

B.SIGHT™

The fastest microbial isolation system with
image-based single-cell dispensing technology



The B.SIGHT uses CYTENA's validated label-free single-cell dispensing technology to isolate **single prokaryotic cells**, and detects even the smallest cells with high-resolution optics and cutting-edge illumination.

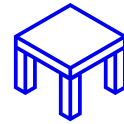
The system can also be modified for sorting of single microorganisms based on fluorescence intensity.



Benefits



Fast and easy-to-use label-free isolation of single bacteria directly into liquid culture or agar



Small benchtop instrument that integrates into fume hoods and anaerobic chambers



Precise single-cell deposition into PCR well plates



Sorting based on size, shape, and fluorescence

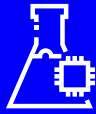


Very high cell viability



Assurance of clonality

Application areas



Synthetic biology

Reduce timelines in microbial strain development workflows for environmentally friendly solutions



Microbiome research

Gentle isolation for cultivation of bacteria from complex microbiome samples



Single-cell sequencing

Precise isolation of microbes for plate-based single-cell multiomics assays

Accelerate single-bacteria isolation workflows



Pipette your sample into the cartridge and insert it in the B.SIGHT



Simple isolation with our disposable cartridge



No calibration/set up in under 5 minutes



No routine cleaning procedures



No carryover



Start sorting right away



Ideal for anaerobic conditions

The B.SIGHT's small footprint, low particle emission and low heat emission make it an ideal system to use in anaerobic conditions, including under a nitrogen atmosphere. You can also control the device externally by connecting a monitor, keyboard and mouse, or by using a remote control terminal.

Isolate fluorescent microorganisms

The B.SIGHT comes with an optional laser that can be added on to your device for fluorescent cell sorting.

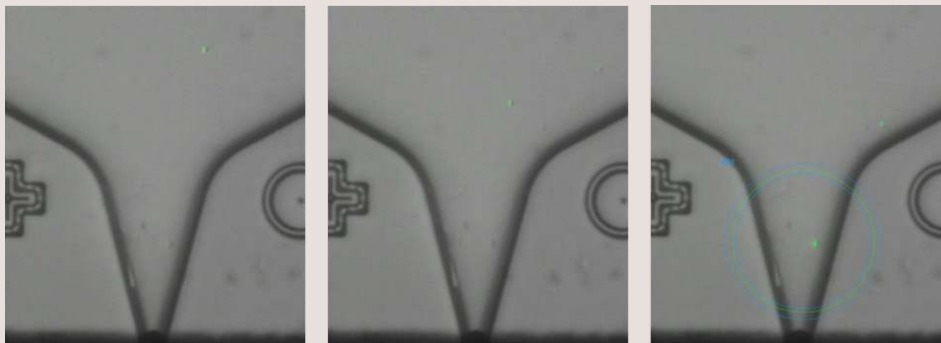


Figure. Detection and isolation of fluorescently-stained *E. coli* cells with a 488 nm laser.

Isolate more species with the B.SIGHT

Pure cultures isolated with the B.SIGHT:

- Bacillus subtilis
- Bacillus vulgatus (strict anaerobe)
- Enterococcus faecalis
- Escherichia coli
(Top10, DH5alpha, BL21, etc.)
- Staphylococcus aureus
- Various cyanobacteria strains
- Saccharomyces cerevisiae (yeast)
- Pichia pastoris (yeast)

Complex samples processed with the B.SIGHT



Human oral
microbiome



Human faecal
samples



Mouse caecal
samples



Wastewater



Marine samples

Related research

Protein expression in microbial systems: Automate your single-cell cloning of bacteria, yeast and other microorganisms with the B.SIGHT

Engineered microorganisms enable the creation of environmentally friendly products that optimize expensive and time-consuming processes such as drug synthesis, biofuel production and biobetter manufacturing. The production of recombinant proteins plays a major role in the life sciences, biotechnology and medicine, and enables the development and production of many biopharmaceuticals. While mammalian systems are the method of choice for monoclonal antibodies requiring human-like glycosylation,

microbial expression systems such as bacteria or yeast are widely used for production of peptides or small to mid-size recombinant proteins, such as antibody fragments.

Fast doubling times, high cell densities and high productivities make organisms such as *Escherichia coli* or *Saccharomyces cerevisiae* useful microbial cell factories for drug development, synthetic biology and screening applications. The B.SIGHT plays a critical role at the beginning of these processes in order to choose the most suitable clone.

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Microbiome research: Cultivation of uncultured bacteria complex microbiome samples under anaerobic conditions

Single-cell isolation from complex microbial samples is traditionally done using colony streaking on agar plates or dilution-to-extinction. With these methods, however, it is difficult to obtain pure cultures due to unknown compositions and heterogeneous cell replication rates. The B.SIGHT is a first-of-its-kind system that enables automated and label-free single-cell isolation from complex microbial samples directly into liquid cultures.

diseases, such as inflammatory bowel disease, diabetes, autoimmune diseases, cancer and depression, facilitates the development of promising therapeutics and diagnostic tools.

Isolating single microbes from human gut microbiome requires anaerobic conditions. The B.SIGHT fits on a small benchtop and can be accommodated in an anaerobic workstation for handling strict anaerobes. The device dispenses single microorganism from your complex sample into thousands of different selective culture media in order to cultivate organisms that have never been cultured before.

Growing interest in research investigating the relation between the human microbiome and

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Single-cell sequencing: Sequencing single-cell genomes of uncultivated bacteria from microbiome samples

Most microbial organisms remain unexplored. Isolating single microorganisms from complex microbial samples allows researchers to gain insight into their composition and heterogeneity without the need for cultivation. The process also holds enormous potential in discovering

new metabolic pathways that can be applied in biotechnological processes or used to develop new therapeutics.

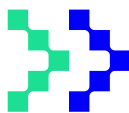
The B.SIGHT facilitates the exploration of microbial dark matter based on single-cell isolation followed by genetic characterization.

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Technical specifications

Cell detection	Brightfield or fluorescence* for maximum flexibility
Sorting principle	Cell morphology or fluorescence
Cell size	1 - 10 μm
Substrate	96-, 394-well plates or agar
Cartridge	20x20 μm disposable cartridge to avoid cross-contamination
Droplet volume	~50 pL to reduce risk of introducing free-floating DNA/RNA
Processing times	Single-cells into 96-well plate: ~5 min Single-cells into 384-well plate: ~20 min
Net voltages	100 – 240 VAC
Nozzle imaging	Output nozzle images for assurance of clonality (JPEG) Camera CMOS, 1.3 MP Magnification 20x Optional: Fluorescence channel 488 nm excitation 500-550 nm emission
Embedded computer	Win10 (x64) Professional
Automation	Ready incl API and DLLs
Compatibility	Standard biosafety cabinets class 2, anaerobic chambers
Footprint	600 x 400 x 240 mm
Weight	32.5 kg
Certification	CE, CB, UL (TÜV), RoHS

*Laser module can be integrated upon request.



CYTENA, A BICO COMPANY

CYTENA is a leading provider of high-precision instruments for isolating, dispensing, imaging, analyzing and handling biological cells, and continues to build on the success of the single-cell dispensing technology the company patented as a spin-off from the University of Freiburg, Germany, in 2014. Today, as part of BICO, the world's leading bioconvergence company, CYTENA's award-winning devices are still manufactured in Germany and used at prestigious academic and pharmaceutical labs around the world to automate workflows in numerous application areas, including stable cell line development, single-cell omics, high-throughput screening and drug discovery. CYTENA's breakthrough innovations for the lab combine advanced automation, state-of-the-art software engineering and the latest insights in cell biology to maximize efficiencies in the life sciences and create the future of health. Learn more at cytena.com.