.007	0.005	1.37E-01
rs1061032	T	G	0.091	-0.014	0.008	6.51E-02
rs184033703	A	G	0.057	0.002	0.009	8.58E-01
rs59986227	C	G	0.745	-0.008	0.005	9.57E-02
rs13172141	A	T	0.567	-0.003	0.004	5.69E-01
rs12636669	T	C	0.080	0.015	0.008	6.69E-02
rs12871550	A	G	0.320	0.012	0.005	7.92E-03

rs2298117	T	C	0.452	-0.001	0.004	8.00E-01
rs3955311	T	C	0.149	0.017	0.006	4.80E-03
rs139911	T	C	0.578	0.018	0.004	3.50E-05
rs247929	C	G	0.507	0.005	0.004	2.38E-01
rs1599374	A	G	0.514	-0.001	0.004	9.10E-01
rs8072058	A	T	0.782	-0.002	0.005	7.18E-01
rs4860734	A	G	0.287	0.009	0.005	5.80E-02
rs12195792	A	T	0.273	-0.004	0.005	3.63E-01
rs4672458	T	C	0.474	0.003	0.004	4.97E-01
rs12771973	A	G	0.250	-0.007	0.005	1.39E-01
rs42210	C	G	0.710	-0.004	0.005	4.19E-01
rs9573980	A	G	0.966	0.010	0.012	4.21E-01
rs11545787	A	G	0.248	0.010	0.005	6.11E-02
rs34329963	T	C	0.114	0.003	0.007	6.83E-01
rs57236847	C	G	0.604	-0.005	0.004	2.46E-01
rs1421085	T	C	0.594	-0.010	0.004	2.01E-02
rs7975791	T	C	0.039	-0.006	0.011	5.88E-01
rs7298532	T	C	0.718	-0.009	0.005	7.59E-02
rs7006885	A	G	0.288	-0.006	0.005	2.44E-01
rs359248	T	G	0.456	-0.015	0.004	5.65E-04
rs187028	A	T	0.316	-0.001	0.005	8.23E-01
rs9381812	A	G	0.703	0.007	0.005	1.43E-01
rs6131942	A	G	0.420	-0.010	0.004	1.90E-02
rs17455138	T	C	0.767	0.002	0.005	6.42E-01
rs4923541	T	C	0.508	0.010	0.004	1.85E-02
rs4666682	A	G	0.178	0.003	0.006	5.78E-01
rs7203707	A	C	0.520	-0.002	0.004	7.00E-01
rs9611597	A	T	0.840	0.010	0.006	9.45E-02
rs12470914	A	T	0.100	0.003	0.007	6.97E-01
rs61990287	A	C	0.277	-0.021	0.005	1.23E-05

rs2916148	A	G	0.453	0.007	0.004	9.36E-02
rs3857599	A	C	0.165	0.005	0.006	4.32E-01
rs1559253	A	G	0.358	-0.004	0.005	3.85E-01
rs76064513	T	C	0.131	-0.005	0.007	4.23E-01
rs4365329	A	T	0.541	0.003	0.004	4.75E-01
rs111261826	A	C	0.679	0.011	0.005	1.46E-02
rs76518095	T	C	0.076	0.006	0.008	4.88E-01
rs9817910	A	G	0.561	-0.002	0.004	7.15E-01
rs2979139	A	G	0.505	0.012	0.005	7.00E-03
rs1931814	A	G	0.478	-0.006	0.004	1.95E-01
rs7602499	T	C	0.352	0.004	0.005	4.34E-01
rs555784	A	T	0.381	0.002	0.005	6.45E-01
rs3743794	A	G	0.605	-0.008	0.004	8.38E-02
rs62124718	A	G	0.895	0.000	0.007	9.84E-01
rs3807651	A	T	0.491	-0.003	0.004	4.92E-01
rs2304467	C	G	0.602	-0.002	0.004	6.90E-01
rs11677484	T	G	0.257	-0.014	0.005	5.83E-03
rs6007594	A	G	0.261	-0.009	0.005	7.90E-02
rs975025	T	C	0.076	-0.004	0.008	6.33E-01
rs62479736	T	G	0.292	-0.004	0.005	4.52E-01
rs6967481	T	C	0.497	0.002	0.004	6.82E-01
rs13414393	T	C	0.540	-0.002	0.004	7.34E-01
rs4785296	C	G	0.235	-0.009	0.005	6.56E-02
rs10520176	T	C	0.498	-0.003	0.004	4.30E-01
rs35588117	A	G	0.105	-0.011	0.007	1.17E-01
rs10777221	T	C	0.603	0.000	0.004	9.82E-01
rs7845620	A	C	0.836	-0.003	0.006	5.99E-01
rs72841368	A	T	0.811	0.002	0.006	7.87E-01
rs66507804	T	C	0.797	-0.005	0.005	3.63E-01
rs17577073	A	C	0.567	0.006	0.004	1.64E-01

rs3760381	A	G	0.252	0.006	0.005	2.06E-01
rs72773411	A	G	0.153	0.006	0.006	3.26E-01
rs301218	A	G	0.392	0.004	0.004	3.94E-01
rs10762434	C	G	0.776	-0.002	0.005	7.39E-01
rs71523448	C	G	0.080	0.021	0.008	1.02E-02
rs10917513	T	C	0.652	-0.007	0.005	1.02E-01
rs12969848	T	C	0.532	-0.007	0.004	1.04E-01
rs4775086	A	G	0.240	0.006	0.005	2.17E-01
rs710284	T	C	0.584	0.002	0.004	6.58E-01
rs11154718	T	C	0.428	0.000	0.004	9.77E-01
rs662094	A	G	0.493	-0.020	0.004	4.23E-06
rs28380327	A	T	0.630	0.013	0.004	3.96E-03
rs3850174	A	T	0.256	0.003	0.005	5.15E-01
rs58681483	A	G	0.920	-0.014	0.008	8.38E-02
rs67988891	C	G	0.680	0.002	0.005	6.33E-01
rs6846730	T	C	0.235	-0.006	0.005	2.08E-01
rs112201801	T	C	0.923	0.009	0.008	2.88E-01
rs1449403	A	G	0.122	-0.008	0.007	2.25E-01
rs2514214	A	G	0.268	0.005	0.005	3.13E-01
rs56113850	T	C	0.424	0.006	0.004	2.03E-01
rs11641239	T	C	0.287	0.000	0.005	9.36E-01
rs11597421	A	G	0.499	0.009	0.004	3.92E-02
rs72966564	T	C	0.248	-0.001	0.005	8.41E-01
rs9394154	C	G	0.434	-0.003	0.004	5.39E-01
rs10818834	T	C	0.731	-0.016	0.005	8.62E-04
rs9476310	T	C	0.511	-0.005	0.004	2.25E-01
rs8044054	T	C	0.389	-0.017	0.004	8.33E-05
rs9558942	T	C	0.675	0.006	0.005	2.15E-01
rs2706762	T	C	0.150	-0.007	0.006	2.33E-01
rs9465253	T	C	0.279	-0.003	0.005	5.79E-01

rs12927162	A	G	0.727	-0.002	0.005	6.35E-01
rs695459	T	C	0.389	-0.018	0.004	6.25E-05
rs17448682	T	C	0.235	0.002	0.005	7.10E-01
rs12065331	T	C	0.310	0.004	0.005	4.31E-01
rs2322605	A	G	0.475	0.000	0.004	9.60E-01
rs7721608	T	G	0.466	0.000	0.004	9.68E-01
rs2844016	T	C	0.294	-0.004	0.005	4.07E-01
rs12442008	T	C	0.254	-0.005	0.005	2.98E-01
rs9964420	A	C	0.302	-0.006	0.005	2.02E-01
rs308521	T	C	0.602	0.017	0.004	1.47E-04
rs11670534	T	C	0.164	-0.004	0.006	5.50E-01
rs4936290	A	C	0.654	-0.005	0.005	3.24E-01
rs2901796	A	G	0.396	-0.002	0.004	6.07E-01
rs4690085	A	G	0.532	0.013	0.005	3.53E-03
rs6727752	A	G	0.364	-0.002	0.005	6.66E-01
rs6993892	T	C	0.613	0.004	0.004	3.34E-01
rs3796618	A	T	0.530	0.003	0.005	5.76E-01
rs3138490	A	T	0.518	-0.007	0.004	8.86E-02
rs4121878	C	G	0.504	0.001	0.004	8.84E-01
rs1737893	T	C	0.385	0.012	0.004	9.03E-03
rs10916892	T	C	0.624	0.015	0.005	8.82E-04
rs9991917	A	T	0.193	-0.002	0.006	7.31E-01
rs4698678	C	G	0.279	0.000	0.005	9.75E-01
rs2362775	T	C	0.531	-0.009	0.004	3.30E-02
rs9348050	T	C	0.487	0.005	0.004	2.51E-01
rs45597035	A	G	0.649	-0.005	0.005	2.94E-01
rs6544906	A	C	0.563	-0.008	0.004	7.15E-02
rs4550384	T	G	0.755	0.009	0.005	8.47E-02
rs17712705	A	G	0.330	0.016	0.005	4.08E-04
rs11102807	A	G	0.539	-0.009	0.004	4.37E-02

rs1811899	T	C	0.792	-0.015	0.005	3.93E-03
rs28459838	T	C	0.236	-0.008	0.005	1.53E-01
rs6468316	T	C	0.472	-0.007	0.004	1.25E-01
rs72829706	A	G	0.961	-0.005	0.011	6.36E-01
rs9597241	A	C	0.810	-0.014	0.006	8.73E-03
rs10175975	T	C	0.184	0.007	0.006	2.38E-01
rs4729854	A	T	0.479	-0.001	0.005	7.64E-01
rs3100052	A	G	0.388	0.003	0.004	4.52E-01
rs72796401	A	T	0.188	0.004	0.006	4.35E-01
rs58876439	A	G	0.069	-0.001	0.009	9.41E-01
rs113161209	A	G	0.074	-0.007	0.008	4.22E-01
rs7900191	T	C	0.403	0.002	0.004	6.06E-01
rs12380242	T	C	0.506	0.004	0.004	4.17E-01
rs7248205	T	C	0.597	0.006	0.004	1.81E-01
rs1886205	A	C	0.759	-0.018	0.005	5.32E-04
rs13011556	C	G	0.761	0.003	0.005	5.05E-01
rs10759208	T	C	0.610	0.010	0.004	2.28E-02
rs1799464	A	G	0.290	0.001	0.005	8.60E-01
rs747003	T	C	0.607	-0.004	0.004	3.24E-01
rs55846845	A	G	0.519	0.005	0.004	2.67E-01
rs114848860	A	T	0.974	0.004	0.014	7.69E-01
rs3808964	T	G	0.634	-0.012	0.005	5.37E-03
rs10877962	T	C	0.412	-0.006	0.004	1.69E-01
rs17007397	C	G	0.576	0.009	0.004	4.10E-02
rs11200159	A	C	0.654	-0.001	0.005	9.10E-01
rs61773390	T	G	0.194	-0.007	0.005	1.87E-01
rs4804951	A	G	0.331	-0.008	0.005	9.13E-02
rs2011528	T	C	0.828	0.001	0.006	9.11E-01
rs9664044	T	C	0.231	-0.004	0.005	4.19E-01
rs938836	A	G	0.467	0.000	0.004	9.94E-01

rs1871729	A	G	0.685	-0.003	0.005	5.09E-01
rs72790386	T	G	0.033	-0.026	0.012	3.14E-02
rs465670	T	C	0.542	0.002	0.004	7.20E-01
rs12206814	C	G	0.493	0.000	0.005	9.62E-01
rs7701529	A	T	0.238	-0.001	0.005	8.72E-01
rs10254050	C	G	0.189	-0.001	0.006	8.13E-01
rs34054660	A	G	0.576	-0.011	0.004	1.53E-02
rs10237162	T	C	0.725	0.004	0.005	4.32E-01
rs16939162	A	G	0.832	-0.014	0.006	1.91E-02
rs6433478	T	C	0.460	-0.001	0.004	8.51E-01
rs1278402	A	G	0.735	-0.002	0.005	7.42E-01
rs12631477	T	C	0.798	-0.003	0.005	5.78E-01
rs7700110	A	G	0.257	-0.013	0.005	9.59E-03
rs10838687	T	G	0.789	0.002	0.005	6.95E-01
rs4419127	A	G	0.662	-0.002	0.005	6.36E-01
rs113851554	T	G	0.057	-0.001	0.010	9.46E-01
rs6961970	A	C	0.242	0.014	0.005	4.85E-03
rs1873958	A	G	0.408	0.003	0.004	4.77E-01
rs909757	T	C	0.632	0.004	0.005	4.25E-01
rs13004345	T	C	0.653	-0.004	0.005	4.03E-01
rs1788784	A	G	0.350	-0.005	0.005	2.62E-01
rs17140201	A	G	0.175	0.005	0.006	4.25E-01
rs6665637	A	G	0.285	0.007	0.005	1.84E-01
rs12378543	T	C	0.384	0.003	0.004	5.14E-01
rs1398346	T	C	0.869	-0.001	0.006	8.30E-01
rs1064213	A	G	0.481	-0.004	0.004	3.35E-01
rs7429614	T	G	0.417	-0.006	0.004	1.81E-01
rs12249410	T	G	0.108	0.010	0.007	1.55E-01
rs12950382	A	G	0.721	0.000	0.005	9.37E-01
rs12040629	A	G	0.161	0.003	0.006	6.22E-01

rs11588913	A	G	0.400	-0.009	0.004	3.25E-02
rs11208844	A	G	0.139	-0.011	0.006	8.76E-02
rs6131805	T	G	0.401	0.006	0.004	1.65E-01
rs1502249	A	G	0.524	-0.002	0.004	6.60E-01
rs295268	T	C	0.744	-0.003	0.005	5.64E-01
rs487722	T	G	0.210	-0.005	0.005	3.10E-01
rs4903203	A	G	0.323	0.007	0.005	1.40E-01
rs2978382	T	C	0.590	-0.008	0.004	5.94E-02

eTable 4. Associations of morning diurnal preference genetic variants with midpoint of sleep. The units of the beta coefficients are hours (i.e. not the standardized genetic associations). EA: effect allele; OA: other allele

SNP	EA	OA	EA Frequency	Beta	Standard error	P value
rs10058356	T	C	0.699	0.005	0.003	3.21E-02
rs10109566	A	G	0.491	0.003	0.003	1.09E-01
rs1013987	T	C	0.407	0.004	0.003	8.27E-02
rs10175975	T	C	0.182	-0.004	0.003	1.03E-01
rs10237162	T	C	0.725	-0.004	0.003	1.03E-01
rs10254050	C	G	0.187	0.011	0.003	2.34E-04
rs1025601	T	C	0.385	0.001	0.003	2.98E-01
rs10402849	T	C	0.201	-0.005	0.003	4.63E-02
rs10520176	T	C	0.504	-0.001	0.003	2.94E-01
rs1061032	T	G	0.090	-0.015	0.004	2.73E-04
rs1064213	A	G	0.473	-0.005	0.003	2.82E-02
rs10742179	A	G	0.259	-0.004	0.003	9.78E-02
rs10759208	T	C	0.610	0.003	0.003	1.40E-01
rs10762434	C	G	0.778	-0.007	0.003	1.35E-02
rs10777221	C	T	0.396	-0.006	0.003	9.52E-03
rs10818834	T	C	0.734	-0.004	0.003	6.70E-02
rs10830107	A	G	0.797	-0.001	0.003	3.49E-01
rs10832648	A	C	0.196	0.006	0.003	2.59E-02
rs10838687	T	G	0.791	0.001	0.003	3.89E-01
rs10877962	T	C	0.416	-0.004	0.003	6.17E-02
rs10916892	T	C	0.623	0.003	0.003	1.63E-01
rs10917513	T	C	0.654	0.004	0.003	8.46E-02
rs10951325	T	C	0.634	-0.003	0.003	1.13E-01
rs10988239	T	C	0.511	-0.001	0.003	2.80E-01
rs11032362	A	G	0.091	-0.011	0.004	5.90E-03
rs11062167	A	G	0.537	-0.005	0.003	2.40E-02

rs11102807	A	G	0.538	0.002	0.003	2.40E-01
rs111261826	A	C	0.680	0.000	0.003	4.41E-01
rs11152350	A	C	0.472	0.005	0.003	2.51E-02
rs11154718	T	C	0.427	0.004	0.003	8.20E-02
rs11165655	A	G	0.524	0.001	0.003	3.41E-01
rs11186842	A	T	0.724	0.006	0.003	1.84E-02
rs11200159	A	C	0.656	0.004	0.003	8.10E-02
rs11208844	A	G	0.138	-0.003	0.004	2.40E-01
rs113161209	A	G	0.070	-0.016	0.005	7.23E-04
rs113851554	T	G	0.057	0.022	0.006	5.78E-05
rs1144566	T	C	0.030	-0.026	0.007	2.04E-04
rs114848860	A	T	0.976	0.008	0.008	1.76E-01
rs115073088	A	G	0.976	0.015	0.008	3.68E-02
rs11545787	A	G	0.250	0.002	0.003	2.59E-01
rs11588913	A	G	0.399	-0.001	0.003	2.88E-01
rs11597421	A	G	0.501	-0.002	0.003	1.96E-01
rs11611435	T	C	0.550	-0.004	0.003	6.47E-02
rs1163238	A	G	0.394	0.008	0.003	1.38E-03
rs1163628	A	C	0.857	0.004	0.004	1.10E-01
rs11641239	T	C	0.288	0.001	0.003	3.24E-01
rs11670534	T	C	0.165	0.006	0.003	4.04E-02
rs11677484	T	G	0.255	-0.001	0.003	4.25E-01
rs11678584	A	T	0.860	0.006	0.004	5.15E-02
rs11681299	T	C	0.288	-0.007	0.003	7.80E-03
rs11788633	C	G	0.651	-0.005	0.003	2.95E-02
rs118047999	C	G	0.249	-0.004	0.003	8.43E-02
rs11845599	A	G	0.635	0.002	0.003	1.80E-01
rs12040629	A	G	0.161	-0.009	0.003	5.99E-03
rs12051	A	G	0.613	0.005	0.003	3.95E-02
rs12065331	T	C	0.311	0.000	0.003	4.90E-01

rs12140153	T	G	0.098	0.008	0.004	2.97E-02
rs12195792	A	T	0.270	-0.006	0.003	1.36E-02
rs12206814	C	G	0.492	0.000	0.003	4.97E-01
rs1221502	A	C	0.738	0.001	0.003	3.58E-01
rs12249410	T	G	0.110	0.001	0.004	4.24E-01
rs12298405	T	C	0.329	0.002	0.003	2.48E-01
rs12378543	T	C	0.386	0.005	0.003	2.02E-02
rs12380242	T	C	0.502	0.003	0.002	1.07E-01
rs12436039	T	C	0.881	-0.010	0.004	6.52E-03
rs12442008	T	C	0.253	-0.001	0.003	3.35E-01
rs12442674	A	C	0.725	-0.004	0.003	6.42E-02
rs12445235	C	G	0.409	0.001	0.003	3.10E-01
rs12464387	A	G	0.459	0.003	0.003	9.28E-02
rs12470914	A	T	0.102	-0.008	0.004	3.20E-02
rs12600452	A	G	0.206	0.000	0.003	4.51E-01
rs12631477	T	C	0.798	-0.002	0.003	2.80E-01
rs12636669	T	C	0.083	-0.004	0.005	2.15E-01
rs12771973	A	G	0.254	0.001	0.003	3.92E-01
rs1278402	A	G	0.733	-0.003	0.003	1.68E-01
rs12808544	A	C	0.240	0.003	0.003	1.47E-01
rs12871550	A	G	0.319	-0.002	0.003	1.88E-01
rs12927162	A	G	0.723	-0.014	0.003	1.01E-07
rs12950382	A	G	0.724	-0.005	0.003	4.26E-02
rs12969848	T	C	0.532	-0.008	0.003	9.68E-04
rs13004345	T	C	0.656	0.005	0.003	2.20E-02
rs13011556	C	G	0.759	0.001	0.003	3.08E-01
rs13065394	T	G	0.287	0.005	0.003	4.69E-02
rs13172141	A	T	0.570	-0.006	0.003	7.47E-03
rs13203140	T	C	0.640	0.001	0.003	3.82E-01
rs13377754	T	C	0.610	-0.007	0.003	3.50E-03

rs13414393	T	C	0.540	0.004	0.003	5.18E-02
rs1398346	T	C	0.871	-0.004	0.004	1.70E-01
rs139911	T	C	0.576	0.006	0.003	5.24E-03
rs1421085	T	C	0.595	0.006	0.003	5.68E-03
rs1449403	A	G	0.122	-0.010	0.004	4.16E-03
rs1468945	A	G	0.786	0.007	0.003	8.43E-03
rs1474754	A	G	0.266	-0.001	0.003	4.12E-01
rs149611468	T	C	0.988	-0.028	0.012	8.98E-03
rs1502249	A	G	0.524	-0.008	0.003	4.47E-04
rs1508608	A	G	0.321	-0.002	0.003	2.45E-01
rs1559253	A	G	0.359	-0.001	0.003	4.10E-01
rs1599374	A	G	0.510	-0.003	0.003	1.18E-01
rs16939162	A	G	0.832	-0.010	0.003	1.97E-03
rs17007397	C	G	0.578	-0.010	0.003	2.62E-05
rs17140201	A	G	0.173	0.005	0.003	7.60E-02
rs17302081	T	C	0.442	-0.009	0.003	2.35E-04
rs1737893	T	C	0.380	0.000	0.003	4.58E-01
rs17396357	T	C	0.379	-0.003	0.003	1.66E-01
rs17448682	T	C	0.234	-0.013	0.003	1.15E-05
rs17455138	T	C	0.766	-0.007	0.003	1.10E-02
rs17575798	A	G	0.192	0.009	0.003	2.03E-03
rs17577073	A	C	0.566	-0.004	0.003	5.01E-02
rs17604349	A	G	0.179	0.012	0.003	2.10E-04
rs17712705	A	G	0.331	-0.001	0.003	3.81E-01
rs1788784	A	G	0.341	-0.002	0.003	2.70E-01
rs1799464	A	G	0.292	-0.004	0.003	9.73E-02
rs1800828	C	G	0.747	-0.006	0.003	1.47E-02
rs1811899	T	C	0.791	0.005	0.003	6.30E-02
rs184033703	A	G	0.058	-0.003	0.005	2.85E-01
rs1843888	A	G	0.548	-0.009	0.003	1.82E-04

rs187028	A	T	0.318	0.002	0.003	2.11E-01
rs1871729	A	G	0.682	0.004	0.003	9.02E-02
rs1873958	A	G	0.408	-0.003	0.003	1.52E-01
rs1886205	A	C	0.759	-0.003	0.003	1.83E-01
rs1931814	A	G	0.478	-0.002	0.002	1.97E-01
rs2011528	T	C	0.830	0.000	0.003	4.82E-01
rs2050185	A	G	0.630	-0.007	0.003	4.17E-03
rs2072727	T	C	0.436	-0.005	0.003	2.34E-02
rs2166559	T	C	0.860	0.003	0.004	1.79E-01
rs2298117	T	C	0.448	0.007	0.003	4.06E-03
rs2304467	C	G	0.600	0.002	0.003	2.03E-01
rs2322605	A	G	0.478	0.005	0.002	1.46E-02
rs2362775	T	C	0.527	0.010	0.003	3.12E-05
rs2396004	A	G	0.434	-0.001	0.003	3.95E-01
rs2433634	A	C	0.718	0.003	0.003	1.66E-01
rs247929	C	G	0.505	0.000	0.002	4.83E-01
rs2514214	A	G	0.266	-0.003	0.003	1.78E-01
rs2550298	T	C	0.377	0.003	0.003	1.27E-01
rs2580160	A	G	0.552	0.000	0.003	4.27E-01
rs2593487	A	G	0.342	0.006	0.003	1.07E-02
rs2648721	T	G	0.702	0.008	0.003	2.89E-03
rs2653349	A	G	0.213	-0.011	0.003	1.49E-04
rs2706762	T	C	0.150	0.003	0.003	1.63E-01
rs2737245	T	G	0.280	-0.005	0.003	3.17E-02
rs28380327	A	T	0.627	-0.005	0.003	1.91E-02
rs2844016	T	C	0.299	-0.001	0.003	3.33E-01
rs28459838	T	C	0.234	-0.001	0.003	3.72E-01
rs2850979	T	C	0.759	-0.001	0.003	4.18E-01
rs2878172	A	G	0.568	0.004	0.003	7.51E-02
rs2881955	T	C	0.279	-0.006	0.003	1.15E-02

rs2901796	A	G	0.397	-0.005	0.003	1.64E-02
rs2916148	A	G	0.456	-0.001	0.003	2.98E-01
rs2944831	A	G	0.298	-0.011	0.003	2.63E-05
rs295268	T	C	0.743	0.010	0.003	2.65E-04
rs2978382	T	C	0.590	-0.003	0.003	8.55E-02
rs2979139	A	G	0.505	0.008	0.002	1.28E-03
rs301218	A	G	0.390	0.002	0.003	2.17E-01
rs308521	T	C	0.602	-0.002	0.003	2.57E-01
rs3100052	A	G	0.389	-0.006	0.003	1.04E-02
rs3138490	A	T	0.515	-0.009	0.003	3.76E-04
rs34054660	A	G	0.575	0.000	0.003	4.71E-01
rs34329963	T	C	0.113	0.003	0.004	2.41E-01
rs34509802	A	G	0.178	-0.006	0.003	3.32E-02
rs34967119	A	G	0.500	-0.003	0.002	9.57E-02
rs35346733	A	G	0.193	0.001	0.003	4.07E-01
rs35524253	A	G	0.357	-0.002	0.003	2.60E-01
rs35588117	A	G	0.105	0.004	0.004	1.54E-01
rs359248	T	G	0.449	0.003	0.003	1.24E-01
rs3743794	A	G	0.607	-0.004	0.003	4.66E-02
rs3760381	A	G	0.251	-0.008	0.003	4.17E-03
rs3796618	A	T	0.533	-0.001	0.003	3.17E-01
rs3807651	A	T	0.492	-0.004	0.003	6.53E-02
rs3808964	T	G	0.631	-0.004	0.003	6.79E-02
rs3815983	T	C	0.359	0.007	0.003	6.03E-03
rs3850174	A	T	0.258	0.004	0.003	1.04E-01
rs3857599	A	C	0.162	-0.005	0.003	7.89E-02
rs3867239	A	G	0.380	-0.002	0.003	2.49E-01
rs3923809	A	G	0.698	0.004	0.003	5.85E-02
rs3955311	T	C	0.153	-0.002	0.003	3.02E-01
rs4027217	A	C	0.212	0.006	0.003	3.21E-02

rs412000	C	G	0.560	0.003	0.003	1.31E-01
rs4121878	C	G	0.508	-0.004	0.002	7.35E-02
rs42210	C	G	0.709	0.006	0.003	1.73E-02
rs4236237	A	C	0.598	0.009	0.003	3.34E-04
rs4241964	T	G	0.528	0.000	0.003	4.68E-01
rs4269995	T	C	0.251	0.008	0.003	3.00E-03
rs4365329	A	T	0.542	0.005	0.003	2.76E-02
rs4419127	A	G	0.665	-0.006	0.003	1.37E-02
rs4535583	T	C	0.697	-0.003	0.003	1.20E-01
rs4550384	T	G	0.754	-0.004	0.003	9.96E-02
rs4550782	T	G	0.670	-0.003	0.003	1.34E-01
rs45597035	A	G	0.652	0.001	0.003	2.94E-01
rs465670	T	C	0.542	-0.006	0.003	8.10E-03
rs4657983	A	G	0.653	0.004	0.003	7.45E-02
rs4666682	A	G	0.177	0.000	0.003	4.79E-01
rs4672458	T	C	0.472	0.003	0.003	1.15E-01
rs4690085	A	G	0.532	-0.001	0.002	3.63E-01
rs4698678	C	G	0.279	-0.008	0.003	2.14E-03
rs4729854	A	T	0.484	0.009	0.003	1.14E-04
rs4761989	T	C	0.867	0.003	0.004	2.17E-01
rs4775086	A	G	0.241	0.006	0.003	2.88E-02
rs4785296	C	G	0.234	-0.006	0.003	2.92E-02
rs4800998	A	T	0.184	-0.008	0.003	9.52E-03
rs4804951	A	G	0.329	-0.005	0.003	2.45E-02
rs481214	A	T	0.603	-0.003	0.003	9.93E-02
rs4860734	A	G	0.283	-0.002	0.003	2.24E-01
rs487722	T	G	0.212	-0.005	0.003	4.89E-02
rs4878734	A	T	0.516	-0.007	0.002	3.01E-03
rs4903203	A	G	0.323	-0.006	0.003	1.04E-02
rs4923541	T	C	0.508	0.001	0.002	3.16E-01

rs4936290	A	C	0.651	0.004	0.003	4.68E-02
rs495593	A	G	0.742	-0.005	0.003	3.48E-02
rs497338	T	C	0.281	-0.005	0.003	2.66E-02
rs5016898	T	C	0.425	0.006	0.003	9.36E-03
rs555784	A	T	0.385	0.005	0.003	2.82E-02
rs55846845	A	G	0.521	0.007	0.003	4.41E-03
rs56113850	T	C	0.421	0.004	0.003	4.59E-02
rs57236847	C	G	0.603	-0.006	0.003	8.96E-03
rs58681483	A	G	0.921	-0.006	0.005	1.11E-01
rs58876439	A	G	0.070	-0.010	0.005	2.01E-02
rs59986227	C	G	0.743	0.004	0.003	6.51E-02
rs6007594	A	G	0.260	0.005	0.003	3.62E-02
rs6047481	A	T	0.673	0.002	0.003	2.45E-01
rs605203	A	C	0.636	0.003	0.003	1.20E-01
rs60616179	A	G	0.944	-0.013	0.005	9.78E-03
rs6131805	T	G	0.402	-0.003	0.003	1.16E-01
rs6131942	A	G	0.420	0.004	0.003	4.80E-02
rs61773390	T	G	0.197	-0.013	0.003	1.34E-05
rs61990287	A	C	0.284	-0.004	0.003	5.78E-02
rs62082402	T	G	0.191	-0.005	0.003	5.43E-02
rs62124718	A	G	0.895	0.009	0.004	1.02E-02
rs621421	T	C	0.623	0.009	0.003	4.83E-04
rs62182135	A	C	0.332	0.003	0.003	1.18E-01
rs62465218	A	C	0.149	0.007	0.004	1.77E-02
rs62479736	T	G	0.294	-0.004	0.003	7.35E-02
rs62553781	T	C	0.035	0.005	0.007	2.26E-01
rs6429233	A	G	0.453	-0.005	0.003	3.27E-02
rs6433478	T	C	0.457	0.002	0.003	2.12E-01
rs6440833	A	G	0.461	-0.002	0.003	2.14E-01
rs6468316	T	C	0.477	0.004	0.002	5.12E-02

rs6477309	T	C	0.664	0.000	0.003	4.56E-01
rs6544906	A	C	0.564	-0.004	0.003	4.47E-02
rs6560218	T	C	0.518	0.002	0.003	2.30E-01
rs6573308	T	C	0.391	-0.001	0.003	3.99E-01
rs662094	A	G	0.497	-0.005	0.003	2.81E-02
rs66507804	T	C	0.795	0.006	0.003	2.05E-02
rs66617308	T	C	0.673	-0.002	0.003	1.84E-01
rs6665637	A	G	0.282	0.002	0.003	2.10E-01
rs6690292	T	C	0.728	0.000	0.003	4.93E-01
rs6718511	A	G	0.552	-0.005	0.003	1.82E-02
rs6727752	A	G	0.373	-0.005	0.003	3.86E-02
rs6794796	A	G	0.288	-0.004	0.003	5.76E-02
rs67988891	C	G	0.679	0.007	0.003	5.32E-03
rs6816922	A	C	0.537	0.001	0.003	3.77E-01
rs6838677	A	C	0.669	0.007	0.003	5.66E-03
rs6846730	T	C	0.232	0.009	0.003	9.51E-04
rs695459	T	C	0.388	0.002	0.003	1.71E-01
rs6958557	T	G	0.604	-0.003	0.003	1.39E-01
rs6961970	A	C	0.247	-0.004	0.003	1.11E-01
rs6967481	T	C	0.497	-0.008	0.003	1.40E-03
rs6968240	A	C	0.432	-0.001	0.003	3.36E-01
rs6988733	T	C	0.345	-0.004	0.003	8.50E-02
rs6993892	T	C	0.609	0.004	0.003	4.05E-02
rs7006885	A	G	0.289	-0.007	0.003	3.77E-03
rs710284	T	C	0.586	-0.007	0.003	1.99E-03
rs711098	A	C	0.403	0.002	0.003	2.71E-01
rs7111582	A	G	0.896	0.003	0.004	2.04E-01
rs7143933	T	G	0.264	-0.002	0.003	1.94E-01
rs71523448	C	G	0.079	0.006	0.005	9.21E-02
rs7203707	A	C	0.517	0.009	0.003	1.57E-04

rs7248205	T	C	0.604	0.000	0.003	4.28E-01
rs72720396	A	G	0.767	0.009	0.003	8.43E-04
rs72729847	T	C	0.802	0.006	0.003	2.16E-02
rs72773411	A	G	0.158	-0.007	0.003	2.49E-02
rs72790386	T	G	0.033	-0.003	0.007	3.24E-01
rs72796401	A	T	0.187	-0.001	0.003	4.28E-01
rs72829706	A	G	0.961	-0.011	0.006	4.73E-02
rs72841368	A	T	0.812	0.007	0.003	1.70E-02
rs72950188	T	C	0.925	-0.011	0.005	1.02E-02
rs72966564	T	C	0.250	0.001	0.003	4.19E-01
rs7298532	T	C	0.718	0.004	0.003	8.78E-02
rs7299922	A	G	0.629	-0.005	0.003	1.92E-02
rs73026775	A	G	0.129	-0.001	0.004	4.04E-01
rs7304278	A	G	0.275	0.006	0.003	2.13E-02
rs73050286	T	C	0.785	-0.007	0.003	8.89E-03
rs7429614	T	G	0.419	-0.006	0.003	1.39E-02
rs74357745	A	G	0.880	0.002	0.004	2.91E-01
rs747003	T	C	0.608	-0.004	0.003	7.33E-02
rs75120545	T	C	0.030	-0.018	0.008	8.97E-03
rs7602499	T	C	0.345	-0.006	0.003	7.60E-03
rs76064513	T	C	0.130	-0.005	0.004	8.09E-02
rs7626335	A	C	0.331	-0.001	0.003	3.48E-01
rs7649164	T	G	0.581	-0.002	0.003	2.60E-01
rs76518095	T	C	0.078	-0.017	0.005	1.81E-04
rs766406	T	G	0.639	0.004	0.003	8.45E-02
rs7700110	A	G	0.256	-0.003	0.003	1.25E-01
rs7701529	A	T	0.240	0.006	0.003	1.46E-02
rs7721608	T	G	0.462	-0.005	0.003	1.52E-02
rs77960	A	G	0.328	-0.004	0.003	9.21E-02
rs7845620	A	C	0.834	0.008	0.003	9.49E-03

rs7900191	T	C	0.395	0.001	0.003	3.15E-01
rs7943634	T	C	0.309	0.005	0.003	3.19E-02
rs7975791	T	C	0.040	-0.009	0.006	7.05E-02
rs80097534	T	G	0.099	0.005	0.004	1.11E-01
rs80271258	T	C	0.087	0.019	0.004	9.00E-06
rs8044054	T	C	0.391	-0.003	0.003	1.29E-01
rs8072058	A	T	0.780	0.006	0.003	1.74E-02
rs812925	C	G	0.646	0.002	0.003	1.78E-01
rs848552	C	G	0.474	0.007	0.002	2.28E-03
rs909757	T	C	0.632	0.000	0.003	4.40E-01
rs9347926	A	T	0.447	-0.003	0.003	8.32E-02
rs9348050	T	C	0.490	-0.001	0.003	3.72E-01
rs9381812	A	G	0.704	0.009	0.003	3.21E-04
rs938836	A	G	0.466	0.000	0.003	4.97E-01
rs9394154	C	G	0.434	0.003	0.003	9.54E-02
rs9416744	A	C	0.255	-0.003	0.003	1.11E-01
rs9436119	A	G	0.394	-0.006	0.003	1.14E-02
rs9465253	T	C	0.281	-0.002	0.003	2.88E-01
rs9476310	T	C	0.510	-0.003	0.002	9.82E-02
rs9479402	T	C	0.989	0.019	0.012	5.94E-02
rs9496643	A	G	0.288	-0.002	0.003	2.57E-01
rs9558942	T	C	0.671	0.003	0.003	1.64E-01
rs9571526	T	G	0.769	0.005	0.003	3.57E-02
rs9573980	A	G	0.967	-0.015	0.007	1.67E-02
rs9597241	A	C	0.812	-0.006	0.003	2.39E-02
rs9611597	A	T	0.838	-0.005	0.003	7.17E-02
rs962961	T	C	0.329	0.007	0.003	3.71E-03
rs9636202	A	G	0.268	0.003	0.003	1.45E-01
rs9664044	T	C	0.231	0.003	0.003	1.42E-01
rs975025	T	C	0.078	0.006	0.005	9.04E-02

rs9817910	A	G	0.560	0.004	0.003	6.86E-02
rs9836621	T	C	0.518	0.005	0.003	3.53E-02
rs9950528	A	G	0.649	0.004	0.003	8.82E-02
rs9956387	A	T	0.493	0.000	0.003	5.00E-01
rs9964420	A	C	0.304	0.013	0.003	9.69E-07
rs9997394	A	G	0.292	0.006	0.003	1.91E-02

eTable 5. Variants identified as outliers by MR-PRESSO and RadialMR.

Variants filtered by RadialMR	Variants filtered by MR-PRESSO
rs10109566	rs10109566
rs1025601	rs11165655
rs10742179	rs139911
rs10759208	rs2050185
rs10818834	rs308521
rs10916892	rs61990287
rs10951325	rs662094
rs11102807	rs695459
rs111261826	rs77960
rs11152350	rs8044054
rs11165655	rs10109566
rs11588913	rs11165655
rs11677484	
rs1221502	
rs12442674	
rs12464387	
rs12600452	
rs12636669	
rs12871550	
rs13377754	
rs139911	
rs1421085	
rs16939162	
rs17007397	
rs1737893	
rs17604349	
rs17712705	

rs1800828	
rs1811899	
rs1843888	
rs1886205	
rs2050185	
rs2166559	
rs2362775	
rs2433634	
rs2550298	
rs2593487	
rs28380327	
rs2979139	
rs308521	
rs34054660	
rs359248	
rs3808964	
rs3867239	
rs3955311	
rs4269995	
rs4690085	
rs4800998	
rs4860734	
rs4923541	
rs6047481	
rs605203	
rs6131942	
rs61990287	
rs6440833	
rs6477309	
rs662094	

rs6718511	
rs6816922	
rs695459	
rs6961970	
rs71523448	
rs74357745	
rs766406	
rs7700110	
rs77960	
rs7943634	
rs8044054	
rs9347926	
rs9571526	
rs9597241	
rs962961	
rs9636202	
rs9950528	

eTable 6. Random-effects inverse-variance weighted MR estimates for the effect of genetically proxied morning diurnal preference on depression (PGC-UKB) after progressive filtering of variants associated with other sleep phenotypes (sleep duration, short sleep duration, long sleep duration, daytime sleepiness, insomnia symptoms).

P **threshold for association with other sleep phenotypes**	**Number of variants remaining after filtering**	**Mean F statistic**	**Odds ratio [95% CI]**	***P*** **value**
5.00E-08	322	25.2	0.73 [0.60-0.89]	0.002
5.00E-05	301	24.4	0.75 [0.61-0.92]	0.006
5.00E-03	207	22.5	0.77 [0.59-1.00]	0.05

eTable 7. Leave-one-out MR estimates for the effect of genetically proxied morning diurnal preference on major depressive disorder (using the PGC-UKB dataset). The *SNP* column lists the SNP that was removed in each respective analysis.

SNP	MR estimate	*P* value
rs10058356	0.766 [0.626, 0.939]	0.01
rs10109566	0.774 [0.633, 0.946]	0.012
rs1013987	0.766 [0.625, 0.938]	0.01
rs10175975	0.765 [0.624, 0.936]	0.009
rs10237162	0.762 [0.621, 0.933]	0.009
rs10254050	0.762 [0.622, 0.935]	0.009
rs1025601	0.763 [0.623, 0.934]	0.009
rs10402849	0.765 [0.625, 0.937]	0.01
rs10520176	0.768 [0.626, 0.94]	0.011
rs1061032	0.771 [0.629, 0.944]	0.012
rs1064213	0.769 [0.627, 0.943]	0.011
rs10742179	0.756 [0.618, 0.925]	0.007
rs10759208	0.771 [0.629, 0.943]	0.012
rs10762434	0.766 [0.625, 0.939]	0.01
rs10777221	0.765 [0.625, 0.938]	0.01
rs10818834	0.772 [0.631, 0.945]	0.012
rs10830107	0.767 [0.626, 0.939]	0.01
rs10832648	0.764 [0.624, 0.936]	0.009
rs10838687	0.764 [0.623, 0.936]	0.009
rs10877962	0.77 [0.628, 0.944]	0.012
rs10916892	0.775 [0.633, 0.949]	0.013
rs10917513	0.76 [0.621, 0.931]	0.008
rs10951325	0.772 [0.631, 0.946]	0.012
rs10988239	0.765 [0.625, 0.937]	0.01
rs11032362	0.763 [0.622, 0.935]	0.009
rs11062167	0.766 [0.625, 0.939]	0.01
rs11102807	0.762 [0.623, 0.933]	0.009

rs111261826	0.771 [0.63, 0.945]	0.012
rs11152350	0.76 [0.621, 0.93]	0.008
rs11154718	0.765 [0.625, 0.938]	0.01
rs11165655	0.777 [0.635, 0.949]	0.014
rs11186842	0.763 [0.623, 0.935]	0.009
rs11200159	0.765 [0.625, 0.938]	0.01
rs11208844	0.762 [0.623, 0.933]	0.009
rs113161209	0.767 [0.626, 0.94]	0.01
rs113851554	0.765 [0.625, 0.937]	0.01
rs1144566	0.754 [0.613, 0.927]	0.007
rs114848860	0.766 [0.625, 0.939]	0.01
rs115073088	0.767 [0.627, 0.94]	0.011
rs11545787	0.773 [0.631, 0.948]	0.013
rs11588913	0.762 [0.622, 0.933]	0.008
rs11597421	0.77 [0.629, 0.943]	0.011
rs11611435	0.764 [0.624, 0.936]	0.009
rs1163238	0.768 [0.627, 0.94]	0.011
rs1163628	0.763 [0.623, 0.935]	0.009
rs11641239	0.766 [0.625, 0.938]	0.01
rs11670534	0.765 [0.624, 0.937]	0.01
rs11677484	0.769 [0.629, 0.942]	0.011
rs11678584	0.764 [0.624, 0.936]	0.009
rs11681299	0.77 [0.628, 0.943]	0.011
rs11788633	0.761 [0.622, 0.932]	0.008
rs118047999	0.77 [0.628, 0.943]	0.011
rs11845599	0.765 [0.624, 0.937]	0.01
rs12040629	0.761 [0.62, 0.933]	0.009
rs12051	0.768 [0.627, 0.941]	0.011
rs12065331	0.767 [0.626, 0.94]	0.011
rs12140153	0.765 [0.624, 0.937]	0.01

rs12195792	0.768 [0.627, 0.941]	0.011
rs12206814	0.766 [0.625, 0.938]	0.01
rs1221502	0.762 [0.622, 0.932]	0.008
rs12249410	0.768 [0.627, 0.941]	0.011
rs12298405	0.768 [0.627, 0.941]	0.011
rs12378543	0.767 [0.626, 0.939]	0.01
rs12380242	0.767 [0.626, 0.939]	0.01
rs12436039	0.764 [0.624, 0.936]	0.009
rs12442008	0.768 [0.627, 0.941]	0.011
rs12442674	0.773 [0.631, 0.946]	0.013
rs12445235	0.766 [0.625, 0.938]	0.01
rs12464387	0.771 [0.63, 0.944]	0.012
rs12470914	0.763 [0.623, 0.935]	0.009
rs12600452	0.761 [0.621, 0.932]	0.008
rs12631477	0.767 [0.626, 0.939]	0.01
rs12636669	0.759 [0.62, 0.929]	0.008
rs12771973	0.762 [0.623, 0.934]	0.009
rs1278402	0.766 [0.625, 0.939]	0.01
rs12808544	0.768 [0.627, 0.941]	0.011
rs12871550	0.759 [0.62, 0.928]	0.007
rs12927162	0.766 [0.625, 0.939]	0.01
rs12950382	0.765 [0.625, 0.938]	0.01
rs12969848	0.77 [0.629, 0.943]	0.012
rs13004345	0.764 [0.623, 0.935]	0.009
rs13011556	0.767 [0.626, 0.939]	0.01
rs13065394	0.767 [0.626, 0.939]	0.01
rs13172141	0.767 [0.626, 0.939]	0.01
rs13203140	0.766 [0.625, 0.939]	0.01
rs13377754	0.777 [0.634, 0.952]	0.015
rs13414393	0.765 [0.624, 0.937]	0.01

rs1398346	0.766 [0.625, 0.938]	0.01
rs139911	0.774 [0.633, 0.947]	0.013
rs1421085	0.756 [0.617, 0.926]	0.007
rs1449403	0.769 [0.627, 0.942]	0.011
rs1468945	0.764 [0.624, 0.936]	0.009
rs1474754	0.765 [0.624, 0.937]	0.01
rs149611468	0.76 [0.621, 0.932]	0.008
rs1502249	0.766 [0.626, 0.939]	0.01
rs1508608	0.761 [0.621, 0.932]	0.008
rs1559253	0.768 [0.627, 0.941]	0.011
rs1599374	0.765 [0.625, 0.938]	0.01
rs16939162	0.77 [0.629, 0.943]	0.012
rs17007397	0.761 [0.622, 0.932]	0.008
rs17140201	0.767 [0.626, 0.939]	0.01
rs17302081	0.765 [0.624, 0.937]	0.009
rs1737893	0.772 [0.63, 0.945]	0.012
rs17396357	0.765 [0.624, 0.937]	0.01
rs17448682	0.764 [0.624, 0.936]	0.009
rs17455138	0.764 [0.623, 0.936]	0.009
rs17575798	0.765 [0.624, 0.937]	0.01
rs17577073	0.762 [0.622, 0.933]	0.009
rs17604349	0.772 [0.63, 0.945]	0.012
rs17712705	0.774 [0.632, 0.947]	0.013
rs1788784	0.761 [0.621, 0.932]	0.008
rs1799464	0.766 [0.625, 0.938]	0.01
rs1800828	0.763 [0.624, 0.934]	0.009
rs1811899	0.758 [0.619, 0.927]	0.007
rs184033703	0.765 [0.625, 0.937]	0.01
rs1843888	0.777 [0.634, 0.952]	0.015
rs187028	0.765 [0.624, 0.937]	0.01

rs1871729	0.764 [0.624, 0.936]	0.009
rs1873958	0.762 [0.622, 0.934]	0.009
rs1886205	0.774 [0.633, 0.947]	0.013
rs1931814	0.769 [0.628, 0.942]	0.011
rs2011528	0.766 [0.625, 0.938]	0.01
rs2050185	0.772 [0.632, 0.944]	0.012
rs2072727	0.765 [0.624, 0.937]	0.01
rs2166559	0.762 [0.623, 0.933]	0.008
rs2298117	0.765 [0.625, 0.937]	0.01
rs2304467	0.765 [0.624, 0.937]	0.01
rs2322605	0.766 [0.625, 0.938]	0.01
rs2362775	0.764 [0.624, 0.936]	0.009
rs2396004	0.764 [0.624, 0.936]	0.009
rs2433634	0.76 [0.621, 0.931]	0.008
rs247929	0.761 [0.622, 0.933]	0.008
rs2514214	0.764 [0.623, 0.935]	0.009
rs2550298	0.775 [0.632, 0.949]	0.013
rs2580160	0.767 [0.626, 0.939]	0.01
rs2593487	0.772 [0.63, 0.945]	0.012
rs2648721	0.765 [0.625, 0.937]	0.01
rs2653349	0.768 [0.626, 0.942]	0.011
rs2706762	0.762 [0.622, 0.933]	0.009
rs2737245	0.767 [0.626, 0.939]	0.01
rs28380327	0.752 [0.614, 0.92]	0.006
rs2844016	0.767 [0.626, 0.94]	0.011
rs28459838	0.769 [0.628, 0.942]	0.011
rs2850979	0.766 [0.625, 0.938]	0.01
rs2878172	0.764 [0.624, 0.936]	0.009
rs2881955	0.767 [0.626, 0.939]	0.01
rs2901796	0.767 [0.626, 0.939]	0.01

rs2916148	0.761 [0.621, 0.931]	0.008
rs2944831	0.767 [0.627, 0.94]	0.011
rs295268	0.764 [0.624, 0.936]	0.009
rs2978382	0.769 [0.628, 0.942]	0.011
rs2979139	0.772 [0.631, 0.945]	0.012
rs301218	0.767 [0.626, 0.94]	0.011
rs308521	0.755 [0.618, 0.924]	0.006
rs3100052	0.764 [0.624, 0.936]	0.009
rs3138490	0.769 [0.628, 0.942]	0.011
rs34054660	0.772 [0.631, 0.946]	0.012
rs34329963	0.766 [0.626, 0.939]	0.01
rs34509802	0.764 [0.623, 0.936]	0.009
rs34967119	0.765 [0.624, 0.937]	0.01
rs35346733	0.768 [0.627, 0.941]	0.011
rs35524253	0.766 [0.625, 0.939]	0.01
rs35588117	0.763 [0.623, 0.934]	0.009
rs359248	0.754 [0.616, 0.923]	0.006
rs3743794	0.763 [0.623, 0.934]	0.009
rs3760381	0.763 [0.623, 0.934]	0.009
rs3796618	0.767 [0.626, 0.939]	0.01
rs3807651	0.767 [0.626, 0.939]	0.01
rs3808964	0.769 [0.628, 0.941]	0.011
rs3815983	0.768 [0.627, 0.941]	0.011
rs3850174	0.767 [0.626, 0.94]	0.01
rs3857599	0.765 [0.624, 0.937]	0.01
rs3867239	0.772 [0.631, 0.945]	0.012
rs3923809	0.763 [0.623, 0.934]	0.009
rs3955311	0.76 [0.621, 0.93]	0.008
rs4027217	0.768 [0.628, 0.941]	0.011
rs412000	0.765 [0.624, 0.937]	0.01

rs4121878	0.765 [0.625, 0.937]	0.01
rs42210	0.763 [0.623, 0.935]	0.009
rs4236237	0.769 [0.628, 0.942]	0.011
rs4241964	0.766 [0.625, 0.938]	0.01
rs4269995	0.776 [0.634, 0.95]	0.014
rs4365329	0.767 [0.626, 0.94]	0.01
rs4419127	0.766 [0.625, 0.939]	0.01
rs4535583	0.767 [0.626, 0.94]	0.01
rs4550384	0.762 [0.622, 0.933]	0.009
rs4550782	0.766 [0.625, 0.938]	0.01
rs45597035	0.764 [0.624, 0.935]	0.009
rs465670	0.765 [0.624, 0.937]	0.01
rs4657983	0.769 [0.628, 0.942]	0.011
rs4666682	0.767 [0.626, 0.939]	0.01
rs4672458	0.767 [0.626, 0.939]	0.01
rs4690085	0.769 [0.629, 0.941]	0.011
rs4698678	0.765 [0.625, 0.938]	0.01
rs4729854	0.762 [0.622, 0.935]	0.009
rs4761989	0.766 [0.625, 0.939]	0.01
rs4775086	0.768 [0.627, 0.941]	0.011
rs4785296	0.769 [0.628, 0.942]	0.011
rs4800998	0.779 [0.636, 0.953]	0.015
rs4804951	0.768 [0.627, 0.941]	0.011
rs481214	0.765 [0.624, 0.937]	0.009
rs4860734	0.762 [0.622, 0.933]	0.008
rs487722	0.767 [0.627, 0.94]	0.011
rs4878734	0.765 [0.625, 0.937]	0.01
rs4903203	0.762 [0.622, 0.934]	0.009
rs4923541	0.76 [0.62, 0.93]	0.008
rs4936290	0.764 [0.624, 0.936]	0.009

rs495593	0.765 [0.624, 0.937]	0.01
rs497338	0.765 [0.625, 0.937]	0.01
rs5016898	0.768 [0.627, 0.941]	0.011
rs555784	0.766 [0.626, 0.939]	0.01
rs55846845	0.768 [0.627, 0.94]	0.011
rs56113850	0.769 [0.627, 0.942]	0.011
rs57236847	0.768 [0.627, 0.941]	0.011
rs58681483	0.77 [0.628, 0.943]	0.011
rs58876439	0.766 [0.625, 0.938]	0.01
rs59986227	0.762 [0.622, 0.933]	0.008
rs6007594	0.762 [0.622, 0.933]	0.009
rs6047481	0.761 [0.622, 0.931]	0.008
rs605203	0.772 [0.632, 0.945]	0.012
rs60616179	0.767 [0.626, 0.939]	0.01
rs6131805	0.762 [0.622, 0.934]	0.009
rs6131942	0.759 [0.62, 0.929]	0.007
rs61773390	0.77 [0.628, 0.945]	0.012
rs61990287	0.775 [0.634, 0.947]	0.013
rs62082402	0.766 [0.625, 0.939]	0.01
rs62124718	0.765 [0.624, 0.937]	0.01
rs621421	0.763 [0.623, 0.934]	0.009
rs62182135	0.769 [0.628, 0.942]	0.011
rs62465218	0.769 [0.628, 0.942]	0.011
rs62479736	0.767 [0.626, 0.94]	0.01
rs62553781	0.767 [0.626, 0.939]	0.01
rs6429233	0.768 [0.627, 0.941]	0.011
rs6433478	0.765 [0.624, 0.937]	0.01
rs6440833	0.773 [0.632, 0.947]	0.013
rs6468316	0.764 [0.624, 0.935]	0.009
rs6477309	0.757 [0.619, 0.927]	0.007

rs6544906	0.77 [0.629, 0.943]	0.012
rs6560218	0.766 [0.625, 0.938]	0.01
rs6573308	0.767 [0.626, 0.939]	0.01
rs662094	0.779 [0.637, 0.953]	0.015
rs66507804	0.763 [0.623, 0.934]	0.009
rs66617308	0.767 [0.627, 0.94]	0.011
rs6665637	0.768 [0.627, 0.941]	0.011
rs6690292	0.766 [0.625, 0.938]	0.01
rs6718511	0.77 [0.629, 0.943]	0.012
rs6727752	0.766 [0.626, 0.939]	0.01
rs6794796	0.764 [0.624, 0.936]	0.009
rs67988891	0.767 [0.626, 0.939]	0.01
rs6816922	0.758 [0.62, 0.927]	0.007
rs6838677	0.766 [0.626, 0.939]	0.01
rs6846730	0.763 [0.623, 0.934]	0.009
rs695459	0.759 [0.621, 0.928]	0.007
rs6958557	0.763 [0.623, 0.935]	0.009
rs6961970	0.757 [0.619, 0.927]	0.007
rs6967481	0.764 [0.623, 0.936]	0.009
rs6968240	0.765 [0.624, 0.937]	0.01
rs6988733	0.768 [0.627, 0.941]	0.011
rs6993892	0.768 [0.627, 0.941]	0.011
rs7006885	0.769 [0.628, 0.943]	0.011
rs710284	0.765 [0.624, 0.937]	0.01
rs711098	0.762 [0.622, 0.934]	0.009
rs7111582	0.764 [0.623, 0.936]	0.009
rs7143933	0.765 [0.624, 0.937]	0.01
rs71523448	0.773 [0.631, 0.946]	0.013
rs7203707	0.765 [0.625, 0.937]	0.01
rs7248205	0.762 [0.622, 0.933]	0.009

rs72720396	0.768 [0.627, 0.941]	0.011
rs72729847	0.763 [0.623, 0.934]	0.009
rs72773411	0.763 [0.623, 0.935]	0.009
rs72790386	0.77 [0.629, 0.943]	0.011
rs72796401	0.764 [0.624, 0.936]	0.009
rs72829706	0.766 [0.626, 0.939]	0.01
rs72841368	0.766 [0.625, 0.938]	0.01
rs72950188	0.766 [0.625, 0.938]	0.01
rs72966564	0.765 [0.625, 0.938]	0.01
rs7298532	0.769 [0.628, 0.942]	0.011
rs7299922	0.765 [0.625, 0.937]	0.01
rs73026775	0.764 [0.623, 0.935]	0.009
rs7304278	0.768 [0.627, 0.94]	0.011
rs73050286	0.766 [0.626, 0.939]	0.01
rs7429614	0.77 [0.628, 0.943]	0.012
rs74357745	0.762 [0.623, 0.933]	0.008
rs747003	0.767 [0.626, 0.94]	0.01
rs75120545	0.763 [0.623, 0.935]	0.009
rs7602499	0.764 [0.624, 0.936]	0.009
rs76064513	0.767 [0.626, 0.94]	0.011
rs7626335	0.766 [0.625, 0.938]	0.01
rs7649164	0.767 [0.626, 0.939]	0.01
rs76518095	0.764 [0.624, 0.936]	0.009
rs766406	0.757 [0.618, 0.926]	0.007
rs7700110	0.771 [0.63, 0.944]	0.012
rs7701529	0.765 [0.625, 0.937]	0.01
rs7721608	0.765 [0.625, 0.938]	0.01
rs77960	0.756 [0.621, 0.919]	0.005
rs7845620	0.763 [0.622, 0.935]	0.009
rs7900191	0.766 [0.626, 0.939]	0.01

rs7943634	0.77 [0.629, 0.943]	0.011
rs7975791	0.767 [0.626, 0.939]	0.01
rs80097534	0.764 [0.624, 0.936]	0.009
rs80271258	0.77 [0.628, 0.944]	0.012
rs8044054	0.776 [0.634, 0.949]	0.014
rs8072058	0.765 [0.624, 0.937]	0.01
rs812925	0.763 [0.623, 0.934]	0.009
rs848552	0.765 [0.624, 0.937]	0.01
rs909757	0.764 [0.624, 0.936]	0.009
rs9347926	0.771 [0.63, 0.945]	0.012
rs9348050	0.764 [0.624, 0.935]	0.009
rs9381812	0.771 [0.629, 0.946]	0.013
rs938836	0.765 [0.625, 0.938]	0.01
rs9394154	0.765 [0.624, 0.937]	0.009
rs9416744	0.771 [0.63, 0.945]	0.012
rs9436119	0.77 [0.628, 0.944]	0.012
rs9465253	0.767 [0.626, 0.939]	0.01
rs9476310	0.769 [0.627, 0.942]	0.011
rs9479402	0.768 [0.626, 0.941]	0.011
rs9496643	0.766 [0.625, 0.938]	0.01
rs9558942	0.768 [0.627, 0.941]	0.011
rs9571526	0.771 [0.629, 0.944]	0.012
rs9573980	0.76 [0.62, 0.932]	0.008
rs9597241	0.772 [0.63, 0.945]	0.012
rs9611597	0.761 [0.622, 0.932]	0.008
rs962961	0.758 [0.62, 0.927]	0.007
rs9636202	0.76 [0.621, 0.929]	0.007
rs9664044	0.764 [0.624, 0.936]	0.009
rs975025	0.764 [0.624, 0.936]	0.009
rs9817910	0.765 [0.625, 0.937]	0.01

rs9836621	0.765 [0.624, 0.937]	0.01
rs9950528	0.772 [0.631, 0.945]	0.012
rs9956387	0.765 [0.625, 0.937]	0.01
rs9964420	0.757 [0.618, 0.928]	0.007
rs9997394	0.765 [0.624, 0.937]	0.01