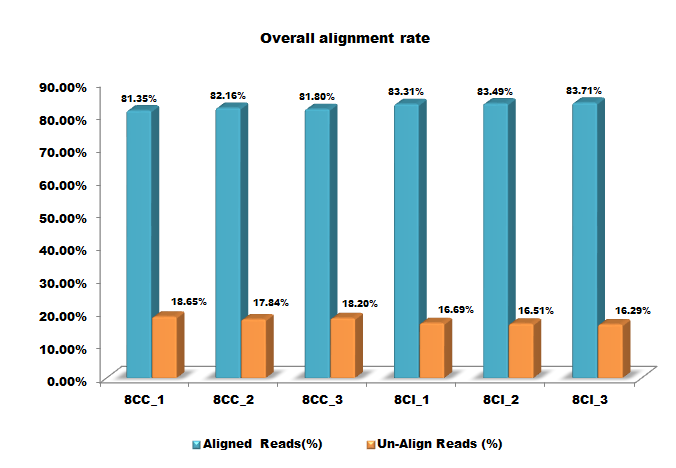
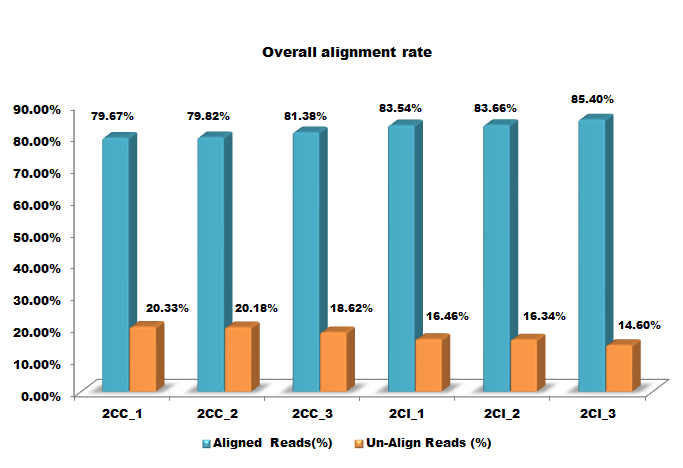
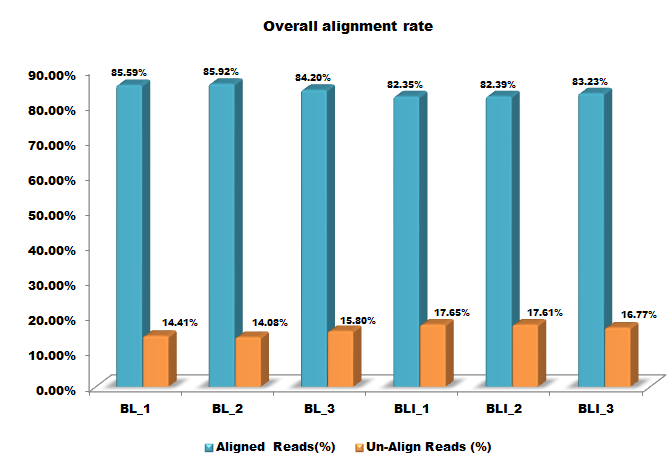
**Supplementary figure 1:** High-quality reads of **(a)** 2-cell stage **(b)** 8-cell stage **(c)** blastocyst stage cloned and IVF embryos were aligned against *Bos taurus* reference genome, UMD 3.1.1. Percentage of the total reads that got aligned was determined. For all the samples, 79.67 to 85.40% of the total reads got aligned against the reference genome.

****

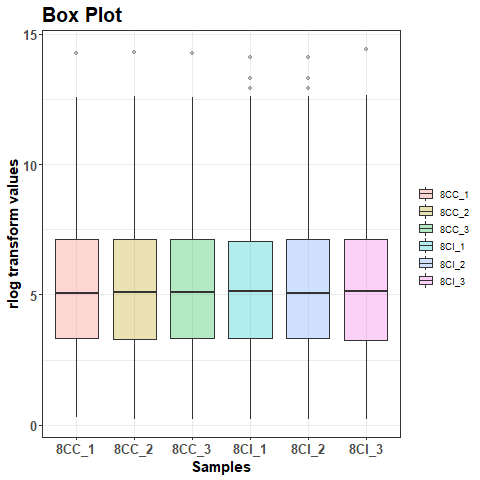
**b**

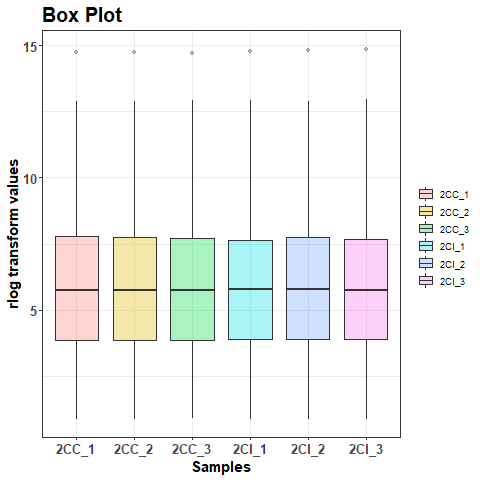
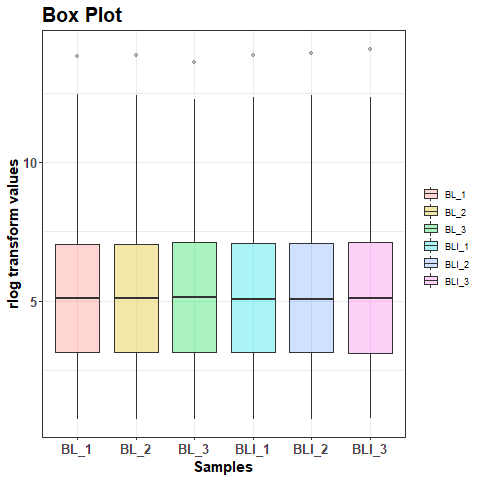
****

**a**

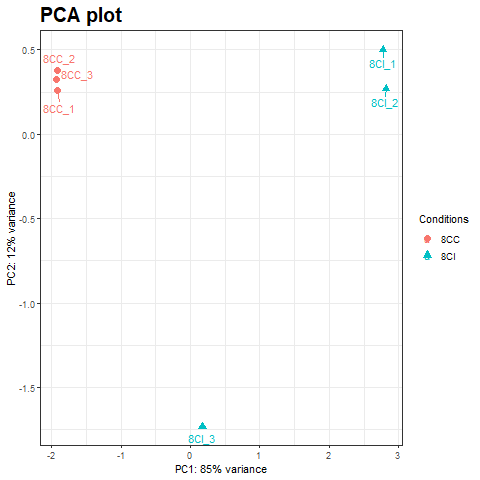
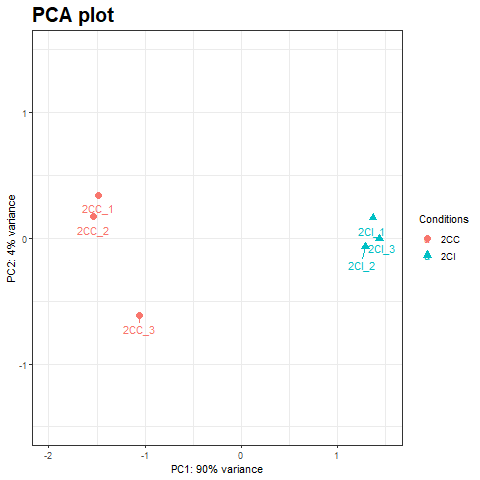
**c**

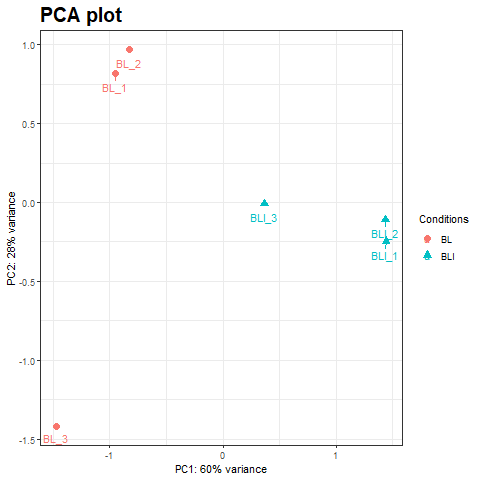
**Supplementary figure 2:** Box whisker plot showing the distribution of normalized signal values in the three replicates of a) 2-cell stage, b) 8-cell stage and c) blastocyst stage cloned and IVF embryos.



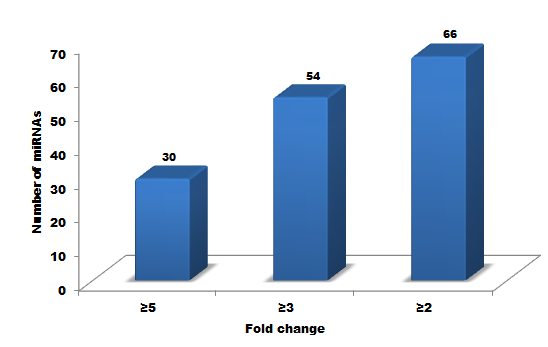


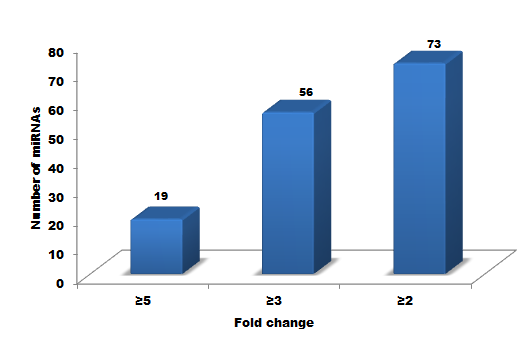
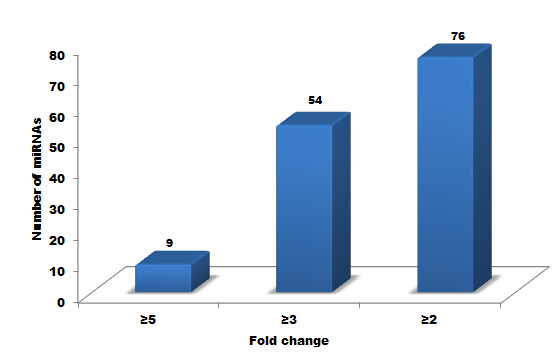
**Supplementary figure 3:** The quality of the sequencing data generated was analyzed by Principal Component Analysis(PCA). The 2D scatter plot shows that the three replicates of 2-cell stage cloned embryos clustered together in one group while the three replicates of a) 2-cell, b) 8-cell and c) blastocyst stage IVF embryos clustered together in another group. A high correlation amongst the replicates of same origin was observed with correlation coefficient value of R=1.



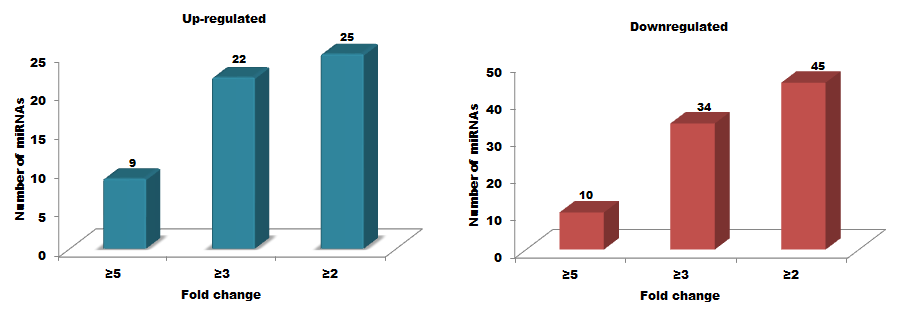
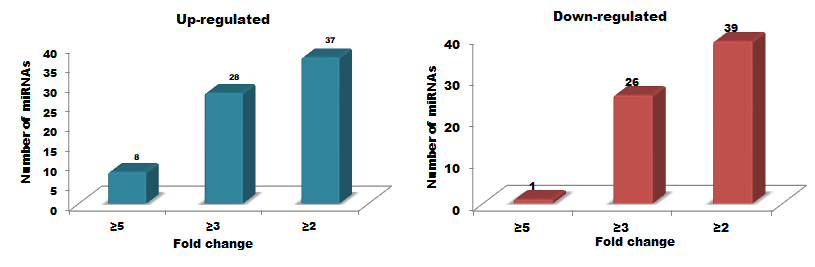


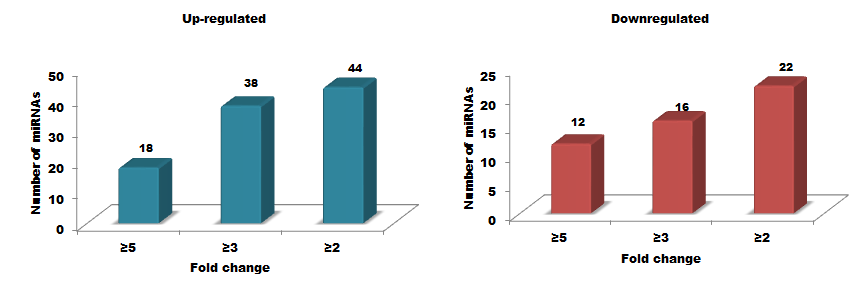
**Supplementary figure 4:** miRNAs expressed differentially between cloned and IVF a) 2-cell stage b) 8-cell stage c) blastocyst stage embryos were sorted on the basis of FC values. The graph represents the number of miRNAs expressed differentially at different FC values (≥2 to <3, ≥3 to <5 and ≥5-fold).



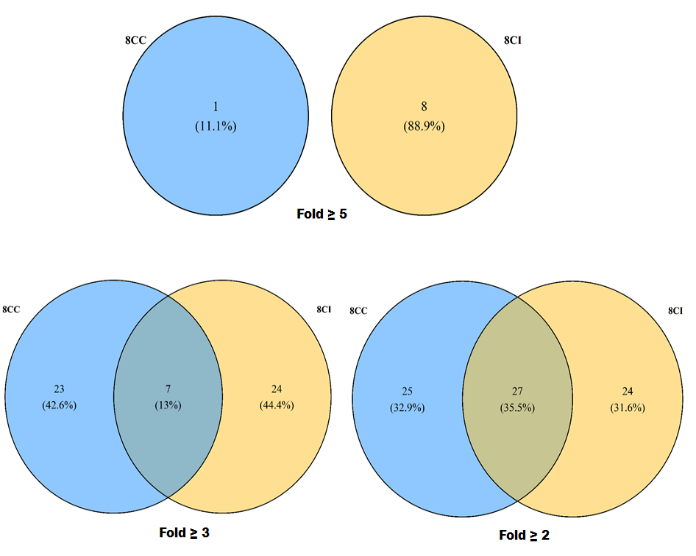
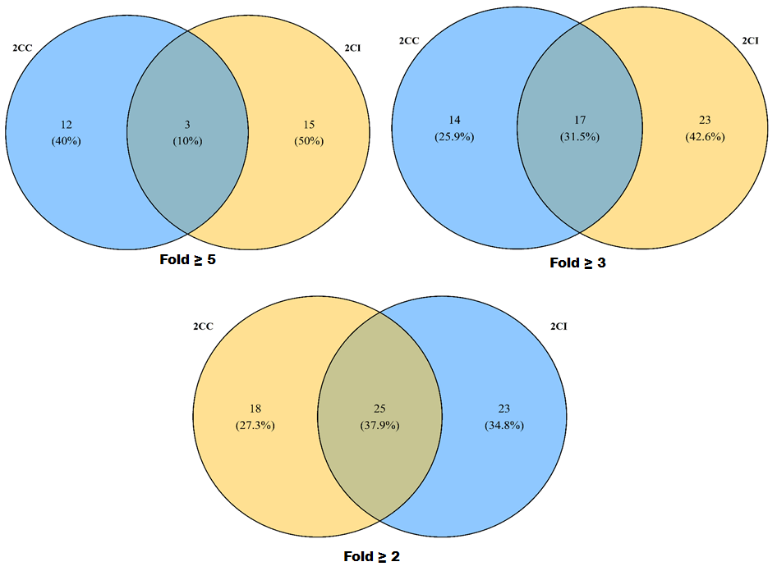


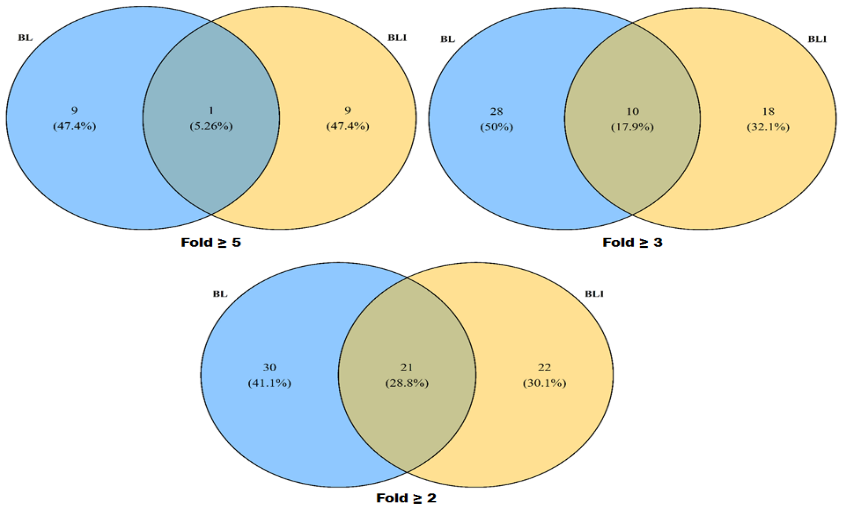
**Supplementary figure 5:** miRNAs expressed differentially between cloned and IVF IVF a) 2-cell stage b) 8-cell stage c) blastocyst stage embryos at different FC values (≥2 to <3, ≥3 to <5 and ≥5-fold) were sorted on the basis of regulation. The graph represents the number of miRNAs up- or down-regulated in cloned compared to IVF embryos.



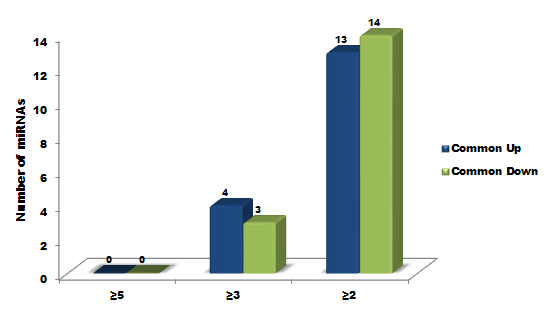
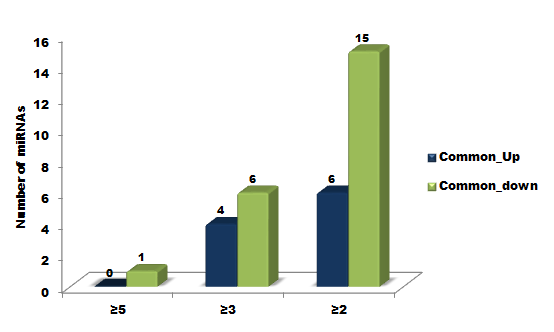
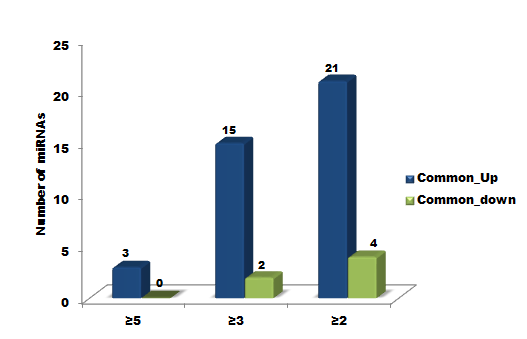


**Supplementary figure 6:** Venn diagrams depicting the miRNAs expressed commonly and uniquely in cloned and IVF a) 2-cell stage b) 8-cell stage c) blastocyst stage embryos at different FC values (≥2 to <3, ≥3 to <5, ≥5-fold).

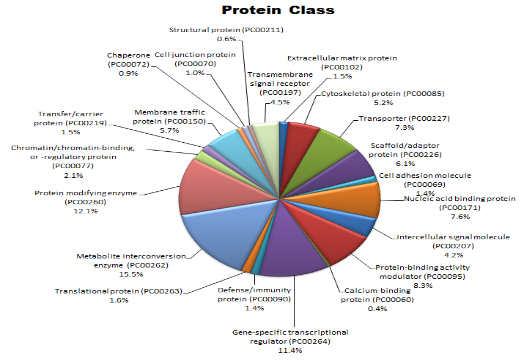
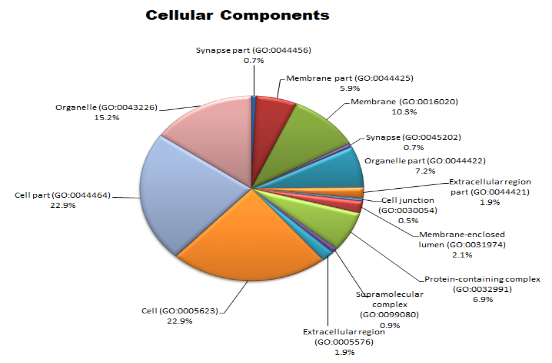
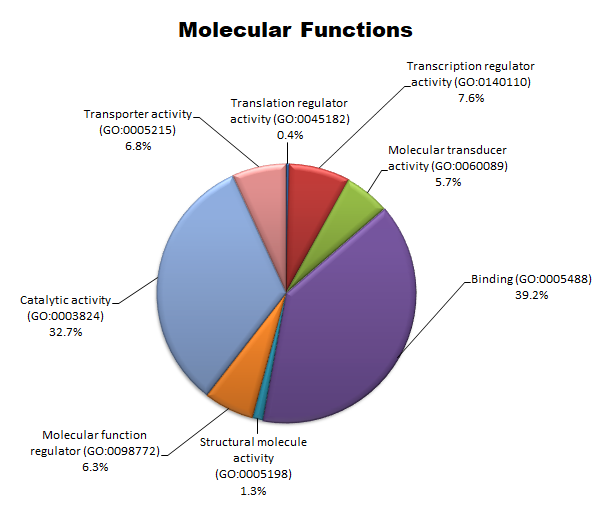
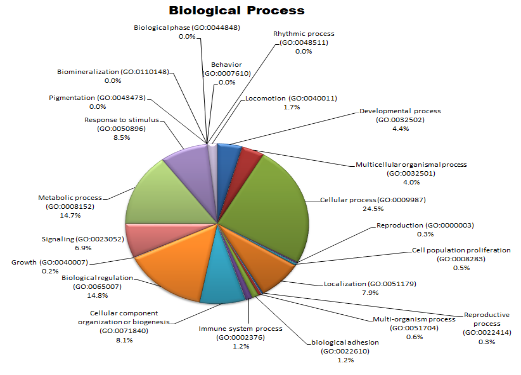
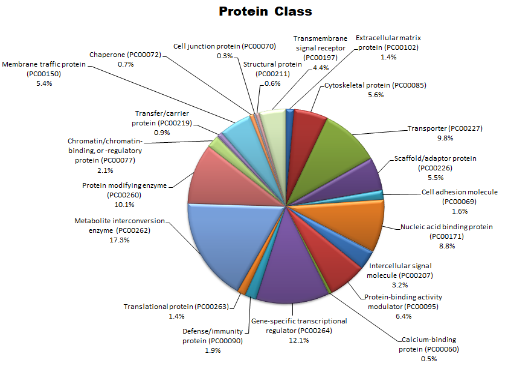
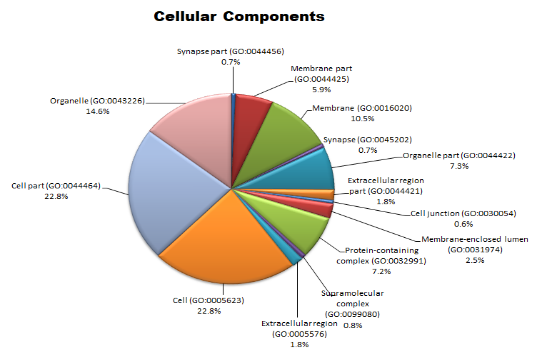
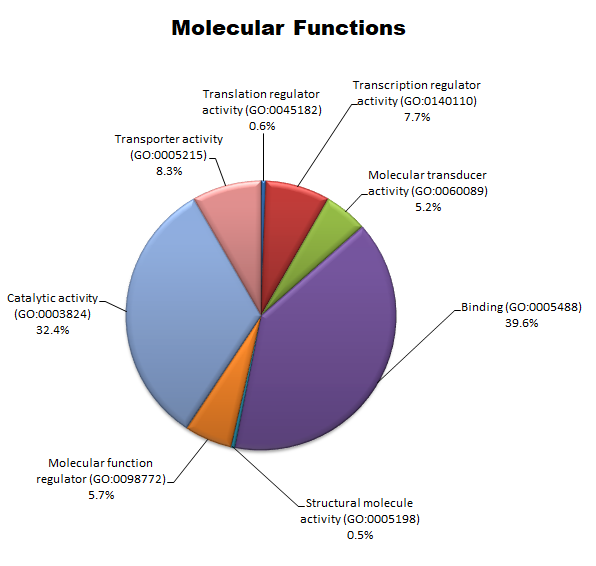
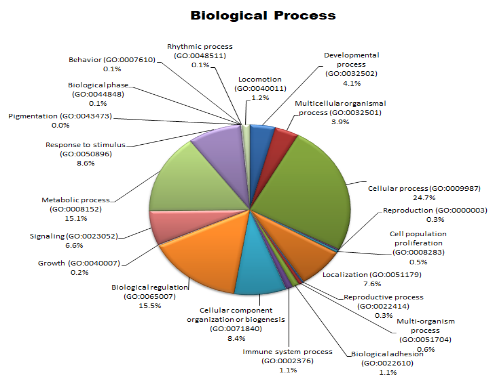
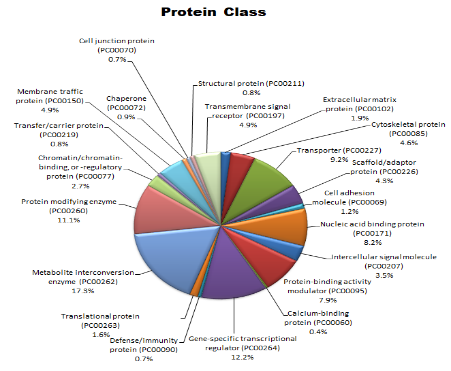
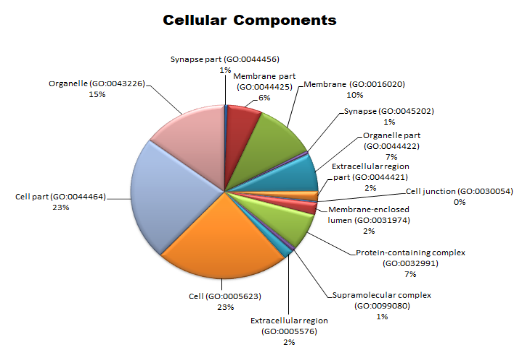
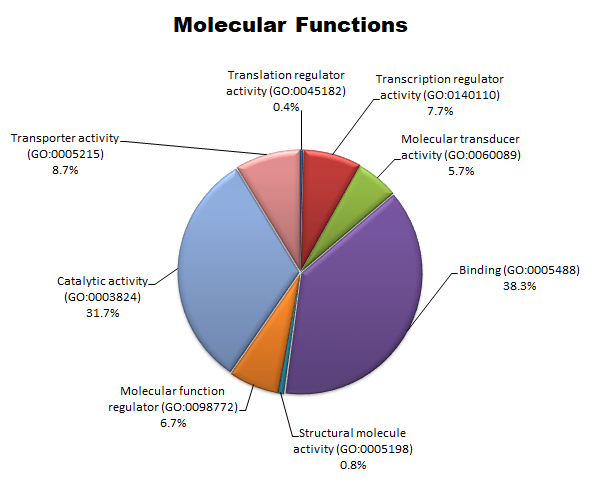
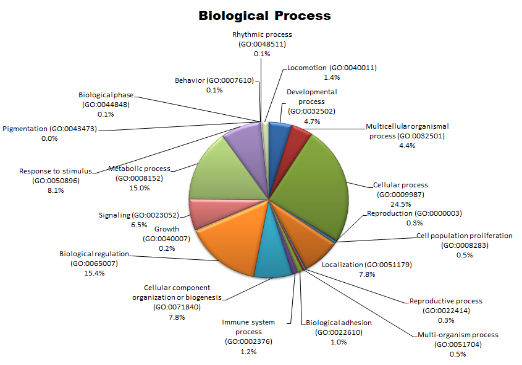




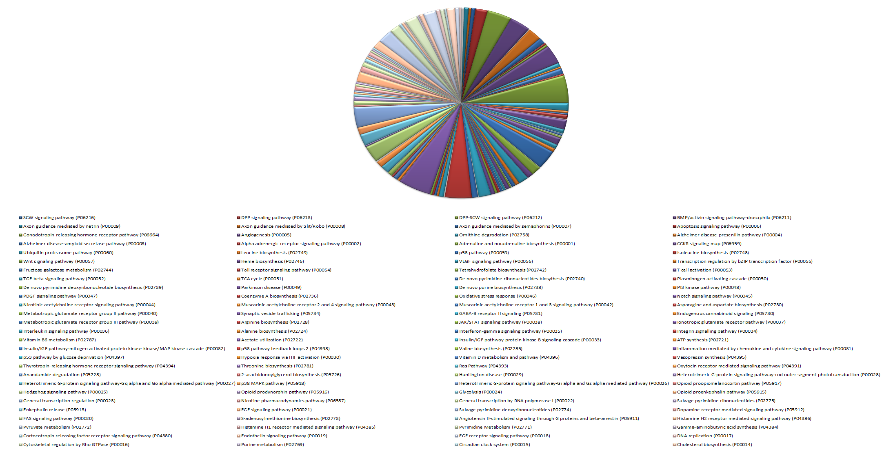
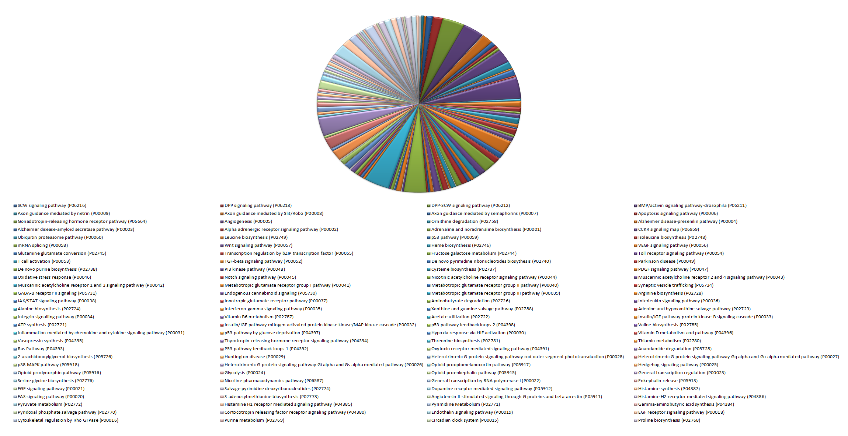
**Supplementary figure 7:** miRNAs expressed commonly in cloned and IVF a) 2-cell stage b) 8-cell stage c) blastocyst stage embryos at different FC values (≥2 to <3, ≥3 to <5 and ≥5-fold) were sorted on the basis of regulation. The graph represents the number of miRNAs up- or down-regulated in cloned compared to IVF embryos.

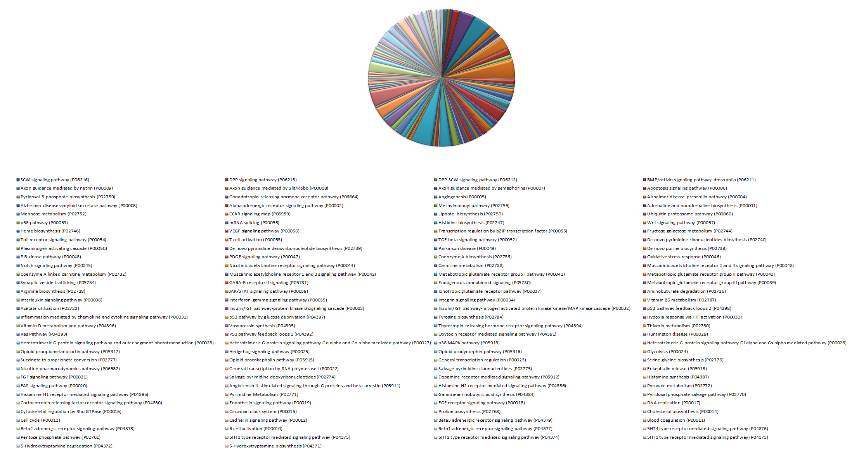


**Supplementary figure 8:** GO categories across the target genes of differentially expressed miRNAs in cloned a) 2-cell stage b) 8-cell stage c) blastocyst stage embryos relative to IVF counterparts.



**Supplementary figure 9:** Pie-chart representing the pathways affected by the target genes of differentially expressed miRNAs at a) 2-cell stage b) 8-cell stage c) blastocyst stage cloned embryos relative to IVF counterparts.





|  |  |  |  |
| --- | --- | --- | --- |
| **Down-regulated** | | | |
| **S.No** | **miRNA** | **Gene ID** | **Fold Change** |
| 1 | bta-mir-141 | MI0009742 | -7.31919 |
| 2 | bta-mir-451 | MI0009837 | -6.91573 |
| 3 | bta-mir-340 | MI0009809 | -6.55886 |
| 4 | bta-mir-205 | MI0004759 | -6.24835 |
| 5 | bta-mir-760 | MI0009894 | -6.23108 |
| 6 | bta-mir-3956 | MI0022291 | -5.95104 |
| 7 | bta-mir-208a | MI0009773 | -5.88637 |
| 8 | bta-mir-195 | MI0005459 | -5.79194 |
| 9 | bta-mir-218 | MI0009780 | -5.64761 |
| 10 | bta-mir-3064 | MI0031503 | -5.64761 |

**Supplementary table 1:** List of top 10 miRNAs up-regulated and downregulated in cloned relative to IVF 2-cell stage embryos with minimum FC of ≥2.

|  |  |  |  |
| --- | --- | --- | --- |
| **Up-regulated** | | | |
| **S.No** | **miRNA** | **Gene ID** | **Fold Change** |
| 1 | bta-mir-136 | MI0009739 | 7.432896 |
| 2 | bta-mir-1187 | - | 7.412167 |
| 3 | bta-mir-431 | MI0009830 | 7.352068 |
| 4 | bta-mir-494 | MI0009848 | 7.335247 |
| 5 | bta-mir-2474 | MI0011534 | 6.884633 |
| 6 | bta-mir-2355 | MI0011384 | 6.880918 |
| 7 | bta-mir-3431 | MI0014498 | 6.865685 |
| 8 | bta-mir-11988 | MI0038217 | 6.280845 |
| 9 | bta-mir-1291 | MI0010458 | 6.244429 |
| 10 | bta-mir-3141 | MI0021117 | 6.232131 |

**Supplementary table 2:** List of top 10 miRNAs up-regulated and downregulated in cloned relative to IVF 8-cell stage embryos with minimum FC of ≥2.

|  |  |  |  |
| --- | --- | --- | --- |
| **Up-regulated** | | | |
| **S. No.** | **miRNA** | **Gene ID** | **Fold Change** |
| 1 | bta-mir-133a-2 | MI0009732 | 8.784764 |
| 2 | bta-mir-431 | MI0009830 | 8.748791 |
| 3 | bta-mir-202 | MI0009771 | 8.63385 |
| 4 | bta-mir-1973 | - | 8.031015 |
| 5 | bta-mir-282 | - | 7.703359 |
| 6 | bta-mir-136 | MI0009739 | 7.587887 |
| 7 | bta-mir-1949 | MI0038481 | 7.497515 |
| 8 | bta-mir-263 | - | 6.344238 |
| 9 | bta-mir-11995 | MI0038372 | 4.886532 |
| 10 | bta-mir-1244 | - | 4.886532 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Down-regulated** | | | |
| **S. No.** | **miRNA** | **Gene ID** | **Fold Change** |
| 1 | bta-mir-139 | MI0005009 | -5.06179 |
| 2 | bta-mir-214 | MI0005040 | -4.90516 |
| 3 | bta-mir-328 | MI0009800 | -4.47833 |
| 4 | bta-mir-135 | MI0009736 | -4.2404 |
| 5 | bta-mir-2435 | MI0011486 | -4.11921 |
| 6 | bta-mir-10395 | - | -4.09689 |
| 7 | bta-mir-758 | MI0009892 | -4.02584 |
| 8 | bta-mir-218-1 | MI0009780 | -3.89558 |
| 9 | bta-mir-497 | MI0005467 | -3.8403 |
| 10 | bta-mir-11991 | MI0038355 | -3.83427 |

**Supplementary table 3:** List of top 10 miRNAs up-regulated and downregulated in cloned relative to IVF blastocyst stage embryos with minimum FC of ≥2.

|  |  |  |  |
| --- | --- | --- | --- |
| **Up-regulated** | | | |
| **S. No.** | **miRNA** | **Gene ID** | **Fold Change** |
| 1 | bta-mir-1949 | MI0038481 | 6.866632 |
| 2 | bta-mir-1692 | - | 6.558697 |
| 3 | bta-mir-431 | MI0009830 | 6.185156 |
| 4 | bta-mir-3956 | MI0022291 | 5.970153 |
| 5 | bta-mir-664a | MI0011547 | 5.755526 |
| 6 | bta-mir-100 | MI0009720 | 5.610384 |
| 7 | bta-mir-11982 | MI0038196 | 5.531622 |
| 8 | bta-mir-9226 | - | 5.334239 |
| 9 | bta-mir-33a | MI0009807 | 5.084101 |
| 10 | bta-mir-329a | MI0009801 | 4.860397 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Down-regulated** | | | |
| **S. No.** | **miRNA** | **Gene ID** | **Fold Change** |
| 1 | bta-mir-1973 | - | -6.53716 |
| 2 | bta-mir-1839 | MI0010473 | -6.3781 |
| 3 | bta-mir-188 | MI0009760 | -5.95997 |
| 4 | bta-mir-126 | MI0004754 | -5.92198 |
| 5 | bta-mir-592 | MI0009875 | -5.90065 |
| 6 | bta-mir-451 | MI0009837 | -5.55396 |
| 7 | bta-mir-32 | MI0009796 | -5.23674 |
| 8 | bta-mir-345 | MI0005019 | -5.23674 |
| 9 | bta-mir-328 | MI0009800 | -5.21535 |
| 10 | bta-mir-551a | MI0009863 | -5.21535 |

**Supplementary table 4:** Details of Locked nucleic acid (LNA) primers for miRNAs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No.** | **miRNA** | **Target sequence** | **miRCURY Cat. No. (for LNA universal primers)** | **Annealing Temperature**  **(**ᵒC**)** |
| **1.** | miR-423 | 5'UGAGGGGCAGAGAGCGAGACUUU | YP00205624 | 56 |
| **2.** | miR-202 | 5'UUCCUAUGCAUAUACUUCUUUG | YP00205616 | 56 |
| **3.** | miR-340 | 5'UUAUAAAGCAAUGAGACUGAUU | YP00206068 | 56 |
| **4.** | miR-218 | 5'UUGUGCUUGAUCUAACCAUGU | YP00206034 | 56 |
| **5.** | miR-96 | 5'UUUGGCACUAGCACAUUUUUGCU | YP00204417 | 56 |
| **6.** | miR-139 | 5'UCUACAGUGCACGUGUCUCCAGU | YP00205874 | 56 |
| **7.** | miR-214 | 5'UGCCUGUCUACACUUGCUGUGC | YP00204575 | 56 |
| **8.** | miR-370 | 5'GCCUGCUGGGGUGGAACCUGGU | YP00204011 | 56 |