

**Supplemental Table 3** Study specific genomic inflation factor (lambda)

Phenotype	Lambda
base_CONST	0.982
base_COGi	0.965
base_DEPR	0.980
base_DYSKINESIAS	0.960
base_HY3	0.969
base_HYPOSMIA	0.965
base_INS	0.969
base_MOTORFLUX	0.960
base_SLEEP	0.952
cont_HY	0.997
cont_MMSE	1.005
cont_MOCA	1.031
cont_SEADL	1.015
cont_UPDRS1_scaled	1.030
cont_UPDRS2_scaled	1.014
cont_UPDRS3_scaled	1.020
cont_UPDRS4_scaled	1.018
cont_UPDRS_scaled	1.000
surv_COGi	1.003
surv_DEPR	0.986
surv_DYSKINESIAS	1.014
surv_HY3	1.005
surv_INS	0.995
surv_MOTORFLUX	1.007
surv_SEADL70	0.997

base, logistic regression model at the baseline; surv, Cox survival model; cont, linear mixed effect model

CONST, constipation; COGi, cognitive impairment; INS, insomnia; SLEEP, daytime sleepiness; MOTORFLUX, motor fluctuations; HY3, Hoehn Yahr scale 3 or greater; RBD, REM sleep behavior disorder; DEPR, depression; MMSE, Mini Mental State Examination; Montreal Cognitive Assessment, SEADL, Schwab and England Activities of Daily Living Scale; UPDRS, Unified Parkinson Disease Rating Scale; MDS-UPDRS, Movement Disorder Society revised version of UPDRS.