CLAIMS

1. A method of transducing animal cells comprising:

adding a media, animal cells, and genetic modification agents comprised of lentivirus into a device that includes a bottom comprised of gas permeable, liquid impermeable material, said animal cells are at a concentration of 3 million to 20 million cells per millilitre of media, with said gas permeable, liquid impermeable material being in contact with ambient gas, and

allowing a period of time whereby said genetic modification agents act to transduce at least a portion of said cells.

2. The method of claim 1 wherein said animal cells are at a concentration of 4 million to 20 million cells per millilitre of media, or are at a concentration of 5 million to 20 million cells per millilitre of media, or are at a concentration of 6 million to 20 million cells per millilitre of media.

3. The method of claim 1 wherein the media in the device is not in a static state during at least a portion of the period of time whereby said genetic modification agents act to transduce at least a portion of said animal cells.

4. The method of claim 1 wherein said gas permeable, liquid impermeable material is in contact with a gas permeable material support.

5. The method of claim 1 wherein the ratio of the number of genetic modification agents to the quantity of animal cells added to the device is not greater than 2.

6. A method of transducing animal cells comprising:

a) adding media and a quantity of animal cells into a gas permeable device including a horizontal cell growth surface comprised of gas permeable, liquid impermeable material, and allowing animal cells to gravitate to the gas permeable, liquid impermeable material, whereby the animal cells are at a first cell concentration, media is a first media height, and media is at a first media volume, said first cell concentration being the quantity of animal cells divided by said first media volume, said first media height being defined by the distance from the uppermost location of

said media to the lowest location of said media when said cell growth surface is in a horizontal position,

b) removing a portion of said first media volume from said device leaving a second media volume in said device wherein animal cells are at a second cell concentration of at least 3 x 10^6 cells per ml, said second cell concentration is greater than said first cell concentration, media is at a second media height which is defined by the distance from the uppermost location of said media to the lowermost location of said media when said cell growth surface is in a horizontal position,

c) adding genetic modification agents comprised of lentivirus into said device,

d) allowing a period of time for said genetic modification agents to transduce at least a portion of said animal cells,

e) adding a volume of media into said device, and

f) allowing a period of culture time for animal cells to be expanded in quantity when said device is oriented in a position such that at least a portion of said animal cells reside upon said cell growth surface and said cell growth surface is oriented in a horizontal position and ambient gas suitable for cell culture is in contact with said gas permeable liquid impermeable material.

7. The method of claim 6 wherein said second cell concentration is:

(i) from 4 million to 20 million animal cells per millilitre of media, or

(ii) from 5 to 10 million animal cells per millilitre of media.

8. The method of claim 7 part (i) or part (ii) wherein the quantity of transduced animal cells after said culture time exceeds the quantity of animal cells added into said device.

9. The method of claim 7 part (i) or part (ii) wherein prior to adding lentivirus, a plurality of beads are added into the device.

10. The method of claim 9 wherein the beads are exposed to a magnetic field and animal cells that have not attached to the beads are removed, thereby leaving a desired subpopulation of animal cells within the device.

11. The method of claim 10 wherein the magnetic field is created by a magnet in contact with a gas permeable material support.

12. The method of claim 11 wherein a surface of the magnet is parallel to the gas permeable cell growth surface.

13. The method of claim 11 wherein a surface of the magnet is parallel and within 0.5 inches of the cell growth surface.