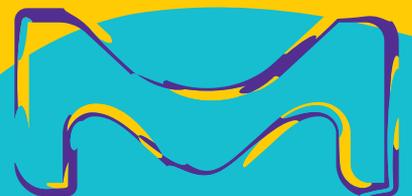


# AMNIS<sup>®</sup> IMAGING FLOW CYTOMETERS

Microscopy in Flow



The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.



# spanning the research disciplines in the life sciences

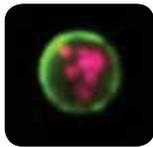
**Microscopy** offers detailed cellular images and morphologic information, which are useful scientific tools for the study of cell function. However, the interpretation of microscopy images can be subjective, qualitative, and laborious.

**Flow cytometry** is excellent for quantitative phenotyping and yields statistically robust results by rapidly interrogating large numbers of cells. However, flow cytometry lacks any ability to image, so sub-cellular localization and functional studies are difficult at best.

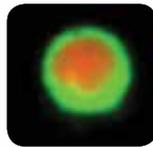
By combining the speed, sensitivity, and phenotyping abilities of flow cytometry with the detailed imagery and functional insight of microscopy, the ImageStream<sup>®X</sup> MKII and FlowSight<sup>®</sup> instruments overcome the limitations of both techniques and open the door to an extensive range of novel applications.



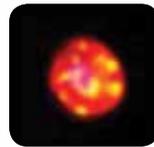
**Immunology**



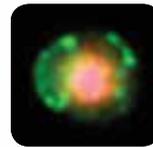
**Oncology**



**Biochemistry**



**Drug Discovery**



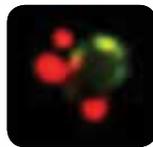
**Stem Cell  
Biology**



**Hematology**



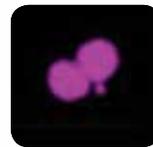
**Microbiology**



**Virology**



**Nanotechnology**



**Toxicology**



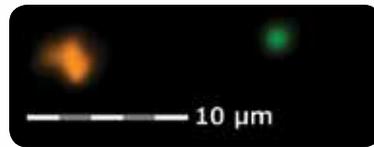
**Parasitology**



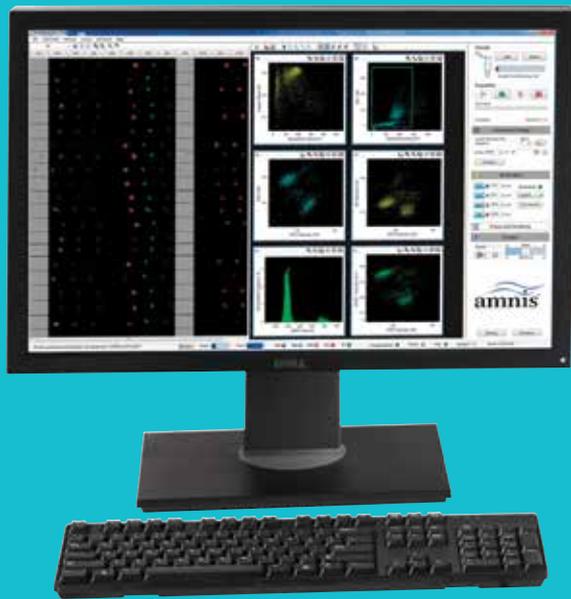
**Oceanography**



**Phycology**



**Small Particle Analysis**



## FlowSight® Imaging Flow Cytometer

**Capable:** Applicable to every research discipline

**Sensitive:** Camera-based detection dramatically increases resolution over traditional flow cytometry

**Affordable:** Smaller footprint with configurations for any lab focus and budget

**Powerful:** Characterizes populations by virtually any visual or fluorescent attribute

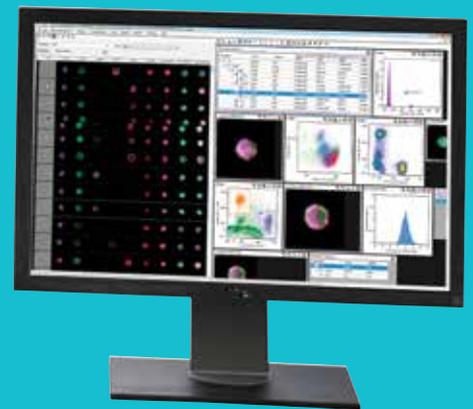
# ImageStream<sup>®X</sup> Mark II Imaging Flow Cytometer

**High-Throughput:** Analyzes thousands of cells per second at up to 60X magnification

**Intuitive:** Simple user interface with real-time plotting and gating

**Adaptable:** Can be configured with one to seven lasers

**Boundless:** Variable magnification images small particles and your largest cells

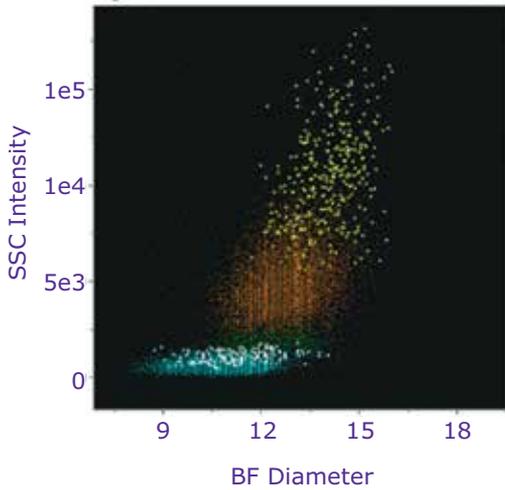


# powerful flow cytometry

The ImageStream<sup>®</sup> MKII and FlowSight<sup>®</sup> systems deliver multiple images of every cell in flow, including brightfield, darkfield (SSC) and up to 10 fluorescent markers at high speed. The ImageStream<sup>®</sup> camera operates with a pixel size of 0.1/0.25/1  $\mu\text{m}^2$  with 60X/40X/20X magnification, respectively, allowing visualization of fluorescence location from the membrane, cytoplasm, subcellular organelles or nucleus at high resolution. The FlowSight<sup>®</sup> system operates at 20X magnification with a 1  $\mu\text{m}^2$  pixel.

The innovative design of Amnis<sup>®</sup> cytometers increases signal and minimizes noise to provide exceptional photonic sensitivity. Design details like a dedicated side scatter laser, adjustable laser intensities, and brightfield imagery for the direct measurement of cell size allow the systems to resolve cell populations more effectively than far more expensive cytometers. The ease of use, outstanding performance, and imagery of each cell meet the needs of flow cytometry novices and experts alike.

### Single cells

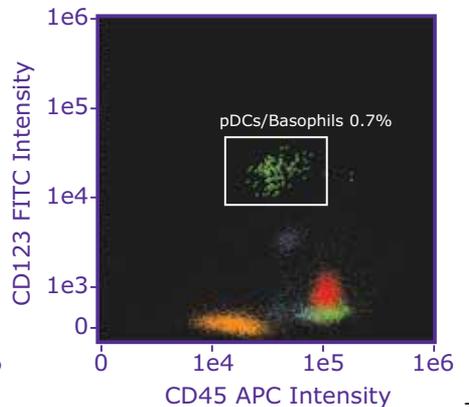
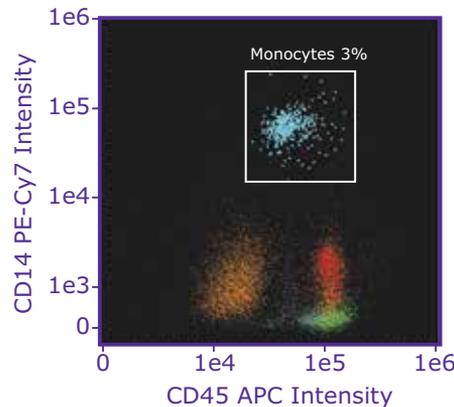
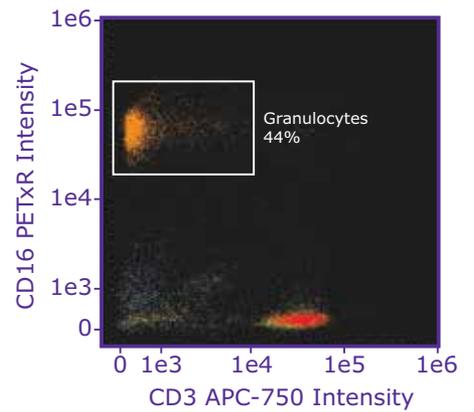
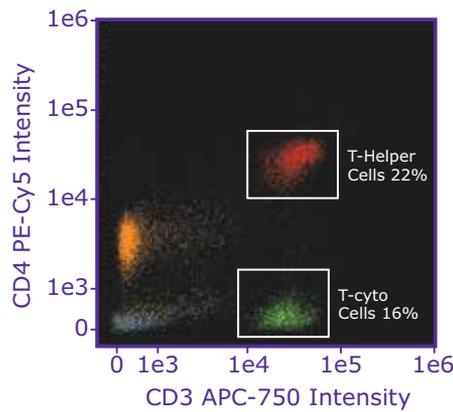


### Beyond forward and side scatter

Traditional flow cytometers do an admirable job of using low-resolution scattering characteristics to approximate size and intracellular granularity. Amnis® Imaging Flow Cytometers produce familiar 'size vs complexity' scatter plots, but with the power of 20x magnification—or more—can report absolute rather than relative cell size by measuring the actual diameter of objects in brightfield images.

### Multichannel Immunophenotyping

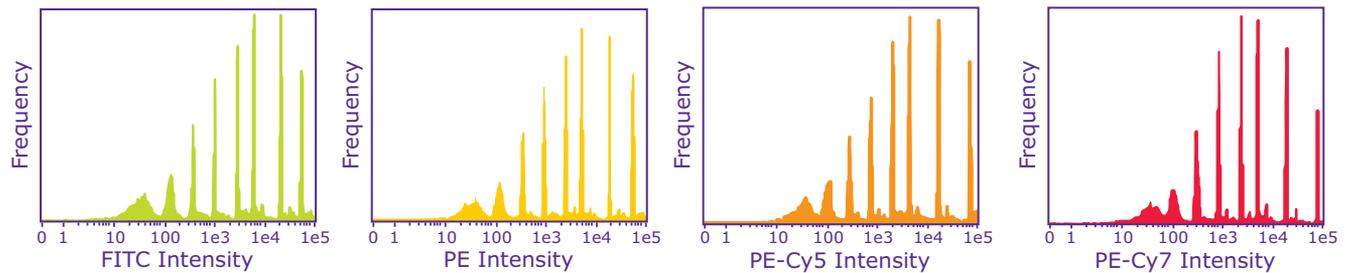
Immunophenotyping requires multiple fluorescence channels in addition to dual scatter. Below is a six-color immunophenotype of human PBMC using antibodies against CD3, CD4, CD14, CD16, CD45, and CD123, plus DAPI. The arrangement of detection channels, available laser options, and automated compensation wizard allow the straightforward separation of complex cell populations.



# Sensitive and flexible for any research need

## Exceptional fluorescence sensitivity

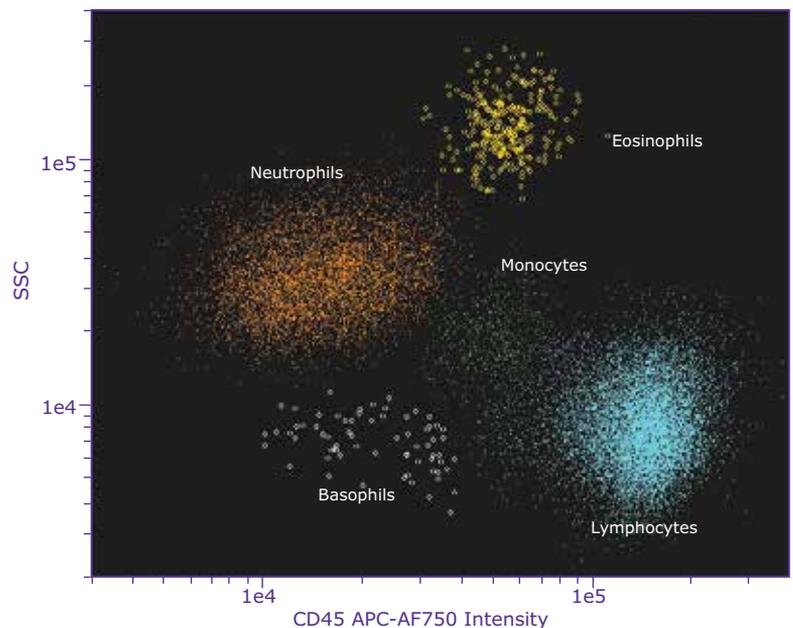
The patented architecture of Amnis® imaging flow cytometers provides extraordinary fluorescence sensitivity across the visible spectrum, outperforming other imaging devices. The four plots below demonstrate the ability of the FlowSight® instrument to discriminate all intensities in the Spherotech 8-peak calibration bead set, across the spectrum from FITC to PE-Cy7. Note the distinct peak separation, low coefficients of variance (CVs) and high sensitivity from the FITC to the PE-Cy7 channels.



FlowSight® twelve channel imagery of three-micron diameter Spherotech 8-peak Rainbow beads.

## Five-Part White Blood Cell Differential

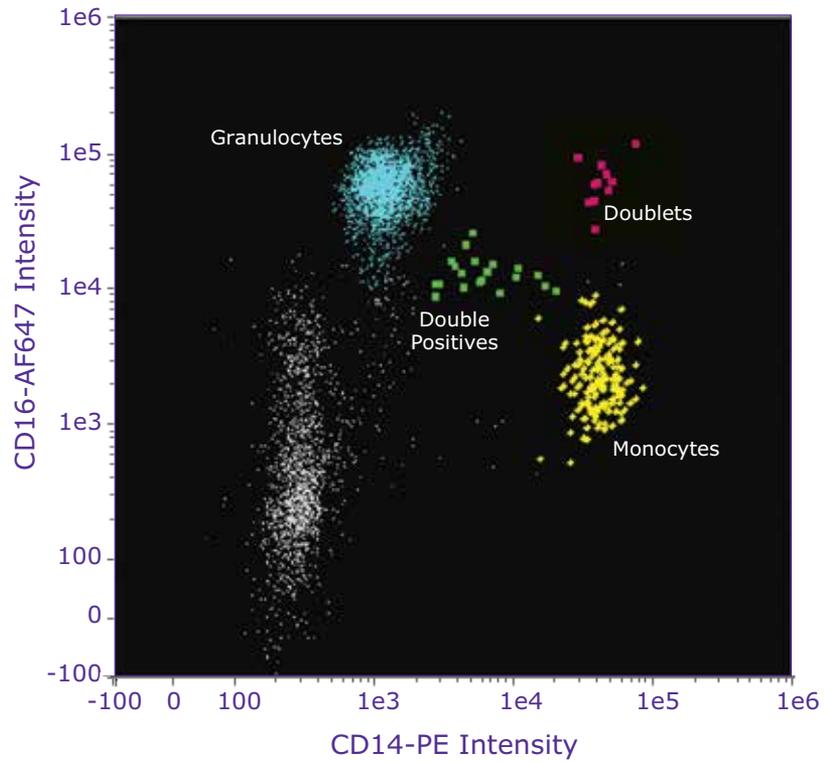
Because of its exceptional sensitivity, the FlowSight® system excels at the resolution of mixed sub-populations in heterogeneous samples. Human peripheral blood mononuclear cells (PBMC) were partitioned into five distinct populations using CD45 expression and side scatter intensity. High fluorescence sensitivity and tight coefficients of variance (CVs) resolve monocytes (green) from lymphocytes (blue) and facilitate the detection of rare basophils (white). The dedicated side scatter laser clearly resolves eosinophils (yellow) from neutrophils (orange).



## Images of every cell

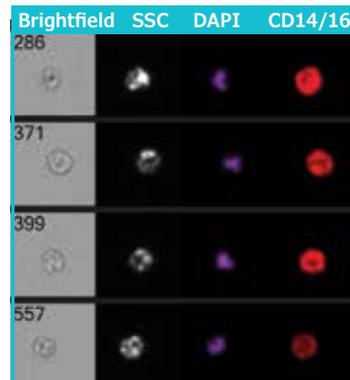
The FlowSight® and ImageStream®x instruments operate like conventional flow cytometers, but also provide imagery of every cell. Powerful and intuitive analysis software seamlessly links quantitative data to images:

- **Click on a dot in any plot** to see its corresponding image
- **Click on a bin** in any histogram to view every cell in that bin
- **Draw gates on dot plots** and view the resulting populations to validate results

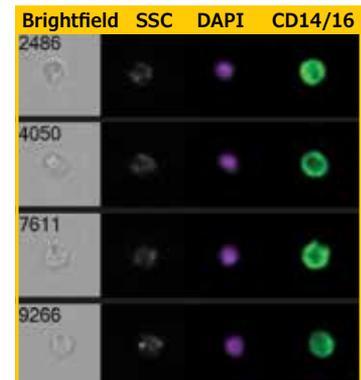


With imaging capabilities, you'll never wonder about outliers or whether your gates are in the right place. Once you've drawn a gate on a plot you can click inside and out to determine if it's in the right place as shown in the example to the right. With visual feedback, you can optimize gate size, shape, and position for better data quality.

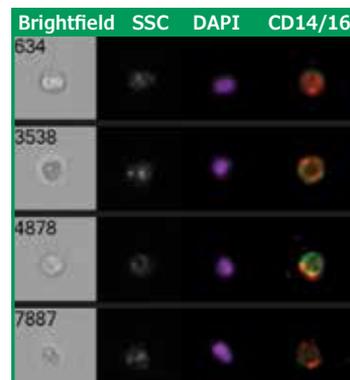
### Granulocytes



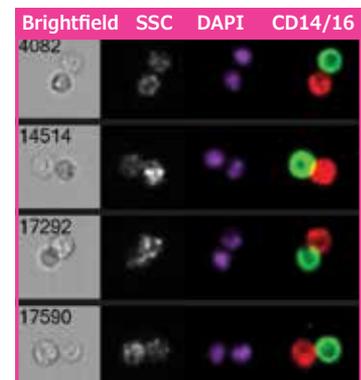
### Monocytes



### Double Positives



### Doublet Artifacts



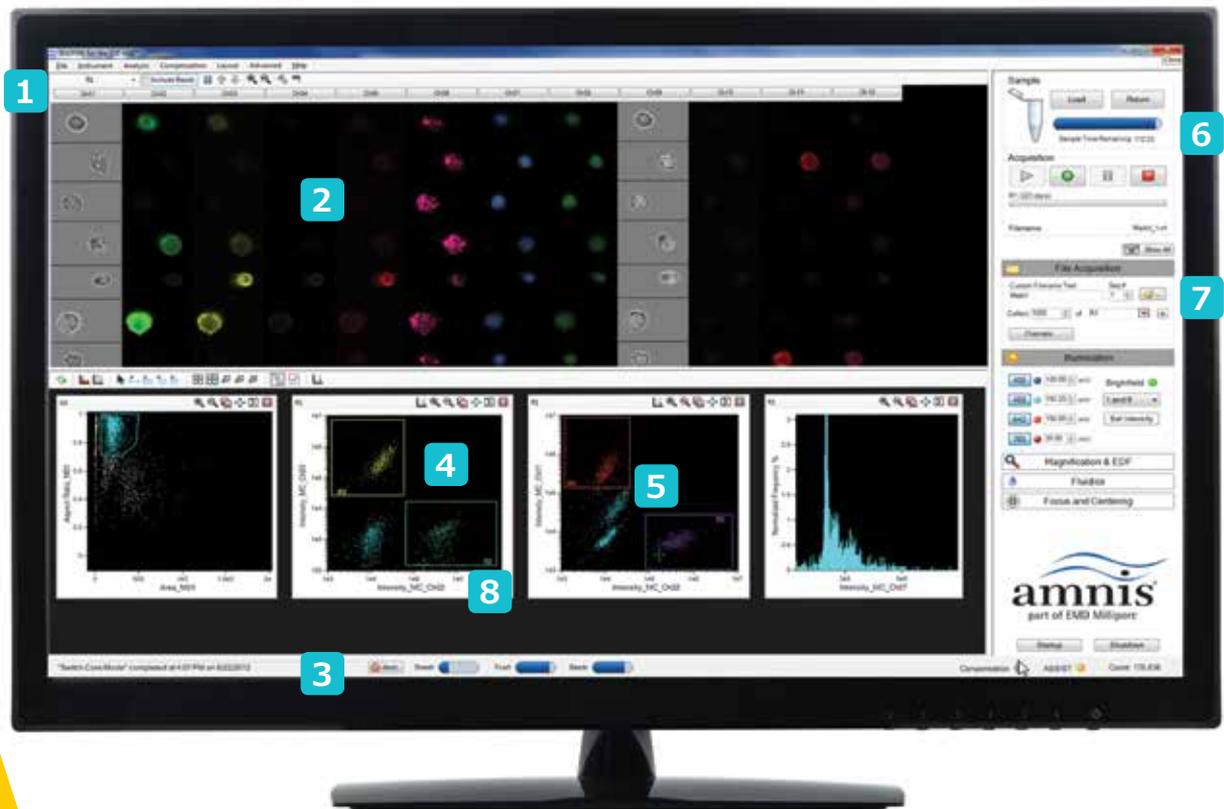


## Data acquisition software

**INSPIRE® software offers powerful image-based gating and real-time fluorescence compensation**

- 1 Instant Population Viewer**  
Every population is added to a pull-down list as soon as you draw a gate. Simply select a population of interest from the list to view the corresponding cells during data acquisition.
- 2 Image Gallery**  
Imagery of cells of interest appear in the gallery as they are acquired, allowing you to inspect morphology, assess staining patterns, and optimize laser power settings.
- 3 Instrument Status at a Glance**  
Convenient gauges, indicators, and text alerts provide continuously-updated instrument operational status.
- 4 Real-Time Intensity Compensation**  
An easy-to-use compensation wizard quickly guides you through the setup of multi-color compensation matrices.
- 5 Gating without Guesswork**  
Gates are easily drawn using graphical tools and verified for accuracy by visual inspection of gated cells.
- 6 Efficient Sample Handling**  
Up to 95% of the sample volume is utilized, facilitating the analysis of rare cells. Unused sample can be recovered for further analysis.
- 7 Intuitive Acquisition**  
A simple and intuitive user interface provides complete control of sample acquisition settings and data storage criteria.
- 8 Familiar Dot Plots and Histograms**  
Data plots are updated in real time, just as with conventional flow cytometers. Unlike conventional cytometers, you can also plot morphologic parameters such as Area, Cell Width, Cell Height, Aspect Ratio, and others.

# INSPIRE<sup>®</sup> software

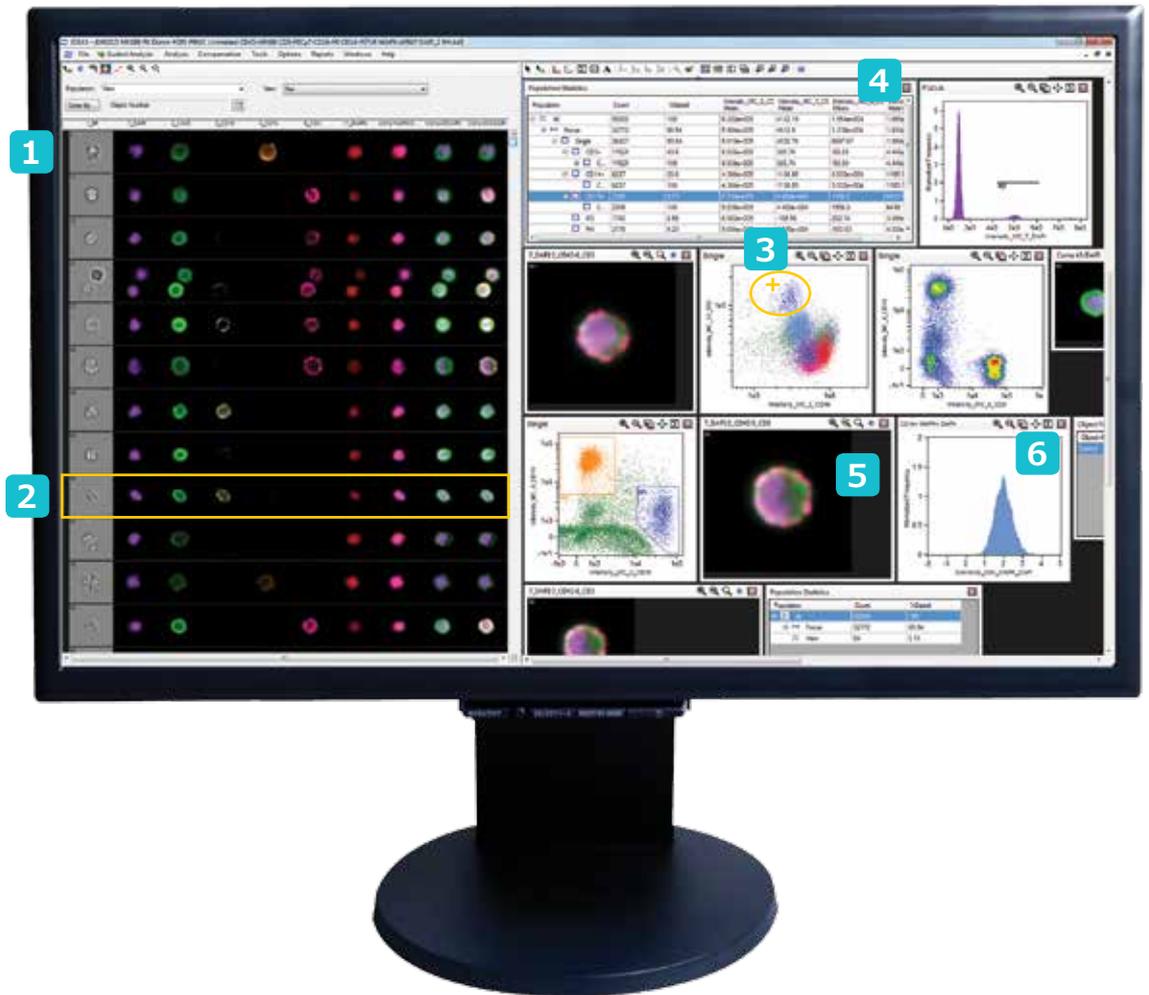


# Software that turns data into understanding

**IDEAS® software combines image analysis, statistical rigor, and visual confirmation in an easy-to-use package**

- 1 Inspect Your Populations**  
The Image Gallery allows you to see every image of every cell or perform a “virtual cell sort” to inspect and validate the cells within a specific population.
- 2 Images for Every Dot**  
Every dot in every scatter plot is linked to the corresponding cell imagery. Simply click on a dot to see the associated cell images or vice-versa.
- 3 Graphical Population Definitions**  
Define populations using familiar graphical tools and combine them with logical functions.
- 4 Comprehensive Population Statistics**  
Characterize your cell populations with a wide range of statistical metrics to reveal differences in cell morphology, phenotype, and function.
- 5 Flexible Image Display Tools**  
Create composite images, pseudo-color representations and a host of other image transformations for reporting and publication.
- 6 Graph What You See**  
Virtually anything you see in the imagery can be plotted as a histogram or dot plot. Hundreds of parameters are calculated for every cell, including fluorescence intensity, fluorescence location, cell shape, cell texture, and numerous other morphologic and photometric features.

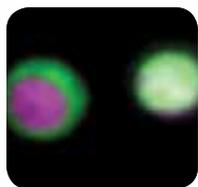
# IDEAS<sup>®</sup> software



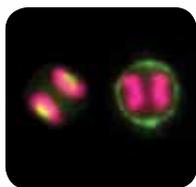
# a wealth of applications

**Any Application You Can Imagine**

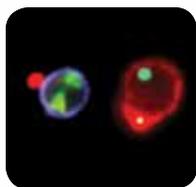




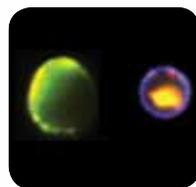
**Cell signaling**



**Cell cycle and mitosis**



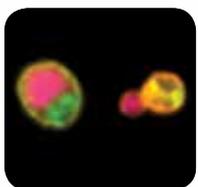
**Internalization and co-localization**



**Surface and intracellular co-localization**



**DNA damage and repair**



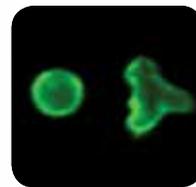
**Stem cell biology**



**Microbiology**



**Cell-cell interaction**



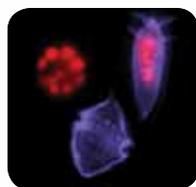
**Shape change and chemotaxis**



**Immunological synapse**



**Micronucleus Counting**



**Oceanography**



**Parasitology**

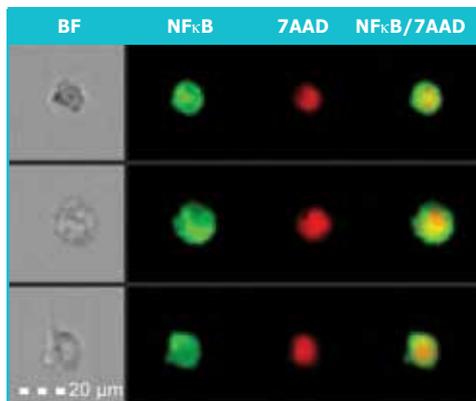
### **Featured Applications**

The applications detailed on the following pages demonstrate the types of studies that can be performed using the ImageStream<sup>®X</sup> Mark II and FlowSight<sup>®</sup> instruments with their powerful companion IDEAS<sup>®</sup> image analysis software.

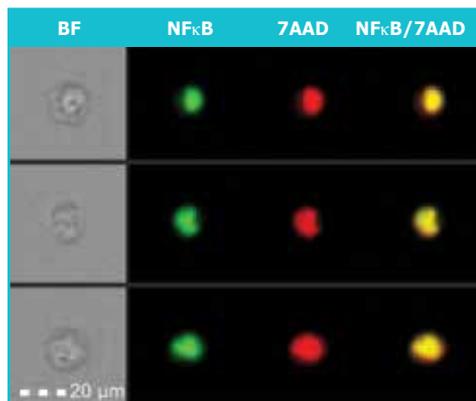
### **Any Application You Can Imagine**

The ImageStream<sup>®X</sup> and FlowSight<sup>®</sup> systems are designed to be general-purpose platforms for cellular studies and are not limited to the applications illustrated in this brochure.

# Quantifying nuclear translocation...



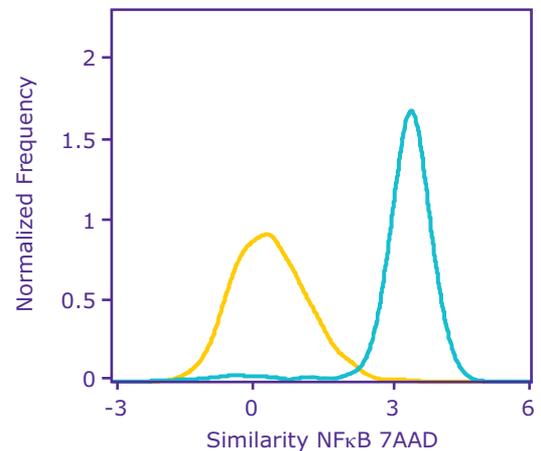
THP-1 Control (no LPS)  
Mean similarity score = 0.4

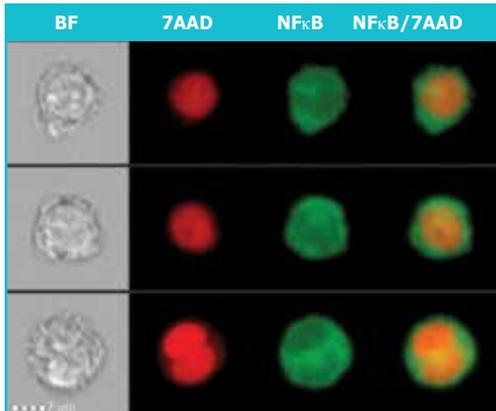


THP-1 + 1 μg/mL LPS  
Mean similarity score = 3.2

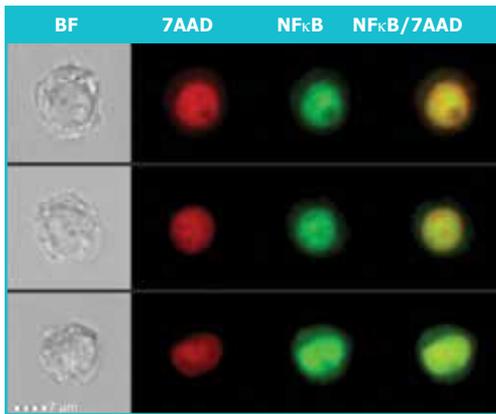
## 20X resolution tells the story

Translocation of NFκB from the cytoplasm to the nucleus of the cell is a key event in the response to the presence of cell stressors. Only imaging flow cytometers can analyze translocation quantitatively, in thousands of cells. For this data, the 20x objective of the FlowSight® system is used to locate NFκB in relation to 7-AAD fluorescence from the nucleus in untreated THP-1 cells and cells stimulated with lipopolysaccharide (LPS). The similarity feature of the IDEAS® software produces a score for every cell quantifying the colocalization of NFκB and 7-AAD.





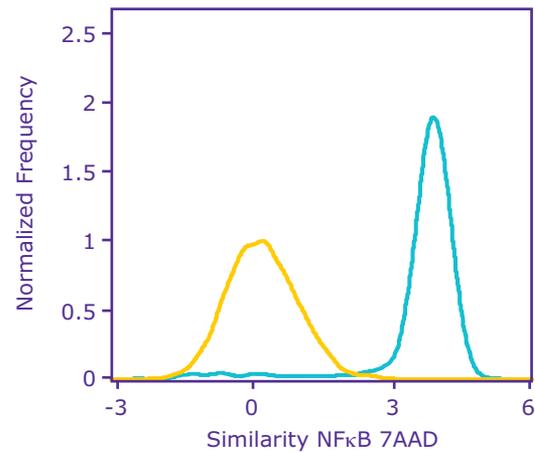
THP-1 Control (no LPS)  
Mean similarity score = 0.2



THP-1 Control (no LPS)  
Mean similarity score = 3.8

## A closer look at NFκB signaling with 60X magnification

Here, THP-1 cells stimulated or not with LPS and stained with anti-NFκB and 7-AAD to counterstain the nucleus were collected on the ImageStream<sup>®</sup> system using the 60X objective. The IDEAS<sup>®</sup> software similarity feature demonstrates binning of samples consistent with the FlowSight<sup>®</sup> histogram, and establishes the quality of visual detail that the ImageStream<sup>®</sup> system can provide when needed for studies when greater detail is a benefit.



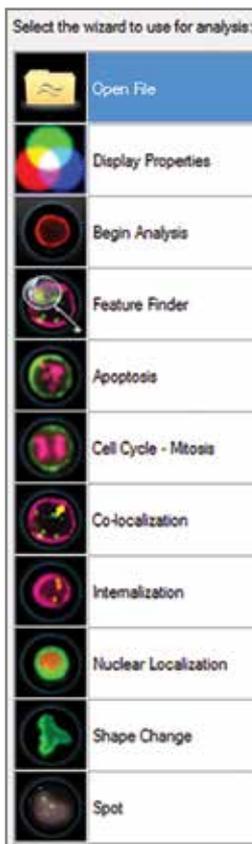
...with  
**fluorescent**  
image similarity.

# Amnis® Spectral Imaging Channels And Corresponding Fluorophores

Laser	Fluorophore	Ex	Em	☼	Fluorophore	Ex	Em	☼	Fluorophore	Ex	Em	☼	
<b>375</b> (with installed 405)	<b>CH 1</b>				<b>CH 2</b>				<b>CH 3</b>				
	Ch1/Ch9 BF *or*				QD525	350-450	525	5	eFluor565 NC	UV - 405	565	2	
	<b>AlexaFluor® 350</b>	<b>346</b>	<b>442</b>	<b>1</b>					QD565	350-450	565	5	
	<b>BV421™</b>	<b>405</b>	<b>421</b>	<b>5</b>					QD585	350-450	585	5	
	Cascade Blue	377	420	1									
	<b>DAPI</b>	<b>345</b>	<b>461</b>	<b>1</b>									
	Hoechst	352	455	1									
	Pacific Blue	410	455	1									
<b>488</b>	BRIGHTFIELD				<b>AlexaFluor® 488</b>	<b>496</b>	<b>514</b>	<b>3</b>	Cy3	514	566	1	
					BODIPY FI	503	512	3	DSRed	557	592	1	
					DiO	484	501		<b>PE</b>	<b>496,565</b>	<b>578</b>	<b>5</b>	
					DyLight™ 488	493	518	3	RFP	555	584	2	
					<b>FITC</b>	<b>494</b>	<b>520</b>	<b>3</b>					
					<b>GFP/EGFP</b>	<b>475/488</b>	<b>509</b>						
					LysoTracker Green	504	511						
					MitoTracker Green	490	516						
					PKH2 & PKH67	490	504						
					Rhodamine 110	496	520						
					SYBR® Green	494	521						
					Syto13 (DNA/RNA)	488D/491R	509D/514R						
			YFP	514	527								
<b>561</b>	BRIGHTFIELD								<b>AlexaFluor®546</b>	<b>556</b>	<b>573</b>	<b>5</b>	
									CellMask/Tracker	522	535		
									DI	549	565		
									DSRed	557	592	3	
									DyLight™550	562	576	3	
									Nile Red	515-530	525-605		
									<b>PE</b>	<b>496,565</b>	<b>578</b>	<b>5</b>	
									PKH26	551	567		
									Spectrum Orange	559	588		
									Sytox Orange	547	570		
<b>785</b>													
<b>Ch width</b>	<b>435-480</b>				<b>480-560</b>				<b>560-595</b>				
<b>Bandpass*</b>	<b>(457/45)</b>				<b>(528/65)</b>				<b>(577/35)</b>				
<b>375</b> (with 405 not installed)	<b>CH 7</b>				<b>CH 8</b>				<b>CH 9</b>				
	AlexaFluor®350	346	442	1	eFluor525 NC	UV - 405	525	1					
	<b>BV421™</b>	<b>405</b>	<b>421</b>	<b>5</b>	QD525	350-450	525	5					
	Cascade Blue	377	420	1									
	<b>DAPI</b>	<b>345</b>	<b>461</b>	<b>1</b>									
	Hoechst	352	455	1									
	Pacific Blue	410	455	1									
<b>405</b>	AlexaFluor®405	402	421	1	AlexaFluor®430	434	541	1					
	<b>BV421®</b>	<b>405</b>	<b>421</b>	<b>5</b>	<b>BV510™</b>	<b>405</b>	<b>510</b>	<b>3</b>					
	Cascade Blue	377	420	1	Cascade Yellow	402	545	1					
	CFP	435	485	2	Pacific Orange	410	551	1					
	<b>DAPI</b>	<b>345</b>	<b>461</b>	<b>1</b>	Pacific Orange	410	551	1					
	DyLight™405	400	420	1	QD525	350-450	525	5					
	Hoescht	352	455	1									
	LIVE/DEAD Violet	416	451										
	Pac Blue	410	455	1									
<b>592</b>													
<b>642</b>													
<b>730</b>													
<b>785</b>													
<b>Ch width</b>	<b>435-505</b>				<b>505-570</b>				<b>570-595</b>				
<b>Bandpass*</b>	<b>(457/45)</b>				<b>(537/65)</b>				<b>(582/25)</b>				

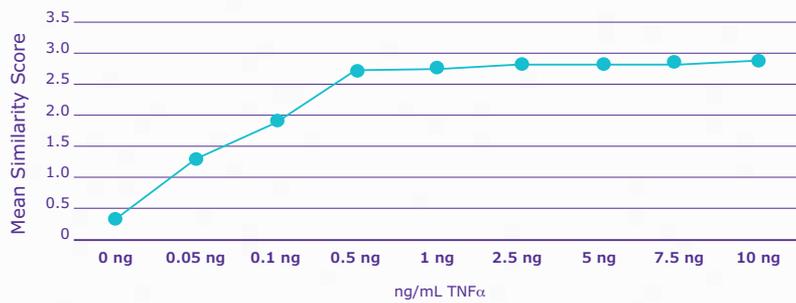


# quantitative imaging and robust population statistics



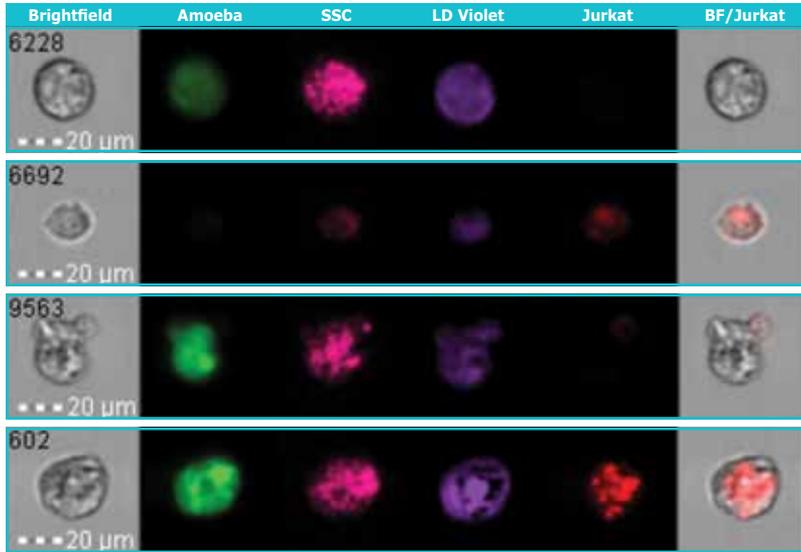
Quantitative Imaging means a powerful and intuitive image processing package with thousands of analysis parameters and optimized analysis wizards for many common image-based applications, including nuclear translocation, shape change, internalization, and apoptosis.

Objective, quantitative image analysis on large numbers of cells is backed by a large set of statistical parameters for data reporting.



File	Count All	Count Focus	Count Singles	Count Positive	Mean Similarity	Std Dev Similarity
TNFa_0ng_2_2016.daf	10000	4903	4265	3740	0.34	0.71
TNFa_0-05ng_3_2016.daf	10000	4621	4060	3635	1.28	0.81
TNFa_0-1ng_4_2016.daf	10000	4280	3739	3365	1.90	0.82
TNFa_0-5ng_5_2016.daf	10000	4861	4167	3516	2.68	0.66
TNFa_1ng_6_2016.daf	10000	3811	3311	2910	2.72	0.63
TNFa_2-5ng_7_2016.daf	10000	3893	3425	3070	2.72	0.58
TNFa_5ng_8_2016.daf	10000	4162	3685	3180	2.72	0.52
TNFa_7-5ng_9_2016.daf	10000	4361	3782	3387	2.72	0.58
TNFa_10ng_10_2016.daf	10000	4005	3456	2988	2.72	0.55

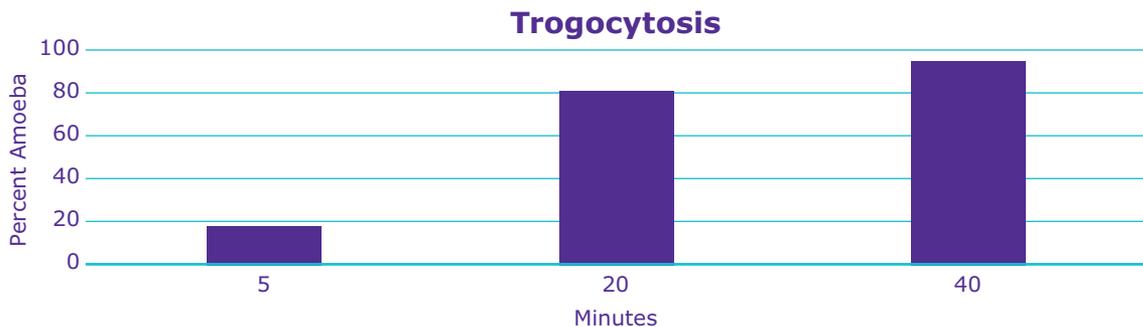
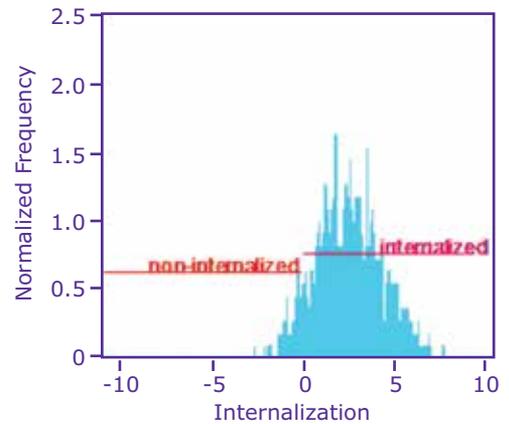
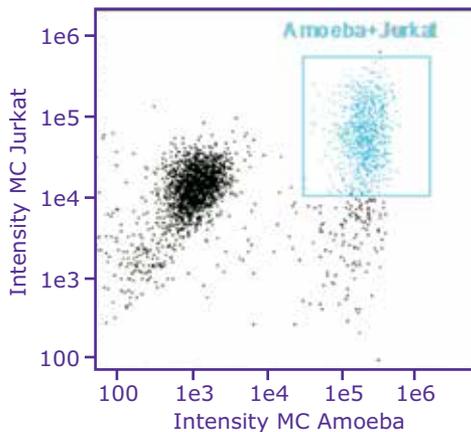
# Internalization identifies trogocytosis



## 20X objective for a wider field of view

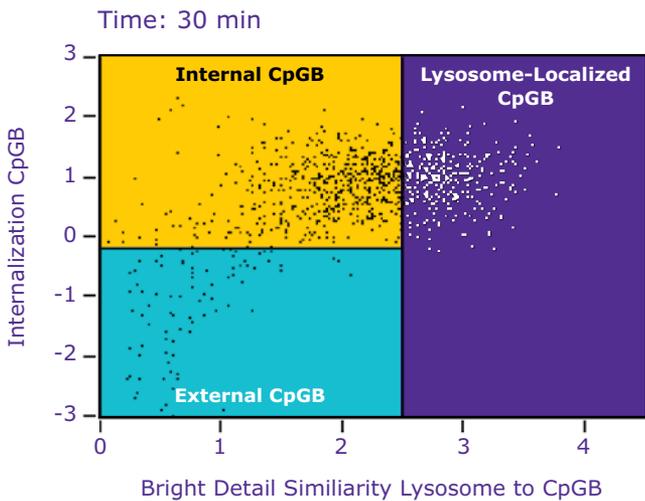
The FlowSight® instrument is optimized for imaging large objects such as epithelial cells, macrophages, neutrophils, fibroblasts, and even large eukaryotic parasites. Here, *Entamoeba histolytica* demonstrates amoebic trogocytosis of immune cells. Following attachment to Jurkat cells, the FlowSight® instrument measures every *E. histolytica* expressing Jurkat markers internalized or on their surface.

Data courtesy of Dr. Katherine Ralston, UC Davis.



# Co-localization and Trafficking

The ImageStream<sup>®</sup>X Mark II instrument greatly improves co-localization studies by combining the rapid collection of large numbers of cell images with objective measurement of the Similarity of bright image details.



**Example:**  
Internalization and Trafficking of CpGB in Primary Plasmacytoid Dendritic Cells (pDC)



Lysosomal trafficking of CpGB within pDC is quantified using the Internalization (Y-axis) and the Bright Detail Similarity (X-axis) scores. Representative merged images of pDC (orange), CpGB (red), and lysosomes (green) are shown at 40X magnification. Cells within the lower left region of the plot have surface-bound CpGB. As CpGB molecules enter the pDC, the Internalization score increases (upper left region). Once the CpGB traffics to the lysosomes, the similarity between the CpGB and lysosome image pair increases (upper right region).

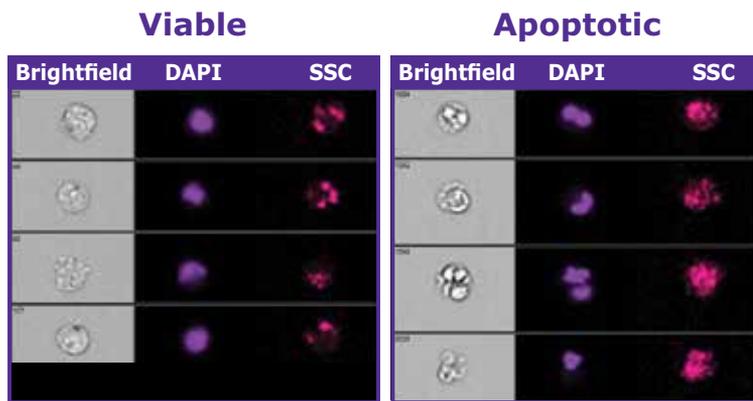
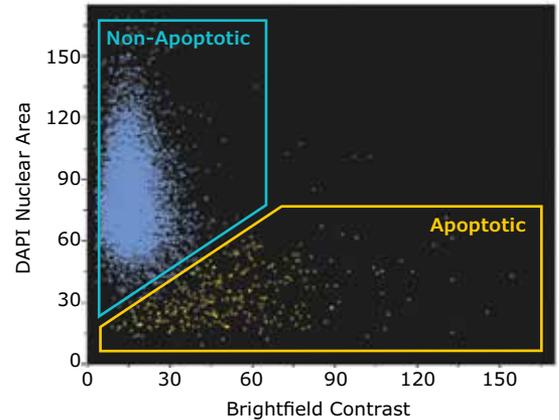
Data courtesy of Dr. Patricia Fitzgerald-Bocarsly, University of Medicine and Dentistry, New Jersey.

# Apoptosis and Necrosis

## Apoptosis and necrosis detection by image analysis

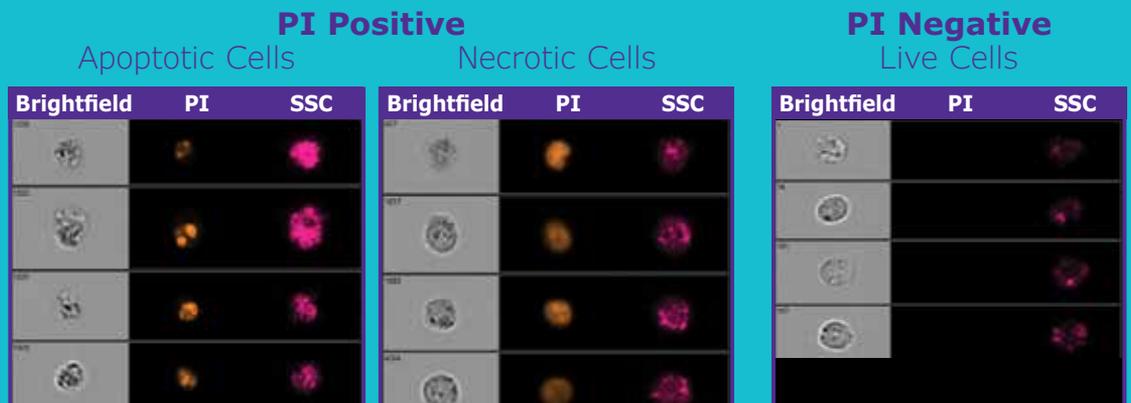
The apoptosis wizard analyzes the nuclear morphology and brightfield image contrast of each cell to detect apoptosis in any sample containing a nuclear stain.

Differentiate Necrotic and Apoptotic cells from each other by measuring the texture of the PI images.



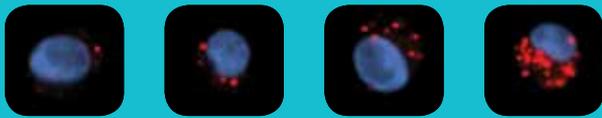
### Necrosis versus apoptosis

Conventional flow cytometers can use membrane-impermeant dyes to identify dead or dying cells that have lost membrane integrity. However, it can be difficult to determine if cell death is via apoptosis or necrosis. The FlowSight® system simplifies this determination by revealing the nuclear morphology of every cell. As shown in this sample of THP-1 cells labeled with propidium iodide, the nuclei of necrotic cells have normal nuclear morphology while the nuclei of apoptotic cells are shrunken and fragmented.



# Autophagy

During autophagy, cytoplasmic LC3 is processed and recruited to the outer membrane of autophagosomes. Cells undergoing autophagy can be identified by visualizing LC3 puncta and enumerating the spots within each cell using the Spot Count feature of the IDEAS® software package:



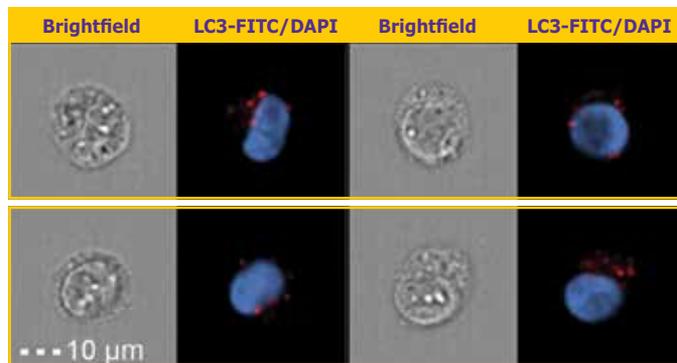
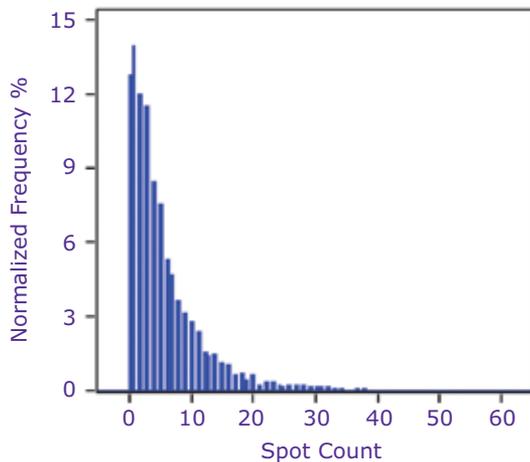
1                      4                      7                      >15

Spot Count Scores

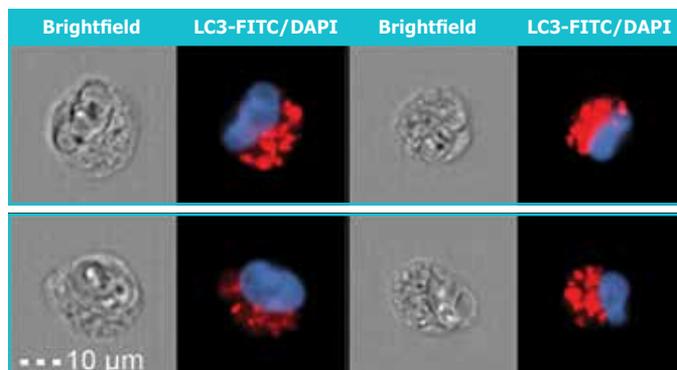
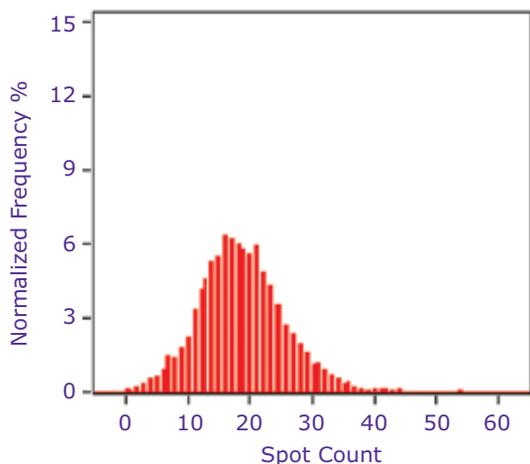
The IDEAS® image processing software included with the ImageStream® Mark II system determines the Spot Count of every cell. In this example, cells with varying number of LC3-RFP (red) spots are shown with their corresponding Spot Count.

## Example: Autophagy in the Human CML Cell Line K562

Control Untreated



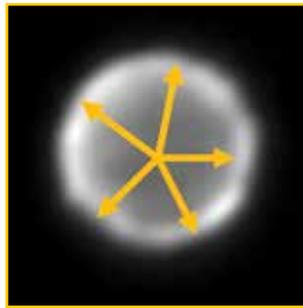
Starved



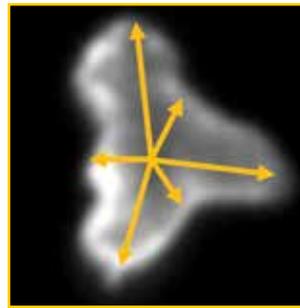
U2OS RFP-LC3 human osteosarcoma reporter cell line were starved for 4 hours at 37°C. Both the control and starved samples were supplemented with a degradation inhibitor. Merck FlowCollect® RFP-LC3 Reporter Autophagy kit (Catalog No. FCCH100183).

# Morphology

Change in cell shape is correlated with change in function, particularly in the case of macrophage activation, stem cell differentiation, and cellular response to drugs. The ImageStream<sup>®</sup> Mark II instrument measures cell shape using powerful, pre-defined features in the IDEAS<sup>®</sup> image analysis software. One such feature is the Circularity score.



23.8

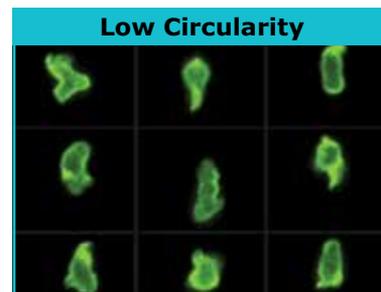
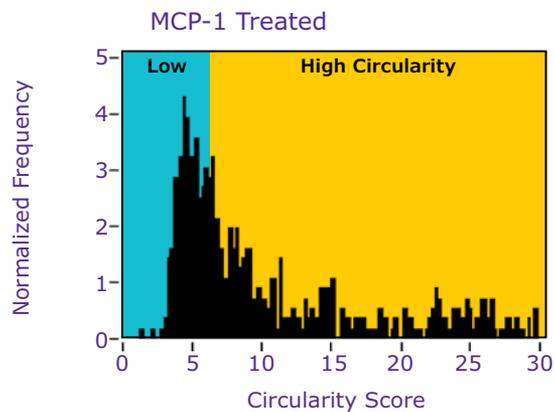
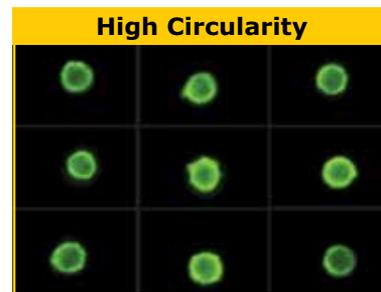
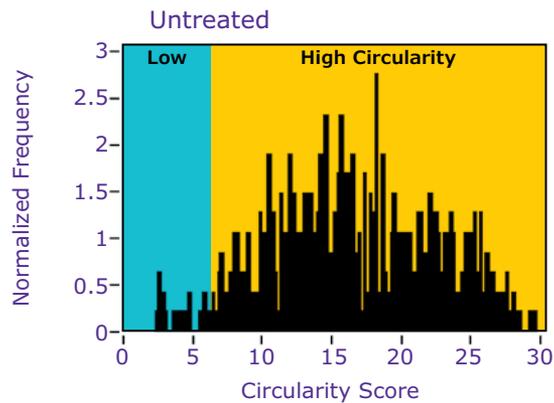


4.6

Circularity Scores

The Circularity score is a measure of how much the cell radius varies. Round cells (left) have high Circularity scores while irregularly shaped cells (right) have low Circularity scores.

## Example: Shape Change in Primary Monocytes

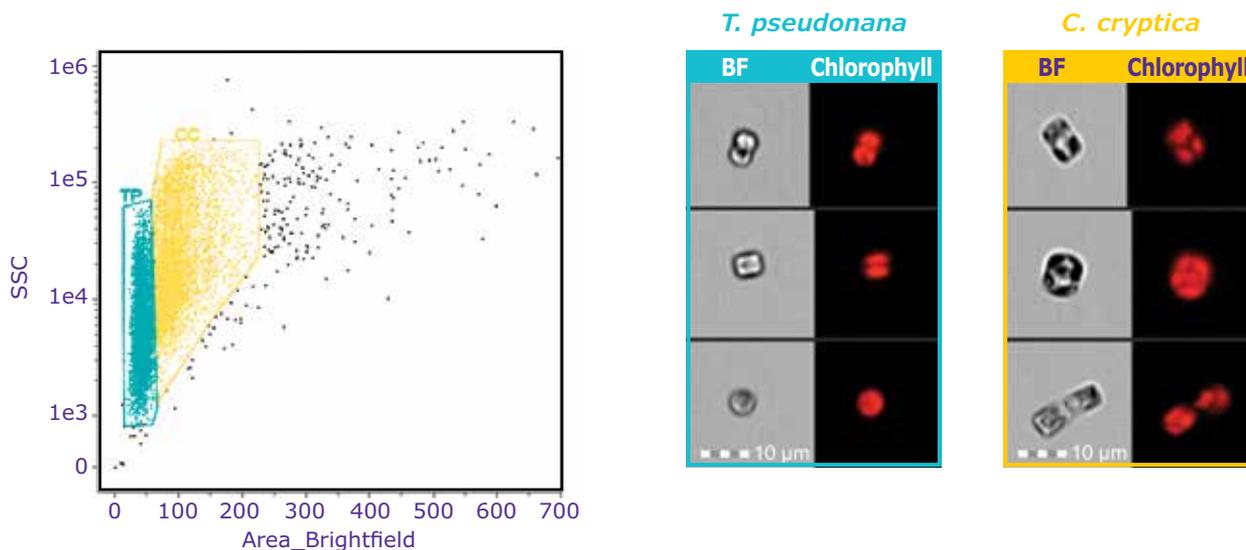


Chemoattractant MCP-1 induces monocyte shape change and migration to sites of inflammation, as evidenced by the significant decrease in the Circularity score of the MCP-1 treated sample relative to the untreated control. In contrast, treatments that reduce inflammatory response – such as drugs for autoimmune disorders – result in an increase in Circularity scores.

# Microalgae

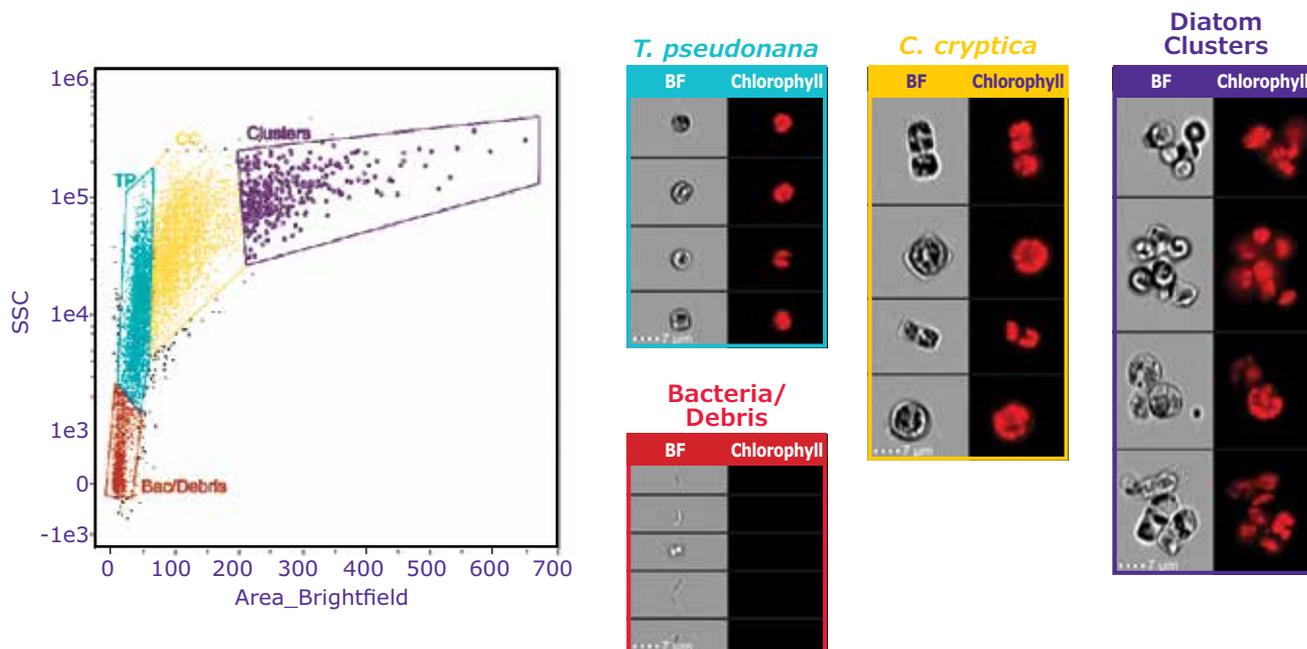
## Mixed cultures of microalgae

Microalgae identification in mixed cultures using morphological parameters and the ImageStream<sup>®</sup> MK II instrument at 40X magnification.

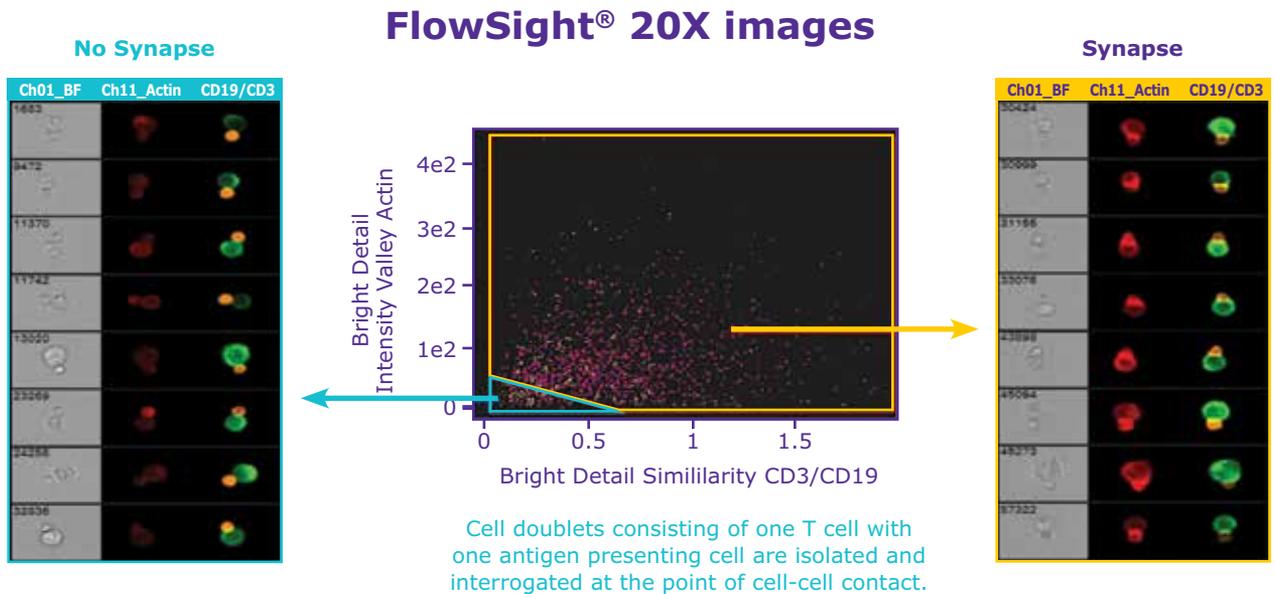


## Microalgae quality control

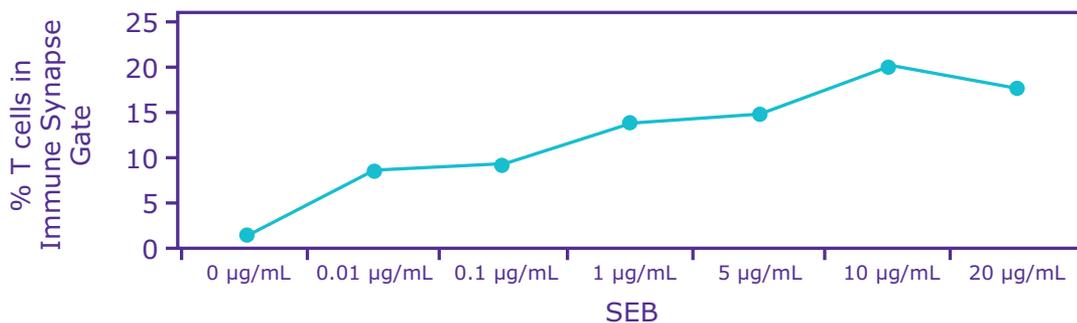
Detection of bacterial contamination, cellular debris, and clusters in mixed culture of microalgae. A mixed culture of *T. pseudonana* and *C. cryptica* contaminated with bacteria was analyzed on the ImageStream<sup>®</sup> Mark II system at 60x magnification.



# Quintessential cell interactions at the immunological synapse



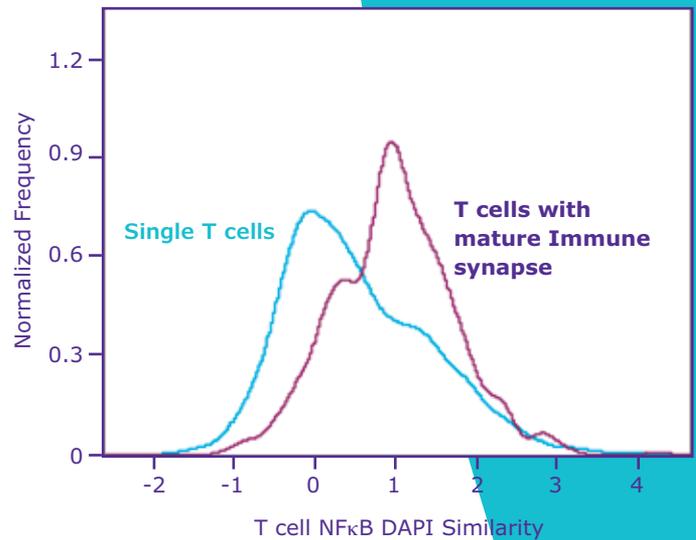
## SEB Dose Response Curve



Raji B cells were exposed to SEB (0-20 µg/mL) and incubated with human primary T cells.

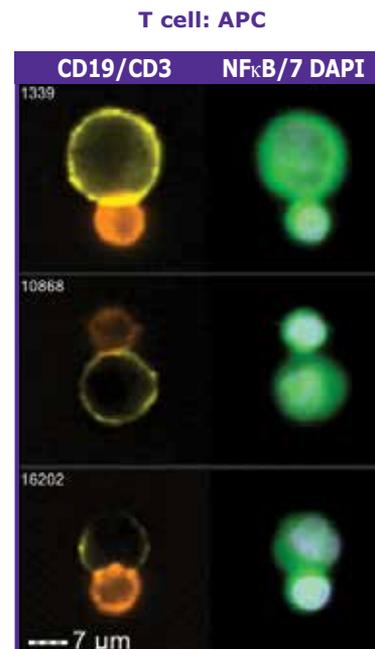
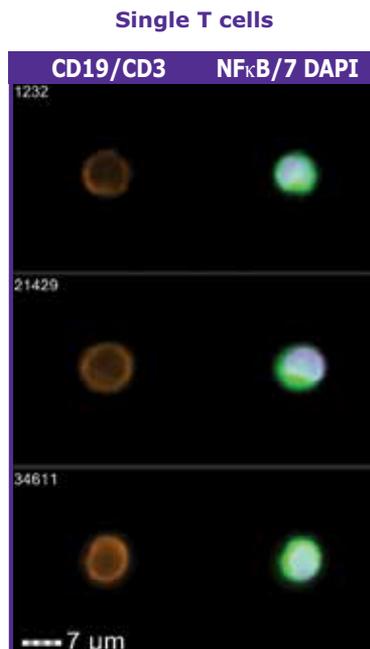
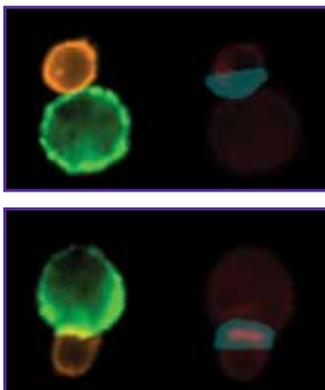
# Take the analysis even further with higher resolution

- T:APC conjugates are easily identified using morphological features.
- The point of cell-cell contact is identified using a mask (cyan overlay).
- Actin accumulation within the mask confirms formation of an immunological synapse.
- All T cells are then identified either in conjugates or not.
- NFκB translocation is measured in the T cells specifically.

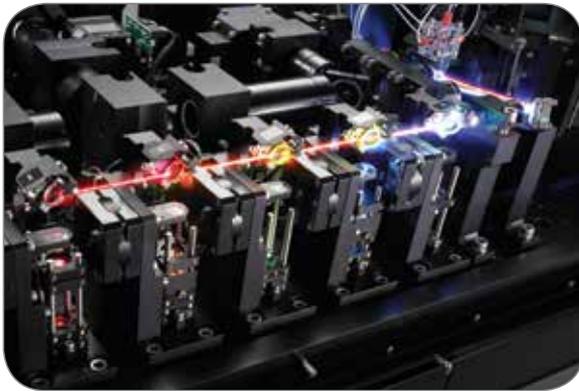


## ImageStream<sup>®</sup>X 60X images

**Mask overlay (cyan) showing synapse identification**



# Modular Options for the FlowSight<sup>®</sup> and ImageStream<sup>®X</sup> MKII instruments



## Additional Excitation Lasers

The 488 nm blue laser comes standard with the FlowSight<sup>®</sup> and ImageStream<sup>®X</sup> MKII instruments. Adding excitation lasers increases experimental flexibility by permitting a broader palette of fluorescent markers. All lasers are intensity adjustable to ease protocol development.



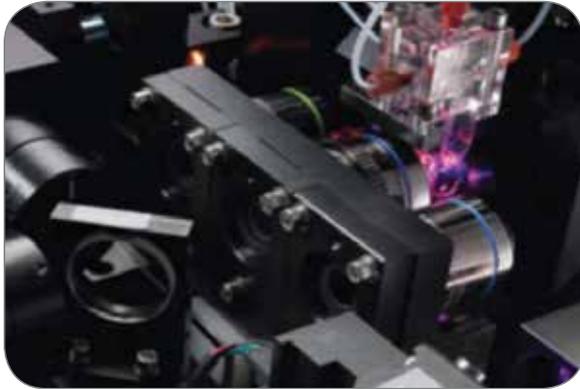
## Twelve Channels Of Detection

Up to 12 image channels are available with the addition of an optional second camera and associated optics for the ImageStream<sup>®X</sup> system. Twelve channels are standard on the FlowSight<sup>®</sup> instrument.



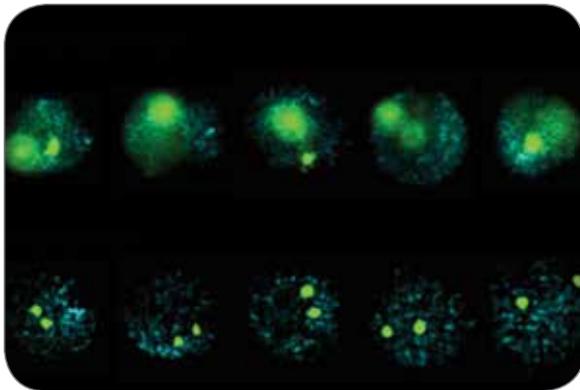
## Multiwell Plate Autosampler

The AutoSampler option enhances productivity with unattended sample loading from 96 well plates. The fully integrated AutoSampler option greatly facilitates dose response and time-course studies.



### MultiMag

The MultiMag option for the ImageStream<sup>®</sup> MKII system provides 60X and 20X objectives on a motorized stage, in addition to the standard 40X objective. The 60X objective offers greater resolution for the morphologic analysis of cells as small as yeast and bacteria, while the 20X objective offers a 120 micron wide field of view for very large cells.



### EDF: Extended Depth of Field

The EDF<sup>™</sup> option incorporates WavefrontCoding<sup>™</sup> technology from CDM Optics, which is a combination of specialized optics and unique image processing algorithms, to project all structures within the cell into one crisp plane of focus. Ideal for automated FISH spot counting.

Option	FlowSight <sup>®</sup>	ImageStream <sup>®</sup> MKII
Additional Excitation Lasers	STANDARD 488 OPTION 405, 561, 642	STANDARD 488 OPTION HIGH POWER 488, 375, 405, 561, 592, 642, 730
Twelve Channels Of Detection	STANDARD	6 STANDARD HIGH RESOLUTION 12 CHANNEL OPTION
Multiwell Plate Autosampler	96 WELL PLATE	96 WELL PLATE
MultiMag	NOT AVAILABLE	40X STANDARD, 20X + 60X OPTION
EDF: Extended Depth of Field	NOT AVAILABLE	AVAILABLE

# Progressive engineering...

## FlowSight® Instrument Specifications

Performance characteristics	Magnification
	20x
Numeric Aperture	0.6
Pixel Size	1.0 x 1.0 $\mu\text{m}$
Field of View	60 x 256 $\mu\text{m}$
Imaging Rate	4,000 cells/sec

### Sample characteristics

**Volume:** 20-200  $\mu\text{L}$

**Utilization Efficiency:** up to 95% of sample

### Automated instrument operations

- Start up and shut down
- Sample load and acquisition
- Laser alignment, focus adjustment, calibration and self test

### Operational requirements

400W, 100-240 VAC, 50/60 Hz

No external air or water necessary

### Physical characteristics

- 18 W x 18.3 H x 25 D inches  
(457 mm x 465 mm x 635 mm)
- 135 lbs. (61 kg)

### Illumination:

**Excitation** – Standard: 488 nm;

Optional: 405 nm, 561 nm, and 642 nm

**Side scatter** – 785 nm standard

**Brightfield** – Multichannel



# ...advances performance



## ImageStream<sup>®</sup> Mark II Specifications

Performance characteristics	Magnification		
	40x	60x	20x
Numeric Aperture	0.75	0.9	0.5
Pixel Size	0.5 x 0.5 $\mu\text{m}$	0.3 x 0.3 $\mu\text{m}$	1.0 x 1.0 $\mu\text{m}$
Field of View	60 x 128 $\mu\text{m}$	40 x 170 $\mu\text{m}$	120 x 256 $\mu\text{m}$
Imaging Rate	2,000 cells/sec	1,200 cells/sec	4,000 cells/sec

### Sample characteristics

**Volume:** 20-200  $\mu\text{L}$

**Utilization Efficiency:** up to 95% of sample

### Automated instrument operations

- Start up and shut down
- Sample load and acquisition
- Laser alignment, focus adjustment, calibration and self test

### Operational requirements

- 450 W, 100-240 VAC, 50/60 Hz
- No external air or water necessary

### Physical characteristics

- 35" W x 26" H x 25" D  
(889 mm x 660 mm x 635 mm)
- 400 lbs (182 Kg)

### Illumination:

**Excitation** – Standard: 488 nm;  
Optional: High Power 488, 375 nm, 405 nm,  
561 nm, 592 nm, 642nm and 730 nm

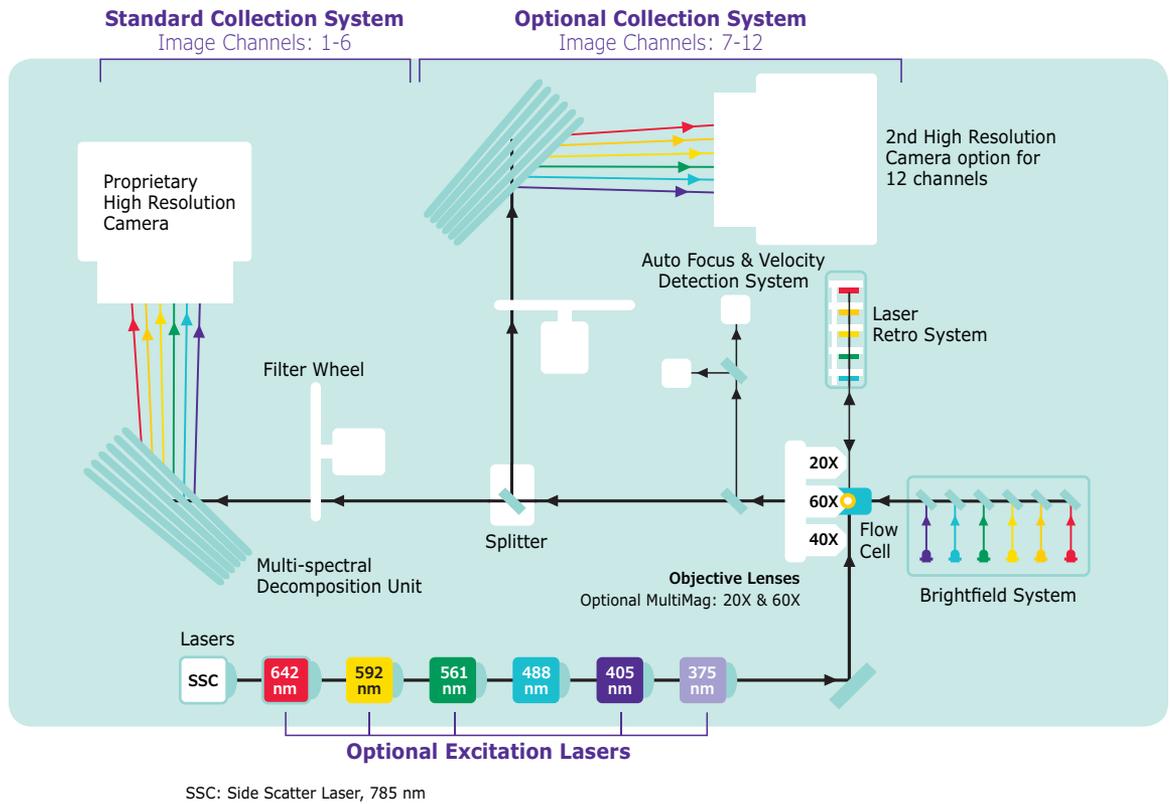
**Side scatter** – 785 nm standard

**Brightfield** – Multichannel

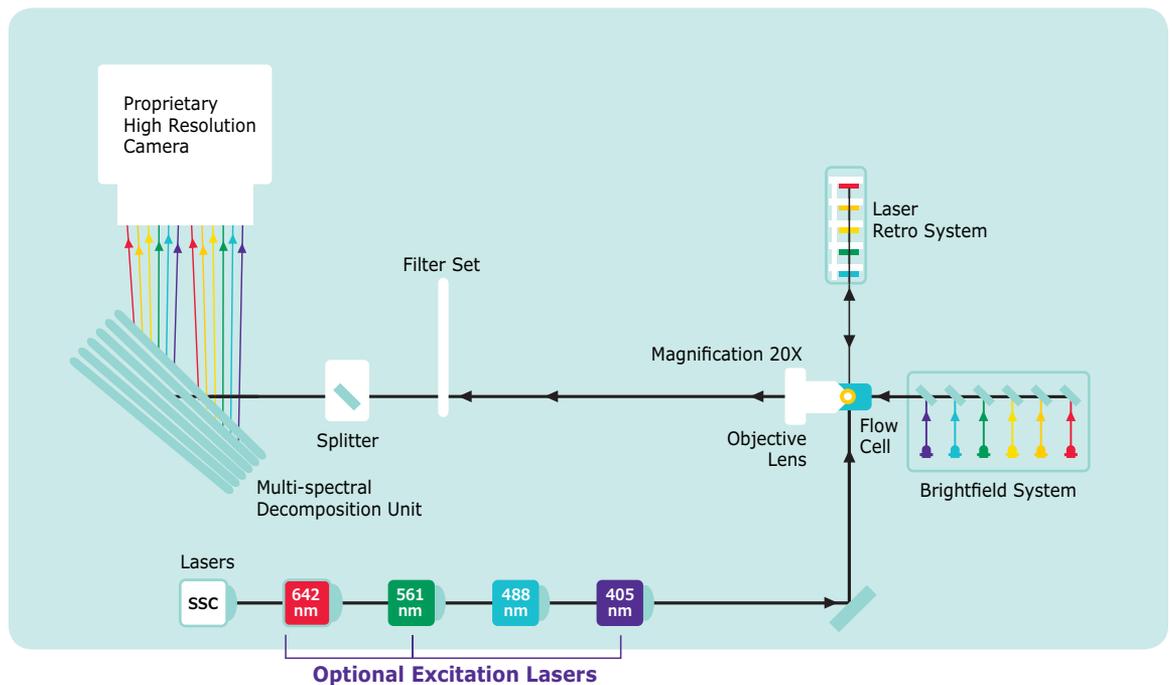
# The path to scientific enlightenment

passes through the Amnis® multispectral decomposition element, which enables simultaneous collection of brightfield, laser scatter, and multiple fluorescent images per cell.

## ImageStream®X Imaging Flow Cytometer Optical Layout



## FlowSight® Imaging Flow Cytometer Optical Layout



## Ordering information

Description	Catalog No.
<b>Instruments</b>	
FlowSight® Flow Cytometer	100370
ImageStream® <sup>MX</sup> Mark II Flow Cytometer	100220
<b>Reagents</b>	
SpeedBeads	400041
FlowSight® Calibration Beads	400300
<b>Kits</b>	
Amnis® NFκB Translocation Kit	ACS10000
Amnis® Protein Aggregate and Silicone Oil Detection Kit	APH10001
Amnis® Intracellular Staining Kit	ACS10002

**To place an order or receive technical assistance**

In Europe, please call Customer Service:

France: 0825 045 645

Germany: 069 86798021

Italy: 848 845 645

Spain: 901 516 645 Option 1

Switzerland: 0848 645 645

United Kingdom: 0870 900 4645

For other countries across Europe,  
please call: +44 (0) 115 943 0840

Or visit: [www.merckmillipore.com/offices](http://www.merckmillipore.com/offices)

For Technical Service visit:

[www.merckmillipore.com/techservice](http://www.merckmillipore.com/techservice)

