

| Trait  | real<br>adip mean | shuffled<br>adip mean sd | adipose P | real<br>brain mean | shuffled<br>brain mean sd | brain P   | popln<br>mean |
|--|-------------------|--------------------------|-----------|--------------------|---------------------------|-----------|---------------|
| Body mass index  | 30.39             | 29.4(1.102)              | 6.25E-142 | 27.60              | 28.58(1.133)              | 9.76E-130 | 27.40         |
| Waist circumference  | 95.50             | 93.25(2.455)             | 1.00E-146 | 89.20              | 91.36(2.51)               | 2.53E-128 | 90.33         |
| Weight   | 85.20             | 82.53(2.982)             | 4.36E-140 | 77.58              | 80.27(3.059)              | 2.32E-135 | 78.31         |
| Standing height  | 167.45            | 167.57(0.144)            | 1.81E-127 | 167.65             | 167.62(0.152)             | 1.41E-08  | 168.84        |
| Sitting height   | 88.97             | 88.95(0.054)             | 1.58E-32  | 88.82              | 88.89(0.054)              | 0         | 89.41         |
| Haemoglobin concentration  | 14.04             | 14.03(0.029)             | 1.86E-62  | 13.97              | 13.99(0.028)              | 5.19E-112 | 14.21         |
| Haematocrit percentage   | 40.76             | 40.72(0.083)             | 1.42E-60  | 40.54              | 40.63(0.079)              | 6.79E-227 | 41.16         |
| Red blood cell erythrocyte count   | 4.48              | 4.47(0.016)              | 1.67E-81  | 4.44               | 4.46(0.016)               | 5.71E-226 | 4.51          |
| High light scatter reticulocyte percentage                                 | 0.44              | 0.43(0.019)              | 3.60E-120 | 0.40               | 0.41(0.02)                | 2.33E-117 | 0.40          |
| Red blood cell erythrocyte distribution width                              | 13.62             | 13.6(0.018)              | 3.32E-314 | 13.56              | 13.59(0.019)              | 0         | 13.47         |
| White blood cell leukocyte count   | 7.15              | 7.1(0.076)               | 1.07E-88  | 6.98               | 7.05(0.079)               | 1.23E-131 | 6.89          |
| High light scatter reticulocyte count                                      | 0.02              | 0.02(0.001)              | 1.16E-157 | 0.02               | 0.02(0.001)               | 5.81E-99  | 0.02          |
| Neutrophil count   | 4.45              | 4.41(0.046)              | 2.68E-134 | 4.35               | 4.39(0.048)               | 5.00E-112 | 4.24          |
| Reticulocyte count   | 0.06              | 0.06(0.002)              | 2.21E-172 | 0.06               | 0.06(0.002)               | 5.46E-56  | 0.06          |
| Reticulocyte percentage  | 1.42              | 1.38(0.043)              | 3.86E-167 | 1.32               | 1.35(0.045)               | 5.01E-57  | 1.35          |
| Mean corpuscular haemoglobin concentration                                 | 34.46             | 34.46(0.01)              | 1.84E-08  | 34.48              | 34.46(0.01)               | 0         | 34.54         |
| Platelet crit  | 0.24              | 0.24(0.001)              | 5.28E-140 | 0.23               | 0.24(0.001)               | 3.18E-64  | 0.23          |
| Basophil count   | 0.04              | 0.04(0.001)              | 9.52E-77  | 0.04               | 0.04(0.001)               | 1.08E-163 | 0.03          |
| Monocyte percentage  | 6.99              | 6.98(0.026)              | 5.52E-78  | 6.97               | 6.98(0.026)               | 1.07E-26  | 7.10          |
| Neutrophil percentage  | 61.67             | 61.68(0.077)             | 0.0004    | 61.67              | 61.72(0.079)              | 1.20E-61  | 61.14         |
| Mean corpuscular volume  | 91.09             | 91.2(0.148)              | 3.37E-89  | 91.49              | 91.32(0.155)              | 1.56E-210 | 91.34         |
| Platelet count   | 256.95            | 256.41(0.845)            | 2.72E-71  | 255.58             | 256.01(0.928)             | 6.14E-39  | 253.21        |
| Lymphocyte percentage  | 28.20             | 28.22(0.067)             | 4.46E-07  | 28.25              | 28.19(0.07)               | 2.15E-114 | 28.63         |
| Monocyte count   | 0.49              | 0.48(0.005)              | 7.09E-222 | 0.47               | 0.48(0.005)               | 3.00E-225 | 0.48          |
| Basophil percentage  | 0.59              | 0.59(0.006)              | 3.44E-07  | 0.60               | 0.6(0.006)                | 0.02      | 0.57          |
| Number of treatments medications taken                                     | 3.08              | 2.9(0.132)               | 0         | 2.70               | 2.81(0.135)               | 3.64E-120 | 2.45          |
| Number of self reported non cancer illnesses                               | 2.24              | 2.12(0.087)              | 0         | 1.98               | 2.07(0.088)               | 4.23E-156 | 1.87          |
| Interpolated Age of participant when<br>non cancer illness first diagnosed | 41.89             | 41.65(0.256)             | 8.57E-144 | 41.56              | 41.46(0.263)              | 6.73E-26  | 42.32         |
| Townsend deprivation index at recruitment                                  | -1.13             | -1.17(0.055)             | 9.18E-71  | -1.26              | -1.18(0.057)              | 1.54E-316 | -1.58         |
| Neuroticism score  | 4.44              | 4.4(0.032)               | 2.37E-322 | 4.38               | 4.41(0.033)               | 1.51E-120 | 4.10          |
| Creatinine enzymatic in urine  | 9077.69           | 8885.47(252.885)         | 3.80E-101 | 8429.45            | 8677.5(254.514)           | 5.26E-165 | 8806.93       |
| Sodium in urine  | 79.56             | 77.86(1.986)             | 7.51E-127 | 74.72              | 76.34(2.001)              | 1.92E-114 | 76.21         |
| Sleep duration   | 7.08              | 7.08(0.014)              | 7.10E-21  | 7.08               | 7.08(0.014)               | 2.82E-26  | 7.13          |
| Immature reticulocyte fraction   | 0.30              | 0.3(0.004)               | 2.20E-127 | 0.29               | 0.29(0.004)               | 4.98E-141 | 0.29          |
| Mean corpuscular haemoglobin   | 31.39             | 31.43(0.052)             | 7.04E-99  | 31.55              | 31.46(0.055)              | 0         | 31.55         |
| Lymphocyte count   | 1.98              | 1.98(0.024)              | 1.06E-16  | 1.93               | 1.96(0.025)               | 1.32E-179 | 1.95          |
| Eosinophil count   | 0.18              | 0.18(0.003)              | 3.41E-43  | 0.17               | 0.18(0.003)               | 6.94E-66  | 0.17          |
| Non cancer illness code self reported                                      | 2405.55           | 2696.21(140.196)         | 0         | 2779.19            | 2747.36(146.249)          | 9.77E-10  | 2891.97       |
| Non cancer illness year age first occurred                                 | 628.73            | 646.05(28.147)           | 6.08E-67  | 703.82             | 665.47(29.619)            | 1.36E-289 | 702.47        |
| Mean spheroid cell volume  | 82.86             | 83(0.201)                | 3.20E-90  | 83.37              | 83.18(0.206)              | 1.21E-147 | 82.87         |
| Mean reticulocyte volume   | 106.00            | 106.02(0.125)            | 3.58E-05  | 106.22             | 106.13(0.13)              | 3.50E-83  | 105.83        |
| Eosinophil percentage  | 2.53              | 2.53(0.018)              | 6.55E-10  | 2.52               | 2.52(0.019)               | 0.71      | 2.56          |
| Platelet distribution width  | 16.49             | 16.48(0.007)             | 0         | 16.47              | 16.48(0.007)              | 2.24E-205 | 16.49         |
| Potassium in urine   | 63.61             | 62.84(0.851)             | 1.64E-141 | 61.68              | 62.13(0.858)              | 8.05E-48  | 63.47         |
| Birth weight   | 3.30              | 3.3(0.009)               | 0.0001    | 3.30               | 3.3(0.009)                | 8.54E-06  | 3.33          |

**S19 Table:** Summary of results from the analyses performed to characterize the tissue-specificity of phenotypic characteristics of individuals assigned to a tissue-specific subtype of BMI. Central tendency measures of the artificial tissue-specific mean of a quantitative trait (computed only in the individuals classified into artificial tissue-specific subtype of BMI) across 500 artificial tissue-specific subtype groups identified based on 500 sets of artificial tissue-specific eQTLs (obtained by random exchange of eQTLs between the sets of adipose and brain specific eQTLs) are provided. These quantitative traits were found primarily heterogeneous between at least one of real adipose and brain specific subtype groups of individuals and the remaining population (S10 Table). Here adipose P denotes the p-value of testing whether the artificial adipose tissue-specific trait mean across the artificial adipose tissue-specific subtype groups is different from the original adipose tissue-specific trait mean. Similarly Brain P is defined. The real adipose and brain tissue-specific mean and population mean of the traits are also provided.