CELL CO-CULTURE SYSTEM AND METHOD

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Invention

As it’s known, cell-to-cell and cell-to-matrix interactions play a fundamental role in biological tissues for cell survival, growth, proliferation, migration and differentiation. In particular, cell-to-cell interactions are regulated via secretion of signalling molecules and direct contact among the cells.

In this context, the research focus has been on developing a method and an apparatus for in vitro three-dimensional cell co-culture, wherein said method comprises a step of seeding a plurality of cells of a first cell type on a first magnetic prismatic porous scaffold and a plurality of cells of a second cell type on a second magnetic prismatic porous scaffold, while keeping the first and second scaffolds physically separate, and a step of moving the first and second scaffolds towards each other under the action of a magnetic field generated by a magnetic field generator until contact occurs on at least one surface.

The idea that solves the aforesaid problem is to effect the interfacing between three-dimensional structures of cells of different types grown on magnetic scaffolds via magnetic interaction between said scaffolds in the presence of a magnetic field.

Drawing & pictures

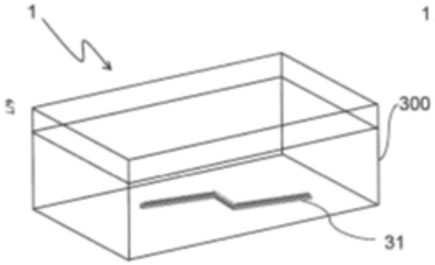

Fig. 6a

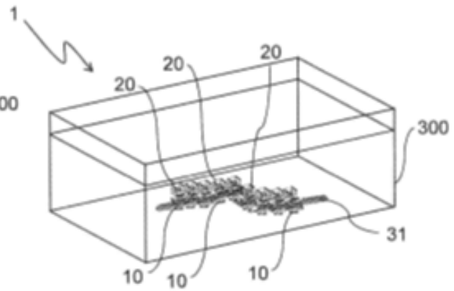

Fig. 6b

Industrial applications

- Provide a system and a method for cell co-culture with features that allow the limitations of the current state of the art to be overcome;
- In vitro reproduction of complex biological structures in which two or more different cell populations interact with each other;
- Modelling biological structures, such as neuromuscular junctions and pancreatic islets, or pathological states of the body, such as infiltration of tumour cells into healthy tissues;

Possible developments

The research group is interested in industrial partners interested in licensing the technology covered by this patent.

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