



## Is this the End of the Animal Testing Era in Drug Discovery – Recent Advances and Future Trends

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The traditional journey from drug discovery to drug development takes place mainly in cell-culture dishes and animals, so new compounds are tested on cells that don't function like those in the human body. Most Pharmaceutical Discovery Labs get completely different results in dogs, cats, mice and humans, but now they will be able to test the specific effects of drugs with greater accuracy and speed. The current drug-development model is broken, say many Scientists in this field.

Less drugs are getting to patients, more Discovery companies are getting frustrated and it's clear that we need better lab models that mimic whole organ function.

Enter organs-on-chips – devices the size of a computer memory stick that contain human cells immersed in the blood vessels and tissue that normally form living organs. Because the environment of each organ chip is so similar to that of the human body, some actually function the way the human organ does.

The Organ on a chip was crafted by combining microfabrication techniques from the computer industry with modern tissue engineering techniques, human cells, and a plain vacuum pump. The idea is not to recreate an entire organ; it's to reconstitute the smallest possible functional unit of an organ in a microenvironment similar to that of the human body. The organs-on-chips allow us to see biological mechanisms and behaviours that no one knew existed before.

These tiny organs-on-chips ultimately could be used in various stages of drug development, for example, to determine whether a particular protein might be a suitable target for drug discovery. In later testing, the chips could be used instead of animals to assess and predict whether a candidate drug might be toxic or efficacious.

In addition to pursuing applications in drug discovery, the company's projects will include making personalized organs-on-chips from tissues of specific patients, as well as from genetic subpopulations. These chips could then be used to make drugs tailored specifically to them, in other words the onset of the era of Personalized Medicines.

Although, Organ-on-chip technology is "still in its infancy," this science is heading down the right track and making rapid progress, say the Scientists working on these projects.

With such exciting developments in this field, are we seeing the end of the era for culture testing and Animal test and the beginning of a Robust and Validated tests that will also hasten the process of Drug Discovery.?

The ultimate goal is to lessen dependence on animal test subjects and decrease TIME and COST for developing drugs.