CLAIMS:

1. An *in vitro* method of multiplying a donor embryo, said method comprising:

(i) obtaining a donor embryo comprising one or more embryonic cells that are developmentally equivalent to embryonic cells from a 16-cell embryo or a pre-compacted morula;

(ii) separating a plurality of the embryonic cells from the donor embryo;

(iii) expanding the embryonic cells *in vitro* under conditions suitable to produce a plurality of conceptuses from thew donor embryo, wherein at least a portion of the embryonic cells are expanded as one or more cell aggregates, each aggregate comprising 2 or more embryonic cells; and

(iv) culturing the plurality of conceptuses under conditions suitable to produce a plurality of blastocysts,

wherein the donor embryo is from a ruminant livestock species.

2. The method of claim 1, wherein separating the one or more of the embryonic cells from the one or more donor embryos is achieved by disrupting the zona pellucida (ZP), and isolating the embryonic cells from the one or more donor embryos.

3. The method of claim 2, wherein the ZP is disrupted enzymatically or mechanically, and a micropipette is used to aspirate the one or more of the embryonic cells and/or aggregates thereof from the one or more donor embryos thereby isolating the embryonic cells.

4. The method of any one of claims 1 to 3, wherein all or substantially all of the embryonic cells separated from the donor embryo are expanded as cell aggregates.

5. The method of any one of claims 1 to 4, wherein the donor embryo comprises between about 9-64 cells and wherein the embryo has not yet progressed to a blastocyst; or between about 16-64 cells and wherein the embryo has not yet progressed to a blastocyst; or between about 32-64 cells and wherein the embryo has not yet progressed to a blastocyst.

6. The method of any one of claim 1 to 5 wherein the donor embryo comprises one or more embryonic cells which are developmentally equivalent to embryonic cells from a 32-cell embryo.

7. The method of any one of claims 1 to 6, wherein each cell aggregate comprises 2-8 embryonic cells prior to expansion.

8. The method of claim 7, wherein each cell aggregate comprises 2-4 embryonic cells prior to expansion; or wherein each cell aggregate comprises 4 embryonic cells prior to expansion.

9. The method of any one of claims 1 to 8, wherein at least about 4 conceptuses are cultured for each donor embryo at step (iv) to produce a plurality of blastocysts; or wherein at least about 6-8 conceptuses are cultured for each donor embryo at step (iv) to produce a plurality of blastocysts.

10. The method of any one of claims 1 to 9, wherein:
(i) at least a portion of the plurality of embryonic cells separated from the donor embryo are separated as an existing aggregate; or
(ii) at least a portion of the plurality of embryonic cells separated from the donor embryo are aggregated after being separated from the donor embryo.

11. The method of claim 10, wherein the embryonic cells which are aggregated are derived from the same donor embryo or from more than one donor embryo; or wherein the embryonic cells which are aggregated are derived from donor embryos obtained from different animals; or wherein the one or more donor embryos at step (i) is/are produced by *in vitro* fertilisation (IVF).

12. The method of any one of claims 1 to 11, wherein::
(i) the embryonic cells are cultured in the presence of one or more factors capable of promoting embryogenesis; and/or
(ii) the embryonic cells are cultured in the presence of one or more factors capable of maintaining totipotency.

13. The method of any one of claims 1 to 12, wherein the donor embryos are from a bovine, ovine or caprine species.

14. The method of claim 13, wherein the donor embryos are from a bovine species. s

15. The method of any one of claims 1 to 14, wherein:

(i) one or more donor embryos at step (i) are fresh;

one or more donor embryos at step (i) have been stored in embryo holding media; and/or

one or more donor embryos at step (i) have been cryopreserved; and/or

(ii) the embryos produced by the method are harvested and stored in an embryo holding media and/or stored at 4°C; and/or

the embryos produced by the method are harvested and cryopreserved;

16. The method of any one of claims 1 to 15, further comprising selecting the one or more donor embryos prior to step (i) on the basis of one or more genetic screening criteria, genetic diagnoses and/or one or more morphological criteria.

17. The method of any one of claims 1 to 16, wherein the one or more donor embryos have been genetically modified.

18. The method of claim 17, wherein the one or more donor embryos comprise a unique genetic tag or identifier for traceability of the embryos produced therefrom.

19. The method of any one of claims 1 to 18, wherein the plurality of embryos produced are expanded *in vitro* to form blastocysts.

20. The method of any one of claims 1 to 19, wherein prior to the step of culturing the plurality of conceptuses to produce the plurality of blastocysts at (iv), the method further comprises:

(v) isolating one or more of the plurality of conceptuses produced at (iii) to be used as donor embryos in subsequent multiplications, wherein each donor embryo isolated for subsequent multiplications comprises at least two embryonic cells;

(vi) separating one or more of the embryonic cells from the one or more donor embryos;

(vii) expanding the embryonic cells *in vitro* under conditions suitable to produce a plurality of conceptuses, each comprising at least two embryonic cells; and

(viii) optionally repeating steps (i)-(iii) ‘N’ times, optionally wherein ‘N’ is between 1-10.