## SUPPLEMENTARY TABLES

Supplementary Table 1. Effects of genetic markers on the age at the midpoint of cognitive function decline (M) and the rate of cognitive function decline (R) parameters based on the MMSE after adjusting for sex and education years (n = 283).

| Covariates               | Minor allele | Regression coefficients on M Posterior mean | 95% CI     | Regression coefficients on R Posterior mean | 95% CI     |
|--------------------------|--------------|--------------------------------------------|------------|--------------------------------------------|------------|
| Sex (female vs. male)    | —            | −1.02                                       | (−2.93, 0.92) | 0.64                                       | (0.23, 1.11)* |
| Education years          | —            | 0.39                                        | (0.18, 0.61)* | −0.04                                      | (−0.09, −0.003)* |
| APOE ε4                  | —            | −2.10                                       | (−3.79, −0.34)* | 0.90                                       | (0.37, 1.42)* |
| ABCA7 rs3764650          | G            | −1.74                                       | (−3.16, −0.29)* | −0.20                                      | (−0.51, 0.13) |
| SORL1 rs3737529          | T            | 2.65                                        | (0.41, 4.90)* | 0.56                                       | (0.01, 1.07)* |
| SORL1 rs1784933          | G            | 1.16                                        | (−0.91, 3.22) | 0.12                                       | (−0.33, 0.52) |
| SORL1 rs2298813          | A            | 0.88                                        | (−1.78, 3.61) | −0.005                                     | (−0.60, 0.71) |
| BIN1 rs744373            | G            | −0.47                                       | (−1.79, 0.86) | −0.16                                      | (−0.43, 0.11) |
| GAB2 rs2373115           | A            | −0.35                                       | (−1.69, 0.99) | 0.09                                       | (−0.23, 0.40) |
| CD33 rs3865444           | A            | 1.32                                        | (−0.34, 2.95) | −0.05                                      | (−0.41, 0.36) |

Note: The subset of 255 AD and 28 MCI progression to AD patients were analyzed.

Abbreviations: MMSE, Mini-Mental State Examination; CI, credible interval.

*Statistically significant with 95% credible interval.

Supplementary Table 2. Model selection among the eight genetic markers after adjusting for sex and education years (n = 283).

| Models    | Variables in the model                  | Posterior model probabilities |
|-----------|-----------------------------------------|-------------------------------|
| Model 1   | APOE, SORL1 rs3737529                   | 0.8988                        |
| Model 2   | APOE, ABCA7 rs3764650, SORL1 rs3737529, SORL1 rs1784933 | 0.0565                        |
| Model 3   | APOE, SORL1 rs3737529, CD33 rs3865444  | 0.0216                        |
| Model 4   | APOE, SORL1 rs3737529, SORL1 rs1784933 | 0.0131                        |
| Model 5   | APOE, SORL1 rs3737529, SORL1 rs2298813 | 0.0066                        |
| Model 6   | APOE, SORL1 rs3737529, GAB2 rs2373115  | 0.0024                        |
| Model 7   | APOE, SORL1 rs3737529, BIN1 rs744373, GAB2 rs2373115 | 0.0009                        |
| Model 8   | APOE, SORL1 rs3737529, BIN1 rs744373     | 0.0002                        |

Note: The subset of 255 AD and 28 MCI progression to AD patients were analyzed.
Supplementary Table 3. Effects of APOE and SORL1 rs3737529 on the age at the midpoint of cognitive function decline (M) and the rate of cognitive function decline (R) parameters based on the MMSE after Bayesian variable selection (n = 283).

| Covariates                        | Minor allele | Regression coefficients on M | Regression coefficients on R |
|-----------------------------------|--------------|------------------------------|------------------------------|
|                                   |              | Posterior mean | 95% CI          | Posterior mean | 95% CI          |
| Sex (female vs. male)             | —            | −0.89           | (−2.88, 1.12)   | 0.59           | (0.12, 1.12)*   |
| Education years                   | —            | 0.40            | (0.19, 0.62)*   | −0.04          | (−0.09, 0.003)  |
| APOE ε4                           | —            | −2.50           | (−4.25, −0.73)* | 0.82           | (0.37, 1.30)*   |
| SORL1 rs3737529                   | T            | 1.58            | (0.01, 3.23)*   | 0.43           | (0.06, 0.80)*   |

Note: The subset of 255 AD and 28 MCI progression to AD patients were analyzed.
Abbreviations: MMSE, Mini-Mental State Examination; CI, credible interval.
*Statistically significant with 95% credible interval.

Supplementary Table 4. Effects of genetic markers on the age at the midpoint of cognitive function decline (M) and the rate of cognitive function decline (R) parameters based on the MMSE after adjusting for sex and education years using the ADNI data (n = 385).

| Covariates                        | Minor allele | Regression coefficients on M | Regression coefficients on R |
|-----------------------------------|--------------|------------------------------|------------------------------|
|                                   |              | Posterior mean | 95% CI          | Posterior mean | 95% CI          |
| Sex (female vs. male)             | —            | −1.47           | (−3.34, 0.39)   | −0.05          | (−0.29, 0.18)   |
| Education years                   | —            | −0.04           | (−0.36, 0.28)   | −0.07          | (−0.10, −0.03)* |
| APOE ε4                           | —            | −3.82           | (−5.14, −2.44)* | −0.05          | (−0.23, 0.13)   |
| ABCA7 rs3764650                   | G            | 1.35            | (−0.55, 3.22)   | 0.09           | (−0.18, 0.37)   |
| SORL1 rs3737529                   | T            | −1.67           | (−5.06, 1.92)   | 0.16           | (−0.44, 1.02)   |
| SORL1 rs1784933                   | G            | 1.68            | (−1.24, 4.57)   | 0.11           | (−0.30, 0.56)   |
| SORL1 rs2298813                   | A            | 2.19            | (−0.62, 4.97)   | −0.14          | (−0.44, 0.18)   |
| BIN1 rs744373                     | G            | −0.13           | (−1.50, 1.26)   | −0.14          | (−0.32, 0.04)   |
| GAB2 rs2373115                    | A            | −0.39           | (−1.94, 1.16)   | −0.07          | (−0.26, 0.14)   |
| CD33 rs3865444                    | A            | 0.57            | (−0.79, 1.95)   | 0.12           | (−0.06, 0.31)   |

Note: The sample of 150 AD and 235 MCI progression to AD patients with at least four MMSE measurements were analyzed.
Abbreviations: MMSE, Mini-Mental State Examination; CI, credible interval.
*Statistically significant with 95% credible interval.
Supplementary Table 5. The TaqMan genotyping assay ID for the selected single nucleotide polymorphism (SNP).

| Gene   | SNP   | TaqMan genotyping assay ID |
|--------|-------|-----------------------------|
| APOE_e2/3/4 | rs429358 | C_3084793_20 |
| APOE_e2/3/4 | rs7412 | C_904973_10 |
| ABCA7 | rs3764650 | C_27478162_20 |
| SORL1 | rs3737529 | C_25803133_10 |
| SORL1 | rs1784933 | C_8799397_10 |
| SORL1 | rs2298813 | C_16190780_10 |
| BIN1 | rs744373 | C_1042213_10 |
| GAB2 | rs2373115 | C_12033202_20 |
| CD33 | rs3865444 | C_1487395_40 |