



Miltenyi Biotec

CytoGenics 
life science innovation

MACSQuant[®] Flow Cytometers

The future of automation



**JOIN THE
FLOW
REVOLUTION**

At the heart of intelligent design

The first MACSQuant® Analyzer was engineered to enable demanding and diverse flow cytometry applications of researchers around the world.

At Miltenyi Biotec, we have since continued to expand our instrument portfolio to meet the ever-growing complexities in cell analysis. Innovation is at the core of each MACSQuant Instrument, offering automated flow cytometry solutions for a diverse array of applications.

Wondering which MACSQuant Flow Cytometer is the best fit for your lab? Explore your options in the MACSQuant family of flow cytometers.

- **MACSQuant Analyzer 10**
automating and standardizing key assays
- **MACSQuant Analyzer 16**
increasing parameters with more colors
- **MACSQuant X**
high-throughput applications from streamlined fluidics and sample processing
- **MACSQuant VYB**
red fluorescent protein analysis and optimized FITC and PE applications

				
Automation features				
Automated acquisition	●	●	●	●
Automated labeling	●	●	●	●
Automated start up, shutdown, cleaning	●	●	●	●
Automated compensation	●	●	●	●
Optics				
10 parameter	●	●		●
16 parameter			●	
405 nm laser	●	●	●	●
488 nm laser	●	●	●	●
561 nm laser				●
640 nm laser	●	●	●	
405 nm side scatter			●	
488 nm side scatter	●	●		●
Sample processing				
Needle-arm vibration mixing		●		
Orbital sample mixing		●		
Pipette sample mixing	●		●	●
24-tube rack processing	●	●	●	●
96-well plate processing	●	●	●	●
384-well plate processing		●		
High-throughput plate screening		●		
Sample cooling (chill racks)	●		●	●
Low carryover: standard mode <0.01%	●	●	●	●
Unique features				
Absolute cell counting	●	●	●	●
Rare cell enrichment	●		●	●
Remote support	●	●	●	●
Multi-instrument alignment	●	●	●	●
21 CFR Part 11 compliant software	●	●	●	●



Reliable reagents

- REAfinity® Recombinant Antibodies for reproducible results in flow cytometry applications
- Vio® and VioBright™ Dyes with superior mean fluorescence intensity and high stain indices

Customized solutions

- Antibodies and conjugates tailored to your specifications
- Personalized multicolor antibody cocktails
- Custom 'Express Mode' development, including pre-set acquisition, algorithm-based gating, and analysis templates

21 CFR Part 11 software package

Seamless data submission to regulatory agencies ensured by:

- Audit trail
- Analysis reports with e-signature
- User management system according to 21 CFR part 11

Support and service

- Remote support at your fingertips via MACSQuant live support portal
- On- and offsite training programs
- Application support
- Comprehensive service offerings including IQOQ

MACSQuant® Analyzer 10

Your trusted partner in automated flow cytometry

The MACSQuant® Analyzer 10 brings to life the versatility and power required for modern flow cytometry applications. Whether mining for rare cells, analyzing the efficiency of your cell manufacturing process or investigating signaling pathways, you are equipped for the task at hand.

Truly hands-free operation

With a range of automated features, the MACSQuant Analyzer 10 lays the foundation for true automation present in all instruments belonging to the MACSQuant Family of flow cytometers.



Application highlight: Automated assays

- In-process and quality control
- Cellular therapy, i.e., chimeric antigen receptor (CAR) T cell manufacturing
- Toxicological assays
- Whole blood analysis
- Cell counting
- Rare cell analysis
- Small particles / exosomes
- Cytokine arrays

Automated features of the MACSQuant Family

Startup, cleaning, and shutdown

Compensation

Labeling

Calibration and quality control (QC)



MACSQuant Analyzer 10 optical bench

405 nm

450/50 nm	VioBlue®
525/50 nm	VioGreen™

488 nm

488/10 nm	FSC
488/10 nm	SSC
525/50 nm	FITC
585/40 nm	PE
655–730 nm	PerCP-Vio® 700
750 nm LP	PE-Vio® 770

640 nm

655–730 nm	APC
750 nm LP	APC-Vio® 770

MACSQuant® X

Reliable high-throughput flow cytometry

Engineered from the ground up as a compact flow cytometer, the MACSQuant® X was made to provide speed and reliability in high-throughput screening. It allows you to get more data, in less time, with less effort. Perfect for laboratories that want to maximize efficiency, while enjoying the certainty of getting reliable results from every tube, 96- or 384-well plate. The MACSQuant X has been designed to meet high-throughput cell analysis needs for the most challenging large-scale screening settings.

Technology highlight:

Integration with liquid handling systems

- Robust flow cytometer capable of processing up to 9,200 samples per day (96-well plate within 15 minutes, 384-well plate in under 60 minutes)
- Seamless integration into a variety of liquid handling systems

Orbital and needle mixing ensure consistency and accuracy in assay performance and cell counting.

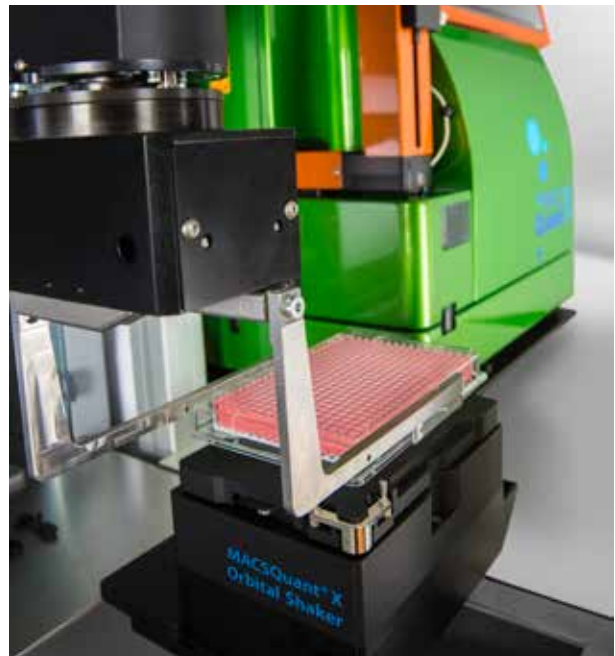
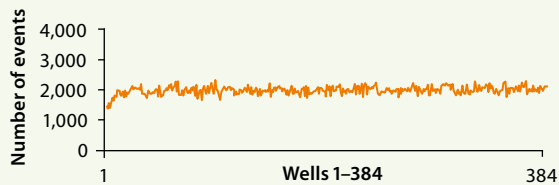
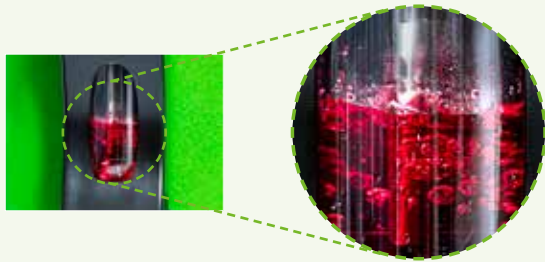


Figure 1: Fast and reliable processing of 96- and 384-well plates.

MACSQuant X optical bench

405 nm

450/50 nm	VioBlue®
525/50 nm	VioGreen™

488 nm

488/10 nm	FSC
488/10 nm	SSC
525/50 nm	FITC
585/40 nm	PE
655-730 nm	PerCP-Vio® 700
750 nm LP	PE-Vio® 770

640 nm

655-730 nm	APC
750 nm LP	APC-Vio® 770

MACSQuant® Analyzer 16

Colorful new possibilities in automated flow cytometry

Expanding fully automated data acquisition to 16-parameters is what the MACSQuant® Analyzer 16 is all about. The instrument's compact design is suited for basic research as well as advanced immune monitoring applications. It provides users with the flexibility and customization known from the MACSQuant Analyzer 10, with an additional six fluorescent channels to meet the increasing demands of modern laboratories.

Unique features

- Expanded fluorescent channels: Amplify your data with up to 16 parameters, while using 40% less sample material
- Violet side scatter: Enhance your small particle analysis with the optimal laser line.

Technology highlight: More acquisition parameters and multi-instrument alignment

- Explore more cell subsets and their activation status by utilizing a broader range of fluorochrome and antibody options
- Improved consistency and reproducibility by easy aligning of instrument settings for intra- and inter-lab assays or applications. Down the hall or around the world!



MACSQuant Analyzer 16 optical bench

405 nm

405/10 nm	SSC
450/50 nm	VioBlue®
525/50 nm	VioGreen™
579/34 nm	BV 570™
615/20 nm	BV 605™
667/30 nm	BV 650™

488 nm

488/10 nm	FSC
525/50 nm	FITC
579/34 nm	PE
615/20 nm	PE-Vio® 615
667/30 nm	PerCP
725/40 nm	PerCP-Vio® 700
785/62 nm	PE-Vio® 770

640 nm

667/30 nm	APC
725/40 nm	Alexa Fluor® 700
785/62 nm	APC-Vio® 770

MACSQuant® VYB

Your benchmark for fluorescent protein flow cytometry

On top of the performance, automation, compactness and convenience associated with the MACSQuant® Family of flow cytometers, the MACSQuant VYB comes with a uniquely configured optical bench, featuring violet, yellow, and blue lasers. It is a perfect match for labs utilizing fluorescent protein reporters or for labs that want to simply use PE and FITC conjugates.

Technology highlight: Finding the right fit for fluorescent proteins with the yellow laser

- Fully utilize fluorescent proteins and reporter applications that require the Violet, Blue or Yellow laser such as mCherry, GFP and CFP (figure 2)
- Optimal excitation of PE and PE tandem dyes
- Excite and analyze APC and APC tandems
- Minimize compensation for FITC/GFP and PE conjugates (figure 3)

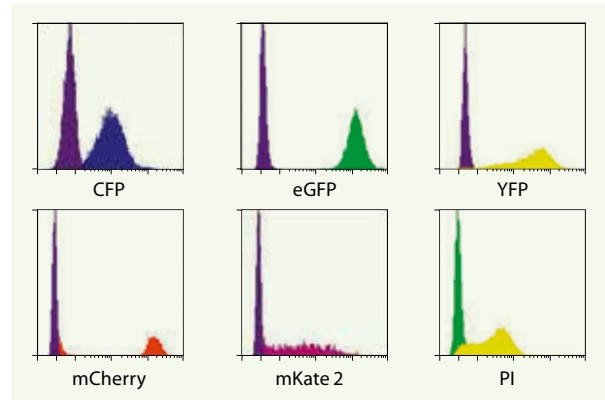


Figure 2: The MACSQuant VYB can detect a wide range of fluorescent proteins. Histograms of cells transfected with CFP, GFP, YFP (top row), mCherry, and mKate 2 (bottom row) are easily distinguished from non-transfected cells (shown in purple). GFP and YFP are often difficult to distinguish using flow cytometry due to similarities in their emission spectra. With the MACSQuant VYB, YFP (shown in yellow) and GFP (shown in green) cells are clearly distinguishable when observed in the PI channel (bottom right).

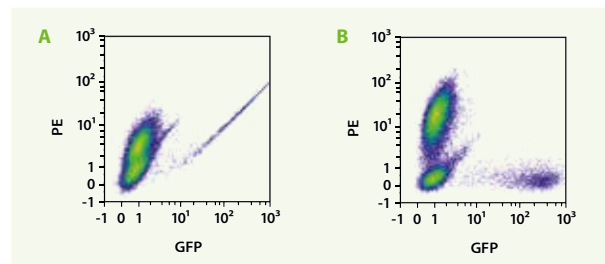


Figure 3: Cells expressing GFP were stained using a PE-conjugated antibody against a dim marker and analyzed using the MACSQuant VYB. Excitation of both PE and GFP with the blue 488 nm laser only minimally resolves the two signals (A). In comparison, excitation of PE by the yellow 561 nm laser and of GFP by the blue 488 nm laser fully resolves these two signals without the need for any compensations (B).

MACSQuant VYB optical bench

405 nm

452/45 nm	VioBlue®, BFP
525/50 nm	VioGreen™

488 nm

525/50 nm	GFP, FITC
593–650 nm	PI, LSS-mKate

561 nm

561/4 nm	FSC
561/4 nm	SSC
586/15 nm	PE
615/20 nm	mCherry, PE-Vio® 615
661/20 nm	mKate, APC
750 nm LP	PE-Vio® 770, APC-Vio® 770



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