SONY

Revolutionizing microbial biotechnology with the versatile SH800 Cell Sorter's precision and efficiency



The SH800 Cell Sorter has emerged at the intersection of advanced biotechnological innovation, proving an invaluable asset for a spectrum of applications within the microbial sciences. Its cutting-edge design – characterized by a user-friendly interface – is a testament to its seamless adaptability across a wide array of microbial biotechnological domains. The SH800 excels on several fronts, assisting microalgae-based bioproduction, enabling precise control of yeast fermentations, and empowering meticulous analysis of bacteria-containing samples.

What truly sets the SH800 apart is its microfluidic chip-based sorting system, which not only ensures exceptional throughput, but also eliminates the risk of cross-contamination. The instrument's high levels of precision, efficiency and adaptability, combined with its capacity to meet the ever-evolving demands of microbial research and bioprocessing, position the SH800 at the forefront of modern biotechnology, where it plays a pivotal role in driving innovation and scientific discovery.

Sony Biotechnology Inc.



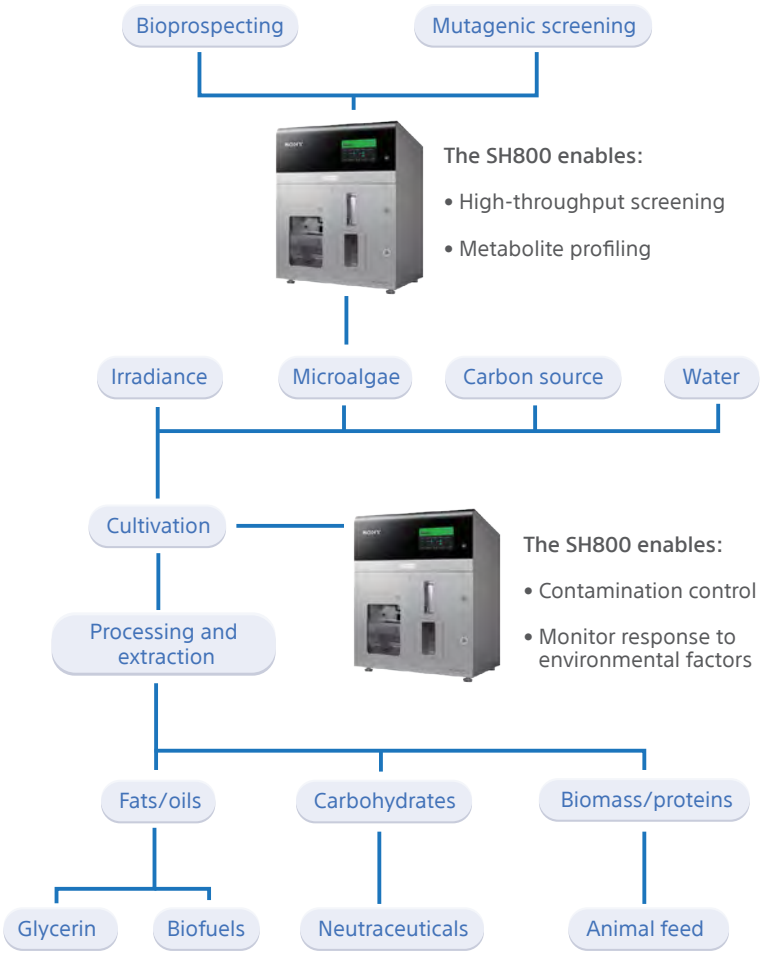
Bioproduction

Harnessing the potential of microalgae in bioproduction is vital to address many of today's global challenges. These minuscule photosynthetic organisms have many diverse applications – including biofuel production, bioremediation, and nutritional supplements – but optimizing their cultivation is complex, due to the need to balance various environmental factors. As the demand for eco-friendly bioproduction continues to grow, there is a need for advanced tools and technologies that can precisely control and enhance microalgae-based bioproduction.

Meet the demands of a wide range of biotechnology applications with the SH800 Cell Sorter. The SH800 allows you to identify and separate microalgal cells based on criteria such as size, fluorescence, or specific markers, for applications including:

- Isolation of high performing strains;
- Obtaining genetically engineered cells for biofuel production through lipid extraction;
- Pharmaceutical production of high value compounds, such as omega-3 fatty acids and antioxidants;
- Wastewater treatment to remove pollutants;
- Generation of pigments and supplements used in the cosmetics and food industries.

In addition, the SH800 allows users to select strains based on unique metabolic pathways, and maintain monocultures with improved purity, aiding in the optimization of microalgal cultivation systems.



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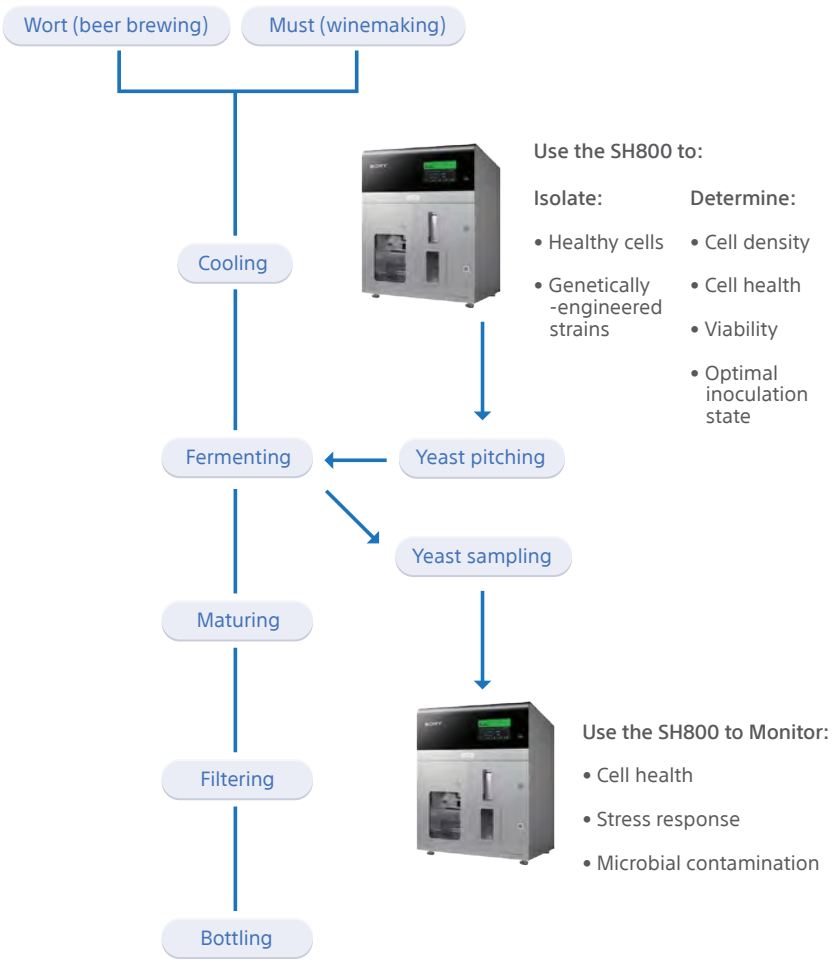
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Precision fermentation

Precision has become a defining pursuit in the fermentation sector, and yeast – the workhorse microorganism in many processes – stands at the forefront of this revolution. Precision fermentation of yeasts involves the careful selection of strains that possess specific traits for optimization of different production processes, from brewing and winemaking to the production of biofuels and pharmaceuticals. However, strain selection is not the sole focus; the ongoing monitoring of yeast performance during the fermentation process is equally crucial. This dual need for precise strain selection and real-time monitoring underscores the critical role of advanced tools and technologies that empower researchers and bioprocess engineers to make informed decisions, ensuring the success and efficiency of yeast-driven fermentation processes while meeting the evolving demands of sustainable and high yield bioproduction.

Achieve true precision fermentation with the SH800 Cell Sorter. The SH800 allows you to obtain genetically-engineered strains, to isolate high-performing clones, to monitor contaminants, and to optimize your fermentation process. In addition, the system enables in-depth insights into microorganism physiology and morphology before exploring a range of experimental parameters, including fluorescent markers. The SH800 assists in identifying and resolving deviations from ideal growth conditions to ensure product consistency and quality, whether it's beer, wine or biofuel. It is also a valuable tool for monitoring fermentation progress, performing quality control, and preventing contamination.



Additional references

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2. Dong, Chang, *et al.* Identification of novel metabolic engineering targets for S-adenosyl-L-methionine production in Saccharomyces cerevisiae via genome-scale engineering. *Metabolic Engineering* 66 (2021): 319-327.

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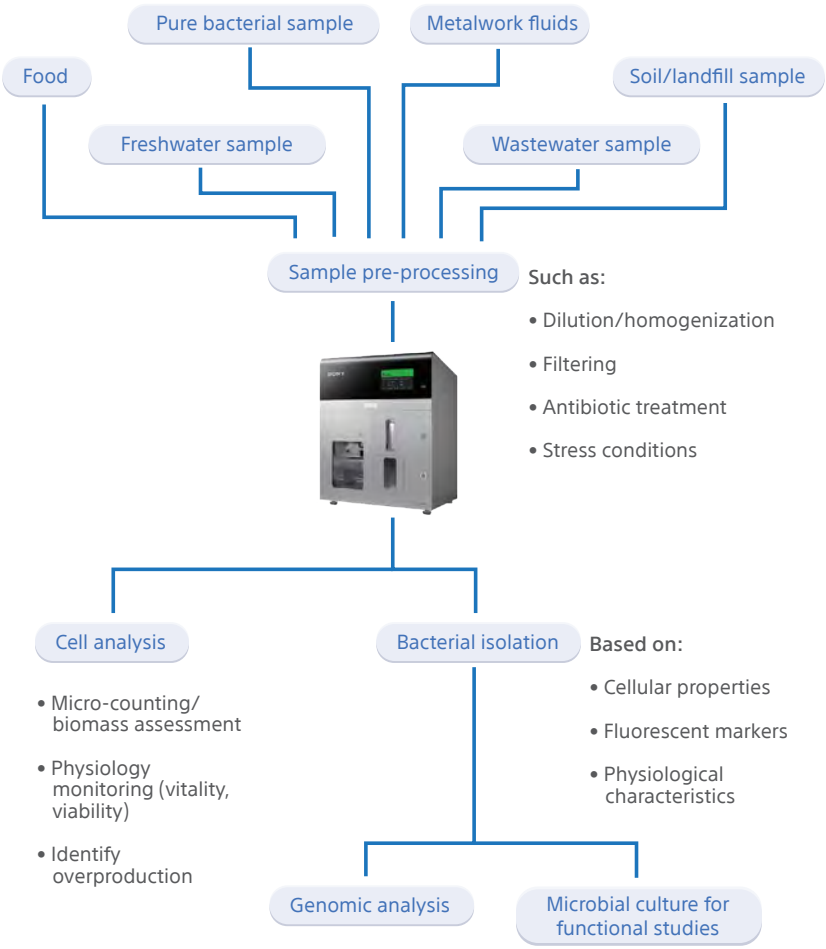
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Analytical applications

Analytical tools have become indispensable assets in addressing a myriad of challenges associated with samples containing bacteria. These microorganisms are ubiquitous in nature, and are found in diverse environments, from food and metalworking fluids to soil, freshwater, and wastewater. The need for effective analytical tools – particularly cell sorters – has grown substantially, not only to identify and enumerate bacterial populations, but also to delve deeper into their genetic composition and functional characteristics. This surge in demand is driven by the crucial role bacteria play in various biotechnological applications, spanning environmental monitoring, food safety, pharmaceutical production, and antimicrobial resistance surveillance.

Empower your biotechnology workflows with the versatile SH800 Cell Sorter. The SH800 allows you to analyze and characterize samples, as well as separate and isolate bacterial populations based on desired attributes. It enables you to explore the composition and functional activities of microbial communities in diverse environments, aiding in pathogen detection, contamination control, antibiotic susceptibility testing, and the study of host-microbe interactions. The SH800 is also valuable for metagenomic and metatranscriptomic studies, supporting a comprehensive understanding of the genetic composition, functional potential and diversity of bacterial communities.



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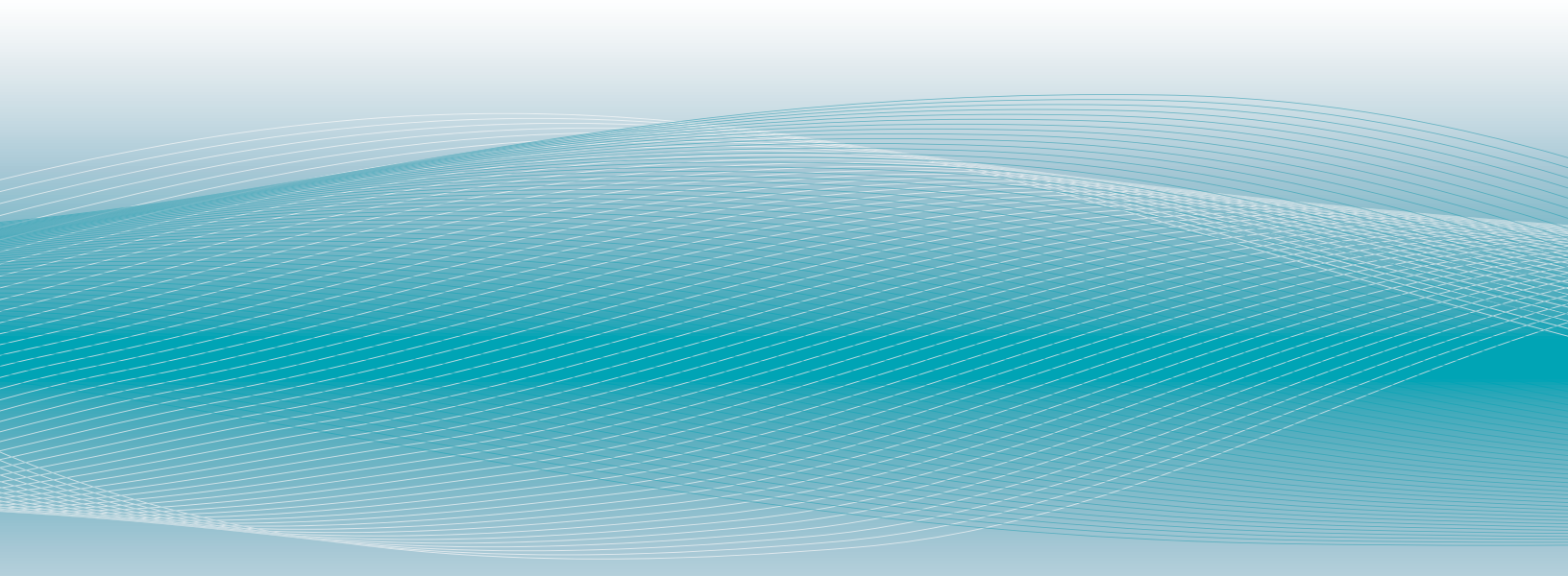
The SH800 Cell Sorter

Specifications	
Excitation laser wavelengths	488, 405, 638 and 561 nm
Detection parameters	6 fluorescent + 2 scatter
Sample tube	Single, auto-loading tube
Tube types	0.5, 1.5, 5 and 15 mL tubes
Sort devices	2-way tube, multiwell plates, PCR tubes, slides
Temperature control	5 and 37 °C (electric cooling method)
Sorting chip size	70, 100 and 130 µm
Event rate	100,000 eps
Sorting speed	An average threshold of 12,000 events per second can be achieved with >98 % purity and >80 % yield using the 70 µm sorting chip at 50 kHz. A threshold rate up to 30,000 events per second can be achieved without affecting purity, but with a decrease in yield, based on Poisson statistics.
Scatter resolution	0.5 µm
Fluorescence resolution	<2.5 % half-peak coefficient of variation (HPCV)
Fluorescence sensitivity	FITC 120 MESF, PE 110 MESF
Dimensions (W x D x H)	21.7 in. (55 cm) x 21.7 in. (55 cm) x 28.4 in. (72 cm)

The SH800 Cell Sorter offers a suite of invaluable features that greatly enhance its use in microbial biotechnology applications. Its exceptional capacity to selectively isolate highly pure strains while preventing any cross-contamination from previous experiments is paramount in maintaining the genetic integrity of microbial organisms, ensuring the preservation of desired traits without interference from other strains. Furthermore, the SH800 excels as a high-throughput tool, enabling precise quantification and detailed characterization of microbial cells – a critical advantage in large-scale biotechnology processes. Crucially, the system offers gentle cell handling, which is particularly important for delicate microorganisms, as harsh handling can disrupt their viability and performance. These features, together with its user-friendly interface, make the SH800 an indispensable asset for the precise and reliable manipulation of microbial cultures, contributing to more informed decision-making and advancing biotechnological research and applications.



- **High precision sorting**
- **No cross-contamination**
- **Gentle cell handling**
- **Automated setup**
- **Fast and straightforward troubleshooting**
- **High throughput**
- **Easy to use**
- **High specificity and sensitivity**
- **Low maintenance**



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