Supplementary Table 1: Coverage of the 8 genes associated with MO

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Gene** | **Chromosome** | **Minimum** | **1st Qu.** | **Median** | **Mean** | **3rd Qu.** | **Maximum** |
| *ADCY3* | 2 | 24.34 | 32.2675 | 34.33 | 34.26074 | 36.0675 | 67.93 |
| *LEP* | 7 | 24.89 | 32.7775 | 34.845 | 34.82248 | 36.7225 | 68.43 |
| *LEPR* | 1 | 25.91 | 34.2175 | 36.02 | 35.78126 | 37.5475 | 68.63 |
| *MC3R* | 20 | 19.46 | 31.4175 | 34.315 | 34.45918 | 37.005 | 63.43 |
| *MC4R* | 18 | 23.86 | 33.655 | 36.14 | 36.13064 | 38.56 | 71.55 |
| *MRAP2* | 6 | 25.63 | 33.825 | 35.75 | 35.5699 | 37.2525 | 68.55 |
| *PCSK1* | 5 | 25.66 | 34.3675 | 36.215 | 36.00092 | 37.73 | 69.98 |
| *POMC* | 2 | 23.86 | 32.94 | 34.755 | 34.91226 | 36.8725 | 68.79 |

Supplementary table 2: Effect sizes for the 11 genetic variants associated with MO identified.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gene** | **Chromosome** | **Position**(GRCh37) | **SNP ID** | **Effect size\*** |
| *ADCY3* | 2 | 25059790 | rs115329263 | 10.6 |
| 2 | 25141368 | rs143034828 | 2.8 |
| *MC3R* | 20 | 54824819 | rs1481948431 | 2.8 |
| *MC4R* | 18 | 58039098 | rs1555691402 | 6.6 |
| *MRAP2* | 6 | 84765081 | rs760845706 | 2.8 |
| 6 | 84799133 | rs1054400375 | 2.8 |
| 6 | 84798925 | rs368589399 | 2.8 |
| *PCSK1* | 5 | 95761591 | rs748072514 | 2.8 |
| 5 | 95735682 | rs1026383684 | 2.8 |
| 5 | 95728961 | rs567748971 | 2.8 |
| *POMC* | 2 | 25384596 | rs28932470 | 2.8 |

\*Calculated using the formula described at [https://www.medcalc.org/calc/odds\_ratio.php](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.medcalc.org%2Fcalc%2Fodds_ratio.php&data=04%7C01%7C%7Ca1c79232c0e348fbf5d408d98df3a5c8%7C0edca4720b7146e696c70a68c10dcb96%7C0%7C0%7C637696899883718247%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=AH2sRo2T3n8TDE3Kl1ufBTRrj49%2B0CoGnxeoaV3YoUs%3D&reserved=0)