Luminex®

Amnis® Imaging
Flow Cytometers

Microscopy in Flow

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 Amnis® ImageStream®X Mk II and Amnis® FlowSight® Instruments overcome the limitations of both techniques and open the door to an extensive range of novel applications.


Immunology


Oncology

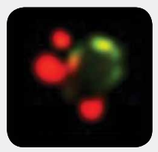

Biochemistry

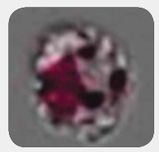

Drug Discovery


Stem Cell Biology

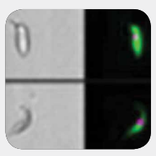

Hematology


Microbiology

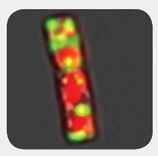

Virology

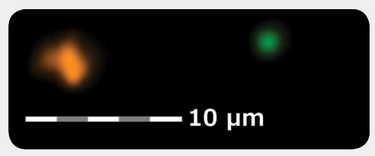

Nanotechnology


Toxicology


Parasitology


Oceanography


Phycology



Small Particle Analysis

Amnis® 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

Amnis® ImageStream®X Mk 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 1 to 7 lasers

Boundless: Variable magnification images small particles and your largest cells

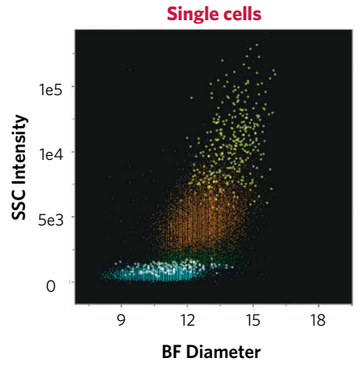
Powerful Flow Cytometry.

The ImageStream^X Mk II and FlowSight Systems deliver multiple images of every cell in flow, including brightfield, darkfield (SSC), and up to 10 fluorescent markers at high speed. The ImageStream^X Mk II camera operates with a pixel size of 0.1/0.25/1 µm^2 with 60X/40X/20X magnification, respectively, allowing visualization of fluorescence location from the membrane, cytoplasm, subcellular organelles, and nucleus at high resolution. The FlowSight System operates at 20X magnification with a 1 µm^2 pixel.

The innovative design of Amnis Flow 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.

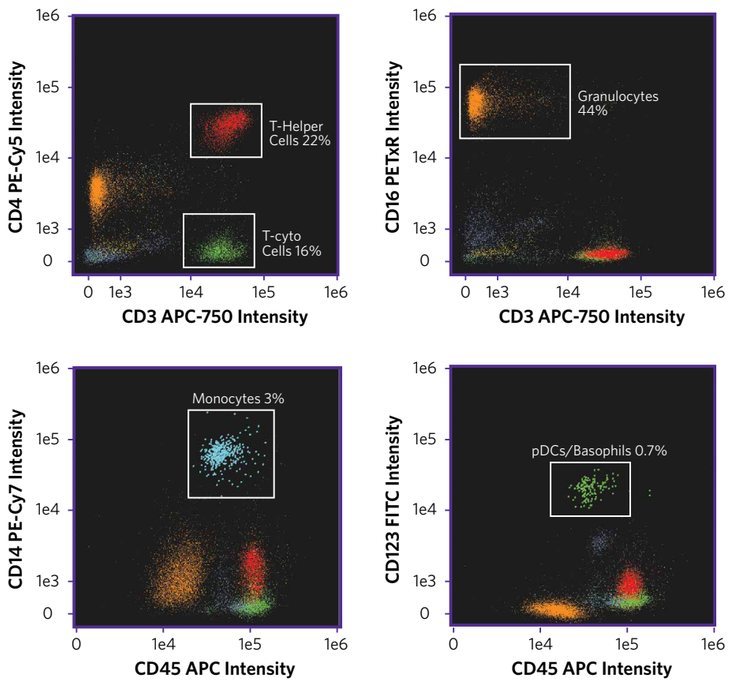
Beyond forward and side scatter

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

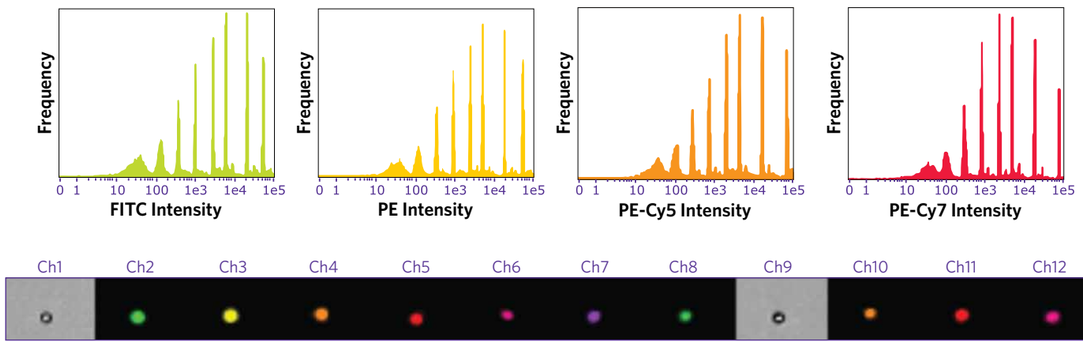
Immunophenotyping requires multiple fluorescence channels in addition to dual scatter. Below is a 6-color immunophenotype of human PBMC using antibodies against CD3, CD4, CD14, CD16, CD45, and CD123, plus DAPI. The arrangement of detection channels, available laser options, and automated compensation wizard allows for the straightforward separation of complex cell populations.



Sensitive and Flexible for Any Research Need.

Exceptional fluorescence sensitivity

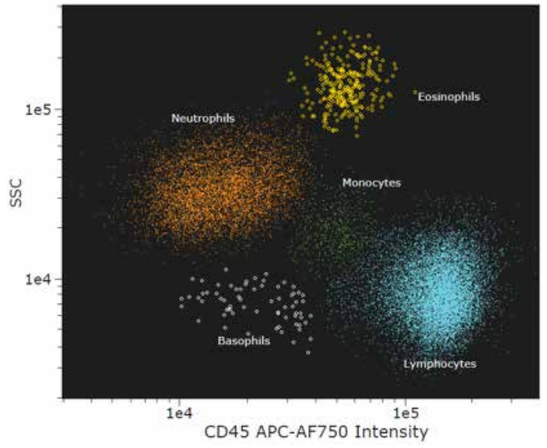
The patented architecture of Amnis imaging flow cytometers provides extraordinary fluorescence sensitivity across the visible spectrum, outperforming other imaging devices. The four plots below demonstrate the ability of the FlowSight Instrument to discriminate all intensities in the Spherotech 8-peak 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® 12 channel imagery of 3-micron diameter Spherotech 8-peak Rainbow beads.

5-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) are partitioned into 5 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).

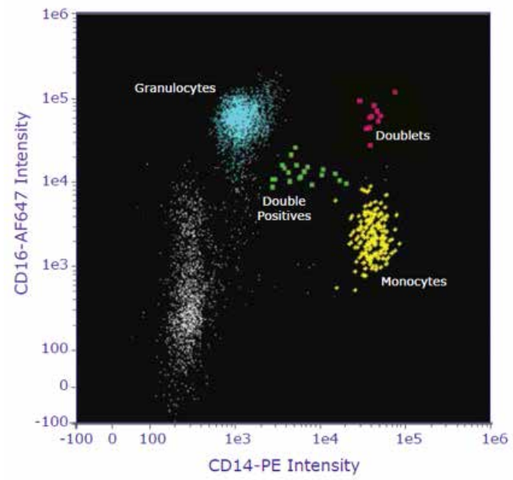


Sensitive and Flexible for Any Research Need.

Images of every cell

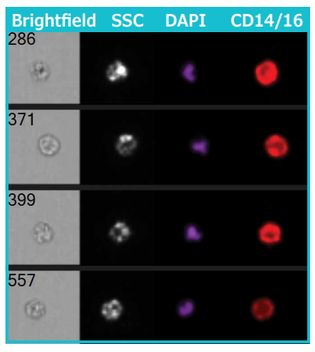
The FlowSight and ImageStream^{X} Mk II Instruments operate like conventional flow cytometers, but also provide imagery of every cell. Powerful and intuitive analysis software seamlessly links quantitative data to images:

- 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

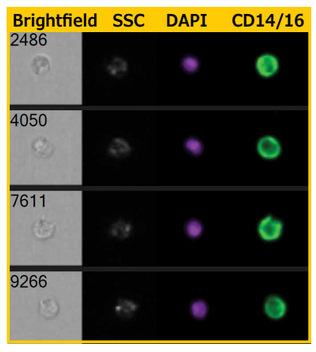


With imaging capabilities, you'll never wonder about outliers or whether your gates are in the right place, as shown in the example above. Once you've drawn a gate on a plot, you can click inside and out to determine if it's in the right place, as shown in the example to the right. With visual feedback,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

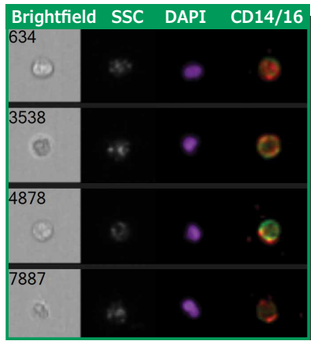
Granulocytes



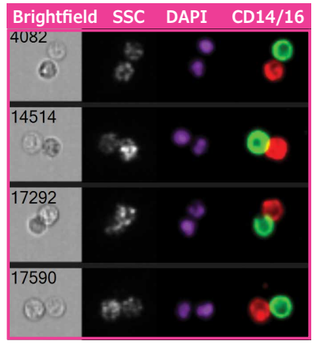
Monocytes



Double Positives



Doublet Artifacts



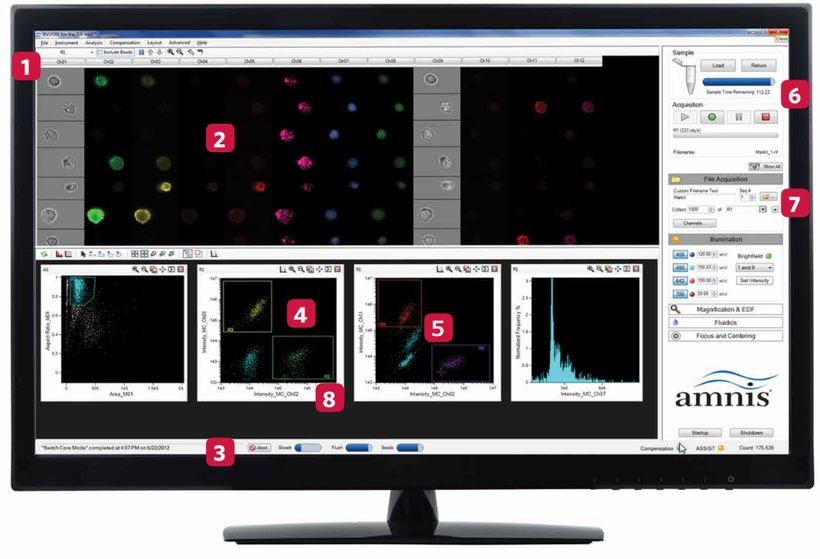
Data Acquisition Software.

Fast and easy.

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™ Software

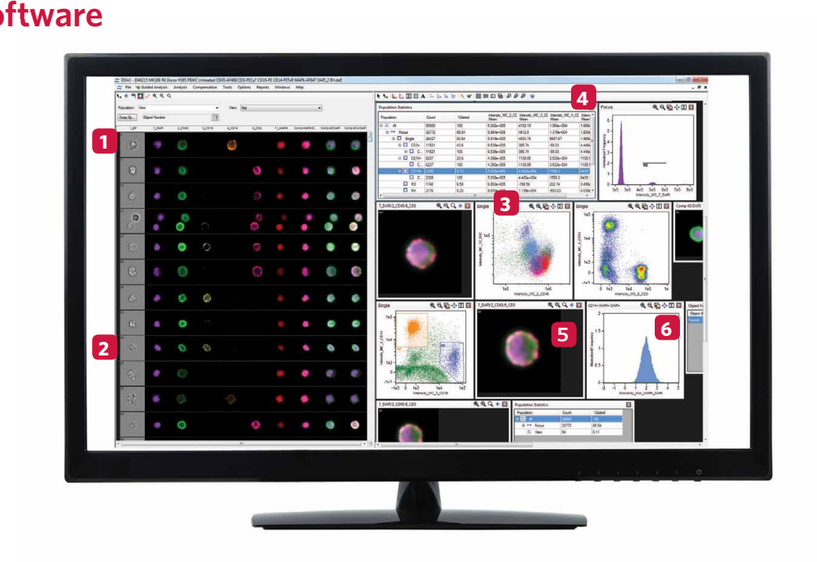


Software That Turns Data Into Understanding.

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® Software



A Wealth of Applications.

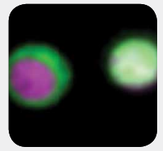
Any application you can imagine.

Featured applications

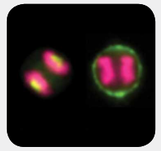
The applications detailed on the following pages demonstrate the types of studies that can be performed using the ImageStream^{X} Mk II and FlowSight Instruments with their powerful companion IDEAS image analysis software.

Any application you can imagine

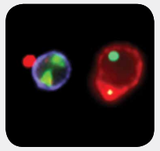
The ImageStream^{X} Mk II and FlowSight Systems are designed to be general-purpose platforms for cellular studies and are not limited to the applications illustrated in this brochure.



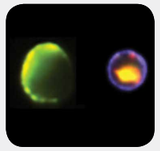
Cell Signaling



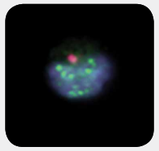
Cell Cycle and Mitosis



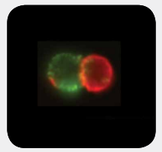
Internalization and Co-localization



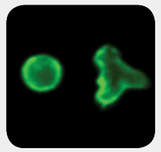
Surface and Intracellular Co-localization



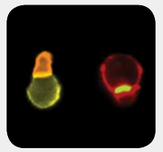
DNA Damage and Repair



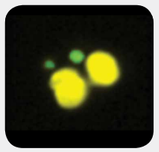
Cell-cell Interaction



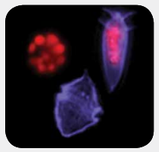
Shape Change and Chemotaxis



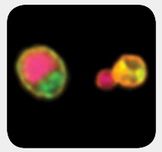
Immunological Synapse



Micronucleus Counting

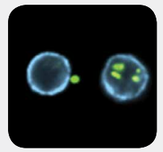


Oceanography



Stem Cell Biology

Parasitology

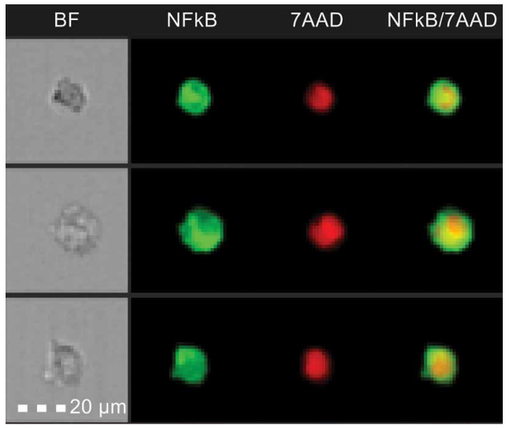


Microbiology

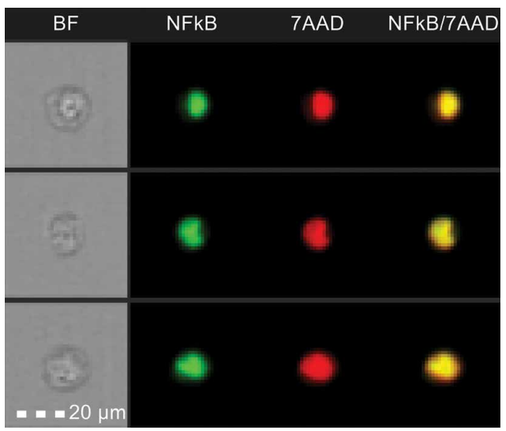
Quantifying Nuclear Translocation...

20X resolution tells the story

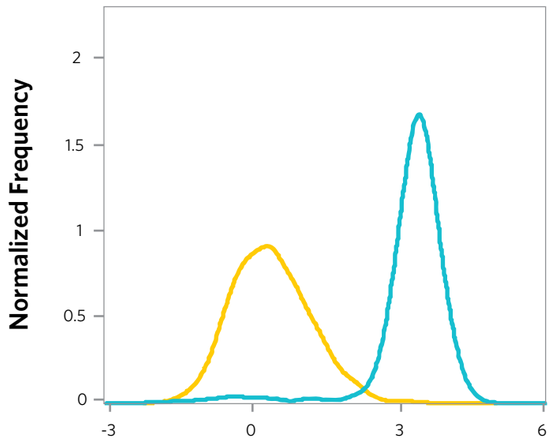
Translocation of NFkB from the cytoplasm to the nucleus of the cell is a key event in the response to the presence of cell stressors. Only imaging flow cytometers can analyze translocation quantitatively, in thousands of cells. For this data, the 20X objective of the FlowSight System is used to locate NFkB 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 co-localization of NFkB and 7-AAD.



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



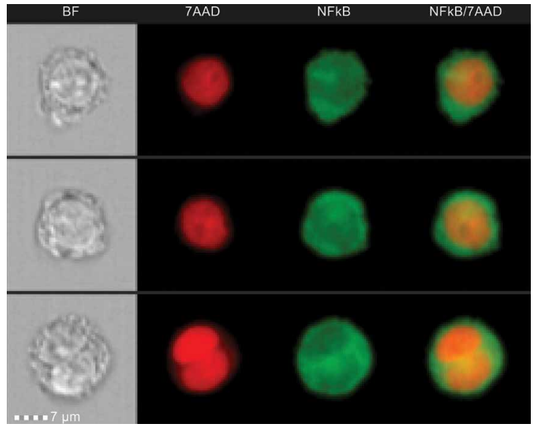
THP-1 + 1 µg/mL LPS
Mean similarity score = 3.2



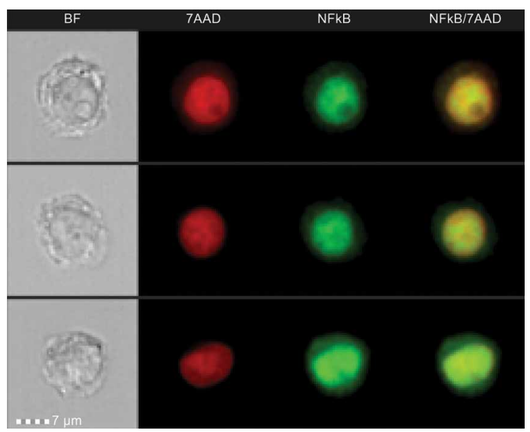
...with Flourescent Image Similarity.

A closer look at NFκB signaling with 60X magnification

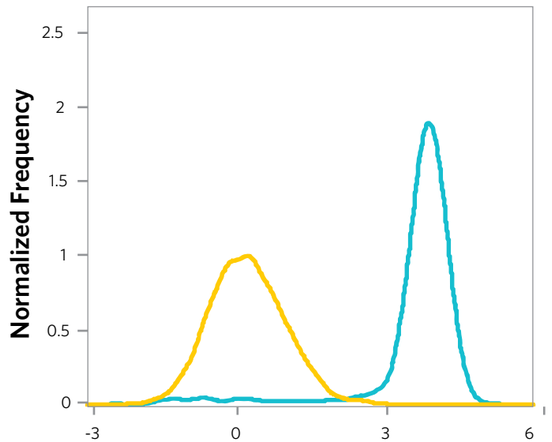
Here, THP-1 cells stimulated or not with LPS and stained with anti-NFkB and 7-AAD to counterstain the nucleus were collected on the ImageStream^X Mk II System using the 60X objective. The IDEAS Software similarity feature demonstrates binning of samples consistent with the FlowSight histogram, and establishes the quality of visual detail that the ImageStream^X Mk II System can provide for studies when greater details are needed.



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



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



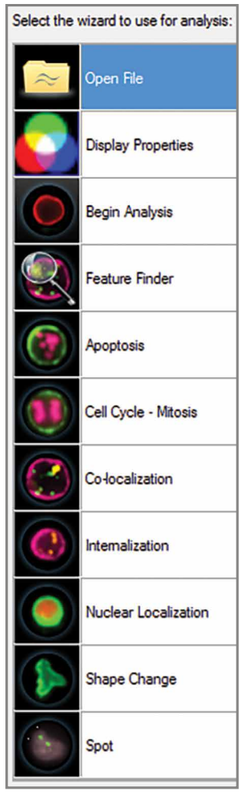
Amnis® Spectral Imaging Channels And Corresponding Fluorophores

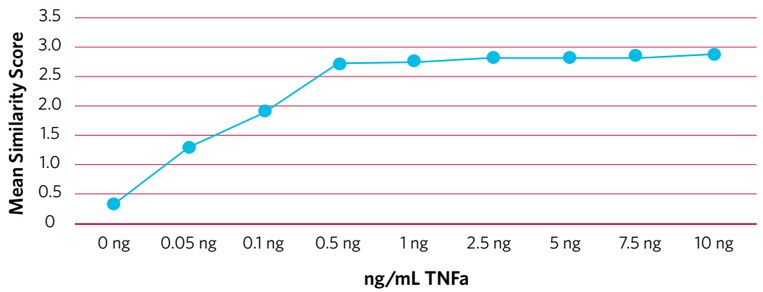
Laser	Fluorophore	Ex	Em	☼	Fluorophore	Ex	Em	☼	Fluorophore	Ex	Em	☼	Fluorophore	Ex	Em	☼	Fluorophore	Ex	Em	☼	Fluorophore	Ex	Em	☼	FlowSight®	ImageStream® Camera 1	ImageStream® Camera 2
	CH 1				**CH 2**				**CH 3**				**CH 4**				**CH 5**				**CH 6**						
375 (with installed 405)	Ch1/Ch9 BF *or*				QD525	350-450	525	5	eFluor565 NC	UV - 405	565	2	eFluor625 NC	UV - 405	625	5	eFluor700 NC	UV - 405	700	1	QD800	350-450	800	5		●	
	Alexa Fluor® 350	**346**	**442**	**1**					QD565	350-450	565	5	QD625	350-450	625	5	QD705	350-450	705	5							
	BV421™	**405**	**421**	**5**					QD585	350-450	585	5															
	Cascade Blue	377	420	1																							
	DAPI	**345**	**461**	**1**																							
	Hoechst	352	455	1																							
	Pacific Blue	410	455	1																							
488					**Alexa Fluor® 488**	**496**	**514**	**3**	Cy3	514	566	1	AldeRed	488	615		7-AAD	546	647	3	**PE-Alexa Fluor® 750**	**496,565**	**775**	**3**	●	●	
					BODIPY Fl	503	512	3	DSRed	557	592	1	PE-Alexa Fluor® 610	496,565	630	3	DRAQ5	646	697		**PE-Cy7**	**496,565**	**774**	**4**			
					DiO	484	501		**PE**	**496,565**	**578**	**5**	**PE-Texas Red®(ECD)**	**496,565**	**613**	**2**	FuraRed-lo	472	657								
					DyLight™ 488	493	518	3	RFP	555	584	2	RFP	555	584	2	**LDS751**	**543**	**712**								
					FITC	**494**	**520**	**3**									**PE-Alexa Fluor® 647**	**496,565**	**669**	**5**							
					GFP/EGFP	**475/488**	**509**										PE-Cy5	496,565	670	4							
					LysoTracker Green	504	511										PE-Cy5.5	496,565	690	3							
					MitoTracker Green	490	516										PerCP	482	675	2							
					PKH2 & PKH67	490	504										**PerCP-Cy5.5**	**482**	**690**	**3**							
					Rhodamine 110	496	520										**PI**	**535**	**617**								
					SYBR® Green	494	521																				
	BRIGHTFIELD				Syto13 (DNA/RNA)	488D/491R	509D/514R																				
					YFP	514	527																				
561									**Alexa Fluor® 546**	**556**	**573**	**5**	**Alexa Fluor® 568**	**578**	**603**	**3**	7-AAD	546	647	5	**PE-Alexa Fluor®750**	**496,565**	**775**		●	●	
									CellMask/Tracker	522	535		DyLight™594	593	618		DRAQ5	646	697		**PE-Cy7**	**496,565**	**774**	**4**			
									DiI	549	565		PE-Texas Red®(ECD)	496,565	613	2	LDS751	543	712								
									DSRed	557	592	3	PE-Alexa Fluor®610	496,565	628	5	**PE-Alexa Fluor® 647**	**496,565**	**669**	**5**							
									DyLight™550	562	576	3	RFP	555	584	4	**PE-Cy5**	**496,565**	**670**	**4**							
									Nile Red	515-530	525-605		mCherry*	587	610	4											
									PE	**496,565**	**578**	**5**															
									PKH26	551	567																
									Spectrum Orange	559	588																
									Sytox Orange	547	570																
785																					SSC				●	●	●
Ch width	**435-480**				**480-560**				**560-595**				**595-642**				**642-745**				**745-780**				**Ch width**		
Bandpass*	**(457/45)**				**(528/65)**				**(577/35)**				**(610/30)**				**(702/85)**				**(762/35)**				**Bandpass***		
	CH 7				**CH 8**				**CH 9**				**CH 10**				**CH 11**				**CH 12**						
375 (with 405 not installed)	Alexa Fluor® 350	346	442	1	eFluor525 NC	UV - 405	525	1																		●	
	BV421™	**405**	**421**	**5**	QD525	350-450	525	5																			
	Cascade Blue	377	420	1																							
	DAPI	**345**	**461**	**1**																							
	Hoechst	352	455	1																							
	Pacific Blue	410	455	1																							
405	Alexa Fluor® 405	402	421	1	Alexa Fluor® 430	434	541	1					eFluor625 NC	UV- 405	625	5	eFluor650 NC	UV- 405	650	5	QD800	350-450	800	5	●		●
	BV421®	**405**	**421**	**5**	**BV510™**	**405**	**510**	**3**					QD625	350-450	625	5	QD705	350-450	705	5							
	Cascade Blue	377	420	1	Cascade Yellow	402	545	1																			
	CFP	435	485	2	Pacific Orange	410	551	1																			
	DAPI	**345**	**461**	**1**	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																							
592													**Alexa Fluor® 594**	**590**	**617**	**2**										●	
													DyLight™594	593	618												
													mCherry	587	610	1											
													Texas Red®	**595**	**603**	**5**											
642																	**Alexa Fluor® 647**	**650**	**668**	**5**	**APC-Alexa Fluor® 750**	**650**	**774**	**2**			
																	Alexa Fluor® 660	**663**	**690**	**2**	**APC-Cy7**	**650**	**774**	**2**			
																	APC	**645**	**660**	**5**	APC-eFluor750	633	750	4	●	●	●
																	Cy5	650	670	2	APC-H7	652	785				
																	DiD	644	665		Cy7	743	767	3			
																	DRAQ5	646	697		eFluor780	753	785	2			
																	DyLight™650	655	670		PE-Cy7	496,565	774	4			
730																					**Alexa Fluor® 750**	**749**	**775**	**4**			
																					Cy7	743	767	3		●	
																					DyLight™755	75 4	776				
785																					SSC						●
Ch width	**435-505**				**505-570**				**570-595**				**595-642**				**642-745**				**745-780**				**Ch width**		
Bandpass*	**(457/45)**				**(537/65)**				**(582/25)**				**(610/30)**				**(702/85)**				**(762/35)**				**Bandpass***		

Quantitative Imaging and Robust Population Statistics.

Quantitative imaging means Luminex's imaging flow cytometers have 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.



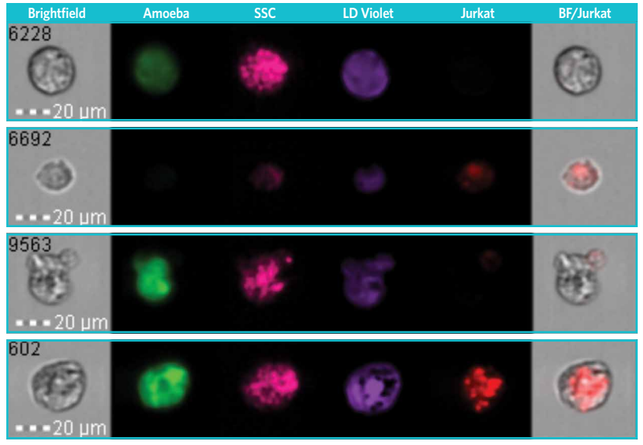


File	Count All	Count Focus	Count Singles	Count Positive	Mean Similarity	Std Dev Similarity
TNFa_0ng_2_2016.daf	10000	4903	4265	3740	0.34	0.71
TNFa_0-05ng_3_2016.daf	10000	4621	4060	3635	1.28	0.81
TNFa_0-1ng_4_2016.daf	10000	4280	3739	3365	1.90	0.82
TNFa_0-5ng_5_2016.daf	10000	4861	4167	3516	2.68	0.66
TNFa_1ng_6_2016.daf	10000	3811	3311	2910	2.72	0.63
TNFa_2-5ng_7_2016.daf	10000	3893	3425	3070	2.80	0.58
TNFa_5ng_8_2016.daf	10000	4162	3685	3180	2.80	0.52
TNFa_7-5ng_9_2016.daf	10000	4361	3782	3387	2.82	0.58
TNFa_10ng_10_2016.daf	10000	4005	3456	2988	2.90	0.55

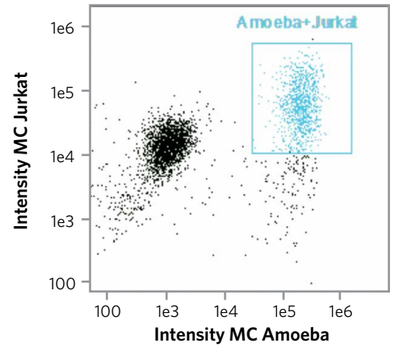
Internalization Identifies Trogocytosis.

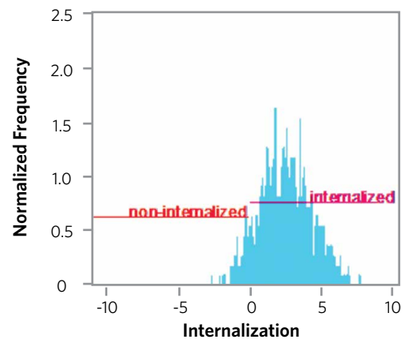
20X objective for a wider field of view

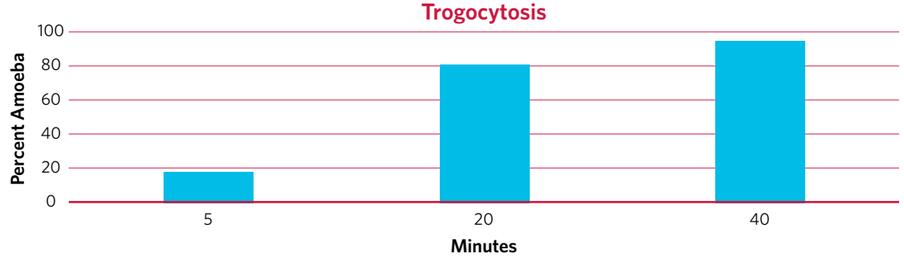
The FlowSight Instrument is optimized for imaging large objects such as epithelial cells, macrophages, neutrophils, fibroblasts, and even large eukaryotic parasites. Here, *Entamoeba histolytica* demonstrates amoebic trogocytosis of immune cells. Following attachment to Jurkat cells, the FlowSight Instrument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



Data courtesy of Dr. Katherine Ralston, UC Davis.

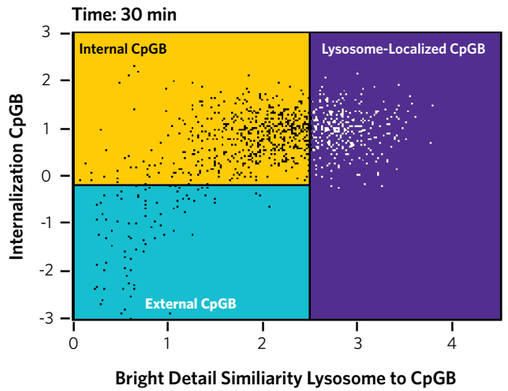




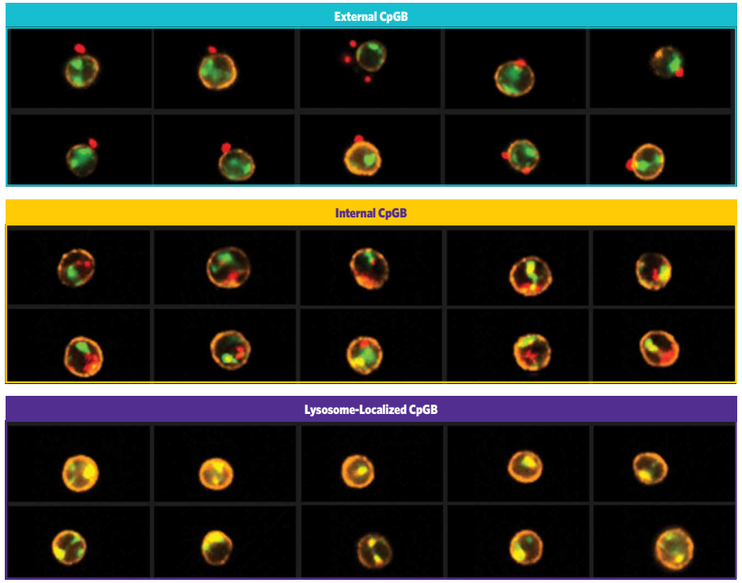


Co-localization and Trafficking.

The ImageStream^{X} Mk 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 and 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).

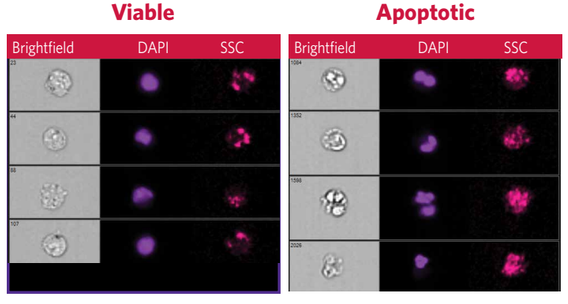
Data courtesy of Dr. Patricia Fitzgerald-Bocarsly, University of Medicine and Dentistry, New Jersey.

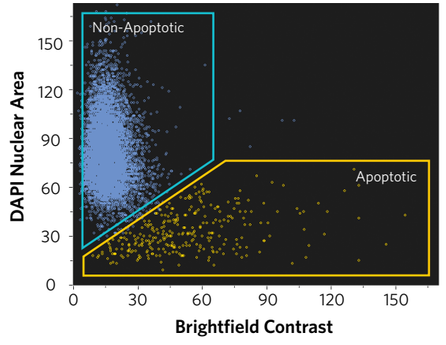
Apoptosis and Necrosis.

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.

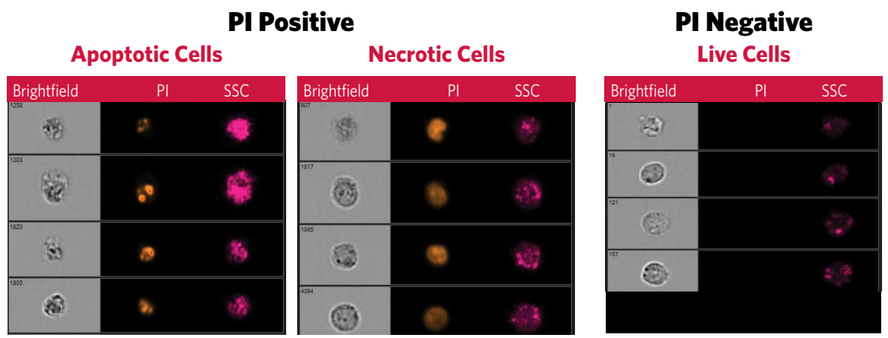
Differentiate necrotic and apoptotic cells from each other by measuring the texture of the PI images.





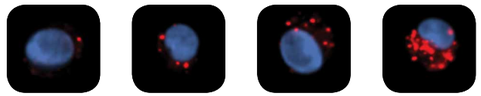
Necrosis versus apoptosis

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.

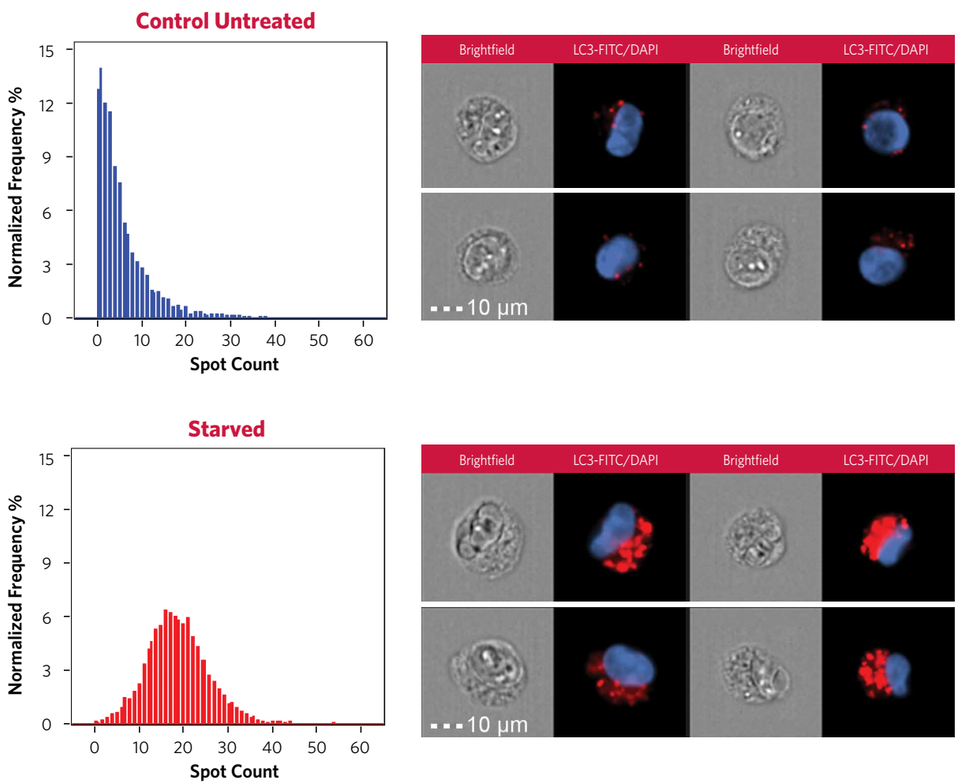


The IDEAS image processing software included with the ImageStream^{X} Mk II System determines the Spot Count of every cell. In this example, cells with varying number of LC3-RFP (red) spots are shown with their corresponding Spot Count.

Example: Autophagy in the human CML cell line K562

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.

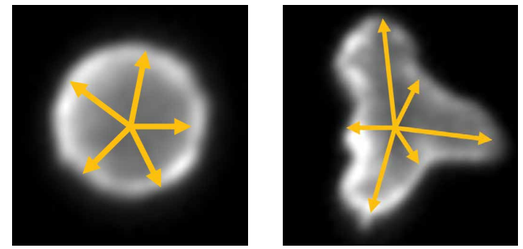


U2OS RFP-LC3 human osteosarcoma reporter cell line was starved for 4 hours at 37˚C. Both the control and starved samples were supplemented with a degradation inhibitor. FlowCellect RFP-LC3 Reporter Autophagy Kit (Catalog No. FCCH100183).

Morphology.

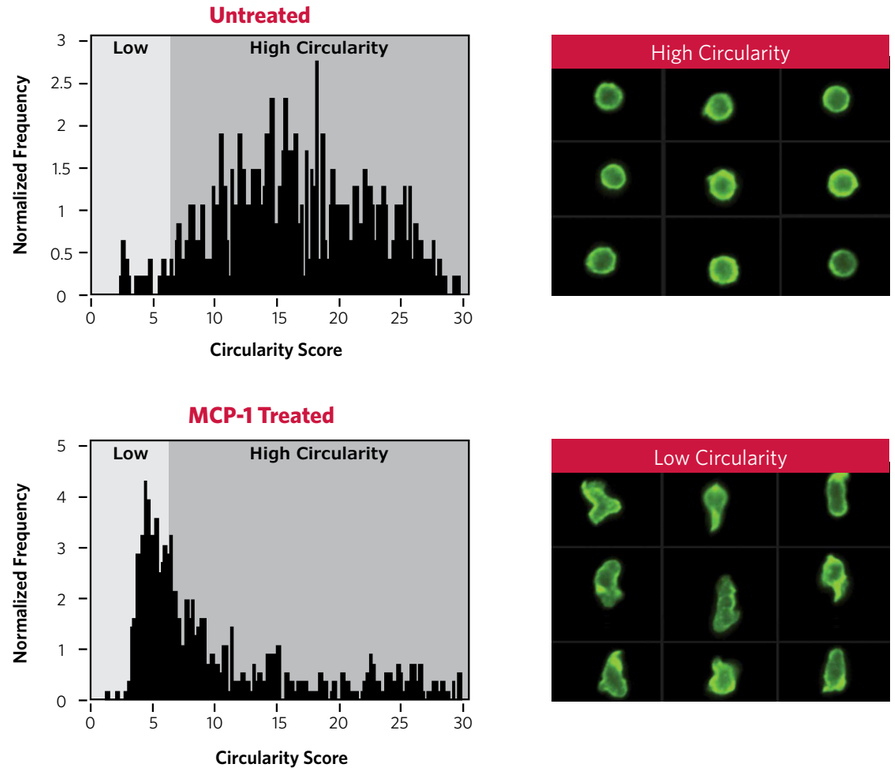
Change in cell shape is correlated with change in function, particularly in the case of macrophage activation, stem cell differentiation, and cellular response to drugs. The ImageStream^{X} Mk II Instrument measures cell shape using powerful, pre-defined features in the IDEAS image analysis software. One such feature is the Circularity score.

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

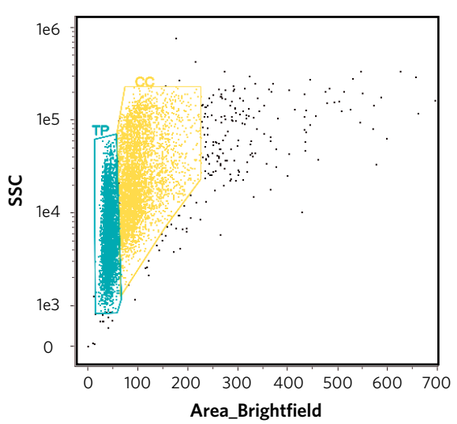
Chemoattractant MCP-1 induces monocyte shape change and migration to sites of inflammation, as evidenced by the significant decrease in the Circularity score of the MCP-1 treated sample relative to the untreated control. In contrast, treatments that reduce inflammatory response – such as drugs for autoimmune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

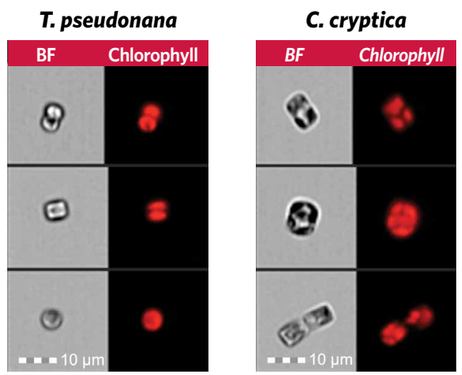


Microalgae.

Mixed cultures of microalgae

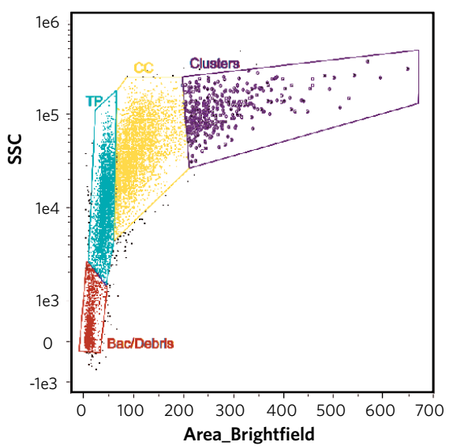
The images below demonstrate microalgae identification in mixed cultures using morphological parameters and the ImageStream^X Mk II Instrument at 40X magnification.

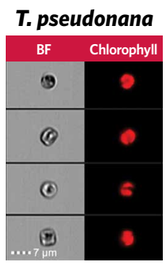


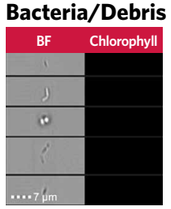


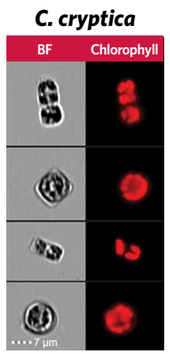
Microalgae quality control

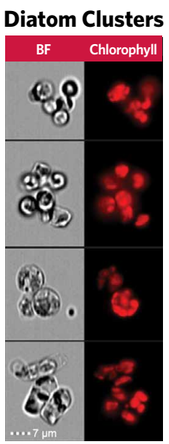
The images below demonstrate detection of bacterial contamination, cellular debris, and clusters in mixed culture of microalgae. A mixed culture of *T. pseudonana* and *C. cryptica* contaminated with bacteria was analyzed on the ImageStream^X Mk II System at 60X magnification.





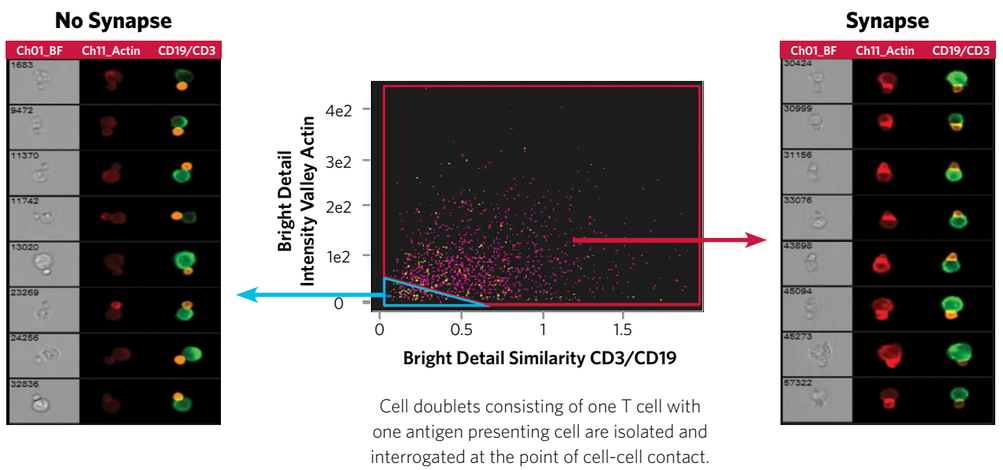






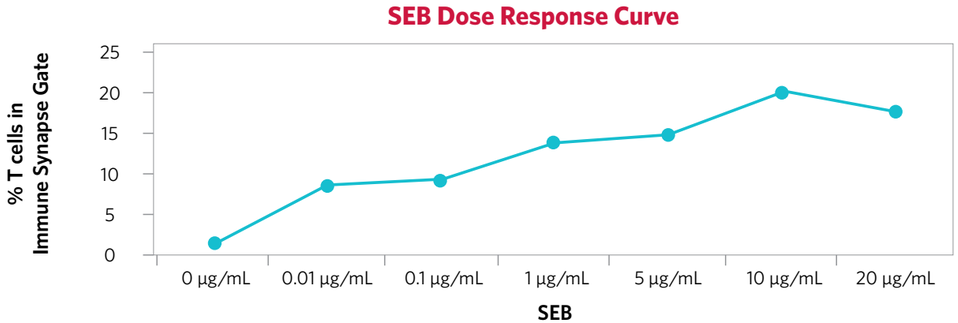
Quintessential Cell Interactions at the Immunological Synapse.

FlowSight 20X images



Cell doublets consisting of one T cell with one antigen presenting cell are isolated and interrogated at the point of cell-cell contact.

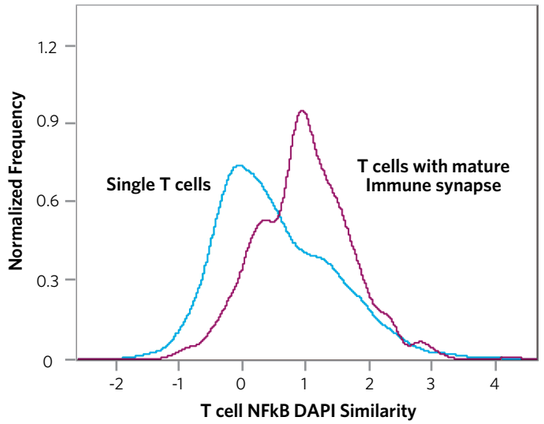
SEB Dose Response Curve



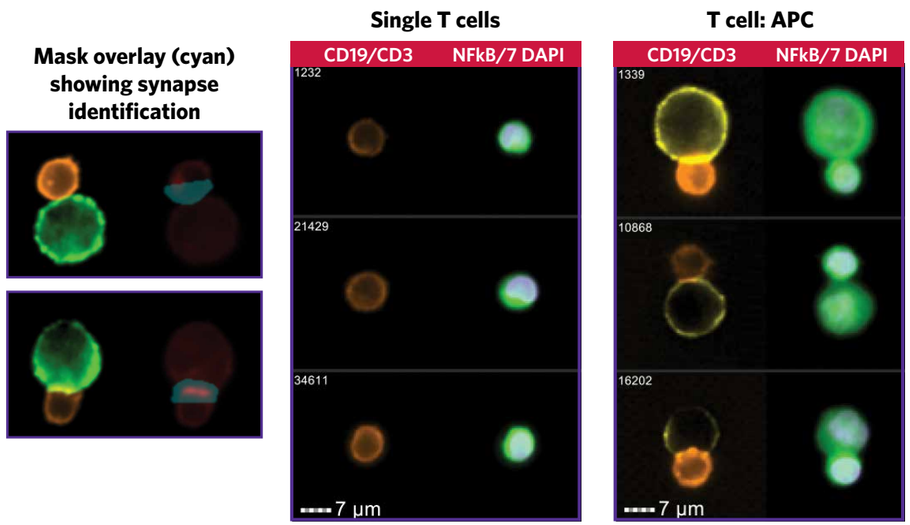
Raji B cells were exposed to SEB (0-20 µg/mL) and incubated with human primary T cells.

Take the Analysis Even Further with Higher Resolution.

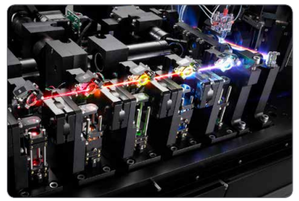
- T:APC conjugates are easily identified using morphological features
- The point of cell-cell contact is identified using a mask (cyan overlay)
- Actin accumulation within the mask confirms formation of an immunological synapse
- All T cells are then identified either in conjugates or not
- NFkB translocation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



ImageStream^X Mk II 60X images



Modular Options for the **FlowSight** and **ImageStream^X Mk II** Instruments.

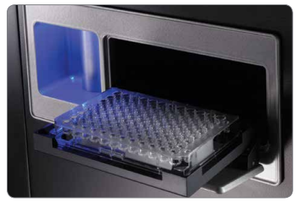


Additional excitation lasers

The 488 nm blue laser comes standard with the FlowSight and ImageStream^X Mk II Instruments. Adding excitation lasers increase experimental flexibility by permitting a broader palette of fluorescent markers. All lasers are intensity adjustable to ease protocol development.

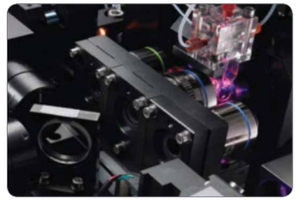
12 channels of detection

Up to 12 high resolution image channels are available with the addition of an optional second camera and associated optics for the ImageStream^X Mk II System. Twelve channels are standard on the FlowSight Instrument.



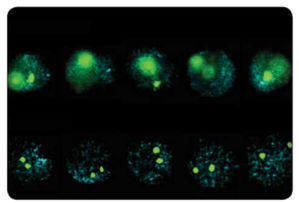
Multi-well plate AutoSampler

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^X Mk II 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 option incorporates Wavefront Coding technology from OmniVision 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®	ImageStream®^{X} Mk II
Additional Excitation Lasers	Standard 488 Option 405, 561, 642	Standard 488 Option High Power 488, 375, 405, 561, 592, 642, and 730
12 Channels of Detection	Standard	6 Standard High Resolution 12 Channel Option
Multi-well Plate Autosampler	96-Well Plate	96-Well Plate
MultiMag	Not Available	40X Standard; 20X and 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 µm
Field of view	60 x 256 µm
Imaging rate	4,000 cells/sec

Sample characteristics

- **Volume** – 20-200 µL
- **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" H x 25" D in (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** – Multi-channel

...Advances Performance.

ImageStream^X Mk II Instrument specifications

Performance Characteristics	Magnification		
	40X	60X	20X
Numeric aperture	0.75	0.9	0.5
Pixel size	0.5 x 0.5 µm	0.3 x 0.3 µm	1.0 x 1.0 µm
Field of view	60 x 128 µm	40 x 170 µm	120 x 256 µm
Imaging rate	2,000 cells/sec	1,200 cells/sec	5,000 cells/sec

Sample characteristics

- **Volume** – 20-200 µL
- **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

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

Physical characteristics

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

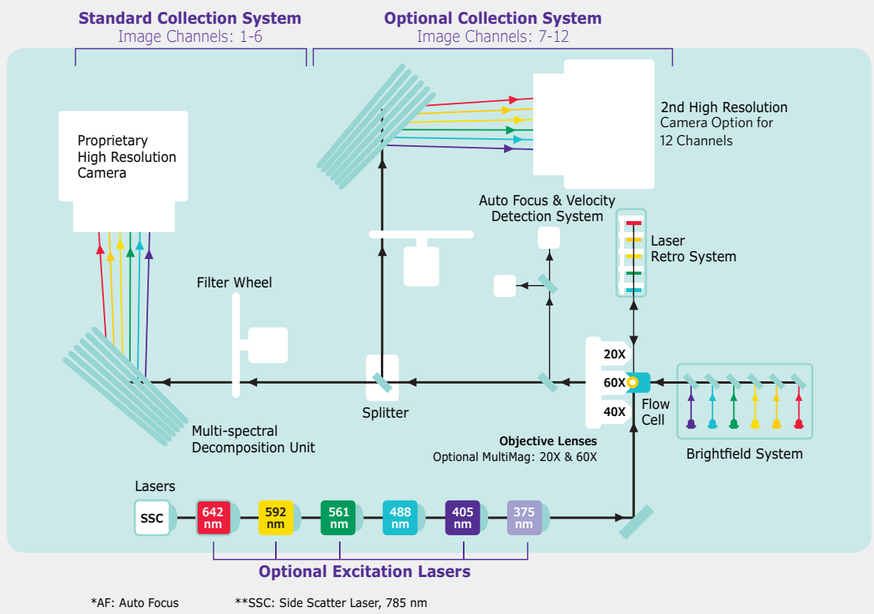
Illumination

- **Excitation** – Standard: 488 nm; Optional: High Power 488, 375 nm, 405 nm, 561 nm, 592 nm, 642 nm, and 730 nm
- **Side scatter** – 785 nm standard
- **Brightfield** – Multi-channel

The Path to Scientific Enlightenment...

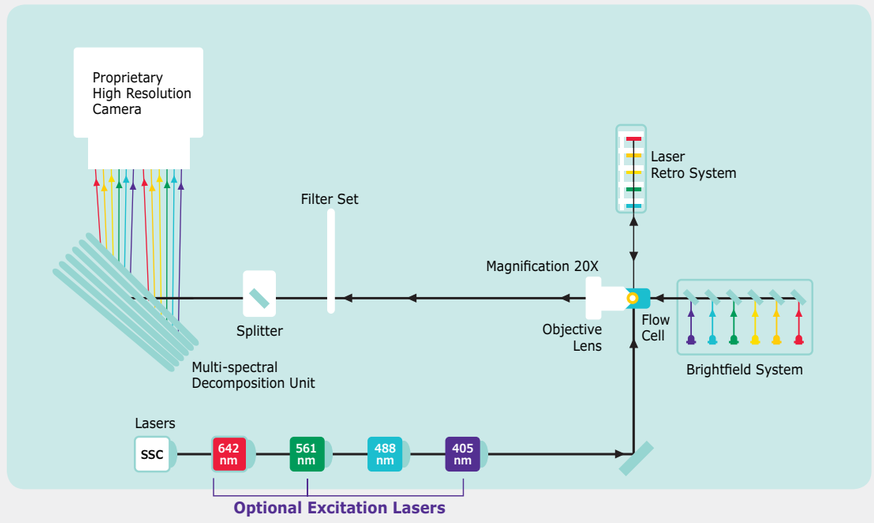
...passes through the Amnis® multi-spectral decomposition element, which enables simultaneous collection of brightfield, laser scatter, and multiple fluorescent images per cell.

ImageStream®X Mk II Imaging Flow Cytometer Optical Layout



*AF: Auto Focus **SSC: Side Scatter Laser, 785 nm

FlowSight® Imaging Flow Cytometer Optical Layout



Ordering Information

Product Name	Part Number
Instruments	
Amnis® FlowSight® Flow Cytometer	100370
Amnis® ImageStream®X Mk II Flow Cytometer	100220
Reagents	
Amnis® SpeedBead® Kit	400041
FlowSight® Calibration Beads	400300
Kits	
Amnis® NFkB Translocation Kit	ACS10000
Amnis® Protein Aggregate and Silicone Oil Detection Kit	APH10001
Amnis® Intracellular Staining Kit	ACS10002
Service Plans	
ImageStream®X Mk II Complete Maintenance and Service Agreement	SLA-ISXMkII-COMPLETE
ImageStream®X Mk II Basic Maintenance and Service Agreement	SLA-ISXMkII-BASIC
FlowSight® Complete Maintenance and Service Agreement	SLA-FS-COMPLETE
FlowSight® Basic Maintenance and Service Agreement	SLA-FS-BASIC
Training Options	
ImageStream®X Mk II training at Luminex, 3 days - per person	5020
Onsite ImageStream®X Mk II or FlowSight® training - FAS 1 day - up to 5 people	50200-1
Onsite ImageStream®X Mk II or FlowSight® training - FAS 2 consecutive days - up to 5 people	50200-2
Onsite ImageStream®X Mk II or FlowSight® training - FAS 3 consecutive days; Up to 5 people	50200-3
Onsite ImageStream®X Mk II or FlowSight® training - FAS 4 consecutive days; Up to 5 people	50200-4
Onsite ImageStream®X Mk II or FlowSight® training - FAS 5 consecutive days; Up to 5 people	50200-5

Luminex®
complexity simplified.

For more information, please visit luminexcorp.com/flowsight-imaging and luminexcorp.com/imagestreamx-mark-ii.

For Research Use Only. Not for use in diagnostic procedures.

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