Multiplelabs
Turnkey Laboratories Solutions

Analytical®
Technologies Limited

FC - 3200
Flow Cytometer

EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

A new flow cytometry system that shifts the paradigm in what scientists expect to see in performance from an affordable three laser system.

its optical design and unmixing algorithm give scientists remarkable flexibility, enabling the use of a wide array of new fluorochrome combinations without reconfiguring the system for each application. The state-of-the-art optics and low-noise electronics provide excellent sensitivity and resolution. Flat-top laser beam profiles, combined with a uniquely designed fluidics system, translate to outstanding performance at high sample flow rates.

The end result is a system that sits in a sweet spot for scientists that have budgeted for a one to three laser system, but desire the ability to run panels of higher complexity.

software offers an intuitive workflow from QC to data analysis with technology-enabling tools that simplify running applications. The ATL team has reimagined what you should expect from an affordable cytometer and has delivered an instrument that brings the benefits of full spectrum cytometry to more scientists.

- High Value
  Upgradeable from one laser and nine colors to three lasers and 24 colors, there is a ATL configuration to fit your needs.

- Remarkable Sensitivity
  Sensitivity redefined using state-of-the-art optics and low-noise electronics.
  Superb resolution of dim and rare populations, even in high complexity panels and high flow rates.

Easy, Flexible, and Intuitive

- One configuration for all assays - no need to change optical filters.
- Use any commercially available fluorochrome excited by the onboard lasers.
- Intuitive software with familiar workflow.

Low Cost of Ownership

- Fewer lasers to run more colors.
- Low maintenance lasers, more fluorochrome choice, one configuration, and up to 24 colors per sample equates to greater cost savings and less setup time between experiments.

Application Flexibility For More Users

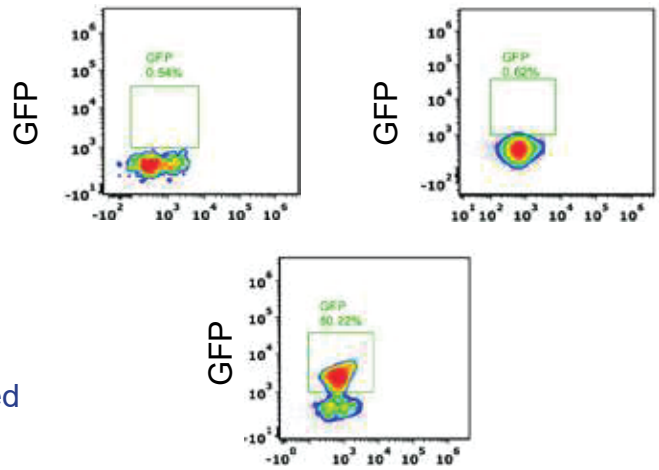
The revolutionary technologies on board ATL enable capabilities usually seen in much pricier systems. With its onboard 100mW 405nm laser (available with three laser configuration only) and highly sensitive violet side scatter detector, particles nearing 100nm in size can be analyzed. ATL opens the door to a wide variety of small particle applications. For those challenging applications involving highly autofluorescent particles, let the software's autofluorescence extraction tool bring new levels of resolution.

Small Particle Detection Example

Murine Leukemia Virus (MLV-1 24 nm ±14 nm) genetically engineered to express superfolder GFP (sfGFP) as a fusion protein with the viral envelope glycoprotein.

The plots on the right show:

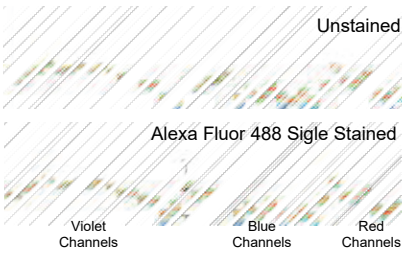
A) Buffer only
B) MLV with no sfGFP (MV-M-Zero)
C) MLV with sfGFP-Env (MV-M-sfGFP)



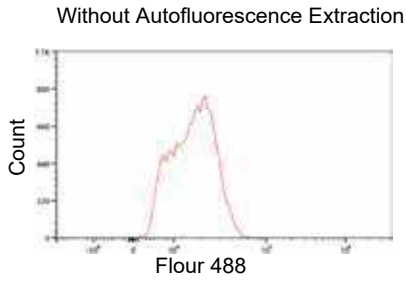
All samples were run on a three laser Aurora using violet SSC as a threshold trigger. Virus reference particles were provided by ATL Technologies.

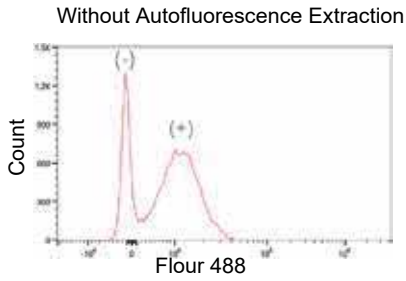
Autofluorescence Extraction Example:

Human U937 cells were subjected to the RNA Assay. The cells underwent a seríes of hybridization steps to label mRNA for HMBS, a low expressed gene (-10 copies/cell), with Autofluorescence. The sample was run on ATL and analyzed using software with two different strategies, one with autofluorescence extraction and one without.



Spectrum plots of unstained and Fluor stained cells acquired on ATL. Note that the two spectra heavily overlap.





Due to high autofluorescence, separation of negative and positive signals was marginal (upper histogram). Autofluorescence extraction greatly improved the resolution of the two cell populations (lower histogram).

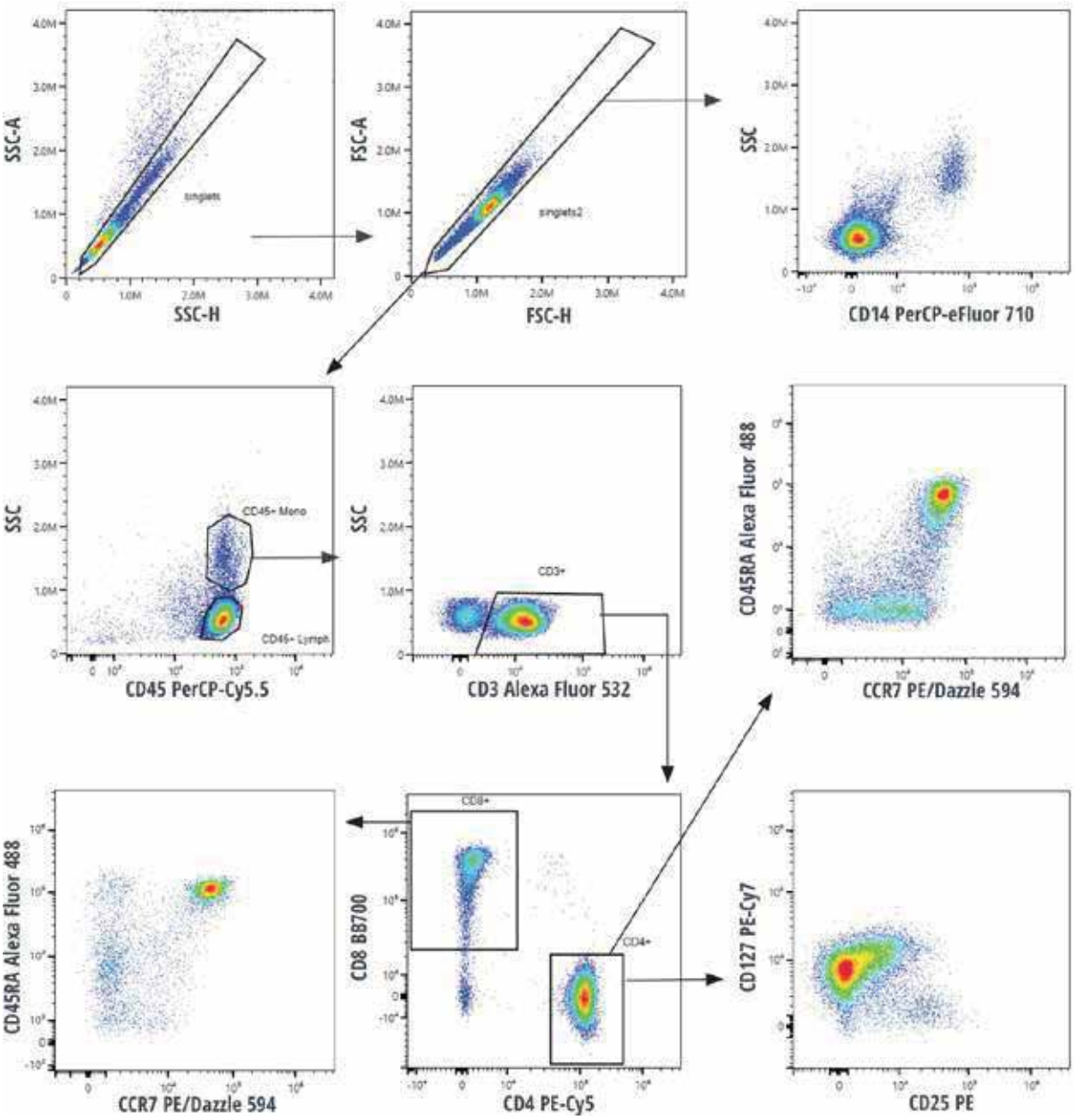
The Power of Full Spectrum Cytometry

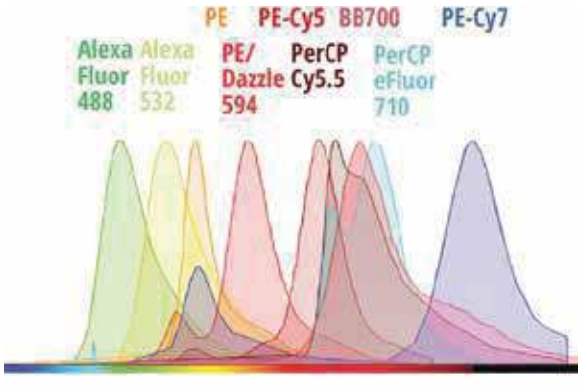
Full spectrum cytometry opens a wide range of new possibilities. ATL allows scientists to run complex multicolor experiments with as few as one or two lasers. The unique optical system enables the use of dyes with highly overlapping peak emissions without sacrificing resolution, translating to more flexibility in dye choice. Only one configuration is used for all applications, saving time in experimental setup, and minimizing the chance for experimental error. Experiments on the following pages are examples of what is possible with ATL:

9-Color Blue Laser Planel

Peripheral blood mononuclear cells (PBMC5) were thawed, stained, washed, and analyzed on a one-laser ATL. In this nine color blue laser excitable dyes panel, monocytes and several CD4 T cell and CD8 T cell subsets were easily identified. Markers and fluorochromes used in this assay are summarized in the table below.

SPECIFICITY	FLUOROCHRIME
CD45RA	Fluor 488
CD3	Fluor 532
CD25	PE
CCR7	Dazzle 594
CD4	Cy 5
CD45	Cy 5.5
CD8	Horizon BB700
CD14	eFluor 710
CD127	Cy 7





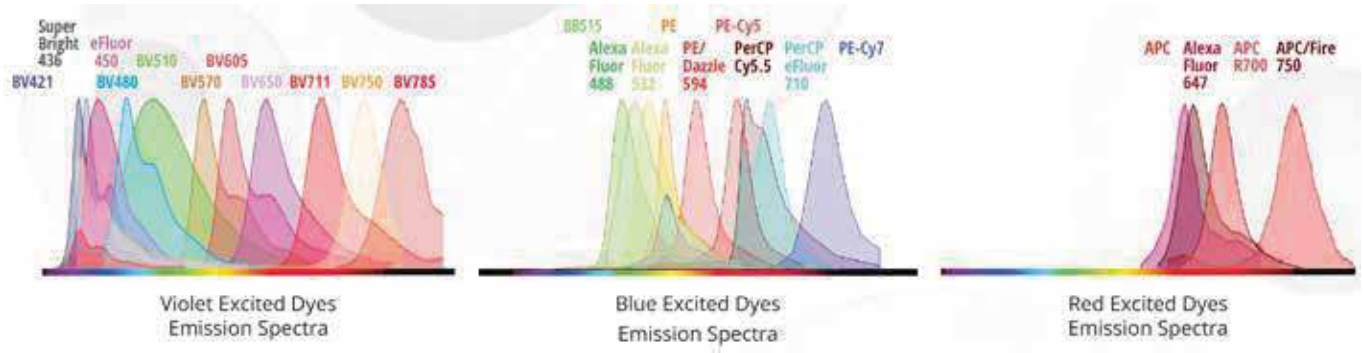
9-Color Panel Dyes Emission Spectra

24 Colors With Three Lasers...Is it Possible?

The optical design combined with the unmixing capability in SpectroFlo® software allows greater fluorochrome choice, panel flexibility, and easy setup without having to change filters. The three laser configuration provides outstanding multi-parametric data for a wide array of applications. Markers and fluorochromes in a 24-color panel designed for identification of circulating cell subsets in human peripheral blood are summarized in the table below:

SPECIFICITY	FLUOROCHRIME	SPECIFICITY	FLUOROCHRIME	SPECIFICITY	FLUOROCHRIME
CCR7	Brilliant Violet 421	CD11c	BD Horizon BB515	CD27	APC
CD19	Super Bright 436	CD45RA	Alexa Fluor 488	CD123	Alexa Fluor 67
CD16	eFluor 450	CD3	Alexa Fluor 532	CD127	BD Horizon APC R700
TCR	BD Horizon BV480	CD25	PE	HLA DR	APC/Fire 750
CD14	Brilliant Violet 510	igD	PE/Dazzle 594		
CD8	Brilliant Violet 570	CD95	PE-Cy 5		
CD1c	Brilliant Violet 605	CD11b	PerCP-Cy 5.5		
PD-1	Brilliant Violet 650	CD38	PerCP-eFluor 710		
CD56	Brilliant Violet 711	CD57	PE-Cy 7		
CD4	Brilliant Violet 750				
CD28	Brilliant Violet 785				

The 24-Color Panel Includes Many Highly Overlapping Dyes:



Violet Excited Dyes Emission Spectra

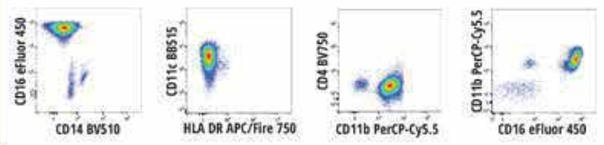
Blue Excited Dyes Emission Spectra

Red Excited Dyes Emission Spectra

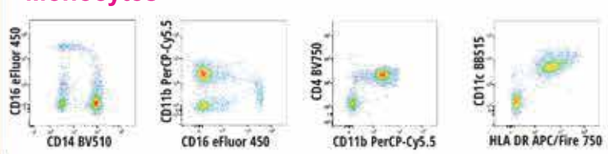
A New Reality:
3 Lasers, 24 Colors, Unparalleled Resolution

analytical Tech. Makes It Possible

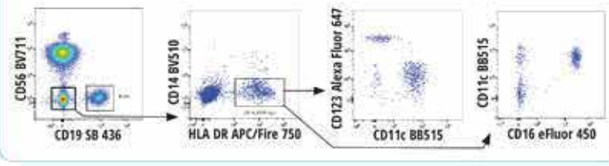
Granulocytes



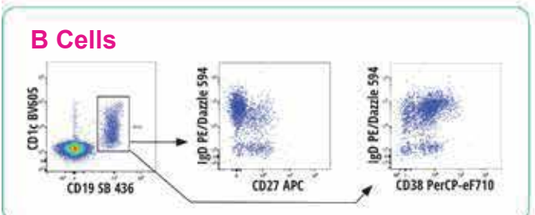
Monocytes

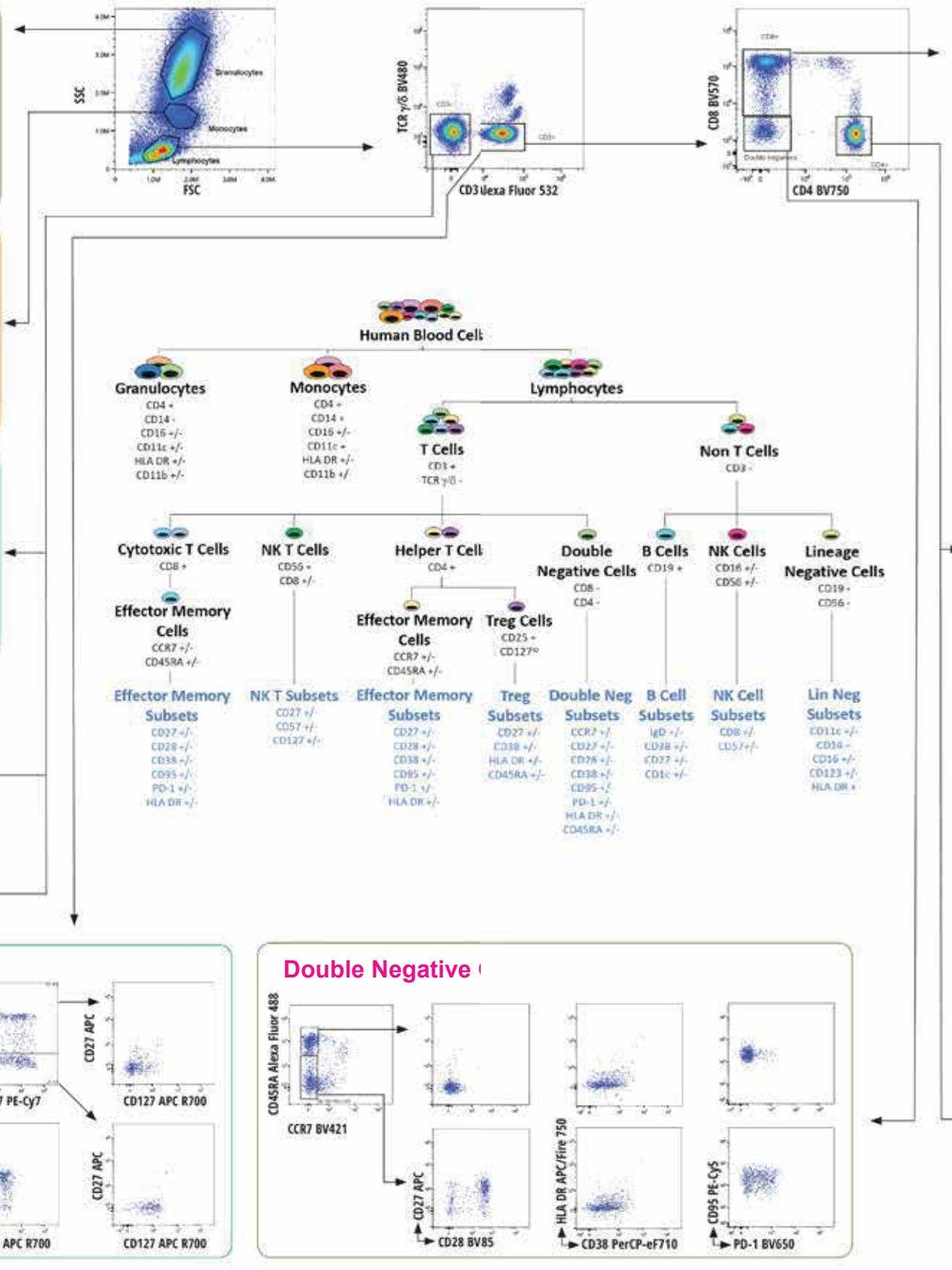


Lineage Negative Calls

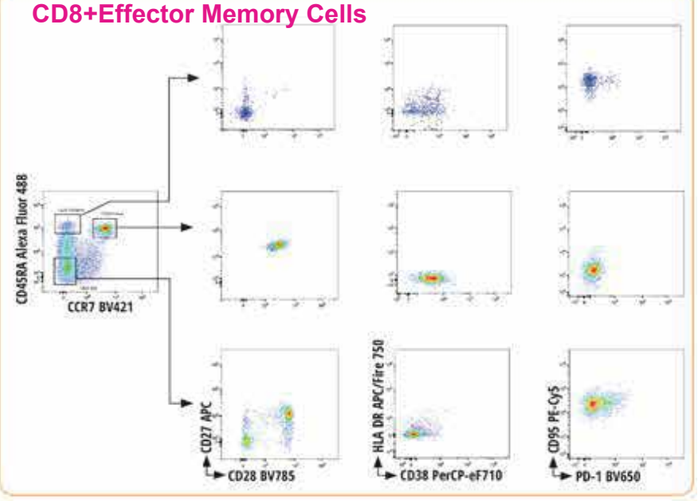


B Cells

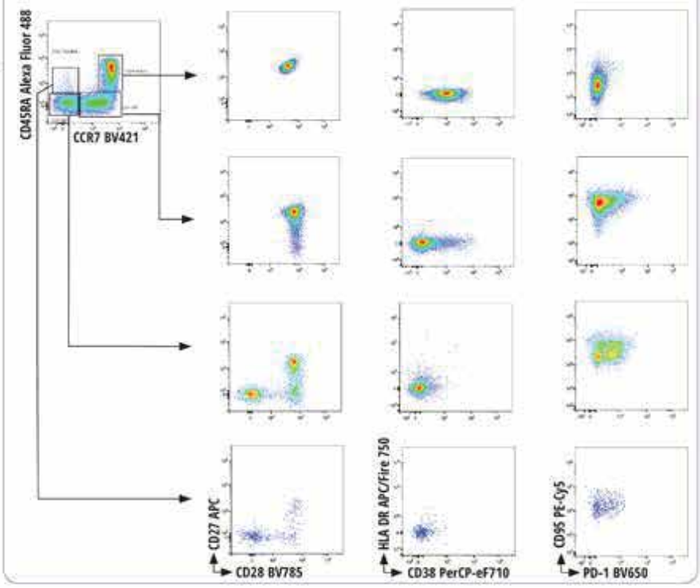




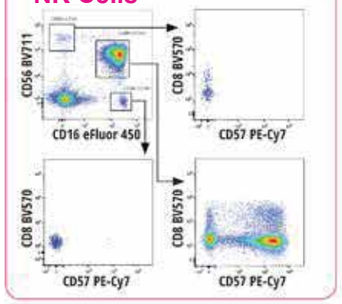
CD8+Effector Memory Cells



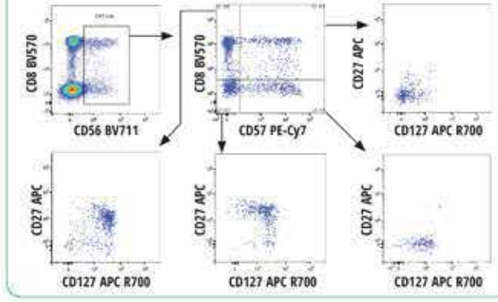
CD4+Effector Memory Cells



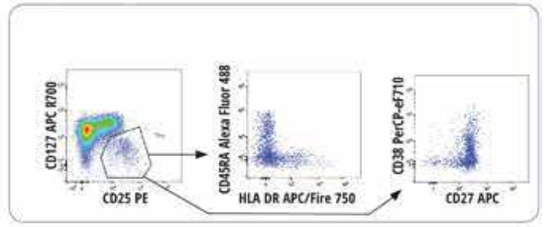
NK Cells



NK T Cells



Double Negative



Fluorescent Proteins and Challenging Dye Combinations

The detection of some fluorescent protein or fluorochrome combinations by conventional flow cytometry presents a challenge due to high amounts of spectral overlap (Figures 1, 4). Analytica tech. addresses this challenge by using differences in full emission spectra signatures across all lasers to clearly resolve these combinations, even if the populations are co-expressed (Figures 2, 3, 5 and 6).

Example 1: GFP and YFP

Figure 1:
Spectrum plots from a conventional spectrum viewer shows heavy overlap between GFP and YFP.

Figure 2: Spectrum plots from Analytical tech. show distinct signatures across three lasers.

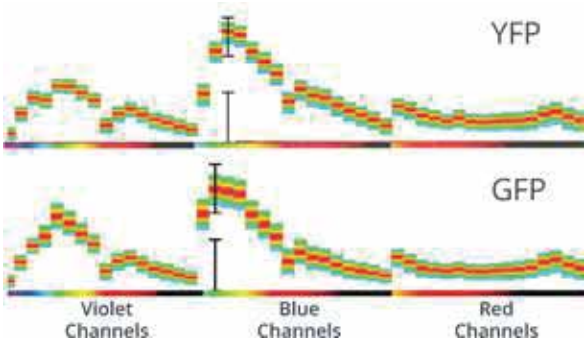
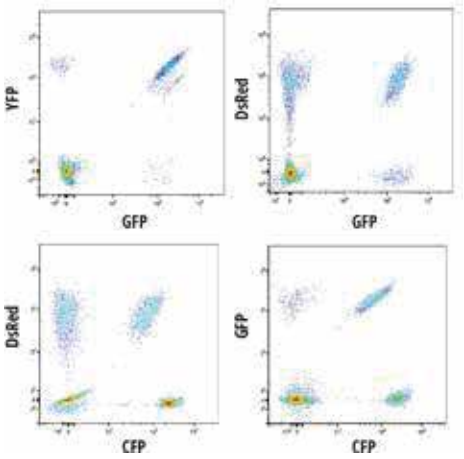


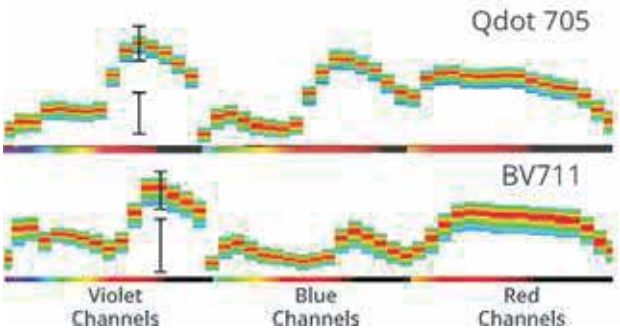
Figure 3:
Sp2/O cells were transfected with GFP, YFP, CEP and/or DsRed (alone or in combination) and run on Analytical tech. (plots are gated on FSC vs SSC). Each population is clearly identified.



Example 2: Qdot 705 and BV711

Figure 4: Spectrum plots from a conventional spectrum viewer shows heavy overlap between Qdot 705 and BV711.

Figure 5: Spectrum plots from Analytical tech. show distinct signatures for Qdot 705 and BV711.



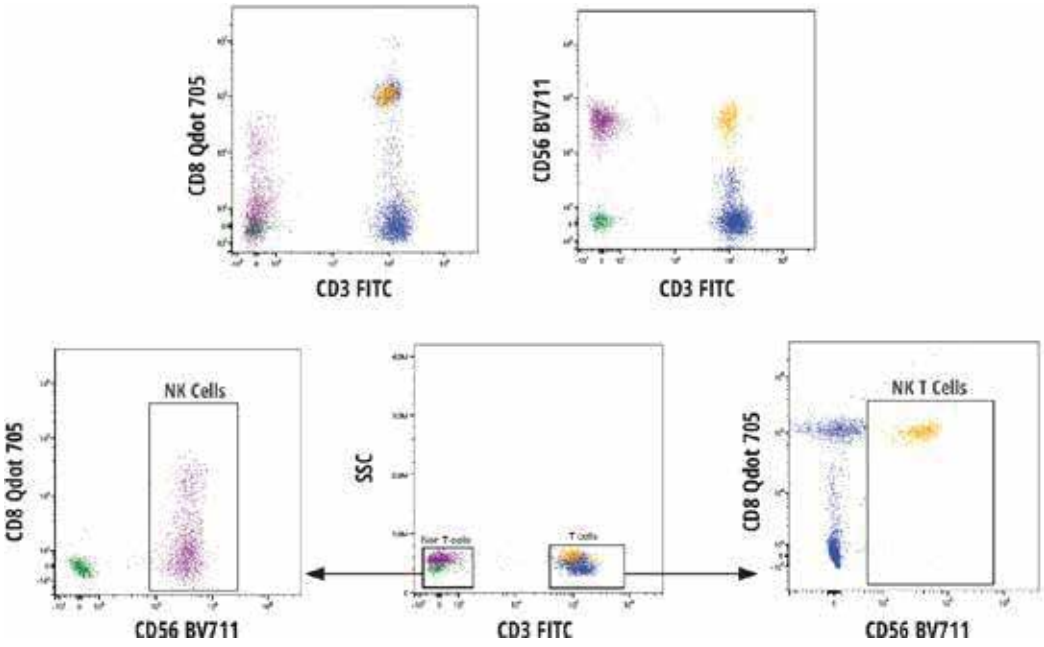


Figure 6: Normal human whole blood was stained, lysed, washed, and analyzed on Analytical tech . Subsets of NK and NK T cells that co-express CD56 BV711 and CD8 Qdot 705 were easily identified.

Get to know Our Automatic Micro-Sampling System(AMS)

Meet the New AMS

The new AMS offers preset and user adjustable settings that allows the loader to be fine tuned to your experimental requirements. The AMS is specifically designed to streamline experimental workflow and seamlessly integrates into Analytical tech. The AMS also offers ease of use, low carry over, and minimal dead volume.

Reliable and easy

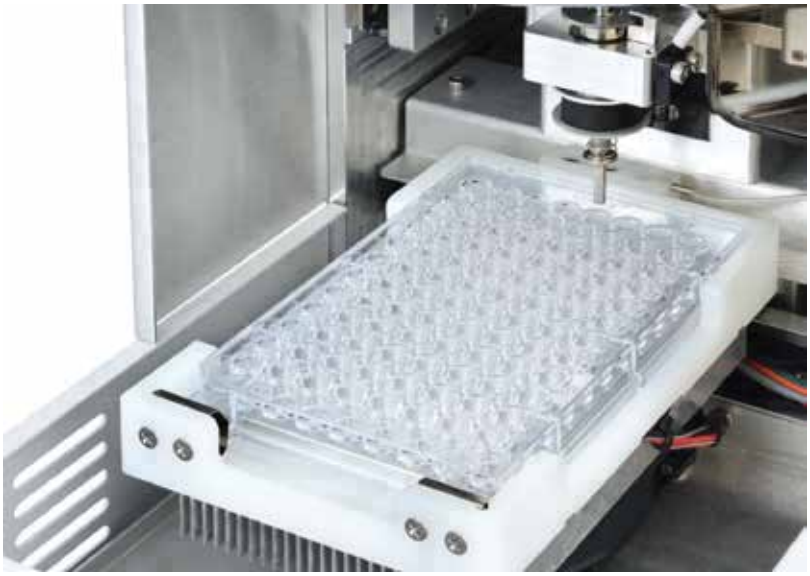
- Reliable 96 well plate acquisition maximizes productivity.
- Easily change between plates and tubes in a matter of seconds.

Three throughput modes

- Optimized acquisition speeds, from low carry over to high throughput.

User customizable modes

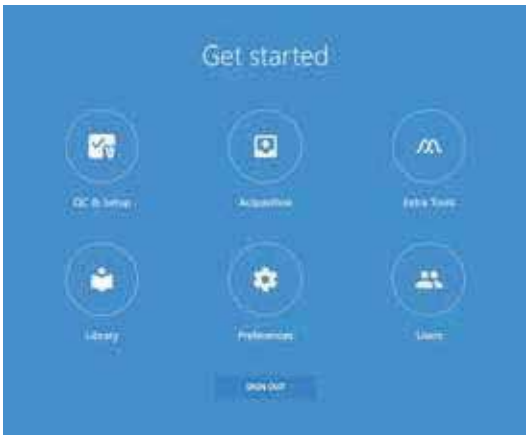
- Fully customizable with a suite of user modes to fit a variety of applications and workflows.



SpectroFlo® Software Guided Workflows

The new SpectroFlo software offers an intuitive workflow from QC to data analysis with technology-enabling tools that simplify running any application.

QC and Setup:
Run Daily QC to monitor instrument performance and add reference controls.



Extra Tools:
Unmix data using controls from different experiments or apply virtual filters to your data.

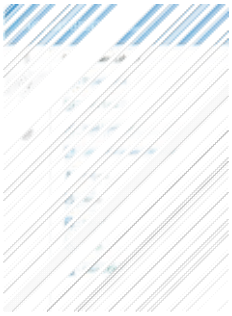
Users:
For administrative controls.

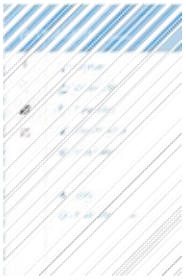
Library:
Add or remove experiment templates, worksheet templates, fluorochrome information, QC bead information, and more.

Preferences:
Customize the software appearance. Set default plot sizes, text sizes and fonts, gate colors, print layout, statistics table options, and more.

Acquisition:

Experiment Menu


Worksheet Menu


Fluidics Menu

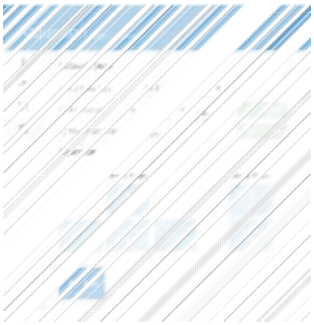
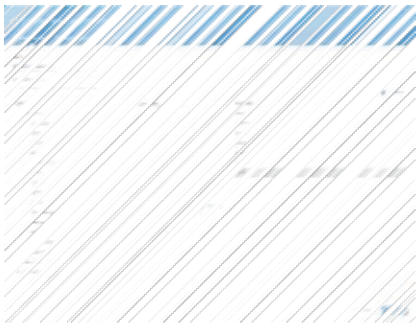


Plate Calibration

Experiment Workflow:
From the Acquisition menu, you can start a new experiment and get to your data in three simple guided steps.

Step 1:
Create Your Experiment

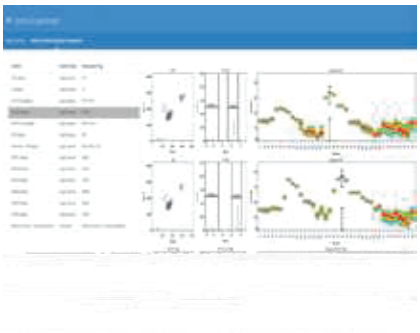


Create your experiment, choose fluorochromes, and add labels, tubes, worksheets, and stopping criteria in this guided workflow.

Step 2:
Acquire Your Tubes

Load and acquire your samples.

Step 3:
Unmix Your Data



Visualize your reference controls spectra using our unmixing wizard.

Specifications

Optics

Excitation Optics

Optical Platform

Analytical tech. contains a fixed optical assembly confígured with one to three spatially separated laser beams. Laser delays are automatically adjusted during instrument QC.

LASERS

- One laser Configuration : 488nm:50mW
- Two laser Configuration : 488nm:50mW,640nm:80mW
- Three laser Configuration : 405nm:100mW,488nm:50mW, 640nm:80mW

BEAM GEOMETRY

- Flat-Top laser beam profile with narrow vertical beam height optimized for small particle detection.

EMISSION OPTICS

EMISSION COLLECTION

- Fused silica cuvette coupled to high NA lens for optimum collection efficiency to optical fibers.

Optics

FORWARD AND SIDE SCATTER DETECTION

- FSC: high-performance semiconductor detector with 488 nm band pass filter.
- SSC: Two high-performance semiconductor detectors with 405 nm and 488 nm bandpass filter. Note: 405 nm side scatter applies to three laser configurations only.

- FLUORESCENCE DETECTORS

  Proprietary high sensitivity Coarse Wavelength Division Multiplexing (CWDM) semiconductor array per laser enabling more efficient spectrum capture in the 420-829 nm range. No filter changes required for any fluorochrome excited by the 405 nm, 488 nm, and 640 nm lasers.

STANDARD OPTICAL CONFIGURATION

- Violet detector module (only available in three laser configurations): 16 channels uneven spaced bandwidth from 420-829 nm.
- Blue detector module: 14 channels uneven spaced bandwidth from 498-829 nm.
- Red detector module: 8 channels uneven spaced bandwidth from 652-829 nm.

Fluidics

- SAMPLE FLOW RATES

  Low: 15 pL/mm, Medium: 30 pL/mm, High: 60 pLI mm,
  Plate high-throughput mode: loo pL/mm
- FLU DIC MODES

  Long clean, SIT flush, Purge filter, Clean flow cell
- MANUAL SAMPLE IN PUT FORMATS

  1 2x75mm polystyrene and polypropylene tubes

- STANDARD FLUIDIC RESERVOIRS

  4L fluid container set with level-sensing provided. Compatible with 20L sheath and waste cubitainers.

- VOLUMETRIC SENSOR

  Volumetric measurement during sample recording enables calculation of counts per pL for any gated population.

- STANDARD FLUIDIC RESERVOIRS

  4L fluid container set with level-sensing provided. Compatible with 20L sheath and waste cubitainers.

- VOLUMETRIC SENSOR

  Volumetric measurement during sample recording enables calculation of counts per pL for any gated population.

PLATE LOADER OPTION

- 96-well microtiter plate capability
- Throughput time 35 minutes at High Throughput mode sampling 7 µL/well
- Plate stage temperature: 4-30°C

PLATE LOADER CARRYOVER

- Default mode: ≤0.3%, Low Carryover mode:
- ≤0.1 %, High Throughput mode: ≤1 %

Performance

FLUORESCENCE SENSITIVITY

- FITC: ≤35 MEFL, PE:≤1 O MEFL, APC:≤1 O MEFL,
- Pacific Blue:≤2SMEFL

*Measurements based on an average from two systems, one three lasers and one five lasers, and performed using SPH ERO Rainbow Calibration Particle (RCP-30-5A) based on its peak emission channel.

- FLUORESCENCE LINEARITY
  FITC R2 ≥O.995 I PE R2 ≥O.995

- FORWARD AND SIDE SCATTER RESOLUTION
  Performance is optimized for resolving lymphocytes, monocytes, and granulocytes.

- SIDE SCATTER RESOLUTION
  Capable of resolving O.2pm beads from noise.

- CARRYOVER
  <0.1%

- DATA ACQUISITION RATE
  35,000 events/s*

Software

SPECTRO SOFTWARE

- Live unmixing during acquisition
- Developed specifically to streamline assay setup,
- data acquisition, and file export
- Automated QC module
- Autofluorescence extraction
- Raw and Unmixed FCS 3.1 files

Electronics

SIGNAL PROCESSING

- Digital signal processing with automatic window gate adjustment.
- 22-bit 605log decades.
- Threshold using any single parameter or combination of parameters.

PULSE SHAPE PARAMETERS

- Pulse Area and Height for every parameter. Width for scatter parameters and one
- fluorescence parameter for each laser.

Workstation

- Operating System :- Windows® 10 Pro 64-bit
- Processor :- Intel® Core™ i7 processor,3.2 GHz
- RAM :- 16 GB
- Hard Drive :- 500GB SSD / 1TB SATA
- Video Processor :- NVIDIA® HD GrForce
- Monitor :- 28” UHD 4K Monitor

Installation Requirements

- Dimensions(WxDxH)

INSTRUMENT DIMENSIONS

Without loader :- 54 x 52 x 52 cm

With loader :- 58.4 x 62 x 52 cm

INSTRUMENT WEIGHT

- Instrument Weight :- 61 kg
- Loader Weight :- 13 kg

- Computer Dimensions

29.1 x 9.25 x 3434 cm

Room Requirments

- Power :- 100-240V, 50/60 Hz, 2A max
- Heat Dissipation :- 500w with all solid-state lasers
- Temperature :- 15-28ºC
- Humidity :- 20%-85% relative non-condensing
- Air Filtering :- No excessive dust or smoke
- Lighting :- No special requirments

Regulatory Status

- For research use only. Not for use in diagnostic or therapeutic procedures.

Analytical®
Technologies Limited

HPLC Servicing, Validation, Trainings and Preventive Maintenance :

HPLC Servicing :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

Trainings :We also take up preventive Maintenace to reduce downtime of HPLC's Trainings.

AMC's/CMC :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

Validations :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

Instruments :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.

About Analytical Technologies

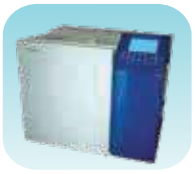
Analytical Technologies is synonymous for offering technologies for doing analysis and is the Fastest Growing Global Brand having presence in at least 96 countries across the global. Analytical Technologies Limited is an ISO:9001 Certified Company engaged in Designing, Manufaturing, Marketing & providing Services for the Analytical, Chromatography, Spectroscopy, Bio Technology, Bio Medical, Clinical Diagnostics, Material Science & General Laboratory Instrumentation. Analytical Technologies, India has across the Country operations with at least 4 Regional Offices, 6 Branch Offices & Service Centers. Distributors & Channel partners worldwide.

Our Products & Technologies

UV/VIS Spectro 2080+ Double Beam

Infra FTIR

Optima Gas Chromatograph 3007



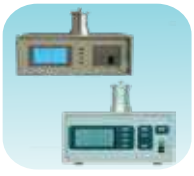
Optima Gas Chromatograph 2979 Plus

Flash Chromatograph

Atomic Absorption Spectrophotometer

Liquid Partical Counter

Optical Emission Spectrophotometer



DSC/TGA

Semi Auto Bio Chemistry Analyzer

HEMA 2062 Hematology Analyzer

Micro Plate Reader/Washer

URINOVA 2800 Urine Analyzer

Total Organic Carbon 3800

Fully Automated CLIA

NOVA-2100 Chemistry Analyzer

PCR/Gradient PCR/ RTPCR

TOC Analyzer

Laser Particle Size Analyzer

Ion Chromatograph

Water purification system

Regulatory compliances

Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:

1.Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personallities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at Info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXIFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

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