

Flow Cytometry

Instrument Quality Assurance / Quality Control Program

In flow cytometry, a comprehensive quality assurance program is essential for achieving accurate and consistent results. Polysciences' flow cytometry offerings include instrument standards that support the various aspects of quality assurance programs, from general instrument QC to study-specific standardization.

When designing a QC program, the unique needs of the department or facility should be considered. Some products may satisfy multiple tasks, such as a single product used for basic daily QC and set-up of dedicated instruments. In other instances, combinations of products may be appropriate to meet the unique requirements of specific studies, or for instruments with shared use. Please contact us to discuss what products are available to support the unique requirements of your QC program or study.

Routine QC

The general status and stability of the cytometer must be checked daily. By plotting values over time, random and systematic errors may be identified and corrected. Manually aligned instruments must be aligned daily. If the data from multiple instruments and/or sites are to be compared, all instruments must be standardized daily, using the same standard beads. If multi-color analysis and/or quantitation is being performed, then the appropriate standards must be run on that same day.

If only qualitative analyses are being run, weekly checks of detection threshold, resolution, and linearity are sufficient to establish sensitivity. Some cytometers are fixed alignment instruments. For these, alignment may be verified weekly rather than established daily.

Additional standards

In addition to a regular QA / QC program, specific analyses may require other controls, such as count standards, size standards, or reference standards. Experiments and analyses must be critically evaluated for inclusion of the appropriate controls prior to instrumental analysis.

On the back is a table providing product suggestions and recommendations for your QA / QC needs.

CATEGORY	PURPOSE	FREQUENCY	PRODUCTS
<i>QC – Daily</i>	General check of instrument stability /status	Daily	Full Spectrum™ (multi) Ultra Rainbow Fluorescent Particles (multi) Fluorescence Reference Standards (single) Quantum™ QC
<i>QC – Daily</i>	General check of instrument optical system	Daily	Full Spectrum™ (multi) Ultra Rainbow Fluorescent Particles (multi) Flow Check™ Calibration Grade Particles (single) Fluorescence Reference Standards (single) Quantum™ QC
<i>QC – Daily</i>	Optical Alignment	Daily	Flow Check™ Calibration Grade Particles Right Reference Standards™
<i>QC – Daily</i>	Fluidics check	Daily	Surface-labeled fluorescent microspheres, e.g. Fluorescence Reference Standards Quantum™ MESF
<i>QC – Weekly</i>	Optical System Sensitivity, Resolution and Linearity (for specific lasers / PMTs)	Weekly	Quantum™ QC Flow Check™ YG Intensity Standards
<i>QC</i>	Time delay	As needed	Time Delay Calibration Standard Ruby Red Microspheres
<i>Set-Up</i>	Standardized instrument (PMT, voltage) set-up	Daily, or Between runs if settings are changed	Quantum™ QC
<i>Set-Up</i>	Standardized compensation settings for multi-color analyses	Daily, or Test-specific between runs if settings are changed	FITC / PE Compensation Standard™ Protein A / Protein G Antibody Binding Beads Simply Cellular® Compensation Standard™ Quantum™ Simply Cellular® Viability Dye Compensation Standard
<i>Application</i>	Fluorescence quantitation in cellular expression studies or bead-based assays	Daily when quantitative analyses are performed, or Test-specific between different runs if fluorescence PMT or compensation settings are changed	Quantum™ MESF Quantum™ Simply Cellular®
<i>Application</i>	Antibody F:P Ratio determination for quantitative fluorescence analyses	As needed, i.e. with each new Lot of fluorochrome-conjugated antibody	Simply Cellular® (used in conjunction with Quantum™ MESF)
<i>Application</i>	Compensation for multi-color flow cytometry	Daily, or Between different applications if fluorescence PMT or compensation settings are changed	FITC/PE Compensation Standard™ Simply Cellular® Compensation Standard™ Quantum™ Simply Cellular® Viability Dye Compensation Standard Protein A / Protein G Antibody Binding Beads
<i>Application</i>	Cell Counting	As needed	Flow Cytometry Absolute Count Standard™
<i>Application</i>	Cell Size Estimation	As needed	Flow Check™ YG Size Range Calibration Kit Size Calibration Standards Kit Submicron & Micron Bead Calibration Kits
<i>Application</i>	Suspension Array	Platform for development of bead-based flow cytometric assays	QuantumPlex™ QuantumPlex™MM

For additional information regarding our flow cytometry products, visit our website at www.polysciences.com.