Miltenyi Biotec

MACSQuant® VYB

Your benchmark for fluorescent protein flow cytometry

JOIN THE FLOW REVOLUTION

Your benchmark for fluorescent protein flow cytometry

The MACSQuant VYB delivers all the performance, automation, compactness, and convenience of the MACSQuant Analyzer but with a uniquely confirgured optical layout, featuring violet, yellow, and blue lasers. With this new optical layout in combination with ten optical detection channels, the MACSQuant VYB is a powerful and versatile flow cytometer for virtually every lab.

Ideal match

With the yellow 561 nm laser and ten optical detection channels, the MACSQuant VYB offers a perfect match for fluorescent proteins and conjugates.

Automation

With a range of automated features, the MACSQuant VYB lays the foundation for true automation.

Simplicity

Minimize the learning curve with straight forward experiment setup and operation.

Multi-instrument alignment

Using our Smart Gain technology, users can harmonize data with collaborating labs to ensure reproducibility.


MACS
QuantVYB

Simplicity

Fluorescent protein

Automation

Feel the VYB

A uniquely configured optical bench, featuring violet, yellow, and blue lasers. It is a perfect match for labs utilizing fluorescent protein reporters or for researchers that want to simply use FITC and PE conjugates with minimal compensation.

The yellow laser expands your possibilities

- Fully utilize fluorescent proteins and reporter applications that require the violet, blue or yellow laser such as mCherry, GFP and CFP (fig. 1).
- Discriminate APC populations with ease.
- Minimize compensation for FITC/GFP and PE conjugates (fig. 2).
- Optimal excitation of PE and PE tandem dyes.
- Classical immunophenotyping with greater number of colors.

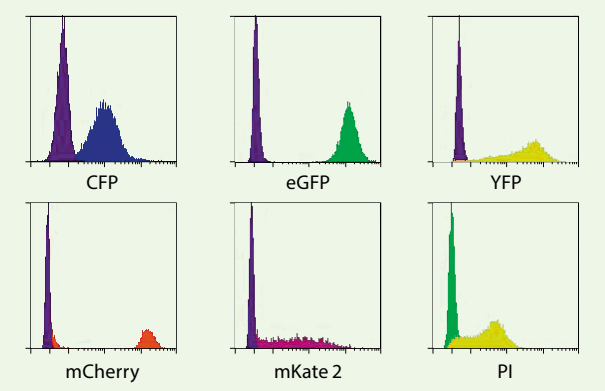


Figure 1: The MACSQuant VYB can detect a wide range of fluorescent proteins. Histograms of cells transfected with CFP, eGFP, YFP (top row), mCherry, and mKate 2 (bottom row) are easily distinguished from non-transfected cells (shown in purple). GFP and YFP are often difficult to distinguish using flow 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).

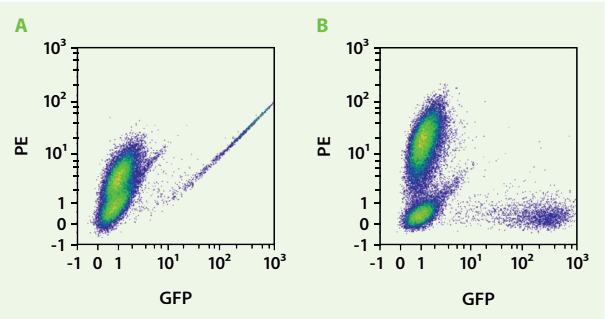


Figure 2: Cells expressing GFP were stained using a PE-conjugated antibody against a dim marker and analyzed using the MACSQuant VYB. Excitation of both PE and GFP with the blue 488 nm laser only minimally resolves the two signals (A). In comparison, excitation of PE by the yellow 561 nm laser and of GFP by the blue 488 nm laser fully resolves these two signals without the need for any compensations (B).

Press play and walk away

Truely hands-free operation

With the incorporation of automated house keeping, sample labeling and processing, PMT calibration, and volumetric cell counting features, the MACSQuant VYB delivers true automation and is robust enough to process hundreds of samples in a day.

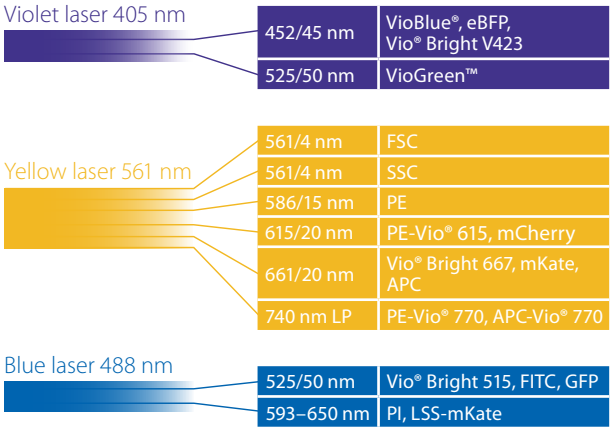
Autolabeling: the missing feature in automated flow cytometry

With the inclusion of the MACS® MiniSampler Plus, the MACSQuant VYB enables autolabeling of your samples using the fully automated computer-controlled robotic needle arm. The Universal Reagent Rack allows you to add reagents to your tubes or plates from 5 mL glass or 1 mL plastic vials.

Why risk the variability when you can automate your applications?

Reduce the risk of pipetting error with the reliability of robotics. All you have to do is program the titer of your reagent, the time for incubation, and the dilution of your sample, if applicable. That's it! You are now ready for the instrument to label, prepare, and measure your samples automatically.

The MACSQuant VYB optical bench



Complete your automation loop with reproducible reagents

Achieving maximum reproducibility between experiments cannot depend on the flow cytometer alone. In order to obtain consistent results, Miltenyi Biotec offers a great extent of flow cytometry solutions, including a dedicated range of reagents. We help you make sure that variations in your experiment are due to your sample, and not due to unreliable antibodies or instruments.

REAfinity™ Recombinant Antibodies – flow cytometry is in their genes

Miltenyi Biotec has introduced a portfolio of REAfinity Recombinant Antibodies that provide superior lot-to-lot consistency and purity compared to mouse or rat monoclonal and polyclonal antibodies. Our recombinant technology also diminishes the need for FcR blocking and allows for analyses with single isotype control, generating high-quality data with no more background signal and saving effort when setting up experiments. For more information, visit: **www.miltenyibiotec.com/reafinity**

Advantages of REAfinity Recombinant Antibodies:

- **High lot-to-lot consistency**
- **One universal isotype**
- **No more background signal**

REAfinity Recombinant Antibodies

Vio® Dyes – brighter dyes for flow cytometry

When used in combination with our proprietary Vio and Vio Bright Dyes, you can take advantage of superior mean fluorescence intensity and high stain indices. As the brightest dyes on the market, setting up complex multicolor experiments has never been so simple. For more information, visit: **www.miltenyibiotec.com/vio**

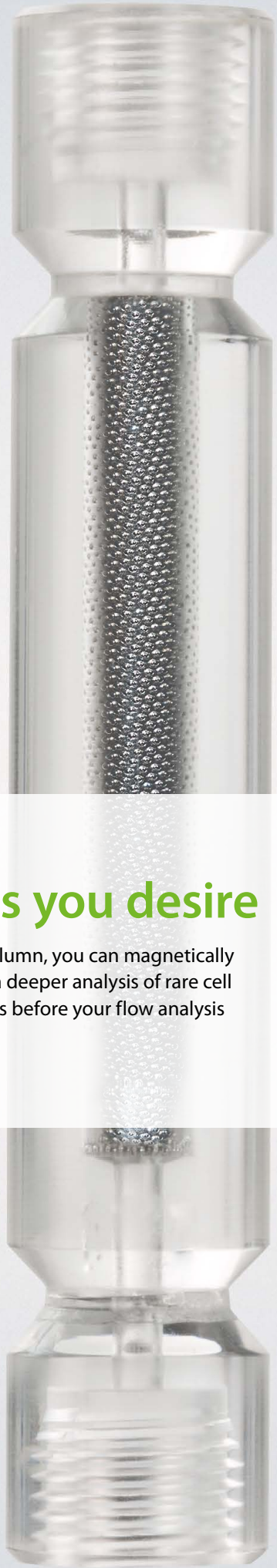
ViO Dyes

Ready-to-use kits

Use Miltenyi Biotec's range of ready-to-use, pre-titrated kits and save valuable experiment set-up time and assay costs. Our kits have been validated for use with the automatic labeling capacities of the MACSQuant Analyzer VYB, which in combination with our Express Modes gives you true walk-away capability. All you have to do is set up the experiment and return later to look at fully analyzed data.

Customized solutions

Miltenyi Biotec's custom antibody design service enables researchers to benefit from personalized flow cytometry solutions. This service includes purified, functional-grade antibodies, and single- and multicolor antibody conjugates, as well as multicolor antibody cocktails. To find out more, visit: **www.miltenyibiotec.com/customab**



Focus on the cells you desire

Using the integrated MACS Enrichment Column, you can magnetically enrich your target population to perform a deeper analysis of rare cell subsets. Removing the non-relevant events before your flow analysis makes your assay even more robust.

MACSQuant® VYB specifications

Optics

Laser excitation	Spatially separated: 405 nm, 40 mW diode 488 nm, 50 mW diode 561 nm, 100 mW DPSS (diode pumped solid state)			
Emission detectors	FSC: 561/4 nm SSC: 561/4 nm	V1: 452/45 nm V2: 525/50 nm	Y1: 586/15 nm Y2: 615/20 nm Y3: 661/20 nm Y4: 740 nm LP	B1: 525/50 nm B2: 593–650 nm
Fluorescence sensitivity and resolution	MESFs (CV <5%): FITC <200 PE <100 APC <150			
Flow cell dimensions	200 × 250 µm			
Fluorescence detectors	Optimized with spectrally matched PMTs for all channels			

Fluidics

Minimal uptake volume[1]	1 µL (25 µL recommended for volumetric counting applications)
Sample flow rate	25, 50, or 100 µL/min or automated flow rate to maintain 500, 1,000, or 2,000 events/second
Measurement speed[2,3]	<25 minutes per 96-well plate (5 µL measurement per well)
Sample uptake	1–450 µL
Maximal event rate	Up to 15,000 events/second

Technical specifications

Footprint	385.5 × 284.5 mm (15.18 × 11.2 in)
Size (width × depth) Height (adjustable touchscreen)	669 × 400 mm (26.34 × 15.75 in) 394–553.5 mm (15.51–21.79 in)
Size with MiniSampler Plus (width × depth)	669 × 500 mm (26.34 × 19.69 in)
Weight	50 kg (110 lbs)
Monitor	15.6'' LCD touchscreen
Power requirements	100–240 V, 50/60 Hz
Power consumption standard use	450 W
RAM	8 GB DDR4 (SO DIMM)
Mass storage	500 GB SSD
Ports	4× USB 2.0 ports, 6× USB 3.0 ports (2 at display), 2× DisplayPort, 2× LAN, DVI, RE-232, Audio
Emission sound pressure level at workstation	<61 dB(A)

Performance

Sample carry over[2,4]	0.01%
Fluorescence performance	5 decade logarithmic scale (10^{-2} to 10^{3}), displayed in lin, log, or hlog scales

Data management

Operating system	Embedded operating system
Measurement parameters	Area, width, height for all parameters, with time and volume
Signal processing	>18 bit dynamic range in area with 32 bit floating point signal processing
Compensation	Automated, or manual with 8 × 8 matrix, during or after acquisition
Data files	.mqd (proprietary file format), .fcs (2.0, 3.0, 3.1 compatible)

[1] At every uptake, an additional excess volume is aspirated by the instrument. The excess volumes are calibration- and process-dependent and do not exceed 10 µL for Fast, Standard, and Extended modes, and 20 µL for Screen mode.

[2] Referred value indicates the average of multiple experiments and can differ for individual sample materials.

[3] The measurement speed is determined by measuring the time between the movement of the robotic arm into the first measured well, and its movement out of the last measured well. The measurements were carried out at High flow rate in Fast mode.

[4] For carry over, full 96 well plates were loaded with 200 µL/well of PBMC suspension at a nominal concentration of 10,000 µL in every other well ("SRC wells"). Alternating wells are loaded with an equal volume of MACSQuant Running Buffer ("CO wells"). The uptake volume was set to 100 µL and measured at Medium flow rate in Standard mode. The carry over is defined by sum(CO singlet count)/sum(SRC singlet count) × 100%.

Support at your fingertips

MACSQuant Live Support

- Live support at your fingertips via MACSQuant Support portal
- Have your questions answered in real-time by one of our experts

Application and instrument support

- Technical and field application support for assay design and product advice
- Custom automation and express mode development

Instrument training

- Training at regional MACS Academy Miltenyi Biotec facilities
- Onsite training and assay development
- Online application resources

Service

- Comprehensive service options
- Globally distributed field service teams

▶ **miltenyibiotec.com/mqvyb**

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