**Table S1:**

F2 progeny genotype data and corresponding animal body weights (g)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Animal No. | D5Rat98 | D5Got131 | D5Rat256 | D5WOX37 | D5Rat235 | D5Rat69 | Weight |
| obese | 1 | A | A | A | A | H | H | 460 |
| 2 | A | A | A | A | A | A | 466 |
| 3 | A | A | A | A | A | H | 579 |
| 4 | A | A | A | A | A | H | 507 |
| 5 | A | A | A | A | A | A | 630 |
| 6 | A | A | A | A | A | A | 450 |
| 7 | A | A | A | A | H | H | 502 |
| 8 | H | H | A | A | A | A | 460 |
| 9 | H | H | A | A | A | A | 622 |
| 10 | A | A | - | A | H | H | 650 |
| 11 | H | H | A | A | A | H | 605 |
| 12 | A | A | A | A | A | A | 608 |
| 13 | H | A | A | A | A | A | 560 |
| 14 | H | A | A | A | A | H | 385 |
| 15 | A | - | A | A | A | A | 430 |
| 16 | H | A | A | A | A | H | 630 |
| 17 | H | H | H | A | A | A | 530 |
| 18 | A | A | A | A | A | A | 460 |
| 19 | A | A | A | A | A | A | 435 |
| 20 | A | A | A | A | A | A | 514 |
| 21 | A | A | A | A | A | A | 479 |
| 22 | H | H | A | A | A | A | 650 |
| 23 | A | A | A | A | A | A | 530 |
| 24 | A | A | A | A | - | - | 594 |
| 25 | A | A | A | A | A | H | 513 |
| 26 | A | A | A | A | H | H | 594 |
| 27 | A | A | A | A | A | H | 520 |
| 28 | A | A | A | A | H | H | 570 |
| 29 | A | A | A | A | H | H | 610 |
| 30 | A | A | - | A | A | H | 590 |
| 31 | A | A | A | A | A | A | 430 |
| 32 | A | A | A | A | A | H | 440 |
| 33 | A | A | A | A | A | A | 419 |
| 34 | A | A | A | A | A | A | 417 |
| 35 | H | A | A | A | A | A | 420 |
| 36 | A | A | A | A | A | A | 428 |
| 37 | H | A | A | A | A | A | 502 |
| 38 | A | A | A | A | A | A | 470 |
| 39 | A | A | A | A | A | A | 550 |
| 40 | A | A | A | A | A | A | 550 |
| 41 | A | A | A | A | A | H | 460 |
| 42 | A | A | A | A | A | A | 380 |
| 43 | A | A | A | A | A | A | 460 |
| 44 | A | A | A | A | A | H | 530 |
| 45 | H | A | A | A | A | A | 596 |
| 46 | H | H | H | A | A | H | 420 |
| 47 | A | A | A | A | A | A | 440 |
| 48 | A | A | A | A | A | H | 471 |
| 49 | H | H | H | A | A | H | 367 |
| 50 | H | H | H | A | A | A | 485 |
| 51 | A | A | A | A | A | A | 491 |
| 52 | A | A | A | A | H | H | 508 |
| 53 | A | A | A | A | H | - | 400 |
| 54 | A | A | A | A | A | A | 517 |
| 55 | - | A | A | A | A | H | 550 |
| 56 | H | H | H | A | A | H | 420 |
| 57 | A | A | A | A | A | A | 546 |
| 58 | A | A | A | A | A | H | 470 |
| 59 | H | H | A | A | A | H | 450 |
| 60 | H | H | H | A | A | A | 330 |
| 61 | - | A | A | A | A | H | 562 |
| 62 | A | A | A | A | A | - | 458 |
| 63 | A | A | A | A | A | A | 545 |
| 64 | A | A | A | A | A | A | 506 |
| 65 | A | A | A | A | A | H | 412 |
| 66 | A | A | A | A | A | A | 501 |
| carrier | 67 | H | H | H | H | H | H | 241 |
| 68 | H | H | H | H | H | - | 224 |

A= WNIN/Ob alleles; H= WNIN/Ob alleles and Fisher -344 alleles; - missing data