

PE & APC Tandem Dyes

discover the possibilities



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6. Use of Our Products: Our products are used ONLY for laboratory research and development purposes. We realize that, since our products are, unless otherwise stated, intended primarily for research purposes, they may not be on the Toxic Substances Control Act (TSCA) inventory. You assume responsibility to assure that the products purchased from us are approved for use under TSCA, if applicable. You have the responsibility to verify the hazards and to conduct any further research necessary to learn the hazards involved in using products purchased from us. You also have the duty to warn your customers and any auxiliary personnel (such as freight handlers, etc.) of any risks involved in using or handling the products.

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Our Mission

AAT Bioquest® is committed to constantly meet or exceed its customer's requirements by providing consistently high quality products and services, and by encouraging continuous improvements in its long-term and daily operations. Our core value is Innovation and Customer Satisfaction.

Our Story

AAT Bioquest®, Inc. develops, manufactures and markets bioanalytical research reagents and kits to life sciences research, diagnostic R&D and drug discovery. We specialize in photometric detections including absorption (color), fluorescence and luminescence technologies. The Company's superior products enable life science researchers to better understand biochemistry, immunology, cell biology and molecular biology. AAT Bioquest offers a rapidly expanding list of enabling products. Besides the standard catalog products, we also offer custom services to meet the distinct needs of each customer. Our current services include custom synthesis of biological detection probes, custom development of biochemical, cell-based and diagnostic assays and custom high throughput screening of drug discovery targets.

It is my greatest pleasure to welcome you to AAT Bioquest. We greatly appreciate the constant support of our valuable customers. While we continue to rapidly expand, our core value remains the same: Innovation and Customer Satisfaction. We are committed to being the leading provider of novel biological detection solutions. We promise to extend these values to you during the course of our service and to continue to support you with our new products and services. It is our greatest honor to receive valuable feedbacks and suggestions from you so that we can better serve your projects.

Very truly yours,



Zhenjun Diwu, Ph.D.
President



Recent advancements in flow cytometry technology, and the emergence of spectral flow cytometry has greatly expanded the number of markers that can be detected in a single sample. Researchers can now simultaneously measure up to 28-40 targets, providing novel insights into complex cellular processes in normal and disease states. However, the design of robust multicolor flow panels requires careful consideration. As instruments incorporate more lasers and detectors, and panels become increasingly complex, issues such as spectral overlap, excessive compensation, and loss of resolution become increasingly difficult to avoid.

To address these challenges and enable better reproducibility and panel design, AAT Bioquest has developed a series of PerCP, PE and APC tandem dyes optimized for the 488 nm, 561 nm, and 633 nm laser lines. These bright dyes provide superior population resolution of low-expression markers and allow for the distribution of fluorochromes across multiple lasers and a wider spectrum. This reduces spillover and simplifies panel design, making the process more efficient and effective for researchers.

Tandem Dyes

Tandem dyes are highly effective fluorophores that offer exceptional brightness (Table 1), making them ideal for detecting populations with lower receptor densities. They allow for the simultaneous detection of multiple targets within a single sample using a single laser, which not only reduces the amount of sample required, but also improves the specificity and sensitivity of the assay.

Tandem dyes are composed of a donor dye (such as phycobiliprotein) and an acceptor dye (such as an iFluor® dye, cyanine dye, or an Alexa Fluor® equivalent XFD dye) that are covalently linked together to form a single molecule. This unique combination allows for an energy transfer cascade, known as Förster resonance energy transfer (FRET), wherein excitation of the donor leads to emission by the acceptor at a longer wavelength. In cases such as PerCP and PE, it results in blue laser excitable tandem dyes with red to near-infrared emission. Our PE-iFluor® tandems, including iFluor® 700, iFluor® 720, iFluor® 750, and iFluor® 780, can

At-a-Glance Conventional vs Spectral Flow Cytometry

Conventional and spectral flow cytometry are highly effective and efficient methods for analyzing cells or particles in fluid suspension. Both detect scattered light and various fluorescence signals to simultaneously evaluate multiple parameters. They are crucial tools for identifying and characterizing cells, playing a vital role in applications like immunology, microbiology, drug discovery, and biomarker identification. The primary difference between the two lies in the approach used to collect and analyze fluorescent signals.

Conventional flow cytometry works by filtering the emission light through bandpass filters that allow specific wavelengths of

light to pass through to each detector. This technique compensates for light spillover from other fluorophores by recording the two overlapping parameters separately and mathematically subtracting the overlapping areas on the spectrum upon their mixing. Current panel limits for a conventional cytometer range from 15-20 colors. The major drawback of conventional flow cytometry is that it relies on a primary channel for each fluorophore, which limits the number of fluorescent parameters that can be detected by the number of detectors available in the instrument.

Spectral flow cytometry takes a more holistic approach to analyzing fluorescent signals. It uses a spectrometer to separate and

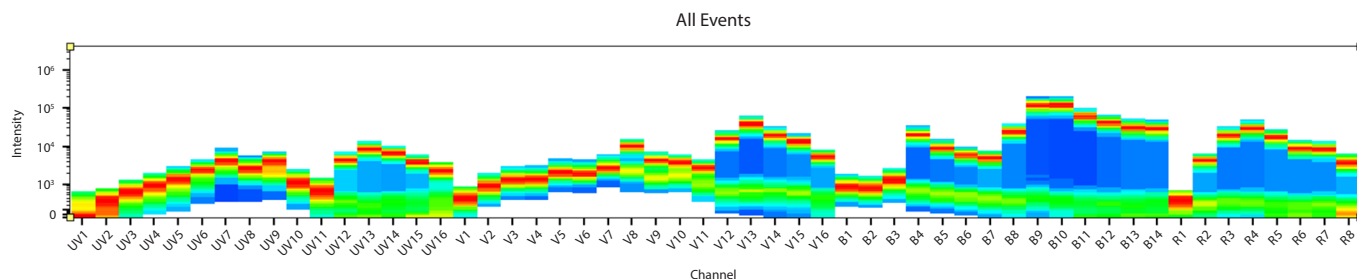


Figure 1. Spectral signature of AAT Bioquest PE-iFluor® 710 dye obtained on a Cytek Aurora spectral flow cytometer equipped with four lasers.

be excited at 488 nm and emit at 708 nm, 740 nm, 778 nm, and 808 nm, respectively.

Phycobiliproteins, such as phycoerythrin (PE), allophycocyanin (APC), and the peridinin-chlorophyll-protein complex (PerCP), are widely used as donor dyes due to their distinctive properties. PE and APC are high molecular weight proteins, with 240 kDa and 105 kDa, respectively, while PerCP is a smaller protein with a molecular weight of 35.5 kDa. Despite their tendency to photobleach quickly, phycobiliproteins are compatible with common flow cytometry lasers and transfer energy efficiently to acceptor dyes. Moreover, their high extinction coefficients and quantum yields allow for strong signal development.

Preparaing Tandem Dye Conjugates for Flow Cytometry

To prepare tandem dyes for use in flow cytometry, it is necessary to conjugate them to a protein, in particular antibodies. The antibody plays the role of detecting the target of interest, while

Table 1. Relative brightness index of common flow cytometry dyes.

Fluorophore	Filter	Relative Brightness
Phycoerythrin (PE)	575/25	<div><div></div><div></div><div></div><div></div><div></div></div>
PerCP	695/40	<div><div></div><div></div><div></div><div></div><div></div></div>
Allophycocyanin (APC)	670/30	<div><div></div><div></div><div></div><div></div><div></div></div>
PE-Cy5	660/20	<div><div></div><div></div><div></div><div></div><div></div></div>
PE-iFluor® 594	610/20	<div><div></div><div></div><div></div><div></div><div></div></div>
PE-iFluor® 647	660/20	<div><div></div><div></div><div></div><div></div><div></div></div>
APC-Cy7	780/60	<div><div></div><div></div><div></div><div></div><div></div></div>
APC-iFluor® 800	780/60	<div><div></div><div></div><div></div><div></div><div></div></div>
FITC	530/30	<div><div></div><div></div><div></div><div></div><div></div></div>
Pacific Blue	450/50	<div><div></div><div></div><div></div><div></div><div></div></div>

detect fluorescent signals emitted by the labeled cells or particles. Rather than using a set of filters, a detector, such as a CCD camera or photodiode array, measures the entire spectrum emitted by each cell or particle, generating a spectral fingerprint for each individual event (Figure 1). Instead of compensating for light spillover, spectral cytometry relies on the mathematics of mixture modeling (e.g., principal component analysis and least squares unmixing) to resolve each parameter in a multicolor sample. This approach allows for the differentiation of fluorophores with similar peak emissions but distinct off-peak emissions, making it possible to use them together in a panel. It is also highly effective at subtracting cellular autofluorescence to improve signal resolution. Flow panels on

spectral cytometers can have as many as 40 colors, but panel design must be carefully considered to ensure the detection of all desired parameters.

Regardless of the approach used, both conventional and spectral flow cytometry require intelligent panel design. To ensure accurate results, researchers must carefully consider factors such as the brightness of each fluorophore and the spectrums of the antigens expressed on the cell surface. For example, bright fluorophores are best assigned to lowly expressed antigens to avoid overloading the detector, while fluorophores with similar spectrums should not be used to label antigens expressed on the same cell.

Table 2. Differences between conventional and spectral flow cytometry.

	Conventional flow cytometry	Spectral flow cytometry
Wavelength range of detection for a given fluorophore	Near emission maxima	~350–900 nm
Detector per fluorophore	One	Multiple
Spectrum analyzed	Narrow bandwidth analysis	Entire spectral profile analysis
Spillovter correction method	Compensation	Unmixing
Fluorophore selection	Limited by optical configuration	Limited by fluorophore spectral signature uniqueness
Autofluorescence extraction	No	Yes

the PE- or APC-tandem functions as the reporter that translates the detected event into a measurable signal. Conjugating tandem dyes to antibodies is typically done using a heterobifunctional crosslinker like succinimidyl-4-(N-maleimidomethyl)cyclohexane-1-carboxylate (SMCC).

While SMCC-based conjugation is a commonly used method, its protocol can be cumbersome and it has several limitations. The conjugation efficiency is generally low and yield is satisfactory, ~30% recovery. It requires the use of reducing agents which can negatively impact antibody functionality, and the low efficiency of SMCC-based reactions requires large amounts of starting materials (e.g., antibody and fluorophore) to ensure an adequate yield.

Buccutite™ Rapid Antibody Labeling Technology

The Buccutite™ Rapid Antibody Labeling Kits provide a convenient and efficient method for labeling microscale volumes of antibodies with bright tandem dyes. With a simple two-step mixing protocol, researchers can directly conjugate PE-, APC-, or PerCP- tandem dyes to any antibody or protein in less than two

hours. The labeling process doesn't require column purification, ensuring a 100% recovery rate. Available in two sizes optimized for 25 µg or 100 µg per labeling reaction, these kits come equipped with all the necessary components to perform conjugations with ease, including:

- Two vials of Buccutite™ FOL-Activated Tandem Dye
- One vial of Buccutite™ MTA
- One vial of reaction buffer
- Labeling protocol

ReadiUse™ Preactivated Tandem Dyes

Readiuse™ Preactivated Tandem dyes make it easier to label larger volumes of antibody, scalable up to 1 mg. It incorporates the same Buccutite™ conjugation technology found in our tandem antibody labeling kits. The covalent bond formed between tandem and protein is extremely stable resulting in conjugates that can tolerate rigorous washing process in a typical immunoassay.

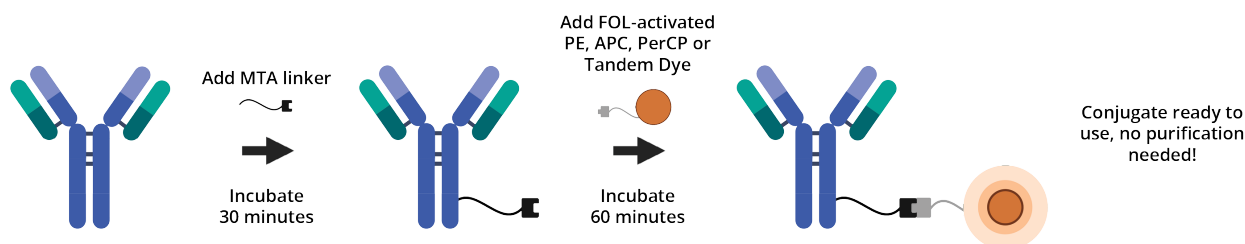


Figure 2. Buccutite™ Rapid Tandem Antibody Labeling Kit workflow.

Table 3. Tandem dyes and kits for labeling proteins or antibodies.

Product	#Labelings	Required/Kit Components	Features
PE Tandem APC Tandem PerCP Tandem	Scalable	<ul style="list-style-type: none"> • Tandem Dye • SMCC Crosslinker (not included) 	Available in several sizes to satisfy a range of requirements from 25 tests for multicolor panel pilot-scale experiments to 100-test sizes needed for routine assays. Tandem reagents are also offered in mass sizes for optimal value and flexibility across different tissue types and strains.
ReadiUse™ Preactivated Tandem Dyes	Scalable	<ul style="list-style-type: none"> • ReadiUse™ Preactivated Tandem • Buccutite™ MTA linker • Spin column (not included) 	ReadiUse™ Preactivated tandems are ready to conjugate, giving much higher yield than the conventionally tedious SMCC-based conjugation chemistry.
Buccutite™ Rapid Tandem Antibody Labeling Kits	2 Labeling reactions, each with 25 µg or 100 µg of protein	<ul style="list-style-type: none"> • Buccutite™ FOL-Activated Tandem • Buccutite™ MTA linker • Reaction buffer • Labeling protocol 	Buccutite™ Rapid Tandem Antibody Labeling Kits provide a convenient means for labeling small amounts (25 to 100 µg) of purified proteins with our PE-, APC- or PerCP-Tandem dyes. Purification of the conjugate is not required, with 100% conjugation yield. Labeling can be completed in as little as 2 hours.

Table 4. Tandem dyes and kits for labeling proteins or antibodies.

Label	Ex/Em (nm)	Tandem Dye	ReadiUse™ Preactivated Tandem Dye	Buccutite™ Antibody Labeling Kit
APC-Cy5.5 Tandem	651/700	2622	2586 (SE) 2721 (maleimide)	1320 (100 µg Ab/reaction) 1350 (25 µg Ab/reaction)
APC-Cy7 Tandem	651/779	2625	2587 (SE) 2722 (maleimide)	1321 (100 µg Ab/reaction) 1351 (25 µg Ab/reaction)
APC-iFluor® 700 Tandem	651/710	2623	2570 (SE)	1319 (100 µg Ab/reaction) 1347 (25 µg Ab/reaction)
APC-iFluor® 710 Tandem	651/739	2631		
APC-iFluor® 720 Tandem	651/740	2633		
APC-iFluor® 740 Tandem	651/764	2635		
APC-iFluor® 750 Tandem	651/776	2626	2571 (SE)	
APC-iFluor® 770 Tandem	651/797	2638		
APC-iFluor® 780 Tandem	651/808	2639		
APC-iFluor® 800 Tandem	651/806	2630	2572 (SE)	
APC-iFluor® A7 Tandem	651/782	2632		
APC-XFD700 Tandem	651/707	2624	2720 (maleimide)	
APC-XFD750 Tandem	651/782	2627		
PE-Cy5 Tandem	488/666	2610	2580 (SE) 2517 (maleimide)	1322 (100 µg Ab/reaction) 1340 (25 µg Ab/reaction)
PE-Cy5.5 Tandem	488/671	2613	2581 (SE) 2718 (maleimide)	1316 (100 µg Ab/reaction) 1341 (25 µg Ab/reaction)
PE-Cy7 Tandem	488/778	2616	2582 (SE) 2719 (maleimide)	1317 (100 µg Ab/reaction) 1342 (25 µg Ab/reaction)
PE-iFluor® 594 Tandem	488/606	2600	2584 (SE)	
PE-iFluor® 597 Tandem	488/618	2601		
PE-iFluor® 610 Tandem	488/625	2700		
PE-iFluor® 647 Tandem	488/666	2702	2577 (SE)	
PE-iFluor® 660 Tandem	488/695	2602	2579 (SE)	
PE-iFluor® 700 Tandem	488/708	2614	2585 (SE)	
PE-iFluor® 710 Tandem	488/747	2615		
PE-iFluor® 720 Tandem	488/740	2605		
PE-iFluor® 740 Tandem	488/764	2606		
PE-iFluor® 750 Tandem	488/778	2704	2578 (SE)	
PE-iFluor® 770 Tandem	488/797	2608		
PE-iFluor® 780 Tandem	488/808	2617		
PE-Texas Red Tandem	488/615	2619	2583 (SE) 2716 (maleimide)	1318 (100 µg Ab/reaction) 1343 (25 µg Ab/reaction)
PerCP-Cy5.5 Tandem	489/679	2650	2595 (SE) 2725 (maleimide)	
PerCP-Cy7 Tandem	488/778	2654	2725 (maleimide)	
PerCP-iFluor® 700 Tandem	488/708	2651		
PerCP-iFluor® 710 Tandem	488/747	2652		
PerCP-iFluor® 780 Tandem	488/808	2655		

PE Tandem Dyes

AAT Bioquest PE-iFluor® tandem dyes exhibit remarkable brightness, surpassing many dyes excited by the 488 nm or 561 nm lasers. Their exceptional brightness empowers researchers to detect cell populations with lower receptor density and resolve previously indistinguishable cell populations. PE tandems exhibit narrow emission spectra and minimal cross-laser excitation, effectively reducing spectral spillover and enhancing marker resolution. Moreover, their distinct spectral signatures provide an opportunity to detect additional markers in intricate flow cytometry panels.

AAT Bioquest offers PE-tandem dyes as ReadiUse™ Preactivated reagents and Buccutite™ Rapid Antibody Labeling kits for the quick and convenient conjugation of PE-tandems to antibodies and other proteins such as streptavidin and other secondary reagents. The Buccutite™ Rapid Antibody Labeling kits are optimized for labeling microgram amounts of antibodies in less than two hours, with no purification necessary and 100% recovery of antibody.

PE-iFluor® 594

PE-iFluor® 594 is a remarkably bright tandem dye, featuring an emission peak at 606 nm. It offers an excellent choice to broaden your multicolor panel, with its outstanding signal-to-noise ratio allowing for easy detection of target antigens. Additionally, this dye requires lower compensation compared to other spectrally equivalent fluorophores. PE-iFluor® 594 is a suitable alternative to other fluorophores like PE-Texas Red®, PE-eFluor® 610, and PE-Dazzle™ 594, offering equivalent performance.

PE-iFluor® 597

PE-iFluor® 597 is a tandem dye that exhibits exceptional brightness,

with an emission peak at 612 nm. It is an excellent alternative to PE-Texas Red®, PE-eFluor® 610, and PE-Dazzle™ 594 when using the 561 nm laser. Its remarkable brightness allows for the detection of target antigens with high sensitivity and minimal background noise.

PE-iFluor® 610

PE-iFluor® 610 tandem dye is a high-performance fluorophore that is specifically developed to function with flow cytometers equipped with blue (488 nm), green (532 nm), or yellow-green (561 nm) laser. Its peak emission of 625 nm can be conveniently detected using typical filters utilized for PE-Texas Red dye, such as the 610/20 bandpass filter.

PE-iFluor® 647

PE-iFluor® 647 is a tandem dye that emits bright far-red light with an emission peak at 666 nm. This dye is a superior alternative to the frequently used PE-Cy5 tandem dye, as it exhibits substantially improved FRET efficiency and signal-to-background ratio. PE-iFluor® 647 can be effectively paired with antigens expressed at medium to low levels, enabling the detection of subtle changes in cellular expression.

PE-iFluor® 660

PE-iFluor® 660 is a tandem dye with an emission spectrum that fills the gap between the emission peaks of PE-Cy5 and PE-Cy7, offering the possibility of detecting an extra marker in a complicated multicolor panel. This dye emits far-red fluorescence, with a maximum emission peak at 695 nm, providing optimal results for a wide range of applications.

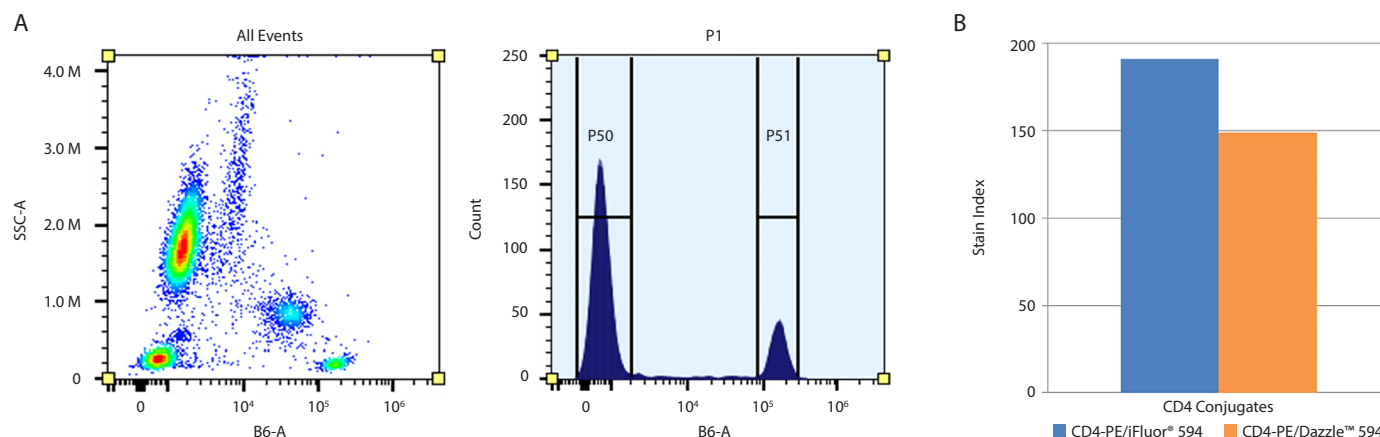


Figure 3. A) Flow cytometry analysis of whole blood stained with PE/iFluor® 594 anti-human CD4 *SK3* conjugate. The fluorescence signal was monitored using an Aurora flow cytometer in the PE/iFluor® 594 specific B6-A channel. **B)** Stain index comparison of CD4+ signal using fluorophore-labeled antibody conjugates. Human peripheral blood mononuclear cells (PBMCs) were isolated and stained using AAT Bioquest PE/iFluor® 594 anti-human CD4 conjugates or Biolegend PE/Dazzle™ 594 anti-human CD4 conjugates. The fluorescence signal was monitored using an Aurora flow cytometer in the PE/iFluor® 594 specific B6-A channel.

PE-iFluor® 700

PE-iFluor® 700 is a novel tandem dye that emits fluorescence at a peak of 708 nm. Notably, when compared to the corresponding PE-Alexa Fluor™ 700 Tandem, PE-iFluor® 700 yields a significantly improved staining index.

PE-iFluor® 710

PE-iFluor® 710 is a tandem dye that has been created by combining PE with iFluor® 710. It emits light in the near-infrared spectrum with a maximum emission at 747 nm.

PE-iFluor® 720

PE-iFluor® 720 is a tandem dye that can be used to replace PE-Cy7. It emits light in the near-infrared spectrum with a maximum emission at 750 nm.

PE-iFluor® 740

PE-iFluor® 740 is a tandem dye that has been created by combining PE with iFluor® 740. It emits light in the near-infrared spectrum with a maximum emission at 767 nm.

PE-iFluor® 750

PE-iFluor® 750 is a novel tandem dye that combines PE with iFluor® 750, emitting near-infrared light with a maximum emission at 778 nm. Compared to the corresponding PE-Alexa Fluor™ 750 or PE-Cy7 Tandem, PE-iFluor® 750 exhibits a significantly improved staining index.

PE-iFluor® 770

PE-iFluor® 770 is a tandem dye for both traditional and spectral

flow cytometry. It emits light in the near-infrared spectrum with a maximum emission at 795 nm.

PE-iFluor® 780

PE-iFluor® 780 is a novel NIR tandem dye for both traditional and spectral flow cytometry. It emits light in the near-infrared spectrum with a maximum emission at 808 nm.

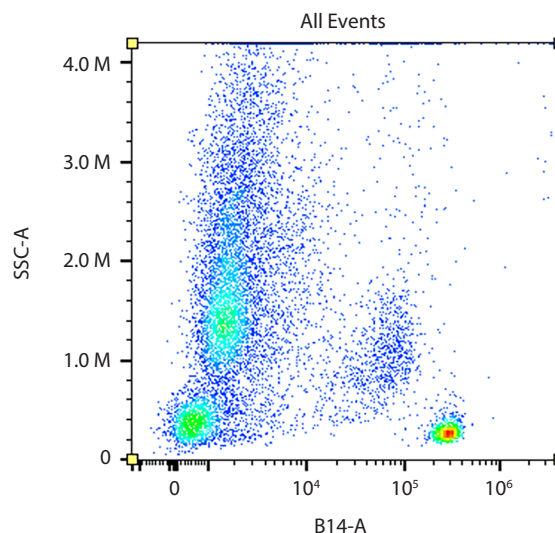


Figure 5. Flow cytometry analysis of whole blood cells stained with PE-iFluor® 770 anti-human CD4 *SK3* conjugate. The fluorescence signal was monitored using an Aurora flow cytometer in the PE-iFluor® 770 specific B14-A channel.

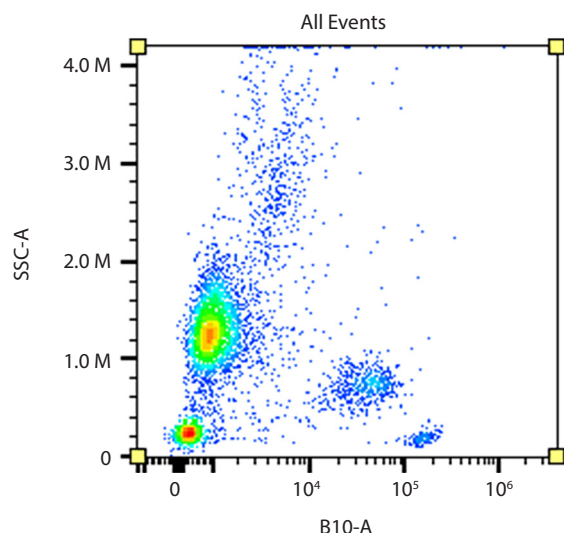


Figure 4. Flow cytometry analysis of PBMC stained with PE-iFluor® 700 anti-human CD4 *SK3* conjugate. The fluorescence signal was monitored using an Aurora flow cytometer in the PE-iFluor® 700 specific B10-A channel.

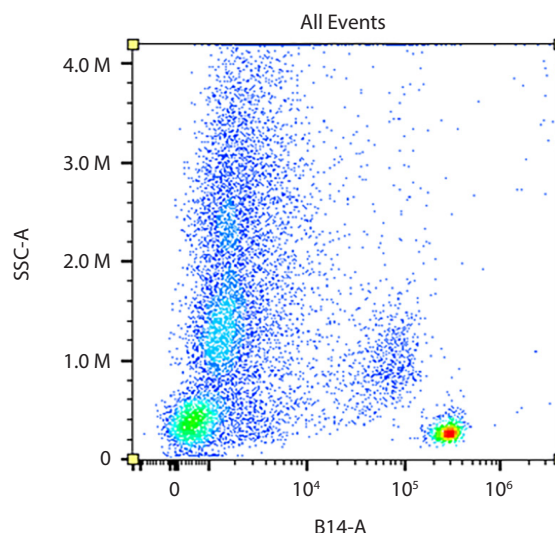




















Figure 6. Flow cytometry analysis of PBMC stained with PE-iFluor® 780 anti-human CD4 *SK3* conjugate. The fluorescence signal was monitored using an Aurora flow cytometer in the PE-iFluor® 780 specific B14-A channel.

Table 5. PerCP tandems, preactivated PerCP tandems and kits for labeling antibodies and proteins.

Dye/Tandem	Laser	Ex/Em (nm)	Cytek Channel	Filter	Relative Brightness	Size	Cat No.
PE [R-Phycoerythrin] *CAS 11016-17-4*		565/574	B4	585/20	■ ■ ■ ■ ■	1 mg 10mg 100mg	2556 2257 2558
ReadiUse™ PE [R-Phycoerythrin] *Ammonium Sulfate-Free*		565/574	B4	585/20	■ ■ ■ ■ ■	1 mg 10mg	2500 2501
ReadiUse™ Preactivated PE Maleimide [Activated R-Phycoerythrin]		565/574	B4	585/20	■ ■ ■ ■ ■	1 mg 10mg	2565 2566
Buccutite™ Rapid PE Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		565/574	B4	585/20	■ ■ ■ ■ ■	2 Labelings	1312
Buccutite™ Rapid PE Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		565/574	B4	585/20	■ ■ ■ ■ ■	2 Labelings	1310
PE-Cy5 Tandem		565/666	B8	660/20	■ ■ ■ ■ ■	1 mg	2610
ReadiUse™ Preactivated PE-Cy5 Tandem		565/666	B8	660/20	■ ■ ■ ■ ■	1 mg	2580
ReadiUse™ Preactivated PE-Cy5 Maleimide		565/666	B8	660/20	■ ■ ■ ■ ■	1 mg	2717
Buccutite™ Rapid PE-Cy5 Tandem Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		565/666	B8	660/20	■ ■ ■ ■ ■	2 Labelings	1340
Buccutite™ Rapid PE-Cy5 Tandem Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		565/666	B8	660/20	■ ■ ■ ■ ■	2 Labelings	1322
PE-Cy5.5 Tandem		565/671	B9	670/30	■ ■ ■ ■ □	1 mg	2613
ReadiUse™ Preactivated PE-Cy5.5 Tandem		565/671	B9	670/30	■ ■ ■ ■ □	1 mg	2581
ReadiUse™ Preactivated PE-Cy5.5 Maleimide		565/671	B9	670/30	■ ■ ■ ■ □	1 mg	2718
Buccutite™ Rapid PE-Cy5.5 Tandem Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		565/671	B9	670/30	■ ■ ■ ■ □	2 Labelings	1341
Buccutite™ Rapid PE-Cy5.5 Tandem Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		565/671	B9	670/30	■ ■ ■ ■ □	2 Labelings	1316
PE-Cy7 Tandem		565/778	B14	780/60	■ ■ □ □ □	1 mg	2616
ReadiUse™ Preactivated PE-Cy7 Tandem		565/778	B14	780/60	■ ■ □ □ □	1 mg	2582
ReadiUse™ Preactivated PE-Cy7 Maleimide		565/778	B14	780/60	■ ■ □ □ □	1 mg	2719
Buccutite™ Rapid PE-Cy7 Tandem Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		565/778	B14	780/60	■ ■ □ □ □	2 Labelings	1342
Buccutite™ Rapid PE-Cy7 Tandem Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		565/778	B14	780/60	■ ■ □ □ □	2 Labelings	1317
PE-Texas Red Tandem		565/615	B6	610/20	■ ■ ■ ■ ■	1 mg	2619
ReadiUse™ Preactivated PE-Texas Red Tandem		565/615	B6	610/20	■ ■ ■ ■ ■	1 mg	2583
ReadiUse™ Preactivated PE-Texas Red Maleimide		565/615	B6	610/20	■ ■ ■ ■ ■	1 mg	2716
Buccutite™ Rapid PE-Texas Red Tandem Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		565/615	B6	610/20	■ ■ ■ ■ ■	2 Labelings	1343
Buccutite™ Rapid PE-Texas Red Tandem Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		565/615	B6	610/20	■ ■ ■ ■ ■	2 Labelings	1318
PE-iFluor® 594 Tandem		565/606	B6	610/20	■ ■ ■ ■ ■	1 mg	2600
ReadiUse™ Preactivated PE-iFluor® 594 Tandem		565/606	B6	610/20	■ ■ ■ ■ ■	1 mg	2584
PE-iFluor® 597 Tandem		565/618	B6	610/20	■ ■ ■ ■ ■	1 mg	2601

Table 5. Continued.

Dye/Tandem	Laser	Ex/Em (nm)	Cytek Channel	Filter	Relative Brightness	Size	Cat No.
PE-iFluor® 610 Tandem	 	565/625	B6	620/15	               		

APC Tandem Dyes

APC-iFluor® tandems are high-performance fluorophores that can be utilized in multicolor flow cytometry and spectral flow cytometry. These dyes feature narrow emission spectra and minimal cross-laser excitation, thereby reducing spectral spillover and facilitating improved marker resolution. Their unique spectral signatures, most notably APC-iFluor® 800, enable the detection of additional markers in flow cytometry panels by unlocking previously inaccessible channels. Like PE tandems, the brightness of APC-iFluor® dyes provides excellent resolution of dim populations, as well as significantly enhanced resolution when compared to typical red-excitable fluorochromes. By providing more options to resolve dim populations, APC-tandem dyes enable the creation of more optimal panel designs.

By enabling up to 8 colors to be run on the red laser, APC-iFluor® dyes also make large multicolor experiments more accessible. Additionally, for smaller panels, a broader selection of fluorochromes facilitates greater control over spillover by spreading markers across multiple lasers. AAT Bioquest offers APC-tandem dyes as ReditUse™ Preactivated reagents and Buccutite™ Rapid Antibody Labeling kits for the quick and convenient conjugation of APC-tandems to antibodies and other proteins such as streptavidin and other secondary reagents. The Buccutite™ Rapid Antibody Labeling kits are optimized for labeling microgram amounts of antibodies in less than two hours, with no purification necessary and 100% recovery of antibody.

APC-iFluor® 700

APC-iFluor® 700 is a red-laser excitable tandem dye. It emits light in the far-red spectrum with a maximum emission at 710 nm.

APC-iFluor® 710

APC-iFluor® 710 is a far-red tandem dye, exhibiting a maximum emission at 747 nm. It presents a superior alternative to APC-R700, due to its low cross-laser excitation and reduced spectral spillover when utilizing the 640 nm laser for excitation. The bright fluorescence of APC-iFluor® 710 allows it to be paired with medium-to-low abundance antigens providing exceptional resolution that might otherwise go undetected with other far-red tandem dyes..

APC-iFluor® 720

The APC-iFluor® 720 tandem dye emits light in the far-red spectrum with a maximum emission at 748 nm. This spectrally unique and bright NIR fluorophore is optimized for use for cell surface applications in both conventional and spectral flow cytometry.

APC-iFluor® 740

APC-iFluor® 740 is a tandem dye that has been created by combining APC with iFluor® 740. It emits light in the far-red spectrum with a maximum emission at 764 nm. It is one of the brightest NIR fluorophores with a unique spectral profile that can be used to replace dim dyes, such as APC-Cy7.

APC-iFluor® 750

APC-iFluor® 750 is a far-red tandem dye with a maximum emission at 776 nm. With similar spectral characteristics to APC-Alexa Fluor® 750, APC-iFluor® 750 requires no changes to your instrument configuration for use, allowing you to easily add APC-iFluor® 750 to your multicolor panels.

APC-iFluor® 770

APC-iFluor® 770 is a tandem dye that has been created by combining APC with iFluor® 770. It emits light in the near-infrared spectrum with a maximum emission at 800 nm.

APC-iFluor® 780

APC-iFluor® 780 is a near-infrared tandem dye that has been created by combining APC with iFluor® 780. It emits light in the near-infrared spectrum with a maximum emission at 804 nm.

APC-iFluor® 800

APC-iFluor® 800 is a tandem dye that has been created by combining APC with iFluor® 800. It emits light in the near-infrared spectrum with a maximum emission at 806 nm.

Table 6. Common fluorophores for 6-, 8- and 10-color experiments.

6-Color	8-Color	10-Color
FITC or iFluor® 488	FITC or iFluor® 488	FITC or iFluor® 488
PE	PE	PE
		PE-Texas Red® or PE-iFluor® 610
PerCP-Cy5.5	PerCP-Cy5.5	PerCP-Cy5.5
PE-Cy7 or PE-iFluor® 594	PE-Cy7 or PE-iFluor® 594	PE-Cy7 or PE-iFluor® 594
APC or iFluor® 647	APC or iFluor® 647	APC or iFluor® 647
		APC-iFluor® 700
APC-Cy7 or APC-iFluor® 750	APC-Cy7 or APC-iFluor® 750	APC-Cy7 or APC-iFluor® 750
	AmCyan	AmCyan
	PacBlue	PacBlue

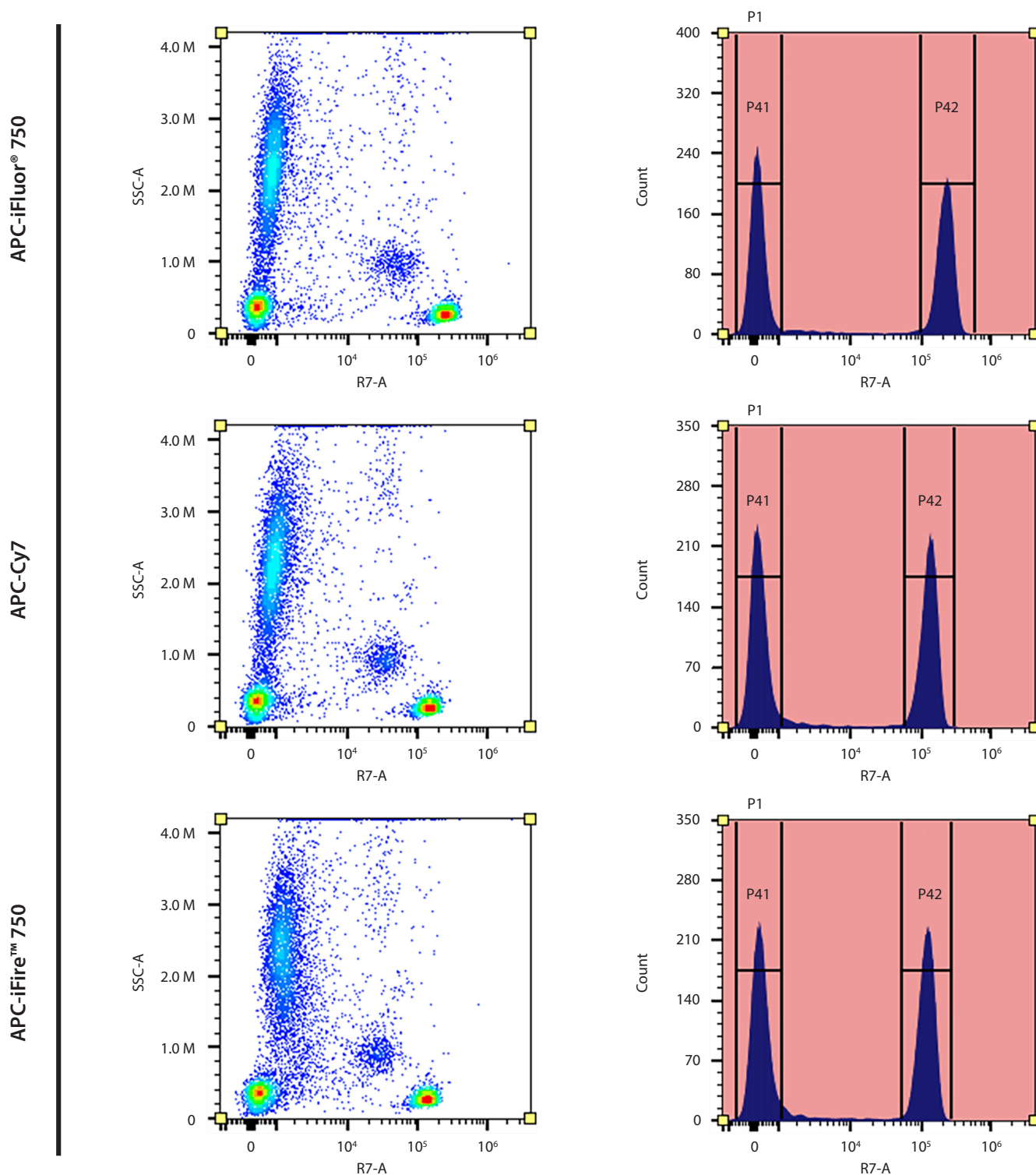


Figure 7. Flow cytometry analysis of whole blood cells stained with APC-iFluor® 750 anti-human CD4 antibody (AAT Bioquest), APC/Cy7 anti-human CD4 antibody (BioLegend), and APC/iFire™ 750 anti-human CD4 antibody (BioLegend). The fluorescence signal was monitored using an Aurora flow cytometer in the APC/iFluor® 750 specific R7-A channel.

Table 7. PerCP tandems, preactivated PerCP tandems and kits for labeling antibodies and proteins.

Dye/Tandem	Laser	Ex/Em (nm)	Cytek Channel	Filter	Relative Brightness	Size	Cat No.
APC (Allophycocyanin)		651/660	R1	660/20	■ ■ ■ ■ □	1 mg	2554
CL-APC [Cross linked-AlloPhycocyanin]		651/660	R1	660/20	■ ■ ■ ■ □	1 mg	2552
ReadiUse™ Preactivated APC		651/660	R1	660/20	■ ■ ■ ■ □	1 mg	2561
ReadiUse™ Preactivated APC Maleimide		651/660	R1	660/20	■ ■ ■ ■ □	1 mg 5 mg	2568 2568
ReadiUse™ CL-APC *Ammonium Sulfate-Free*		651/660	R1	660/20	■ ■ ■ ■ □	1 mg 5 mg	2503 2504
Buccutite™ Rapid APC Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		651/660	R1	660/20	■ ■ ■ ■ □	2 Labelings	1313
Buccutite™ Rapid APC Antibody Labeling Kit * For Labeling 100 ug Antibody Per Reaction*		651/660	R1	660/20	■ ■ ■ ■ □	2 Labelings	1311
APC-Cy5.5 Tandem		651/700	R4	695/40	■ ■ ■ □ □	1 mg	2622
ReadiUse™ Preactivated APC-Cy5.5 Tandem		651/700	R4	695/40	■ ■ ■ □ □	1 mg	2586
ReadiUse™ Preactivated APC-Cy5.5 Maleimide		651/700	R4	695/40	■ ■ ■ □ □	1 mg	2721
Buccutite™ Rapid APC-Cy5.5 Tandem Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		651/700	R4	695/40	■ ■ ■ □ □	2 Labelings	1350
Buccutite™ Rapid APC-Cy5.5 Tandem Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		651/700	R4	695/40	■ ■ ■ □ □	2 Labelings	1320
APC-Cy7 Tandem		651/779	R7	780/60	■ ■ □ □ □	1 mg	2625
ReadiUse™ Preactivated APC-Cy7 Tandem		651/779	R7	780/60	■ ■ □ □ □	1 mg	2587
ReadiUse™ Preactivated APC-Cy7 Maleimide		651/779	R7	780/60	■ ■ □ □ □	1 mg	2722
Buccutite™ Rapid APC-Cy7 Tandem Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		651/779	R7	780/60	■ ■ □ □ □	2 Labelings	1351
Buccutite™ Rapid APC-Cy7 Tandem Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		651/779	R7	780/60	■ ■ □ □ □	2 Labelings	1321
APC-iFluor® 700 Tandem		651/710	R4	710/50	■ ■ ■ □ □	1 mg	2623
ReadiUse™ Preactivated APC-iFluor® 700 Tandem		651/710	R4	710/50	■ ■ ■ □ □	1 mg	2570
Buccutite™ Rapid APC-iFluor® 700 Tandem Antibody Labeling Kit *For Labeling 25 ug Antibody Per Reaction*		651/710	R4	710/50	■ ■ ■ □ □	2 Labelings	1347
Buccutite™ Rapid APC-iFluor® 700 Tandem Antibody Labeling Kit *For Labeling 100 ug Antibody Per Reaction*		651/710	R4	710/50	■ ■ ■ □ □	2 Labelings	1319
APC-iFluor® 710 Tandem		651/747	R6	730/45	■ ■ □ □ □	1 mg	2631
APC-iFluor® 720 Tandem		651/748	R6	730/45	■ ■ □ □ □	1 mg	2633
APC-iFluor® 740 Tandem		651/764	R7	780/60	■ ■ □ □ □	1 mg	2635
APC-iFluor® 750 Tandem		651/776	R7	780/60	■ ■ ■ ■ □	1 mg	2626
ReadiUse™ Preactivated APC-iFluor® 750 Tandem		651/776	R7	780/60	■ ■ ■ ■ □	1 mg	2571
APC-iFluor® 770 Tandem		651/800	R8	820/60	■ ■ □ □ □	1 mg	2638
APC-iFluor® 780 Tandem		651/804	R8	820/60	■ ■ □ □ □	1 mg	2639

Table 7. Continued.

Dye/Tandem	Laser	Ex/Em (nm)	Cytek Channel	Filter	Relative Brightness	Size	Cat No.
APC-iFluor® 800 Tandem		651/806	R8	820/60	■ ■ □ □ □	1 mg	2630
ReadiUse™ Preactivated APC-iFluor® 800 Tandem		651/806	R8	820/60	■ ■ □ □ □	1 mg	2572
APC-iFluor® A7 Tandem		651/782	R7	780/60	■ □ □ □ □	1 mg	2632
APC-XFD700 Tandem		651/707	R6	710/50	■ ■ ■ □ □	1 mg	2624
ReadiUse™ Preactivated APC-AF700 Maleimide		651/707	R6	710/50	■ ■ ■ □ □	1 mg	2720
APC-XFD750 Tandem		651/776	R7	780/60	■ ■ ■ ■ □	1 mg	2627

■ 633 nm He-Ne red laser

PerCP Tandem Dyes

PerCP tandem dyes were engineered with the aim of enhancing multicolor flow cytometry capabilities on 488-nm laser-equipped instruments. The utilization of these dyes enables the distribution of markers across multiple lasers, consequently minimizing the compensation requirements of a multicolor panel. Unlike PerCP alone, the structure of PerCP tandem dyes provide improved photostability and can tolerate high-powered lasers, further expanding the range of applications in cytometry research.

The PerCP-iFluor® tandem dyes are suitable for use with standard buffers utilized in both surface and intracellular staining protocols, as well as paraformaldehyde-based fixatives and EDTA or heparin blood collection tubes. However, the compatibility of these dyes with buffers can vary based on the clone, as certain reagents may not be suitable for use with all buffer systems.

PerCP-Cy5.5

PerCP-Cy5.5 is a near-infrared tandem dye with a maximum emission at 695 nm. It displays photostability and resistance to degradation by fixation, enabling the preservation of stained cells for prolonged periods. This tandem dye is particularly adept at detecting low-abundance intracellular antigens in multicolor flow cytometry. Furthermore, its low Fc-receptor mediated nonspecific staining makes it a favorable option for use in negative cell populations containing Fc receptors.

PerCP-Cy7

PerCP-Cy7 is a tandem dye that emits light in the near-infrared

spectrum with a maximum emission at 784 nm. Due to its low spillover into neighboring channels, PerCP-Cy7 conjugates are particularly useful for multicolor analysis alongside other fluorochromes such as FITC and PE. AAT Bioquest provides a convenient ReadIUse™ Preactivated PerCP-Cy7 Maleimide that can be readily used for conjugating to reduced antibodies and other biomolecules that contain a thiol group.

PerCP-iFluor® 700

The blue laser-excitable PerCP-iFluor® 700 tandem dye was developed as the ideal option for the FL3 or B3 channel. It has a much higher brightness than PerCP-Cy5.5 and, despite a minor red-shift in emission relative the PerCP-Cy5.5 (708 nm vs. 695 nm), it employs the same filter sets.

PerCP-iFluor® 710

PerCP-iFluor® 710 is a tandem dye that has been created by combining PerCP with iFluor® 710. It emits light in the far-red spectrum with a maximum emission at 747 nm.

PerCP-iFluor® 780

The PerCP-iFluor® 780 tandem dye exhibits exceptional properties such as an extremely high extinction coefficient, a high quantum efficiency, and the largest Stokes Shift compared to any other PerCP tandem dyes. It emits light at a maximum wavelength of 798 nm, and has virtually no spillover into neighboring channels.

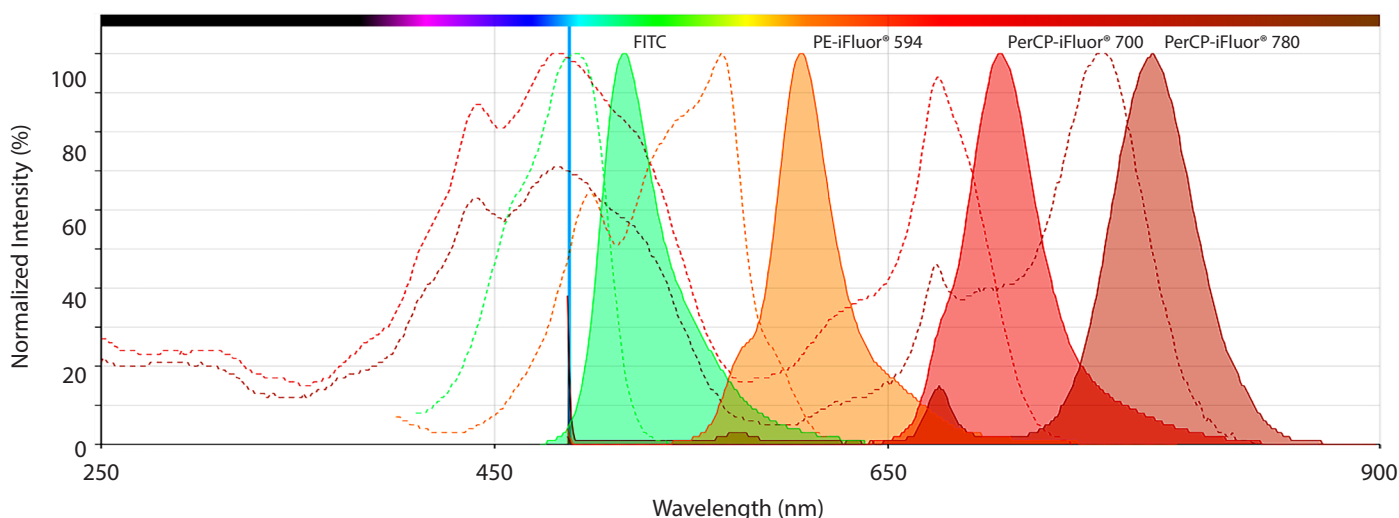


Figure 8. Absorption and emission spectra of FITC (Green), PE-iFluor® 594 (Orange), PerCP-iFluor® 700 (Red), and PerCP-iFluor® 780 (deep red). All four fluorophores can be well excited by the 488 nm laser line (Blue) with excellent spectral separation.

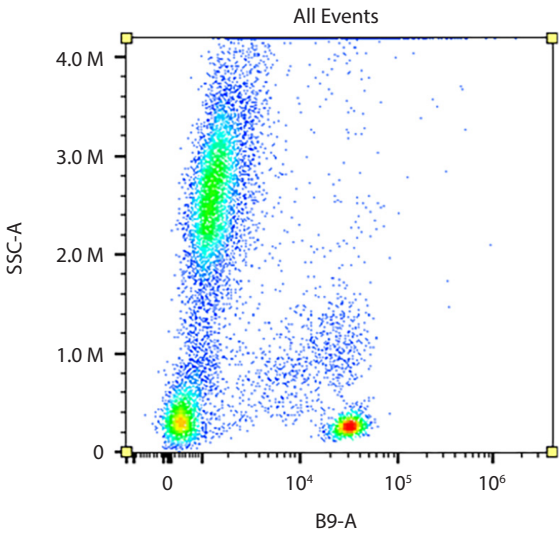


Figure 9. Flow cytometry analysis of whole blood stained with PerCP-Cy5.5 anti-human CD4 *SK3* conjugate. The fluorescence signal was monitored using an Aurora flow cytometer in the PerCP-Cy5.5 specific B9-A channel.

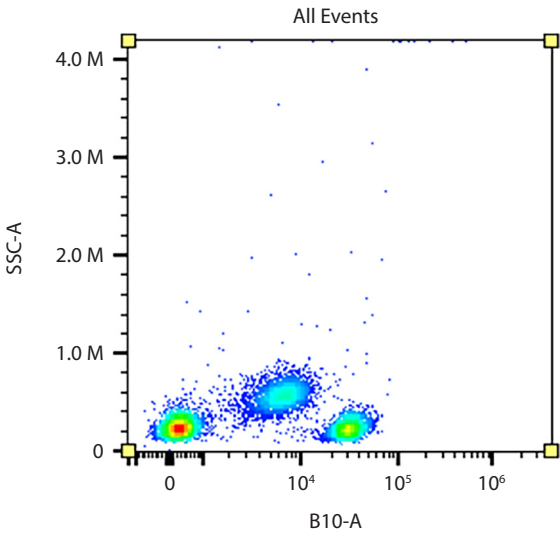


Figure 10. Flow cytometry analysis of PBMC stained with PerCP-iFluor® 700 anti-human CD4 *SK3* conjugate. The fluorescence signal was monitored using an Aurora flow cytometer in the PerCP-iFluor® 700 specific B10-A channel.

Table 8. PerCP tandems, preactivated PerCP tandems and kits for labeling antibodies and proteins.

Dye/Tandem	Laser	Ex/Em (nm)	Cytek Channel	Filter	Relative Brightness	Size	Cat No.
PerCP [Peridinin-Chlorophyll-Protein Complex]	■	482/678	B8	695/40	■ ■ □ □ □	1 mg	2559
						10 mg	2540
ReadiUse™ Preactivated PerCP		482/678	B8	695/40	■ ■ □ □ □	1 mg	2590
ReadiUse™ Preactivated PerCP Maleimide		482/678	B8	695/40	■ ■ □ □ □	1 mg	2723
Buccutite™ Rapid PerCP Antibody Labeling Kit * Microscale Optimized for Labeling 25 ug Antibody Per Reaction*		482/678	B8	695/40	■ ■ □ □ □	2 Labelings	1353
Buccutite™ Rapid PerCP Antibody Labeling Kit * Microscale Optimized for Labeling 100 ug Antibody Per Reaction*		482/678	B8	695/40	■ ■ □ □ □	2 Labelings	1325
PerCP-Cy5.5		482/695	B9	695/40	■ ■ ■ □ □	1 mg	2650
ReadiUse™ Preactivated PerCP-Cy5.5		482/695	B9	695/40	■ ■ ■ □ □	1 mg	2595
ReadiUse™ Preactivated PerCP-Cy5.5 Maleimide		482/695	B9	695/40	■ ■ ■ □ □	1 mg	2725
PerCP-Cy7		482/784	B14	780/60	■ ■ ■ □ □	1 mg	2654
ReadiUse™ Preactivated PerCP-Cy7 Maleimide		482/784	B14	780/60	■ ■ ■ □ □	1 mg	2725
PerCP-iFluor® 700		482/707	B10	695/40	■ ■ ■ □ □	1 mg	2651
PerCP-iFluor® 710		482/747	B12	730/45	■ ■ □ □ □	1 mg	2652
PerCP-iFluor® 780		482/798	B14	780/60	■ ■ □ □ □	1 mg	2655

■ 488 nm argon or blue diode laser

Product List: PE, APC and PerCP tandem dyes and kits for labeling proteins

Cat. No.	Product	Quantity
2554	APC [Allophycocyanin]	1 mg
2555	APC [Allophycocyanin]	10 mg
2622	APC-Cy5.5 Tandem	1 mg
2625	APC-Cy7 Tandem	1 mg
2623	APC-iFluor® 700 Tandem	1 mg
2631	APC-iFluor® 710 Tandem	1 mg
2633	APC-iFluor® 720 Tandem	1 mg
2635	APC-iFluor® 740 Tandem	1 mg
2626	APC-iFluor® 750 Tandem	1 mg
2638	APC-iFluor® 770 Tandem	1 mg
2639	APC-iFluor® 780 Tandem	1 mg
2630	APC-iFluor® 800 Tandem	1 mg
2632	APC-iFluor® A7 Tandem	1 mg
2624	APC-XFD700 Tandem	1 mg
2627	APC-XFD750 Tandem	1 mg
1311	Buccutite™ Rapid APC antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1313	Buccutite™ Rapid APC antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1351	Buccutite™ Rapid APC cy7 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1320	Buccutite™ Rapid APC-Cy5.5 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1350	Buccutite™ Rapid APC-Cy5.5 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1321	Buccutite™ Rapid APC-Cy7 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1319	Buccutite™ Rapid APC-iFluor® 700 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1347	Buccutite™ Rapid APC-iFluor® 700 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1310	Buccutite™ Rapid PE Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1312	Buccutite™ Rapid PE Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1322	Buccutite™ Rapid PE-Cy5 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1340	Buccutite™ Rapid PE-Cy5 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1316	Buccutite™ Rapid PE-Cy5.5 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1341	Buccutite™ Rapid PE-Cy5.5 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1317	Buccutite™ Rapid PE-Cy7 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1342	Buccutite™ Rapid PE-Cy7 Tandem Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1325	Buccutite™ Rapid percp Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1353	Buccutite™ Rapid percp Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
1318	Buccutite™ Rapid PE-Texas Red Tandem Antibody Labeling Kit Microscale Optimized for Labeling 100 µg Antibody Per Reaction	2 Labelings
1343	Buccutite™ Rapid PE-Texas Red Tandem Antibody Labeling Kit Microscale Optimized for Labeling 25 µg Antibody Per Reaction	2 Labelings
2549	CL-APC [Cross linked-Allophycocyanin]	10 mg
2550	CL-APC [Cross linked-Allophycocyanin]	50 mg
2551	CL-APC [Cross linked-Allophycocyanin]	100 mg
2552	CL-APC [Cross linked-Allophycocyanin]	1 mg
2556	PE [R-Phycoerythrin] *CAS 11016-17-4*	10 mg
2557	PE [R-Phycoerythrin] *CAS 11016-17-4*	100 mg
2558	PE [R-Phycoerythrin] *CAS 11016-17-4*	1 mg
2610	PE-Cy5 Tandem	1 mg
2613	PE-Cy5.5 Tandem	1 mg

Product List: PE, APC and PerCP tandem dyes and kits for labeling proteins-continued

Cat. No.	Product	Quantity
2616	PE-Cy7 Tandem	1 mg
2600	PE-iFluor® 594 Tandem	1 mg
2601	PE-iFluor® 597 Tandem	1 mg
2700	PE-iFluor® 610 Tandem	1 mg
2702	PE-iFluor® 647 Tandem	1 mg
2602	PE-iFluor® 660 Tandem	1 mg
2614	PE-iFluor® 700 Tandem	1 mg
2615	PE-iFluor® 710 Tandem	1 mg
2605	PE-iFluor® 720 Tandem	1 mg
2606	PE-iFluor® 740 Tandem	1 mg
2704	PE-iFluor® 750 Tandem	1 mg
2608	PE-iFluor® 770 Tandem	1 mg
2617	PE-iFluor® 780 Tandem	1 mg
2540	PerCP [Peridinin-Chlorophyll-Protein Complex]	10 mg
2559	PerCP [Peridinin-Chlorophyll-Protein Complex]	1 mg
2650	PerCP-Cy5.5 Tandem	1 mg
2619	PE-Texas Red Tandem	1 mg
2503	ReadiUse™ CL-APC [Cross linked-Allophycocyanin] *Ammonium Sulfate-Free*	1 mg
2504	ReadiUse™ CL-APC [Cross linked-Allophycocyanin] *Ammonium Sulfate-Free*	10 mg
2500	ReadiUse™ PE [R-Phycoerythrin] *Ammonium Sulfate-Free*	1 mg
2501	ReadiUse™ PE [R-Phycoerythrin] *Ammonium Sulfate-Free*	10 mg
2586	ReadiUse™ Preactivated APC Cy5.5 Tandem	1 mg
2587	ReadiUse™ Preactivated APC Cy7 Tandem	1 mg
2570	ReadiUse™ Preactivated APC iFluor® 700 Tandem	1 mg
2571	ReadiUse™ Preactivated APC iFluor® 750 Tandem	1 mg
2567	ReadiUse™ Preactivated APC Maleimide [Activated Allophycocyanin]	1 mg
2568	ReadiUse™ Preactivated APC Maleimide [Activated Allophycocyanin]	5 mg
2572	ReadiUse™ Preactivated APC-iFluor® 800 Tandem	1 mg
2565	ReadiUse™ Preactivated PE Maleimide [Activated R-Phycoerythrin]	1 mg
2566	ReadiUse™ Preactivated PE Maleimide [Activated R-Phycoerythrin]	5 mg
2583	ReadiUse™ Preactivated PE Texas Red Tandem	1 mg
2580	ReadiUse™ Preactivated PE-Cy5 Tandem	1 mg
2581	ReadiUse™ Preactivated PE-Cy5.5 Tandem	1 mg
2582	ReadiUse™ Preactivated PE-Cy7 Tandem	1 mg
2584	ReadiUse™ Preactivated PE-iFluor® 594 Tandem	1 mg
2577	ReadiUse™ preactivated PE-iFluor® 647 Tandem	1 mg
2579	ReadiUse™ Preactivated PE-iFluor® 660 Tandem	1 mg
2585	ReadiUse™ Preactivated PE-iFluor® 700 Tandem	1 mg
2578	ReadiUse™ Preactivated PE-iFluor® 750 Tandem	1 mg
2595	ReadiUse™ Preactivated PerCP-Cy5.5 Tandem	1 mg

