

Table S1. Characteristics of the ejaculates used for production of fresh and cooled semen samples.

| Stallion    | Breed         | Age<br>y | VOL<br>mL | CC<br>x 10 <sup>6</sup> /mL | NOR<br>% | ACR<br>% | HD<br>% | DT<br>% | PD<br>% | DD<br>% | BMP<br>% | OMP<br>% | BCT<br>% |
|-------------|---------------|----------|-----------|-----------------------------|----------|----------|---------|---------|---------|---------|----------|----------|----------|
| Stallion 1  | AQH           | 8        | 19        | 485                         | 80       | 1        | 4       | 2       | 8       | 0       | 6        | 3        | 0        |
| Stallion 1  | AQH           | 8        | 27        | 378                         | 74       | 0        | 0       | 6       | 5       | 0       | 4        | 1        | 0        |
| Stallion 2  | AQH           | 10       | 51        | 280                         | 45       | 0        | 30      | 2       | 24      | 2       | 1        | 7        | 7        |
| Stallion 2  | AQH           | 10       | 38        | 208                         | 75       | 0        | 1       | 3       | 7       | 3       | 5        | 5        | 1        |
| Stallion 3  | AQH           | 17       | 77        | 119                         | 81       | 0        | 1       | 0       | 6       | 0       | 1        | 0        | 2        |
| Stallion 3  | AQH           | 17       | 83        | 197                         | 64       | 0        | 10      | 0       | 17      | 7       | 4        | 1        | 1        |
| Stallion 4  | AQH           | 23       | 53        | 248                         | 30       | 0        | 8       | 2       | 46      | 0       | 2        | 12       | 6        |
| Stallion 4  | AQH           | 23       | 49        | 511                         | 33       | 0        | 13      | 1       | 53      | 1       | 4        | 3        | 2        |
| Stallion 5  | Arabian       | 9        | 22        | 505                         | 64       | 0        | 3       | 0       | 10      | 11      | 10       | 2        | 1        |
| Stallion 5  | Arabian       | 9        | 27        | 477                         | 60       | 1        | 1       | 0       | 8       | 16      | 12       | 1        | 2        |
| Stallion 6  | Arabian       | 20       | 19        | 214                         | 31       | 0        | 4       | 1       | 11      | 2       | 41       | 6        | 6        |
| Stallion 6  | Arabian       | 20       | 83        | 138                         | 34       | 0        | 6       | 0       | 20      | 0       | 24       | 6        | 14       |
| Stallion 7  | Cleveland Bay | 5        | 17        | 102                         | 41       | 5        | 11      | 1       | 6       | 5       | 14       | 18       | 8        |
| Stallion 7  | Cleveland Bay | 5        | 37        | 83                          | 31       | 8        | 4       | 1       | 7       | 2       | 20       | 22       | 10       |
| Stallion 8  | Thoroughbred  | 9        | 58        | 69                          | 54       | 1        | 32      | 0       | 4       | 1       | 13       | 4        | 2        |
| Stallion 8  | Thoroughbred  | 9        | 78        | 131                         | 36       | 2        | 44      | 2       | 10      | 4       | 14       | 4        | 4        |
| Stallion 9  | Thoroughbred  | 11       | 110       | 102                         | 60       | 3        | 3       | 1       | 12      | 8       | 13       | 1        | 1        |
| Stallion 10 | Trakehner     | 5        | 37        | 282                         | 28       | 5        | 12      | 2       | 15      | 2       | 17       | 19       | 12       |
| Stallion 11 | Trakehner     | 8        | 41        | 668                         | 79       | 2        | 4       | 3       | 1       | 1       | 5        | 5        | 3        |
| Stallion 11 | Trakehner     | 8        | 87        | 150                         | 83       | 0        | 5       | 1       | 1       | 0       | 5        | 3        | 4        |
| Stallion 12 | Trakehner     | 8        | 56        | 228                         | 49       | 3        | 19      | 0       | 6       | 2       | 16       | 9        | 4        |
| Stallion 12 | Trakehner     | 8        | 36        | 393                         | 45       | 9        | 5       | 4       | 9       | 3       | 12       | 10       | 9        |
| Stallion 13 | Warmblood     | 3        | 93        | 191                         | 40       | 7        | 12      | 10      | 9       | 2       | 19       | 5        | 4        |
| Stallion 13 | Warmblood     | 3        | 48        | 129                         | 43       | 8        | 5       | 8       | 11      | 2       | 16       | 15       | 2        |
| Stallion 14 | Warmblood     | 3        | 53        | 60                          | 40       | 1        | 35      | 1       | 19      | 4       | 4        | 6        | 8        |
| Stallion 14 | Warmblood     | 3        | 21        | 372                         | 22       | 3        | 19      | 3       | 21      | 21      | 10       | 10       | 5        |
| Stallion 15 | Welsh Pony    | 3        | 10        | 585                         | 65       | 1        | 4       | 0       | 9       | 6       | 9        | 7        | 3        |
| Stallion 15 | Welsh Pony    | 3        | 13        | 197                         | 54       | 3        | 5       | 2       | 23      | 12      | 2        | 3        | 1        |

Table S1. Continued...characteristics of the ejaculates used for production of fresh and cooled semen samples.

|             |            |    |    |     |    |   |    |   |    |   |    |    |   |
|-------------|------------|----|----|-----|----|---|----|---|----|---|----|----|---|
| Stallion 16 | Welsh Pony | 12 | 39 | 237 | 64 | 0 | 8  | 1 | 6  | 2 | 6  | 16 | 1 |
| Stallion 16 | Welsh Pony | 12 | 15 | 313 | 67 | 0 | 6  | 0 | 1  | 1 | 11 | 15 | 1 |
| Stallion 17 | Welsh Pony | 22 | 68 | 229 | 50 | 8 | 9  | 1 | 8  | 6 | 18 | 4  | 5 |
| Stallion 18 | Welsh Pony | 29 | 50 | 136 | 60 | 2 | 7  | 0 | 24 | 1 | 5  | 2  | 0 |
| Stallion 18 | Welsh Pony | 29 | 57 | 137 | 76 | 0 | 12 | 1 | 10 | 0 | 1  | 0  | 3 |

VOL: volume, CC: sperm concentration, NOR: morphologically normal sperm, ACR: acrosome defects, HD: head defects, DT: detached heads, PD: proximal droplets, DD: distal droplets, BM: bent midpieces, OMP: other midpiece defects, BCT: bent/coiled tails.

Table S2. Characteristics of the ejaculates used for production of frozen semen samples.

| Stallion    | Breed        | Age<br>y | VOL<br>mL | CC<br>x 10 <sup>6</sup> /mL | TM<br>% | PM<br>% | NOR<br>% | ACR<br>% | HD<br>% | DT<br>% | PD<br>% | DD<br>% | BMP<br>% | OMP<br>% | BCT<br>% |
|-------------|--------------|----------|-----------|-----------------------------|---------|---------|----------|----------|---------|---------|---------|---------|----------|----------|----------|
| Stallion 1  | AQH          | 8        | 16        | 303                         | 89      | 54      | 64       | 3        | 12      | 1       | 9       | 6       | 2        | 2        | 2        |
| Stallion 2  | AQH          | 10       | 29        | 116                         | 80      | 49      | 66       | 3        | 12      |         | 8       | 0       | 1        | 14       | 0        |
| Stallion 2  | AQH          | 10       | 33        | 222                         | 84      | 67      | 79       | 0        | 9       | 1       | 9       | 0       | 1        | 5        | 1        |
| Stallion 3  | AQH          | 12       | 32        | 241                         | 83      | 60      | 84       | 0        | 10      | 0       | 1       | 1       | 0        | 4        | 0        |
| Stallion 3  | AQH          | 12       | 37        | 315                         | 83      | 65      | 81       | 1        | 7       | 1       | 1       | 0       | 4        | 6        | 0        |
| Stallion 4  | AQH          | 15       | 25        | 165                         | 77      | 55      | 69       | 0        | 10      | 2       | 10      | 2       | 3        | 12       | 1        |
| Stallion 4  | AQH          | 15       | 13        | 293                         | 77      | 59      | 65       | 4        | 7       | 0       | 10      | 3       | 3        | 11       | 2        |
| Stallion 5  | AQH          | 17       | 72        | 146                         | 72      | 51      | 62       | 0        | 16      | 2       | 16      | 1       | 3        | 2        | 0        |
| Stallion 5  | AQH          | 17       | 26        | 274                         | 89      | 74      | 70       | 1        | 17      | 0       | 7       | 4       | 1        | 7        | 1        |
| Stallion 6  | Andalusian   | 15       | 50        | 179                         | 80      | 50      | 67       | 0        | 1       | 1       | 11      | 3       | 2        | 3        | 12       |
| Stallion 6  | Andalusian   | 15       | 14        | 392                         | 70      | 40      | 58       | 3        | 7       | 3       | 0       | 3       | 3        | 8        | 17       |
| Stallion 7  | Arabian      | 7        | 32        | 277                         | 97      | 63      | 72       | 0        | 2       | 3       | 2       | 5       | 15       | 4        | 2        |
| Stallion 7  | Arabian      | 7        | 89        | 150                         | 92      | 58      | 72       | 2        | 2       | 1       | 2       | 0       | 16       | 5        | 0        |
| Stallion 8  | Arabian      | 12       | 41        | 148                         | 68      | 41      | 52       | 4        | 10      | 15      | 13      | 2       | 1        | 4        | 0        |
| Stallion 8  | Arabian      | 12       | 46        | 102                         | 84      | 64      | 47       | 4        | 4       | 9       | 17      | 3       | 2        | 8        | 5        |
| Stallion 9  | Arabian      | 12       | 52        | 203                         | 79      | 69      | 75       | 2        | 3       | 5       | 5       | 4       | 6        | 0        | 8        |
| Stallion 9  | Arabian      | 12       | 39        | 132                         | 85      | 75      | 80       | 2        | 2       | 3       | 2       | 2       | 3        | 0        | 6        |
| Stallion 10 | Arabian      | 18       | 25        | 206                         | 69      | 49      | 37       | 1        | 4       | 5       | 11      | 0       | 40       | 4        | 0        |
| Stallion 10 | Arabian      | 18       | 8         | 199                         | 66      | 52      | 50       | 0        | 8       | 2       | 8       | 0       | 26       | 12       | 0        |
| Stallion 11 | Arabian      | 18       | 39        | 150                         | 64      | 44      | 38       | 7        | 13      | 2       | 7       | 5       | 18       | 3        | 10       |
| Stallion 12 | Arabian      | 19       | 44        | 123                         | 81      | 44      | 47       | 1        | 6       | 3       | 8       | 4       | 18       | 17       | 0        |
| Stallion 13 | Gipsy Vaner  | 16       | 84        | 59                          | 70      | 33      | 58       | 1        | 6       | 2       | 14      | 11      | 5        | 3        | 0        |
| Stallion 13 | Gipsy Vaner  | 16       | 83        | 63                          | 73      | 35      | 70       | 2        | 2       | 3       | 7       | 6       | 2        | 5        | 3        |
| Stallion 14 | Lusitano     | 4        | 40        | 227                         | 85      | 62      | 56       | 0        | 11      | 2       | 3       | 0       | 12       | 19       | 4        |
| Stallion 15 | Nokota       | 4        | 64        | 62                          | 76      | 67      | 73       | 0        | 7       | 0       | 9       | 3       | 6        | 7        | 0        |
| Stallion 16 | Standardbred | 8        | 26        | 646                         | 70      | 60      | 72       | 3        | 10      | 1       | 9       | 1       | 6        | 4        | 1        |
| Stallion 17 | Standardbred | 11       | 43        | 306                         | 70      | 50      | 73       | 0        | 10      | 0       | 6       | 4       | 8        | 4        | 1        |
| Stallion 18 | Standardbred | 17       | 28        | 51                          | 70      | 60      | 53       | 3        | 8       | 1       | 15      | 5       | 2        | 9        | 5        |
| Stallion 19 | Standardbred | 19       | 67        | 500                         | 50      | 40      | 39       | 0        | 35      | 1       | 18      | 3       | 13       | 5        | 6        |
| Stallion 20 | Standardbred | 19       | 67        | 137                         | 60      | 50      | 46       | 7        | 5       | 5       | 15      | 1       | 8        | 12       | 1        |

Table S2. Continued...characteristics of the ejaculates used for production of frozen semen.

|             |              |    |                  |     |    |    |    |   |    |   |    |    |    |    |    |
|-------------|--------------|----|------------------|-----|----|----|----|---|----|---|----|----|----|----|----|
| Stallion 21 | Standardbred | 23 | 97               | 242 | 50 | 40 | 38 | 0 | 24 | 6 | 6  | 11 | 25 | 5  | 0  |
| Stallion 22 | Thoroughbred | 4  | 58               | 202 | 62 | 33 | 63 | 3 | 7  | 4 | 6  | 1  | 5  | 4  | 7  |
| Stallion 22 | Thoroughbred | 4  | 63               | 184 | 69 | 44 | 79 | 0 | 0  | 0 | 4  | 5  | 7  | 0  | 9  |
| Stallion 23 | Thoroughbred | 9  | 59               | 252 | 75 | 43 | 40 | 2 | 38 | 0 | 4  | 15 | 15 | 2  | 7  |
| Stallion 23 | Thoroughbred | 9  | 55               | 91  | 79 | 57 | 44 | 5 | 30 | 1 | 7  | 7  | 16 | 1  | 2  |
| Stallion 24 | Trakehner    | 8  | 13               | 455 | 77 | 62 | 48 | 1 | 20 | 1 | 6  | 2  | 15 | 12 | 8  |
| Stallion 24 | Trakehner    | 8  | 41               | 157 | 78 | 65 | 53 | 3 | 12 | 1 | 5  | 1  | 9  | 13 | 15 |
| Stallion 25 | Trakehner    | 8  | 45               | 197 | 83 | 78 | 77 | 3 | 5  | 2 | 0  | 1  | 5  | 6  | 2  |
| Stallion 25 | Trakehner    | 8  | 87               | 150 | 87 | 81 | 83 | 0 | 5  | 1 | 1  | 0  | 5  | 3  | 4  |
| Stallion 26 | Warmblood    | 5  | Epididymal flush |     | 60 | 40 | 62 | 4 | 3  | 1 | 11 | 6  | 4  | 2  | 8  |
| Stallion 27 | Welsh Pony   | 12 | 59               | 132 | 75 | 60 | 75 | 1 | 0  | 5 | 2  | 5  | 4  | 2  | 6  |

VOL: volume, CC: sperm concentration, TM: total sperm motility, PM: progressive sperm motility, NOR: morphologically normal sperm, ACR: acrosome defects, HD: head defects, DT: detached heads, PD: proximal droplets, DD: distal droplets, BM: bent midpieces, OMP: other midpiece defects, BCT: bent/coiled tails.