

FROST & SULLIVAN

SPHERE FLUIDICS

2022
TECHNOLOGY
INNOVATION
LEADER

*EUROPEAN MICROFLUIDIC PLATFORMS
FOR BIOLOGICAL SCREENING
AND DISCOVERY INDUSTRY*

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each Award category before determining the final Award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Sphere Fluidics excels in many of the criteria in the microfluidic platforms for biological screening and discovery space.

AWARD CRITERIA	
<i>Technology Leverage</i>	<i>Business Impact</i>
Commitment to Innovation	Financial Performance
Commitment to Creativity	Customer Acquisition
Stage Gate Efficiency	Operational Efficiency
Commercialization Success	Growth Potential
Application Diversity	Human Capital

Sphere Fluidics

Founded in 2010 and headquartered in Cambridge (UK), Sphere Fluidics is a life sciences company that has developed innovative products for single-cell analysis and characterization and provides collaborative research and development (R&D) services in this area.

The company initially focused on producing novel biochip systems and providing R&D services. Frost & Sullivan analysts monitor how Sphere Fluidics has since extended its expertise, developing a technology platform that enables discovery in a range of growing markets through single-cell analysis. Its platform allows developing new biopharmaceuticals faster and more cost-effectively. It also improves monoclonal antibody screening, cell line development, and overall research efficiency across applications, including cell therapy, synthetic biology, single-cell diagnostics, and single-cell genome editing.

Sphere Fluidics' central research implementation platform includes microfluidic pumps, lasers for fluorescence assays, and biochips that generate, sort, and pick out droplets. It has also developed surfactants and instrumentation for critical assays. The company has around 34 patented systems and products.

A Leader's Playbook: Cutting-edge Product Development

Technology and product evolution begin with Sphere Fluidics' tenured industry professionals and subject matter experts conducting extensive R&D. It then leverages the acquired knowledge to build innovative technologies and purposeful systems that properly address market needs.

This reiterative innovation process yielded the proprietary microfluidic droplet generation technology and, consequently, Cyto-Mine®, its flagship product.

The Technology behind the Magic: Picodroplet

Sphere Fluidics' picodroplet incubation technology empowers ultra-sensitive, rapid miniaturized assays of target proteins secreted from tens of millions of individual cells. The novel method stabilizes picoliter volume droplets (picodroplets) and their cellular and molecular content across various conditions, facilitating high-throughput screening, a primary technical attribute. Liquid picodroplets generated at high speed encapsulate individual cells (up to 40 million), enabling the screening and analysis of cells and their secreted molecules.

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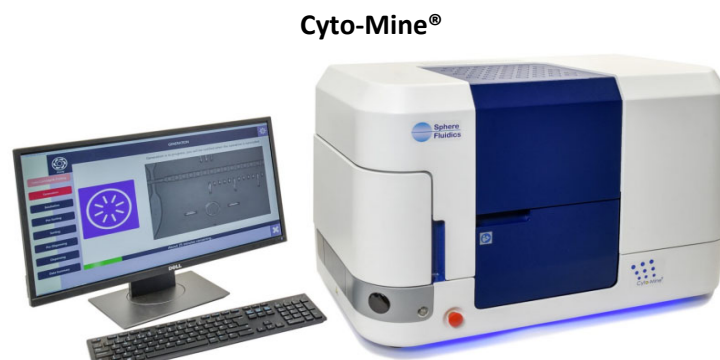
*- Julieta Simone,
Best Practice Research Analyst*

of target proteins secreted from tens of millions of individual cells. The novel method stabilizes picoliter volume droplets (picodroplets) and their cellular and molecular content across various conditions, facilitating high-throughput screening, a primary technical attribute. Liquid picodroplets generated at high speed encapsulate individual cells (up to 40 million),

The company currently has two research instruments that generate, isolate, and dispense picodroplets for various applications: the Picodroplet Single Cell Encapsulation System and the Picodroplet Single Cell Assay System. Both tools are compatible with its robust microfluidic chemicals and biochip portfolio.

Cyto-Mine®: Revolutionary, High-throughput Single-cell Analysis Platform

Sphere Fluidics' Cyto-Mine® single-cell analysis system is the first integrated benchtop platform to automatically analyze, sort, image, and dispense millions of individual cells. It uniquely screens between 200,000 and 40,000,000 cells simultaneously; thus, it can process millions of samples per day. In turn, automated isolation, selective screening, sorting, imaging, and clone verification streamline workflows and enable high-value clone capture in a single run, both reducing costs and accelerating research. Frost & Sullivan's own research maintains that Cyto-Mine® System's high throughput clearly distinguishes it from other competing offerings, supporting relevant research fields marked by solid growth.



Courtesy of Sphere Fluidics

The platform serves as a one-stop-shop for any B cell type, hybridoma, and Chinese hamster ovary (CHO) and human embryonic kidney (HEK) cells for antibody discovery and stable cell-line generation. The Cyto-Mine® cartridge holds the sample, followed by individual isolation and dispensing 'hits' into the individual microtiter plate wells.¹

The company specifically designed the platform to cost-effectively assess and isolate rare and valuable cell variants and biological products for antibody discovery, cell line development, synthetic biology, and single-cell diagnostics and prognostics. Sphere Fluidics also applies the technology to critical areas such as precision genome editing and cell therapy.

The Cyto-Mine® system performs several cellular processes that typically require several types of equipment that multiply time and costs. Frost & Sullivan classifies the integrated technology platform as a revolutionary, empowering, rapid, accurate single-cell screening and analysis system.

Customer as a Focal Point

With its customer-led strategy, Sphere Fluidics consistently brings to market best-in-class products and solutions. The Cyto-Mine® system is flexible and easy-to-use, easily adapting to fit customers' unique research needs. At the same time, its advanced picodroplet technology boosts throughput and efficiency. As such, the platform enhances customers' single-cell research capabilities, saves their resources, and improves their chances of finding highly valuable and rare biological variants among vast cell populations.

Sphere Fluidics incorporates user feedback into its product roadmap to maximize short-term growth opportunities while providing a path to future revenues. For outstanding results and best-in-class proficiency, the company manufactures all of its instruments in ISO9001:2015-accredited laboratories, subsequently undergoing rigorous quality testing before release.²

Sphere Fluidics offers high-quality services and training to its users via its dedicated customer service and technical support groups operating from the UK and United States (US) mainly. The company also trains support staff in its global distributor network to offer local and quick customer support.

Successful Commercialization and Promising Outlook

In terms of commercialization readiness, Sphere Fluidics launched the Cyto-Mine® benchtop instrument (picodroplet technology) in early 2019. Frost & Sullivan appreciates how the company has disrupted the way that the pharmaceutical industry discovers commercially viable biomolecules ever since. Current customers include global pharmaceutical companies, biotech, contract development and manufacturing organizations, and leading research institutions. The company has sold the product in Europe, Asia, and the United States (US) to date, targeting sales to more than 500 customers worldwide in the coming years.

Frost & Sullivan notes that Sphere Fluidics clearly understands various clients' unique needs and emerging demands, taking steps to develop the most up-to-date and advanced single-cell analysis and

¹ <https://spherefluidics.com/technology/>, accessed February 2022

² <https://spherefluidics.com/quality-commitment/>

monoclonality assurance systems, to enable leading-edge research and accelerate biotherapeutics discovery. Besides continuous platform capabilities and performance enhancements, the company's fundraising activities support ongoing commercialization, broadening the technology's adoption into new research areas such as cell therapy, synthetic biology, and genome editing. It secured £40 million (M) in equity funding, a £2M convertible loan, and about £3.1M in grants. Giants like GlaxoSmithKline, Horizon Discovery, UCB, and Imperial College London have been particularly supportive.

As for investors, various UK investment funds have become key allies contributing to Sphere Fluidics' international expansion strategy. The company has raised around £15M through angel and venture capital investors such as Greenwood Way Capital, 24Haymarket, and Amadeus. The company also recently announced closing a £26M investment round with two international venture capital funds - Sofinnova Partners and Redmile Group. This will support international sales activities in key markets and assure customer-centric support.³ Furthermore, it plans to develop new product R&D programs, including novel applications for its proprietary Cyto-Mine® Single Cell Analysis System.

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*- Julieta Simone,
Best Practice Research Analyst*

Consequently, Sphere Fluidics also partnered with best-in-kind third-party vendors, e.g., design and software companies and manufacturers, to scale-up production in the UK and Europe. It will leverage these external agreements to get the product to its growing customer base faster than building a factory itself (which can take years and cost tens of millions).

The company's thriving domestic and international funding and collaboration agreements with preeminent third-party vendors are a testament to its single-cell analysis technology potential, team expertise, and growth strategy leadership. Frost & Sullivan anticipates Sphere Fluidics extending its product line successfully with strong support for new and existing customers globally. The company is well-positioned to capture growth opportunities in the market, with an industry-leading product that provides tremendous value in high-demand research sectors.

Conclusion

Technology is a critical success factor for the microfluidic platforms for the biological screening and discovery market. Yet with many options available, market stakeholders need to leverage the most appropriate and best technology-based solutions to optimize their market impact.

Sphere Fluidics enables research and discovery in a range of growing markets with Cyto-Mine®, its flagship product. The revolutionary, high-throughput single-cell analysis platform enables fast, cost-effective biologics discovery and development and improves monoclonal antibody screening, cell line development, and overall research efficiency. With its strong overall performance, Sphere Fluidics earns the 2022 Frost & Sullivan Technology Innovation Leadership Award in the microfluidic platforms for biological screening and discovery industry.

³ <https://newable.co.uk/newable-ventures-investee-company-raises-30m-series/>, accessed February 2022

What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Award recognizes the company that has introduced the best underlying technology for achieving remarkable product and customer success while driving future business value.

Best Practices Award Analysis

For the Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

[Learn more.](#)

Key Impacts:

- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

