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30th August, 2024

Sub: Citation (brief summary) on the research work

To Whom It May Concern

Our research work entitled "***Microfluidic Human Physiomimetic Liver Model as a Screening Platform Recapitulates Intrinsic and Idiosyncratic Drug Toxicity***", submitted by ***Mr. Souradeep Dey*** for Sun Pharma Science Scholar Fellowship aims to develop a human physiomimetic 3D printed liver acinus model which holds potential to address patient-specific absorption, distribution, metabolism, excretion and toxicity (ADMET) and may serve as a drug screening platform for applications related to drug induced liver injury risk prediction, therapeutic discovery and pre-clinical trials.

Following is a brief summary of the research work:

The pre-clinical animal models often fail to predict intrinsic and idiosyncratic drug induced liver injury (DILI), thus contributing to drug failures in clinical trials, black box warnings and withdrawal of marketed drugs. This suggests a critical need for human-relevant in vitro models to predict diverse DILI phenotypes. Here, we applied microfluidic technology to bioengineer a human physiomimetic liver acinus model (HPLAM), recapitulating the radial hepatic cord-like structure with functional sinusoidal microvasculature network, biochemical and biophysical properties of native liver acinus. Intriguingly, the human derived hepatic cells incorporated HPLAM cultured under physiologically relevant microenvironment, acts as metabolic biofactories manifesting enhanced hepatic functionality, secretome levels and biomarkers expression over several weeks.

We also show that the matured HPLAM reproduces dose- and time-dependent hepatotoxic response of human clinical relevance to drugs typically recognized for inducing diverse DILI phenotypes as compared to conventional static culture. Overall, the developed HPLAM emulates in vivo like functions and may provide a useful platform for DILI risk assessment to better determine safety and human risk.

With kind regards,
Your sincerely

(Prof. Biman B. Mandal)