Table S1 Survival rates of oocytes post-thawing (%)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Group | Loaded oocyte replicate | 2 | 4 | 6 | 8 | 10 |
| Droplet merge | 1 | 9/10 (90.00) | 15/16 (93.75) | 11/18 (61.11) | 10/24 (41.67) | 5/20 (25.00) |
| 2 | 7/8 (87.50) | 11/12 (91.67) | 15/24 (62.50) | 7/16 (43.75) | 9/30 (30.00) |
| 3 | 11/12 (91.67) | 19/20 (95.00) | 7/12 (58.33) | 9/24 (37.50) | 7/30 (23.33) |
| Multi-gradient equilibration | 1 | 11/12 (91.67) | 18/20 (90.00) | 19/24 (79.17) | 22/24 (91.67) | 28/30 (93.33) |
| 2 | 13/14 (92.86) | 22/24 (91.67) | 16/18 (88.89) | 29/32 (90.63) | 18/20 (90.00) |
| 3 | 9/10 (90.00) | 14/16 (87.50) | 17/18 (94.44) | 15/16 (93.75) | 17/20 (85.00) |

Table S2 Fertilization rates of icsi oocytes post-thawing (%)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Loaded oocyte replicate | 2 | 4 | 6 | 8 | 10 |
| Droplet merge | 1 | 7/9(77.78) | 12/15(80.00) | 9/11(81.82) | 9/13 (69.23) | 3/5(60.00) |
| 2 | 6/7(85.71) | 9/11(81.82) | 11/15(73.33) | 7/10(70.00) | 6/9(66.67) |
| 3 | 9/11(81.82) | 16/19(84.21) | 6/7(85.71) | 6/9(66.67) | 5/7(71.43) |
| Multi-gradient equilibration | 1 | 9/11(81.82) | 15/18(83.33) | 15/19(78.95) | 18/22(81.82) | 21/28(75.00) |
| 2 | 11/13(84.62) | 17/22(77.27) | 13/16(81.25) | 23/29(79.31) | 15/18(83.33) |
| 3 | 7/9(77.78) | 12/14(85.71) | 14/17(82.35) | 12/15(80.00) | 14/17(82.35) |

Table S3 Percentages of oocytes with normal spindle morphology (%)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Number of loaded oocyte per cryotop | | | | |
| Group | 2 | 4 | 6 | 8 | 10 |
| Droplet merge | 20/25(80.00) | 19/24(79.17) | 14/22(63.64) | 11/25(44.00） | 7/30(23.33) |
| Multi-gradient equilibration | 25/30(83.33) | 20/25(80.00) | 20/24(83.33) | 22/28(78.57) | 21/27(77.78) |

Table S4 Percentages of grade A+B blastocyst (%)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Number of loaded oocyte per cryotop | | | | |
| Group | 2 | 4 | 6 | 8 | 10 |
| Droplet merge | 18/24 (75.00) | 17/23 (73.91) | 15/21 (71.43) | 9/23 (39.13) | 3/26 (11.54) |
| Multi-gradient equilibration | 17/22 (77.27) | 20/26 (76.92) | 21/27 (77.78) | 20/26 (76.92) | 16/22 (72.73) |