CLAIMS

1. A method for labelling a cell unit, comprising the steps of:

(a) providing one or more cell units each comprising one or more cells;

(b) microencapsulating the cell unit(s) together with one or more first labels; and

(c) repeating the microencapsulation of step (b) together with a second label,

in which the first and second labels are different.

2. A method for labelling a group of cells with a plurality of labels, comprising the steps of:

(a) providing a first group of one or more cell units each comprising one or more cells;

(b) microencapsulating the cell units together with a first identifying label;

(c) mixing the cell units with one or more cell units which have been microencapsulated with a second identifying label to form a second group;

(d) repeating step (b) with the second group, using a third identifying label, in which at least two of the first, second and third labels are different.

3. A method according to Claim 2, in which the first group of cell units is split into two or more groups before or after step (c).

4. A method according to Claim 2 or 3, in which the groups of cell units are exposed to different culture conditions.

5. A method for labelling a group of cells which has been exposed to a plurality of culture conditions, comprising the steps of:

(a) providing a first set of groups of cell units each comprising one or more cells, and exposing the groups to desired culture conditions;

(b) microencapsulating the cell units together with a first identifying label;

(c) pooling two or more of the groups to form at least one pool;

(d) subdividing the pool to create a further set of groups of cell units;

(e) exposing the further groups to desired culture conditions;

(f) repeating steps (b) - (e) with a second identifying label, in which the second identifying label differs from the first identifying label.

6. A method according to any preceding claim, in which the microencapsulation is performed by a jetting procedure, which is optionally selected from the group consisting of bio-electrospray jetting, aerodynamically-assisted bio-jetting and pressure-assisted cell jetting.

7. A method according to any of Claims 1 to 5, in which the microencapsulation is performed by layer-by-layer addition of polyelectrolytes.

8. A method according to any preceding claim, in which the cell units comprise at least one microcarrier and one or more cells.

9. A method according to any preceding claim, in which the label is selected from the group consisting of a fluorescent compound, a secondary amine, a mixture of stable isotopes, a bar code, an optical tag, a bead, a quantum dot and a radiofrequency encoding tag.

10. A method according to Claim 9, in which the label is a microsphere.

11. A method according to Claim 4, in which the culture conditions are selected from the group consisting of growth media, temperature regimes, substrates, atmospheric conditions and physical cell handling.

12. A method according to any preceding claim, in which substantially each microcapsule contains a single cell unit.

13. A method according to any of Claims 1 to 11, in which substantially each microcapsule contains a plurality of cell units.

14. A method according to any of Claims 1 to 10, in which each microcapsule contains a plurality of cell units, each cell unit itself being individually microencapsulated.

15. A microcapsule comprising a living cell and a label, in which the microcapsule comprises two or more layers of encapsulation containing two or more labels, in which the labels in a first layer of encapsulation differ from the labels in another layer of encapsulation.

16. A microcapsule according to Claim 15, which comprises a cell unit.

17. A microcapsule according to Claim 15 or 16, in which the label is an RFID label.

18. A microcapsule according to any of Claims 15 to 17, in which a polymer composing a layer of encapsulation is labelled by an incorporated fluorescent dye.

19. A microencapsulated cell unit comprising at least one cell unit encapsulated within a first microcapsule together with a first identifying label, the encapsulated cell unit being itself encapsulated within a second microcapsule together with a second identifying label different from the first identifying label.

20. A microencapsulated cell unit according to Claim 22, in which the second microcapsule comprises a plurality of microencapsulated cell units.

21. A kit for encapsulating a cell unit, comprising:

(a) a microcarrier;

(b) two different detectable tags;

(c) sodium alginate; and optionally

(d) a polyelectrolyte.

CLAIMS

1. A method for labelling a cell unit, comprising the steps of:

(a) providing one or more cell units each comprising one or more cells;

(b) microencapsulating the cell unit(s) together with one or more first labels, creating a first microcapsule layer containing the first label around the cell unit(s); and

(c) repeating the microencapsulation of step (b) together with a second label, creating a second microcapsule layer containing the second label around the first microcapsule layer,

in which the first and second labels are different, and the microcapsules form a barrier which prevents the passage of the labels they retain.

2. A method for labelling a group of cells with a plurality of labels, comprising the steps of:

(a) providing a first group of one or more cell units each comprising one or more cells;

(b) microencapsulating the cell units together with a first identifying label;

(c) mixing the cell units with one or more cell units which have been microencapsulated with a second identifying label to form a second group;

(d) repeating step (b) with the second group, using a third identifying label, in which at least two of the first, second and third labels are different.

3. A method according to Claim 2, in which the first group of cell units is split into two or more groups before or after step (c).

4. A method according to Claim 2 or 3, in which the groups of cell units are exposed to different culture conditions.

5. A method for labelling a group of cells which has been exposed to a plurality of culture conditions, comprising the steps of:

(a) providing a first set of groups of cell units each comprising one or more cells, and exposing the groups to desired culture conditions;

(b) microencapsulating the cell units together with a first identifying label;

(c) pooling two or more of the groups to form at least one pool;

(d) subdividing the pool to create a further set of groups of cell units;

(e) exposing the further groups to desired culture conditions;

(f) repeating steps (b) - (e) with a second identifying label, in which the second identifying label differs from the first identifying label.

6. A method according to any preceding claim, in which the microencapsulation is performed by a jetting procedure, which is optionally selected from the group consisting of bio-electrospray jetting, aerodynamically-assisted bio-jetting and pressure-assisted cell jetting.

7. A method according to any of Claims 1 to 5, in which the microencapsulation is performed by layer-by-layer addition of polyelectrolytes.

8. A method according to any preceding claim, in which the cell units comprise at least one microcarrier and one or more cells.

9. A method according to any preceding claim, in which the label is selected from the group consisting of a fluorescent compound, a secondary amine, a mixture of stable isotopes, a bar code, an optical tag, a bead, a quantum dot and a radiofrequency encoding tag.

10. A method according to Claim 9, in which the label is a microsphere.

11. A method according to Claim 4, in which the culture conditions are selected from the group consisting of growth media, temperature regimes, substrates, atmospheric conditions and physical cell handling.

12. A method according to any preceding claim, in which substantially each microcapsule contains a single cell unit.

13. A method according to any of Claims 1 to 11, in which substantially each microcapsule contains a plurality of cell units.

14. A method according to any of Claims 1 to 10, in which each microcapsule contains a plurality of cell units, each cell unit itself being individually microencapsulated.

15. A microcapsule comprising a living cell and a label, in which the microcapsule comprises two or more layers of encapsulation containing two or more labels, in which the labels in a first layer of encapsulation differ from the labels in another layer of encapsulation,

and the microcapsule layers form a barrier which prevents the passage of the labels they retain.

16. A microcapsule according to Claim 15, which comprises a cell unit.

17. A microcapsule according to Claim 15 or 16, in which the label is an RFID label.

18. A microcapsule according to any of Claims 15 to 17, in which a polymer composing a layer of encapsulation is labelled by an incorporated fluorescent dye.

19. A microencapsulated cell unit comprising at least one cell unit encapsulated within a first microcapsule together with a first identifying label, the encapsulated cell unit being itself encapsulated within a second microcapsule together with a second identifying label different from the first identifying label, wherein the microcapsules form a barrier which prevents the passage of the labels they retain.

20. A microencapsulated cell unit according to Claim 19, in which the second microcapsule comprises a plurality of microencapsulated cell units.

21. A kit for encapsulating a cell unit, comprising:

(a) a microcarrier;

(b) two different detectable tags, selected from the group consisting of a molecule of unique sequence, a microsphere, a bar code, a quantum dot, and a radiofrequency encoding tag;

(c) sodium alginate; and optionally

(d) a polyelectrolyte.