

Organs-On-Chips To Revolutionize The Drug Development Industry, New Report Shows

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The market for organs-on-chips (OOCs), the cell culture chips that imitate the activities, mechanisms and responses of organs, is growing at 70% year on year according to research from [The Business Research Company](#) in its report [Organ-On-Chip Global Market Opportunities And Strategies To 2021](#). The market is expected to maintain a high growth rate up to 2019, and then accelerate. This rapid growth in such a new market will result from increases in the number of collaborative sales agreements between the pharmaceutical companies and university spin-offs and the entry of new advanced models of OOCs, such as lab on a chip, into the market. However, regulatory approval for drugs tested on OOCs will be needed before the potential demand is fully realized and complex manufacturing technology is a supply-side restraint.



North America, particularly the USA, is the largest market for organs-on-chips, followed by Europe. These are the regions where most drug development is currently undertaken. However, Asia and the rest of the world will also see significant growth in the market up to 2021.

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Organs-on-chips are microfluidic 3D cell culture devices that closely mimic the key physiological functions of body organs. The chips are not designed to biomimic an entire organ but to simulate the physiology of a single functional unit of an organ system. They have resulted from scientific advances in cell biology, microfabrication and microfluidics which allow the emulation of the human micro environment in vitro. This unique feature of OOCs is made possible by integrating biology with advanced engineering technologies. Human organs-on-chips (OOCs) are miniaturized versions of lungs, livers, kidneys, heart, brain, intestines and other vital human organs embedded in a chip.

Since the organ-on-chip market is still in the research and development phase, and hasn't been completely commercialized, it is dependent on government grants. For example, in 2012 the USA's National Institutes of Health (NIH) established a 'Tissue Chip for Drug Screening' initiative. The establishment of this program was aided by NIH's Common Fund and the National Institute of Neurological Disorders and Stroke. NIH plans to commit up to \$70 million over five years for the program. In total, 15 NIH institutes and centers are assisting in the coordination of this program. Seventeen research projects were awarded about \$13 million in July 2012. In 2014, NIH

began the second phase of funding for the Tissue Chip for Drug Screening Program in which 11 institutes were supported by \$17 million. In September 2017, NIH funded 13 institutions. The funds allocated were close to \$15 million.

The players in the OOC market are primarily university spinoffs involved in the commercialization of OOC prototypes developed in the universities. These business arms include CN-Bio Innovations, InSphero, Mimetas, TissUse, Hprel and Nortis.

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Further improvements in the design and manufacture of OOCs will probably lead to them replacing animal models as subjects in many preclinical drug evaluations in the future. According to a Senior Sales and Marketing Manager from Nortis, "The value proposition of OOCs for pharmaceutical companies is very strong in terms of reducing clinical failure rates and reliance on animal testing". With advances in OOC technology, drug regulatory bodies have started testing OOCs for their reliability and their use as an alternative to animal testing. For instance, in April 2017, the US Federal Drug Administration announced an agreement with Emulate Inc., a US-based biotechnology company, to evaluate the company's human organs-on-chip technology in laboratories.

OOC technology offers a less time-consuming and more cost-effective way to test for the efficacy and toxicity of new drugs, foods, cosmetics and dietary supplements. Overall, these biochips have the potential to break an impasse in in-vitro drug discovery and development in these fields.

Where To Learn More

Read Organ-On-Chip Global Market Opportunities And Strategies To 2021 from The Business Research Company for information on the following:

Markets Covered: Organ-on-Chip, lung on a chip, heart on a chip, liver on a chip, Intestine on a chip, kidney on a chip, human on a chip, lab on a chip, human disease and tissue models, and microfluidics

Data Segmentations: Organ-on-Chip global and regional total and by product segments – by organ type, end users and geography 2013-21 market size and growth rates.

Organ-on-Chip Organizations Covered: CN Bio Innovations, Emulate Inc., TissUse GmbH, Mimetas, Hprel Corporation (Hprel), Nortis, InSphero, Tara Biosystems, and AxoSim Technologies LLC

Regions: North America, Europe, Asia and Rest Of World (ROW)

Time Series: Five years historic (2013-17) and forecast (2017-21).

Other Information And Analyses: Organ-on-chip market – product analysis, overview of organ-specific models (lung on a chip, heart on a chip, liver on a chip, Intestine on a chip, kidney on a chip, skin on a chip, human on a chip, blood-brain-barrier-on-chip), market trends, business models, Porters five forces analysis, market drivers and restraints, global OOC market funding landscape, top company profiles

Strategies For Participants In The Organ-On-Chip Industry: The report explains over 25 strategies for organ-on-chip companies, based on industry trends and company analysis. These include participating in the adaptation of organ-on-chip technology for use in space, tying up with end-users to design tailor-made products, and developing models for new end uses such as food safety testing.

Opportunities For OOC Companies: The report reveals the global and regional segments where the OOC market will put on most \$ sales up to 2022.

Number of Tables: 23

Number of Figures: 22

Sourcing and Referencing: Data and analysis throughout the report are sourced using end notes.

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[Biologics Global Market Opportunities And Strategies To 2021](#)

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The Business Research Company is a Business Intelligence Company which excels in company, market and consumer research. It has offices in the UK, the US and India and a network of trained researchers in 15 countries globally.

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