

isoplexis

# isospark

SMALL. POWERFUL. AUTOMATED.

isoplexis



isospark

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# Superpowered Functional Proteomics for Every Lab

Discover the right system for your lab's throughput and immune landscaping needs.

## isospark

A personalized proteomics system for any lab

18.0"



## isolight

A high capacity instrument enabling higher throughput

28.5"



## isospark duo

An advanced setup for complete functional immune landscaping

18.0"

18.0"



# isospark

## Tech Overview

A personalized proteomics system for any lab.

### 18 in

Footprint

### Superpowered

Unique Applications

### 4 Chips

Throughput

### Automated

Walk-away Proteomic Workflow



# Intuitive Design

Elegantly designed with an intuitive user interface for ease-of-use and simplicity, completely automated for walk-away proteomics.



## Reagent Bay

Load your reagents with a single-use cartridge for ultimate ease-of-use.



## LED Status Bar

Instantly know the status of your experimental run with a quick glance.



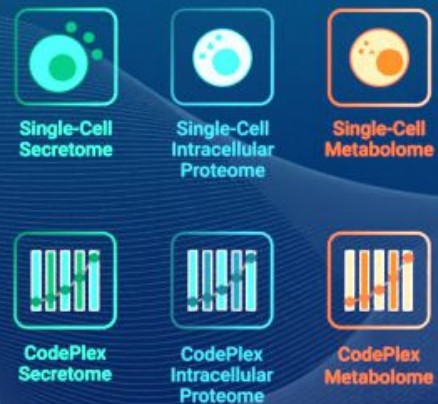
## Touch Screen UI

Award winning ease-of-use, now available on the IsoSpark.



plexis

k<sup>®</sup>



Version 2.6.0

spark

# Engineering Innovations

Combining superpowered innovations into a system with just 18 inches in footprint for ease-of-use and same day insights.



## Software-Enabled Optics

Multi-colored lasers enable sensitive and precision imaging of each cell via surface fluorescence, enabling quantitative detection of proteins associated with each single cell.



## Fluidics-Enabled Flow Cells

Our fluidics-enabled flow cell allows us to deliver the highest quality ELISA reagents with uniform flow in a completely hands-off manner, maximizing consistency.



## Deep Hardware Connection with the Software

Access the most efficient lab collaboration tool with advanced figures and export features that help drive decisions across the organization.



# Functional Immune Landscaping

**Unique Superpowered Biology:** Detect subsets of superpowered immune cells

**Uniquely Predictive:** 50+ uniquely correlative data sets

**Gold Standard:** Leading tool for single-cell multiplexed cytokine profiling

**Highly Multiplexed:** Targets 30+ cytokines, per immune cell

**Fully Automated ELISA Workflow**

**Consistent:** 20% CV

**Sensitive:** ~2-2000pg/ml

**Widely Published in Biomarkers & Discovery**



## SINGLE-CELL SECRETOME

### Human Adaptive Immune

Granzyme B, IFN- $\gamma$ , MIP-1 $\alpha$ , Perforin, TNF- $\alpha$ , TNF- $\beta$ , GM-CSF, IL-2, IL-5, IL-7, IL-8, IL-9, IL-12, IL-15, IL-21, CCL11, IP-10, MIP-1 $\beta$ , RANTES, IL-4, IL-10, IL-13, IL-22, TGF $\beta$ 1, sCD137, sCD40L, IL-1 $\beta$ , IL-6, IL-17A, IL-17F, MCP-1, MCP-4

### Non-Human Primate Adaptive Immune

TNF- $\alpha$ , MCP-1, IL-2, IL-4, MIP-1 $\beta$ , IL-6, IL-8, IL-1 $\beta$ , RANTES, IFN- $\gamma$ , IP-10, MIP-1 $\alpha$ , MIF, GM-CSF

### Mouse Adaptive Immune

Granzyme B, IFN- $\gamma$ , MIP-1 $\alpha$ , TNF- $\alpha$ , GM-CSF, IL-2, IL-5, IL-7, IL-12p70, IL-15, IL-18, IL-21, sCD137, CCL11, CXCL1, CXCL13, IP-10, RANTES, Fas, IL-4, IL-10, IL-13, IL-27, TGF $\beta$ 1, IL-6, IL-17A, MCP-1, IL-1 $\beta$

### Human Innate Immune

IFN- $\gamma$ , MIP-1 $\alpha$ , TNF- $\alpha$ , TNF- $\beta$ , GM-CSF, IL-8, IL-9, IL-15, IL-18, TGF- $\alpha$ , IL-5, CCL11, IP-10, MIP-1 $\beta$ , RANTES, BCA-1, IL-10, IL-13, IL-22, sCD40L, IL-1 $\beta$ , IL-6, IL-12-p40, IL-12, IL-17A, IL-17F, MCP-1, MCP-4, MIF, EGF, PDGF-BB, VEGF

### Human Inflammation

GM-CSF, IFN- $\gamma$ , IL-2, IL-12, TNF- $\alpha$ , TNF- $\beta$ , IL-4, IL-5, IL-7, IL-9, IL-13, CCL11, IL-8, IP-10, MCP-1, MCP-4, MIP-1 $\alpha$ , MIP-1 $\beta$ , RANTES, IL-10, IL-15, IL-22, TGF- $\beta$ 1, IL-1 $\beta$ , IL-6, IL-17A, IL-17F, IL-21, Granzyme B, Perforin, sCD40L, sCD137



# Intracellular Signaling Omics

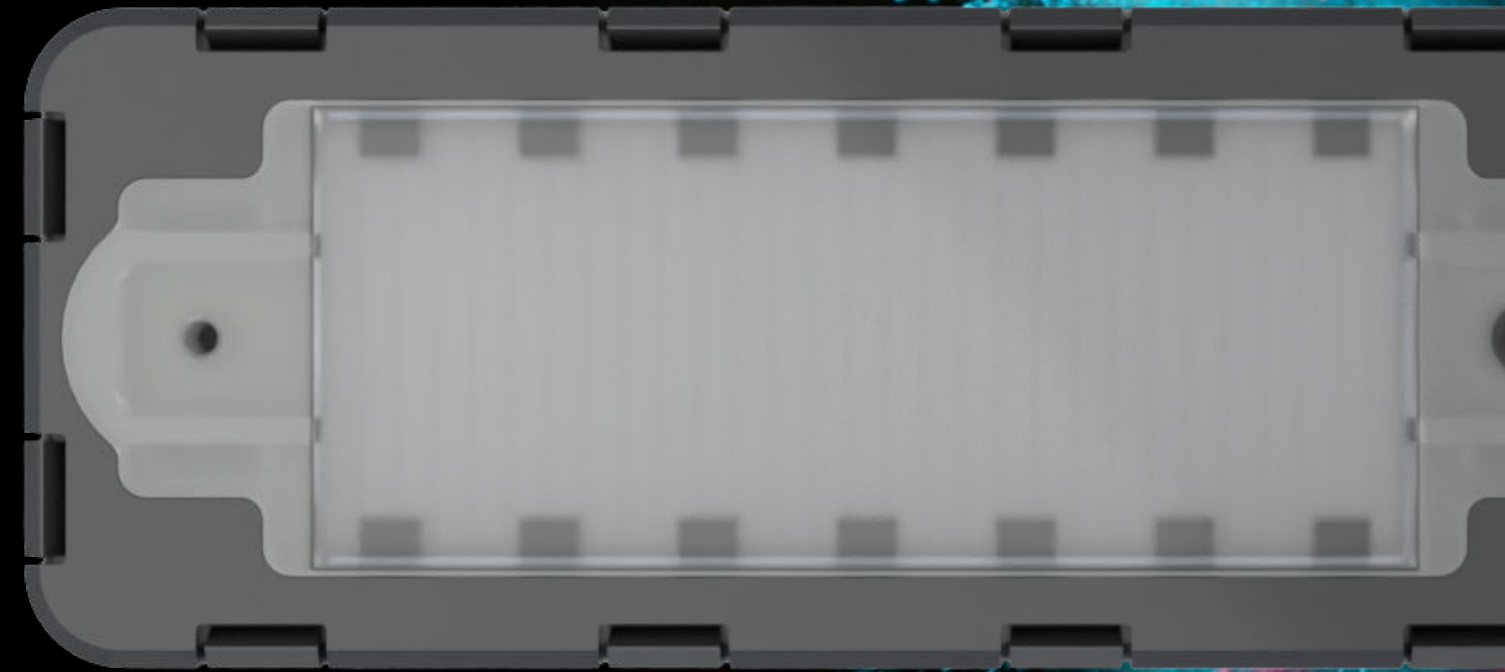
**Identify Adaptive Signaling Networks:** Accelerate development of targeted therapies to overcome resistance & metastases

**Highly Multiplexed per Cell:** Targets 15+ intracellular proteins from each cell

**Pathways Revealed:** See multiple coordinated protein pathways engaged for first time

## Fully Automated Proteomics Workflow

**Published:** In a variety of peer-reviewed journals & indication types



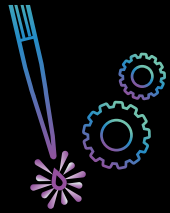
## SINGLE-CELL INTRACELLULAR PROTEOME

### Tumor Signaling Panel

P-PRAS40, P-IkBa, P-NF-k $\beta$  p65, P-Met, P-p44/42 MAPK, P-S6 Ribosomal, P-Rb, P-p90RSK, P-STAT3, P-MEK1/2, P-Stat1, P-Stat5, P-eIF4E, Cleaved PARP, Alpha Tubulin

### Adaptive Immune Panel (Coming Summer 2021)

P-Akt, P-p53, P-PD1, P-LCK, P-CD3 zeta, P-Zap70, P-CCR7, P-CD28, P-41BB, P-MEK 1/2, P-P44/42 MAPK (ERK1/2), P-Jak1, P-Jak2, P-AMPK, P-PI3K, P-mTOR, P-P21, P-LAT, P-NF-kB p65, Alpha Tubulin



# High-Plex Walk-Away Immunoassays

**Highly Multiplexed:** Targets 20-30+ cytokines

**Uniquely Fully Automated for High Multiplexing:**  
5 minutes of hands-on time

**Uniquely Small Sample Volume:** 11 uL per sample  
(for replicates)

**Highly Consistent:** <20% CV

**Modular:** 8-64 samples per run = less waiting to  
amass samples

**Widely Published with Many Applications**

## CODEPLEX INTRACELLULAR PROTEOME

### Tumor Signaling Panel (Coming Spring 2021)

P-PRAS40, P-IkBa, P-NF-kB p65, P-Met, P-p44/42 MAPK, P-S6 Ribosomal, P-Rb, P-p90RSK, P-STAT3, P-MEK1/2, P-Stat1, P-Stat5, P-eIF4E, Cleaved PARP, Alpha Tubulin

### Adaptive Immune Panel (Coming Summer 2021)

P-Akt, P-p53, P-PD1, P-LCK, P-CD3 zeta, P-Zap70, P-CCR7, P-CD28, P-41BB, P-MEK 1/2, P-P44/42 MAPK (ERK1/2), P-Jak1, P-Jak2, P-AMPK, P-PI3K, P-mTOR, P-P21, P-LAT, P-NF-kB p65, Alpha Tubulin



## CODEPLEX SECRETOME: Selected Panel Menu

### Human Adaptive Immune

GM-CSF, Granzyme B, IFN- $\gamma$ , IL-2, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-13, IL-15, IL-17A, IP-10, MCP-1, MIP-1 $\alpha$ , MIP-1 $\beta$ , Perforin, sCD137, TGF- $\beta$ 1, TNF- $\alpha$ , TNF- $\beta$

### Non-Human Primate Adaptive Immune

TNF- $\alpha$ , MCP-1, IL-2, IL-4, MIP-1 $\beta$ , IL-6, IL-8, IL-1 $\beta$ , RANTES, IFN-g, IP-10, MIP-1 $\alpha$ , MIF, GM-CSF

### Mouse Adaptive Immune

GM-CSF, IFN- $\gamma$ , IL-1 $\beta$ , IL-2, IL-4, IL-5, IL-6, IL-10, IL-12, IL-17A, IP-10, KC, MCP-1, MIP-1 $\alpha$ , RANTES, TNF- $\alpha$

### Human Innate Immune

EGF, GM-CSF, Granzyme B, IFN- $\gamma$ , IL-1 $\beta$ , IL-4, IL-6, IL-7, IL-8, IL-10, IL-15, IP-10, MCP-1, MIP-1 $\alpha$ , MIP-1 $\beta$ , PDGF-BB, sCD137, TGF- $\beta$ 1, TNF- $\alpha$ , VEGF

### Human Cytokine Storm Panel

GM-CSF, IFN- $\gamma$ , IL-2, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-13, IL-17A, IP-10, MCP-1, MIP-1 $\alpha$ , MIP-1 $\beta$ , Perforin, TGF- $\beta$ 1, TNF- $\alpha$

### Cancer Signaling (Coming Spring 2021)

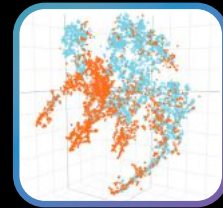
CXCL5, GM-CSF, IFN- $\gamma$ , IL-1 $\alpha$ , IL-1 $\beta$ , IL-2, IL-4, IL-6, IL-8, IL-10, IL-15, IL-17A, MCP-1, MIP-1 $\alpha$ , MIP-1 $\beta$ , RANTES, TGF- $\beta$ 1, TNF- $\alpha$

### Stem Cell Signaling (Coming Spring 2021)

EGF, IFN- $\gamma$ , IL-1 $\alpha$ , IL-1 $\beta$ , IL-2, IL-4, IL-5, IL-6, IL-7, IL-10, IL-12, IL-13, MCP-1, MIF, PDGF-BB, RANTES, TNF- $\alpha$ , VEGF

# IsoSpeak Software

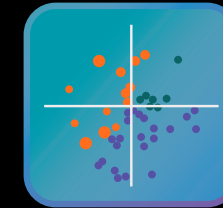
Same-day visualizations and insights.



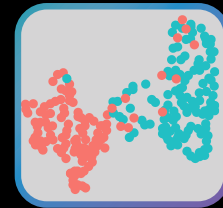
**t-SNE**  
High-Dimensional Single-Cell Mapping



**PF Heatmap**  
Uncover Critical Cells and Subpopulations



**PAT PCA**  
Stratify Donor/Patient Response



**UMAP**  
Highlight Differences in High Dimensional Datasets



**PF OVERVIEW**  
Reveal the Polyfunctionality of Your Samples



**PSI**  
Reveal the Potency of Different Immune Cell Types

The screenshot displays the IsoSpeak software interface. At the top, there is a navigation bar with icons for 'iso speak', 'MAIN MENU', 'IMPORT', 'PROJECT INFO', 'DATA PROCESSING', 'DATA TABLES', 'DATA BIOMARKER ANALYSIS', 'EXPORT', and 'SAVE'. Below this is a 'SELECT OPTIONS' section with 'FILTER SELECTION', 'GRAPH OPTIONS', and 'EXPERIMENT SELECTION'. A 'SELECT GRAPH TYPE' section offers various visualization options: 'SECRETION LEVELS', 'SIGNAL DISTRIBUTION', 'PF OVERVIEW', 'PF INDEX', 'PF GROUPS', 'PF HEATMAP', 'PAT PCA', 'T-SNE', 'STANDARD CURVES', and 'ZOOM'. The main interface is divided into several sections: 'GENERAL' (NO CELLS, SINGLE-CELL, TWO-CELL, CLEAR SELECTED, SELECT ALL, AVERAGE REPLICATES), 'STIMULATION' (UNLABELED, CD19, NGFR, CLEAR, ALL, AVERAGE), 'SELECT OPTIONS' (UNLABELED, D0001, D0002, D0003, D0004, D0005, D0006, CLEAR, ALL, AVERAGE), 'DONOR GROUPS' (UNLABELED, NONRESPONDER, RESPONDER, CLEAR, ALL, AVERAGE), 'MARKERS' (UNLABELED, CD4+, CD8+, CLEAR, ALL, AVERAGE), and 'CYTOKINES' (CCL-11, GM-CSF, GRANZYME B, IFN-g, IL-10, IL-12, IL-13, IL-15, IL-17A, IL-17F, IL-1B, IL-2, IL-21, IL-22, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IP-10, MCP-1, MCP-4, MIP-1A, MIP-1B, PERFORIN, RANTES, TGF-b1, TNF-a, TNF-b, sCD137, sCD4DL, Clear, Secreting, All). The central part of the interface shows a grid of t-SNE plots for various cytokines: GM-CSF, Granzyme B, IFN-g, IL-10, IL-17A, IL-2, IL-22, IL-4, IL-5, IL-8, IL-9, MCP-1, MIP-1a, MIP-1b, Perforin, and TNF-a. The plots are organized into rows for 'Non-Responder' and 'Responder' groups.

# IsoSpark System Specifications

## Working Environment

For indoor use only  
Operating temperature: +15°C ~ +30° C (59°F ~ 86°F)  
Humidity: 20% ~ 80% non-condensing  
Altitude: < 6,500 ft (2,000 m)

## Dimensions

Width: 18 in (45.7 cm)  
Height: 19.8 in (50.3 cm)  
Depth: 19.7 in (50.0 cm)

## Weight

Crated for shipping: 140 lb (63.5 kg)  
Free standing: 95.5 lb (43.4 kg)

## Bench Size

Width: > 30 in (76 cm)  
Depth: > 23.7 in (60.2 cm)

## Clearance

Front: > 4 in (10 cm)  
Rear: > 4 in (10 cm)  
Left: > 12 in (30 cm)  
Right: > 12 in (30 cm)  
Height: > 12 in (30 cm)

## Power Supply

Voltage: 100 V (min) to 240 V (max)  
Current: 6.3 A (max)  
Frequency: 50/60 Hz

## Gas Supply

Connection: 0.25 in or 4 mm OD  
push to connect tubing  
Pressure: 30-70 PSI  
Composition: Carbon dioxide (CO2)  
at > 99% purity

## User Interface

11 in LCD multi-touch screen

## Connection

Ethernet: 1xGigE  
USB: 3x USB 3.0, 2 front & 1 rear cable

## Contact Us

info@isoplexis.com | 203.500.9350  
Visit us at [Isoplexis.com](https://www.isoplexis.com) for more information

# Performance Specifications

## Consumables

Up to 4 disposable **IsoCode®** or **CodePlex®**  
Chips per run with barcode tracking

## Reagents

Disposable one-time use reagent cartridge

## Cell Counts

500-1500 targeted single cells per chip  
2000-6000 targeted cells per run with 4 chips

## Throughput

Over 30-plex functional cytokines per isolated single cell  
Over 150,000 single cell, secreted protein data points per run

## Hands-On Time

< 3 min per sample (cell preparation time not included)

## Run Time

< 24 hours from sample loading to results

## On-Board Incubator

Temperature: 37 ± 2°C  
CO2 Concentration: 5 ± 1%

## Laser Wavelengths

405 nm, 473 nm, 638 nm

## Software Solutions

**IsoSpeak®** data analysis software  
Operating System: PC

For research use only. Not for use in diagnostic procedures.  
Individual components cannot be sold or used separately.

704-00091-01 REV 1.2



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