



HAL
open science

Attempt to generate liver organoids from rabbit iPSCs

Worawalan Samruan, Rangsun Parnpai, Bertrand Pain, Marielle Afanassieff

► To cite this version:

Worawalan Samruan, Rangsun Parnpai, Bertrand Pain, Marielle Afanassieff. Attempt to generate liver organoids from rabbit iPSCs. Séminaire Organoïdes et recherche agronomique, Jun 2022, Maison-Alfort, France. hal-04227282

HAL Id: hal-04227282

<https://hal.inrae.fr/hal-04227282v1>

Submitted on 3 Oct 2023

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.



Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

Attempt to generate liver organoids from rabbit iPSCs

Worawalan Samruan¹, Camille Bacquerre¹, Rangsun Parnpai², Bertrand Pain¹, and Marielle Afanassieff¹

¹. Stem cell and Brain Research Institute, INSERM U1208, INRAE USC1361, Université Claude Bernard Lyon 1, Bron, France.

². Embryo Technology and Stem Cell Research Center, Suranaree University of Technology, Rakhon Ratchasima, Thailand

The liver is a major and multifunctional organ responsible for the regulating of a multitude of complex metabolic processes. Despite the huge regenerative capacity of this organ, in humans, liver diseases are a major global health problem. The rabbit is often used as a model for non-alcoholic fatty liver disease or liver cancers, thanks to the similarities of its hepatic physiology and anatomy with those of humans. Nevertheless, the liver is a delicate organ in rabbit as well, due to its sensitivity to endogenous and exogenous toxins and to parasites responsible for coccidiosis and toxoplasmosis. The structure of the liver is composed of 80% of hepatocytes organized in lobules around blood vessels and bile capillaries composed of cholangiocytes. Hepatic organoids have been mainly produced in humans from healthy and diseased liver biopsies or from induced pluripotent stem cells. Different protocols are therefore available creating organoids of various complexity and function. However, very few examples are published in agronomic species. Our project aims at producing hepatic organoids from rabbit induced pluripotent stem cells, using a protocol that mimics the embryonic development of the liver by following five phases: formation of embryoid bodies, induction of definitive endoderm, differentiation of hepatoblasts, maturation of hepatocytes and maintenance of hepatocytes. Although this type of protocol has shown efficiency in humans, each step must be adapted to rabbit cells. Here we will present preliminary data that validate the first three steps towards generating liver organoids in rabbits.