**Supplementary table 1.** Detail of samples included in the BD GWAS dataset.

|  |  |  |  |
| --- | --- | --- | --- |
| **Dataset abbreviation** | **Case N** | **Control N** | **Genotyping platform** |
| **bmau** | 329 | 1,810 | I660Q, I610Q |
| **bmg2** | 181 | 478 | IO1Q |
| **bmg3** | 489 | 880 | I550, I610Q, I660Q |
| **bmpo** | 410 | 689 | I317, I660Q |
| **bmsp** | 253 | 291 | I610Q, IO1Q |
| **bonn** | 669 | 1,246 | I550 |
| **dub1** | 150 | 796 | A6.0 |
| **edi1** | 275 | 272 | A5.0 |
| **fat2** | 722 | 1,027 | A6.0 |
| **fran** | 451 | 1,630 | I650 |
| **gain** | 706 | 593 | A6.0 |
| **gsk1** | 706 | 899 | I550 |
| **hal2** | 410 | 479 | OMEX |
| **icuk** | 2,456 | 4,069 | OMEX |
| **jst5** | 646 | 643 | Il1M |
| **may1** | 929 | 759 | OMEX |
| **mich** | 481 | 399 | I550 |
| **pf1e** | 375 | 346 | OMEX |
| **rom3** | 233 | 198 | OMEX |
| **st2c** | 628 | 1,219 | A5.0 |
| **stp1** | 920 | 973 | A5.0 |
| **swa2** | 885 | 2,252 | A6.0 |
| **swei** | 1,278 | 3,669 | OMEX |
| **top7** | 416 | 350 | A6.0 |
| **top8** | 148 | 291 | OMEX |
| **ucl2** | 726 | 693 | OMEX |
| **uclo** | 427 | 488 | A5.0 |
| **ume4** | 565 | 569 | OMEX |
| **usc2** | 1,293 | 1,156 | OMEX |
| **wtcc** | 1,644 | 1,641 | A5.0 |
| **butr** | 236 | 236 | OMEX |
| **uktr** | 130 | 130 | OMEX |
| **jea2** | 372 | 628 | Il1M |
| **kfo4** | 247 | 288 | PsychChip |
| **tgco2** | 1,032 | 499 | A6.0 |
| **bdtrs** | 218 | 684 | PsychChip |
| **dutch** | 831 | 953 | PsychChip |
| **gawli** | 268 | 502 | PsychChip |
| **germ1** | 219 | 992 | PsychChip |
| **gpcw1** | 447 | 2,092 | PsychChip |
| **neuc1** | 215 | 750 | PsychChip |
| **spsp3** | 153 | 2,337 | PsychChip |
| **swed1** | 2,909 | 2,844 | PsychChip |
| **ukwa1** | 2,789 | 2,372 | PsychChip |
| **usaw4** | 2,956 | 2,930 | PsychChip |
| **usaw5** | 1,107 | 1,316 | PsychChip |
| **iPSYCH** | 1,758 | 5,937 | PsychChip |
| **deCODE** | 1,972 | 192,602 | OMEX |
| **Estonian\_Biobank** | 407 | 17,209 | GSA v1, OMEX, 2641, HumanCNV370-Duo BeadChips, Infinium CoreExome-24 BeadChips from Illumina |
| **HUNT** | 905 | 41,914 | OMEX |
| **UK\_Biobank** | 1,454 | 58,113 | UK BiLEVE Axiom Array/ UK Biobank Axiom Array |
| **bmrus** | 522 | 460 | GSA+ Psych |
| **greek** | 186 | 87 | GSA v.2+MD+Psych |
| **norgs** | 101 | 315 | GSA |
| **noroe** | 313 | 4,367 | OMEX |
| **graza** | 144 | 66 | OMEX |
| **bmrom** | 225 | 121 | OMEX |

**Supplementary table 2.** Detail of samples included in the SCZ GWAS dataset.

|  |  |  |  |
| --- | --- | --- | --- |
| **DATASET** | **Samples in GWAS** | | **Genotyping chip** |
| **CLOZUK1** | 5,528 | | OmniExpress |
| **CardiffCOGS1** | 512 | | OmniExpress |
| **CLOZUK2** | 4,973 | | OmniExpress |
| **CardiffCOGS2** | 247 | | OmniExpress |
| **WTCCC2** | 4,641 | | Illumina 1.2M |
| **Cardiff Controls** | 1,078 | | OmniExpress |
| **Generation Scotland** | 6,480 | | OmniExpress |
| **T1DGC** | 2,532 | | HumanHap 550 |
| **POBI** | 2,516 | | Illumina 1.2M |
| **TWINSUK** | 2,426 | | Illumina 317/610/660/1M |
| **QIMR** | 2,339 | | Illumina 317/610/660 |
| **TEDS** | 1,752 | | OmniExpress |
| **GERAD** | 778 | | Illumina 660 |
|  |  |  | **Replication samples** |
| **DATASET** | Cases | Controls | Genotyping chip |
| **deCODE1** | 681 | 137,678 | HumanHap/OmniExpress |
| **deCODE2** | 885 | 924 | HumanHap |
| **iPSYCH** | 3,226 | 10,583 | HumanCoreExome/PsychChip |
| **TOP** | 970 | 5,039 | OmniExpress |

**Supplementary Table 3.** Genetic correlations analysis results between BD and plasma neurological protein.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Neurological Protein** | **Psychiatric disorders** | **Coefficients** | **95% confidence intervals** | ***P* value** | **Heritability**  **estimate** |
| NEP | BD | -0.1650 | -0.3187~-0.0113 | 0.0354 | 0.0717 |
| Alpha\_2\_MRAP | BD | -0.1887 | -0.3904~0.0130 | 0.0668 | 0.0714 |
| FcRL2 | BD | -0.2208 | -0.6397~0.1981 | 0.3016 | 0.0714 |
| CD200R1 | BD | -0.1286 | -0.4653~0.2081 | 0.4543 | 0.0766 |
| GM\_CSF\_R\_alpha | BD | -0.0739 | -0.2711~0.1233 | 0.4622 | 0.0714 |
| Beta\_NGF | BD | -0.2379 | -0.8953~0.4195 | 0.4782 | 0.0730 |
| EDA2R | BD | 0.2937 | -0.5187~1.1061 | 0.4785 | 0.0758 |
| MANF | BD | -0.1765 | -0.7063~0.3533 | 0.5137 | 0.0714 |
| CLEC1B | BD | -0.1288 | -0.5382~0.2806 | 0.5373 | 0.0721 |
| PDGF\_R\_alpha | BD | -0.2926 | -1.2269~0.6417 | 0.5393 | 0.0728 |
| NCAN | BD | 0.1801 | -0.4800~0.8402 | 0.5928 | 0.0714 |
| SMPD1 | BD | 0.0800 | -0.2305~0.3905 | 0.6136 | 0.0714 |
| GDF\_8 | BD | 0.0660 | -0.1955~0.3275 | 0.6205 | 0.0721 |
| DDR1 | BD | -0.0676 | -0.3461~0.2109 | 0.6344 | 0.0714 |
| EZR | BD | -0.0750 | -0.3853~0.2353 | 0.6356 | 0.0714 |
| WFIKKN1 | BD | -0.0320 | -0.1670~0.1030 | 0.6422 | 0.0714 |
| sFRP\_3 | BD | 0.0516 | -0.2003~0.3035 | 0.6883 | 0.0715 |
| MSR1 | BD | 0.0496 | -0.2054~0.3046 | 0.7029 | 0.0714 |
| LAT | BD | -0.0828 | -0.5654~0.3998 | 0.7367 | 0.0714 |
| IL12 | BD | -0.1000 | -0.7689~0.5689 | 0.7694 | 0.0714 |
| CLEC10A | BD | 0.2665 | -1.5379~2.0709 | 0.7722 | 0.0741 |
| BMP\_4 | BD | 0.0282 | -0.2395~0.2959 | 0.8363 | 0.071 |
| RGMA | BD | -0.0328 | -0.3631~0.2975 | 0.8455 | 0.0714 |
| CPA2 | BD | 0.0162 | -0.2841~0.3165 | 0.9156 | 0.0714 |
| TN\_R | BD | -0.0151 | -0.4492~0.4190 | 0.9456 | 0.0715 |
| gal\_8 | BD | 0.0050 | -0.1928~0.2028 | 0.9606 | 0.0712 |
| SPOCK1 | BD | -0.0055 | -0.2544~0.2434 | 0.9655 | 0.0716 |
| IL\_5R\_alpha | BD | -0.0043 | -0.5170~0.5084 | 0.9868 | 0.0780 |

**\*** BD, bipolar disorder.

**Supplementary Table 4.** Genetic correlations analysis results between SCZ and plasma neurological protein.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Neurological Protein** | **Psychiatric disorders** | **Coefficients** | **95% confidence intervals** | ***P* value** | **Heritability**  **estimate** |
| NEP | SCZ | -0.2352 | -0.4332~-0.0372 | 0.0198 | 0.2499 |
| FcRL2 | SCZ | -0.1799 | -0.4890~0.1292 | 0.2540 | 0.2417 |
| Beta\_NGF | SCZ | -0.1328 | -0.3796~0.1140 | 0.2916 | 0.2417 |
| EDA2R | SCZ | 0.2558 | -0.2291~0.7407 | 0.3011 | 0.2476 |
| CD200R1 | SCZ | -0.1428 | -0.4294~0.1438 | 0.3288 | 0.2532 |
| PDGF\_R\_alpha | SCZ | -0.3631 | -1.0969~0.3707 | 0.3321 | 0.2394 |
| MSR1 | SCZ | -0.1229 | -0.3877~0.1419 | 0.3628 | 0.2417 |
| EZR | SCZ | -0.1376 | -0.4410~0.1658 | 0.3743 | 0.2417 |
| DDR1 | SCZ | -0.1244 | -0.4413~0.1925 | 0.4420 | 0.2417 |
| CLEC10A | SCZ | 0.2589 | -0.4673~0.9851 | 0.4847 | 0.2518 |
| gal\_8 | SCZ | -0.0718 | -0.2839~0.1403 | 0.5072 | 0.2408 |
| MANF | SCZ | -0.1060 | -0.4192~0.2072 | 0.5072 | 0.2417 |
| BMP\_4 | SCZ | -0.0966 | -0.3851~0.1919 | 0.5115 | 0.2421 |
| LAT | SCZ | -0.1294 | -0.5171~0.2583 | 0.5132 | 0.2417 |
| CLEC1B | SCZ | -0.1021 | -0.4294~0.2252 | 0.5409 | 0.2418 |
| sFRP\_3 | SCZ | 0.0708 | -0.1787~0.3203 | 0.5780 | 0.2422 |
| GDF\_8 | SCZ | -0.1172 | -0.5343~0.2999 | 0.5816 | 0.2436 |
| NRP2 | SCZ | -0.1468 | -0.7293~0.4357 | 0.6213 | 0.2417 |
| Alpha\_2\_MRAP | SCZ | -0.0559 | -0.2987~0.1869 | 0.6519 | 0.2417 |
| IL\_5R\_alpha | SCZ | -0.2749 | -1.4844~0.9346 | 0.6560 | 0.2442 |
| SMPD1 | SCZ | -0.0699 | -0.3980~0.2582 | 0.6761 | 0.2417 |
| GM\_CSF\_R\_alpha | SCZ | -0.0352 | -0.2459~0.1755 | 0.7435 | 0.2417 |
| HAGH | SCZ | 0.0808 | -0.4972~0.6588 | 0.7840 | 0.2572 |
| WFIKKN1 | SCZ | 0.0133 | -0.1249~0.1515 | 0.8500 | 0.2417 |
| SPOCK1 | SCZ | 0.0210 | -0.2001~0.2421 | 0.8520 | 0.2413 |
| CPA2 | SCZ | -0.0185 | -0.2745~0.2375 | 0.8873 | 0.2417 |
| N2DL\_2 | SCZ | 0.0224 | -0.3132~0.3580 | 0.8957 | 0.2417 |

**\*** SCZ, schizophrenia.