



Cytek® Aurora Fluorochrome Selection Guidelines 4 Laser 16UV-16V-14B-8R

Aurora Detectors – 4 Laser

Laser	Channel	Center Wavelength (nm)	Bandwidth (nm)	Wavelength Start (nm)	Wavelength End (nm)
Ultraviolet	UV1	372	15	365	380
	UV2	387	15	380	395
	UV3	427	15	420	435
	UV4	443	15	435	450
	UV5	458	15	450	465
	UV6	473	15	465	480
	UV7	514	28	500	528
	UV8	542	28	528	556
	UV9	581	31	566	597
	UV10	612	31	597	628
	UV11	664	27	650	677
	UV12	691	28	677	705
	UV13	720	29	705	734
	UV14	750	30	735	765
	UV15	780	30	765	795
	UV16	812	34	795	829

Laser	Channel	Center Wavelength (nm)	Bandwidth (nm)	Start (nm)	End (nm)
Violet	V1	427.5	15	420	435
	V2	443	15	436	451
	V3	458	15	451	466
	V4	473	15	466	481
	V5	508	20	498	518
	V6	524.5	17	516	533
	V7	541.5	17	533	550
	V8	580.5	19	571	590
	V9	598	20	588	608
	V10	615	20	605	625
	V11	664	27	651	678
	V12	691.5	28	678	706
	V13	720	29	706	735
	V14	749.5	30	735	765
	V15	779.5	30	765	795
	V16	811.5	34	795	829

Laser	Channel	Center Wavelength (nm)	Bandwidth (nm)	Start (nm)	End (nm)
Blue Laser	B1	508	20	498	518
	B2	524.5	17	516	533
	B3	541.5	17	533	550
	B4	580.5	19	571	590
	B5	598	20	588	608
	B6	615	20	605	625
	B7	660	17	652	669
	B8	678	18	669	687
	B9	697	19	688	707
	B10	717	20	707	727
	B11	738	21	728	749
	B12	760	23	749	772
	B13	783	23	772	795
	B14	811.5	34	795	829

Laser	Channel	Center Wavelength (nm)	Bandwidth (nm)	Start (nm)	End (nm)
Red Laser	R1	660	17	652	669
	R2	678	18	669	687
	R3	697	19	688	707
	R4	717	20	707	727
	R5	738	21	728	749
	R6	760	23	749	772
	R7	783	23	772	795
	R8	811.5	34	795	829

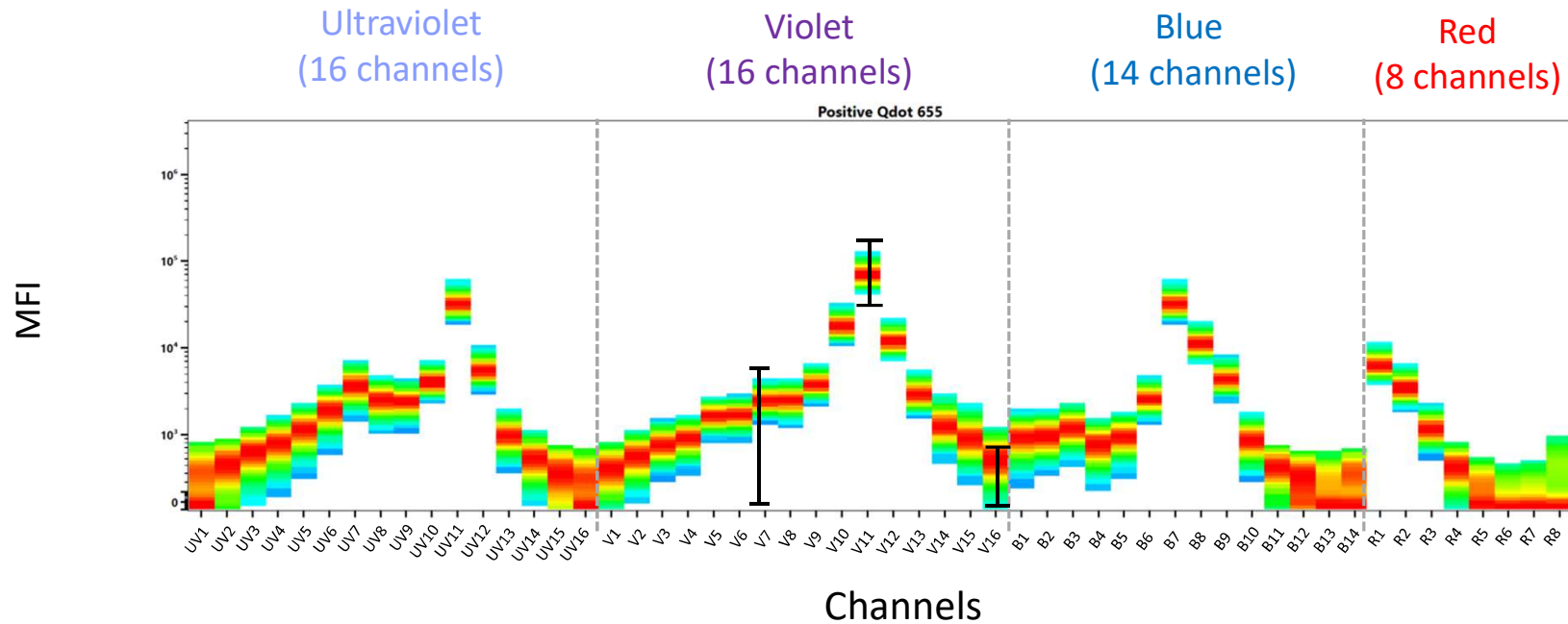


Fluorochrome Signatures

Dyes can be used in combination as long as they have a unique spectrum signature.

When designing a multicolor panel, you should look for dyes with unique spectra and also consider spread introduced by the dyes (see slide 28).

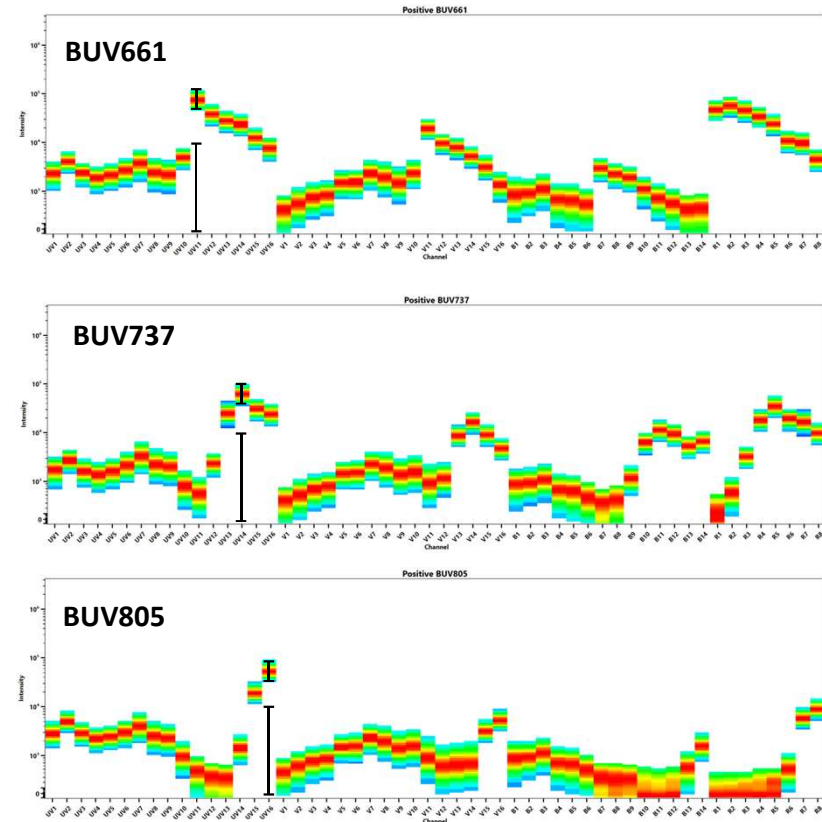
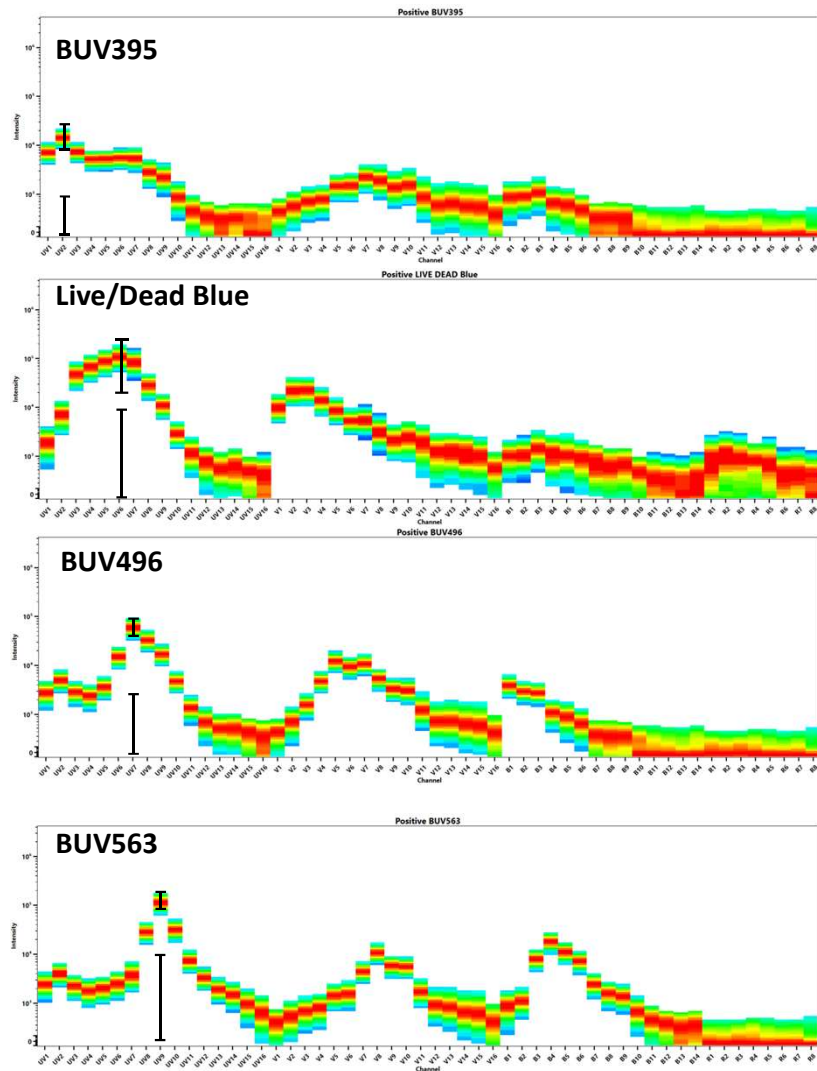
How to Read Full Spectrum Fluorochrome Signatures



This dye is excited by all 5 lasers. The peak channel (indicated by the black bar) is in channel V11, and it has secondary emission in channels UV11, B7, and R1. Based on this information, expect this dye to introduce spread into dyes emitting at similar wavelengths.

Dyes Primarily Excited by the Ultraviolet Laser

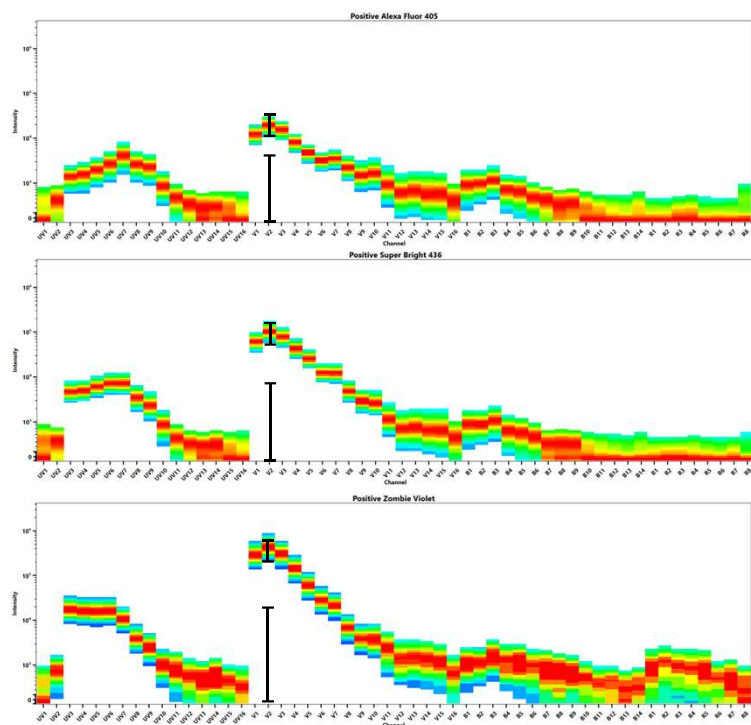
Ultraviolet Laser Excitable Dyes with Unique Signatures



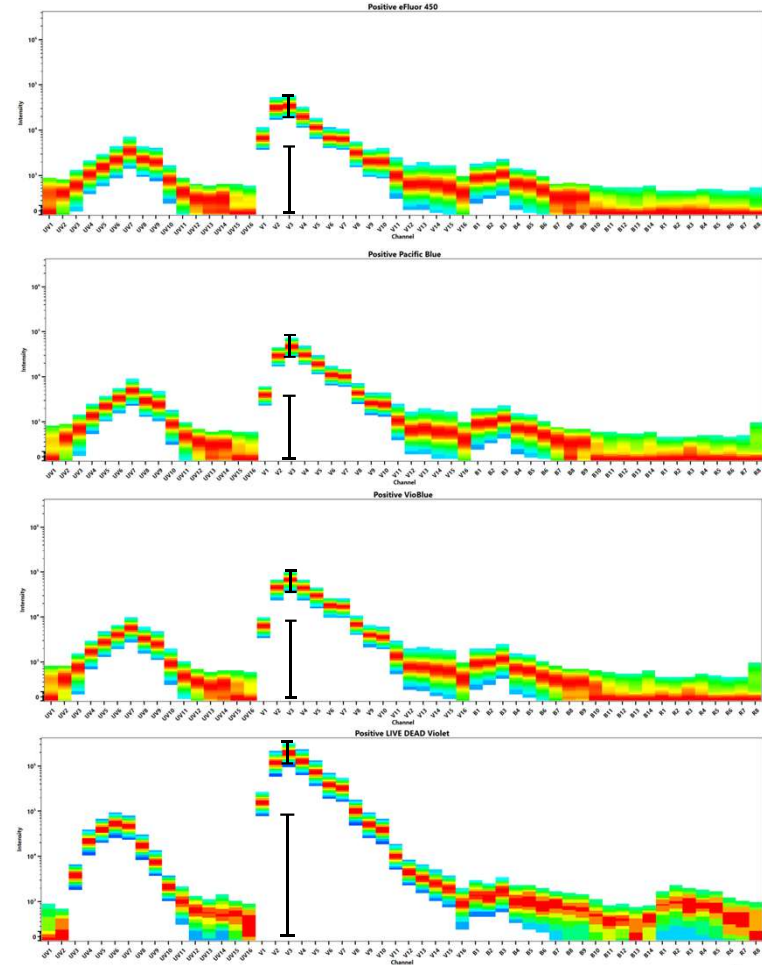
Dyes Primarily Excited by the Violet Laser

Violet Laser Excitable Dyes with Similar Signatures

Alexa Fluor 405, Super Bright 436 and Zombie Violet

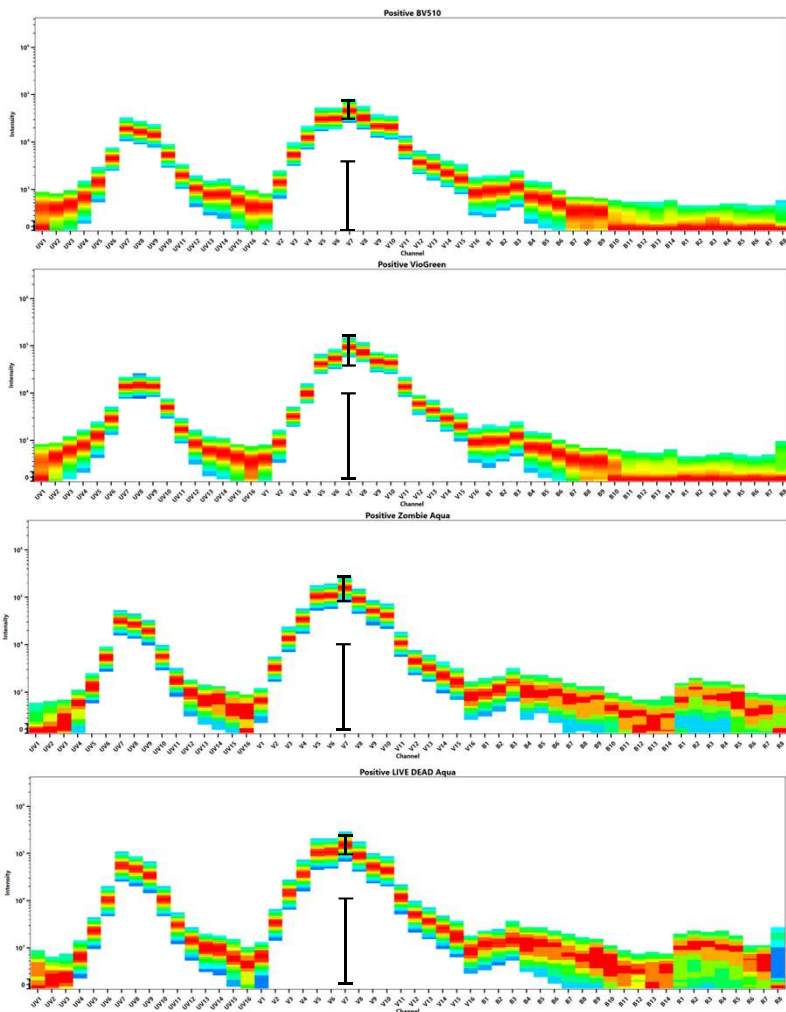


eFluor 450, VioBlue, Pacific Blue and Live/Dead Violet

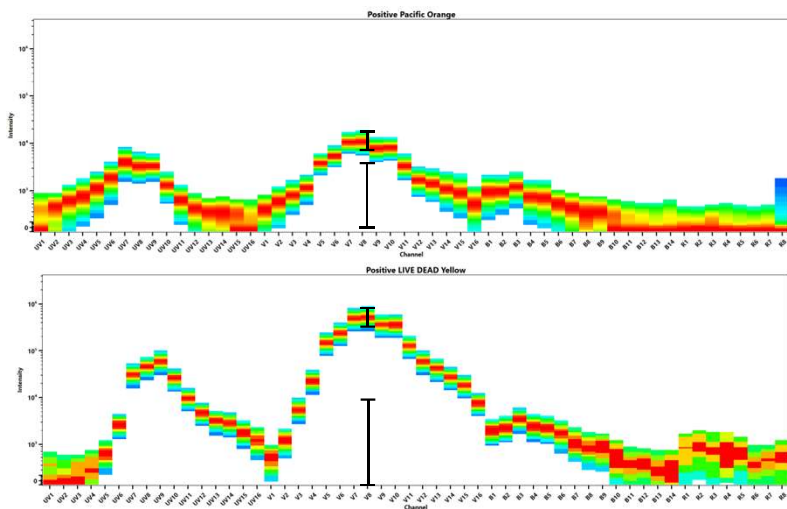


Violet Laser Excitable Dyes with Similar Signatures

BV510, VioGreen, Zombie Aqua and Live/Dead Aqua

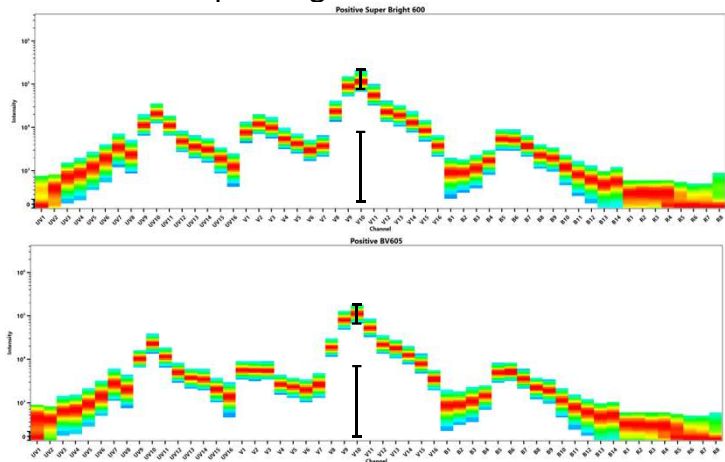


Pacific Orange and Live/Dead Yellow

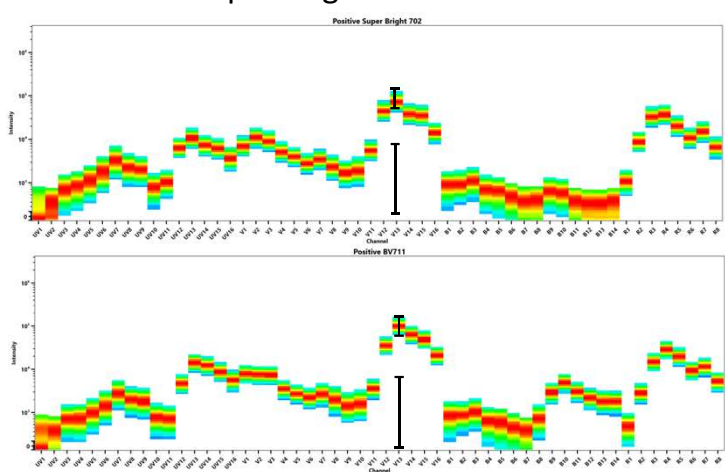


Violet Laser Excitable Dyes with Similar Signatures

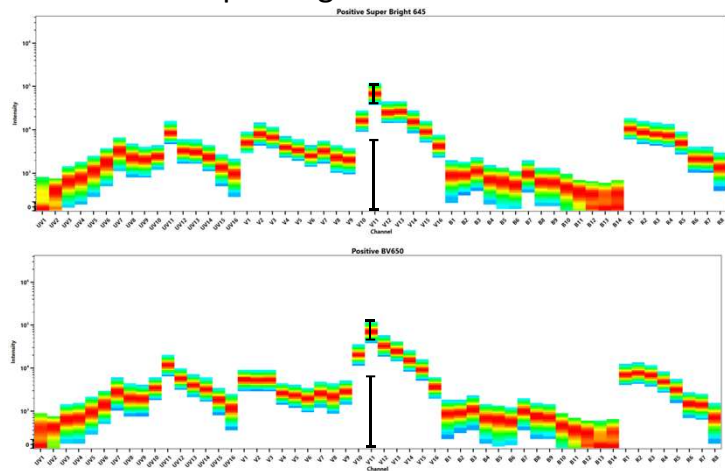
Super Bright 600 and BV605



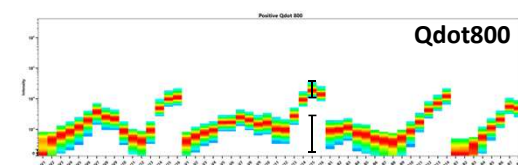
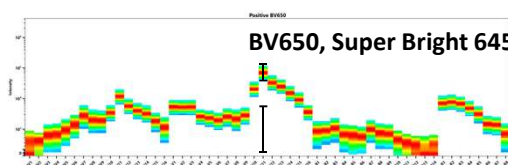
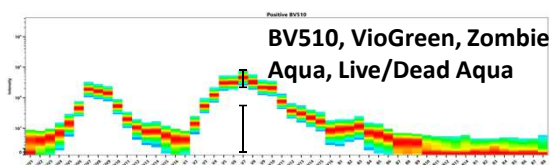
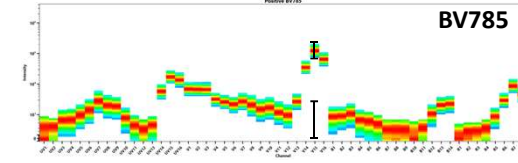
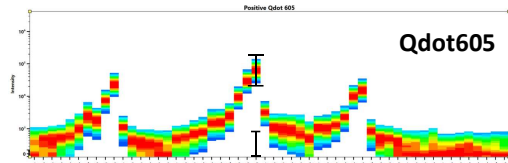
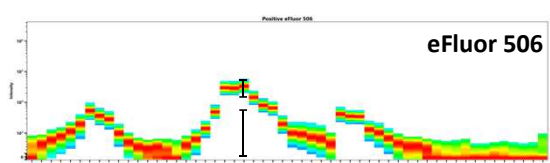
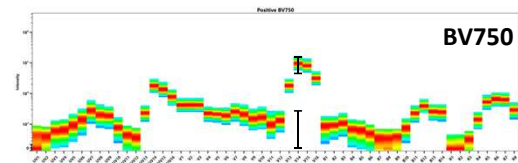
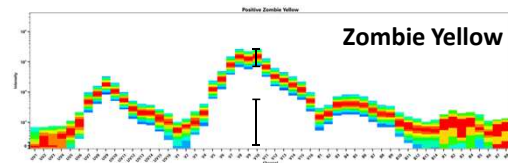
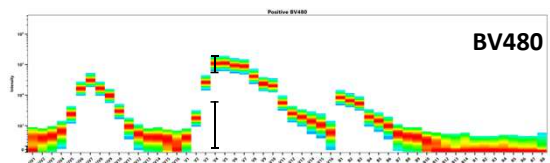
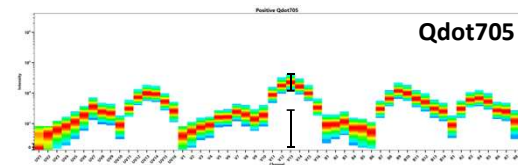
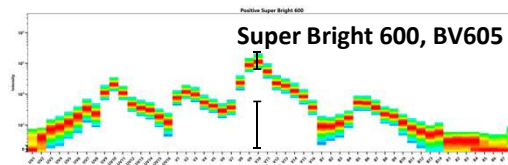
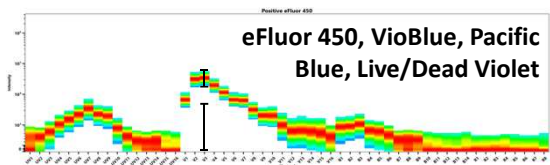
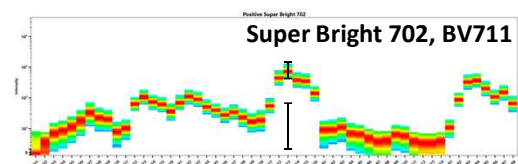
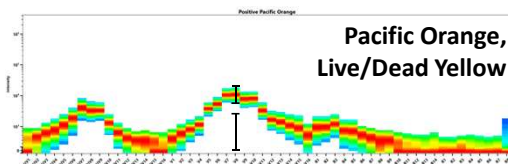
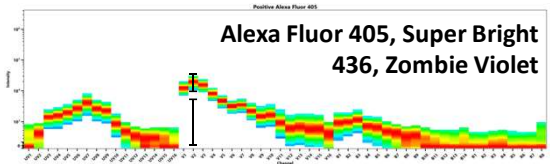
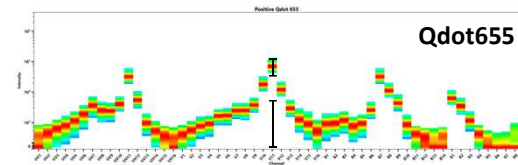
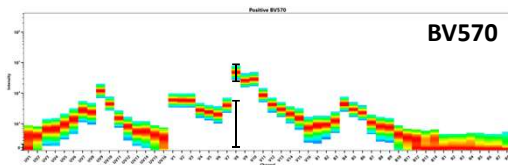
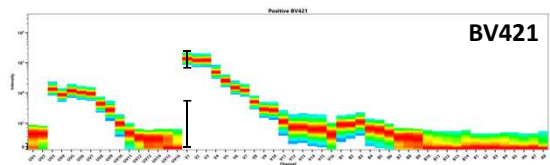
Super Bright 702 and BV711



Super Bright 645 and BV650



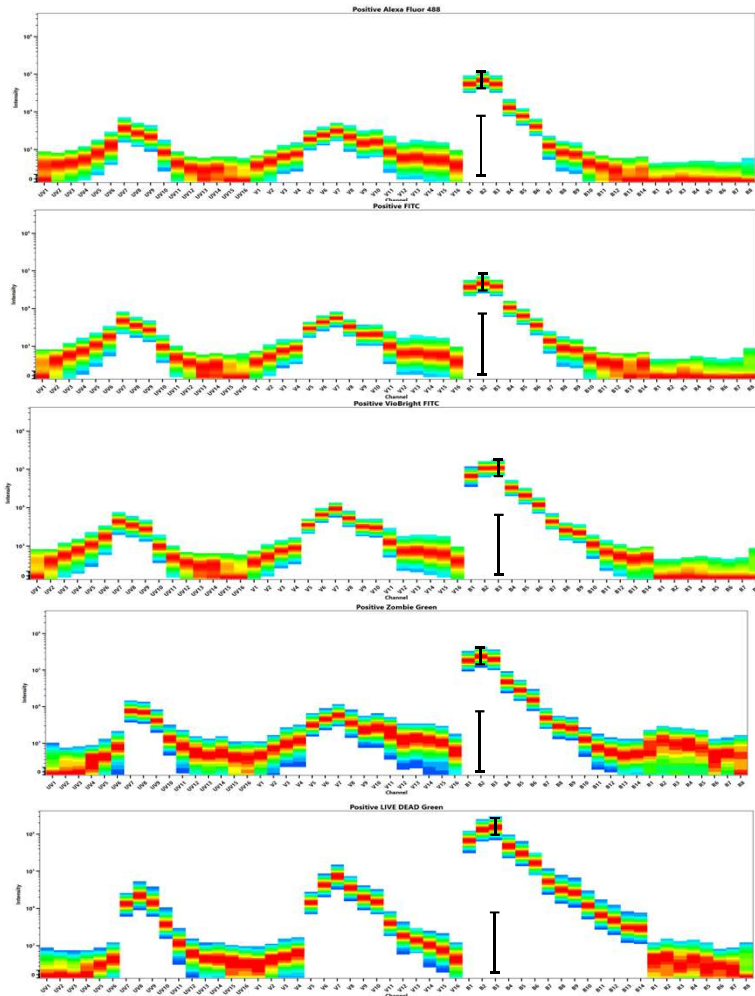
Violet Laser Excitable Dyes with Unique Signatures



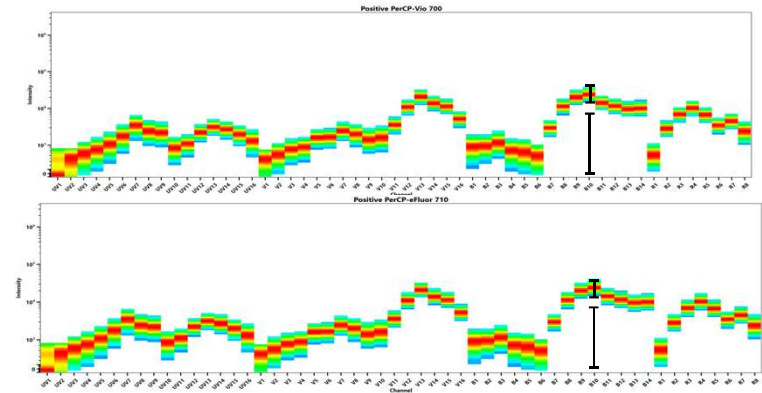
Dyes Primarily Excited by the Blue Laser

Blue Laser Excitable Dyes with Similar Signatures

Alexa Fluor 488, FITC, VioBright FITC, Zombie Green and Live Dead Green

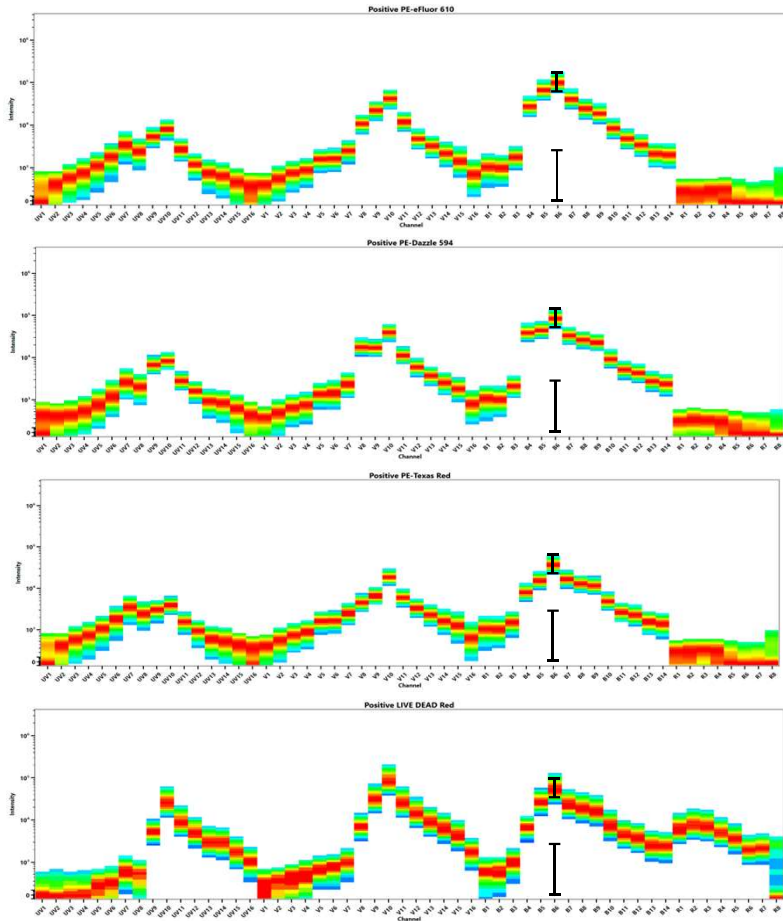


PerCP-Vio 700 and PerCP-eFluor 710

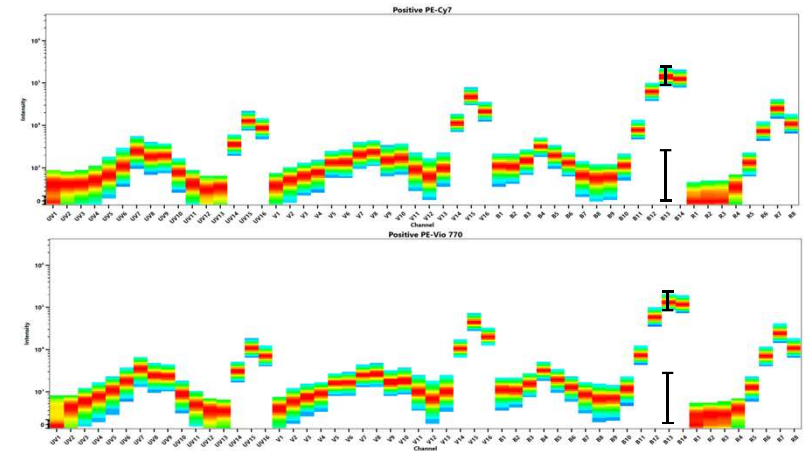


Blue Laser Excitable Dyes with Similar Signatures

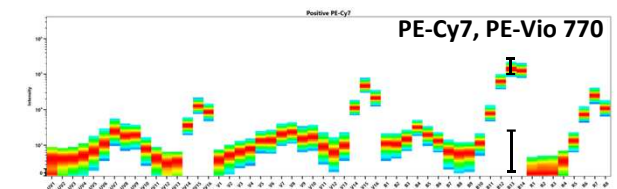
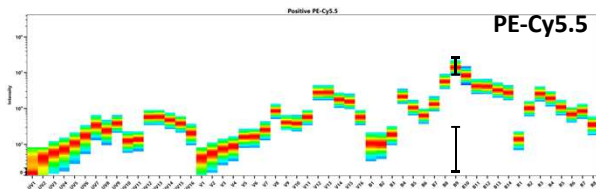
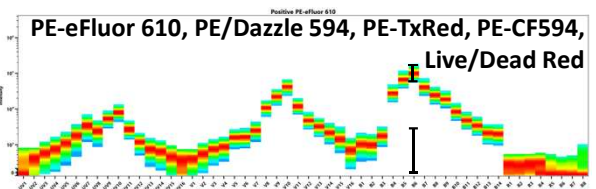
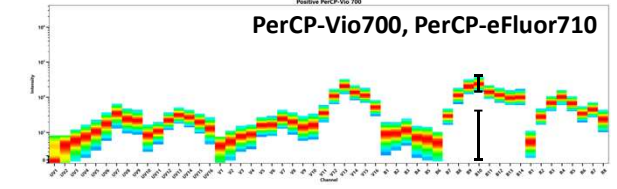
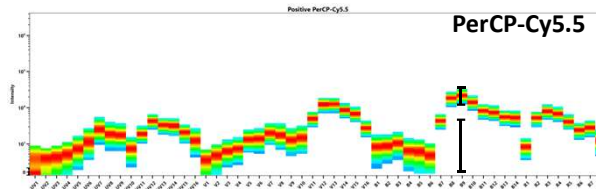
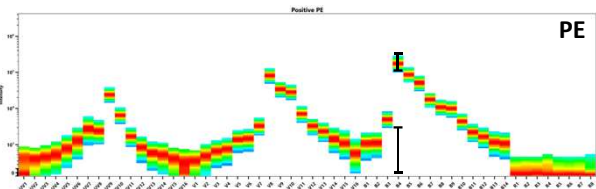
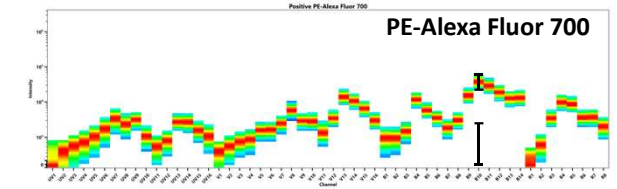
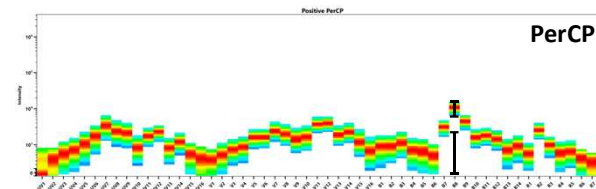
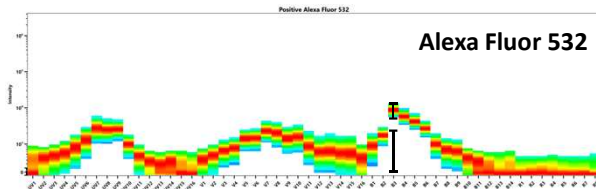
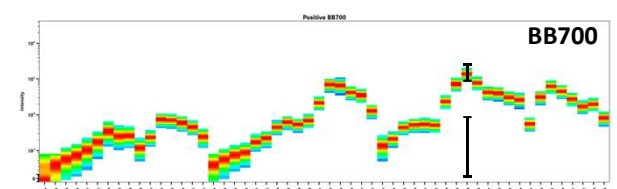
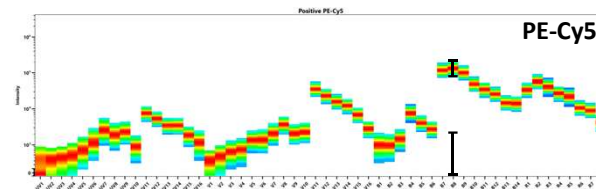
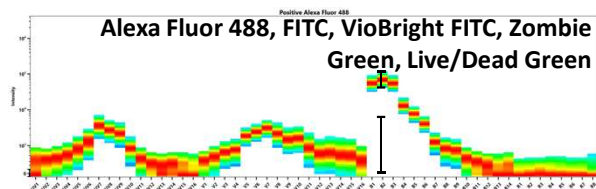
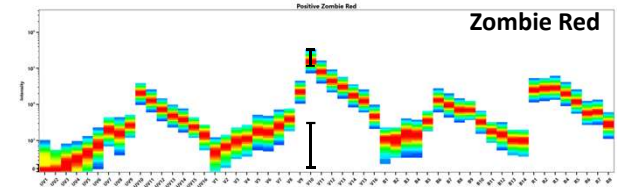
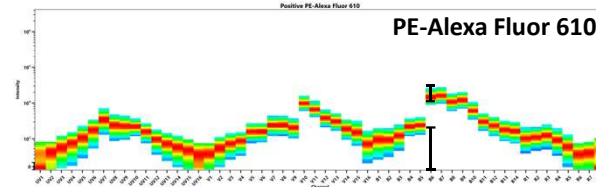
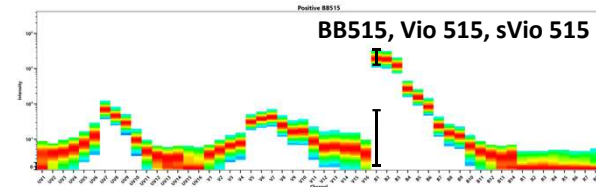
PE-eFluor 610, PE/Dazzle 594, PE-CF594, PE-Texas Red and
Live Dead Red



PE-Cy7 and PE-Vio 770



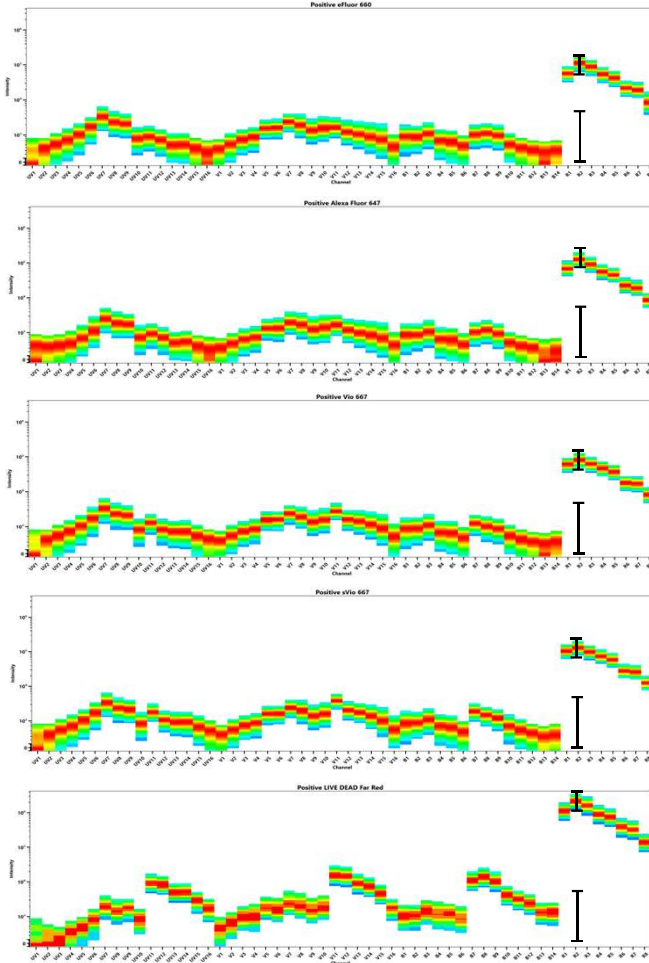
Blue Laser Excitable Dyes with Unique Signatures



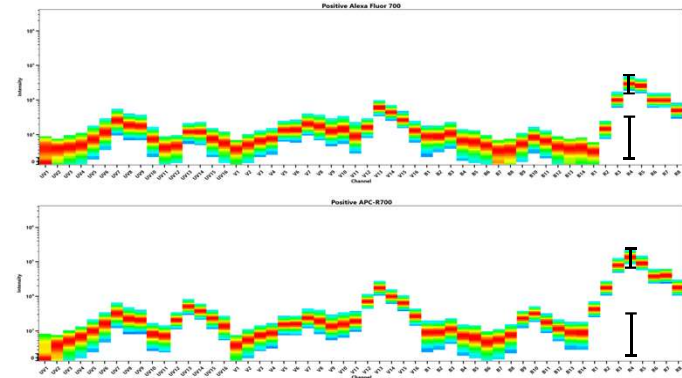
Dyes Primarily Excited by the
Red Laser

Red Laser Excitable Dyes with Similar Signatures (1 of 2)

eFluor 660, Alexa Fluor 647, Vio 667, sVio 667 and
Live/Dead Far Red

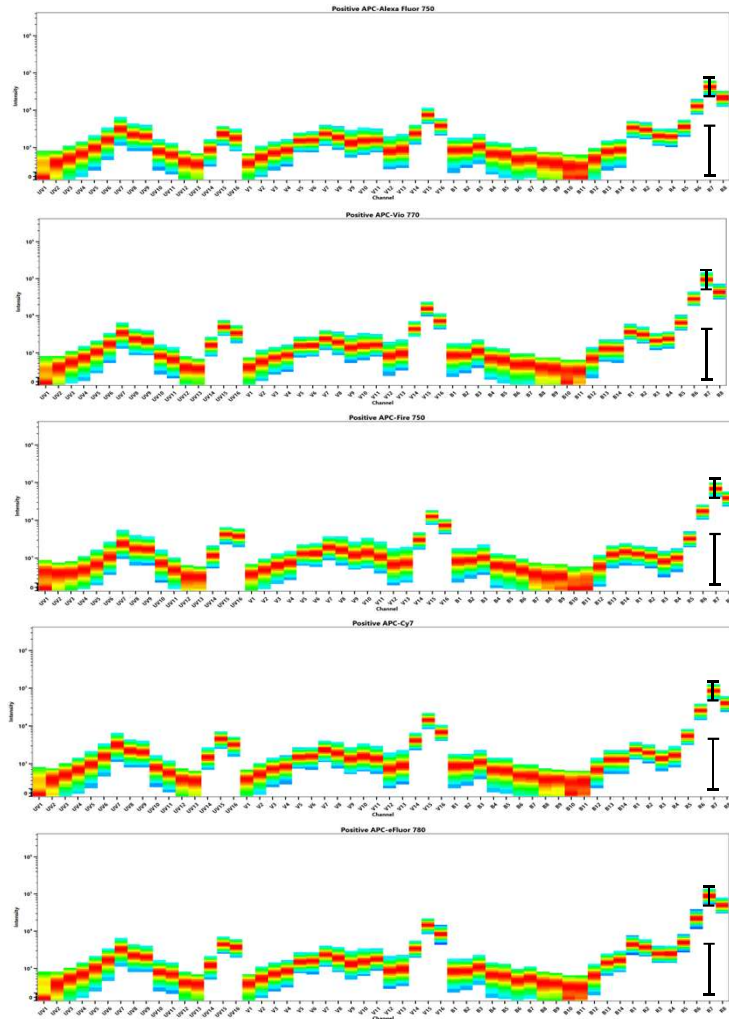


Alexa Fluor 700 and APC-R700

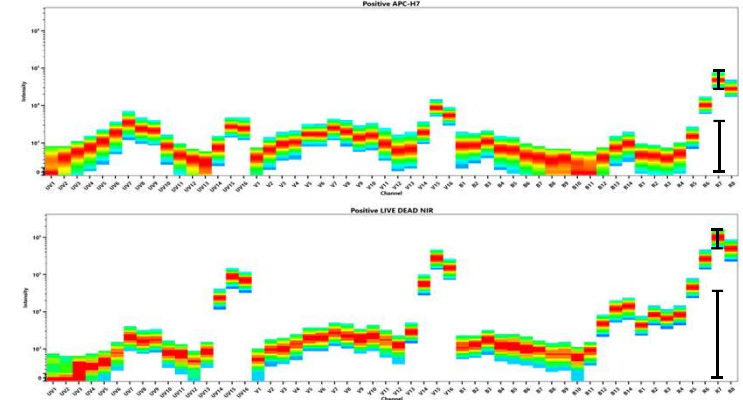


Red Laser Excitable Dyes with Similar Signatures (2 of 2)

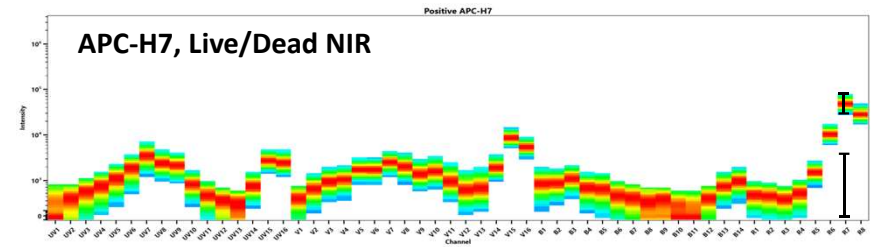
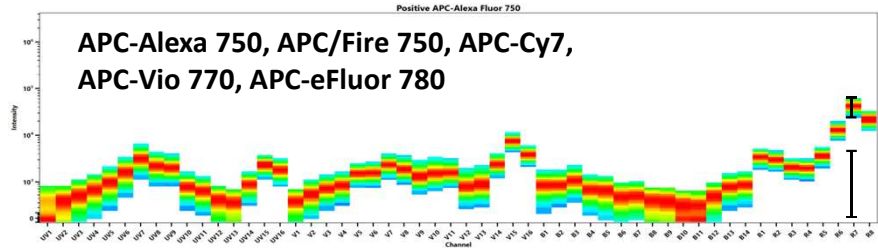
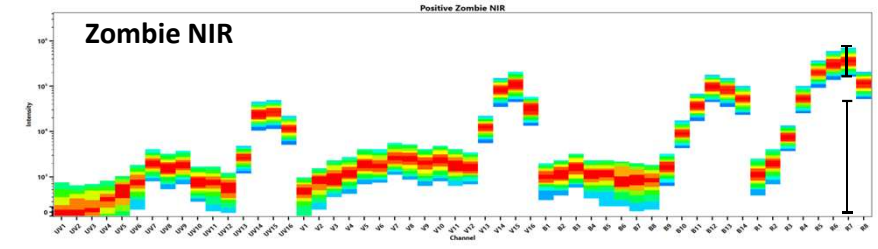
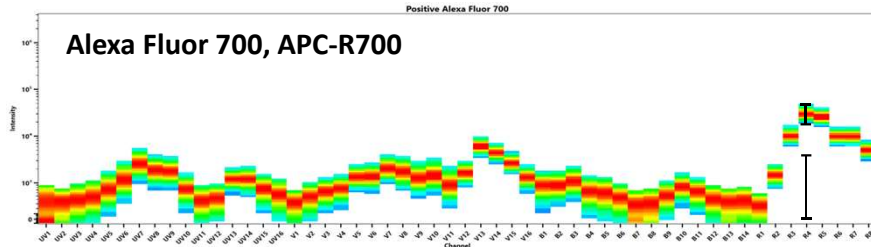
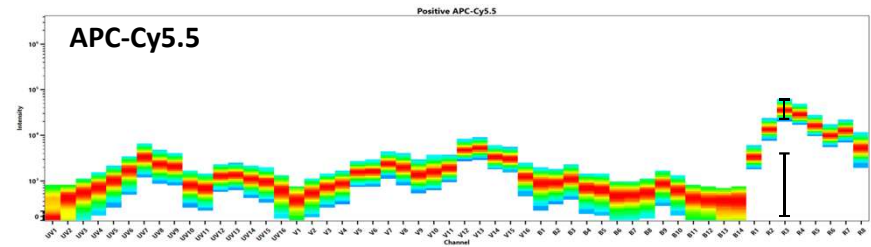
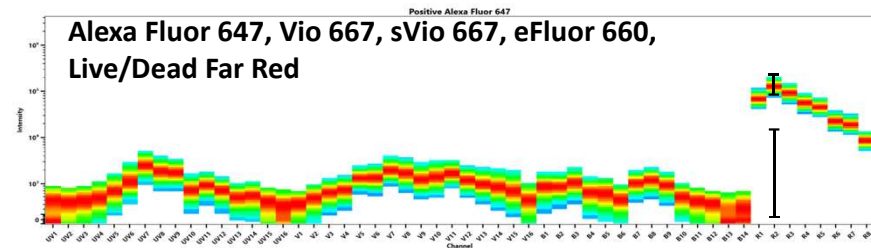
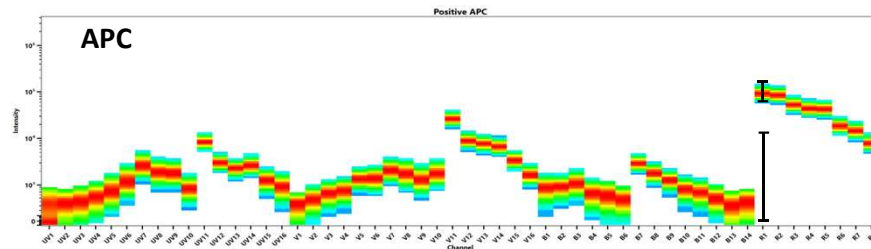
APC-Alexa 750, APC-Vio 770, APC/Fire 750, APC-Cy7 and APC-eFluor 780



APC-H7 and Live/Dead NIR

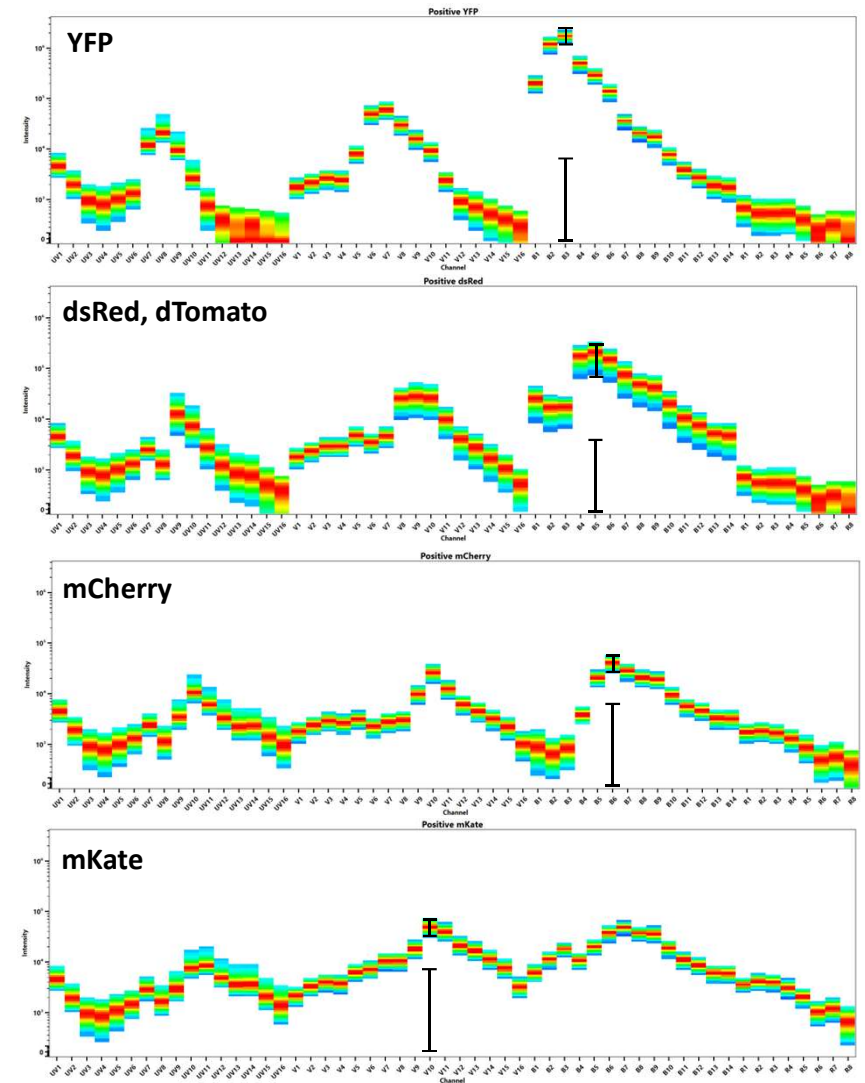
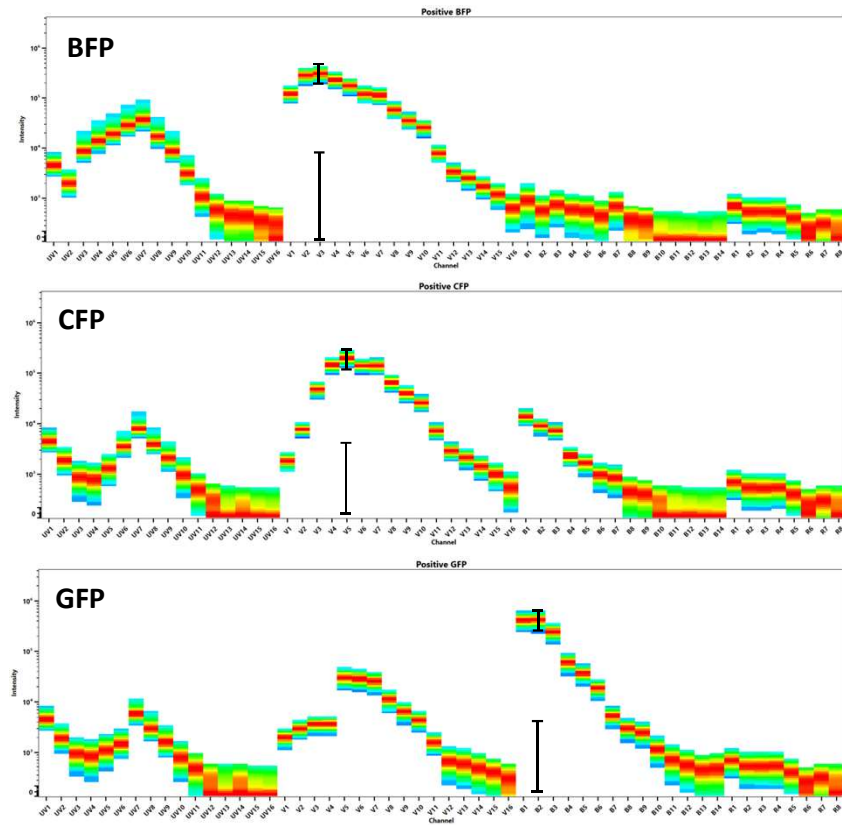


Red Laser Excitable Dyes with Unique Signatures



Fluorescent Protein Signatures

Fluorescent Proteins



Peak Channels & Possible Combination of Dyes

Fluorochrome Peak Channels

UV Excited Fluors	Peak Channel
BUV395	UV2
BUV496	UV7
BUV563	UV9
BUV661	UV11
BUV737	UV14
BUV805	UV16
Violet Excited Fluors	Peak Channel
BV421	V1
Alexa 405, SuperBright 436	V2
efluor450 , VioBlue, Pacific Blue	V3
BV480	V4
eFluor 506	V5
BV510, VioGreen	V7
BV570, Pacific Orange	V8
BV605, SuperBright 600, Qdot 605	V10
BV650, SuperBright 645, Qdot 655	V11
BV711, Super Bright 702, Qdot705	V13
BV750	V14
BV785, BV786, Qdot 800	V15
Blue Excited Fluors	Peak Channel
Vio 515, sVio 515, BB515	B1
Alexa Fluor 488, FITC, VioBright FITC	B2
Alexa Fluor 532	B3
PE	B4
PE-Dazzle 594, PE-CF 594, PE-TexasRed, PE-efluor 610, PE-Alexa Fluor 610	B6
PerCP, PE-Cy5	B8
PerCP-Cy5.5, BB700, PE-Cy5.5, PE- AlexaFluor 700	B9
PerCP-eFluor 710, PerCP-Vio 700	B10
PE-Cy7, PE-Vio 770	B13
Red Excited Fluors	Peak Channel
APC	R1
Alexa647, Vio 667, sVio 667, efluor660	R2
Alexa 700, APC-R700	R4
APC-Alexa750, APC/Fire 750, APC-Cy7, APC-Vio 770, APC-efluor780, APC-H7	R7

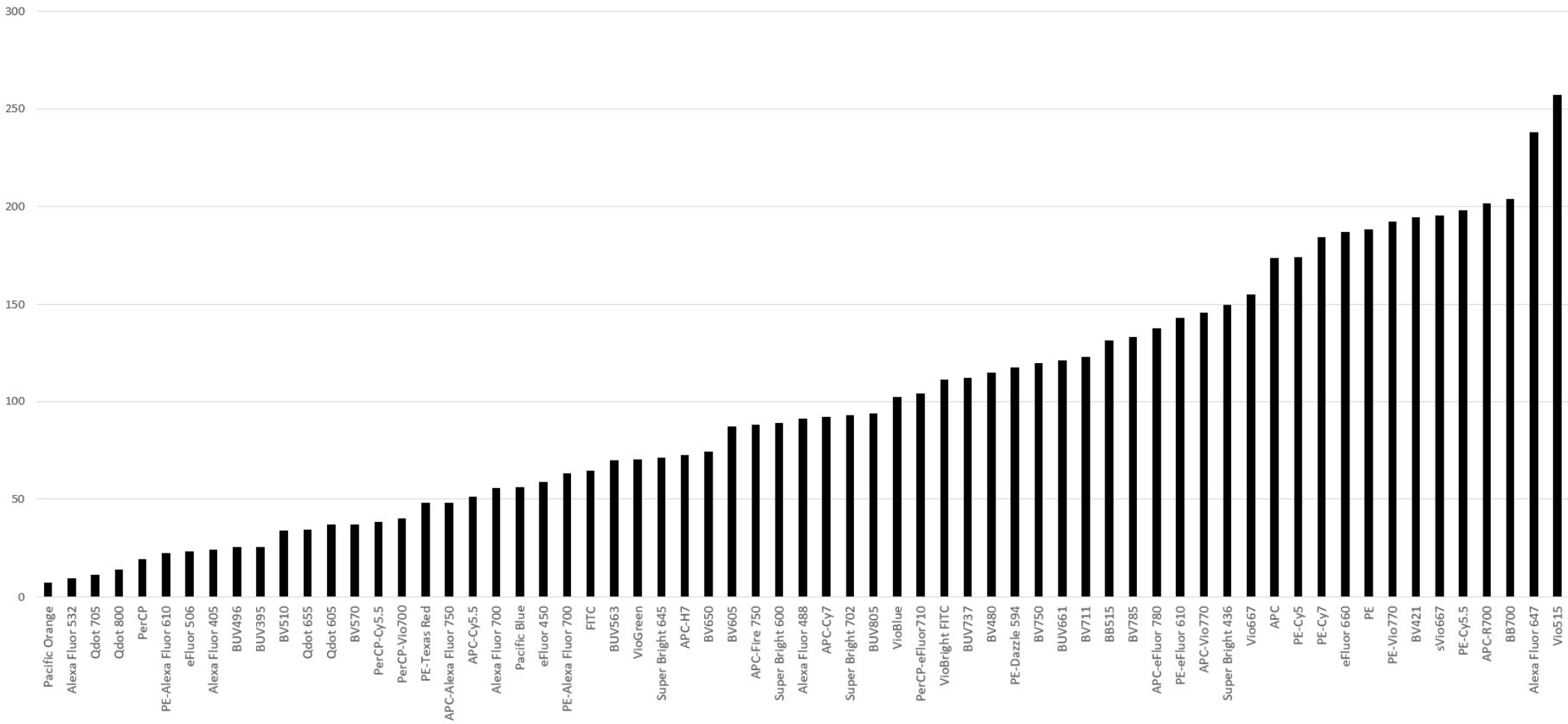
Example of 30 Dyes that can be Used in Combination (CAREFUL PANEL DESIGN IS NEEDED)

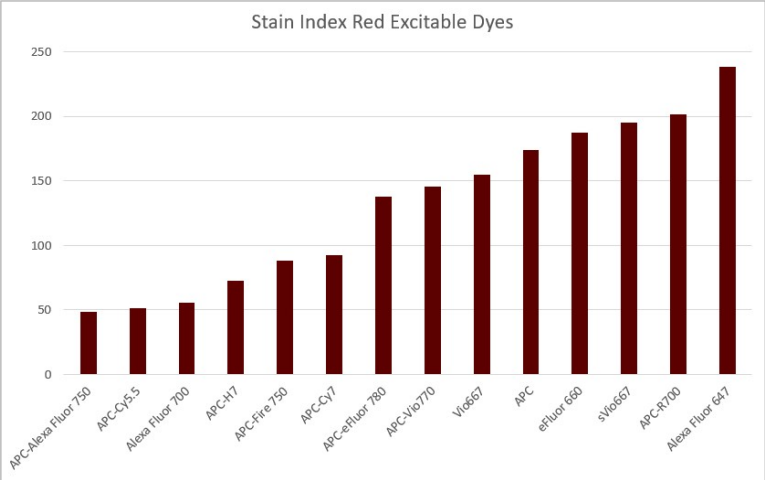
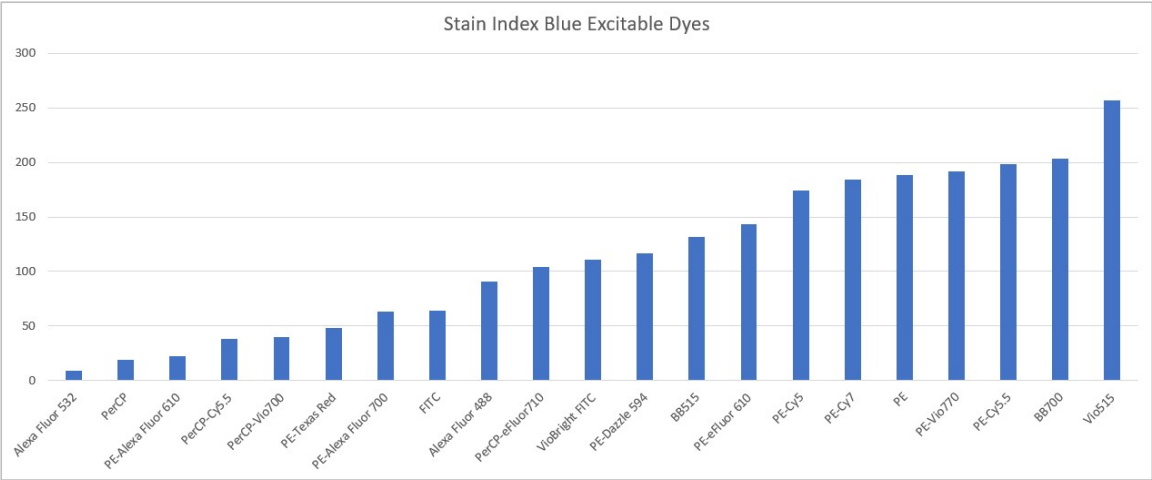
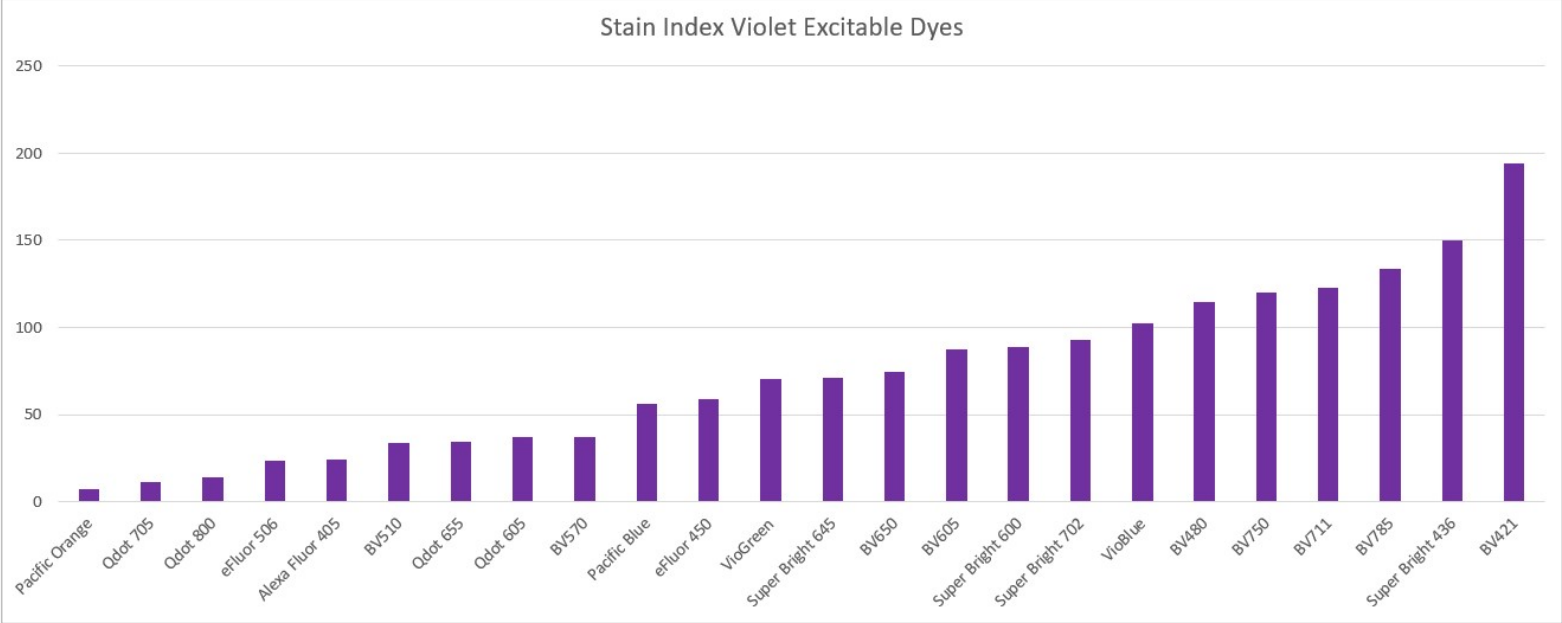
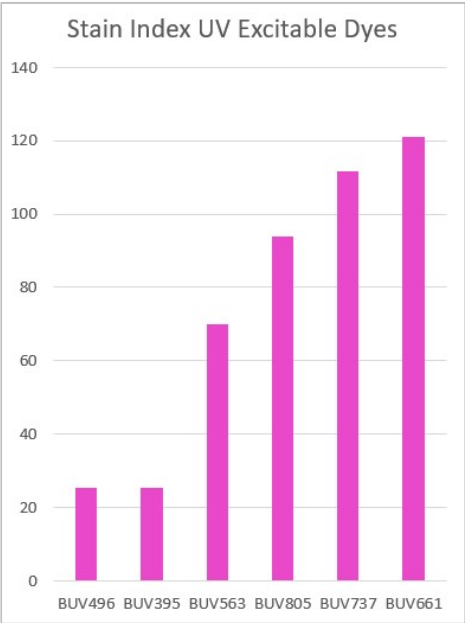
UV Excited Fluors	Violet Excited Fluors	Blue Excited Fluors	Red Excited Fluors
BUV395	BV421	BB515	APC
BUV496	Super Bright 436	Alexa Fluor 488	Alexa Fluor 647
BUV563	efluor450	Alexa Fluor 532	APC-R700
BUV661	BV480	PerCP-Cy5.5	APC/Fire750
BUV737	BV510	PerCP-eFluor 710	
BUV805	BV570	PE	
	BV605	PE/Dazzle594	
	BV650	PE-Cy5	
	BV711	PE-Cy7	
	BV750		
	BV785		

Stain Indexes

Data generated using CD4 staining on human PBMCs

Stain Index Ranking - 65 Dyes





Cross-Stain Index Matrix

Dyes used in combination need to have a unique spectrum AND also need to be assessed in terms of spread that they introduce to other dyes.

For example PerCP-Cy5.5 and PE-Cy5.5 have distinct signatures, but since both dyes emit in the same wavelength range and significant spread is introduced by PE-Cy5.5, you will use one or the other (not both!).

Spread Matrix for 30 Fluors that can be Used in Combination

	BUV395	BUV496	BUV563	BUV661	BUV737	BUV805	BV421	Super Bright 436	eFluor 450	BV480	BV510	BV570	BV605	BV650	BV711	BV750	BV785	BB515	Alexa Fluor 488	Alexa Fluor 532	PerCP-Cy5.5	PerCP-eFluor 710	PE	PE-Dazzle594	PE-Cy5	PE-Cy7	APC	Alexa Fluor 647	Alexa Fluor 700	APC-Fire 750
BUV395																														
BUV496																														
BUV563																														
BUV661																														
BUV737																														
BUV805																														
BV421																														
Super Bright 436																														
eFluor 450																														
BV480																														
BV510																														
BV570																														
BV605																														
BV650																														
BV711																														
BV750																														
BV785																														
BB515																														
Alexa Fluor 488																														
Alexa Fluor 532																														
PerCP-Cy5.5																														
PerCP-eFluor 710																														
PE																														
PE-Dazzle594																														
PE-Cy5																														
PE-Cy7																														
APC																														
Alexa Fluor 647																														
Alexa Fluor 700																														
APC-Fire 750																														

To read this table: spread of fluor in the row impacts resolution of the fluor in the column. Red means the fluor in that row has significant spread into the dye in the column (for example PE into AF532). Areas in bright pink and red indicate pairs for which more attention to panel design is needed.