

Turbine Simulated Cell Technologies Limited

Category:

Best Startup

Company Name:

Turbine Simulated Cell Technologies Limited

Turnover and/or Funding:

Series A - 2022

Sub-Category:

Biotechnology

Corporate history (creation, key milestones, main funding,...)Information on Condition / Disease and need for solution / product (prevalence, existing treatments / solutions):

Capturing patient biology accurately is a huge challenge for the drug discovery industry. Experiments on cells and animals are frequently unreliable, leading to repeated trial failures when transitioned to humans. For over a decade, Turbine, the Budapest- and London-based predictive biosimulation company, has been developing a solution to this issue using AI - with the goal of empowering biopharma companies to develop the right drugs for the right patients.

Backed by top investors, and with users including Bayer, AstraZeneca and Ono, the company's simulated cell and tissue models utilize AI to virtualize preclinical experiments and capture the biology of real patients. Using these models, scientists can iterate a hypothesis a million times before committing to a single, high likelihood experimental plan that is more likely to succeed than those found by traditional labs and enables truly rational experiment design at each stage of R&D.

Earlier this year, Turbine launched the world's first Virtual Lab using these cell simulation models. The interface allows scientists to design and iterate experiments at unprecedented speed and accuracy, across disease settings and cell types. This technology has previously been available only through bespoke collaborations, and with the launch, it's now broadly accessible by the broader scientific community.

By virtualizing these pre-clinical experiments, Turbine has begun to completely change

the way biopharma companies approach drug R&D. Their virtual lab and models will save time and money, and most importantly, get the right drugs to the right patients at the right times.

History of the development of the solution/product (Intellectual Property, preclinical and clinical datas, development collaborations):

Capturing patient biology accurately is a huge challenge for the drug discovery industry. Experiments on cells and animals are frequently unreliable, leading to repeated trial failures when transitioned to humans - not to mention the time and cost of the initial testing in the discovery phase. For over a decade, Turbine, the Budapest- and London-based predictive biosimulation company, has been developing a solution to this issue using artificial intelligence - with the goal of empowering biopharma companies to develop the right drugs for the right patients.

Backed by top investors, and with users including Bayer, AstraZeneca and Ono, the company's simulated cell and tissue models utilize AI to virtualize preclinical experiments and capture the biology of real patients. Using these models, scientists can iterate a hypothesis a million times before committing to a single, high likelihood experimental plan that is more likely to succeed than those found by traditional labs and enables truly rational experiment design at each stage of R&D.

Earlier this year, Turbine launched the world's first Virtual Lab using these cell simulation models. The interface allows scientists to design and iterate experiments at unprecedented speed and accuracy, across numerous disease settings and cell types. This proprietary technology has previously been available only through bespoke collaborations, and with the launch, it's now broadly accessible by the broader scientific community. The initial release includes the ADC Payload Selector, which addresses one of the central challenges of antibody-drug conjugate (ADC) development by identifying and ranking the most promising ADC payloads by running millions of highly predictive, unbiased simulations

Simulations run through the Virtual Lab can also discover completely novel IP by enabling experimental assays that simply cannot be run in a lab setting - such as simulating the tissue of particular patients who aren't represented in available lab models or high-throughput drug screens on scarce tissue samples. Developers can also derisk programs by simulating potential failure points - sometimes years before the actual experimental steps could be carried out.

This technology has continued to be validated by Turbine's partners and investors, and at this year's AACR, the team shared several presentations showcasing the effectiveness of its platform (1, 2, 3, 4). The data highlighted in these posters further

explore its \"avatar\" library of patients which is used by drug developers for target identification, disease positioning, antibody-drug conjugate (ADC) design and more.

By virtualizing experiments like these, Turbine has begun to completely change the way that pharmaceutical companies approach drug R&D. Its Virtual Lab and models will save time and resources, and most importantly allow the industry to get the right drugs to the right patients at the right times. For that reason, I hope you'll give the company serious consideration for the Innovation Award at this year's Scrip Awards ceremony.

Why this drug or device is innovative, the broad implications for future research, and/or how it will improve the human condition:

Turbine's Virtual Lab is an innovation that reimagines how the pharmaceutical industry approaches early-stage drug development. By virtualizing complex biological experiments through AI-powered, patient-specific simulations, Turbine addresses one of the field's most critical limitations: the poor translatability of cell and animal models to real human biology. These conventional systems often lead to high trial failure rates, wasted investment, and ultimately, delays in delivering life-saving therapies to patients.

At the core of this innovation is Turbine's proprietary simulated cell and tissue models, which capture patient biology with unprecedented precision. With the launch of the Virtual Lab, this powerful technology - previously available only through bespoke partnerships with global pharma leaders like Bayer, AstraZeneca, and Ono - is now broadly accessible. For the first time, scientists across the industry can design, run, and iterate on highly predictive experiments entirely in silico.

One of the Virtual Lab's tools, the ADC Payload Selector, exemplifies this innovation. It enables researchers to identify and rank the most promising antibody-drug conjugate payloads by running millions of unbiased simulations, something that would be cost-prohibitive or outright impossible in traditional wet labs. This significantly accelerates ADC development, a rapidly growing class of therapies with transformative potential in oncology and beyond.

The implications for future research are wide-ranging:

- Scientists can now test hypotheses at massive scale before committing resources to physical experiments, increasing the odds of success.
- Programs can be derisked early by identifying likely failure points, sometimes years ahead of experimental timelines.

Researchers can explore entirely novel biological questions or simulate experiments in patient tissues that cannot be modeled today.

- Most importantly, Turbine's Virtual Lab is a tool that advances human health. It helps ensure that drug development is guided by accurate, patient-relevant data from the

very first step. This means faster development, fewer failed trials, and more targeted therapies that reach the right patients sooner. It also levels the playing field, giving smaller biotech companies access to the same high-powered predictive capabilities as the largest pharmaceutical players.

Please provide appropriate references (PubMed, Abstract, Website):

<https://turbine.ai/science/>

<https://blog.turbine.ai/p/ic50-is-a-deep-rabbit-hole>

References File Document upload:

N/A