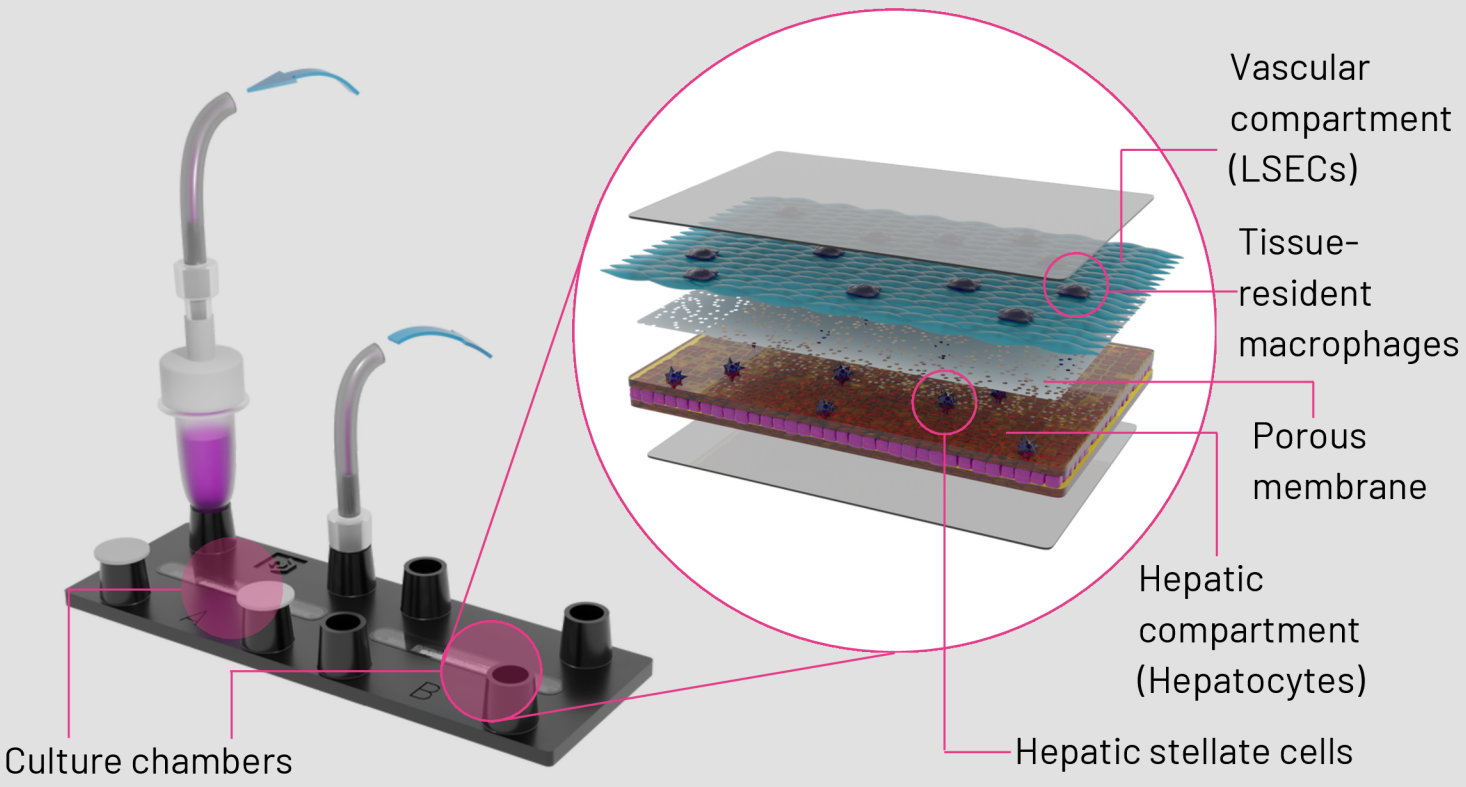
DYNAMIC42

LIVER ON CHIP

Our human immunocompetent liver-on-chip model is designed for investigating central drug metabolism and first pass toxicological studies. Further, recycling of biologicals and the infiltration of immune cells upon inflammatory triggers can be studied. The liver model comprises a vascular and a hepatic compartment. The vasculature is formed by liver sinusoidal endothelial cells and tissue-resident macrophages serving as Kupffer cell surrogates. The hepatic compartment comprises hepatocytes and optionally hepatic stellate cells embedded in various kinds of matrices.



Applications

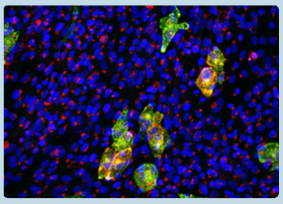
/ Compound uptake
/ Compound metabolism
/ Toxicological studies
/ Immune cell infiltration
/ Disease modelling (e.g. Inflammation, fibrosis)
/ Infection modelling

Key features

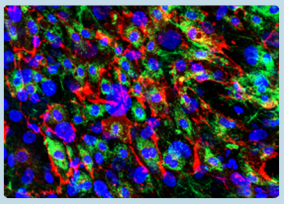
/ Up to 14 days stable model operation
/ Expression & functionality of major CYP enzymes
/ Immunocompetent (Integration of resident/ circulating immune cells)
/ Secretion of clinical parameters (Albumin, urea, LDH, ALT, AST)
/ Various configurations and different cell sources possible (primary cells or cell lines)

Liver model - morphology

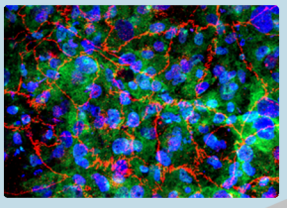
Vascular compartment



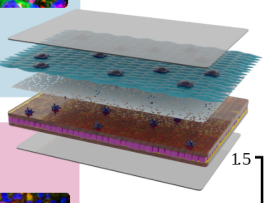
CD32b
MRP-2

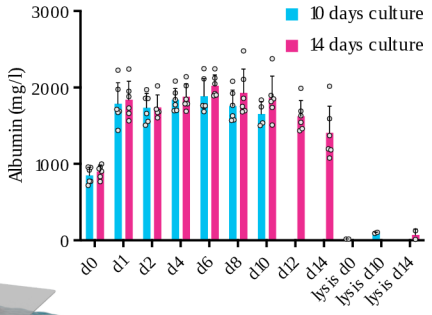


PECAM-1
vWF

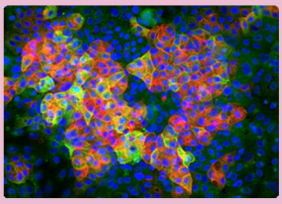


VE-Cadherin
LYVE-1

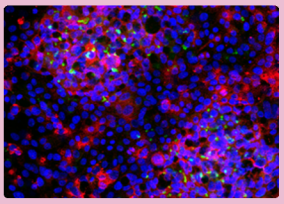




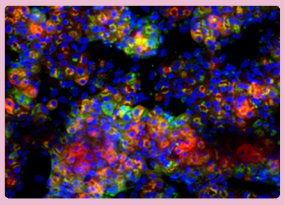
Hepatic compartment



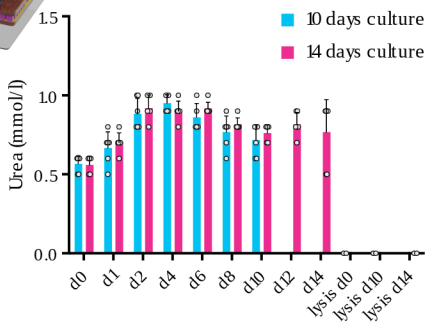
ASGPR1
CYP3A4



CYP1A2
MRP-2



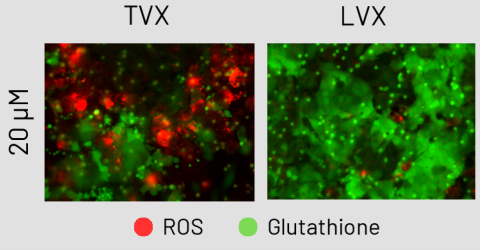
CYP2A6
Albumin

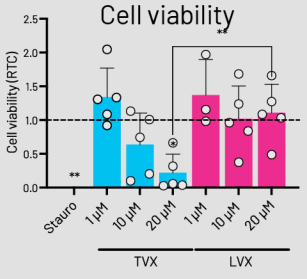


Application highlights

Drug-induced liver injury (DILI)

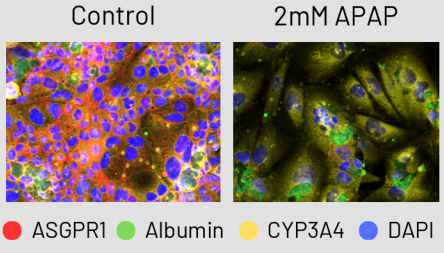
Trovafloxacin (TVX)
vs.
Levofloxacin (LVX)

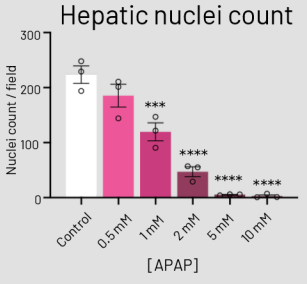




AppNote

Acetaminophen
(APAP)

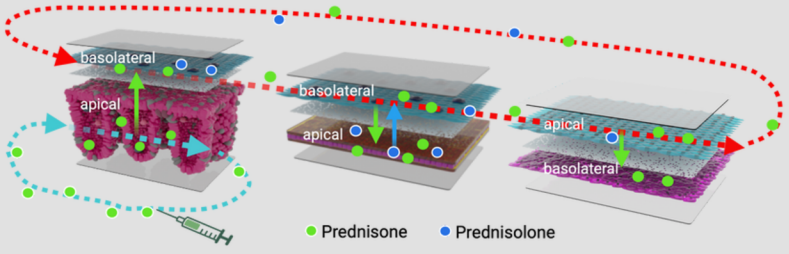




Paper

Multi-organ models

Gut-liver-
placenta model
for ADME &
PBPK



Paper

Get in touch dynamic42.com info@dynamic42.com