



# BD FACSLyric™ Flow Cytometry System

The power to transform



# BD FACSLyric

Small changes contribute to a **Dramatic Transformation** of the whole.

- A single sample, no matter how rare, can show an essential difference.
- A single technician, accessing workflow automations, can reproduce important results.
- A single lab, no matter how remote, can partner in driving a new diagnostic standard.

IVD assays



# Say hello to the next generation of flow cytometry.

The BD FACSLyric flow cytometry solution combines simplicity, speed and automation to ease workflow and improve productivity. This next-generation flow cytometer enables standardization and collaboration through consistent results and unique assay portability capabilities.

Built on a foundation of excellence, experience and expertise, the BD FACSLyric is a new diagnostic standard for clinical cell analysis, transforming the way your lab does flow cytometry. As with all BD instruments, the BD FACSLyric is backed by 40 years of BD expert training, service and support— so there's no limit to your potential.

## Just the FACS

---

**2 lasers**—blue and red—and **6 fluorescence channels** (*IVD assays*)

---

Up to **3 lasers**—blue, red and violet—and **12 fluorescence channels** (*User-defined assays*)

---

**35,000 events per second maximum** acquisition rate; no limit on number of events acquired

---

Automated single-tube QC with BD™ CS&T beads

---

Fluorescence **compensation required only every 60 days**

---

**30- or 40-tube autoloader**—flexibility with BD FACST™ Universal Loader

---



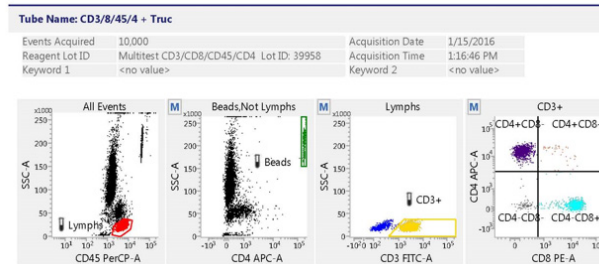
User-defined assays

# Every Sample

Multicolor analysis provides more answers from a single tube and decreases cost by reducing the number of tubes and reagents required to reach a diagnosis.

## IVD assay (BD Multitest™ 6-color TBNK assay)

Intuitive software interface with built-in templates, advanced automated algorithms and reports for enumeration of mature T, B and NK lymphocyte populations as well as CD4<sup>+</sup> and CD8<sup>+</sup> T-cell subsets—all in a single tube.

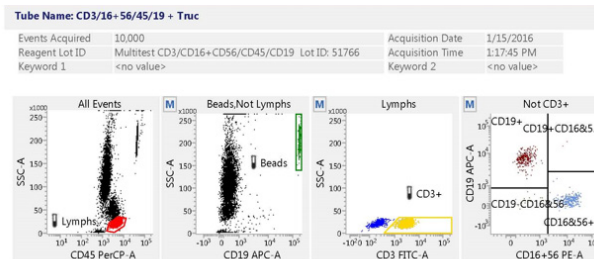


User-adjustable gates and regions with easy audit trail.

## IVD assay (BD Multitest™ 6-color TBNK assay)

- CD4<sup>+</sup> counts are used to monitor disease progression and therapy efficiency in HIV-infected individuals.
- CD8<sup>+</sup> counts outside the normal reference range are related to certain forms of autoimmunity.
- CD16/56<sup>++</sup> NK cells mediate cytotoxicity against certain tumors and virus-infected cells.

Immune status for a number of patient conditions.



Every  
is  
import  
to  
somee

CD4 testing remains a critical factor in achieving ambitious 90-90-90 treatment targets.

Reaching 90-90-90: treatment targets to help end the AIDS epidemic under the UNAIDS 90-90-90 Diagnostics Access Initiative, by 2020:

90%

of all people living with HIV will know their HIV status.



90%

of all people with diagnosed HIV infection will receive sustained antiretroviral therapy.



90%

of all people receiving antiretroviral therapy will have viral suppression.

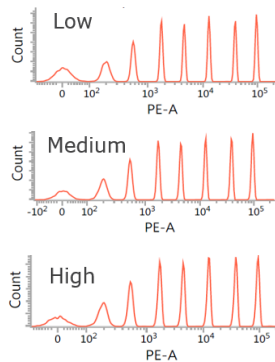


Runs at rates up to 35,000 events per second, sample carryover  $\leq 0.05\%$ .

- Acquires a large number of events rapidly; useful for rare populations.
- There is no limit on events acquired.

test  
tant  
one.

**Fig. 1: Flow rate**

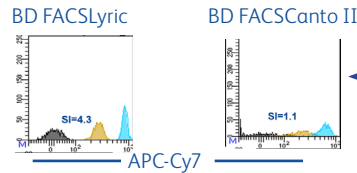


Flow rate	$\mu\text{l}/\text{min}$
Low	12*
Medium	60
High	120*

\* User-defined assay

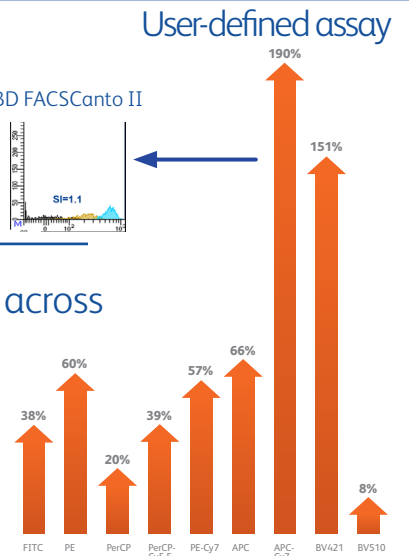
- Outstanding resolution at all flow rates. (Fig.1)
- Enables faster detection without compromising quality. (Fig. 1)

**Fig. 2: Improvement in stain index enhances peak resolution of BD FACSLyric vs the BD FACSCanto™ II system.**



Improvement in stain index of 8–190% across all parameters.

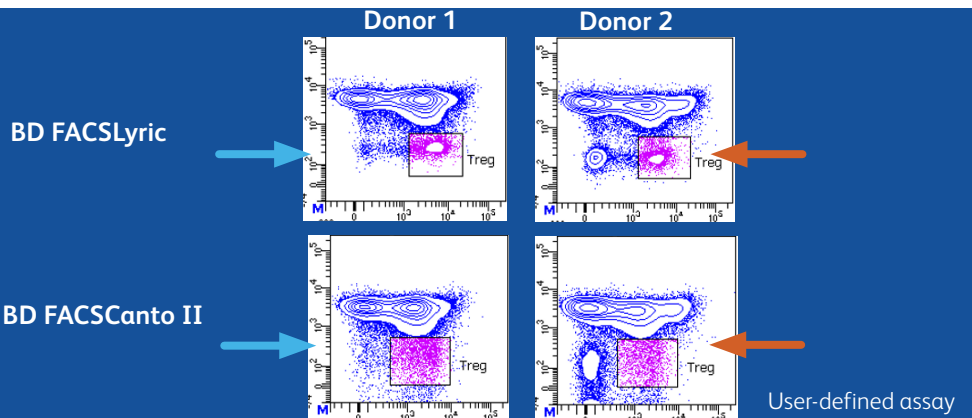
- Better separation enables faster analysis and easier gating. (Fig. 2)
- Higher sensitivity makes dim and rare populations easier to resolve. (Fig. 3)



The figure shows a bar graph of the percent increase in stain index.

**Fig. 3: The optical design and higher sensitivity of the BD FACSLyric improve the resolution of dim populations, as seen in this example.**

- The Treg population
- The double negatives



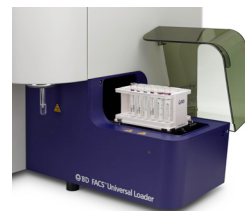
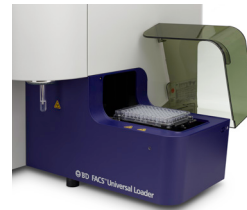
# Every Technician

"The BD FACSLyric is a system for everyday work that every technician can use."

– Dr. Dennis Hoffmann, Labor Wisplinghoff, Cologne, Germany

A lab-friendly system, with a small footprint, quiet operation and BD FACS Universal Loader.

- 21 different loading options
  - 3 types of tube racks, 16 types of 96-well plates, and 2 types of 384-well plates.
- Automated vortexing of tubes and plates for mixing and resuspending.
- Automated sample tracking tubes and plates (barcode enabled).



Patented BD™ CS&T technology enables automated setup.

- PMT voltages are automatically updated to maintain target MFI values as a part of QC.
- Setup ensures <0.4% variability across all parameters everyday.
- Reproducible results.

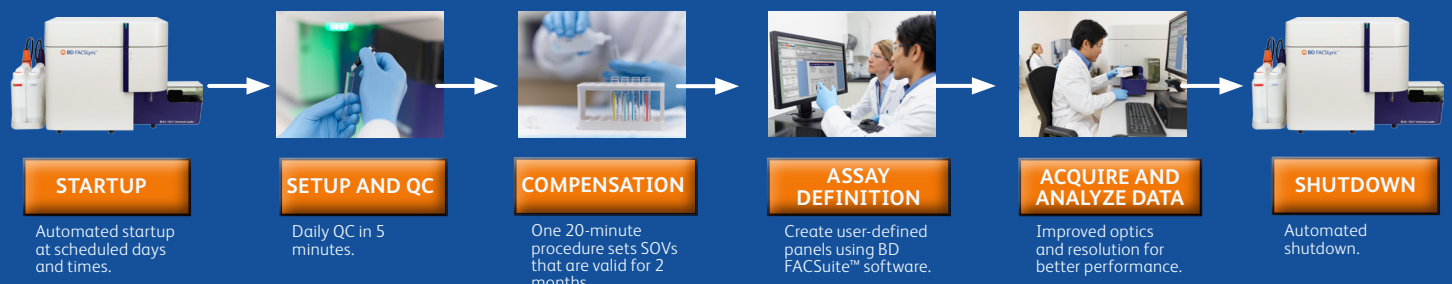
Patented BD FC Bead technology reduces compensation to every 60 days.

- 20 min compensation procedure only needs to be performed every 2 months.
- Spillover values (SOVs) are automatically updated as part of daily QC.



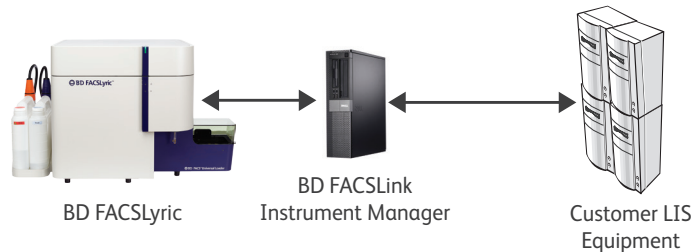
BD™ FC Beads

Daily workflow for user-defined assays is designed to be simple, fast and accurate, enabling strong performance.



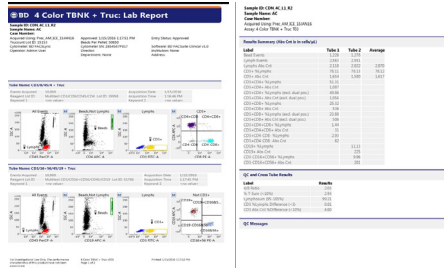
## Spend zero minutes on startup and shutdown.

- Pre-programmable startup means instruments are ready to run the minute users walk in.
- Auto shutdown and power off also contributes to maximizing instrument productivity.



- Seamless LIS integration enabled by the BD FACSLink™ LIS interface solution reduces transcription errors and improves laboratory efficiency.
- Bidirectional transfer of information between your LIS and BD FACSlyric using the BD FACSLink interface solution reduces transcription errors.
- Remote diagnostics and support with BD Assurity Linc™ enables identification of maintenance needs and off-site technical support.

### BD FACSuite clinical reports



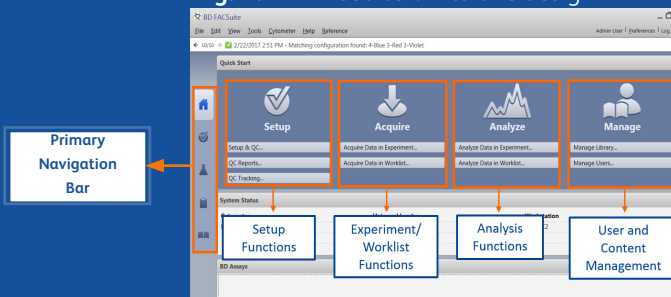
Signature:  
**REPORT NOT SIGNED**

Comments: Signature: Klaus Muster  
11.05.2013 21  
Signature: Klaus Mustermann  
10.05.2013 20:22:22  
Comments: not approved  
Comments: Review durchgeführt - Freigabe erteilt

User-defined reports within the BD FACSuite software are customizable with tables, headers and footers, providing a more professional result

- Unified experience across both IVD and user-defined assays. (Fig.4)
- Audit trail and electronic signature support **21 CFR part 11** compliance.

Fig. 4: BD FACSuite™: Intuitive design



### BD FACSuite Clinical: IVD assays

- Ready to use
- Clinically tested



### BD FACSuite: User-defined assays

- Flexible
- Multiple report functions
- Calculation function

# Your Lab/Every Lab

"The flow crossmatch market may be one of the smallest, but standardization has the potential to have one of the greatest clinical impacts. It's the little things that make a big difference in healthcare."

– Dr. Robert Bray, Emory University, Atlanta, GA

## User-defined assay

Lyse/no-wash assay settings were imported across 6 instruments to show effects of standardization on cells.

Antigen	Fluorochrome	Median Fluorescence Intensity						% CV
		Instrument						
		#1	#2	#3	#4	#5	#6	
CD4	FITC	1,891	1,699	1,816	1,865	1,661	1,691	5.6%
CD4	PE	16,781	16,781	17,393	18,363	16,993	17,482	3.5%
CD4	PerCP-Cy5.5	4,615	4,847	4,546	5,012	4,661	4,913	3.9%
CD4	PE-Cy7	25,402	27,600	26,066	29,213	30,510	26,393	7.2%
CD4	APC	20,064	21,163	20,768	20,600	20,990	18,848	4.2%
CD3	APC-R700	25,238	27,083	26,202	27,982	29,449	26,147	5.6%
CD4	APC-H7	7,406	7,662	7,607	8,000	8,119	7,634	3.5%
CD4	V450	5,234	5,220	5,473	5,299	5,631	5,581	3.3%
CD4	V500-C	2,294	2,332	2,338	2,354	2,318	2,039	5.2%

MFI across 6 BD FACSLyric instruments. The CVs of the fluorescence intensity across all 9 parameters varies by less than 8%. These values for biological measurements prove unprecedented standardization.

## User-defined assay

Modular and upgradeable to grow along with your changing lab needs.

- Up to 14 parameters.
- 4, 6, 8, 10 or 12 ideally distributed colors across up to 3 lasers in order to minimize spectral spillover, resulting in higher sensitivity. (Fig. 5)
- On-site upgrade at any time.

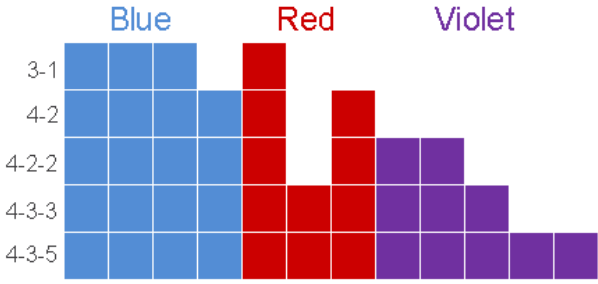
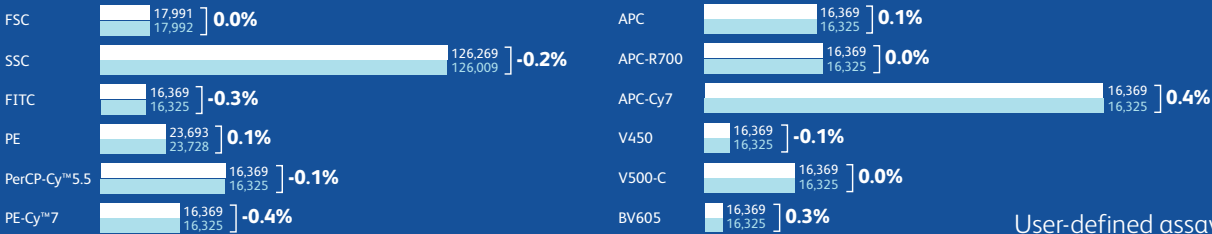


Fig. 5: Laser configurations.



## Highly reproducible results

Bright bead median ■ Target ■ Measured (Avg of 3x)

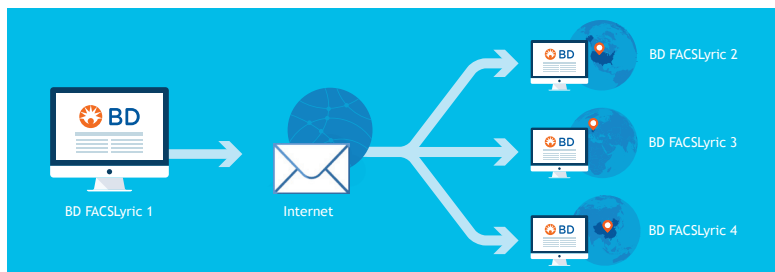
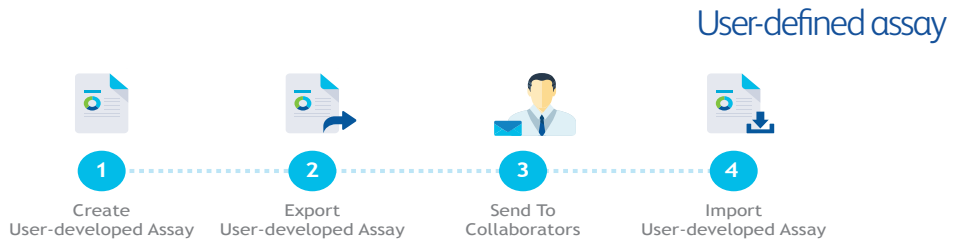
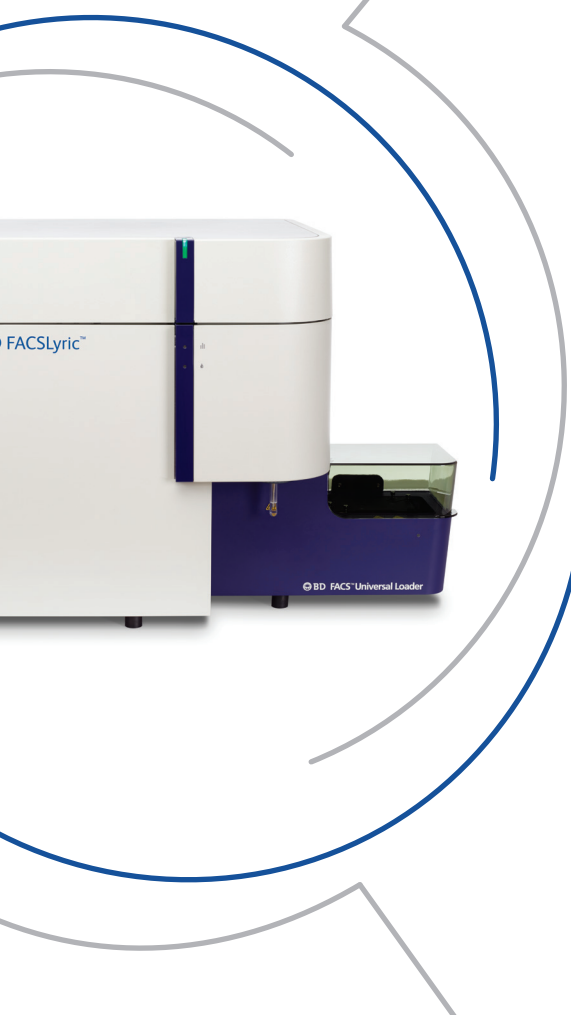


User-defined assay



"BD is positioned with CS&T and FC bead technology to enable instrument standardization simply from day to day, instrument to instrument, and lab to lab. Reference control based instrument standardization is the most important "next step" for clinical flow cytometry."

– Lili Wang, NIST, Gaithersburg, MD



User-defined assay

### Beyond collaboration, inside your lab



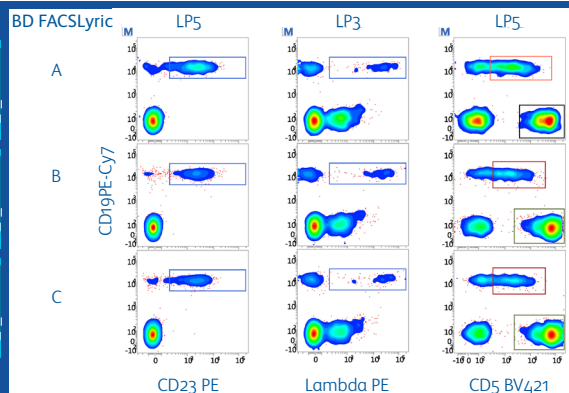
Provides backup in case of natural disaster.



Enables sharing across multiple assays including flow crossmatch, CD4 enumeration and user-defined assays.

### Standardization drives collaboration

User-defined assay across 3 instruments shows reproducible and accurate performance of BD FACSLyric Universal Setup.



User-defined assay

# Flow cytometry solutions, built on a foundation of excellence, experience and expertise

Clinical laboratories expect high quality solutions when they come to BD—a collaborative partner with more than 40 years of experience in flow cytometry. BD is committed to providing excellence and expertise in the clinical environment with an innovative portfolio of solutions, products and tools.

## Training

Course offerings<sup>1</sup> led by BD instructors and application support specialists include training on instruments, software and applications. This training is delivered in a wide range of formats including instructor-led at the BD training center, virtually online, self-paced or at your location.

## Qualification protocols

BD offers qualification assistance to help customers meet current Good Manufacturing Practice (*cGMP*) and Good Laboratory Practice (*cGLP*) standards. Factory-trained Field Service Engineers can provide installation qualification (IQ) and operational qualification (OQ).

## Instrument support and service

Experienced BD cytometry experts help evaluate and resolve issues. These in-country services include telephone support, remote diagnostics and troubleshooting, onsite preventative maintenance and field service. BD Assurity Linc provides secure remote systems management that connects with a variety of BD cytometers.

## Application support

Experienced BD clinical and research application specialists can provide additional telephone scientific support and on-site training in the areas of instruments, software and reagents.

<sup>1</sup> BD offers continuing education units from both P.A.C.E.<sup>®</sup> and CE Broker.





# The Difference of Transformation

Visit [BDBiosciences.com](http://BDBiosciences.com) for more information

*The BD FACSLyric transforms the way you do flow cytometry—one sample, one technician, one lab or one collaboration can now show an essential difference.*

*The Power to Transform*

Class 1 Laser Product.  
The BD FACSLyric™ flow cytometer is for In Vitro Diagnostic Use with BD FACSuite™ Clinical software for up to 6 colors.  
The BD FACSLyric™ flow cytometer is for Research Use Only with BD FACSuite™ software for up to 12 colors.  
The 12-color BD FACSLyric™ flow cytometer is for Research Use Only.  
BD FACSuite Clinical software is for In Vitro Diagnostic Use. BD FACSuite software is for Research Use Only.  
User-defined assays are not for In Vitro Diagnostic Use.

Cy™ is a trademark of GE Healthcare. Cy™ dyes are subject to proprietary rights of GE Healthcare and Carnegie Mellon University, and are made and sold under license from GE Healthcare only for research and in vitro diagnostic use. Any other use requires a commercial sublicense from GE Healthcare, 800 Centennial Avenue, Piscataway, NJ 08855-1327, USA.

Trademarks are the property of their respective owners.

23-19862-01 US

BD Life Sciences, San Jose, CA, 95131, USA

**[bdbiosciences.com](http://bdbiosciences.com)**

© 2018 BD. BD, the BD Logo and all other trademarks are property of Becton, Dickinson and Company.

