



# MOFLO ASTRIOS *EQ*

*Sorting Performance Revisualized*

 **BECKMAN  
COULTER**  
*Life Sciences*



*For answers to tomorrow's questions, look to MoFlo AstriosEQ today.*

*Simplify your most complex sorting tasks with the Beckman Coulter MoFlo AstriosEQ, a six-way jet-in-air sorter that commands powerful capability while reducing complexity. It's easy, intuitive, and flexible—and lets you see what others cannot.*

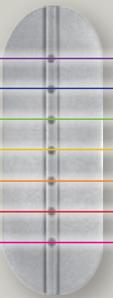
*The AstriosEQ now has patent pending dual forward scatter technology so you can see and sort particles that you would otherwise miss. Measure crucial particle characteristics and preserve sample biology over more than three orders of magnitude, from as small as 200 nm to 30  $\mu\text{m}$  diameter, all at the same time.*

***Trust the MoFlo's proven fluidics to be gentle with your biological material.***

*With AstriosEQ you also get beadless drop delay technology for uninterrupted aseptic sorting. If you need it, an optional integrated biosafety solution greatly increases peace of mind for operators and your laboratory space environment when sorting biohazardous material.*

**Don't be limited by your instrumentation:**

- Up to 51 detector positions, comprising 2 enhanced Forward Scatter (eFSC) detectors and as many as 7 PMTs housed within each precision optical device or POD, one per installed laser, up to a maximum of 7 lasers
- Trigger with SSC or FSC off any laser\* of interest in addition to fluorescence...the choice is yours
- Select from any detector position to characterize your sample
- Retain the freedom to change rapidly between applications



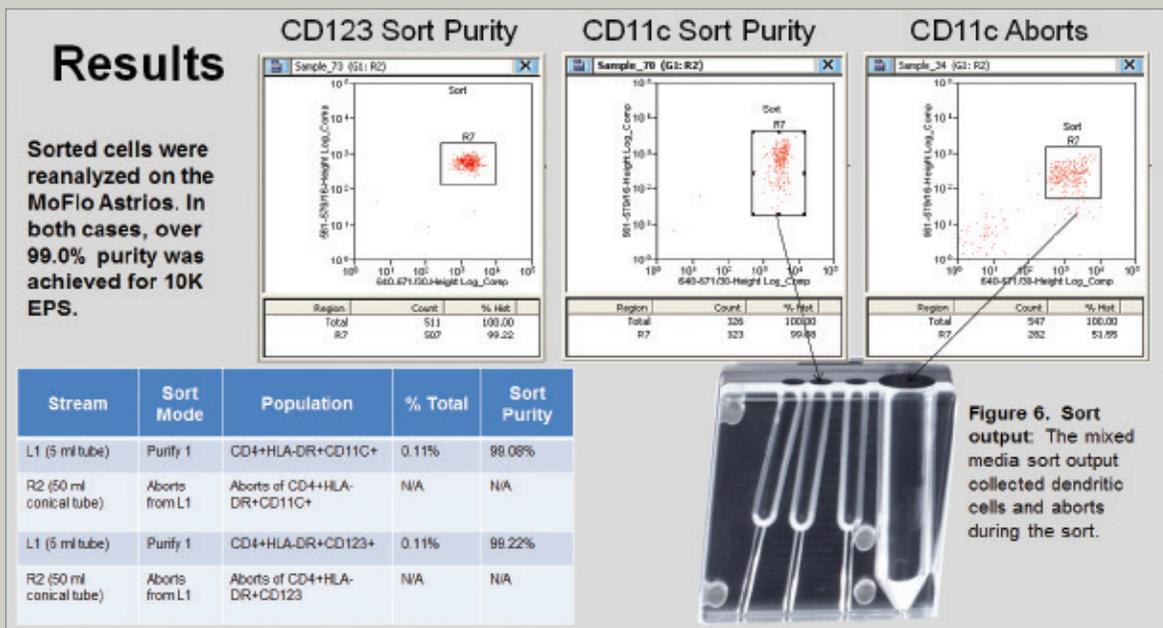


## What data are you missing — and how can you bring that data within reach?

MoFlo AstriosEQ enhances your experimental capability

### Perform 6-way sorting without compromise:

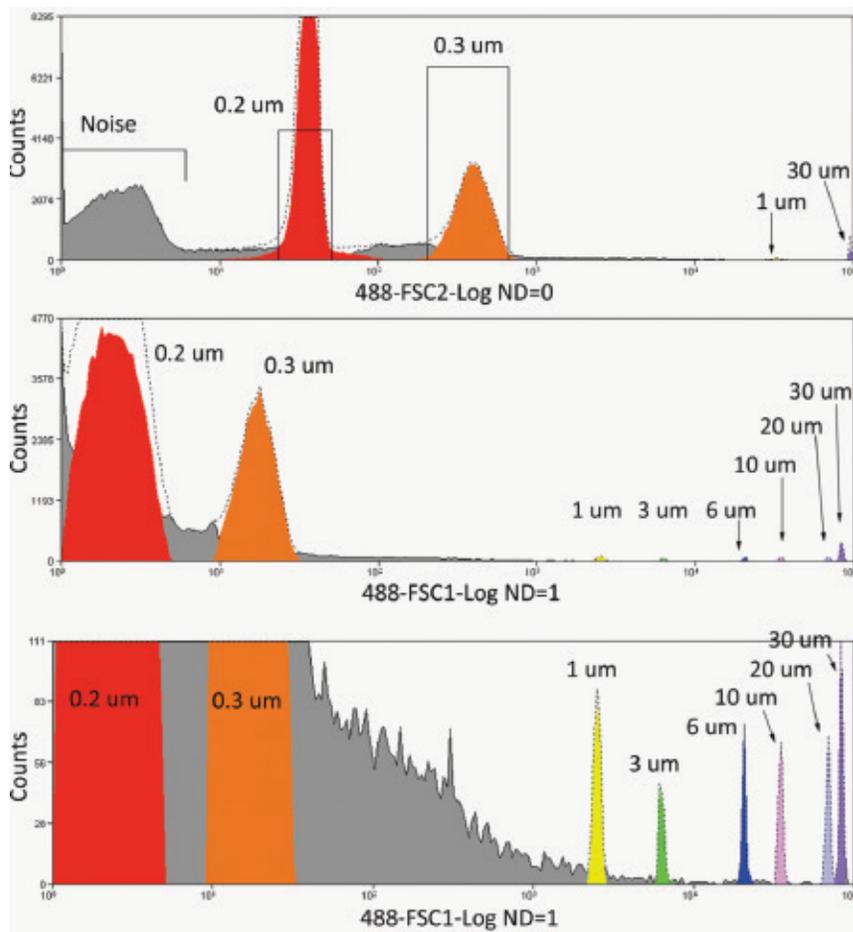
- Save time by selecting more populations at once
- Save precious sample with our unique mixed-mode sorting capability



*In conventional cell sorters, there is a three-way trade-off between sort speed, sort purity and sort yield. The MoFlo AstriosEQ Mixed Mode sorting allows selecting for purity in one sort-direction and yield in another, enabling simultaneous recovery of virtually all the target cells that would otherwise be lost to achieve that high purity. This enables you to sort faster without losing extremely valuable cells, and without sacrificing purity of the principal sort.*

### Break free from cuvette sorting restrictions:

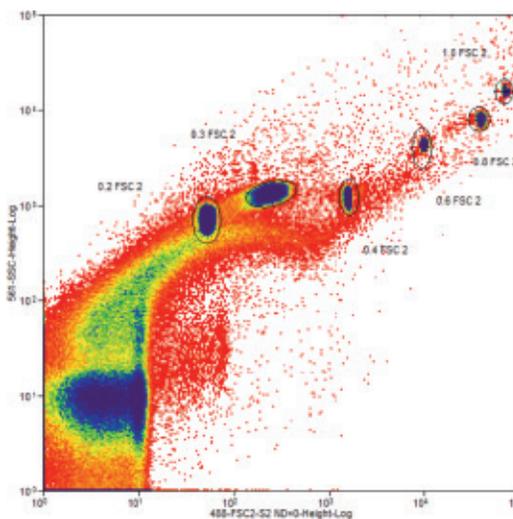
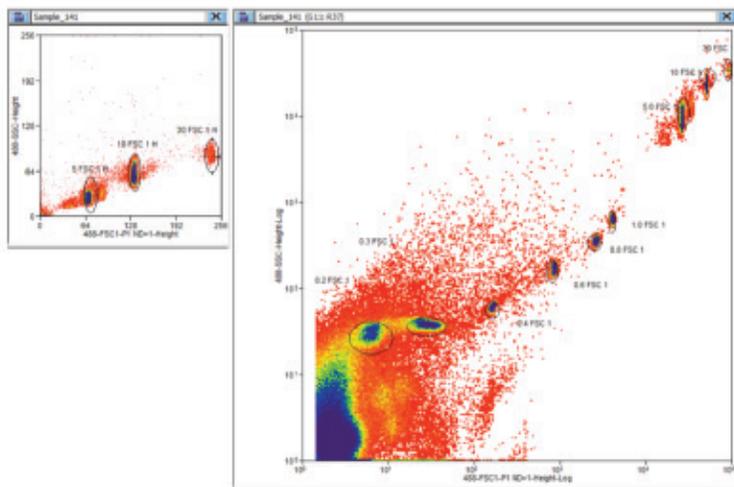
- Analyze heterogeneous populations with confidence — no differential velocities based on particle size; eliminate the need for Area:Height scaling and laser-delay optimization
- Maintain consistent performance with less maintenance — no concern about burn-in of debris on cuvette
- Allow biological demands to dictate sorting conditions — select from 70 and 100 micron nozzle sizes, to precisely accommodate cells from practically any tissue you want using Intellisort II to automatically maintain drop delay



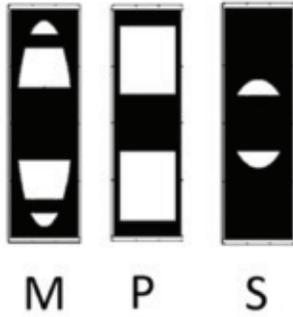
**See more with *enhanced Forward Scatter (eFSC)*:**

Look at data differently with 2 forward scatter PMTs

Dual eFSC channels allow you to apply different application-specific masks for different particle types, or simply use different neutral density (ND) filters to allow a greater overall particle size range to be measurable simultaneously. The top histogram was measured on eFSC2 without any neutral density (ND) filter, to widen the separation between noise and 0.2 and 0.3 μm beads. The middle and lower histograms show the eFSC1 data (acquired with an ND1 filter) with different y-axis scales to better display the larger particle peaks. The entire dynamic range from 0.2 to 30 μm is easily made visible when different ND filters are used on each eFSC parameter.



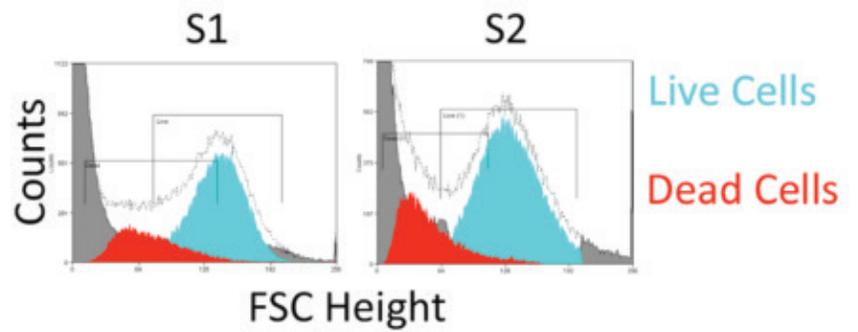
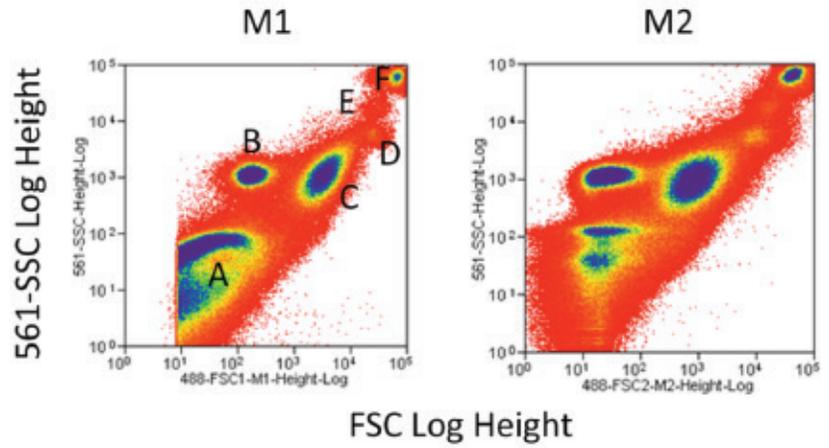
**Adapt to your application in seconds with different forward scatter masks.**



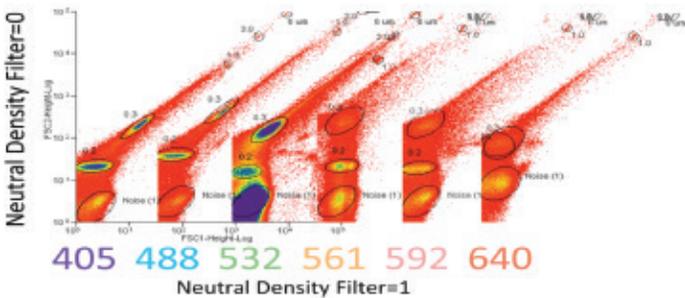
Change easily between application-specific forward scatter masks according to your application needs. There are 7 masks altogether, in three families, M, S and P.

**P masks** are for general-purpose use.

**M masks** highlight differences for materials.



**S masks** are particularly useful for emphasizing small differences, for example between live and dead cells.



**Sort from small to large particles:**

- Select from 70 or 100  $\mu\text{m}$  nozzles to sort smaller and larger particles without compromising on speed or efficiency, respectively. It is possible to sort with other nozzle sizes, but manual setups and drop delay maintenance are required.
- Optimize more precisely for particles across the dynamic range

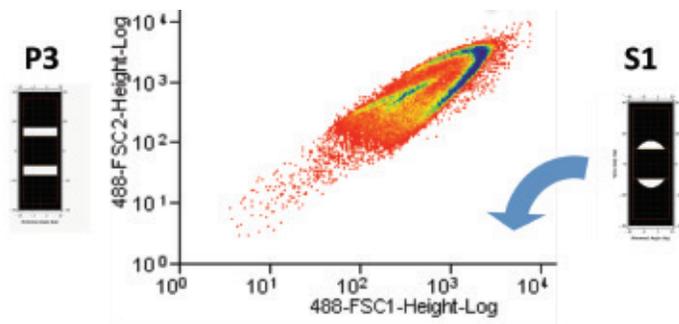
**Choose eFSC wavelength according to the biology.**

Light scattering is strongly influenced by the interaction between particle size and the wavelength of the illuminating light. In this bivariate plot of eFSC1 and eFSC2, with and without an ND1 filter, show the variation of scatter pattern with a range of different wavelengths.

## What have you always wanted to try?

Let the MoFlo AstriosEQ unleash your imagination

For extra discrimination, combine two different mask types in a bivariate eFSC plot to reveal details not visible with a normal single forward scatter signal.



**Representative examples of mask families — to learn more about mask families visit us at [www.astrios.com](http://www.astrios.com)**

### Take control with high precision positional sorting:

- Sort onto common plates or slide formats
- Even 1536-well plates are no challenge
- Employ standard and custom formats
- Enjoy the savings on assay miniaturization

### Expand opportunities for collaboration:

- Share experimental protocols between labs and instruments

### Analyze and sort from microsomes to macrophages, from astrocytes to xenografts:

- Work with the greatest possible range of biological and non-biological particles
- Consider non-biological applications like agarose gel droplets, TiO<sub>2</sub> and gold nanoparticles, or environmental particulates

### Fine-tune the instrument to suit your application:

- Match nozzle size to most experimental demands
- See large and small events together with optimized forward scatter masks
- Gain greater freedom to adjust pressures to handle wide range of cell types from multiple tissue sources
- Enhance cell viability and throughput with sample agitation and temperature control

### Conduct a wide range of single-cell applications, including:

- Circulating Tumor Cells (CTCs)
- Drug discovery applications
- Rare event analysis
- Stem cells
- Neuronal cells
- Fluorescent protein reporter selection
- Ecological and physiological microbes (yeasts and bacteria)

### Enjoy unsurpassed plating efficiency:

- Finest deposition accuracy
- Achieve high throughput single-cell deposition rates for an entire 96-well plate within 75 seconds and an accuracy of 99 % from a 1 % sort population
- Greatest plate range available (6 to 1536 well plates)
- Achieve better precision with uncharged drop collection where required



## ***What does safety mean to you?***

MoFlo AstriosEQ keeps you, your staff, and your cells safe



*The optional Baker Company SterilGARD biological safety cabinet can be fully integrated with the MoFlo AstriosEQ, to provide assured biological safety level BSL 2 containment without compromising workflow, thanks to the aerodynamic design of the AstriosEQ which maintains laminar flow in the cabinet. In addition, there is a convenient space within the compact cabinet for sample storage and easy loading and unloading of sample and sort-collection tubes, eliminating clutter.*



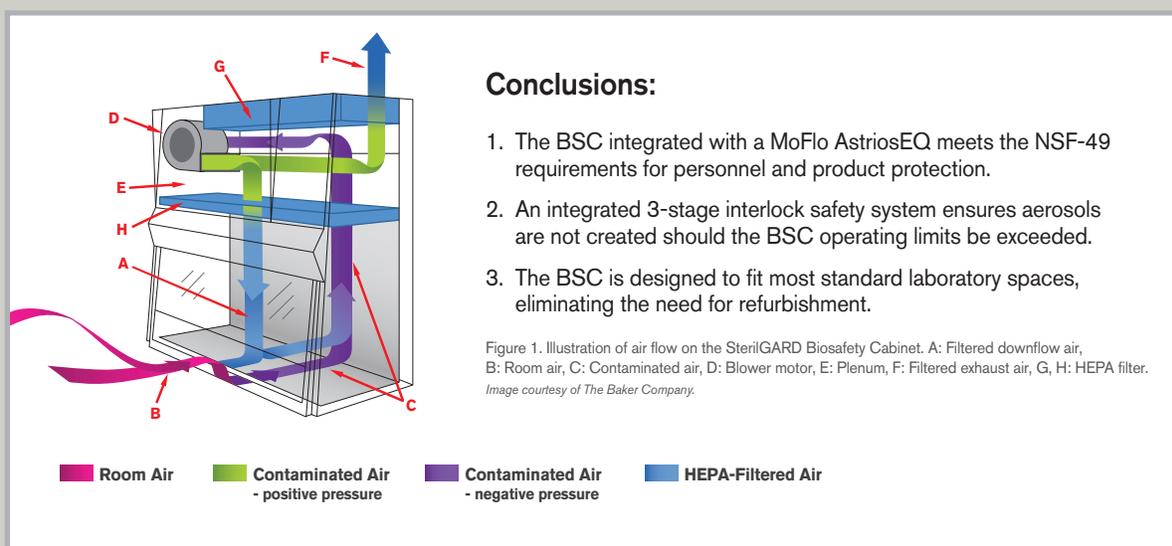
The sort chamber is designed with rounded corners and edges throughout to facilitate cleaning. It also includes multiple levels of interlocks to protect users during normal operation from laser, electrical and biohazard risks. Primary containment and interlocking are provided by the sort-chamber door, which overrides stream, sample flow and sort charging functions when moved out of the way to provide full access to the sort chamber. Secondary interlocks guarantee safe removal of the high-voltage deflection plate assembly for cleaning and prevent laser hazards when switching or replacing nozzles.

### MoFlo AstriosEQ is designed for containment and safety, right from the start:

- Stay safe with multiple aerosol evacuation points
- Clean more easily with round-edged sort chamber
- Smart sort chamber design controls three classes of operator hazard (aerosols, laser scatter and electric shock)

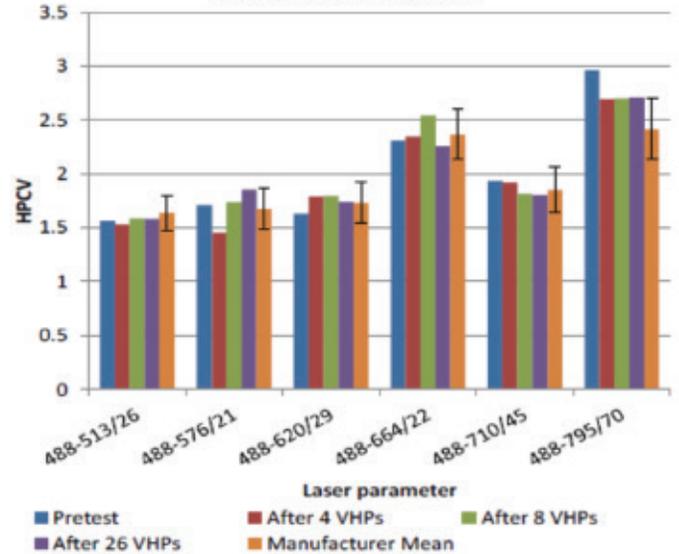
### Baker SterilGARD Class II biological safety cabinet:

- Ensure biological safety level (BSL) 2 containment
- Continuous monitoring of critical safety performance parameters
- Full integration between AstriosEQ and SterilGARD allows shut-down of Sample, Sheath and High-Voltage if ever required
- Compatible with secondary aerosol management system for increased levels of containment confidence



Air-flow patterns around the Astrios within the Baker SterilGARD BSC maintain a safe separation of contaminated air streams, protecting both samples and operators. Continuous monitoring of critical performance parameters by the SterilGARD itself permits controlled shutdown of the Astrios to maintain operational safety in the very unlikely event of a potential problem, within a significant margin.

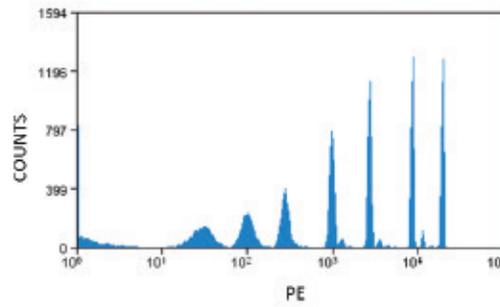
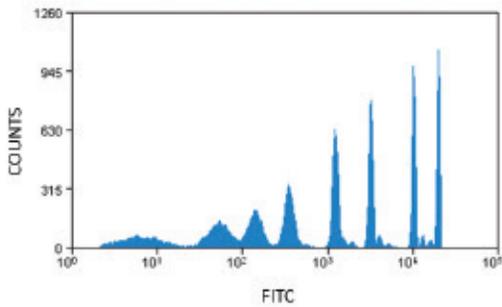
### Half-Height CV after Biohood VHP Decontamination



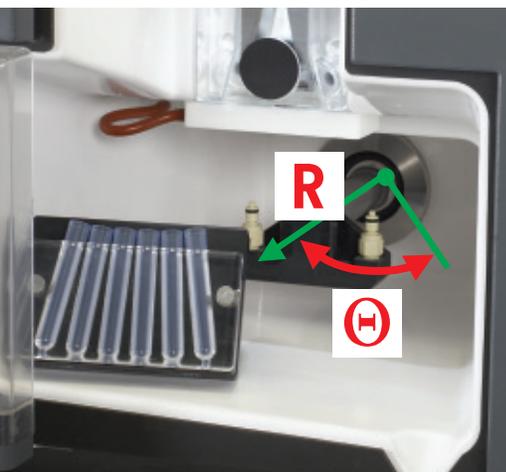
### Decontaminate using vaporous hydrogen peroxide (VHP):

- Proven performance after multiple VHP decontamination cycles of AstriosEQ components within the Baker SterilGARD BSC

*The fluorescence sensitivity of the AstriosEQ has been proven to be substantially unaffected after multiple cycles of vaporous hydrogen peroxide (VHP) decontamination.*



*Excellent sensitivity is obtained even after VHP decontamination.*



### Contain biohazardous material with confidence:

- IntelliSort II beadless drop-delay calculation and monitoring eliminates the risk of sample contamination associated with bead-based methods
- Bubble detection prevents accidental spray, protecting your sorted cells from accidental contamination
- Sort-rescue mechanism triggered by IntelliSort II also acts to save your collected cells

### Eliminate cross-contamination between sorts:

- Fast and easy "spray and wipe" decontamination is made possible by rounded edges and corners throughout sort chamber
- Cleaning is made easier and containment improved by the sealed CyClone carrier arm mechanism without interfering with plate and slide translation precision
- The CyClone carrier arm technology utilized in the AstriosEQ helps to maintain a sealed and easily cleaned sort chamber while maintaining plate and slide translation precision
- No need for slow and potentially hazardous UV decontamination



## ***How do you manage routine tasks — and cope with the unexpected?***

MoFlo AstriosEQ is simply designed to work for you

### **A broader standard laser palette than cuvette-based systems give you more choice:**

- Jet-in-air gives freedom to employ 355 nm true-UV laser
- Reduce compensation requirements through use of up to 7 spatially separated lasers across 44 parameters\* (out of 51 total available)

*\*In fully configured instruments*

### **Uninterrupted aseptic sorting:**

- IntelliSort II beadless drop-delay calculation and monitoring prevents delays

### **Enhanced ergonomic design and ease of use:**

- Easily accessible sort chamber and simple nozzle maintenance
- Easy access to sheath, waste and optical array PODs without leaving your seat
- Usable workspace within the optional biological safety cabinet

### **Fast, easy switching between experimental configurations using Summit 6.2 software:**

- Acquire and save as many events across multiple parameters as necessary while you sort
- Quickly reconfigure instrument configurations to match the broadest experimental design criteria
- Recall all the details of an optimized assay with new software protocol implementation, whether it is from your own instrument, or from another AstriosEQ

### **Intuitive guided workflow:**

- For the greater efficiency in the day-to-day tasks, let your workflow be guided by the layout of the touchscreen controls

### **Simplified set-up and QC:**

- Save time each day with automatic start-up and quality control procedures
- Easy shut-down operation with a timed restart when you need it
- Achieve acclaimed MoFlo sort precision capability in less time with Auto Startup and wizard-driven routines

### **Day-to-day consistency:**

- Get a clear view of your sample every day — no degradation effects from a dirty cuvette
- Optimize your signals by aligning the stream to all the visible lasers simultaneously in just a few minutes, thanks to the unique 6-laser fiber-optic delivery system
- Clean and restore a nozzle mid-sort if ever required with the minimum of effort

Beckman Coulter pioneered MoFlo (for modular flow cytometry) technology to develop scalable, expandable flow instruments with a fluidics design that has yielded an unparalleled record of longevity and stability.

Beckman Coulter's latest development, eFSC (enhanced Forward Scatter), permits simultaneous detection and sorting of the widest range of particle sizes yet, and offers the potential to open new insights into your experimental milieu.

Our fastest and most precise sort deposition technology, coupled with mixed-mode sorting, will allow you to move into assay miniaturization to make more of your precious samples.

Multiple available levels of biohazard control enable you to work with potentially biohazardous materials that you would previously have only been able to analyze, not sort.

Beckman Coulter is committed to continuing the path of innovation allowing you to do more with your MoFlo AstriosEQ than you dreamed was possible yesterday.

We know that it is your call. Embrace the MoFlo AstriosEQ for your cell-sorting demands today—and we will help to enhance your vision and your capability for the future.

***To learn more, contact your local Beckman Coulter sales team,  
or visit us at [www.astriosEQ.com](http://www.astriosEQ.com)***

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