**Supporting information**

Table S1 Incidence analysis of each chromosome in normospermic patients

|  |
| --- |
| Normal semen |
| Complex aneuploidies | Monosomy and trisomy |
| Chromosomes | % monosomy | % trisomy | Chromosomes | % monosomy | % trisomy |
| 1 | 4/112 | 3.6% | 7/128 | 5.5% | 1 | 0/38 | 0.0% | 0/26 | 0.0% |
| 2 | 5/112 | 4.5% | 6/128 | 4.7% | 2 | 1/38 | 2.6% | 1/26 | 3.9% |
| 3 | 5/112 | 4.5% | 2/128 | 1.6% | 3 | 1/38 | 2.6% | 0 | 0.0% |
| 4 | 1/112 | 0.9% | 4/128 | 3.1% | 4 | 2/38 | 5.3% | 1/26 | 3.9% |
| 5 | 6/112 | 5.4% | 1/128 | 0.8% | 5 | 1/38 | 2.6% | 0 | 0.0% |
| 6 | 3/112 | 2.7% | 12/128 | 9.4% | 6 | 0/38 | 0.0% | 1/26 | 3.9% |
| 7 | 3/112 | 2.7% | 4/128 | 3.1% | 7 | 3/38 | 7.9% | 0 | 0.0% |
| 8 | 3/112 | 2.7% | 1/128 | 0.8% | 8 | 0 | 0.0% | 1/26 | 3.9% |
| 9 | 1/112 | 0.9% | 7/128 | 5.5% | 9 | 0 | 0.0% | 1/26 | 3.9% |
| 10 | 7/112 | 6.3% | 7/128 | 5.5% | 10 | 0 | 0.0% | 0 | 0.0% |
| 11 | 5/112 | 4.5% | 7/128 | 5.5% | 11 | 0 | 0.0% | 0 | 0.0% |
| 12 | 4/112 | 3.6% | 2/128 | 1.6% | 12 | 0 | 0.0% | 1/26 | 3.9% |
| 13 | 6/112 | 5.4% | 5/128 | 3.9% | 13 | 2/38 | 5.3% | 2/26 | 7.7% |
| 14 | 5/112 | 4.5% | 5/128 | 3.9% | 14 | 3/38 | 7.9% | 1/26 | 3.9% |
| 15 | 6/112 | 5.4% | 8/128 | 6.3% | 15 | 2/38 | 5.3% | 1/26 | 3.9% |
| 16 | 10/112 | 8.9% | 9/128 | 7.0% | 16 | 6/38 | 15.8% | 8/26 | 30.8% |
| 17 | 6/112 | 5.4% | 8/128 | 6.3% | 17 | 0 | 0.0% | 1/26 | 3.9% |
| 18 | 9/112 | 8.0% | 8/128 | 6.3% | 18 | 4/38 | 10.5% | 0 | 0.0% |
| 19 | 4/112 | 3.6% | 5/128 | 3.9% | 19 | 0 | 0.0% | 2/26 | 7.7% |
| 20 | 6/112 | 5.4% | 9/128 | 7.0% | 20 | 1/38 | 2.6% | 1/26 | 3.9% |
| 21 | 6/112 | 5.4% | 5/128 | 3.9% | 21 | 4/38 | 10.5% | 2/26 | 7.7% |
| 22 | 3/112 | 2.7% | 4/128 | 3.1% | 22 | 5/38 | 13.2% | 0 | 0.0% |
| Y | 1/112 | 0.9% | 1/128 | 0.8% | X | 3/38 | 7.9% | 2/26 | 7.7% |
| X | 3/112 | 2.7% | 1/128 | 0.8% |  |  |  |  |  |

Table S2 Incidence analysis of each chromosome in OAT patients

|  |
| --- |
| OAT |
| Complex aneuploidies | Monosomy and trisomy |
| Chromosomes | % monosomy | % trisomy | Chromosomes | % monosomy | % trisomy |
| 1 | 3/80 | 3.8% | 8/83 | 9.6% | 1 | 1/26 | 3.9% | 0/16 | 0.0% |
| 2 | 3/80 | 3.8% | 4/83 | 4.8% | 2 | 3/26 | 11.5% | 0 | 0.0% |
| 3 | 2/80 | 2.5% | 7/83 | 8.4% | 3 | 1/26 | 3.9% | 0 | 0.0% |
| 4 | 5/80 | 6.3% | 6/83 | 7.2% | 4 | 0 | 0.0% | 0 | 0.0% |
| 5 | 3/80 | 3.8% | 2/83 | 2.4% | 5 | 2/26 | 7.7% | 0 | 0.0% |
| 6 | 3/80 | 3.8% | 4/83 | 4.8% | 6 | 1/26 | 3.9% | 1/16 | 6.3% |
| 7 | 3/80 | 3.8% | 5/83 | 6.0% | 7 | 1/26 | 3.9% | 0 | 0.0% |
| 8 | 2/80 | 2.5% | 2/83 | 2.4% | 8 | 2/26 | 7.7% | 0 | 0.0% |
| 9 | 2/80 | 2.5% | 2/83 | 2.4% | 9 | 0 | 0.0% | 1/16 | 6.3% |
| 10 | 3/80 | 3.8% | 4/83 | 4.8% | 10 | 0 | 0.0% | 2/16 | 12.5% |
| 11 | 6/80 | 7.5% | 3/83 | 3.6% | 11 | 0 | 0.0% | 0 | 0.0% |
| 12 | 2/80 | 2.5% | 5/83 | 6.0% | 12 | 0 | 0.0% | 0 | 0.0% |
| 13 | 6/80 | 7.5% | 1/83 | 1.2% | 13 | 4/26 | 15.4% | 2/16 | 12.5% |
| 14 | 1/80 | 1.3% | 4/83 | 4.8% | 14 | 0 | 0.0% | 0 | 0.0% |
| 15 | 5/80 | 6.3% | 4/83 | 4.8% | 15 | 1/26 | 3.9% | 0 | 0.0% |
| 16 | 4/80 | 5.0% | 2/83 | 2.4% | 16 | 1/26 | 3.9% | 2/16 | 12.5% |
| 17 | 3/80 | 3.8% | 3/83 | 3.6% | 17 | 2/26 | 7.7% | 0 | 0.0% |
| 18 | 7/80 | 8.8% | 2/83 | 2.4% | 18 | 0 | 0.0% | 0 | 0.0% |
| 19 | 3/80 | 3.8% | 3/83 | 3.6% | 19 | 2/26 | 7.7% | 1/16 | 6.3% |
| 20 | 3/80 | 3.8% | 3/83 | 3.6% | 20 | 1/26 | 3.9% | 0 | 0.0% |
| 21 | 5/80 | 6.3% | 3/83 | 3.6% | 21 | 2/26 | 7.7% | 0 | 0.0% |
| 22 | 3/80 | 3.8% | 3/83 | 3.6% | 22 | 2/26 | 7.7% | 7/16 | 43.8% |
| Y | 0/80 | 0.0% | 1/83 | 1.2% | X | 0 |  | 0 | 0.0% |
| X | 3/80 | 3.8% | 2/83 | 2.4% |  |  |  |  |  |

Table S3 Incidence analysis of each chromosome in cryptospermic patients

|  |
| --- |
| Cryptospermia |
| Complex aneuploidies | Monosomy and trisomy |
| Chromosomes | % monosomy | % trisomy | Chromosomes | % monosomy | % trisomy |
| 1 | 2/45 | 4.4% | 3/44 | 6.8% | 1 | 0/12 | 0.0% | 0/9 | 0.0% |
| 2 | 3/45 | 6.7% | 2/44 | 4.6% | 2 | 0 | 0.0% | 0 | 0.0% |
| 3 | 3/45 | 6.7% | 4/44 | 9.1% | 3 | 0 | 0.0% | 0 | 0.0% |
| 4 | 2/45 | 4.4% | 3/44 | 6.8% | 4 | 0 | 0.0% | 0 | 0.0% |
| 5 | 1/45 | 2.2% | 2/44 | 4.6% | 5 | 1/12 | 8.3% | 0 | 0.0% |
| 6 | 2/45 | 4.4% | 0 | 0.0% | 6 | 0 | 0.0% | 0 | 0.0% |
| 7 | 2/45 | 4.4% | 3/44 | 6.8% | 7 | 0 | 0.0% | 0 | 0.0% |
| 8 | 1/45 | 2.2% | 1/44 | 2.3% | 8 | 2/12 | 16.7% | 0 | 0.0% |
| 9 | 0 | 0.0% | 1/44 | 2.3% | 9 | 0 | 0.0% | 0 | 0.0% |
| 10 | 3/45 | 6.7% | 2/44 | 4.6% | 10 | 0 | 0.0% | 1 | 11.1% |
| 11 | 2/45 | 4.4% | 1/44 | 2.3% | 11 | 0 | 0.0% | 0 | 0.0% |
| 12 | 1/45 | 2.2% | 4/44 | 9.1% | 12 | 0 | 0.0% | 0 | 0.0% |
| 13 | 0 | 0.0% | 1/44 | 2.3% | 13 | 0 | 0.0% | 2 | 22.2% |
| 14 | 1/45 | 2.2% | 2/44 | 4.6% | 14 | 0 | 0.0% | 0 | 0.0% |
| 15 | 2/45 | 4.4% | 2/44 | 4.6% | 15 | 2/12 | 16.7% | 0 | 0.0% |
| 16 | 3/45 | 6.7% | 1/44 | 2.3% | 16 | 2/12 | 16.7% | 4 | 44.4% |
| 17 | 1/45 | 2.2% | 1/44 | 2.3% | 17 | 2/12 | 16.7% | 0 | 0.0% |
| 18 | 6/45 | 13.3% | 2/44 | 4.6% | 18 | 0 | 0.0% | 0 | 0.0% |
| 19 | 1/45 | 2.2% | 3/44 | 6.8% | 19 | 0 | 0.0% | 0 | 0.0% |
| 20 | 1/45 | 2.2% | 1/44 | 2.3% | 20 | 1/12 | 8.3% | 0 | 0.0% |
| 21 | 3/45 | 6.7% | 1/44 | 2.3% | 21 | 2/12 | 16.7% | 1 | 11.1% |
| 22 | 3/45 | 6.7% | 2/44 | 4.6% | 22 | 0 | 0.0% | 1 | 11.1% |
| X | 2/45 | 4.4% | 2/44 | 4.6% | X | 0 | 0.0% | 0 | 0.0% |

Table S4 Incidence analysis of each chromosome in NOA patients

|  |
| --- |
| NOA |
| Complex aneuploidies | Monosomy and trisomy |
| Chromosomes | % monosomy | % trisomy | Chromosomes | % monosomy | % trisomy |
| 1 | 2/36 | 5.6% | 3/41 | 7.3% | 1 | 0 | 0.0% | 0 | 0.0% |
| 2 | 3/36 | 8.3% | 2/41 | 4.9% | 2 | 0 | 0.0% | 0 | 0.0% |
| 3 | 1/36 | 2.8% | 0/41 | 0.0% | 3 | 0 | 0.0% | 0 | 0.0% |
| 4 | 1/36 | 2.8% | 1/41 | 2.4% | 4 | 0 | 0.0% | 0 | 0.0% |
| 5 | 2/36 | 5.6% | 3/41 | 7.3% | 5 | 1/5 | 20.0% | 0 | 0.0% |
| 6 | 1/36 | 2.8% | 3/41 | 7.3% | 6 | 0 | 0.0% | 1/2 | 50.0% |
| 7 | 1/36 | 2.8% | 3/41 | 7.3% | 7 | 0 | 0.0% | 0 | 0.0% |
| 8 | 0/36 | 0.0% | 1/41 | 2.4% | 8 | 1/5 | 20.0% | 0 | 0.0% |
| 9 | 0/36 | 0.0% | 3/41 | 7.3% | 9 | 0 | 0.0% | 0 | 0.0% |
| 10 | 2/36 | 5.6% | 0/41 | 0.0% | 10 | 0 | 0.0% | 0 | 0.0% |
| 11 | 1/36 | 2.8% | 3/41 | 7.3% | 11 | 0 | 0.0% | 0 | 0.0% |
| 12 | 2/36 | 5.6% | 0/41 | 0.0% | 12 | 0 | 0.0% | 0 | 0.0% |
| 13 | 1/36 | 2.8% | 0/41 | 0.0% | 13 | 1/5 | 20.0% | 0 | 0.0% |
| 14 | 1/36 | 2.8% | 2/41 | 4.9% | 14 | 0 | 0.0% | 0 | 0.0% |
| 15 | 3/36 | 8.3% | 2/41 | 4.9% | 15 | 0 | 0.0% | 0 | 0.0% |
| 16 | 1/36 | 2.8% | 3/41 | 7.3% | 16 | 1/5 | 20.0% | 1/2 | 50.0% |
| 17 | 5/36 | 13.9% | 1/41 | 2.4% | 17 | 0 | 0.0% | 0 | 0.0% |
| 18 | 0/36 | 0.0% | 1/41 | 2.4% | 18 | 0 | 0.0% | 0 | 0.0% |
| 19 | 1/36 | 2.8% | 2/41 | 4.9% | 19 | 0 | 0.0% | 0 | 0.0% |
| 20 | 1/36 | 2.8% | 2/41 | 4.9% | 20 | 0 | 0.0% | 0 | 0.0% |
| 21 | 3/36 | 8.3% | 3/41 | 7.3% | 21 | 0 | 0.0% | 0 | 0.0% |
| 22 | 2/36 | 5.6% | 1/41 | 2.4% | 22 | 1/5 | 20.0% | 0 | 0.0% |
| Y | 2/36 | 5.6% | 0/41 | 0.0% | X | 0 | 0.0% | 0 | 0.0% |
| X | 0/36 | 0.0% | 2/41 | 4.9% |  |  |  |  |  |