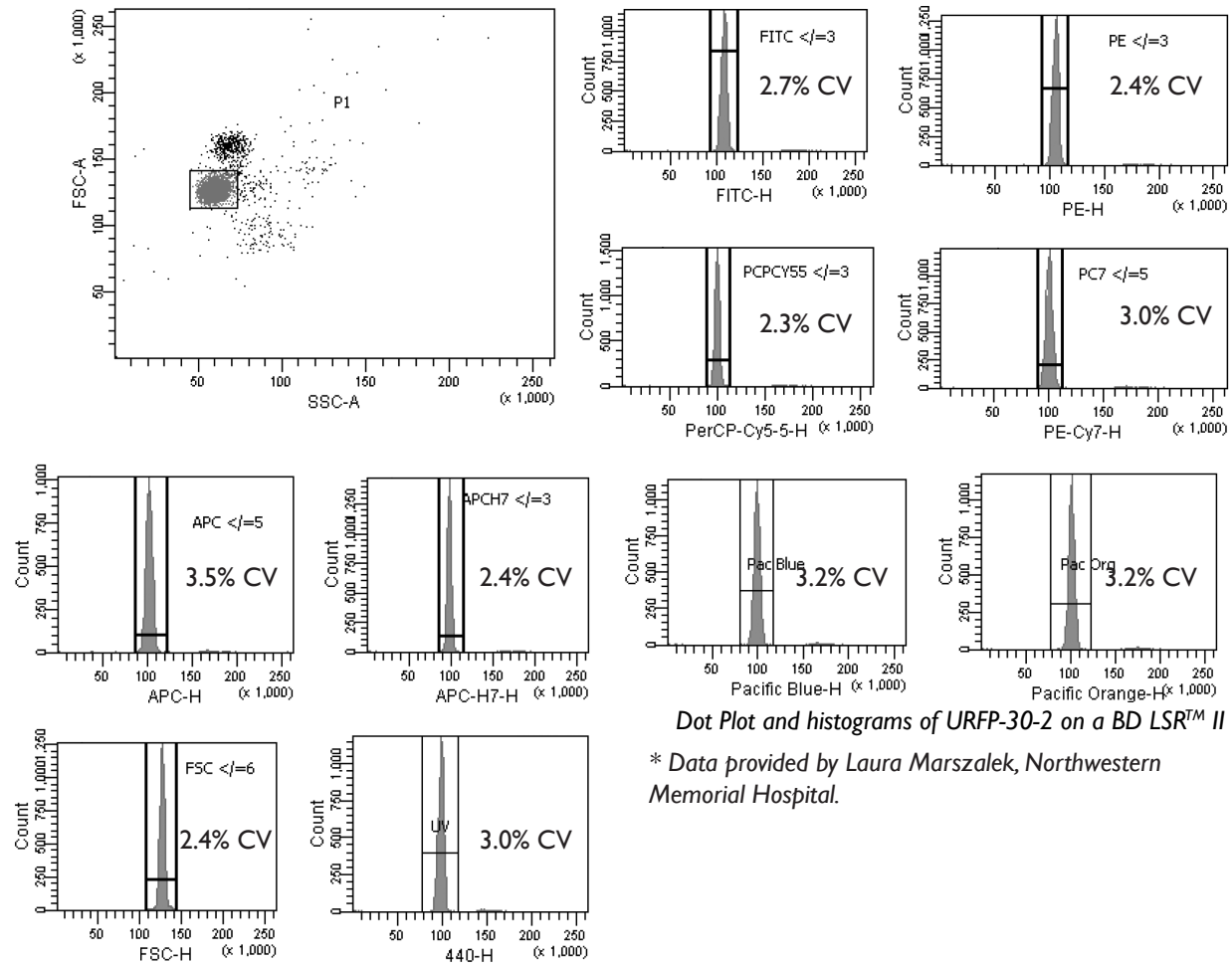


**SPHERO™ Ultra Rainbow Fluorescent Particles**

- Consists of a single peak for optical alignment of any flow cytometer in all channels from UV to Far Red
- Determines if the flow cell is clean and without fluidic blockage
- Measures the coefficients of variation (CVs), peak channels, and histogram distribution to determine the functionality of flow cytometers.

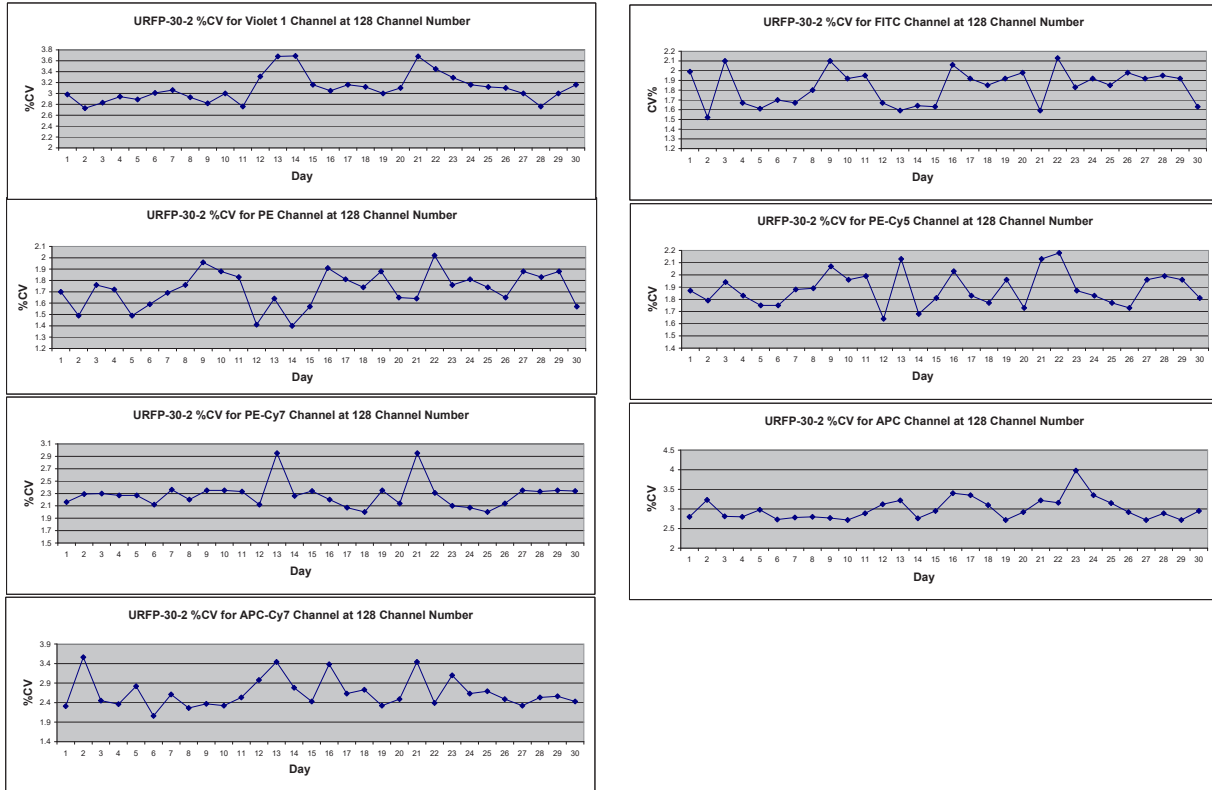
New flow cytometers, with fluorescent channels from the UV to Far Red, and corresponding fluorescent conjugates are now available. As a result, we have developed the Ultra Rainbow Fluorescent Particles with enhanced UV and Far Red fluorescence intensity. The Ultra Rainbow Fluorescent Particles contain a single peak and are designed for checking the optical alignment of any flow cytometer in all channels.

Particle Type and Surface	Size, $\mu\text{m}$	Catalog No.	Unit
Ultra Rainbow Fluorescent, $10^{10}/\text{mL}$	0.1-0.3	URFP-02-2	2 mL
Ultra Rainbow Fluorescent, $10^7/\text{mL}$	0.4-0.6	URFP-05-2	2 mL
Ultra Rainbow Fluorescent, $10^7/\text{mL}$	1.0-1.4	URFP-10-5	5 mL
Ultra Rainbow Fluorescent, $10^7/\text{mL}$	3.0-3.4	URFP-30-2	2 mL
Ultra Rainbow Fluorescent, $10^7/\text{mL}$	3.0-3.4	URFP-30-20	20 mL
Ultra Rainbow Fluorescent, $10^6/\text{mL}$ , Ready-to-Use	3.0-3.4	URFP01-30-2K	2x15mL
Ultra Rainbow Fluorescent, $10^6/\text{mL}$ , Ready-to-Use	3.0-3.4	URFP01-30-10K	10x3mL
Ultra Rainbow Fluorescent, $10^7/\text{mL}$	3.5-3.9	URFP-38-2	2 mL
Ultra Rainbow Fluorescent, Mid-Range Intensity, $10^7/\text{mL}$	3.5-3.9	URFP-38-5A	5 mL
Ultra Rainbow Fluorescent, $10^7/\text{mL}$	8.1-12.0	URFP-100-2	2 mL
Ultra Rainbow Fluorescent, $5 \times 10^6/\text{mL}$	13.0-17.9	URFP-150-2	2 mL
Ultra Rainbow Fluorescent, 1% w/v	18.0-24.9	URFP-200-5	5 mL
Ultra Rainbow Fluorescent, 1% w/v	25.0-35.0	URFP-300-5	5 mL

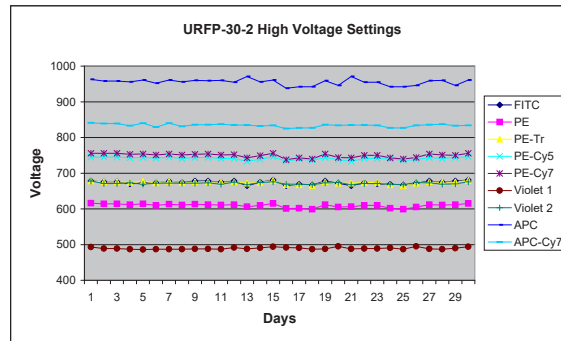


Dot Plot and histograms of URFP-30-2 on a BD LSR™ II

\* Data provided by Laura Marszalek, Northwestern Memorial Hospital.



Levy Jennings Graphs for the %CV of the URFP-30-2 at the 128 Channel Number on a Beckman Coulter CyAn™ ADP

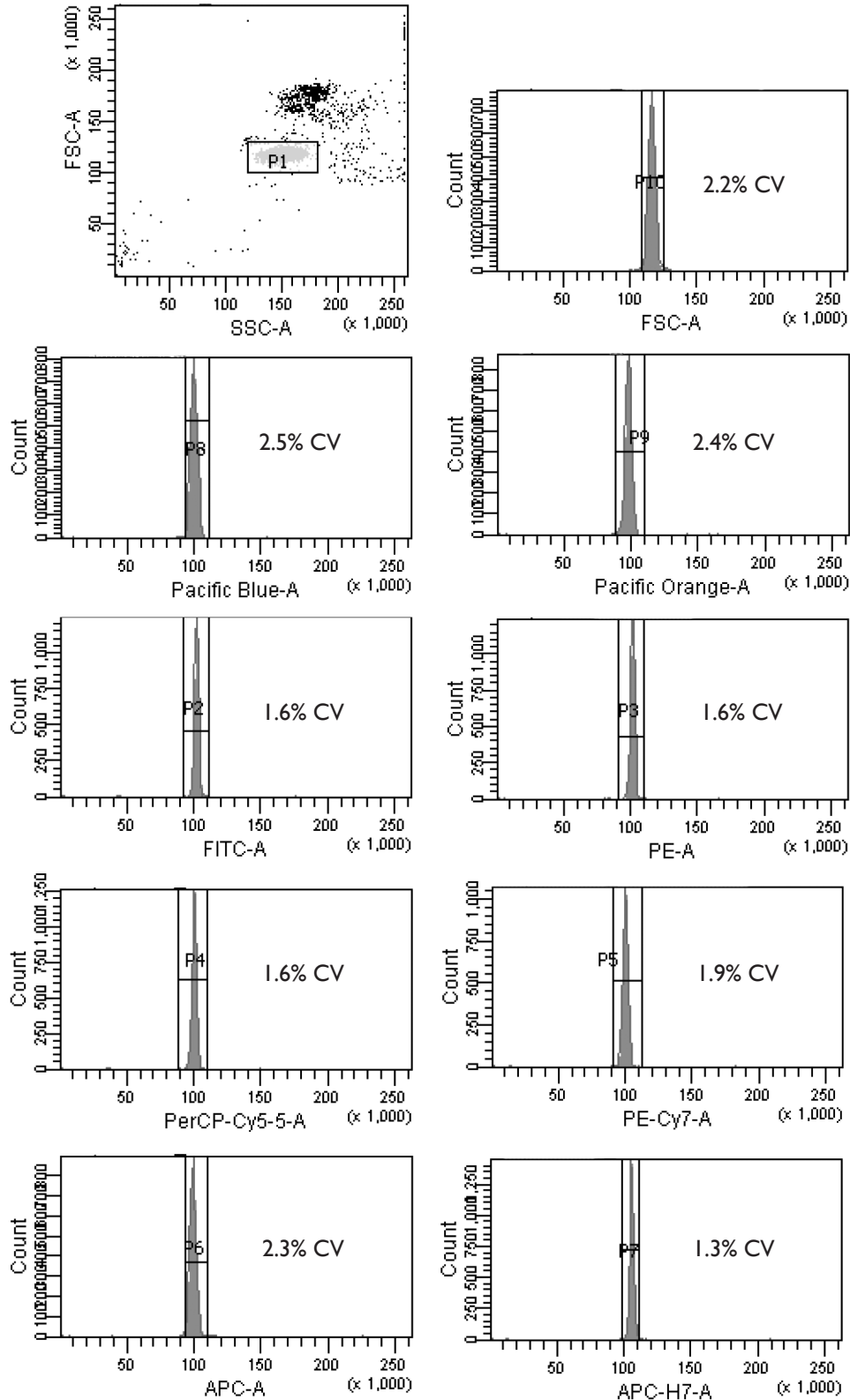


Levy Jennings Graph for the Voltage Setting for the URFP-30-2 at the 128 Channel Number on a Beckman Coulter CyAn™ ADP.

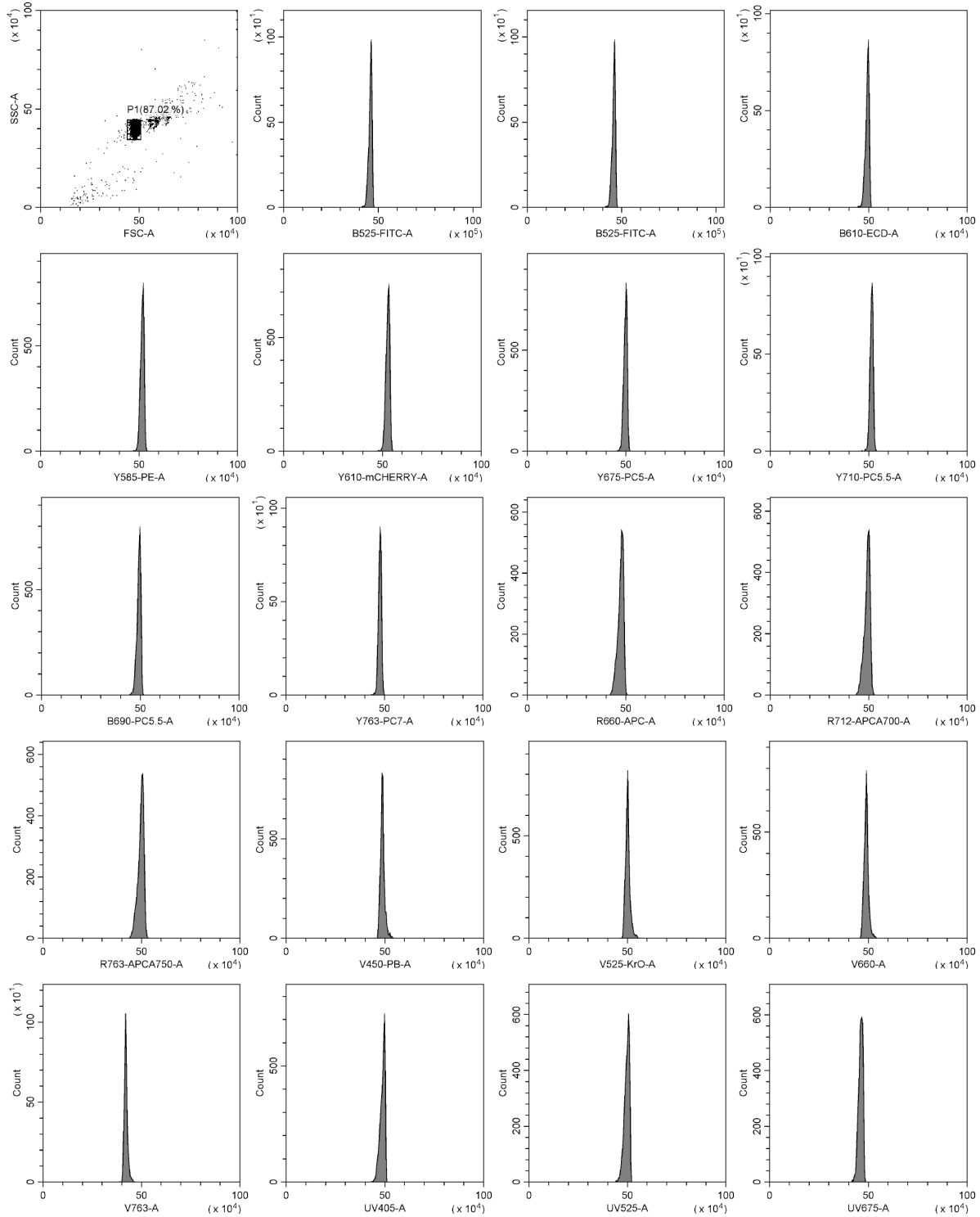
**SPHERO™ Ultra Rainbow Fluorescent Particles**  
One Bead Aligns all Channels

- Aids in the alignment and optimization of all fluorescent and scatter parameters
- Determines if the flow cell is clean and without fluidic blockage
- Measures the coefficients of variation (CVs), peak channels, and histogram distributions to determine the functionality of the flow cytometer.

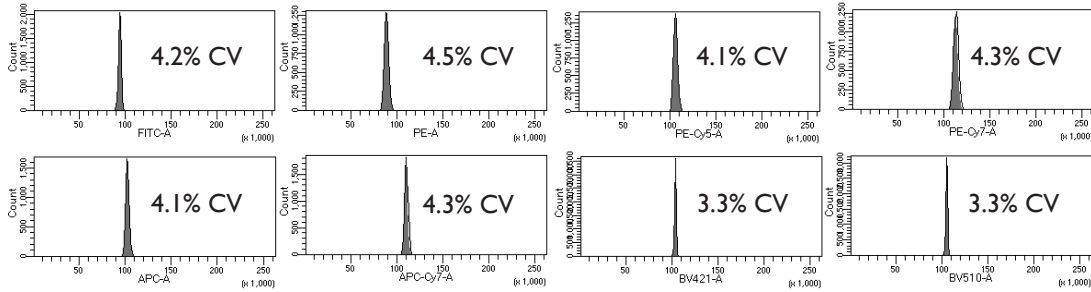
*www.spherotech.com*



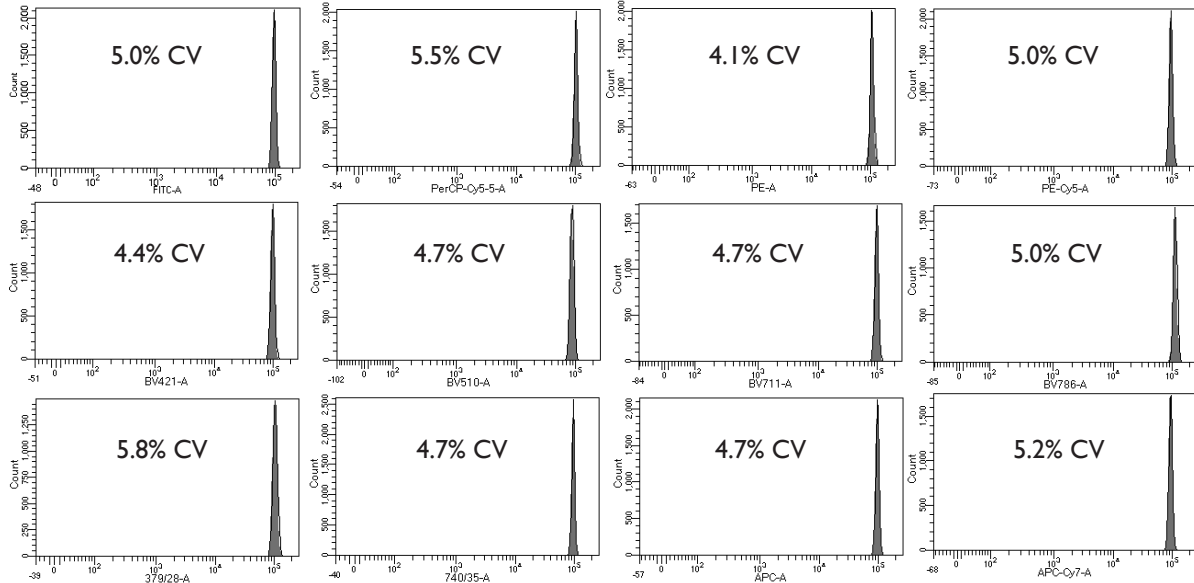
To see more information on Spherotech beads for flow cytometry calibration and standardization go to: [www.Spherotech.com/tech.htm](http://www.Spherotech.com/tech.htm)



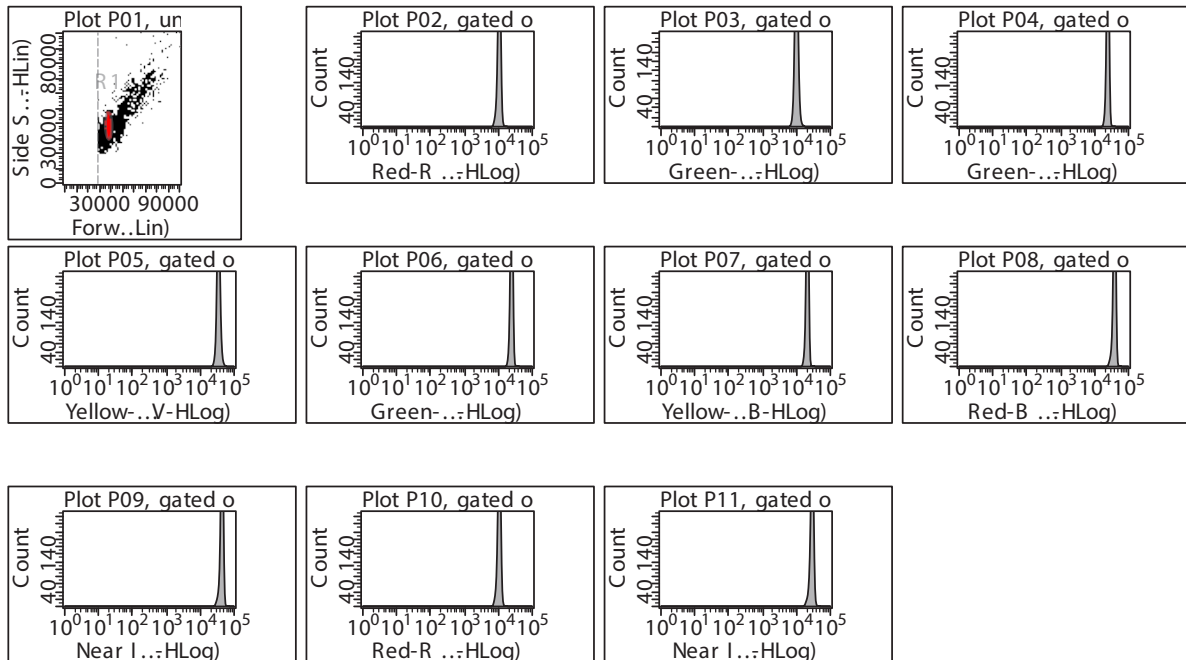
Dot Plot and histograms of URFP-30-2 on a CytoFLEX LX



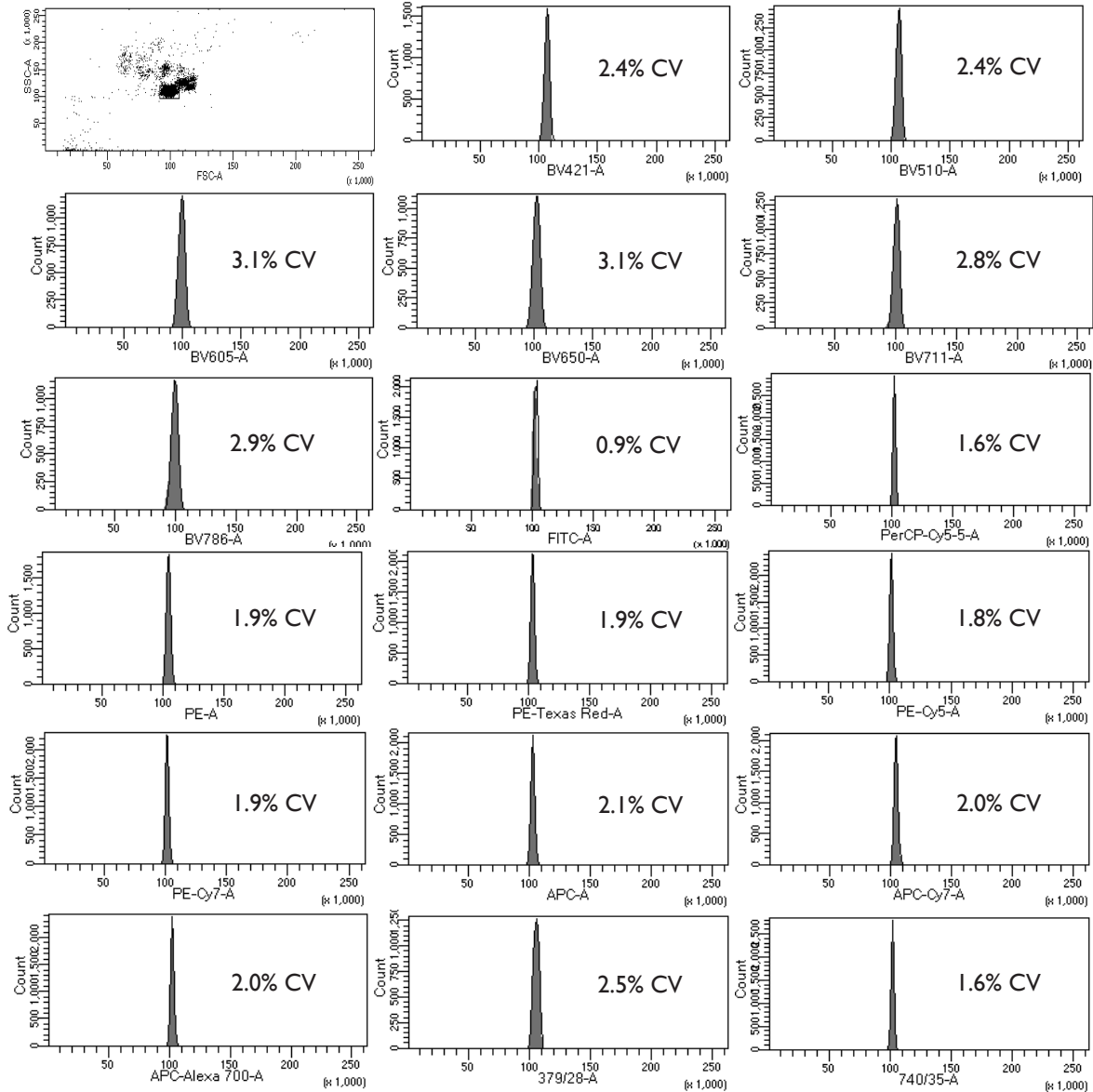
URFP-38-2 on a BD Bioscience Fortessa™ X-20



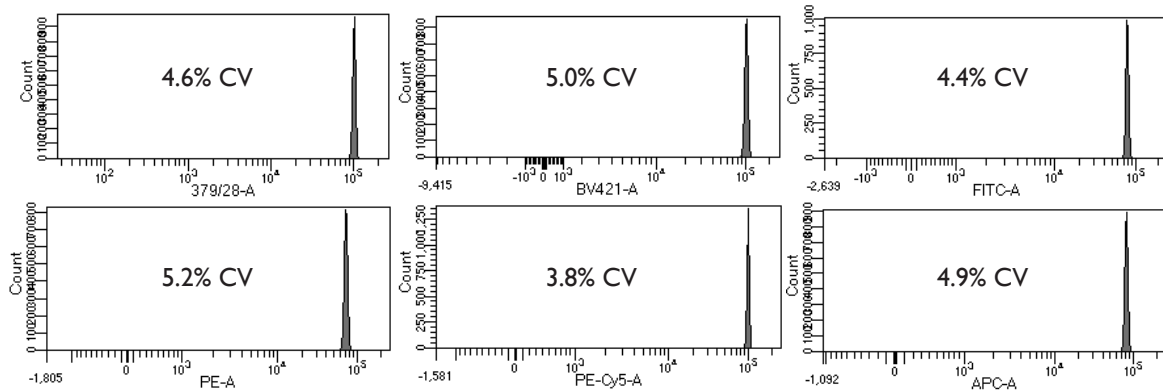
Histograms of URFP-100-2 on a BD Bioscience Fortessa™ X-20



Dot Plot and histograms of URFP-30-2 on a EMD Millipore Guava easyCyte™ 12



Dot Plot and histograms of URFP-30-2 on a BD Fortessa™ X-20

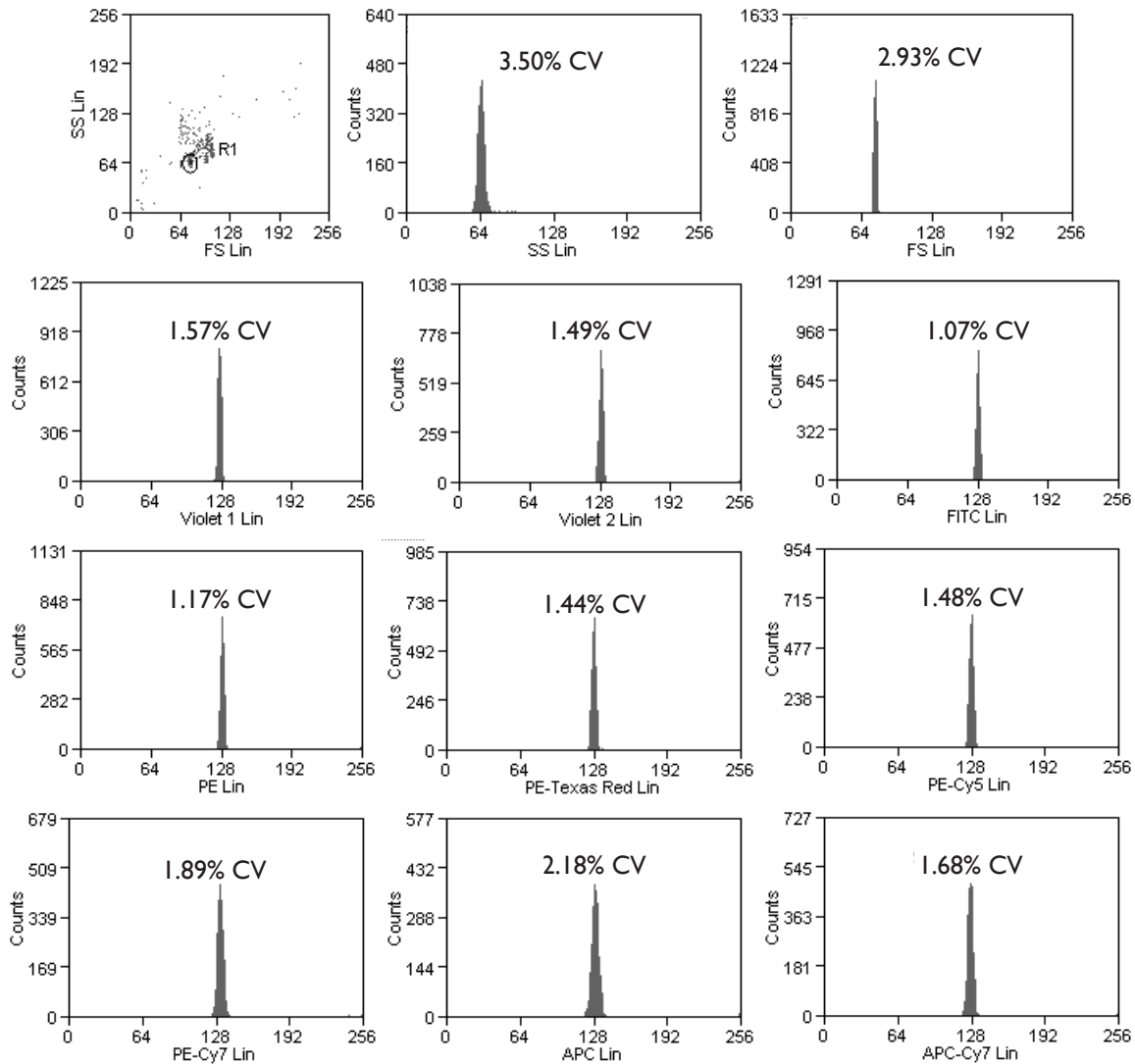


Histograms of URFP-10-5 on a BD Fortessa™ X-20

**SPHERO™ Ultra Rainbow Fluorescent Particles for Beckman Coulter Cytometers**

- Consists of a single peak for performance verification of Beckman Coulter flow cytometers
- Determines cleanliness of the flow cell and fluidics

Particle Type and Surface	Size, $\mu\text{m}$	Catalog No.	Unit
Calibration Beads for MoFlo™ Astrios™, $10^7/\text{mL}$	3.0-3.4	B27034	2 mL
Calibration Beads for MoFlo™, MoFlo™ XDP, and CyAn™ ADP, $10^7/\text{mL}$	3.0-3.4	B28479	2 mL
AccuCount Ultra Rainbow Fluorescent Particles (Calibration Beads for Aquios CL™, $10^6/\text{mL}$ )	3.8 (+/-0.3)	ACURFP-38-5	5 mL
AccuCount Ultra Rainbow Fluorescent Particles (Calibration Beads for Aquios CL™, $10^6/\text{mL}$ )	3.8 (+/-0.3)	ACURFP-38-15	15 mL

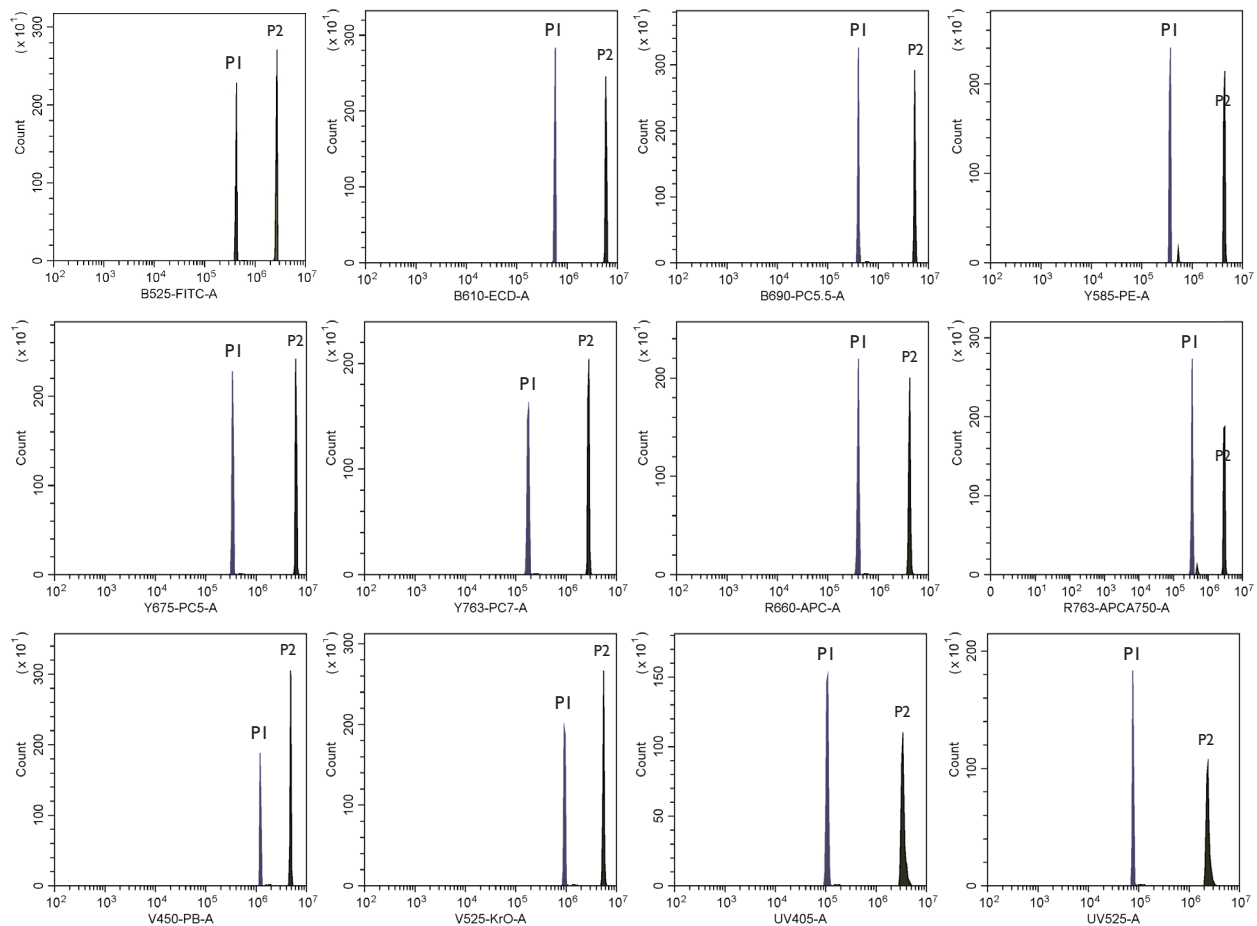


Dot Plot and histograms of B28479 on a Beckman Coulter Cyan™ ADP

## SPHERO™ Rainbow Fluorescent Particles

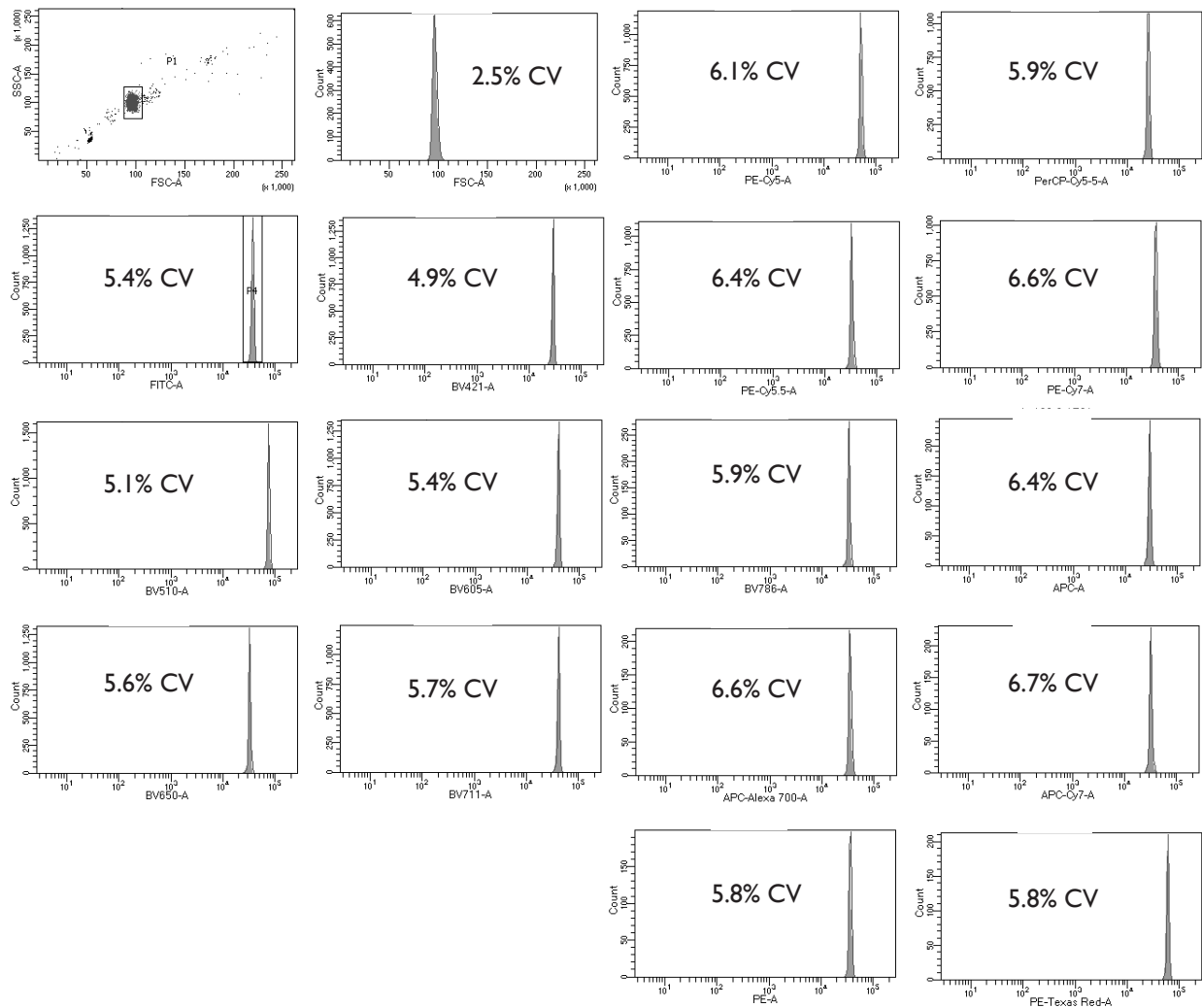
The Rainbow Fluorescent Particles are similar to Rainbow Calibration Particles except that these represent uniform size particles with a single intensity. The Rainbow Fluorescent Particles are usually the brightest peak of the corresponding Rainbow Calibration Particles with the exception of RFP-50-5, RFP-70-2, RFP-100-2 and RFP-30-5A. The RFP-30-5A has the fluorescence intensity similar to stained cells in all channels. Since these particles contain a single peak with very small fluorescence and size CV, they are very useful in the alignment of the optical system of the flow cytometer in all channels.

Particle Type and Surface	Size, $\mu\text{m}$	Catalog No.	Unit
Rainbow Fluorescent, $10^7/\text{mL}$ (Intensity similar to brightest peak in RCP-20-5)	1.8-2.2	RFP-20-5	5 mL
Rainbow Fluorescent, $10^7/\text{mL}$ (Intensity similar to brightest peak in RCP-30-5)	3.0-3.4	RFP-30-5	5 mL
Rainbow Fluorescent, $10^7/\text{mL}$ (Intensity similar to midrange FL1 fluorescence in RCP-30-5)	3.0-3.4	RFP-30-5A	5 mL
Rainbow Fluorescent, $10^7/\text{mL}$ (Intensity similar to brightest peak in RCP-35-5)	3.5-4.0	RFP-35-5	5 mL
Rainbow Fluorescent, $10^7/\text{mL}$	5.0-5.9	RFP-50-5	5 mL
Rainbow Fluorescent, $10^7/\text{mL}$ (Intensity similar to brightest peak in RCP-60-5)	6.0-6.4	RFP-60-5	5 mL
Rainbow Fluorescent, $10^7/\text{mL}$	6.5-8.0	RFP-70-5	5 mL
Rainbow Fluorescent, $10^7/\text{mL}$	8.1-12.0	RFP-100-2	2 mL

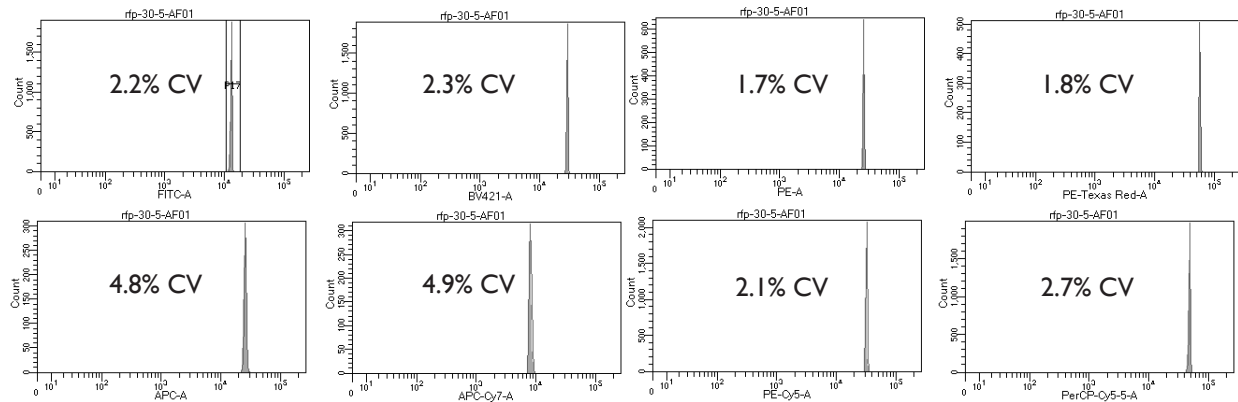


Dot Plot and histograms of RFP-30-5A (PI) & RFP-30-5 (P2) on a Beckman Coulter CytoFLEX LX





*Dot Plot and histograms of RFP-100-2 on a BD Bioscience LSRFortessa™ X-20*



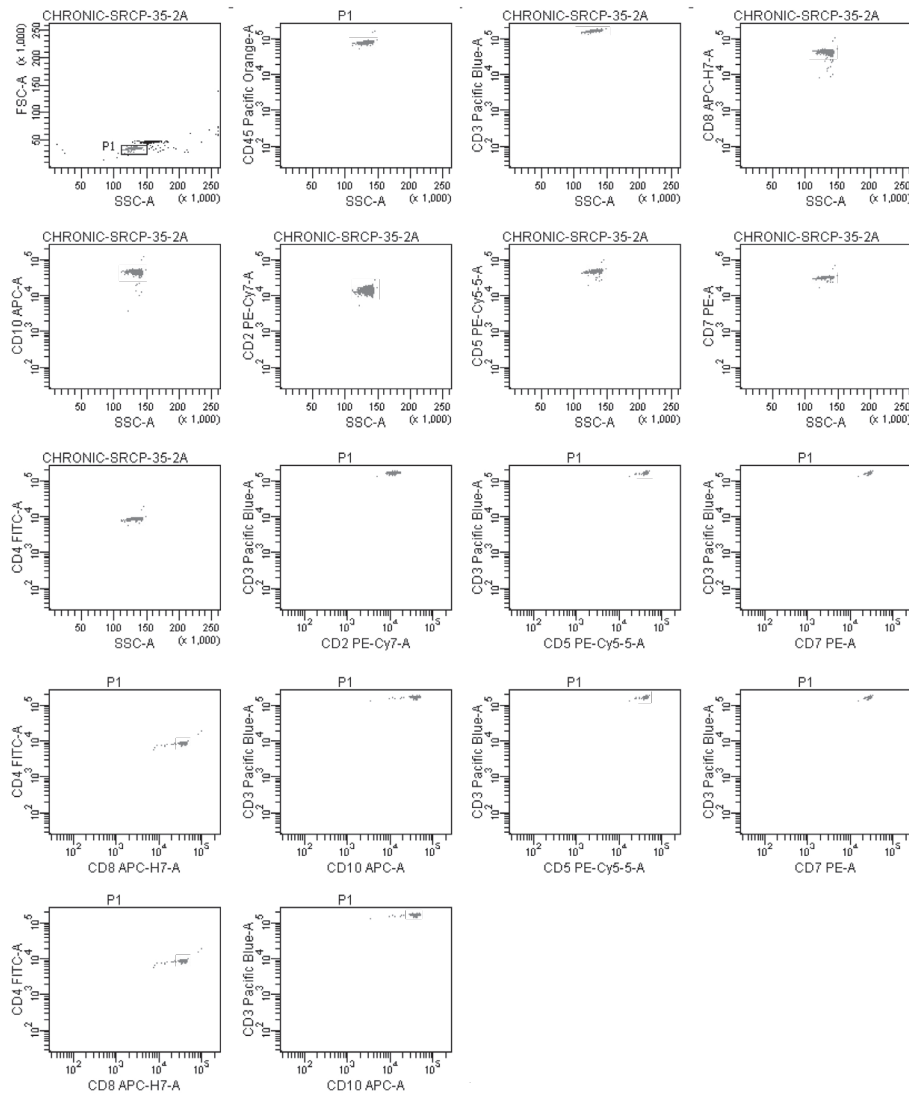
*Histograms of RFP-30-5 on a BD Bioscience LSRFortessa™ X-20*

## SPHERO™ Supra Rainbow Midrange Fluorescent Particles

- Consists of a single peak which has an intensity similar to real samples
- Contains a single peak with very low fluorescence and size CV
- Fluorescent in UV, FITC, PE, PE-TR, PE-Cy5, PE-Cy7, APC, APC-Cy7, and IR
- Measures the coefficients of variation (CVs), and target channels using experimental setting.

Particle Type and Surface	Size, $\mu\text{m}$	Catalog No.	Unit
Supra Rainbow Midrange Fluorescent, $10^6/\text{mL}$	3.0-3.59	SRCP01-35-10A	10 mL
Supra Rainbow Midrange Fluorescent, $10^7/\text{mL}$	3.0-3.59	SRCP-35-2A	2 mL
Supra Rainbow Midrange Fluorescent, $10^7/\text{mL}$	3.0-3.59	SRCP-35-5A	5 mL

The SRCP have an intensity close to that of cellular samples with excellent CVs. Once the optimal voltages for an experiment are determined, the setting can be captured as target channels based on the mean fluorescence intensity of the SRCP. This allows creation of Levy-Jennings plots of the voltages to get the beads to a specific target channel number. The target channel numbers are more robust to instrument changes than the voltages themselves. As a result, changes in the instrument are easier to detect.

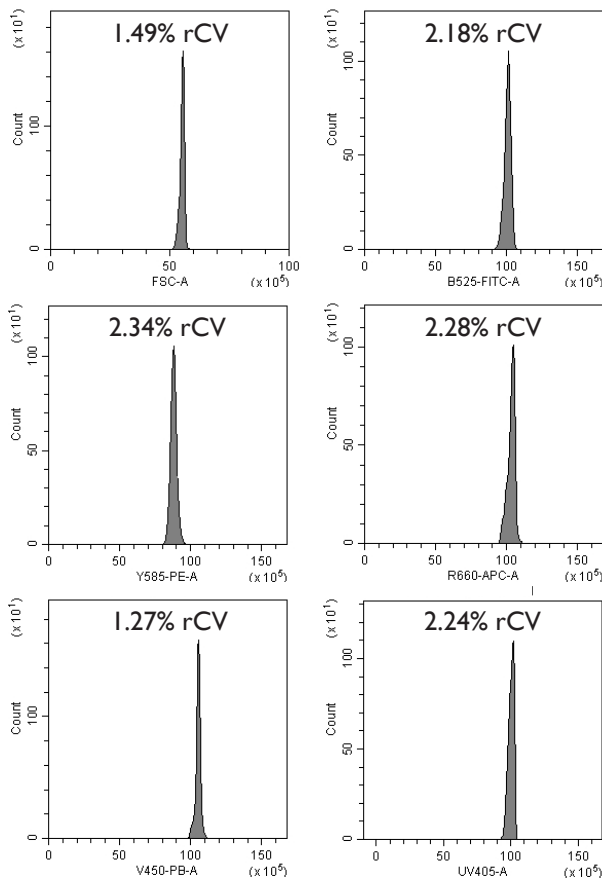


Dot Plots of SRCP-35-2A on a BD Canto™ II using the settings for cellular samples

**SPHERO™ Rainbow Alignment Particles**

- Consists of a prediluted, single peak for optical alignment of any flow cytometer in any channel
- Contains a single peak with very low fluorescence and size CV
- Fluorescent in UV, FITC, PE, PE-TR, PE-Cy5, PE-Cy7, APC, and APC-Cy7 channels
- Measures the coefficients of variation (CVs), peak channels, and histogram distribution of flow cytometers.

Particle Type and Surface	Size, $\mu\text{m}$	Catalog No.	Unit
Rainbow Fluorescent Alignment Particles, $1.2 \times 10^6/\text{mL}$	3.5-3.9	RAP-38-5	5 mL

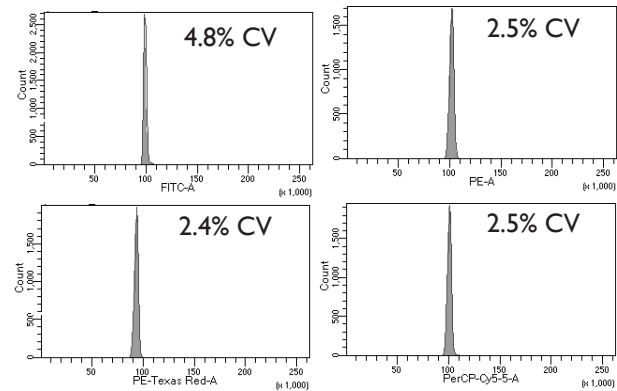


Dot Plot and histograms of RAP-38-5 on a Beckman Coulter CytoFLEX LX

**SPHERO™ Fluorescent Alignment Particles**

- Consists of a single peak for optical alignment of any flow cytometer
- Contains a single peak with very low fluorescence and size CV
- Fluorescent in FITC, PE, PE-TR, and PE-Cy5 channels
- Measures the coefficients of variation (CVs), peak channels, and histogram distribution of flow cytometers.

Particle Type and Surface	Size, $\mu\text{m}$	Catalog No.	Unit
Fluorescent Alignment Particles, $10^8/\text{mL}$	3.0-3.4	FAP-3056-5	5 mL



Dot Plot and histograms of FAP-3056-5 on a BD Bioscience LSRFortessa™ X-20

**SPHERO™ Rainbow Calibration and Rainbow QC Kits**

- Designed to simplify the routine calibration of flow cytometers.

**SPHERO™ Rainbow QC Kit (Cat. No. RCK-3K)**

Consists of one vial each of the following particles:

- RCP-30-5A-1 (Peak 1), 3.0-3.4 $\mu\text{m}$ ,  $10^7/\text{mL}$ , 5mL
- RCP-30-5A-4 (Peak 4), 3.0-3.4 $\mu\text{m}$ ,  $10^7/\text{mL}$ , 5mL
- RCP-30-5A-8 (Peak 8), 3.0-3.4 $\mu\text{m}$ ,  $10^7/\text{mL}$ , 5mL

**SPHERO™ Rainbow Calibration Kit (Cat. No. RQC-4K)**

Consists of one vial each of the following particles:

- BCP-60-2, 6.0-6.4 $\mu\text{m}$ ,  $10^7/\text{mL}$ , 2mL
- RFP-60-2, 6.0-6.4 $\mu\text{m}$ ,  $10^7/\text{mL}$ , 2mL
- RCP-30-2L (Peaks 1-4), 3.0-3.4 $\mu\text{m}$ ,  $10^7/\text{mL}$ , 2mL
- RCP-30-2H (Peaks 5-8), 3.0-3.4 $\mu\text{m}$ ,  $10^7/\text{mL}$ , 2mL

Particle Type and Surface	Catalog No.	Unit
Rainbow Calibration Kit	RCK-3K	1 Kit
Rainbow QC Kit	RQC-4K	1 Kit