



How to Choose a Flow Cytometer Analyzer?

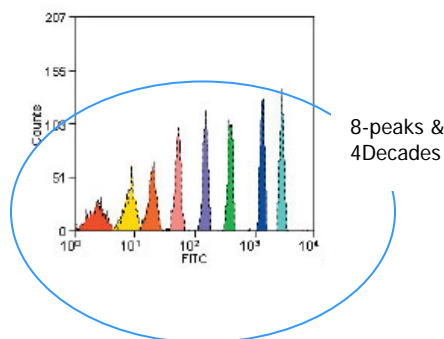
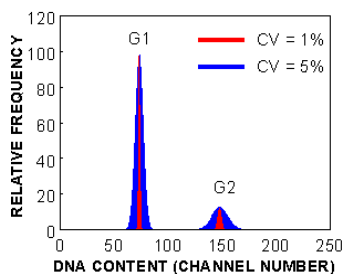
In choosing a flow cytometer analyzer for your particular application, there are many categories that should be evaluated. This guide has been designed to serve as a quick reference to help you choose the right analyzer for your application. It gives you basic tools to check the system against your specifications.

Features

- **Number of Lasers** – Depending on your application you may need from 1 to 4 lasers. The most common configuration for an analyzer is 2 lasers (Blue-488nm & Red-633nm)
- **Number of Detectors** – The typical configuration is 3 colors on Blue, 1 Color on Red, 2 scatters (Forward –FSC and Side – SSC). As the number of colors increases, the system is able to run more complex assays.
- **Software** – This is a very important part of the system that is often overlooked. Check for user friendliness and ease of use as well as bugs.
- **Throughput (Events/Sec)** – The higher the throughput the faster your experiments will run.
- **Upgradeability** – It is advisable to acquire a flow cytometer that could be upgraded to meet your future needs. This includes upgrading number of lasers, colors or adding a High Throughput/Content System (HTCS) as the need arises.

Sensitivity and Resolution

- **Coefficient of variation (CV)** is an attribute of a histogram peak describing its width (expressed as a percentage). It is defined as the standard deviation divided by the mean of a series of fluorescence values. It allows comparing the quality of peaks located on different fluorescence channels. CV fundamentally affects the resolution of flow cytometric acquisitions - reasonably low threshold (preferably less than 3%) should be kept to guarantee reliable results.
- **Dynamic Range** - The most common number of decades is 4. There are a few things to consider besides the number:
 - Having a higher number of decades for the electronics alone does not mean your cytometer has high sensitivity or resolution.
 - The scale on the x-axis is not necessarily indicative of the dynamic range, since it can be set arbitrarily.
 - **8-Peaks** - The easiest and fastest way to check the sensitivity and resolution of a flow cytometer is by running 8-peak calibration beads from Spherotech - p/n RCP-30-5A (8peaks). The higher the resolution and sensitivity, the clearer you'll be able to see the 8 peaks.



Reliability

- **Optical Stability as a function of Temperature** - Temperature fluctuations as small as few degrees Celsius may cause the instrument to loose alignment and yield lower CVs. Ask your vendor if they guarantee fixed alignment and CVs less than 3% over the operating range, in addition always ask for data to back up published specifications.
- **Optical Stability as a function of Time** – CVs should remain less than 3% between regular maintenance. Ask your vendor how long the instrument's optical stability (CVs) is guaranteed for.
- **Robust Fluidics Design** – Reliable and trouble free.
- **Number of parts** - The higher the number of components, the higher the chances of failure.
- **Components** - Part reliability (optimal Mean Time Between Failures (**MTBF**) determined by the supplier).