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NEWS | JULY 16 2021

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Scilight 2021, 291111 (2021)
https://doi.org/10.1063/10.0005715

AIP Publishing

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16 July 2021

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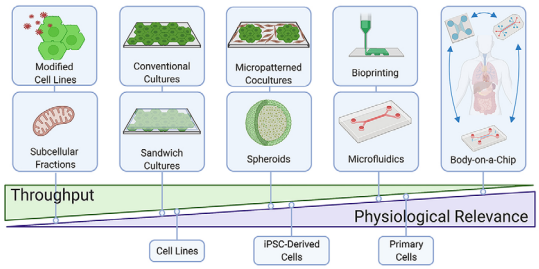
An examination of case studies from the biopharmaceutical industry demonstrates how commercially available in vitro human liver models are used in drug development.



The biopharmaceutical industry tests drugs that are in development on in vitro human liver models. Recent advancements in model liver platforms have improved and elongated their function, enhancing the ability to study the effects of drugs before they enter the marketplace.

Monckton et al. reviewed commercially available liver platforms used to study drug metabolism and toxicity, including micropatterned cocultures, spheroids, organoids, bioprinted tissues and microfluidic devices. They present case studies from the biopharmaceutical industry involving these models and detail their different design features.

“Anyone interested in the current landscape of in vitro liver tissue platforms and their applications will benefit from this read,” said author Grace Brown. “It stresses the most useful approaches that have been received and implemented by pharmaceutical companies into their day-to-day ventures.”

The authors describe the advantages and drawbacks of each model platform, as well as their specific applications. They believe researchers could use this review to better understand differences between platforms and select tools tailored to their individual goals.

They also outline the requirements for pharmaceutical companies to adopt next-generation liver platforms, which could help researchers engineer further advancements in liver models.

It is also important to replicate organ-organ interactions when testing drugs in development. The authors discuss emerging devices modeling multiple organs, including the liver, which allow the evaluation of inter-tissue communication after drug exposure.

“We hope that this review will spark innovation in the field of in vitro human liver models in order to overcome current limitations that were addressed,” said author Chase Monckton.

Source: “Latest impact of engineered human liver platforms on drug development,” by Chase P. Monckton, Grace E. Brown, and Salman R. Khetani, *APL Bioengineering* (2021). The article can be accessed at https://aip.scitation.org/doi/full/10.1063/5.0051765.

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