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Disease-on-a-Chip for Detection and Treatment of Neoplasias of Exocrine Glands

A disease-on-a-chip model provides a high-throughput, in vivo-like environment for accurate drug sensitivity assessment and simultaneous testing of drug targeting and side effects.

Time and money are often wasted when using currently available cell culture models for initial phases of the development of drugs and detection tools. Currently, the best available cell culture models are hanging drops with tumor nodules or 3D monoculture of tumor nodules; however, the tumors in these models are not true representations of the disease due to a poorly replicated environment.

Researchers at Purdue University have developed a disease-on-a-chip model to provide a better solution for this problem. This model reproduces the luminal portion of ductal systems. Tumors are grown in an environment that replicates the in vivo setting observed in human patients, providing a more accurate assessment of the of the tumor's sensitivity to drugs. This model permits test drug targeting to the correct cells and side effects on the normal adjacent tissue at the same time. In addition, this design can be used for automated tissue culture.

Advantages:

-Tumors are grown in an in vivo-like environment

-Could be sealed for high throughput

-Provides a more accurate assessment of a tumor's sensitivity to various compounds

-Performs two tests at once, i.e., drug targeting and side effects

Potential Applications:

-Automated tissue culture

-Drug targeting

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Category

Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

Pharmaceuticals/Research Tools & Assays

Authors

James Leary

Sophie Lelievre

Teimour Maleki-Jafarabadi

Pierre-Alexandre Vidi

Further information

Joe Kasper

JRKasper@prf.org

Nathan Smith

nesmith@prf.org

View online

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