

## Technology Offer

### New Tissue Reactor for cultivating cells on a matrix

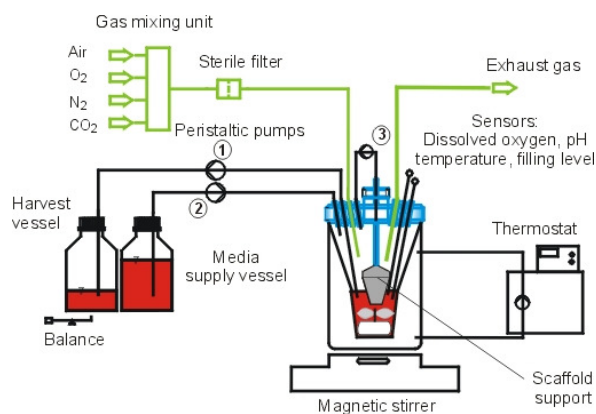
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TO 02-00085

#### The Challenge

Tissue engineering as a suitable means in medicine becomes more and more established, for example in the field of bone repair. For filling bone defects to promote healing or bridging gaps of bone, suitable three-dimensional support matrices are populated with osteoblastic cells in *in-vitro* cultivation systems. The costs for growth supporting medium of osteoblasts are high and therefore an important contributor to the overall production costs. On the other hand three-dimensional shaped support matrices or scaffolds are preferred having a pre-adapted shape corresponding to the defect of a bone. Therefore cultivation of osteoblastic cells not only on the outer surface but through-out the whole body of the scaffold must be achieved without growth limitation due to insufficient medium supply. Therefore a cost efficient cultivation system is needed allowing an adequate supply of nutrients, oxygen and further ingredients of a growth medium, as well as an inflow and ingrowth of cells into the matrix.

#### The Technology

The invention discloses a new bioreactor system for cultivating cells, especially



mammalian cells within a porous matrix material used as a scaffold. The new bioreactor allows three-dimensional *in vitro* propagation of cells in extreme small volume. Adequate nutrient and oxygen supply of the cells is guaranteed by optimal medium circulation. The inventive tissue reactor is

especially useful for the generation of bone tissue implants.

#### Commercial Opportunity

Generation of tissue implants is a steadily growing and highly competitive market. Therefore high quality and simultaneously cost efficient production processes are important success factors.

Advantages of the offered technology are

- optimal medium supply of the cells
- extreme small reactor volume
- optimal growth throughout the three-dimensional scaffold
- high cost efficiency

#### Patent situation

US patent application was filed in April 2004 and published in December 2004 as US20040253716.

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