

Standard Fluorescence Filter Sets

- AZ1000072 DAPI and Hoechst Set:
Exciter D350/50x
Dichroic 400DCLP
Emitter D460/50m
- AZ1000073 FITC FITC/RSGFP/Fluo 3/DiO Acradine Orange(+RNA) set:
Exciter D480/30x
Dichroic 505DCLP
Emitter D535/40m
- AZ1000074 TRITC (Rhodamine)/DiI/Cy3 Set:
Exciter D540/25x
Dichroic 565DCLP
Emitter D605/55m
- AZ1000075 Texas Red® / Cy3.5 Set:
Exciter D560/40x
Dichroic 595DCLP
Emitter D630/60m
- AZ1000076 Cy5, Alexa Fluor 633, Alexa Fluor 647 Set:
Exciter HQ620/60x
Dichroic Q660LP
Emitter HQ700/75m

The emission at these wavelengths will be better detected by camera than by the unaided eye. Only a small percentage of humans can detect these wavelengths.

- AZ1000077 Cyan GFP Set:
Exciter D436/20x
Dichroic 455DCLP
Emitter D480/40m

This set will typically exclude the signal from YFP but not from GFP.

- AZ1000078 Endow GFP Bandpass Emission Set:
Exciter HQ470/40x
Dichroic Q495LP
Emitter HQ525/50m

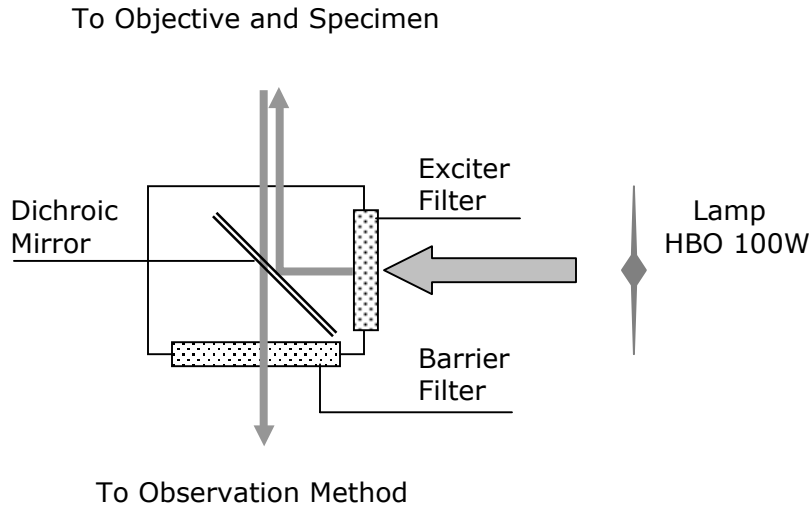
This is the recommended filter set for the newer S65T GFP mutants. It is also recommended for wtGFP for which it was originally designed.

AZ1000079 Yellow GFP BP (10C/Topaz) Set:
Exciter HQ500/20x
Dichroic Q515LP
Emitter HQ535/30m

This set is designed to image YFP. It will not, in most cases, detect CFP when co-expressed in cells. By eye, fluorescence in the 535 nm pass-band will be seen as green.

Arrangement of Filters in a Fluorescence Cube

Inverted Microscope



Nomenclature

Excitation Filter - EX

A filter used in fluorescence microscopy designed to pass only those wavelengths, which excite fluorescence.

Excitation Filter D350/50x

The center wavelength is at 350nm; full bandwidth is 50nm [= $\pm 25\text{nm}$].

In some cases when the bandwidth is not specified, the letter "x" is used to define the filter as an exciter filter and is generally used for narrow band UV excitation filters, e.g. D350x.

Dichroic Mirror - DM

The dichroic mirror is the optical component that separates the excitation light from the fluorescence. Dichroic mirror is designed to reflect selectively the shorter wavelength exciting radiation and transmit the longer wavelength fluorescence.

Dichroic mirror are placed in a 45° incidence angle to light, allowing the mirrors to act as a precise discriminator of excitation and fluorescence wavelengths.

Light passing through the excitation filter is reflected 90° toward the objective and the specimen. Finally, light emanating from the specimen is passed through and directed toward the emission filter and observation method.

Dichroic multi-layer thin-film coatings makeup typically consists of one of the following design types: short wave pass, long wave pass, or bandpass filter. These design types comprise the basis of color determination and color separation and this is determined by the transmittance and/or reflectance of a band of wavelengths.

Dichroic Beamsplitter 505DCLP

The cut-on wavelength is approximately 505nm for this dichroic longpass application.

Emission Filter - EM (Barrier filter)

Emission filter is the last component in a fluorescence cube, which transmits fluorescence emission wavelengths while blocking excitation wavelengths. Emissions filters are coloured glass or interference filters that have transmission properties of a bandpass or longpass filters.

Most interference are mounted at a slight angle to allow for better imaging by suppressing ghost images.

Emission filter D460/50m*

The center wavelength is at 460nm; full band is 50nm [= ± 25 nm].

*m –emission

Definitions of Filter Terminology

Bandpass Filters

Bandpass filters transmit a band of wavelengths and block all light above and below the specified transmission range. These filters are characterized with respect to optical performance by their centre wavelength (**CWL**) and bandwidth, also referred to as the full width at half of maximum transmission (**FWHM**). (See Figure Below)

CWL

Center wavelength

For optical bandpass filters, the arithmetic mean of the cut-on and cut-off wavelength at 50% of peak transmission.

DCLP

Dichroic Longpass.

DCXR

Dichroic Longpass, extended reflection including the UV.

FWHM

Bandpass filters are usually named by their filters center wavelength (the arithmetic means of the wavelengths at 50% of center peak transmission) and by range of wavelengths (bandwidth) of light they transmit at 50% peak transmittance (**full width half maximum, FWHM**). Example D350/50x is an interference filter with maximal transmission at 350nm and transmits light from 325 and 375nm. (See Figure Below)

GFP

The Green Fluorescent Protein (GFP) from the jellyfish *Aequorea victoria* is used as a fluorescent indicator for monitoring gene expression in a variety of cellular systems, including living organisms and fixed tissues.

The wild type GFP has a major excitation peak at a wavelength of 395 nm and a minor one at 475 nm. Its emission peak is at 509 nm which is in the lower green portion of the visible spectrum.

Due to this widespread usage different mutants of GFP have been engineered over the last few years: Color mutants have been obtained from the GFP gene as well: in particular the **cyan fluorescent protein (CFP)** and the **yellow fluorescent protein (YFP)** are two colour variants employed for **fluorescence resonance energy transfer (FRET)** experiments.

GG

Green Glass – Longpass absorption glass from Schott Glassworks with cut-on wavelengths in the violet and blue-green regions

HQ

A designation for high-performance filters with narrow cuton and cutoff wavelengths

LP

Longpass Filters

Longpass filters transmit a wide spectral band of long wavelength radiation while blocking short wavelength radiation. **(See Figure Below)**

Narrowband Filters

Narrowband filters with a very narrow band, typically 1 to 3nm wide. They can be used successfully only with high intensity light sources because of the narrow bandwidth.

ND

Neutral density filters are designed to reduce transmission evenly across a portion of the spectrum.

OG

Orange Glass - Longpass absorption glass from Schott Glassworks with cut-on wavelengths in the green, yellow and orange regions

PC

Polychromatic mirrors or beamsplitters.

These beamsplitters reflect and transmit more than two bands of light. Dual-band or Triple-band filter sets includes three carefully balanced combinations that contain dual or triple bandpass excitation and emission filters, these dedicated filter sets also incorporate polychromatic mirrors or beamsplitters with multiple bandpass characteristics, having transmission and reflection regions that are matching to the specific excitation and emission filters employed.

RG

Red Glass - Longpass absorption glass from Schott Glassworks with cut-on wavelengths in the red and far red regions

SP

Shortpass Filters

Shortpass filters transmit a wide spectral band of short wavelength radiation and block long wave radiation. **(See Figure Below)**

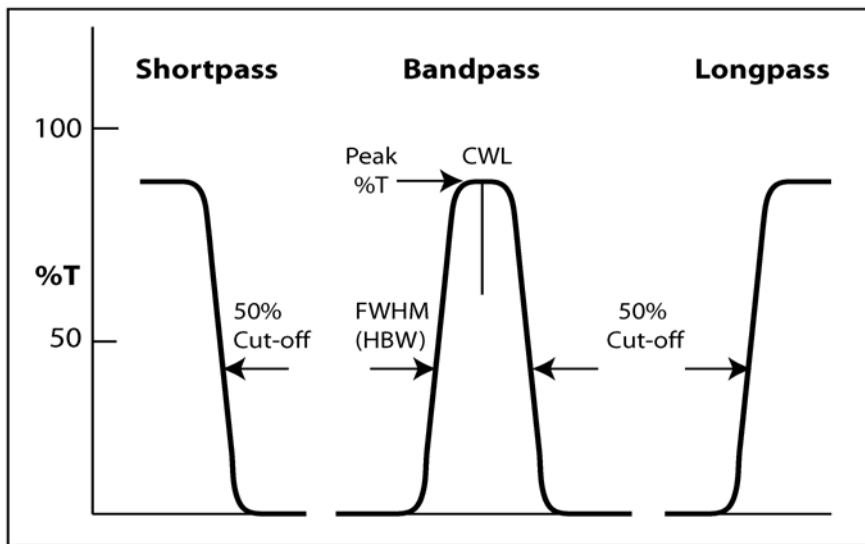
S/N

Signal to Noise Ratio

Ratio of intensity of signal to that of the background.

Stokes shift

The distance between the peak absorption and emission of a dye, usually in nm.



Filters for isolating the wavelength of illumination:

Shortpass and **longpass** filters, block or transmit wavelengths at specific cut-off wavelengths.

Bandpass filters exhibit broadband or shortband transmission centered on a particular band of wavelengths. Filters performance is defined by the central wavelength (CWL) and by the full width at half maximum (FWHM).

Excitation and Emission Maxima for Common Fluorophores					
Recommended Fluorophores					
Excitation Mode	Part No.	Fluorophore	Excitation	Emission	Comments
UV	AZ1000072	1,5 IAEDANS	336	490	
	AZ1000072	1,6 Diphenyl-1,3,5 Hexatriene (DPH)	350	430	
	AZ1000072	2,6 TNS	380	483	
	AZ1000072	7-amino-4-methylcoumarin (AMC)	345	445	
	AZ1000072	7-amino-4-methylcoumarin-3-acetic acid (AMCA)	345	425	
	AZ1000072	7-dimethylaminocoumarin-4-acetic acid (DMACA)	370	459	
	AZ1000072	ABQ	344	445	
	AZ1000072	Acridflavin Feulgen SITSA (AFA)	355-425	460	
	AZ1000072	AFA (Acridflavin Feulgen SITSA)	355-425	460	
	AZ1000072	AMC (7-amino-4-methylcoumarin)	345	445	
	AZ1000072	AMCA (7-amino-4-methylcoumarin-3-acetic acid)	345	425	
	AZ1000072	AMCA-X (6-((7-amino-4-methylcoumarin-3-acetyl) ami	353	442	
	AZ1000072	Anthrovl stearate	360-381	446	
	AZ1000072	Bisbenzamide (Hoechst 33258)	352	461	
	AZ1000072	Blancophor SV	370	435	
	AZ1000072	Calcein Blue	373	440	
	AZ1000072	CellTracker™ Blue CMAC	353	466	
	AZ1000072	CellTracker™ Blue CMF2HC	371	464	
	AZ1000072	CellTracker™ Blue CMHC	372	470	
	AZ1000072	Dansa (Diamino Naphtyl Sulphonic Acid)	340-380	430	
	AZ1000072	DMACA (7-dimethylaminocoumarin-4-acetic acid)	370	459	
	AZ1000072	Dopamine	340	490-520	
	AZ1000072	Fast Blue	360	440	
	AZ1000072	Fluorescamine	390	475	
	AZ1000072	Granular Blue	355	425	
	AZ1000072	Hoechst 33342	347	483	
	AZ1000072	Hoechst 34580	392	440	
	AZ1000072	Hydroxycoumarin (7-hydroxy-4-methylcoumarin-3-acet	360	455	
	AZ1000072	LAURDAN	364	497	
	AZ1000072	Leucophor PAF	370	430	
	AZ1000072	Leucophor SF	380	465	
	AZ1000072	Leucophor WS	395	465	
	AZ1000072	LysoSensor™ Blue (DND-167)	374	424	
	AZ1000072	LysoTracker™ Blue (DND-22)	373	422	
	AZ1000072	Marina Blue	360	465	
	AZ1000072	MEQ	344	442	
	AZ1000072	Methoxycoumarin	360	410	
	AZ1000072	MQAE	350	460	
	AZ1000072	Phorwite BKL	370	430	
	AZ1000072	Phorwite Rev	380	430	
	AZ1000072	Phorwite RPA	375	430	

	AZ1000072	Pyrozal Brilliant Flavin 7GF	365	495	
	AZ1000072	1,8-ANS	372	480	
	AZ1000072	2,6 ANS	372	480	
	AZ1000072	6-((7-amino-4-methylcoumarin-3-acetyl) amino)hexan	353	442	
	AZ1000072	Aminocoumarin	350	445	
	AZ1000072	DAPI	359	461	
	AZ1000072	DND-192	374	424	
	AZ1000072	DPH (1,6 Diphenyl-1,3,5 hexatriene)	350	430	
	AZ1000072	Hoechst 33258	352	461	
	AZ1000072	Phorwite AR Solution	360	430	
	AZ1000072	PRODAN	361	498	
	AZ1000072	Thioflavin T	350	450	
	AZ1000072	TMA-DPH	355	430	
	AZ1000072	TMAP-DPH	354	429	
	AZ1000072	True Blue	365	425	
Cyan GFP	AZ1000077	Sevron Yellow L	430	490	
(Fluorescence	AZ1000077	SYTO® 40	420	441	
Protein)	AZ1000077	SYTO® 41	430	454	
	AZ1000077	SYTO® 42	433	460	
	AZ1000077	SYTO® 43	436	467	
	AZ1000077	SYTO® 44	446	471	
	AZ1000077	SYTO® 45	452	484	
	AZ1000077	SYTOX® Blue	445	470	
	AZ1000077	POPO™-1	434	456	
	AZ1000077	POPPO+™-1	435	455	
	AZ1000077	Genacryl Brilliant Yellow 10GF	430	485	
	AZ1000077	Genacryl Yellow 5GF	430	475	
	AZ1000077	Chromomycin A	436-460	470	
	AZ1000077	Cyan GFP (CFP)	434	477	
	AZ1000077	Astrazon Yellow 7 GLL	450	480	
	AZ1000077	Atabrine	436	490	
	AZ1000077	Alizarin Complexon	530-560	624-645	
	AZ1000077	Acridine homodimer	431	498	
Blue	AZ1000073	Acridine Orange + DNA	500	526	
	AZ1000073	Acridine Yellow	470	550	
	AZ1000073	5-TAMRA (5-Carboxytetramethylrhodamine)	504	529	
	AZ1000073	5-Carboxytetramethylrhodamine (5-TAMRA)	504	529	
	AZ1000073	Astrazon Orange R	470	540	
	AZ1000073	BODIPY® 492/515	490	515	
	AZ1000073	BODIPY® 500/510	509	515	
	AZ1000073	BODIPY® 505/515	502	510	
	AZ1000073	BODIPY® FL	505	513	
	AZ1000073	CellTracker™ Green CMFDA	492	517	
	AZ1000073	Calcein	494	517	
	AZ1000073	Calcium Green™-1	506	531	
	AZ1000073	Calcium Green™-5N	506	532	

AZ1000073	FluoZin-3	494	516	
AZ1000073	FluoZin-1	495	517	
AZ1000073	FluoZin-2	494	521	
AZ1000073	Fluorescein Dichlorotriazine (DTAF)	494	520	
AZ1000073	Fluorescein(FITC)	490	525	
AZ1000073	Fluoro-Emerald	495	524	
AZ1000073	Fluo-3	480 - 506	520	
AZ1000073	Fluo-4	494	516	
AZ1000073	Fluo-4FF	494	518	
AZ1000073	Fluo-5N	493	518	
AZ1000073	FiCRhR (cyclic AMP fluorosensor)	500	517	
AZ1000073	DM-NERF	497(510)	527(536)	
AZ1000073	DiOC7	482	504	
AZ1000073	DiO	484	502	
AZ1000073	DiOC18	484	501	
AZ1000073	DiOC2(3)	482	497	
AZ1000073	DiOC5(3)	484	500	
AZ1000073	NeuroTrace™	497	524	
AZ1000073	NeuroTrace™ 500/525	500	525	
AZ1000073	MitoTracker™ Green FM	490	516	
AZ1000073	LysoTracker™ Blue/White (DPX)	466	536	
AZ1000073	Magnesium Green™	506	531	
AZ1000073	PicoGreen®	502	523	
AZ1000073	PKH67	496	520	
AZ1000073	PFB-F (pentafluorobenzoyl aminofluorescein)	492	516	
AZ1000073	Phen Green™ FL	492	517	
AZ1000073	Newport Green™ DCF	506	535	
AZ1000073	Newport Green™ PDX	490	518	
AZ1000073	Nonyl Acridine Orange	495	519	
AZ1000073	Oligreen	498	518	
AZ1000073	Oregon Green™	503	522	
AZ1000073	Oregon Green™ 488	490	514	
AZ1000073	Oregon Green™ 500	497	517	
AZ1000073	Oregon Green™ 514	506	526	
AZ1000073	Pentafluorobenzoyl aminofluorescein (PFB-F)	492	516	
AZ1000073	DiOC6(3)	484	511	
AZ1000073	DiBAC4(3)	493	516	
AZ1000073	Calcium Green™-2	506	536	
AZ1000073	Chinacrine	450-495	515	
AZ1000073	Cy2™	489	506	
AZ1000073	Aurophosphine	450-490	515	
AZ1000073	BODIPY® 493/503	500	506	
AZ1000073	Alexa 488™	495	519	
AZ1000073	5-Carboxyfluorescein (5-FAM)	492	518	
AZ1000073	5-FAM (5-Carboxyfluorescein)	492	518	
AZ1000073	Rhodamine 110	496	520	

	AZ1000073	SYTOX® Green	504	523	
	AZ1000073	SYTO® 24	490	515	
	AZ1000073	SYTO® 13	488	509	
	AZ1000073	SYTO® 16	488	518	
	AZ1000073	SYTO® 21	494	517	
	AZ1000073	SYTO® 23	499	520	
	AZ1000073	SYBR® DX	475	499	
	AZ1000073	SYBR® Gold	495	537	
	AZ1000073	SYBR® Green I	498	522	
	AZ1000073	SYBR® Green II	492	513	
	AZ1000073	SYTO® 11	508	527	
	AZ1000073	SYTO® 12	499	522	
	AZ1000073	Sodium Green™	506	532	
	AZ1000073	rsGFP	498	516	
	AZ1000073	Rhodamine Green™	502	527	
	AZ1000073	Rhodamine 123	507	529	
	AZ1000073	Phen Green™ SK	507	532	
	AZ1000073	LysoTracker™ Green (DND-26)	504	511	
	AZ1000073	Nitrobenzoxadidole	465	510-650	
	AZ1000073	Oregon Green™ 488-x	494	517	
	AZ1000073	FluorX	494	520	
	AZ1000073	DTAF (Fluorescein Dichlorotriazine)	494	520	
	AZ1000073	Fluo-5F	494	516	
	AZ1000073	fluorescein-5-(and-6)-sulfonic acid	476	519	
	AZ1000073	Fluorescein-EX	494	518	
	AZ1000073	YO-PRO™-1	491	509	
	AZ1000073	YOYO®-1	491	509	
Green	AZ1000074	Tetramethylrhodamine	555	576	
	AZ1000074	Tetramethylrhodamine Ethyl	549	574	
	AZ1000074	Tetramethylrhodamine Methyl	549	573	
	AZ1000074	Tetramethylrhosamine	550	574	
	AZ1000074	Fluoro-Ruby	555	582	
	AZ1000074	Rhodamine BG	540	572	
	AZ1000074	Rhodamine B	540	625	
	AZ1000074	Rhodamine B 200	523-557	595	
	AZ1000074	Rhodamine B extra	550	605	
	AZ1000074	Rhodamine BB	540	580	
	AZ1000074	RhodZin-1	553	582	
	AZ1000074	Sevron Brilliant Red 2B	520	595	
	AZ1000074	Sevron Brilliant Red B	530	590	
	AZ1000074	Sulphorhodamine B can C	520	595	
	AZ1000074	SYTOX® Orange	547	570	
	AZ1000074	SYTO® 85	567	583	
	AZ1000074	SYTO® 81	530	544	
	AZ1000074	SYTO® 82	541	560	
	AZ1000074	SYTO® 83	543	559	

	AZ1000074	SYTO® 84	567	582	
	AZ1000074	SYTO® 80	531	545	
	AZ1000074	Rhodamine	550	573	
	AZ1000074	Rhod-2	548(552)	-578	
	AZ1000074	Rhod-2	548(552)	-578	
	AZ1000074	Rhod-2	552	576	
	AZ1000074	Rhod-2	552	576	
	AZ1000074	CoroNaRed	547(551)	570(576)	
	AZ1000074	CellTracker™ Orange CMTMR	541	565	
	AZ1000074	Dil	549	565	
	AZ1000074	DiSBAC2(3)	535	560	
	AZ1000074	NeuroTrace™ 530/615	530	615	
	AZ1000074	PKH26 (Sigma)	551	567	
	AZ1000074	POPRO™-3	539	570	
	AZ1000074	POPO™-3	534	570	
	AZ1000074	MF31002 RedoxSensor Red CC-1		540	600
	AZ1000074	Propidium Iodide	536	617	
	AZ1000074	Pyronine B	540-590	560-650	
	AZ1000074	Magnesium Orange™	550	575	
	AZ1000074	LyoTracker™ Yellow (HCK-123)	534	551	
	AZ1000074	Merocyanine 540	555	578	
	AZ1000074	MitoTracker™ Orange	551	576	
	AZ1000074	DiIC18	550	565	
	AZ1000074	Calcium Orange™	549	576	
	AZ1000074	BODIPY® TMR	542	574	
	AZ1000074	BODIPY® TMR-X	542	574	
	AZ1000074	BODIPY® 542/563	543	563	
	AZ1000074	BODIPY® 558/568	558	569	
	AZ1000074	BODIPY® 564/570	565	571	
	AZ1000074	Alizarin Red	530-560	580	
	AZ1000074	Alexa 546™	556	573	
	AZ1000074	Alexa 555™	553	568	
Texas Red	AZ1000075	Alexa 568™	578	603	
	AZ1000075	Alexa 594™	590	617	
	AZ1000075	Alizarin Complexon	530-560	624-645	
	AZ1000075	Aminoactinomycin D	555	655	
	AZ1000075	5-ROX (Carboxy-X-Rhodamine)	578	604	
	AZ1000075	7-AAD (7-aminoactinomycin D)	546	647	
	AZ1000075	Acid Fuchsin	540	630	
	AZ1000075	7-aminoactinomycin D (7-AAD)	546	647	
	AZ1000075	BODIPY® 581/591	584	591	
	AZ1000075	BOBO™-3	570	602	
	AZ1000075	carboxy-X-rhodamine (5-ROX)	578	604	
	AZ1000075	BODIPY® TR	589	617	
	AZ1000075	Bo-Pro-3™	575	599	
	AZ1000075	Cy3.5™	581	598	

	AZ1000075	DiBAC4(5)	590	616	
	AZ1000075	MitoTracker™ Red CM-H2XRos	578	599	
	AZ1000075	MitoTracker™ Red CMXRos	578	599	
	AZ1000075	LOLO-1	566	580	
	AZ1000075	LO-PRO-1	568	581	
	AZ1000075	Lissamine Rhodamine	570	590	
	AZ1000075	Lissamine Rhodamine B	570	590	
	AZ1000075	Neutral Red	541	640	
	AZ1000075	Nile Red	552	636	
	AZ1000075	Oxonol VI	599	634	
	AZ1000075	Oxonol V	610	639	
	AZ1000075	BODIPY® 576/589	576	590	
	AZ1000075	BODIPY® 630/650x	625	640	
	AZ1000075	SYTO® 64	599	611	
	AZ1000075	SYPRO® Red	300/550	630	
	AZ1000075	Sulforhodamine 101	586	605	
	AZ1000075	Rhodamine Red™	570	590	
	AZ1000075	Rhodamine Red™-X	570	590	
	AZ1000075	LDS 751 (RNA)	590	607	
	AZ1000075	LyoTracker™ Red (DND-99)	577	592	
	AZ1000075	Texas Red®	595	620	
	AZ1000075	Texas Red®-X	595	615	
	AZ1000075	YO-PRO™-3	612	631	
	AZ1000075	X-Rhodamine	580	605	
	AZ1000075	YOYO®-3	612	620	
Cy 5	AZ1000076	TOTO®-3	642	660	
(Fluorescence	AZ1000076	YO-PRO™-3	642	661	
Protein)	AZ1000076	SYTO® 62	652	676	
	AZ1000076	SYTO® 63	657	673	
	AZ1000076	SYTO® 60	652	678	
	AZ1000076	Cy5.1 8™	649	666	
	AZ1000076	DiD	644	665	
	AZ1000076	Alexa 633™	621	639	
	AZ1000076	Nile Blue	631	660	
	AZ1000076	NeuroTrace™ 640/660	640	660	
	AZ1000076	Indodicarbocyanine	644	665	
	AZ1000076	MitoTracker™ Deep Red	644	665	
	AZ1000076	DiIC1(5)	638	658	
	AZ1000076	DiSC3(5)	651	675	
	AZ1000076	Cy5™	649	670	
	AZ1000076	BODIPY® 650/665x	646	660	
	AZ1000076	Alexa 647™	649	666	
Endow -	AZ1000078	EGFP	488	507	
GFP BP	AZ1000078	GFP (S65A)	471	504	
(Fluorescence	AZ1000078	GFP (S65C)	479	507	
Protein)	AZ1000078	GFP (S65L)	484	510	

	AZ1000078	GFP (S65T)	488	511	
	AZ1000078	sgGFP (super glow)	474	509	
Yellow -	AZ1000079	Yellow GFP (YFP)	513	527	
GFP BP					
(Fluorescence					
Protein)					

Excitation and Emission Maxima for Common Fluorophores					
Alternate Fluorophores					
Excitation Mode	Part No.	Fluorophore	Excitation	Emission	Comments
UV	AZ1000072	Cascade Blue®	377, 399	423	
	AZ1000072	Coumarin	384	470	
	AZ1000072	Dihydroethidium	355	420	
	AZ1000072	Hydroxycoumarin (7-hydroxycoumarin-3-carboxylic ac	386	448	
	AZ1000072	Nuclear Yellow (Hoechst S769121)	355	495	
	AZ1000072	SPQ	344	443	
	Cyan GFP (Fluorescence Protein)	AZ1000077	Bo-Pro-1™	462	481
AZ1000077		9-amino-6-chloro-2-methoxyacridine	412	471	
AZ1000077		ACMA	419	483	
AZ1000077		BOBO™-1	462	481	
Blue	AZ1000073	Astrazon Brilliant Red 4G	500	585	
	AZ1000073	5-(and 6-)Carboxynaphthofluorescein (low)	512	563	
	AZ1000073	6-carboxy-2', 4, 7, 7'-tetrachlorofluorescein (6-t	521	536	
	AZ1000073	6-Carboxyrhodamine 6G	518	543	
	AZ1000073	6-JOE	520	548	
	AZ1000073	6-tet (6-carboxy-2', 4, 7, 7'-tetrachlorofluoresce	521	536	
	AZ1000073	BODIPY® R6G	528	547	
	AZ1000073	BODIPY® 530/550	534	554	
	AZ1000073	DCFH (5-(and-6)-carboxy-2',7'-dichlorofluorescein)	505	535	
	AZ1000073	CellTracker™ Green BODIPY®	522	529	
	AZ1000073	CI-NERF	504(514)	540	
	AZ1000073	Hex	535	556	
	AZ1000073	GFP (S65T)	488	511	
	AZ1000073	GFP (S65A)	471	504	
	AZ1000073	GFP (S65C)	479	507	
	AZ1000073	GFP (S65L)	484	510	
	AZ1000073	Joe	520	548	
	AZ1000073	JOJO-1	530	545	
	AZ1000073	Jo-Pro1	532	544	
	AZ1000073	EGFP	488	507	
	AZ1000073	Eosin	524	545	
	AZ1000073	Erythrosin ITC	530	558	
	AZ1000073	sgGFP (super glow)	474	509	
	AZ1000073	Rhodamine 6G	525	555	
	AZ1000073	NeuroTrace™ 515/535	515	535	
AZ1000073	SYTO® 14	517	549		
AZ1000073	SYTO® 15	516	546		
AZ1000073	SYTO® 20	512	530		
AZ1000073	SYTO® 22	515	535		
AZ1000073	SYTO® 25	521	556		

	AZ1000073	TET	521	536	
	AZ1000073	TO-PRO™-1	515	531	
	AZ1000073	TOTO®-1	514	533	
	AZ1000073	Yellow GFP (YFP)	513	527	
Green	AZ1000074	Phycoerythrin B [PE]	565	575	
	AZ1000074	Phycoerythrin R [PE]	565	578	
	AZ1000074	Ethidium Bromide	510	595	
	AZ1000074	Astrazon Red 6B	520	595	
	AZ1000074	Alexa 532™	531	554	
Texas Red	AZ1000075	Calcium Crimson™	588	611	
	AZ1000075	HcRed	588	644	
	AZ1000075	Naphthofluorescein	602	672	
	AZ1000075	SYTO® 59	622	645	
	AZ1000075	SYTO® 61	628	645	
	AZ1000075	SYTO® 17	621	634	
Cy 5	AZ1000076	Naphthofluorescein	602	672	
(Fluorescence	AZ1000076	Allophycocyanin (APC)	630	660	
Protein)	AZ1000076	5-(and 6-)Carboxynaphthofluorescein (high pH)	98	668	
Endow -	AZ1000078	5-Carboxyfluorescein (5-FAM)	492	518	
GFP BP	AZ1000078	5-Carboxytetramethylrhodamine (5-TAMRA)	504	529	
(Fluorescence	AZ1000078	5-FAM (5-Carboxyfluorescein)	492	518	
Protein)	AZ1000078	5-TAMRA (5-Carboxytetramethylrhodamine)	504	529	
	AZ1000078	Alexa 488™	495	519	
	AZ1000078	Acridine Orange + DNA	500	526	
	AZ1000078	Astrazon Orange R	470	540	
	AZ1000078	BODIPY® 492/515	490	515	
	AZ1000078	Aurophosphine	450-490	515	
	AZ1000078	Calcein	494	517	
	AZ1000078	Calcium Green™-2	506	536	
	AZ1000078	Calcium Green™-5N	506	532	
	AZ1000078	BODIPY® 505/515	502	510	
	AZ1000078	BODIPY® 500/510	509	515	
	AZ1000078	Chinacrine	450-495	515	
	AZ1000078	CellTracker™ Green CMFDA	492	517	
	AZ1000078	Cy2™	489	506	
	AZ1000078	DiO	484	502	
	AZ1000078	DiBAC4(3)	493	516	
	AZ1000078	LysoTracker™ Blue/White (DPX)	466	536	
	AZ1000078	LysoTracker™ Green (DND-26)	504	511	
	AZ1000078	Magnesium Green™	506	531	
	AZ1000078	Fluorescein(FITC)	490	525	
	AZ1000078	fluorescein-5-(and-6)-sulfonic acid	476	519	
	AZ1000078	Fluorescein-EX	494	518	
	AZ1000078	Fluoro-Emerald	495	524	
	AZ1000078	FluorX	494	520	
	AZ1000078	FluoZin-1	495	517	

AZ1000078	FluoZin-2	494	521	
AZ1000078	FluoZin-3	494	516	
AZ1000078	FiCRhR (cyclic AMP fluorosensor)	500	517	
AZ1000078	Fluo-3	480 - 506	520	
AZ1000078	Fluo-4	494	516	
AZ1000078	Fluo-4FF	494	518	
AZ1000078	Fluo-5F	494	516	
AZ1000078	Fluo-5N	493	518	
AZ1000078	Fluorescein Dichlorotriazine (DTAF)	494	520	
AZ1000078	DTAF (Fluorescein Dichlorotriazine)	494	520	
AZ1000078	DiOC7	482	504	
AZ1000078	DM-NERF	497(510)	527(536)	
AZ1000078	DiOC18	484	501	
AZ1000078	DiOC2(3)	482	497	
AZ1000078	DiOC5(3)	484	500	
AZ1000078	DiOC6(3)	484	511	
AZ1000078	NeuroTrace™	497	524	
AZ1000078	Maxilon Brilliant Flavin 10 GFF	450	495	
AZ1000078	Maxilon Brilliant Flavin 8 GFF	460	495	
AZ1000078	MitoTracker™ Green FM	490	516	
AZ1000078	Newport Green™ DCF	506	535	
AZ1000078	NeuroTrace™ 500/525	500	525	
AZ1000078	Newport Green™ PDX	490	518	
AZ1000078	Nonyl Acridine Orange	495	519	
AZ1000078	Nylosan Brilliant Flavin E8G	460	510	
AZ1000078	Oligreen	498	518	
AZ1000078	Oregon Green™	503	522	
AZ1000078	Oregon Green™ 488	490	514	
AZ1000078	Oregon Green™ 488-x	494	517	
AZ1000078	Oregon Green™ 500	497	517	
AZ1000078	Oregon Green™ 514	506	526	
AZ1000078	Pararosaniline (Feulgen)	460	510	
AZ1000078	PicoGreen®	502	523	
AZ1000078	PKH67	496	520	
AZ1000078	Rhodamine 110	496	520	
AZ1000078	Pentafluorobenzoyl aminofluorescein (PFB-F)	492	516	
AZ1000078	PFB-F (pentafluorobenzoyl aminofluorescein)	492	516	
AZ1000078	Phen Green™ FL	492	517	
AZ1000078	Phen Green™ SK	507	532	
AZ1000078	Rhodamine 5 GLD	470	565	
AZ1000078	Rhodamine 123	507	529	
AZ1000078	Rhodamine Green™	502	527	
AZ1000078	rsGFP	498	516	
AZ1000078	Sodium Green™	506	532	
AZ1000078	SYBR® DX	475	499	
AZ1000078	SYBR® Gold	495	537	

	AZ1000078	SYTO® 16	488	518	
	AZ1000078	SYTO® 13	488	509	
	AZ1000078	SYBR® Green I	498	522	
	AZ1000078	SYBR® Green II	492	513	
	AZ1000078	SYTO® 11	508	527	
	AZ1000078	SYTO® 12	499	522	
	AZ1000078	SYTOX® Green	504	523	
	AZ1000078	wtGFP	395/475	509	
	AZ1000078	SYTO® 24	490	515	
	AZ1000078	SYTO® 23	499	520	
	AZ1000078	SYTO® 21	494	517	
	AZ1000078	YO-PRO™-1	491	509	
	AZ1000078	YOYO®-1	491	509	
Yellow -	AZ1000079	YO-PRO™-1	491	509	
GFP BP	AZ1000079	YOYO®-1	491	509	
(Fluorescence	AZ1000079	SYTO® 21	494	517	
Protein)	AZ1000079	SYTO® 23	499	520	
	AZ1000079	SYTO® 24	490	515	
	AZ1000079	SYTOX® Green	504	523	
	AZ1000079	SYTO® 12	499	522	
	AZ1000079	SYTO® 11	508	527	
	AZ1000079	SYBR® Green II	492	513	
	AZ1000079	SYBR® Green I	498	522	
	AZ1000079	SYTO® 13	488	509	
	AZ1000079	SYTO® 16	488	518	
	AZ1000079	SYBR® Gold	495	537	
	AZ1000079	SYBR® DX	475	499	
	AZ1000079	Sodium Green™	506	532	
	AZ1000079	rsGFP	498	516	
	AZ1000079	Rhodamine Green™	502	527	
	AZ1000079	Rhodamine 123	507	529	
	AZ1000079	Phen Green™ SK	507	532	
	AZ1000079	Phen Green™ FL	492	517	
	AZ1000079	PFB-F (pentafluorobenzoyl aminofluorescein)	492	516	
	AZ1000079	Pentafluorobenzoyl aminofluorescein (PFB-F)	492	516	
	AZ1000079	Rhodamine 110	496	520	
	AZ1000079	PKH67	496	520	
	AZ1000079	PicoGreen®	502	523	
	AZ1000079	Oregon Green™ 514	506	526	
	AZ1000079	Oregon Green™ 500	497	517	
	AZ1000079	Oregon Green™ 488-x	494	517	
	AZ1000079	Oregon Green™ 488	490	514	
	AZ1000079	Oregon Green™	503	522	
	AZ1000079	Oligreen	498	518	
	AZ1000079	Nonyl Acridine Orange	495	519	
	AZ1000079	Newport Green™ PDX	490	518	

AZ1000079	Newport Green™ DCF	506	535	
AZ1000079	NeuroTrace™ 500/525	500	525	
AZ1000079	MitoTracker™ Green FM	490	516	
AZ1000079	NeuroTrace™	497	524	
AZ1000079	DiOC5(3)	484	500	
AZ1000079	DiOC2(3)	482	497	
AZ1000079	DiOC18	484	501	
AZ1000079	DiO	484	502	
AZ1000079	DiOC7	482	504	
AZ1000079	DiOC6(3)	484	511	
AZ1000079	DM-NERF	497(510)	527(536)	
AZ1000079	DTAF (Fluorescein Dichlorotriazine)	494	520	
AZ1000079	Fluo-5N	493	518	
AZ1000079	Fluo-5F	494	516	
AZ1000079	Fluo-4FF	494	518	
AZ1000079	Fluo-4	494	516	
AZ1000079	Fluo-3	480 - 506	520	
AZ1000079	FiCRhR (cyclic AMP fluorosensor)	500	517	
AZ1000079	FluoZin-2	494	521	
AZ1000079	FluoZin-1	495	517	
AZ1000079	FluorX	494	520	
AZ1000079	Fluoro-Emerald	495	524	
AZ1000079	Fluorescein-EX	494	518	
AZ1000079	fluorescein-5-(and-6)-sulfonic acid	476	519	
AZ1000079	Fluorescein(FITC)	490	525	
AZ1000079	Fluorescein Dichlorotriazine (DTAF)	494	520	
AZ1000079	Magnesium Green™	506	531	
AZ1000079	LysoTracker™ Green (DND-26)	504	511	
AZ1000079	FluoZin-3	494	516	
AZ1000079	DiBAC4(3)	493	516	
AZ1000079	CI-NERF	504(514)	540	
AZ1000079	Calcium Green™-5N	506	532	
AZ1000079	CellTracker™ Green CMFDA	492	517	
AZ1000079	Chinacrine	450-495	515	
AZ1000079	BODIPY® 500/510	509	515	
AZ1000079	BODIPY® 492/515	490	515	
AZ1000079	BODIPY® 493/503	500	506	
AZ1000079	BODIPY® 505/515	502	510	
AZ1000079	BODIPY® FL	505	513	
AZ1000079	Calcium Green™-2	506	536	
AZ1000079	Calcium Green™-1	506	531	
AZ1000079	Aurophosphine	450-490	515	
AZ1000079	Astrazon Orange R	470	540	
AZ1000079	Acridine Orange + DNA	500	526	
AZ1000079	Alexa 488™	495	519	
AZ1000079	5-TAMRA (5-Carboxytetramethylrhodamine)	504	529	

AZ1000079	5-FAM (5-Carboxyfluorescein)	492	518	
AZ1000079	5-Carboxytetramethylrhodamine (5-TAMRA)	504	529	
AZ1000079	5-Carboxyfluorescein (5-FAM)	492	518	
AZ1000079	2', 4', 5', 7'-Tetrabromosulfonefluorescein	524	544	
AZ1000079	5-(and 6-)Carboxynaphthofluorescein (low)	512	563	

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