



HAL
open science

A new culture model of rabbit trophoblastic cells to explore cell function and transplacental transfers

Guenhaël Sanz, Nathalie Daniel, Vincent Brochard, Marie-Christine Aubrière, Martine Letheule, Anne Couturier-Tarrade, Pierre Adenot, Véronique Duranthon, Pascale Chavatte-Palmer, Alice Jouneau

► **To cite this version:**

Guenhaël Sanz, Nathalie Daniel, Vincent Brochard, Marie-Christine Aubrière, Martine Letheule, et al.. A new culture model of rabbit trophoblastic cells to explore cell function and transplacental transfers. Annual Meeting 2018 CellFit, Oct 2018, Hvar Island, Croatia. School of Medicine University of Zagreb, Editors Tiziana Brevini, Alireza Fazeli, Ana Katusic, Ana Vidos, Georgia May, pp.109, 2018, Proceedings of CellFit Meeting 2018 “ in vitro 3-D Total Cell Guidance and fitness ”. <hal-02738050>

HAL Id: hal-02738050

<https://hal.inrae.fr/hal-02738050v1>

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization



CellFit



EUROPEAN COOPERATION
IN SCIENCE & TECHNOLOGY



IN VITRO 3-D TOTAL CELL GUIDANCE AND FITNESS

PROCEEDINGS OF CellFit MEETING 2018

2nd-3rd of October 2018

Hvar Island
Croatia

Editors

Tiziana Brevini, Alireza Fazeli, Ana Katusic, Ana Vidos, Georgia May

We would like to thank the following organizations for their support:



European Cooperation in Science and Technology

COST is supported by the EU Framework Programme Horizon 2020

Publisher: School of Medicine University of Zagreb

Book Title: In Vitro 3D Total Cell Guidance and Fitness

Year of Publication: 2018

ISBN: 978-953-6255-70-2

978-953-6255-69-6

Legal Notice: Neither the COST Office nor any person acting on its behalf is responsible for the use which might be made of the information contained in this publication. The COST Office is not responsible for the external websites referred to in this publication.

No permission to reproduce or utilise the contents of this book by any means is necessary, other than in the case of images, diagrams or other material from other copyright holders. In such cases the permission of the copyright holders is required.

Sanz, Guenhaël

(presented by Alice Jouneau and Anne Couturier-Tarrade)

UMR Developmental Biology and Reproduction, INRA,
78350 Jouy-en-Josas, France

Co-Authors:

Daniel Nathalie, Brochard Vincent, Aubrière Marie-Christine,
Letheule Martine, Couturier-Tarrade Anne, Adenot Pierre,
Duranthon Véronique, Chavatte-Palmer Pascale, Jouneau
Alice

**A new culture model of rabbit trophoblastic cells to explore
cell function and transplacental transfers**

The placenta controls exchanges between the mother and the fetus and therefore fetal development and growth. The maternal environment (nutrition, exposure to pollutants...) can lead to disturbance of placental functions, with consequences for the health of the offspring. To limit the use of animal experiments to study transplacental transfers and to investigate the mechanistic aspects of placental function, we are developing a cell culture model to mimic the placental barrier. Since the rabbit placenta is closest to that of humans, rabbit experiments can provide biomedical data regarding human placental function. Thus, our cellular model uses rabbit trophoblastic cells, which allows to compare in vitro data to results from in vivo experiments in rabbits. To work with cells close to primary cells, we chose to derive trophoblastic stem cells from rabbit blastocysts and to differentiate them into mature

trophoblastic cells. In particular, these cells are cultured in the presence of a flow of medium, that promotes the appearance of microvilli on the cell surface, the fusion of cytotrophoblasts into syncytiotrophoblasts and the formation of lipid droplets. The cell transcriptome is being characterized. Thereby, the culture model allows mimicking the in vivo conditions in which maternal blood flow exerts mechanical forces on trophoblastic cells and influences their phenotype.