



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



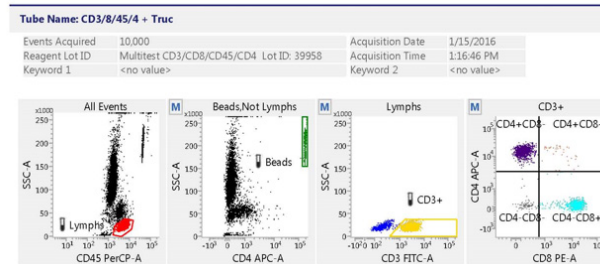
User-defined assays

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⁺ and CD8⁺ T-cell subsets—all in a single tube.

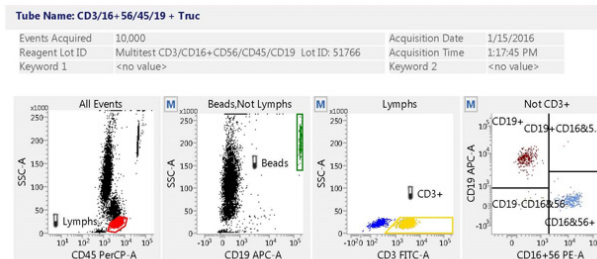


User-adjustable gates and regions with easy audit trail.

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

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

Immune status for a number of patient conditions.



Every
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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.

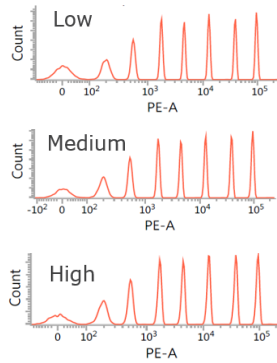


Runs at rates up to 35,000 events per second, sample carryover $\leq 0.05\%$.

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

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Fig. 1: Flow rate

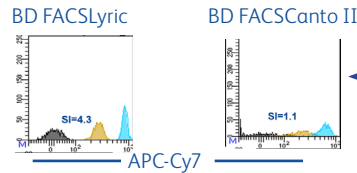


Flow rate	$\mu\text{l}/\text{min}$
Low	12*
Medium	60
High	120*

* User-defined assay

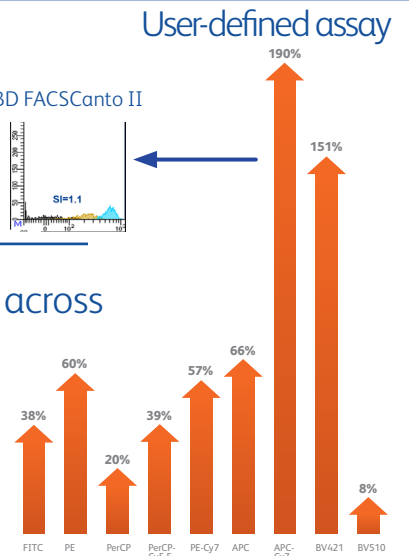
- Outstanding resolution at all flow rates. (Fig.1)
- Enables faster detection without compromising quality. (Fig. 1)

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.

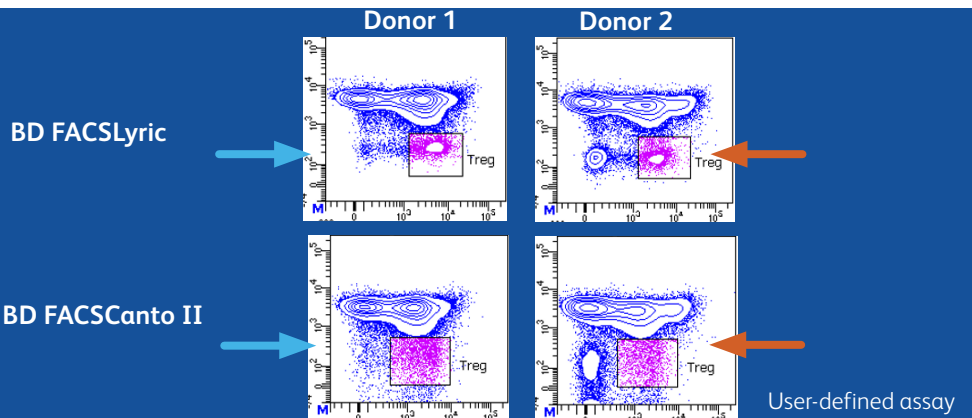
- Better separation enables faster analysis and easier gating. (Fig. 2)
- Higher sensitivity makes dim and rare populations easier to resolve. (Fig. 3)



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



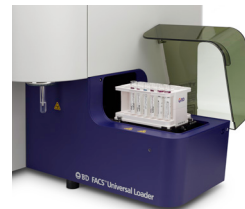
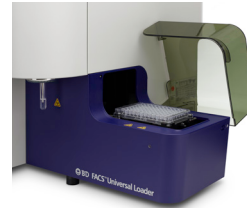
Every Technician

"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.

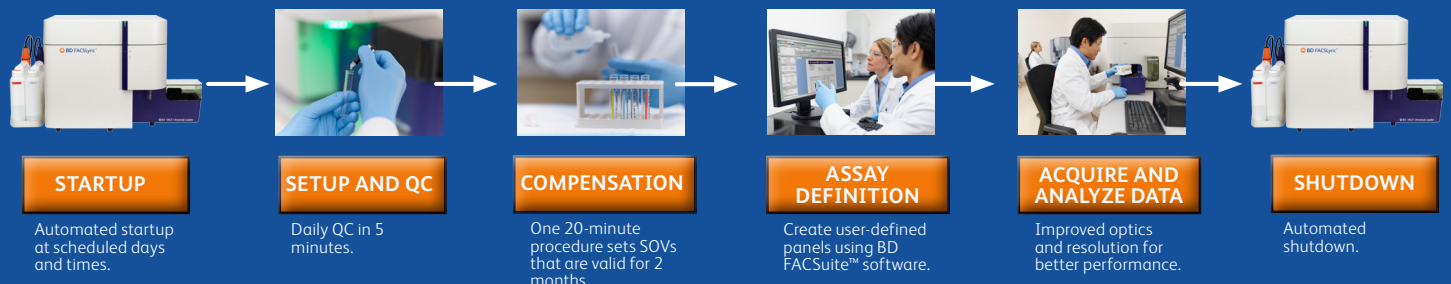
Patented BD FC Bead technology reduces compensation to every 60 days.

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



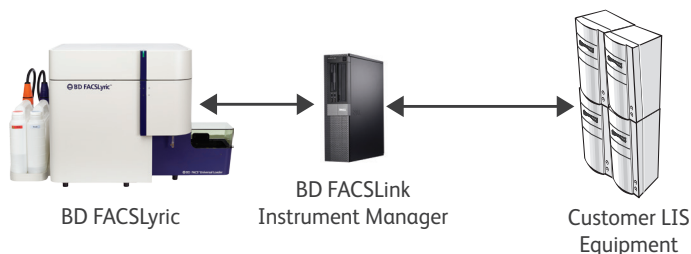
BD™ FC Beads

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

BD FACSuite Clinical Report Example:

Sample	Table 1	Table 2	Average
Sample 1	1234	1235	1236
Sample 2	1237	1238	1239
Sample 3	1240	1241	1242
Sample 4	1243	1244	1245
Sample 5	1246	1247	1248
Sample 6	1249	1250	1251
Sample 7	1252	1253	1254
Sample 8	1255	1256	1257
Sample 9	1258	1259	1260
Sample 10	1261	1262	1263
Sample 11	1264	1265	1266
Sample 12	1267	1268	1269
Sample 13	1270	1271	1272
Sample 14	1273	1274	1275
Sample 15	1276	1277	1278
Sample 16	1279	1280	1281
Sample 17	1282	1283	1284
Sample 18	1285	1286	1287
Sample 19	1288	1289	1290
Sample 20	1291	1292	1293
Sample 21	1294	1295	1296
Sample 22	1297	1298	1299
Sample 23	1300	1301	1302
Sample 24	1303	1304	1305
Sample 25	1306	1307	1308
Sample 26	1309	1310	1311
Sample 27	1312	1313	1314
Sample 28	1315	1316	1317
Sample 29	1318	1319	1320
Sample 30	1321	1322	1323
Sample 31	1324	1325	1326
Sample 32	1327	1328	1329
Sample 33	1330	1331	1332
Sample 34	1333	1334	1335
Sample 35	1336	1337	1338
Sample 36	1339	1340	1341
Sample 37	1342	1343	1344
Sample 38	1345	1346	1347
Sample 39	1348	1349	1350
Sample 40	1351	1352	1353
Sample 41	1354	1355	1356
Sample 42	1357	1358	1359
Sample 43	1360	1361	1362
Sample 44	1363	1364	1365
Sample 45	1366	1367	1368
Sample 46	1369	1370	1371
Sample 47	1372	1373	1374
Sample 48	1375	1376	1377
Sample 49	1378	1379	1380
Sample 50	1381	1382	1383
Sample 51	1384	1385	1386
Sample 52	1387	1388	1389
Sample 53	1390	1391	1392
Sample 54	1393	1394	1395
Sample 55	1396	1397	1398
Sample 56	1399	1400	1401
Sample 57	1402	1403	1404
Sample 58	1405	1406	1407
Sample 59	1408	1409	1410
Sample 60	1411	1412	1413
Sample 61	1414	1415	1416
Sample 62	1417	1418	1419
Sample 63	1420	1421	1422
Sample 64	1423	1424	1425
Sample 65	1426	1427	1428
Sample 66	1429	1430	1431
Sample 67	1432	1433	1434
Sample 68	1435	1436	1437
Sample 69	1438	1439	1440
Sample 70	1441	1442	1443
Sample 71	1444	1445	1446
Sample 72	1447	1448	1449
Sample 73	1450	1451	1452
Sample 74	1453	1454	1455
Sample 75	1456	1457	1458
Sample 76	1459	1460	1461
Sample 77	1462	1463	1464
Sample 78	1465	1466	1467
Sample 79	1468	1469	1470
Sample 80	1471	1472	1473
Sample 81	1474	1475	1476
Sample 82	1477	1478	1479
Sample 83	1480	1481	1482
Sample 84	1483	1484	1485
Sample 85	1486	1487	1488
Sample 86	1489	1490	1491
Sample 87	1492	1493	1494
Sample 88	1495	1496	1497
Sample 89	1498	1499	1500

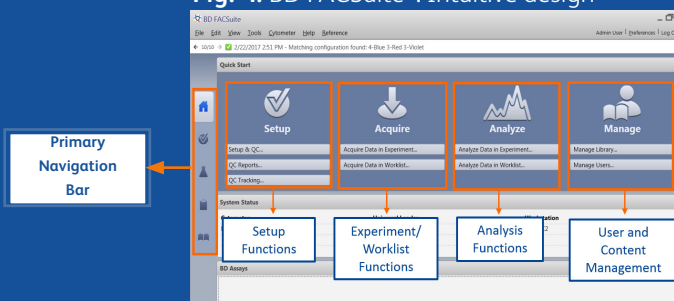
Signature:
REPORT NOT SIGNED

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.

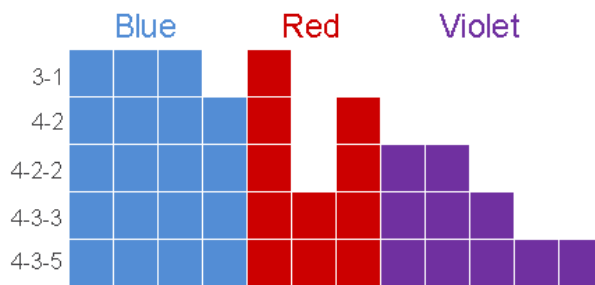


Fig. 5: Laser configurations.



Highly reproducible results

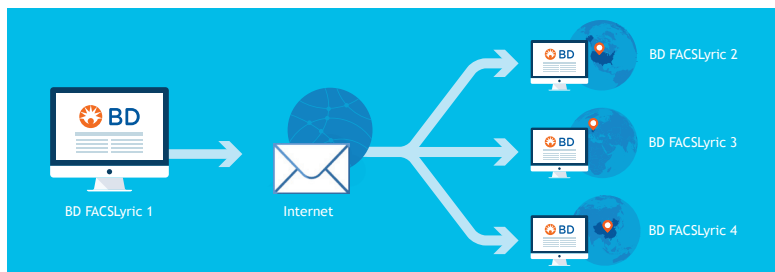
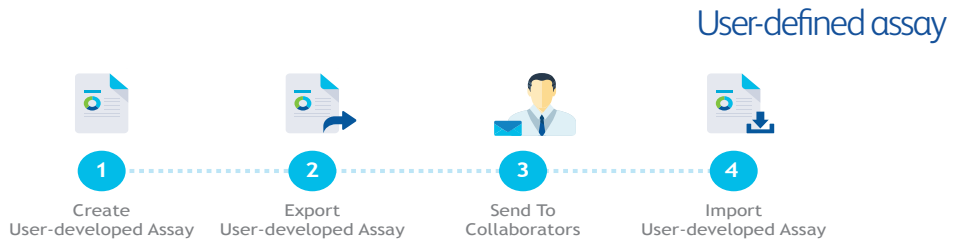
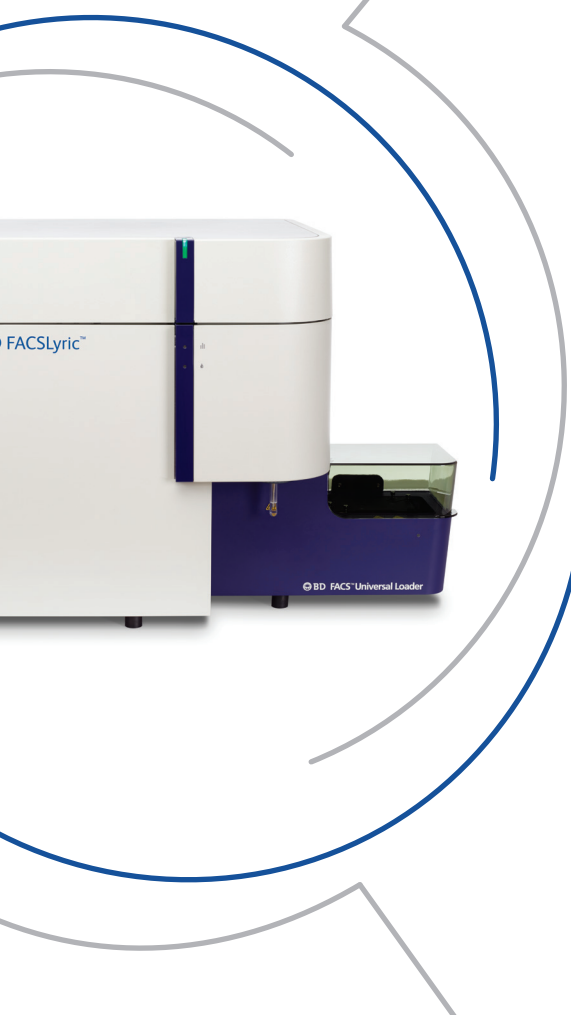
Bright bead median ■ Target ■ Measured (Avg of 3x)



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



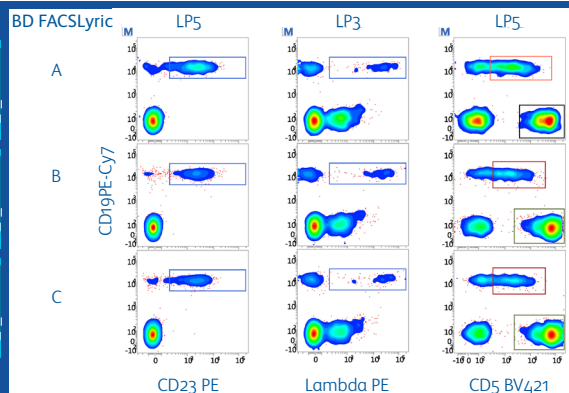
Provides backup in case of natural disaster.



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 offerings¹ 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.

¹ BD offers continuing education units from both P.A.C.E.[®] and CE Broker.





The Difference of Transformation

Visit 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.

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