Fluorophore selection guide for flow cytometry

Dye choices for your instrument made easy

invitrogen™

Fluorophore selection guide for flow cytometry

Fluorophore selection guide

Dyes for the 405 nm and 407 nm lasers

Pacific Blue™

- → The dye of choice for the first violet channel
- → Excited optimally at ~410 nm with emission maximum at ~455 nm
- → No UV excitation
- → Minimal spectral overlap with green fluorophores

Alexa Fluor® 405

- → Excited optimally at ~402 nm with emission maximum at ~421 nm
- → Minimal spectral overlap with green fluorophores
- → Lower in fluorescence than Pacific Blue™ dye, higher background in some intracellular applications
- → May withstand fixation better than Pacific Blue™ dye under some circumstances
- → Some UV excitation

Pacific Orange™

- → Compatible with Pacific Blue™ dye for multicolor applications of the violet laser
- → Excited optimally at ~405 nm with emission maximum at ~551 nm
- → Best signal obtained with an RPE emission filter (i.e., 548/42 or 575/26)

Qdot® 525 nanocrystal | Qdot® 565 nanocrystal | Qdot® 605 nanocrystal | Qdot® 655 nanocrystal | Qdot® 705 nanocrystal | Qdot® 800 nanocrystal

- → Allows high level multiplexing with a single excitation source
- → Ultimate in photostability
- → Excited optimally with UV or violet
- → Also excited by every laser below the emission wavelength
- → Emission centered on the wavelength in nanocrystal name
- → May require cross-laser compensation depending on fluorophores used
- → Can replace selected energy transfer (tandem) conjugates

Fluorophore selection guide

Dyes for the 488 nm laser

Alexa Fluor® 488

- → Brighter and more photostable than FITC
- → Interchangeable with FITC with only minor changes in compensation
- → Excited at 488 nm with emission maximum at ~519 nm
- → pH insensitive
- → Ideal primary color for flow cytometry

RPE (R-Phycoerythrin)

- → Excited at 488 nm or 532 nm with emission maximum at ~575 nm
- → Very bright fluorescence
- → Shows some excitation with 405 nm laser
- → Highly susceptible to photobleaching

RPE-Texas Red®

- → Energy transfer dye excited at ~488 nm with emission maximum at ~615 nm
- → Can be measured in FL3 channel on BD™ and Beckman Coulter instruments

RPE-Alexa Fluor® 610

- → Energy transfer dye excited at ~488 nm with emission maximum at ~628 nm
- → Alternative to RPE-Texas Red® dye
- → Higher quantum yield than RPE-Texas Red® dye with lower compensation against RPE
- → Ideal for use with RPE-Alexa Fluor® 700 or RPE-Cy®5.5 dyes in multicolor panels
- → Can be measured in FL3 channel on BD™ and Beckman Coulter instruments
- → Requires filter modification for optimal use on Beckman Coulter EPICS® XL™ instrument

TRI-COLOR®

- → Energy transfer dye excited at ~488 nm with emission maximum at ~670 nm
- → Also known as PE-Cy®5
- → Bright fluorescence
- → Low compensation against RPE
- → Significant emission in APC channel with 633 nm excitation
- → Measured in FL3 channel on BD FACScan™ and BD FACSCalibur™ instruments
- → Measured in FL4 channel on Beckman Coulter EPICS® XL™ instrument
- → Can demonstrate monocyte binding in some circumstances

continued

Fluorophore selection guide

Dyes for the 488 nm laser, continued

RPE-Alexa Fluor® 700

- → Fluorochrome of choice for BD™ FACSCalibur™ instrument
- → Energy transfer dye excited at ~488 nm with emission maximum at ~723 nm
- → Very low compensation against FL2 and FL4 when detected in FL3 on BD FACSCalibur™ or BD FACScan™ instrument
- → Bright alternative to RPE-Cy®5 (TRI-COLOR®, CyChrome, PC5), PerCP, and RPE-Cy®5.5
- → Together with RPE-Alexa Fluor® 610 dye, constitutes the optimal four-color combination using the 488 nm laser line

RPE-Cy®5.5

- → Energy transfer dye excited at ~488 nm with emission maximum at ~694 nm
- → Lower photostability than RPE-Alexa Fluor® 700
- → Requires more compensation against APC channel than RPE-Alexa Fluor® 700
- → Measured in FL3 channel on BD FACScan™ and BD FACSCalibur™ instruments
- → Measured in FL4 on Beckman Coulter EPICS® XL™ instrument

RPE-Cy®7

- → Provides long-wavelength emission off the 488 nm laser
- → Energy transfer dye excited at ~488 nm with emission maximum at ~775 nm
- → Requires varying degrees of compensation out of RPE channel

Fluorophore selection guide

Dyes for the 635 nm laser

Alexa Fluor® 647

- → Energy transfer dye excited at 633/635 nm with emission maximum at 668 nm
- → An excellent alternative to APC and Cy®5; potentially less background with intracellular staining
- → Brightness comparable to APC in flow cytometry
- → Significantly more photostable than APC and Cy®5

Alexa Fluor® 700

- → Energy transfer dye excited at 633/635 nm with emission maximum at 723 nm
- → Allows three-color analysis using a red laser when combined with APC and APC-Alexa Fluor® 750
- → Extremely bright and photostable
- → A single, small-molecule direct conjugate alternative to the tandem APC-Cy®5.5
- → Minimal compensation against APC
- → Requires significant compensation against RPE-Alexa Fluor® 700 and RPE-Cy®5.5

APC-Alexa Fluor® 750

- → Energy transfer dye excited at 633/635 nm with emission maximum at 775 nm
- → Significantly more photostable than APC-Cy®7
- → Lower compensation when paired with APC than is needed with the APC-Cy®7/APC pair
- → Brighter and more stabile than APC-Cy®7
- → Perfectly interchangeable with APC-Cy®7 due to spectral similarity between Alexa Fluor® 750 dye and Cy®7

Fluorophore selection guide

Instrument: Accuri C6 Flow Cytometer™ System

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	FL1 Green	**530/30**	**515–545**	**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	FL2 Yellow	585/40	565–605	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Qdot® 565 nanocrystal	DyeCycle™ Orange
					Qdot® 585 nanocrystal	JC-1 or $DiOC_2(3)$
						SNARF® (low pH)
						pHrodo™ dye
Argon	488	FL3 Red	675LP	≥675	**RPE-Alexa Fluor® 700**	PI
					Qdot® 705 nanocrystal	7-AAD
					Qdot® 800 nanocrystal	SNARF® (high pH)
					RPE-Cy®5.5	JC-1 or $DiOC_2(3)$
					TRI-COLOR®	LIVE/DEAD® Fixable Red Dead Cell Stain
					RPE-Cy®7	
					RPE-Alexa Fluor® 750	
					PerCP	
He–Ne	640	FL4 Red	675/24	663–687	**APC**	Click-iT™ EdU Alexa Fluor® 647
					Alexa Fluor® 647	LIVE/DEAD® Fixable Far Red Dead Cell Stain
					Qdot® 655 nanocrystal	TO-PRO®-3
						SYTOX® Red
						MitoProbe™ $DiIC_1(5)$
						CellTrace™ Far Red DDAO-SE

Bold = recommended fluorophore.

Fluorophore selection guide

Instrument: BD FACSCalibur™ System

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	FL1 Green	**530/30**	**515–545**	**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	FL2 Yellow	585/42	564–606	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Qdot® 565 nanocrystal	DyeCycle™ Orange
					Qdot® 585 nanocrystal	JC-1 or $DiOC_2(3)$
						SNARF® (low pH)
						pHrodo™ dye
Argon	488	FL3 Red	670LP	≥670	**RPE-Alexa Fluor® 700**	PI
					Qdot® 705 nanocrystal	7-AAD
					Qdot® 800 nanocrystal	SNARF® (high pH)
					RPE-Cy®5.5	JC-1 or $DiOC_2(3)$
					TRI-COLOR®	LIVE/DEAD® Fixable Red Dead Cell Stain
					RPE-Cy®7	
					RPE-Alexa Fluor® 750	
					PerCP	
He–Ne	635	FL4 Red	661/12	656–667	**APC**	Click-iT™ EdU Alexa Fluor® 647
					Alexa Fluor® 647	LIVE/DEAD® Fixable Far Red Dead Cell Stain
					Qdot® 655 nanocrystal	TO-PRO®-3
						SYTOX® Red
						MitoProbe™ $DiIC_1(5)$
						CellTrace™ Far Red DDAO-SE

Bold = recommended fluorophore.

Fluorophore selection guide

Instrument: BD FACScan™ Flow Cytometer

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	FL1 Green	530/30	515–545	**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	FL2 Yellow	585/42	564–606	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Qdot® 565 nanocrystal	DyeCycle™ Orange
					Qdot® 585 nanocrystal	SNARF® (low pH)
						JC-1 or $DiOC_2(3)$
						pHrodo™ dye
Argon	488	FL3 Red	650LP	≥650	**RPE-Alexa Fluor® 700**	PI
					Qdot® 655 nanocrystal	7-AAD
					Qdot® 705 nanocrystal	SNARF® (high pH)
					Qdot® 800 nanocrystal	JC-1 or $DiOC_2(3)$
					RPE-Cy®5.5	LIVE/DEAD® Fixable Red Dead Cell Stain
					TRI-COLOR®	
					RPE-Cy®7	
					RPE-Alexa Fluor® 750	
					PerCP	

Bold = recommended fluorophore.

Fluorophore selection guide

Instrument: BD FACSCanto™ System

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	585/42	564–606	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange SNARF® (low pH) JC-1 or $DiOC_2(3)$ pHrodo™ dye
Argon	488	Red	670LP	≥670	**RPE-Alexa Fluor® 700 (695/40)*** RPE-Cy®5.5 TRI-COLOR® PerCP Qdot® 705 nanocrystal	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain SNARF® (high pH)
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)* Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: BD FACSCanto™ System, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	660/20	650–670	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Infrared	780/60	750–810	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: BD FACSCanto™ II System, 2-laser option

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	Yellow	585/42	566–606	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Qdot® 565 nanocrystal	DyeCycle™ Orange
					Qdot® 585 nanocrystal	SNARF® (low pH)
						JC-1 or $DiOC_2(3)$
						pHrodo™ dye
Argon	488	Orange	616/23	604–628	**RPE-Alexa Fluor® 610**	PI
					RPE-Texas Red®	JC-1 or $DiOC_2(3)$
					Qdot® 705 nanocrystal	LIVE/DEAD® Fixable Red Dead Cell Stain
Argon	488	Red	670LP	≥670	**RPE-Alexa Fluor® 700 (695/40)***	PI
					RPE-Cy®5.5	7-AAD
					TRI-COLOR®	LIVE/DEAD® Fixable Red Dead Cell Stain
					PerCP	SNARF® (high pH)
					Qdot® 705 nanocrystal	
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7**	
					RPE-Alexa Fluor® 750 (787/42)*	
					Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: BD FACSCanto™ II System, 2-laser option, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	660/20	650–670	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Far Red	712/21	701–723	**Alexa Fluor® 700**	
He–Ne	633	Infrared	780/60	750–810	**APC-Alexa Fluor® 750** **(787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain

Bold = recommended fluorophore. * Recommended filter. † Available on some models.

Fluorophore selection guide

Instrument: BD FACSCanto™ II System, 3-laser option

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	585/42	566–606	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange SNARF® (low pH) JC-1 or $DiOC_2(3)$ pHrodo™ dye
Argon	488	Red	670LP	≥670	**RPE-Alexa Fluor® 700 (695/40)*** RPE-Cy®5.5 TRI-COLOR® PerCP Qdot® 705 nanocrystal	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain SNARF® (high pH)
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)* Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: BD FACSCanto™ II System, 3-laser option, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	660/20	650–670	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Infrared	780/60	750–810	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
Violet†	405	Blue	450/50	425–475	**Pacific Blue™** Alexa Fluor® 405	Click-iT™ EdU Pacific Blue™ PO-PRO™-1 DyeCycle™ Violet LIVE/DEAD® Fixable Violet Dead Cell Stain Calcein Violet
Violet†	405	Green	513/22	502–525	Qdot® 525 nanocrystal AmCyan	SYTOX® Blue **LIVE/DEAD® Fixable Aqua Dead Cell Stain**

Bold = recommended fluorophore. * Recommended filter. † Available on some models.

Fluorophore selection guide

Instrument: BD™ LSR Flow Cytometer

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	585/42	564–606	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange SNARF® (low pH) JC-1 or $DiOC_2(3)$ pHrodo™ dye
Argon	488	Red	670LP	≥670	**RPE-Alexa Fluor® 700** **(695/40)*** RPE-Cy®5.5 TRI-COLOR® PerCP Qdot® 705 nanocrystal	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain SNARF® (high pH)
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)* Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: BD™ LSR Flow Cytometer, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Cd	325	FL4 Violet	405/20	395–415	Alexa Fluor® 350	Indo-1 (high Ca^{2+})
He–Cd	325	FL5 Blue	450/50	425–475		DAPI
						Hoechst 33342
						Calcein Blue
						SYTOX® Blue
						LIVE/DEAD® Fixable Blue Dead Cell Stain
He–Cd	325	Green	530/30	515–545	Qdot® 525 nanocrystal	Indo-1 (low Ca^{2+})
						SYTOX® Blue
He–Ne	633	FL6 Red	660/16	652–668	**APC**	Click-iT™ EdU Alexa Fluor® 647
					Alexa Fluor® 647	LIVE/DEAD® Fixable Far Red Dead Cell Stain
					Qdot® 655 nanocrystal	TO-PRO®-3
						CellTrace™ Far Red DDAO-SE
						SYTOX® Red
						MitoProbe™ $DiIC_1(5)$
						LIVE/DEAD® Fixable Near-IR Dead Cell Stain

Bold = recommended fluorophore.

Fluorophore selection guide

Instrument: BD™ LSR II Flow Cytometer

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 YO-PRO®-1 LIVE/DEAD® Fixable Green Dead Cell Stain
Argon	488	Yellow	575/26	562–588	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange JC-1 or $DiOC_2(3)$ SNARF® (low pH) pHrodo™ dye
Argon	488	Orange	610/20	600–620	**RPE-Alexa Fluor® 610** RPE-Texas Red® Qdot® 605 nanocrystal	PI JC-1 or $DiOC_2(3)$ LIVE/DEAD® Fixable Red Dead Cell Stain
Argon	488	Red	695/40	675–715	**RPE-Alexa Fluor® 700** RPE-Cy®5.5 TRI-COLOR® (670/14)* PerCP Qdot® 705 nanocrystal	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain SNARF® (high pH)
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)*	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: BD™ LSR II Flow Cytometer, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	660/20	650–670	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Red	710/20	700–720	**Alexa Fluor® 700** Qdot® 705 nanocrystal	
He–Ne	633	Infrared	780/60	750–810	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
UV†	355	Violet	405/20	395–415	Alexa Fluor® 350	Indo-1 (high Ca^{2+})
UV†	355	Blue	450/50	425–475		Hoechst 33342 DAPI Calcein Blue LIVE/DEAD® Fixable Blue Dead Cell Stain
UV†	355	Green	530/30	515–545	Qdot® 525 nanocrystal	Indo-1 (low Ca^{2+})
Violet†	405	Blue	440/40	420–460	**Pacific Blue™** Alexa Fluor® 405	Click-iT™ EdU Pacific Blue™ PO-PRO™-1 DyeCycle™ Violet LIVE/DEAD® Fixable Violet Dead Cell Stain Calcein Violet
Violet†	405	Green	525/50	500–550	Qdot® 525 nanocrystal (525/20)* AmCyan	SYTOX® Blue **LIVE/DEAD® Fixable Aqua Dead Cell Stain**
Violet†	405	Yellow	585/42	564–606	**Pacific Orange™** **Qdot® 565 nanocrystal (565/20)*** Qdot® 585 nanocrystal (585/20)*	
Violet†	405	Orange	610/20	600–620	**Qdot® 605 nanocrystal**	
Violet†	405	Red	655/20	675–715	**Qdot® 655 nanocrystal**	
Violet†	405	Red	720/40	700–740	**Qdot® 705 nanocrystal**	
Violet†	405	Infrared	787/42	766–808	**Qdot® 800 nanocrystal**	

Bold = recommended fluorophore. * Recommended filter. † Available on some models.

Fluorophore selection guide

Instrument: BD FACSAria™ Cell Sorter

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	575/26	562–588	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange SNARF® (low pH) JC-1 or $DiOC_2(3)$ pHrodo™ dye
Argon	488	Red	610/20	600–620	**RPE-Alexa Fluor® 610** RPE-Texas Red® Qdot® 605 nanocrystal	PI LIVE/DEAD® Fixable Red Dead Cell Stain JC-1 or $DiOC_2(3)$
Argon	488	Far Red	695/40	675–715	**RPE-Alexa Fluor® 700** RPE-Cy®5.5 TRI-COLOR® PerCP Qdot® 705 nanocrystal	7-AAD SNARF® (high pH) LIVE/DEAD® Fixable Red Dead Cell Stain
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)* Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: BD FACSAria™ Cell Sorter, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	660/20	650–670	**APC** Alexa Fluor® 647 Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Infrared	780/60	750–810	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
Violet	407	Blue	450/40	430–470	**Pacific Blue™** Alexa Fluor® 405	Click-iT™ EdU Pacific Blue™ LIVE/DEAD® Fixable Violet Dead Cell Stain PO-PRO™-1 DyeCycle™ Violet Calcein Violet
Violet	407	Green	530/30	515–545	Qdot® 525 nanocrystal AmCyan	**LIVE/DEAD® Fixable Aqua Dead Cell Stain** SYTOX® Blue
Violet	407	Yellow	585/42	564–606	**Pacific Orange™** **Qdot® 565 nanocrystal (565/20)*** Qdot® 585 nanocrystal (585/20)*	
Violet	407	Orange	610/20	600–620	**Qdot® 605 nanocrystal**	
Violet	407	Red	655/20	675–715	**Qdot® 655 nanocrystal**	
Violet	407	Red	720/40	700–740	**Qdot® 705 nanocrystal**	
Violet	407	Infrared	787/42	766–808	**Qdot® 800 nanocrystal**	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: BD FACSArray™ Bioanalyzer System

Laser	Excitation laser	Fluorescence channel	Possible filters	Filter range (nm)	Fluorophores	Other fluorescent dyes
Green He–Ne	532	Yellow	585/42	564–606	RPE	PI
					Alexa Fluor® 546	Fura Red™
					Alexa Fluor® 568	DyeCycle™ Orange
					Qdot® 565 nanocrystal	SNARF® (low pH)
					Qdot® 585 nanocrystal	pHrodo™ dye
Green He–Ne	532	Red	685LP	≥685	**RPE-Alexa Fluor® 700**	PI
					Qdot® 705 nanocrystal	7-AAD
					Qdot® 800 nanocrystal	SNARF® (high pH)
					RPE-Cy®5.5	LIVE/DEAD® Fixable Red Dead Cell Stain
					TRI-COLOR® (670/14)*	
					RPE-Alexa Fluor® 750	
					RPE-Cy®7	
He–Ne	633	Red	661/16	653–669	**APC**	Click-iT™ EdU Alexa Fluor® 647
					Alexa Fluor® 647	LIVE/DEAD® Fixable Far Red Dead Cell Stain
					Qdot® 655 nanocrystal	
						TO-PRO®-3
						SYTOX® Red
						MitoProbe™ $DiIC_1(5)$
						CellTrace™ Far Red DDAO-SE
He–Ne	633	Infrared	788/60	758–818	**APC-Alexa Fluor® 750**	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
					APC-Cy®7	
					Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: BD FACSVantage™ SE Cell Sorter

Laser	Excitation laser	Fluorescence channel	Possible filters	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	575/26	562–588	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange JC-1 or $DiOC_2(3)$ SNARF® (low pH) pHrodo™ dye
Argon	488	Orange	610/20	600–620	**RPE-Alexa Fluor® 610** RPE-Texas Red® Qdot® 605 nanocrystal	PI LIVE/DEAD® Fixable Red Dead Cell Stain JC-1 or $DiOC_2(3)$
Argon	488	Red	700/20	690–710	**RPE-Alexa Fluor® 700 (695/40)*** RPE-Cy®5.5 TRI-COLOR® (670/14)* Qdot® 705 nanocrystal	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain SNARF® (high pH)
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)* Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: BD FACSVantage™ SE Cell Sorter, continued

Laser	Excitation laser	Fluorescence channel	Possible filters	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	660/20	650–670	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Red	710/20	700–720	**Alexa Fluor® 700** Qdot® 705 nanocrystal	
He–Ne	633	Infrared	780/60	750–810	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
UV	355	Violet	395	415		Indo-1 (high Ca^{2+})
UV	355	Blue	424/44	402–446	Alexa Fluor® 350	DAPI Hoechst 33342 Calcein Blue LIVE/DEAD® Fixable Blue Dead Cell Stain
UV	355	Green	530/30	515–545	Qdot® 525 nanocrystal	Indo-1 (low Ca^{2+})
UV	355	Blue	440/40	420–460	**Pacific Blue™** Alexa Fluor® 405	Click-iT™ EdU Pacific Blue™ PO-PRO™-1 DyeCycle™ Violet LIVE/DEAD® Fixable Violet Dead Cell Stain
UV	355	Green	530/30	515–545	Qdot® 525 nanocrystal AmCyan	SYTOX® Blue **LIVE/DEAD® Fixable Aqua Dead Cell Stain**
UV	355	Yellow	575/26	562–588	**Pacific Orange™** **Qdot® 565 nanocrystal (565/20)*** Qdot® 585 nanocrystal (585/20)*	
UV	355	Orange	610/20	600–620	**Qdot® 605 nanocrystal**	
UV	355	Red	655/20	675–715	**Qdot® 655 nanocrystal**	
UV	355	Red	720/40	700–740	**Qdot® 705 nanocrystal**	
UV	355	Infrared	787/42	766–808	**Qdot® 800 nanocrystal**	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: BD FACSVantage™ SE Cell Sorter, continued

Laser	Excitation laser	Fluorescence channel	Possible filters	Filter range (nm)	Fluorophores	Other fluorescent dyes
Green He–Ne	532	Yellow	575/26	562–588	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Alexa Fluor® 568	DyeCycle™ Orange
					Qdot® 565 nanocrystal	SNARF® (low pH)
					Qdot® 585 nanocrystal	pHrodo™ dye
Green He–Ne	532	Orange	610/20	600–620	**RPE-Alexa Fluor® 610**	
					RPE-Texas Red®	
Green He–Ne	532	Red	695/40	675–715	**RPE-Alexa Fluor® 700**	PI
					RPE-Cy®5.5	7-AAD
					TRI-COLOR® (670/14)*	SNARF® (high pH)
					Qdot® 705 nanocrystal	
Green He–Ne	532	Infrared	780/60	750–810	**RPE-Cy®7**	
					RPE-Alexa Fluor® 750 (787/42)*	
					Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter Cytomics FC 500 Flow Cytometer

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	525BP		**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	575BP		**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange JC-1 or $DiOC_2(3)$ SNARF® (low pH) pHrodo™ dye
Argon	488	Orange	620BP		**RPE-Alexa Fluor® 610** RPE-Texas Red® Qdot® 605 nanocrystal	PI LIVE/DEAD® Fixable Red Dead Cell Stain JC-1 or $DiOC_2(3)$
Argon	488	Red	675/30	660-690	**RPE-Alexa Fluor® 700 (710/20)*** Qdot® 705 nanocrystal RPE-Cy®5.5 TRI-COLOR® (670/14)* PerCP	PI 7-AAD SNARF® (high pH) LIVE/DEAD® Fixable Red Dead Cell Stain
Argon	488	Red	755/30	740-770	RPE-Alexa Fluor® 750 (787/42)* RPE-Cy®7 Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: Beckman Coulter Cytomics FC 500 Flow Cytometer, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	675/30	660-690	**APC** **Alexa Fluor® 647** Alexa Fluor® 700 (710/20)*	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 CellTrace™ Far Red DDAO-SE MitoProbe™ $DiIC_1(5)$ SYTOX® Red
He–Ne	633	Infrared	755/30	740-770	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter EPICS® XL™ Flow Cytometer

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	525/30	510–40	**Alexa Fluor® 488** **Fluorescein** Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	575/30	560–590	RPE Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange JC-1 or $DiOC_2(3)$ pHrodo™ dye SNARF® (low pH)
Argon	488	Orange	620/30	605–635	**RPE-Alexa Fluor® 610** **RPE-Texas Red®** **Qdot® 605 nanocrystal**	PI LIVE/DEAD® Fixable Red Dead Cell Stain JC-1 or $DiOC_2(3)$
Argon	488	Red	675/30	660–690	**RPE-Alexa Fluor® 700 (710/20)*** Qdot® 705 nanocrystal RPE-Cy®5.5 TRI-COLOR® (670/14)* PerCP	PI 7-AAD SNARF® (high pH) LIVE/DEAD® Fixable Red Dead Cell Stain

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter Cell Lab Quanta™ SC

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	525BP		**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	Yellow	575BP		**RPE**	PI
					Alexa Fluor® 546	JC-1 or $DiOC_2(3)$
						Fura Red™
						DyeCycle™ Orange
						SNARF® (low pH)
						pHrodo™ dye
Argon	488	Red	670LP	≥670	RPE-Alexa Fluor® 700	PI
					RPE-Cy®5.5	7-AAD
					TRI-COLOR® (670/14)*	LIVE/DEAD® Fixable Red Dead Cell Stain
					PerCP	
					RPE-Cy®7	
					RPE-Alexa Fluor® 750	
					Qdot® 705 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter Cell Lab Quanta™ SC, continued

Excitation filter 355

Light source	Fluorescence channel	Default filter	Fluorophores	Other fluorescent dyes
Mercury-arc	Violet	405BP	Alexa Fluor® 350	Indo-1 (high Ca^{2+})
Mercury-arc	Blue	450BP		Hoechst 33342
				DAPI
				Calcein Blue
				LIVE/DEAD® Fixable Blue Dead Cell Stain
Mercury-arc	Green	525BP	Qdot® 525 nanocrystal	Indo-1 (low Ca^{2+})

Excitation filter 405

Light source	Fluorescence channel	Default filter	Fluorophores	Other fluorescent dyes
Mercury-arc	Blue	440BP	**Pacific Blue™**	Click-iT™ EdU Pacific Blue™
			Alexa Fluor® 405	PO-PRO™-1
				DyeCycle™ Violet
				LIVE/DEAD® Fixable Violet Dead Cell Stain
				Calcein Violet
Mercury-arc	Green	525BP	Qdot® 525 nanocrystal (525/20)*	SYTOX® Blue
			AmCyan	**LIVE/DEAD® Fixable Aqua Dead Cell Stain**
Mercury-arc	Yellow	585BP	**Pacific Orange™**	
			Qdot® 565 nanocrystal (565/20)*	
			Qdot® 585 nanocrystal (585/20)*	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter EPICS® ALTRA™ Cell Sorter

Laser	Excitation laser	Fluorescence channel	Possible filters	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	575/26	562–588	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange JC-1 or $DiOC_2(3)$ SNARF® (low pH) pHrodo™ dye
Argon	488	Orange	(610/20)	600–620	**RPE-Alexa Fluor® 610** RPE-Texas Red® Qdot® 605 nanocrystal	PI LIVE/DEAD® Fixable Red Dead Cell Stain JC-1 or $DiOC_2(3)$
Argon	488	Red	695/40	675–715	**RPE-Alexa Fluor® 700** Qdot® 705 nanocrystal RPE-Cy®5.5 TRI-COLOR® (670/14)* PerCP	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain SNARF® (high pH)
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)* Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter EPICS® ALTRA™ Cell Sorter, continued

Laser	Excitation laser	Fluorescence channel	Possible filters	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	660/16	652–668	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Red	(710/20)	700–720	**Alexa Fluor® 700** Qdot® 705 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
He–Ne	633	Infrared	780/60	750–810	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	
UV	355	Violet	405/20	395–415		Indo-1 (high Ca^{2+})
UV	355	Blue	450/50	425–475	Alexa Fluor® 350	DAPI Hoechst 33342 Calcein Blue
UV	355	Green	530/30	560–585	Qdot® 535 nanocrystal	Indo-1 (low Ca^{2+})
Violet	405	Blue	440/40	420–460	**Pacific Blue™** Alexa Fluor® 405	Click-iT™ EdU Pacific Blue™ PO-PRO™-1 DyeCycle™ Violet LIVE/DEAD® Fixable Violet Dead Cell Stain Calcein Violet
Violet	405	Green	530/30	560–585	Qdot® 525 nanocrystal AmCyan	SYTOX® Blue **LIVE/DEAD® Fixable Aqua Dead Cell Stain**
Violet	405	Yellow	575/26	562–588	**Pacific Orange™** **Qdot® 565 nanocrystal (565/20)*** Qdot® 585 nanocrystal (585/20)*	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: Beckman Coulter EPICS® ALTRA™ Cell Sorter, continued

Laser	Excitation laser	Fluorescence channel	Possible filters	Filter range (nm)	Fluorophores	Other fluorescent dyes
Violet	405	Orange	610/20	600–620	**Qdot® 605 nanocrystal**	
Violet	405	Red	655/20	675–715	**Qdot® 655 nanocrystal**	
Violet	405	Red	720/40	700–740	**Qdot® 705 nanocrystal**	
Violet	405	Infrared	787/42	766–808	**Qdot® 800 nanocrystal**	
Green He–Ne	532	Yellow	575/26	562–588	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Alexa Fluor® 568	DyeCycle™ Orange
					Qdot® 565 nanocrystal	SNARF® (low pH)
					Qdot® 585 nanocrystal	pHrodo™ dye
Green He–Ne	532	Orange	610/20	600–620	**RPE-Alexa Fluor® 610**	PI
					RPE-Texas Red®	LIVE/DEAD® Fixable Red Dead Cell Stain
					Qdot® 605 nanocrystal	
Green He–Ne	532	Red	695/40	675–715	**RPE-Alexa Fluor® 700**	PI
					RPE-Cy®5.5	7-AAD
					TRI-COLOR® (670/14)*	SNARF® (high pH)
					Qdot® 705 nanocrystal	
Green He–Ne	532	Infrared	780/60	750–810	**RPE-Cy®7**	
					RPE-Alexa Fluor® 750 (787/42)*	
					Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter CyAn™ ADP Analyzer

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/40	510–550	**Alexa Fluor® 488** Fluorescein Qdot® 525 nanocrystal	Click-iT™ EdU Alexa Fluor® 488 Calcein Fluo-3 or Fluo-4 TO-PRO®-1 CFSE GFP JC-1 or $DiOC_2(3)$ SYTOX® Green DyeCycle™ Green Rhodamine 123 LIVE/DEAD® Fixable Green Dead Cell Stain YO-PRO®-1
Argon	488	Yellow	575/26	562–588	**RPE** Alexa Fluor® 546 Qdot® 565 nanocrystal Qdot® 585 nanocrystal	PI Fura Red™ DyeCycle™ Orange JC-1 or $DiOC_2(3)$ SNARF® (low pH) pHrodo™ dye
Argon	488	Orange	620/30	605–635	**RPE-Alexa Fluor® 610** RPE-Texas Red® Qdot® 605 nanocrystal	PI LIVE/DEAD® Fixable Red Dead Cell Stain JC-1 or $DiOC_2(3)$
Argon	488	Red	680/30	665–695	**RPE-Alexa Fluor® 700 (695/40)*** RPE-Cy®5.5 TRI-COLOR® (670/14)* PerCP	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain SNARF® (high pH)
Argon	488	Infrared	750LP	≥750	**RPE-Cy®7** RPE-Alexa Fluor® 750 (787/42)* Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: Beckman Coulter CyAn™ ADP Analyzer, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	633	Red	665/20	655–675	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	Click-iT™ EdU Alexa Fluor® 647 LIVE/DEAD® Fixable Far Red Dead Cell Stain TO-PRO®-3 SYTOX® Red MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
He–Ne	633	Red	670/40 695/40	650–690	Alexa Fluor® 660 **Alexa Fluor® 700** Qdot® 655 nanocrystal Qdot® 705 nanocrystal	
He–Ne	633	Infrared	750LP	≥750	**APC-Alexa Fluor® 750 (787/42)*** APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
Violet	405	Blue	450/50	425–475	**Pacific Blue™** Alexa Fluor® 405	Click-iT™ EdU Pacific Blue™ PO-PRO™-1 DyeCycle™ Violet LIVE/DEAD® Fixable Violet Dead Cell Stain Calcein Violet
Violet	405	Green	530/40	510–550	Qdot® 525 nanocrystal AmCyan	SYTOX® Blue **LIVE/DEAD® Fixable Aqua Dead Cell Stain**
Violet	405	Yellow	575/26	562–588	**Pacific Orange™** **Qdot® 565 nanocrystal (565/20)*** Qdot® 585 nanocrystal (585/20)*	
Violet	405	Orange	610/20	600–620	**Qdot® 605 nanocrystal**	
Violet	405	Red	655/20	675–715	**Qdot® 655 nanocrystal**	
Violet	405	Red	720/40	700–740	**Qdot® 705 nanocrystal**	
Violet	405	Infrared	787/42	766–808	**Qdot® 800 nanocrystal**	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter MoFlo™ XDP Cell Sorter

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	530/30	515–545	**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	Yellow	575/26	562–588	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Qdot® 565 nanocrystal	DyeCycle™ Orange
					Qdot® 585 nanocrystal	JC-1 or $DiOC_2(3)$
						pHrodo™ dye
						SNARF® (low pH)
Argon	488	Orange	610/20	600–620	RPE-Alexa Fluor® 610	PI
					RPE-Texas Red®	LIVE/DEAD® Fixable Red Dead Cell Stain
					Qdot® 605 nanocrystal	JC-1 or $DiOC_2(3)$
Argon	488	Red	700/20	690–710	RPE-Alexa Fluor® 700 (695/40)*	PI
					RPE-Cy®5.5	**7-AAD**
					TRI-COLOR® (670/14)*	LIVE/DEAD® Fixable Red Dead Cell Stain
					Qdot® 705 nanocrystal	SNARF® (high pH)
Argon	488	Infrared	780/60	750–810	**RPE-Cy®7**	
					RPE-Alexa Fluor ®750 (787/42)*	
					Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

continued

Fluorophore selection guide

Instrument: Beckman Coulter MoFlo™ XDP Cell Sorter, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
HeNe	633	Red	660/20	650–670	**APC** **Alexa Fluor® 647** Qdot® 655 nanocrystal	TO-PRO®-3 SYTOX® Red LIVE/DEAD® Fixable Far Red Dead Cell Stain Click-iT™ EdU Alexa Fluor® 647 MitoProbe™ $DiIC_1(5)$ CellTrace™ Far Red DDAO-SE
HeNe	633	Red	(710/20)	700–720	Alexa Fluor® 700 Qdot® 705 nanocrystal	
HeNe	633	Infrared	780/60	750–810	APC-Alexa Fluor® 750 (787/42)* APC-Cy®7 Qdot® 800 nanocrystal	LIVE/DEAD® Fixable Near-IR Dead Cell Stain
HeNe	633	Violet	395	415		Indo-1 (High Ca^{2+})
HeNe	633	Blue	424/44	402–446	Alexa Fluor® 350	DAPI Hoechst 33342 Calcein Blue LIVE/DEAD® Fixable Blue Dead Cell Stain Calcein Violet
HeNe	633	Green	530/30	515–545	**Qdot® 525 nanocrystal**	Indo-1 (Low Ca^{2+})
Violet	405	Blue	440/40	420–460	Pacific Blue™ Alexa Fluor® 405	PO-PRO®-1 DyeCycle™ Violet Click-iT™ EdU Pacific Blue™ LIVE/DEAD® Fixable Violet Dead Cell Stain Calcein Violet
Violet	405	Green	530/30	515–545	Qdot® 525 nanocrystal AmCyan	SYTOX® Blue **LIVE/DEAD® Fixable Aqua Dead Cell Stain**
Violet	405	Yellow	575/26	562–588	**Pacific Orange™** **Qdot® 565 nanocrystal (565/20)*** Qdot® 585 nanocrystal (585/20)*	
Violet	405	Orange	(610/20)	600–620	**Qdot® 605 nanocrystal**	
Violet	405	Red	(655/20)	675–715	**Qdot® 655 nanocrystal**	
Violet	405	Red	(720/40)	700–40	Qdot® 705 nanocrystal	
Violet	405	Infrared	(787/42)	766–808	Qdot® 800 nanocrystal	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Beckman Coulter MoFlo™ XDP Cell Sorter, continued

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Green HeNe	532	Yellow	575/26	562–588	RPE	PI
					Alexa Fluor® 546	Fura Red™
					Alexa Fluor® 568	DyeCycle™ Orange
					Qdot® 565 nanocrystal	SNARF® (low pH)
					Qdot® 585 nanocrystal	
Green HeNe	532	Orange	(610/20)	600–620	RPE-Alexa Fluor® 610	PI
					RPE-Texas Red®	LIVE/DEAD® Fixable Red Dead Cell Stain
					Qdot® 605 nanocrystal	
Green HeNe	532	Red	695/40	675–715	**RPE-Alexa Fluor® 700**	PI
					RPE-Cy®5.5	7-AAD
					TRI-COLOR® (670/14)*	SNARF® (high pH)
					Qdot® 705 nanocrystal	
Green HeNe	532	Infrared	780/60	750–810	**RPE-Cy®7**	
					RPE-Alexa Fluor® 750 (787/42)*	

Bold = recommended fluorophore. * Recommended filter.

Fluorophore selection guide

Instrument: Guava® Personal Cell Analysis (PCA) System

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
He–Ne	532	Green	580/20	510–550	**RPE**	PI Fura Red™ DyeCycle™ Orange SNARF® (low pH) pHrodo™ dye
He–Ne	532	Red	675/20	665–685	RPE-Cy®5.5 TRI-COLOR®	PI 7-AAD LIVE/DEAD® Fixable Red Dead Cell Stain

Bold = recommended fluorophore.

Fluorophore selection guide

Instrument: Guava EasyCyte™ Mini System

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	525/30	**515–540**	**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	Yellow	583/26	570–606	**RPE**	PI
					Alexa Fluor® 546	Fura Red™
					Alexa Fluor® 568	DyeCycle™ Orange
					Qdot® 565 nanocrystal	JC-1 or $DiOC_2(3)$
					Qdot® 585 nanocrystal	SNARF® (low pH)
						pHrodo™ dye
Argon	488	Red	680/30	665–695	**RPE-Alexa Fluor® 700**	PI
					RPE-Cy®5.5	7-AAD
					TRI-COLOR®	LIVE/DEAD® Fixable Red Dead Cell Stain
					Qdot® 705 nanocrystal	SNARF® (high pH)

Bold = recommended fluorophore.

Fluorophore selection guide

Instrument: Guava EasyCyte™ Plus System

Laser	Excitation laser	Fluorescence channel	Default filter	Filter range (nm)	Fluorophores	Other fluorescent dyes
Argon	488	Green	525/30	515–40	**Alexa Fluor® 488**	Click-iT™ EdU Alexa Fluor® 488
					Fluorescein	Calcein
					Qdot® 525 nanocrystal	Fluo-3 or Fluo-4
						TO-PRO®-1
						CFSE
						GFP
						JC-1 or $DiOC_2(3)$
						SYTOX® Green
						DyeCycle™ Green
						Rhodamine 123
						LIVE/DEAD® Fixable Green Dead Cell Stain
						YO-PRO®-1
Argon	488	Yellow	583/26	570–606	RPE	PI
					Alexa Fluor® 546	Fura Red™
					Alexa Fluor® 568	DyeCycle™ Orange
					Qdot® 565 nanocrystal	JC-1 or $DiOC_2(3)$
					Qdot® 585 nanocrystal	pHrodo™ dye
						SNARF® (low pH)
Argon	488	Red	680/30	665–695	**RPE-Alexa Fluor® 700**	PI
					RPE-Cy®5.5	7-AAD
					TRI-COLOR®	LIVE/DEAD® Fixable Red Dead Cell Stain
					Qdot® 705 nanocrystal	SNARF® (high pH)
Argon	488	Red	755/30	740–770	RPE-Cy®7	
					RPE-Alexa Fluor® 750	
					Qdot® 800 nanocrystals	

Bold = recommended fluorophore.

Index

Name used on instrument pages	Catalog number	Formal name
7-AAD	A1310	7-aminoactinomycin D (7-AAD)
Calcein *	C3100MP	calcein, AM *special packaging*
Calcein Blue	C34853	CellTrace™ calcein blue, AM *special packaging*
Calcein Violet	C34858	CellTrace™ calcein violet, AM *for 405 nm excitation* *special packaging*
CellTrace™ Far Red DDAO-SE	C34553	CellTrace™ Far Red DDAO-SE *special packaging*
CFSE	C34554	CellTrace™ CFSE Cell Proliferation Kit *for flow cytometry*
Click-iT™ EdU Alexa Fluor® 488	C35002	Click-iT™ EdU Alexa Fluor® 488 Flow Cytometry Assay Kit *50 assays*
Click-iT™ EdU Alexa Fluor® 647	A10202	Click-iT™ EdU Alexa Fluor® 647 Flow Cytometry Assay Kit *50 assays*
Click-iT™ EdU Pacific Blue™	A10034	Click-iT™ EdU Pacific Blue™ Flow Cytometry Assay Kit *50 assays*
DAPI *	D3571	4′,6-diamidino-2-phenylindole, dilactate (DAPI, dilactate)
DyeCycle™ Green	V35004	Vybrant® DyeCycle™ Green stain *5 mM solution in DMSO* *200 assays*
DyeCycle™ Orange	V35005	Vybrant® DyeCycle™ Orange stain *5 mM solution in DMSO* *200 assays*
DyeCycle™ Violet	V35003	Vybrant® DyeCycle™ Violet stain *5 mM in water* *200 assays*
$DiOC_2(3)$	M34150	MitoProbe™ $DiOC_2(3)$ Assay Kit *for flow cytometry* *100 assays*
Fluo-3 *	F1242	fluo-3, AM *cell permeant* *special packaging*
Fluo-4 *	F14201	fluo-4, AM *cell permeant* *special packaging*
Fura Red™*	F3021	Fura Red™, AM *cell permeant* *special packaging*
Hoechst 33342	H3570	Hoechst 33342, trihydrochloride, trihydrate *10 mg/mL solution in water*
Indo-1 *	I1223	indo-1, AM *cell permeant* *special packaging*
JC-1	M34152	MitoProbe™ JC-1 Assay Kit *for flow cytometry* *100 assays*
LIVE/DEAD® Fixable Aqua Dead Cell Stain	L34957	LIVE/DEAD® Fixable Aqua Dead Cell Stain Kit *for 405 nm excitation* *200 assays*
LIVE/DEAD® Fixable Blue Dead Cell Stain	L23105	LIVE/DEAD® Fixable Blue Dead Cell Stain Kit *for flow cytometry* *200 assays*
LIVE/DEAD® Fixable Far Red Dead Cell Stain	L10120	LIVE/DEAD® Fixable Far Red Dead Cell Stain Kit *for 633 or 635 nm excitation* *200 assays*
LIVE/DEAD® Fixable Green Dead Cell Stain	L23101	LIVE/DEAD® Fixable Green Dead Cell Stain Kit *for flow cytometry* *200 assays*
LIVE/DEAD® Fixable Near-IR Dead Cell Stain	L10119	LIVE/DEAD® Fixable Near-IR Dead Cell Stain Kit *for 633 or 635 nm excitation* *200 assays*
LIVE/DEAD® Fixable Red Dead Cell Stain	L23102	LIVE/DEAD® Fixable Red Dead Cell Stain Kit *for flow cytometry* *200 assays*
LIVE/DEAD® Fixable Violet Dead Cell Stain	L34955	LIVE/DEAD® Fixable Violet Dead Cell Stain Kit *for flow cytometry* *200 assays*
MitoProbe™ DiIC1(5)	M34151	MitoProbe™ DiIC1(5) Assay Kit *for flow cytometry* *100 assays*
pHrodo™ dye *	A10025	pHrodo™ E. coli BioParticles® Phagocytosis Kit *for flow cytometry* *100 tests*
PI	P3566	propidium iodide *1.0 mg/mL solution in water*
PO-PRO™-1	P3581	PO-PRO™-1 iodide (435/455) *1 mM solution in DMSO*
Rhodamine 123	R302	rhodamine 123
SNARF®	S22801	SNARF®-1 carboxylic acid, acetate, succinimidyl ester *special packaging*
SYTOX® Blue *	S34857	SYTOX® Blue dead cell stain *for flow cytometry* *1000 assays* *1 mM solution in DMSO*
SYTOX® Green	S7020	SYTOX® Green nucleic acid stain *5 mM solution in DMSO*
SYTOX® Red	S34859	SYTOX® Red dead cell stain *for 633 or 635 nm excitation* *5 µM solution in DMSO*
TO-PRO®-1	T3602	TO-PRO®-1 iodide (515/531) *1 mM solution in DMSO*
TO-PRO®-3	T3605	TO-PRO®-3 iodide (642/661) *1 mM solution in DMSO*
YO-PRO®-1	Y3603	YO-PRO®-1 iodide (491/509) *1 mM solution in DMSO*

* Other packaging formats available.

Trademarks of other companies referred to in this fluorophore selection guide include:

Accuri C6 Flow Cytometer™ (Accuri, Inc.)

BD™ (Becton, Dickinson and Company)

CyAn™ (Beckman Coulter, Inc.)

EasyCyte™ (Guava Technologies, Inc.)

EPICS® ALTRA™ (Beckman Coulter, Inc.)

BD FACSAria™ (Becton, Dickinson and Company)

BC FACSArray™ (Becton, Dickinson and Company)

BD FACSCalibur™ (Becton, Dickinson and Company)

BD FACScan™ (Becton, Dickinson and Company)

BD FACSCanto™ (Becton, Dickinson and Company)

BD FACSVantage™ SE (Becton, Dickinson and Company

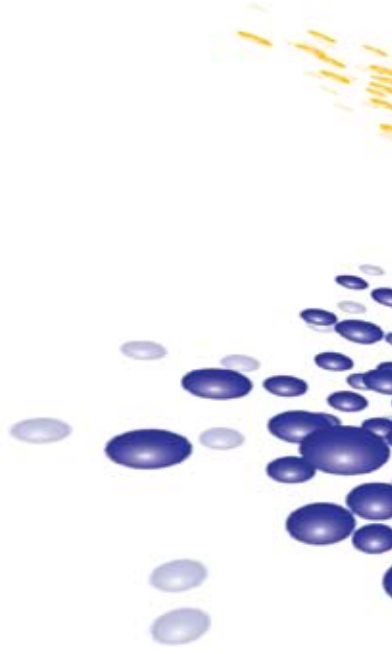
EPICS® XL™ (Beckman Coulter, Inc.)

Guava® (Guava Technologies, Inc.)

Guava® EasyCyte™ (Guava Technologies, Inc.)

MoFlo™ (Beckman Coulter, Inc.)

Quanta™ (Beckman Coulter, Inc.)



invitrogen™

www.invitrogen.com