

# B.SIGHT™

Streamline your single-bacteria and single-yeast isolation and cloning



# Streamline your single-bacteria and single-yeast isolation and cloning

Microbiology is no stranger to innovation, and with current technological advancements, an increasing need for isolating and cloning bacteria and yeast has catapulted the field to new heights. The acceleration of single-cell isolation and cultivation of unknown species from complex microbiome samples is sparking a revolution in microbiome research, and our evolving knowledge of the microbiota is creating opportunities to engineer new diagnostic techniques that benefit many fields from ecology and agriculture to medicine, forensics and exobiology. Additionally, microbiology can benefit from advancements in Next Generation Sequencing (NGS), including miniaturization of reagents. Nonetheless, microbiology is not limited to characterization studies. Both bacterial and yeast model organisms, such as *E. coli* and *S. cerevisiae*, are important expression systems for the production of recombinant proteins for biopharmaceutical applications.

Our second generation B.SIGHT is equipped with CYTENA's patented, highly efficient and gentle single-cell dispensing technology and uses disposable cartridges capable of holding 5 – 80  $\mu$ L cell suspension, making it an ideal system for today's ever-evolving microbiological research. The dispensing technology is combined with high resolution optical microscopy and real-time image analysis to guarantee single bacteria dispensing. The B.SIGHT is also equipped with a high precision dispensing system, the new Automated Offset Correction (AOC) system. Thanks to the AOC, single bacteria are isolated precisely at the center of PCR wells in 50 pL droplets, thus enabling downstream miniaturization for NGS Library Preparation.

Additionally, the B.SIGHT has an innovative dual-camera system for simultaneous detection of brightfield and fluorescence images at high resolution. Together, these images can be used for fluorescent sorting, and fluorescently labelled cells can facilitate the identification and isolation of cells of interest from samples for subsequent downstream analysis.

## Why we stand out



Fast high-throughput single-cell isolation and cloning of microorganism



Isolate single bacteria in 384-well plate in under 8 minutes



Precise deposition of single cells onto PCR plates



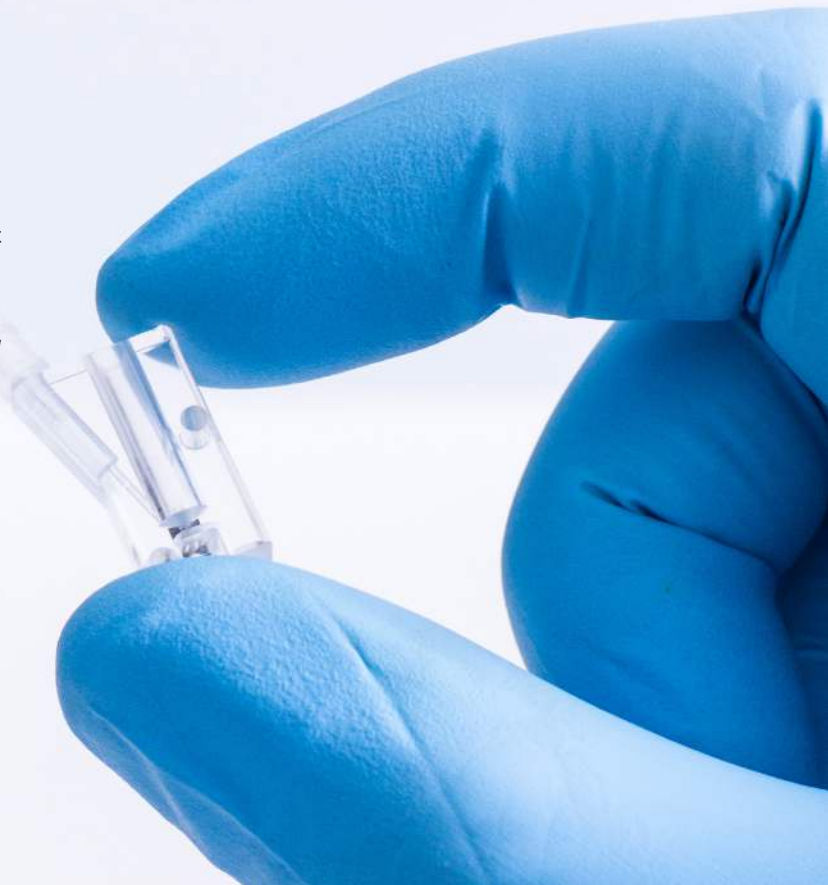
Assurance of clonality



Anaerobic cell isolation and cultivation

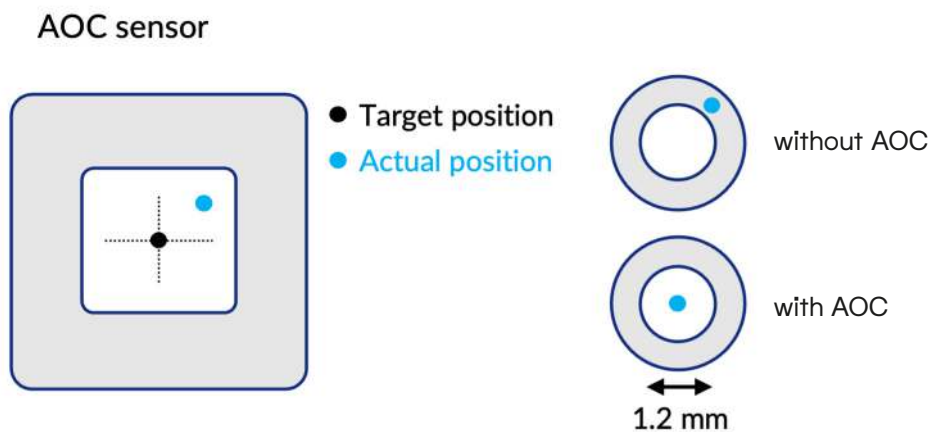
# Reducing the risk of cross-contamination

The B.SIGHT uses our new EASY.ON cartridges, which have been precisely engineered by microfluidic experts to ensure cell viability with the gentlest handling, even with the minimum 5  $\mu$ L volume. The ability to dispose of the cartridges eliminates the risk of cross contamination between samples. Plus, setting up your experiments has never been easier as the EASY.ON cartridge is magnetically mounted for quick and easy loading.



# Precise single cell dispensing into PCR plates

Equipped with an AOC system, the B.SIGHT can circumvent the need for manual droplet alignment at target substrate positions. This results in highly accurate deposition on the center positions of 96- or 384-well conical PCR plates. In combination with the picolitre droplets from single-cell sorting, AOC enables downstream miniaturization of lysis buffers in sub-microliter volumes for NGS library preparation, reducing costs and generating even better data.



# Greater insights from faster single bacteria isolation

The B.SIGHT combines our patented single-cell dispensing technology with an intuitive and fast software. Isolation of single bacteria into multiwell plates can be done in less than 3 minutes. Separate high-resolution brightfield and fluorescence images are obtained together with an overlay image.

The instrument's operating software analyzes cell morphology to isolate single cells according to set parameters such as size, roundness and even fluorescence intensity, which then can be integrated with subsequent NGS Data.

## LOAD SETTINGS DROPLET-QC DISPENSE

Name  Save As

Description

Plate ID

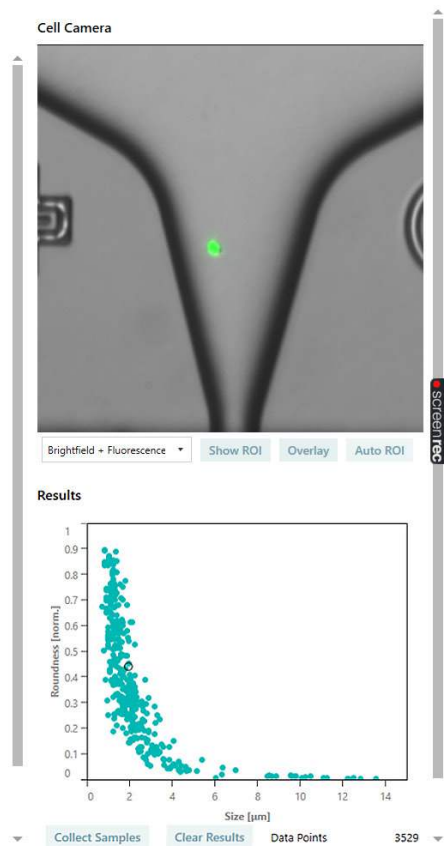
Cartridge ID

MTP Configuration

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
B	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
C	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
D	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
E	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
F	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
G	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
H	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
I	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
J	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
L	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
O	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
P	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Dispense Fluorescence Ce  Number of Cells:

Track Processing Status Size:



## Applications



Microbiome research



Unprecedented insights into the single-cell genomics of uncultivated bacteria



Accelerated anaerobic isolation and cultivation



Protein engineering and strain development



Accelerated cloning of bacteria and yeast

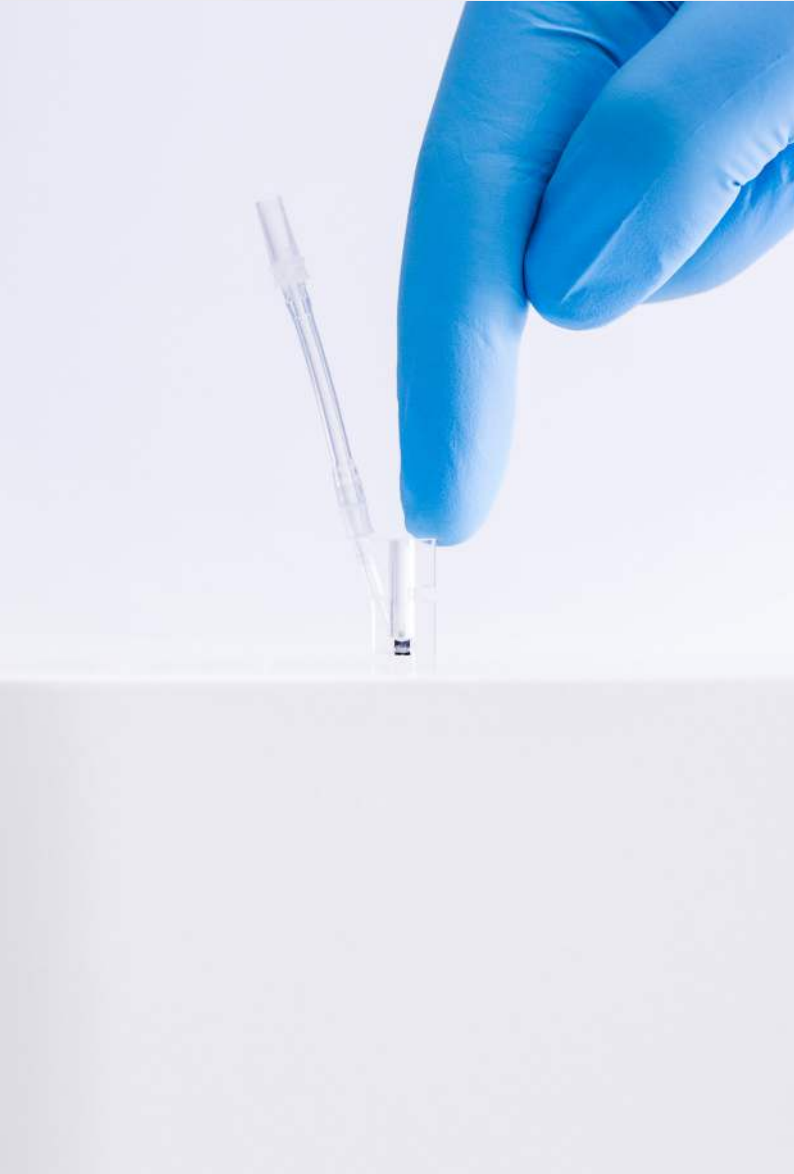
# Fully Enclosed Anaerobic Cell Isolation

The B.SIGHT has successfully and reliably isolated even the most sensitive samples, such as obligate anaerobes organisms. Thanks to its small footprint as well as low particle and heat emissions, the B.SIGHT can operate within an anaerobic chamber, thus opening the door for a simpler and more convenient isolation process. The B.SIGHT can also be fully controlled by a remote terminal outside the chamber.

## Automation

The B.SIGHT is tailored for automated workflows; its lid can be programmed to open and close automatically for a seamless integration with a robotic arm plate carrier. Additionally, previously established experiments can be saved as templates in order to make setting up future isolation runs quick and easy.







# Technical Specifications

Samples	Uncultured microbiota, cultured <i>E.coli</i> , yeast, etc.
Cell size	0.5 – 20 µm
Sorting	Cell morphology or fluorescence
Droplet volume	~50 pL
Substrate	96,384-well plates, PCR or single well for agar
Compatible plate height	Up to 27 mm (ex: low-profile deep-well plates)
Automated Offset Correction (AOC) for precise positioning of the single cells	Bottom imaging using 5x objective lens Optical resolution 2.2 µm
Nozzle imaging	Camera CMOS Magnification 20x Dual-channel: Brightfield and fluorescence
Fluorescence imaging	Ex. 488 nm Em. 504 - 596 nm
Processing times	Single-cell dispensing 96-well plate: ~ 3 min Single-cell dispensing 384-well plate: ~ 8 min
Cartridge	EASY.ON 20 µm disposable to avoid cross-contamination
Automation	Lid opening and closing Compatible with standard automation arm and gripper Compatible with third-party automation clients
Compatibility	Standard biosafety cabinets class 2, and anaerobic chambers
Power consumption ca.	200 W
Footprint	635 x 400 x 286 mm
Weight	40 kg
Net voltages	100 – 240 Vac
Embedded Computer	Windows
Certification	CE, CB, UL (TÜV), RoHS



# We create the future of health.



## CYTENA, A BICO COMPANY

CYTENA is a leading provider of high-precision instruments for isolating, dispensing, imaging, analyzing and handling biological cells. The company continues to build on the success of the single-cell dispensing technology it patented as a spin-off from the University of Freiburg, Germany, in 2014. Today, as part of BICO, the world's leading bio convergence 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 [www.cytena.com](http://www.cytena.com)

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