

Function you can see.

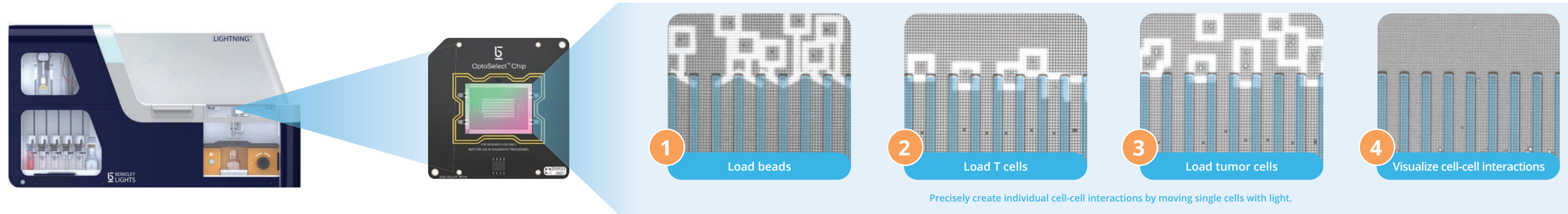


LIGHTNING™

Optofluidic Platform with
T Cell Phenotype & Cytokine Assay



Directly link phenotype and function to genotype



Identifying T cell functional signatures is long and laborious.

Complex processes require you to average individual cell behaviors and draw conclusions from surrogate measurements collected on multiple platforms.



Digital Cell Biology changes this.

The Lightning optofluidic platform lets you directly visualize the phenotype and function of 100s to 1000s of individual T cells in just days.

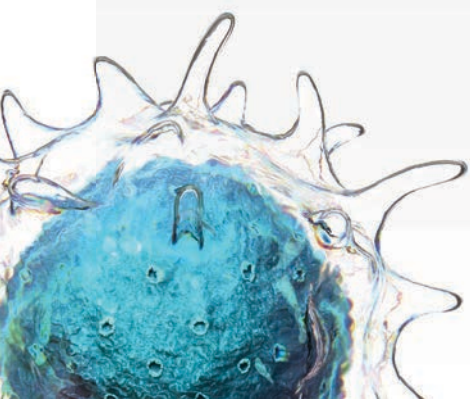
VISUALIZE DIVERSE CELL INTERACTIONS

The Lightning platform lets you precisely build hundreds of individual cell-cell interactions to perform highly controlled experiments that isolate and investigate individual cell function.

This can be applied across many types of experiments including CAR-T construct screening and validation, antigen or TCR discovery and validation, as well as investigation of helper or regulatory T cell function.

Possible interactions:

- CAR-T cell + Target cell expressing antigen
- Pan T cell + T2 antigen presenting cell
- CD8+ T cells + Dendritic cell presenting antigen
- CD4+ T cells + B cell presenting antigen
- CD8+ T cells + Treg cell



MEASURE INDIVIDUAL CELL CYTOTOXICITY

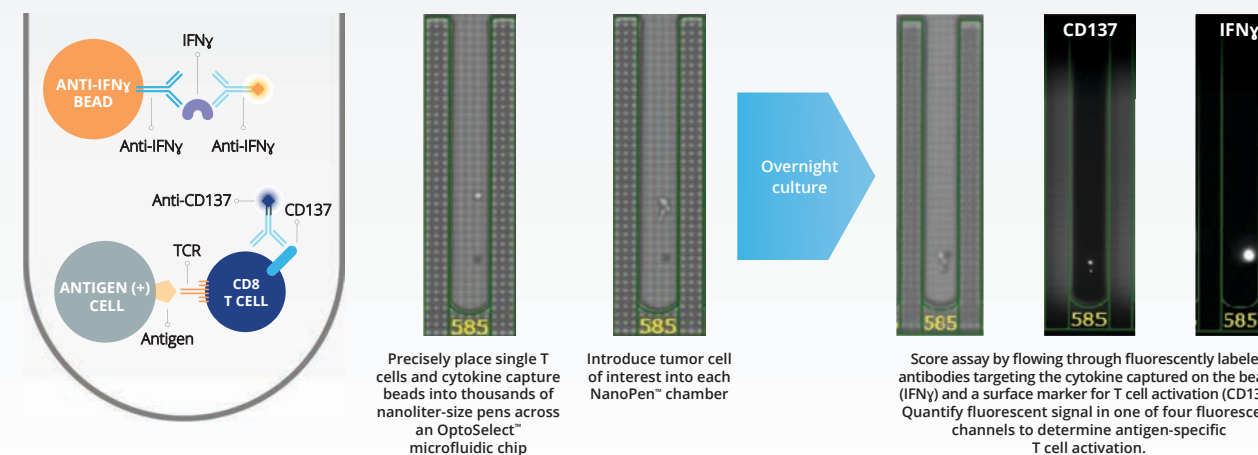
Directly measuring T cell cytotoxicity is challenging and generally accomplished by correlating indirect ELISA measurements and target cell proliferation rates.

The Lightning enables you to directly measure the activation phenotype (CD137) and the function (IFN γ secretion) of individual T cells of interest.

This lets you:

- Rapidly catalog individual T cell variability
- Perform direct tumor killing (coming soon)
- Simplify cytotoxicity measurements
- Run multiplex cytokine assays (coming soon)

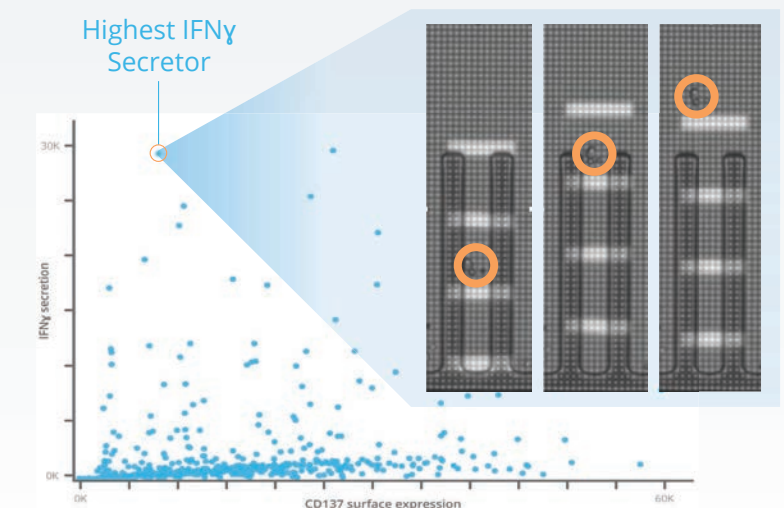
T Cell Phenotype and Cytokine Release Assay



RECOVER CELLS OF INTEREST, ALIVE

You've spent time, energy, and resources profiling your T cell population. With the Lightning platform, you can recover the most interesting cells for further characterization.

Visualize and evaluate your cells and data in our Assay Analyzer software and recover the best cells that meet your export criteria. You can individually unload any single NanoPen on the chip or group single cells with similar phenotypes and function for export into a single well of a well plate for downstream analysis.



LIGHTNING platform capabilities

FEATURES

FEATURES	<ul style="list-style-type: none">• Single optofluidic chip with 1500 NanoPen chambers• Manual sample import/export loading• Automated, on-board culturing, imaging, assay, and OEP capabilities• Four color channels plus brightfield imaging for assay development• Patented Berkeley Lights suite of automation and analysis software tools, including Cell Analysis Suite (CAS) and Assay Analyzer
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APPLICATIONS	T-Cell Functional Analytics, Phenotypic & Fluorescent screens
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ASSAYS	Single cell IFN γ cytokine secretion assay Single T cell surface staining protocol (CD8 & CD137) Open platform model for developing unique multi-channel fluorescent assays
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CELL TYPES	Human primary T cells, T2, K562, hybridoma, CHO K-1, DG44, CHO-S, primary cells, and many others
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SPECIFICATIONS

IMPORT FORMAT	Recommended input density: 1e5 - 5e6 cells/mL Formats: 1.5 mL tubes, 0.2 mL PCR tubes, or 96 well microtiter plates
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FLUORESCENCE CAPABILITIES	DAPI: Ex: 370 – 410 nm / Em: 429 – 475 nm FITC: Ex: 469 – 494 nm / Em: 512 – 527 nm PE: Ex: 540 – 557 nm / Em: 576 – 596 nm TxRed: Ex: 542 – 582 nm / Em: 604 – 644 nm Cy5: Ex: 608 – 648 nm / Em: 672 – 712 nm Brightfield Illumination
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CULTURE	Customer-defined media for culturing at 20°C – 40°C
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EXPORT FORMAT	Manual well plate placement with automated fluidic export
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INPUTS

POWER	Dedicated 110 – 240 V AC, 50 – 60 Hz, 15A circuit
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GAS SUPPLY	5% CO $_2$: 20 – 120 psi and 100% CO $_2$: 20 – 120 psi
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AIR FILTER	MERV8 (No HEPA filtering)
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OTHER	Ethernet
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ENVIRONMENTAL CONTROL	Temperature: 64 – 79°F (18 – 26°C) Humidity: 20 – 60%
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ALTITUDE	<6,500 ft (2,000 m)
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ATTRIBUTES

DIMENSIONS	46.5 in W x 27.5 in D x 28.25 in H (118 cm W x 70 cm D x 72 cm H)
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WEIGHT	Shipping weight: 700 lb (317 kg) Instrument weight: 286 lb (130 kg) Computer and accessories: 37 lb (17 kg)
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