BIOTECHNOLOGIES

BONE MARROW ORGANOIDS

Partnership and/or Licensing Opportunities

Donnons au sang le pouvoir de soigner

Organoids are gaining popularity and have shown increased applications, especially in the early drug discovery and other research and development fields.

EFS research team in Toulouse has developed a unique bone marrow *ex vivo* model that incorporates all cellular and non-hematopoietic micro-environmental parameters

INVENTION

This invention comprises an innovative procedure and a culture medium to generate *in vitro* human bone marrow obtained from primary mesenchymal stromal cells without the use of a cell line.
The bone marrow obtained *in vitro* reproduces physiological haematopoietic niche composed of a medullary adipose tissue, an osteoblastic compartment and a vascular network, able to support haematopoiesis.

This invention enables to cultivate bone marrow in 2D or 3D conditions either with a biomaterial or with an organoid-based strategy.

KEYWORDS

Organoids, 2D or 3D cultures, bone marrow, mesenchymal stromal cells, scaffold, alternatives to animal testing, drug discovery, haematopoiesis

DESCRIPTION

Inventors confirmed by RT-PCR and fluorescence microscopy techniques the expression of osteoblastic, adipocyte and vascular lineage after a single step differentiation in 2D or 3D cell culture which demonstrates the *in vitro* reproducibility of physiological bone marrow. Furthermore, this procedure is flexible and can be adapted to different experimental conditions (monolayer, organoids, and scaffolding).

APPLICATIONS

- Preclinical testing system for molecules
- Drug screening

ADVANTAGES

- Cost effective cell culture
- Model derived from primary mesenchymal stromal cells
- Simple, fast procedure without genetic modification
- Allows to screen drugs and molecules for potential effect on the bone marrow

CONTACTS

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INTELLECTUAL PROPERTY

Patent:
PCT/2022/057229