Figure 11: Characterisation of 3D acini size distribution on a Starter's CYTOOchip. MDCKII acini were formed on a Starter CYTOOchip for 72 hours in MEM medium +2% FCS supplemented with 2.5% Matrigel. After fixing, structures were stained for DNA, F-actin, gp135 and imaged. 3D acini size (μm^2) distribution is represented in the box-plot graphs on each of the pattern shapes and size: median values are shown by the horizontal bar within each box, boxes show 25th and 75th percentiles, whiskers show the spread of the data.

NP = non-patterned; D = disc pattern; C = crossbow pattern; H = H pattern; Y = Y pattern

L = large (1700 μm^2); M = medium (1100 μm^2); S = small (700 μm^2)

n=number of acini.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Before describing the present invention in detail, it is to be understood that this invention is not limited to particularly exemplified methods and may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments of the invention only, and is not intended to be limiting which will be limited only by the appended claims.

~~All publications, patents and patent applications cited herein, whether *supra* or *infra*, are hereby incorporated by reference in their entirety. However,~~ pPublications mentioned herein are cited for the purpose of describing and disclosing the protocols and reagents which are reported in the publications and which might be used in connection with the invention. Nothing herein is to be construed as an admission that the invention is not entitled to antedate such disclosure by virtue of prior invention.

The practice of the present invention will employ, unless otherwise indicated, conventional techniques of cell culture, cell biology and microfabrication, which are within the skill of the art. Such techniques are described in the literature. See, for example, Coligan *et al.* , 1999 "Current protocols in Protein Science" Volume I and II (John Wiley & Sons Inc.); Ross et al., 1995 "Histology: Text and Atlas", 3rd Ed., (Williams & Wilkins); Kruse & Patterson (eds.) 1977 "Tissue Culture" (Academic Press); and Alberts *et al.* 2000 "Molecular Biology of the Cell" (Garland Science).

It must be noted that, as used herein and in the appended claims, the singular forms "a", "an", and "the" include plural reference unless the context clearly dictates otherwise. Thus, for example, a reference to "a cell" includes a plurality of such cells, and a reference

CLAIMS

1. A device comprising:

- a support defining a surface;
- at least one two-dimensional adhesive pattern on said surface, and
- at least one three-dimensional multicellular assembly immobilised on said two-dimensional adhesive pattern, wherein said three-dimensional multicellular assembly has an organised structure with a normalised polarity.

2. A device comprising:

- a support defining a surface;
- at least two two-dimensional adhesive patterns on said surface, and
- at least two three-dimensional multicellular assemblies immobilised on said two-dimensional adhesive patterns, wherein said three-dimensional multicellular assemblies have an organised structure with a normalised polarity, and wherein said three-dimensional multicellular assemblies have ~~substantially~~ the same structure, shape and size.

3. A device according to claim 1 or 2, wherein said three-dimensional multicellular assemblies comprise at least one lumen.

4. A device according to claim 3, wherein said three-dimensional assembly has a structure selected from the group comprising an acinus and a tube.

5. A device according to any one of claims 1 to 4, wherein said adhesive pattern is adapted to control initial cell spreading of the three-dimensional multicellular assembly.

6. A device according to claim 5, wherein said control of initial cell spreading is by a means selected from the group consisting of topographically and chemically, or a combination thereof.

7. A device according to any one of claims 1 to 6, wherein said adhesive pattern is ~~approximately~~ a shape selected from the group comprising a disc, a crossbow, an H, a Y, a rectangle, a ring and a S, or any combination thereof.

8. A device according to any one of claims 1 to 7, wherein said adhesive pattern is adapted to promote the formation of a tube.

9. A device according to claim 8, wherein said adhesive pattern has a length to width ratio of 10:1.

10. A device according to claim 8 or 9, wherein said ~~approximately~~ adhesive pattern has a rectangular shape ~~has~~ having a length of between ~~about~~ 100 and 300μm, preferably between 200 and 300μm.

11. A method of forming a three-dimensional multicellular assembly comprising:

(i) providing a support comprising at least one two-dimensional adhesive pattern adapted to control initial cell spreading of the three-dimensional multicellular assembly~~according to any one of claims 5 to 10~~;

(ii) seeding said support with cells; and

(iii) culturing said cells under conditions and for a sufficient period of time to obtain a three-dimensional multicellular assembly on said two-dimensional adhesive pattern, wherein said three-dimensional multicellular assembly has an organised structure with a normalised polarity.

12. A method according to claim 11, wherein step (iii) comprises overlaying said cells with a culture medium.

13. A method according to claim 12, wherein said culture medium comprises extracellular matrix proteins.

14. A method of defining an average cell comprising:

(i) providing a support comprising at least one two-dimensional adhesive pattern adapted to control initial cell spreading of the three-dimensional multicellular assembly~~according to any one of claims 5 to 10~~;

(ii) seeding said support with cells; and

(iii) forming organised three-dimensional multicellular assemblies with a normalised polarity on said two-dimensional adhesive pattern according to any one of claims 11 to 13, wherein said three-dimensional multicellular assemblies have substantially the same structure, shape and size; and

(iv) imaging said three-dimensional multicellular assemblies and defining an average cell by averaging data obtained from images of said three-dimensional multicellular assemblies.

~~**15.** A device for forming a three-dimensional multicellular tubular structure comprising: a support defining a surface;~~

~~at least one two-dimensional adhesive pattern on said surface, wherein said adhesive pattern is adapted to form a tubular structure.~~