

lightcast

Envisia

Bring function
into focus



LIGHTCAST.BIO

A function-focused approach to single-cell screening

Drug discovery is a complex, costly, and resource-intensive process.

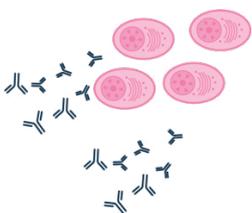
Traditional bulk methods often fail to capture cellular heterogeneity and dynamic biological processes – and even cutting-edge single-cell sequencing relies on indirect measurements of function, which limit its potential.

Enhance decision-making with functional data earlier in the discovery process

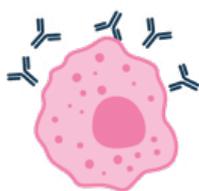
The Envisia platform combines droplet microfluidics, optical electrowetting-on-dielectric (oEWOD) technology, and machine learning to deliver function-focused candidate selection and dispensing, streamlining the workflow for off-platform single-cell sequencing.

Unlock deeper functional insights into the therapeutic potential of antibodies, cell therapies, and antibody-drug conjugates (ADCs).

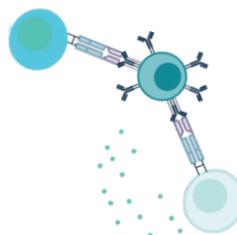
BIOMOLECULE SECRETION



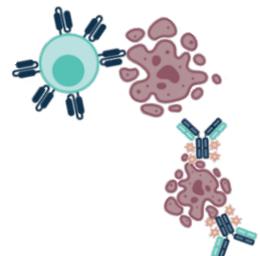
ANTIBODY BLOCKING



CELL-CELL INTERACTIONS

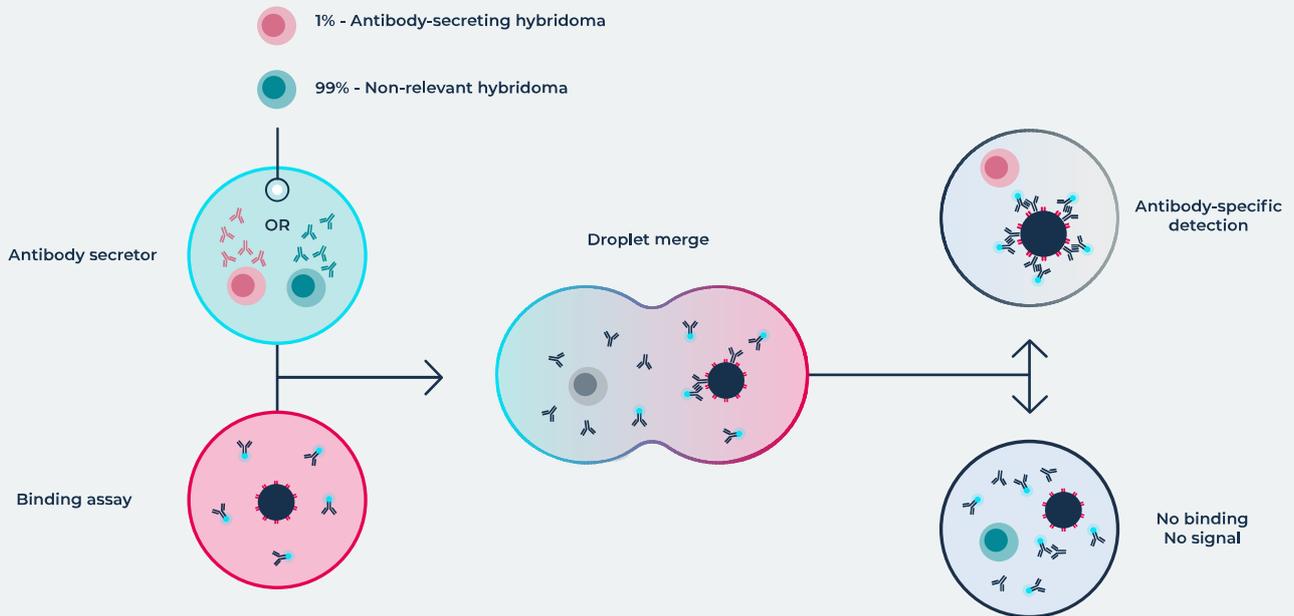


TARGET CELL KILLING



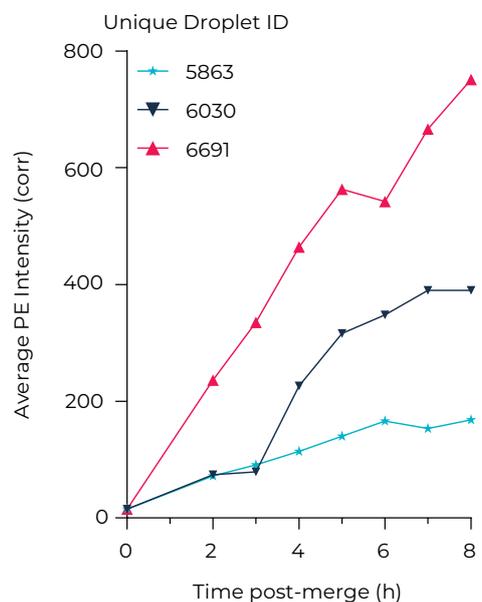
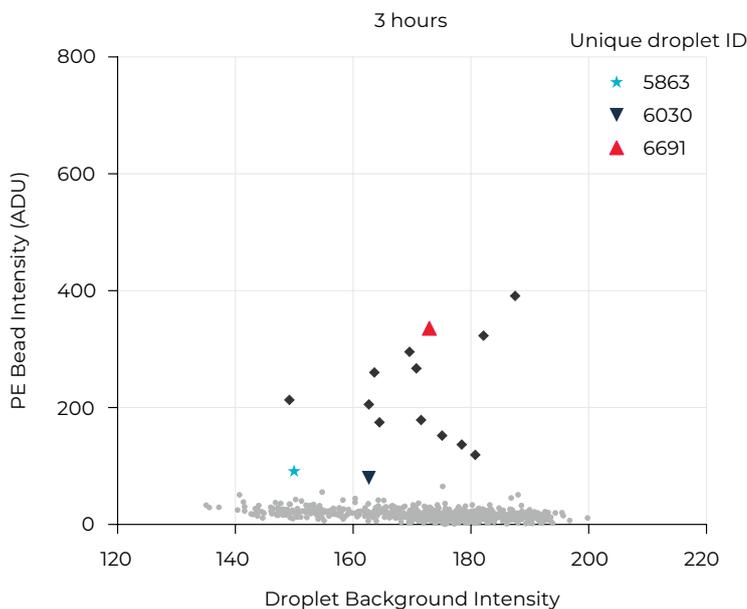
APPLICATIONS

The Envisia system dynamically manipulates droplets for single-cell encapsulation, reagent introduction, and complex multi-step functional assays, reducing the need for multiple workflows.



A 1% population of hybridomas targeting a relevant antigen was dropletised with a 99% irrelevant background. After merging with antigen-coated beads and a fluorescent secondary antibody, positive cells were detected by fluorescence. Of 1624 cells loaded, 15 out of 16 hits were identified within just 3 hours.

Fast hit identification, coupled with rapid recovery into 96-well plates, enables end-to-end antibody discovery in under a day, delivering unparalleled speed compared to other available platforms.



Envisia

ELEVATE YOUR SINGLE-CELL ANALYSIS WITH DIRECT FUNCTIONAL INSIGHT

Integrating cutting-edge hardware, intelligent software, and a specialised cartridge system to enable function-focused single-cell screening

INSTRUMENT

Multiple assays on a single platform

- Supports complex, multi-step functional assays within a unified platform surpassing traditional screening
- Automated imaging with brightfield & multi-colour fluorescence
- Dynamic, real-time monitoring of functional outputs



SOFTWARE

Intelligent & adaptive control



DESIGN

Quickly build powerful, flexible workflows via intuitive drag and drop interface for diverse applications



DRIVE

Set up, monitor, and automate your runs in real-time with complete control



DISCOVER

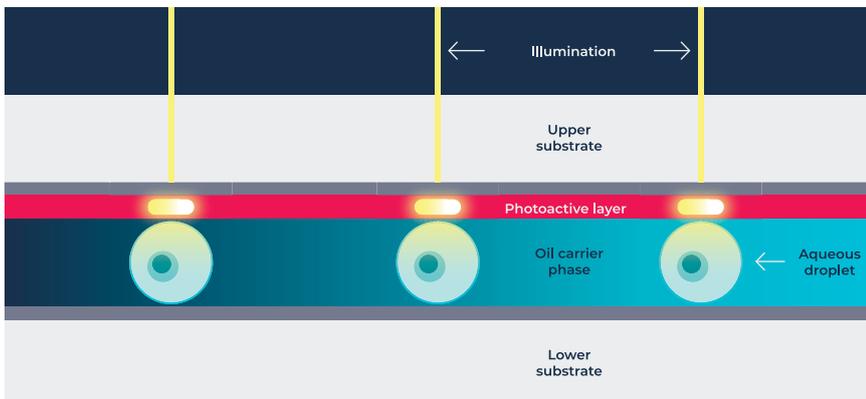
Visualise and analyse your single-cell data with an interactive user interface with flexible graphical outputs to suit your needs



CARTRIDGE

Engineered for complex functional screening

- Dynamically manipulates droplets for reagent introduction, cell isolation, arraying, merging, assaying and dispensing
- Multi-step experimental capabilities, allowing for sequential merging and iterative screening
- Cartridge-contained fluidics ensure a contamination-free workflow



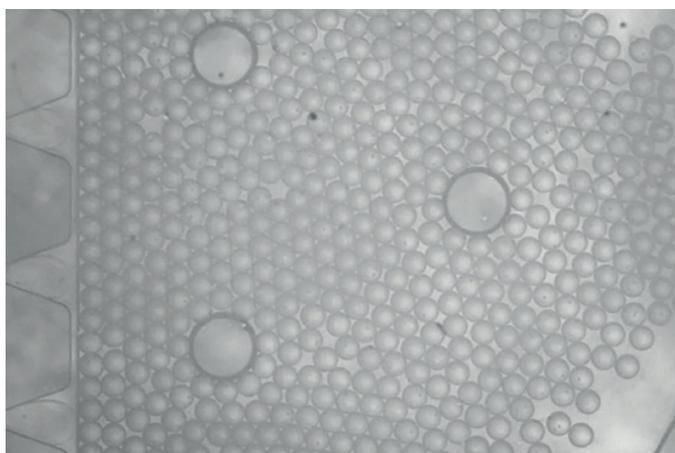


Technology

REDEFINE YOUR WORKFLOW

Lightcast's platform gives you precise control over droplet number, occupancy, location, and movement, enabling fully automated, end-to-end workflows.

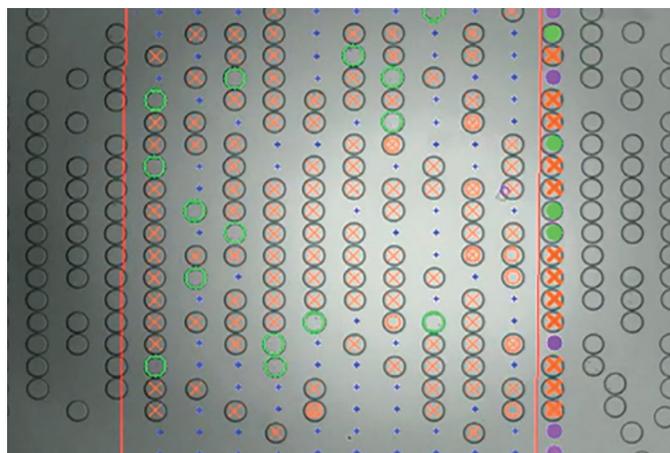
Designed for versatility, it supports a wide range of cell types, antibodies, and assays, seamlessly adapting to your experimental needs.



LOAD

Droplet generation & loading

- Rapidly generate millions of droplets containing content of interest – cells, reporters, reagents, and beads
- Minimal shear stress for fragile samples
- Multiple specific inputs to enable flexible experimental workflows with bespoke droplet contents



FILTER

Droplet acquisition & filtering

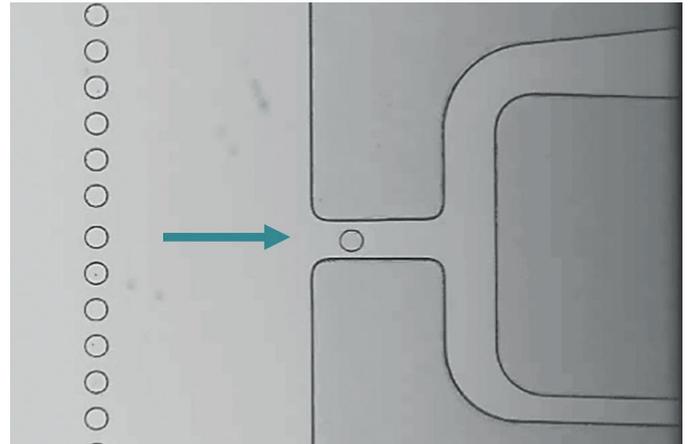
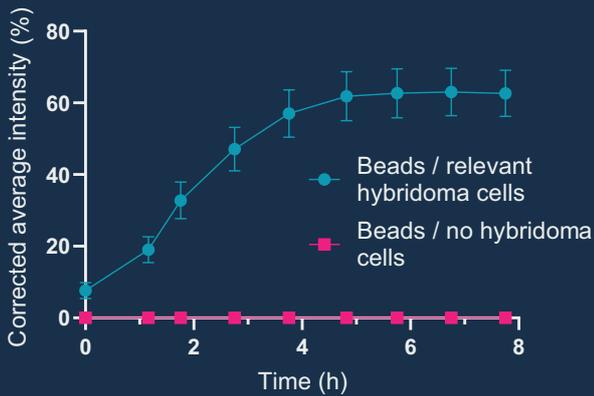
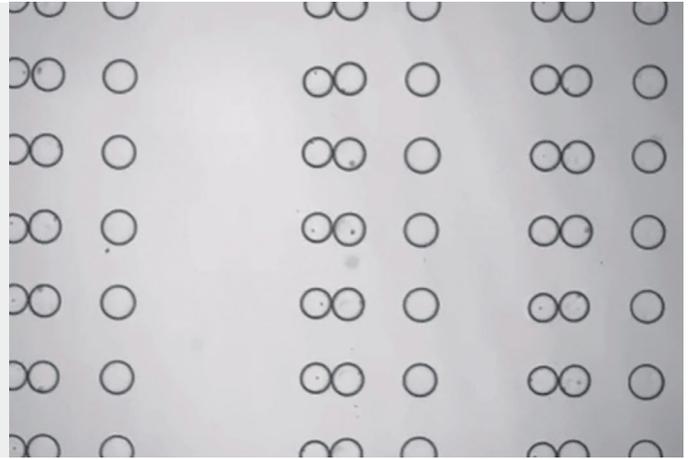
- Controlled droplets with light sprites for precise experimental control
- Filter droplets for size and content
- Overcome random cell distribution in droplets



MERGE

Droplet merging

- Merge samples by field of view or across the entire chip
- Massively parallel merging of interdigitated sample droplets
- Conduct experiments with multiple sequential merges



ASSAY

Sample assaying

- Define brightfield and fluorescence imaging according to experimental needs
- Identify and select hits with a broad range of functional reporters
- Process in real-time for down-selection, sequential processing, or dispensing



DISPENSE

Sample dispensing

- Dispense selected hits into 96-well plates in real time
- Single or pooled cell dispensing based on experimental design
- Trace each droplet digitally, from load to dispense
- Off platform sequencing to determine VHVL sequence

SEE THEM
IN ACTION

LOAD



FILTER



MERGE



ASSAY



DISPENSE



At Lightcast, we're dedicated to your success, providing expert support to help you maximise the potential of the Envisia platform.

Our team works closely with you to develop a tailored strategy for optimising your assay, ensuring seamless integration into your workflow and delivering reliable, high-quality results.

Specification overview for Envisia

IMAGING CAPABILITIES

- Brightfield
- Up to 4 fluorescence channels

EXCITATION/EMISSION RANGE (nm)

EXCITATION	EMISSION
378-52	450-70
457-50	520-28
550-49	624-40
630-69	719-60

DIMENSIONS

- 84cm/33" (W) x 63cm/25" (D) x 71cm/28" (H)
- Weight: 140kg/309lbs

OPERATIONAL REQUIREMENTS

- Temperature: 18°C - 25°C
- Humidity: 30% - 50% RH (non-condensing)
- Altitude: 0 - 2000m above sea level
- RJ45 ethernet connection

POWER REQUIREMENTS

- Voltage: 110-230V
- Frequency: 50-60Hz



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