CLAIMS

1. A device for topography study, the device comprising:

a designated cell reservoir area for allowing cells to be seeded thereon;

a designated cell migratory area for allowing cells to migrate from the designated cell reservoir area;

an inner barrier surrounding the designated cell reservoir area and separating the designated cell reservoir area from the designated cell migratory area; and

a plurality of separators segregating the designated cell migratory area into a plurality of smaller test areas having different surface topologies.

2. The device according to claim 1, wherein the plurality of separators abut the inner barrier.

3. The device according to claim 1 or claim 2, wherein the plurality of test areas comprise one or more test areas defined by the plurality of separators extending away from the inner barrier in a diverging fashion.

4. The device according to any one of claims 1 to 3, wherein the surface topology of a test area is defined by the absence, presence and/or types of feature providing structures thereon.

5. The device according to claim 4, wherein the feature providing structures have an average size in the range of from 1 nm to 50 µm.

6. The device according to claim 4 or claim 5, wherein the feature providing structures are built from one or more shapes selected from the group consisting of circles, triangles, rectangles and combinations thereof.

7. The device according to any one of claims 4 to 6, wherein the feature providing structures have heights that are lower than the height of the inner barrier and the separators.

8. The device according to any one of claims 1 to 7, wherein the device further comprises an outer barrier surrounding the plurality of test areas and defining the end of the test areas.

9. The device according to claim 8, wherein the plurality of separators abut the outer barrier.

10. The device according to any one of claims 1 to 9, wherein the designated cell reservoir area is located substantially in the centre of the device.

11. The device according to any one of claims 1 to 10, wherein the designated cell reservoir area is substantially circular in shape.

12. The device according to any one of claims 1 to 11, wherein the substantially circular cell reservoir area has a diameter in the range of from 0.1 cm to 5 cm.

13. The device according to any one of claims 1 to 12, wherein the device is substantially circular in shape.

14. The device according to any one of claims 1 to 13, wherein the inner barrier and the separators have substantially the same height.

15. The device according to any one of claims 8 to 14, wherein the inner barrier and the outer barrier have substantially the same height.

16. The device according to claim 14 or claim 15, wherein the height is in the range of from 10 nm to 100 µm.

17. The device according to any one of claims 8 to 16, wherein the inner barrier and the outer barrier each comprises substantially circular walls that are substantially concentric.

18. The device according to any one of claims 8 to 17, wherein the plurality of separators radiate from the inner barrier to the outer barrier.

19. The device according to any one of claims 1 to 18, wherein the plurality of test areas are substantially identical in shape with one another.

20. The device according to any one of claims 1 to 19, wherein the device is formed from a material selected from the group consisting of: an elastomer, a ceramic, a thermoplastic polymer, a UV curable polymer, a hydrogel, a metal and composites and combinations thereof.

21. A template mould for making the device of any one of claims 1 to 20, the template mould comprising:

a surface pattern which is a negative image of the designated cell reservoir area;

a surface pattern which is a negative image of the designated cell migratory area;

a surface pattern which is a negative image of the inner barrier;

a surface pattern which is a negative image of the plurality of separators; and

a surface pattern which is a negative image of the different topologies in the plurality of test areas.

22. The template mould of claim 21, further comprising a negative image of an outer barrier of the device, the outer barrier surrounding the plurality of test areas and defining the end of the test areas on the device.

23. A method of making the device of any one of claims 1 to 20, the method comprising:

applying a flowable material over the template mould of claim 21 or claim 22;

curing the flowable material over the template mould to harden the material; and

removing the hardened material from the template mould to obtain the device.

24. A method of evaluating topography mediated cell behaviour, the method comprising:

providing the device of any one of claims 1 to 20;

seeding cells on the designated cell reservoir area of the device;

allowing the cells to migrate from the designated cell reservoir area to the different test areas; and

inspecting the cells.

25. The method of claim 24, further comprising fixing the cells that have migrated to the different test areas.