

PATENT NO. 411397

A BIOREACTOR FOR CULTURING OF LIVING CELLS OR TISSUES

APPLICATION NO. 201811038940

APPLICANT

Indian Institute of Technology
(Banaras Hindu University),
Varanasi

ABSTRACT

The present invention relates to a bioreactor for culturing of living cells or tissues. More specifically, the present invention relates to a bioreactor for culturing of living cells or tissues preferably, mammalian cells and providing mechanical stimulus in microgravity condition to form biocompatible structures for tissue engineering and organ replacement, such as cellular tissues, organ-like structures, and/or complete organs, within the bioreactor.

INVENTOR

Pradeep Srivastava
Satyavrat Tripathi
Bhisham Narayan Singh
Divakar Singh
Indian Institute of Technology
(Banaras Hindu University),
Varanasi

CLAIM 1

A bioreactor (100) for culturing of living cells or tissues, comprising a cylindrical rotating glass vessel (4) further comprising of a scaffold (40) and a scaffold holder assembly (110) attached to a vessel rotator (1); and a media bottle (14) containing liquid culture media, and an oxygenator (120), connected to the cylindrical glass vessel (4) via a connecting tube (20); wherein, the scaffold (40) inside the vessel has zero headspaces in order to minimize the sheer force of liquid culture media which acts in the boundary of two phases and provide microgravity condition for three-dimensional culture of living cell and tissue with low shear stress; and the shear stress on the living cell and tissue is in the range of 0.002 dyne/cm² to 0.008 dyne/cm².