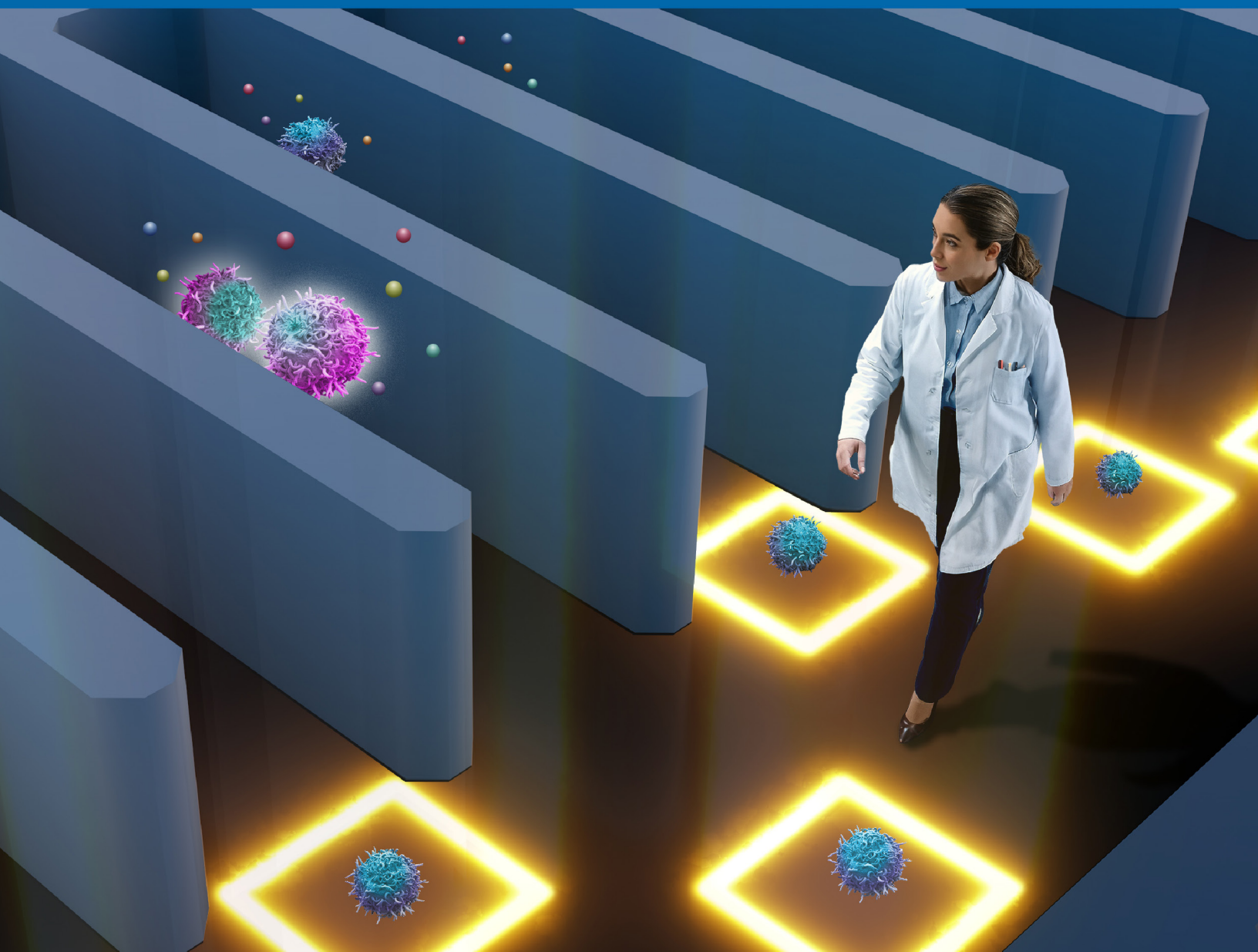




Beacon® Optofluidic Platform

Understand the Life of Single Cells



Revolutionizing Functional Live Single-Cell Insights

Traditional single cell tools focus on sequencing or static snapshots, missing the dynamic functional responses critical to understanding immune cell behavior, biomolecule secretion, and cell-cell interactions. The Beacon platform transforms single cell research by enabling multimodal and temporal live-cell functional analysis and seamlessly linking functional data to sequencing from the same single cell for deeper scientific breakthroughs.

Beacon: The Leader in Live Single Cell Functional Analysis

The Beacon instrument portfolio delivers deepest functional insights from live single cells, enabling unparalleled insights into immune profiling, cell therapy, cell line development, antibody discovery, antibody profiling, and CAR/TCR discovery. Trusted by 150+ leading academic, pharma, biotech, and CRO researchers, Beacon's impact is validated by 40+ peer-reviewed publications in immuno-oncology, infectious diseases, autoimmune disorders, and regenerative medicine.

Key Advantages

Exquisite Control

Build your own single-cell experiments with unparalleled precision

Highest Parameters on Chip

Conduct real-time imaging for serial multi-modal analysis on the same live cells

Infinite Possibilities off Chip

Identify and recover high-value cells to link on-chip phenotypic data with downstream sequencing

Automated Scalability

Analyze 500 to 80,000 single cells enabling analysis of precious clinical samples or performing high throughput screening

Key Specifications



Vast portfolio of functional assays for diverse applications



Rapid, automated workflow for increased efficiency



Brightfield and fluorescence live cell imaging for dynamic analysis



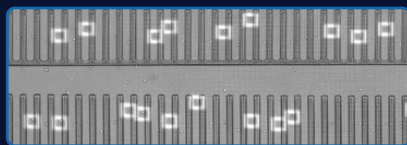
1 to 4 chips per run to match your research needs



Integrated data analysis and visualization tools

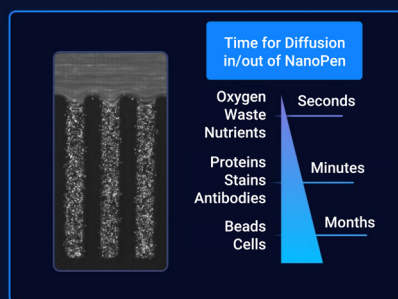
Powered by Optofluidic Technology

At the core of the Beacon Platform is the OptoSelect[®] chip, which combines nanofluidics and Opto-Electrical Positioning (OEP) technology, referred to as optofluidics.



Opto-Electrical Positioning (OEP) Technology

- Provides exquisite control of cells and beads
- Uses light to move cells around in OptoSelect chip and into the NanoPens[®]
- Allows for thousands of parallel single-cell experiments at once

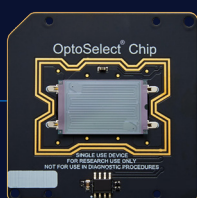


Nanofluidics and NanoPen[®] Horizontal Design

- Allows continuous media perfusion and rapid reagent exchange.
- Provides minimal disruption of the contents in the NanoPens while allows for exchange of oxygen, nutrients, and waste in and out of the NanoPens in a matter of seconds
- Keeps cells alive for days to weeks

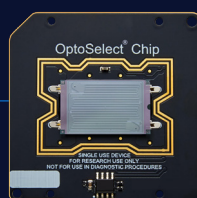
Adaptable High-Throughput Chips

The Beacon platform supports multiple chip configurations, running up to 4 chips simultaneously, seamlessly adapting to diverse workflows and applications.



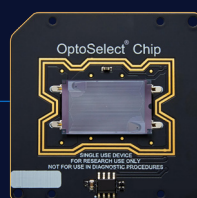
OptoSelect 1750b Chip

This chip has ~1,750 1.7 nL NanoPens that are ideal for longer term culture experiments including cell line development and adherent cell cloning.



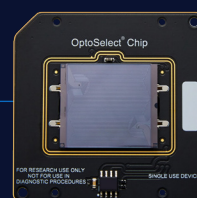
OptoSelect 3500 Chip

This chip has ~3,500 chambers with 0.75 nL NanoPens that enable some cell division and higher clone throughput.



OptoSelect 11K Chip

This chip has ~11,000 chambers with 0.32 nL NanoPens that are designed for scaling up your throughput of single cell screening.



OptoSelect 20K Chip

This chip has ~20,000 chambers with 0.32 nL NanoPens that are designed for the highest throughput of single cell screening.

The Beacon Platform Portfolio: Tailored solutions for every scale of single cell functional analysis and bioproduction

Each Beacon system is designed for offering specific levels of throughput and accessibility.

Beacon Discovery

An accessible and flexible benchtop instrument that runs 1 chip and analyzes up to 20,000 live single cells at a time.



Beacon Quest

A versatile medium-throughput instrument with in-build biosafety and the ability to run up to 2 chips and analyze up to 40,000 live single cells at once.



Beacon

A flagship, high-performance solution with unmatched throughput and application diversity. The system has the ability to run up to 4 chips and analyze 80,000 single cells at once.



Beacon Select for Cell Line Development

A specialized instrument for cell line development, ensuring contamination-free bioproduction workflows with positive-pressure biosafety. It is a 2-chip instrument with the ability to functionally characterize up to 3,500 cell line clones at once.



Comparison Guide: Choosing the Right Beacon System

	 Beacon Discovery	 Beacon Quest	 Beacon	 Beacon Select Cell Line Development
Maximum number of NanoPens per run	20,000	40,000	80,000	3,500
Chip capacity per run	1	2	4	2
Biosafety Containment	N/A	Negative pressure	Negative pressure	Positive pressure
Compatible Software	Cell Analysis Suite Software Wizard-based Interface Assay Analyzer Image Analyzer	Cell Analysis Suite Software Assay Analyzer Image Analyzer	Cell Analysis Suite Software Assay Analyzer Image Analyzer	Cell Analysis Suite Software Assay Analyzer Image Analyzer
Application and Assays	Antibody Discovery and Antibody Profiling: Affinity, Antigen specificity, Cross-reactivity, Ligand blocking, Membrane-bound antigen cell-binding T Cell Profiling: Cytokine analysis, Surface marker staining, Cytotoxicity, Phenotyping	Antibody Discovery: Affinity, Antigen specificity, Cross-reactivity, Ligand blocking, Membrane-bound antigen cell-binding T Cell Profiling: Cytokine analysis, Surface marker staining, Cytotoxicity, Phenotyping	Antibody Discovery: Affinity, Antigen specificity, Cross-reactivity, Ligand blocking, Membrane-bound antigen cell-binding Cell Line Development: Monoclonality, Growth, Productivity, Quality, Stability T Cell Profiling: Cytokine analysis, Surface marker staining, Cytotoxicity, Phenotyping	Cell Line Development: Monoclonality, Growth, Productivity, Quality, Stability
Suitability	Accessible solution for academic labs and Biotech R&D	Balances functionality with cost-effectiveness, ideal for mid-size pharma, biotech, CROs and academia	Premium product, ideal for large biopharma groups, and top-tier CROs	Focused functionality for pharma / biopharma CLD, and CDMOs

A Breadth of Applications

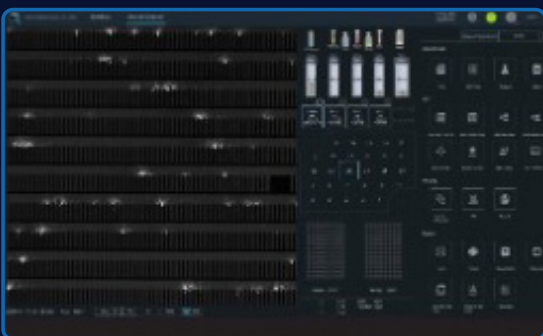
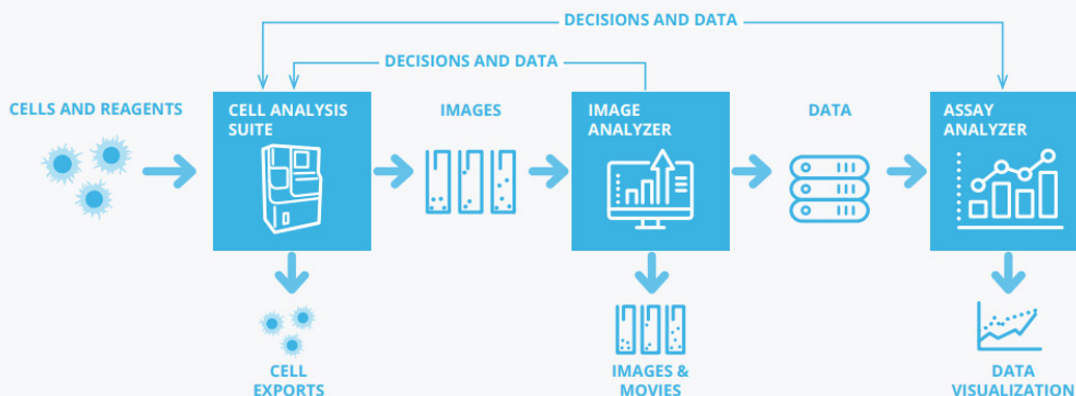
- ✓ Preferred platform
- + Compatible platform



		Beacon Discovery	Beacon Quest	Beacon	Beacon Select Cell Line Development
Immune Profiling	Immune cell profiling	✓	✓	✓	
	Functional TCR/ CAR sequences discovery	✓	✓	✓	
	Tumor infiltrating lymphocyte functionality	✓	✓	✓	
	Comparison of adoptive cell therapy products	+	✓	✓	
Antibody Research	Oncology tumor associated antigen / antibody discovery	✓	✓	✓	
	Therapeutic antibody discovery	+	✓	✓	
	Diagnostic antibody discovery	+	✓	✓	
	Vaccine development	+	✓	✓	
	Difficult Targets for antibody discovery	+	+	✓	
	Antibodies discovery	+	+	✓	
	AI model for antibody design	+	+	✓	
	Antibody profiling	✓	+	+	
	Reagent antibody discovery	✓	+	+	
Cell Line Development for Research		✓	✓	✓	✓
Cell Line Development for Bioproduction					✓

Cellular Analysis Suite: Powerful Software to Empower Live Single Cell Functional Analysis

The Cell Analysis Suite (CAS[®]) is powerful software designed specifically for the Beacon platform, enabling researchers to customize and automate single-cell workflows. Tailor your data insights to specific research needs, whether for antibody discovery, cell line development, T cell profiling or adoptive cell therapy.



Fully Customizable for Every Workflow

The Cell Analysis Suite software simplifies the Beacon platform workflows without compromising on detail or precision. Gain access to predefined workflow templates designed to effortlessly run standard procedures for cell line development, antibody discovery, and cell therapy development. You can also adjust these predefined workflows and reload previously modified ones as new insights and optimizations emerge.



Deep Data Analysis

The Cell Analysis Suite software offers both automated and manual image analysis tools, enabling users to explore and interpret data as it is generated in real-time. The Target and Pen Selection features allow users to make informed decisions based on both fluorescent and morphological properties of single cells over time. Automated machine learning algorithms streamline tasks such as cell counting, assay bloom detection, and image segmentation. Make complex data easier to understand and act upon by using UMAPs to simplify multi-dimensional functional analysis.

Beacon Platform Specifications



Beacon, Beacon Quest, Beacon Select

Beacon Discovery

	Beacon, Beacon Quest, Beacon Select	Beacon Discovery
Import	Recommended input density • 1e5 – 7e6 cells/mL Formats • 1.5 mL Eppendorf tubes • 0.2mL PCR tubes • Std. Height (up to 16 mm) 96-well microtiter plates	Recommended input density • 1e5 – 1e7 cells/mL (application dependent) Formats • Std. Height (up to 16 mm) 96-well microtiter plates
Fluorescence Capabilities	• Brightfield • Up to 5 colors • Standard configuration DAPI: Ex: 370 – 410 nm / Em: 429 – 475 nm FITC: Ex: 450 – 500 nm / Em: 515 – 565 nm PE: Ex: 540 – 557 nm / Em: 576 – 596 nm Tx Red: Ex: 542 – 582 nm / Em: 604 – 644 nm Cy5: Ex: 608 – 648 nm / Em: 672 – 712 nm	• Brightfield • Up to 4 colors • Standard configuration DAPI: Ex: 370 – 410 nm / Em: 429 – 475 nm FITC: Ex: 450 – 500 nm / Em: 515 – 565 nm PE: Ex: 540 – 557 nm / Em: 576 – 596 nm Cy5: Ex: 608 – 648 nm / Em: 672 – 712 nm
Culture	• Customer defined media • Per chip temperature control: 18°C to 40°C	• Customer defined media • Per chip temperature control: 18°C to 40°C
Cell Types	CHO, plasma B cells, memory B cells, T cells, hybridoma cells, primary cells, adherent cells, others	

Resources

For more information about how the Beacon platform can advance your research, explore these helpful resources.

[Speak to Specialist](#)



[Publications](#)



[Support Portal](#)



[Product Literature and
Resource Library](#)



For more information, visit

[BrukerCellularAnalysis.com](https://brukercellularanalysis.com)



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