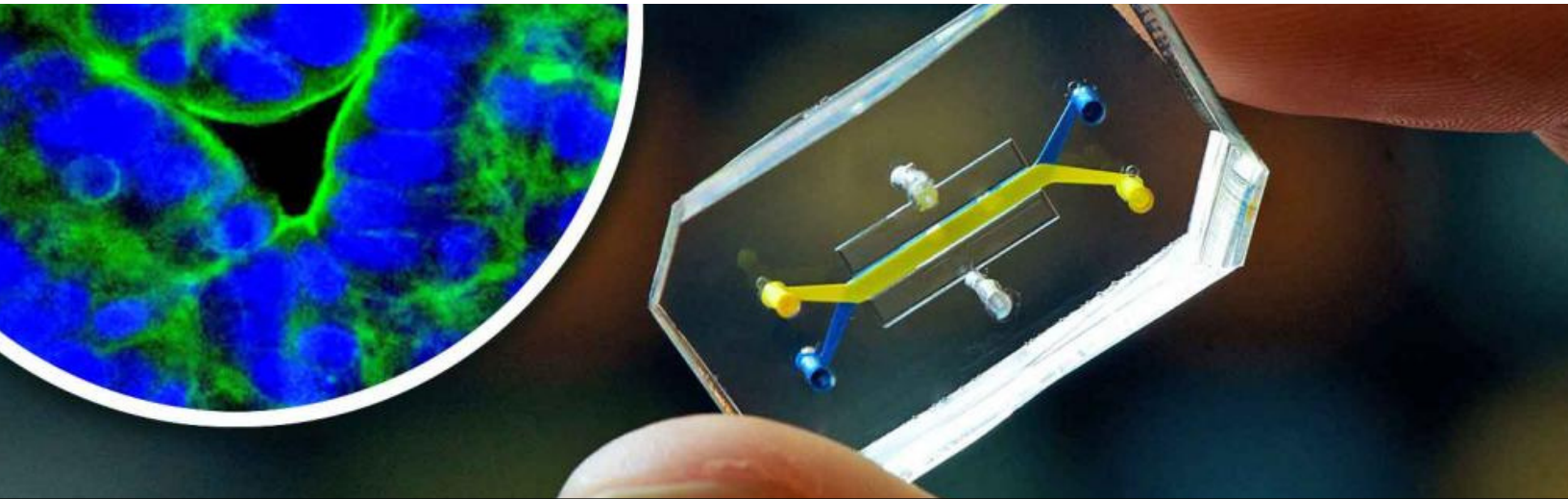


TOP 5 INNOVATORS TO WATCH IN 2024

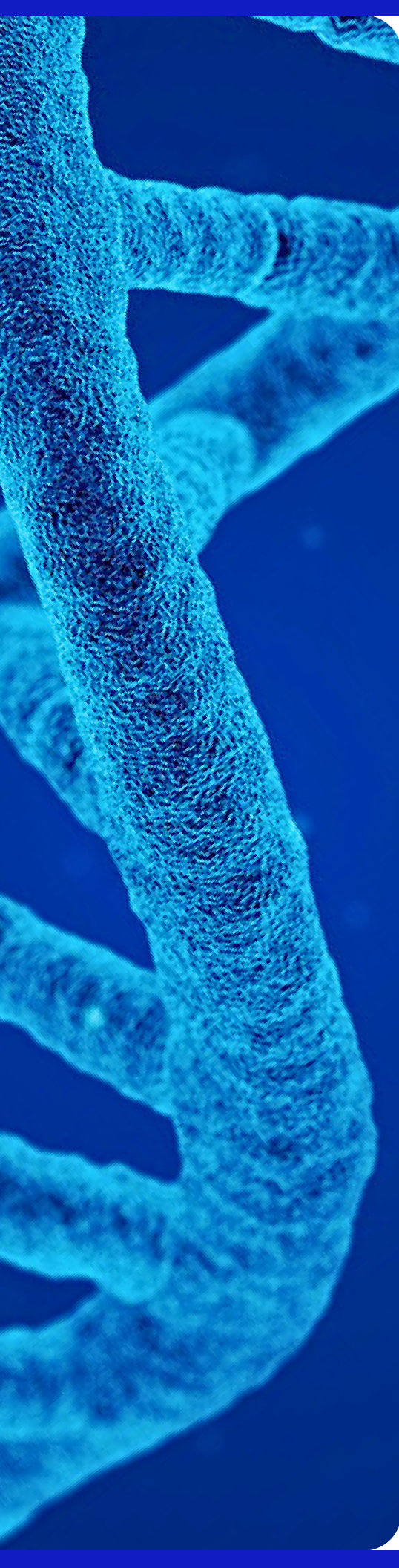


OVERVIEW

The [Center for Contemporary Sciences \(CCS\)](#) is a 501(c)(3) non-profit organization dedicated to advancing the health and well-being of humans, animals, and the planet. Part of our mission is to support scientific and technological advancements to shift the existing paradigm in medical research and drug development.

Despite advancements like organoids, organ-chips, and in silico modeling showing great promise to dramatically improve human health, this technology is not often prioritized by medical research, pharmaceutical, and public health sectors. In an effort to support companies and organizations that are working on human-relevant models, CCS is highlighting five companies we believe stand out.

CCS evaluated more than 150 companies and organizations developing or working with human-relevant technology for biomedical research and drug development. Companies evaluated include pharmaceutical, in vitro, in silico, and chemical companies. CCS determined 4 criteria to identify the top 5 companies we believe have the most significant impact on human-relevant research thus far and should be watched in the upcoming year. The Center for Contemporary Sciences holds no monetary or compensatory connections with the entities shown here.



CRITERIA

1 COMMUNITY RECOGNITION

A key part of a paradigm shift is the accumulated body of knowledge of the technology to support this shift. Animal testing is viewed as the “gold standard” because it is the testing method that people have used for the majority of medical research for decades. Part of the continued acceptance of animal testing comes from the lack of knowledge about other options. The Community Recognition criterion is important because it shows how a company is helping to educate on human-relevant methods.

Focus: Peer-reviewed publications, videos explaining products, news articles, presentations

2 ENTIRE SYSTEM MODELING

Some companies are solely focused on organ-on-a-chip models or even kidney-on-a-chip models. This criteria looks at how many systems or models a company is working on. A criticism of non-animal models is that they are not able to fully model a system within a body.

This criterion takes that concern into consideration by evaluating not only how many types of models a company is working on, but if they are focused on one type of model, how their model can work with others to reflect a full system. A large part of the Entire System Modeling criterion is the collaboration efforts of a company to build a system if they are not working on one themselves.

Focus: Number of organs, collaboration efforts

3 APPLICATIONS

Animal Testing is not confined to one area. Animals are used in toxicity testing for household goods, cosmetics, and other environmental products like pesticides in addition to animals being used for drug development and medical research. The Applications criterion looks at companies that are developing models that can be used across industries.

4 ENTIRELY ANIMAL-FREE

Some companies we evaluated are not exclusively working on human-relevant testing methods. As part of our evaluation criteria, we wanted to consider all companies working to change the current paradigm, but companies that are still using animals were noted as part of this evaluation. Whether or not a company is entirely animal-free did not hold as much weight as the other evaluation criteria.

INNOVATORS TO WATCH

1 Quris.ai

[Quris](#) is an artificial intelligence innovator that is using patient-on-a-chip technology that can be used to train machine learning models to better predict the safety of drug candidates. Quris expands what a single patient-on-a-chip model is able to do by leveraging AI to reflect a broad genomic diversity. The technology Quris is developing goes beyond the limitations of older organ-chip models.

The applications have broad possibilities. They are not focused on just one area and the scalable platform has the potential to change the drug development field. Quris has collaborated with others in the field is recognized in the news for their work in the field.

2 InSphero

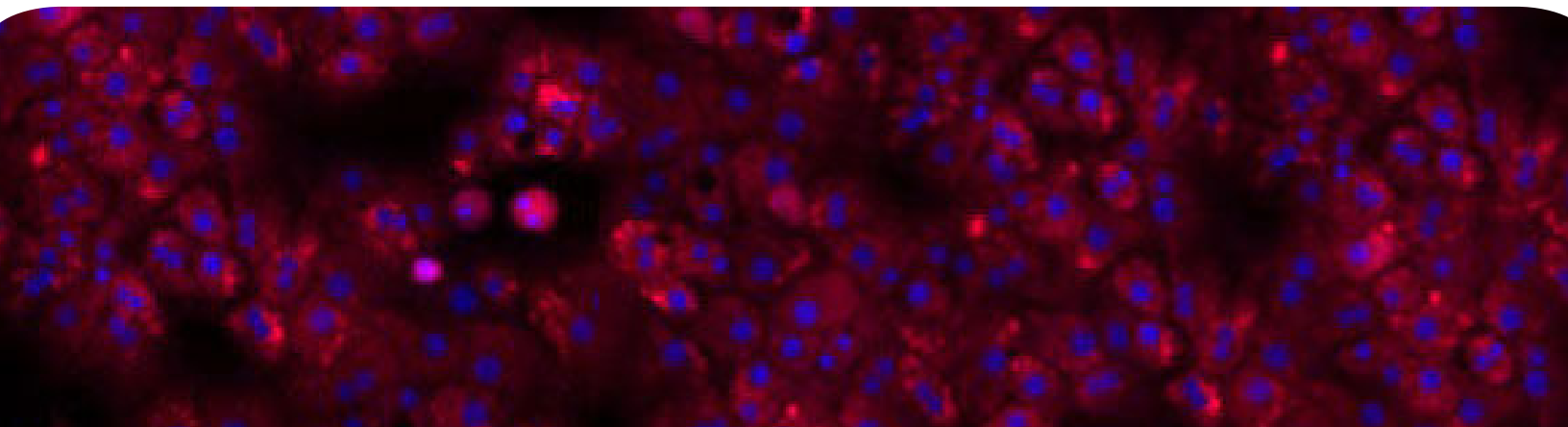
[InSphero](#) is a 3D in vitro model company that is working to modernize drug discovery with their spheroid-based models. It is their mission to "inspire researchers everywhere to reach their full potential and fuel a new era of breakthrough therapies."

InSphero's mission to support researchers everywhere sets them apart from others in their field. Their focus is to help others develop their own research and therapies. Their technology is successfully used in Liver Disease, Diabetes, and multi-tissue research.

3 emulate

[Emulate](#) is a human in vitro company focused on microphysiological systems (organ-chips). Their goal is to build a more predictive model of human physiology. In 2019, Emulate published a paper demonstrating how their Liver-Chip can be used for drug-induced liver injury. In 2022, emulate published a landmark study proving that their Liver-Chip predicted drug-induced liver injury better than animals and hepatic spheroid models.

Emulate plays a large role in educating the public on human-relevant models like microphysiological systems. Their work is more widely recognized than other companies in this space and they actively attend speaking engagements, host webinars, and started Global MPS Day in 2023 to bring more awareness to this technology.



[TissUse](#) is a German-based company pioneering human-on-a-chip developments. The company developed a Multi-Organ-Chip platform for preclinical insight using human tissues. TissUse offers service contracts and creates custom solutions for safety evaluations for drugs, cosmetics, chemicals, and preclinical human disease modeling.

TissUse's Multi-Organ-Chips are used in a variety of applications including drug development, cosmetics, food and nutrition, and consumer products. The significance of their Multi-Organ-Chip platform covers the skin, bone marrow, liver, kidney, intestine, brain, and heart, among other organs. Beyond the far-reaching application of their organ chip system, TissUse works with large companies like Bayer to support their research.

[CN-Bio](#) is an organ-on-a-chip company working on human-specific single and multi-organ solutions for efficacy and safety data. CN-Bio's PhysioMimiz device enables researchers to "culture microtissues that mimic the structure and function of human tissues and organs in vitro." The human-relevant data generated by their PhysioMimiz works with data from animal testing for decision-making during drug discovery.

CN-Bio's human-relevant PhysioMimiz has multiple applications including disease modeling, safety toxicology, and ADMA. The applications of this product are far reaching and CN-Bio has been recognized as a star in this company for their work. CN-Bio provides significant resources including webinars and blogs demonstrating their product and discussing human-relevant organ-on-a-chip technology.

