CYTEK

TRANSCEND THE CONVENTIONAL

Cytek Aurora™ Fluorochrome Selection Guidelines for4 Laser Systems (V-B-YG-R)

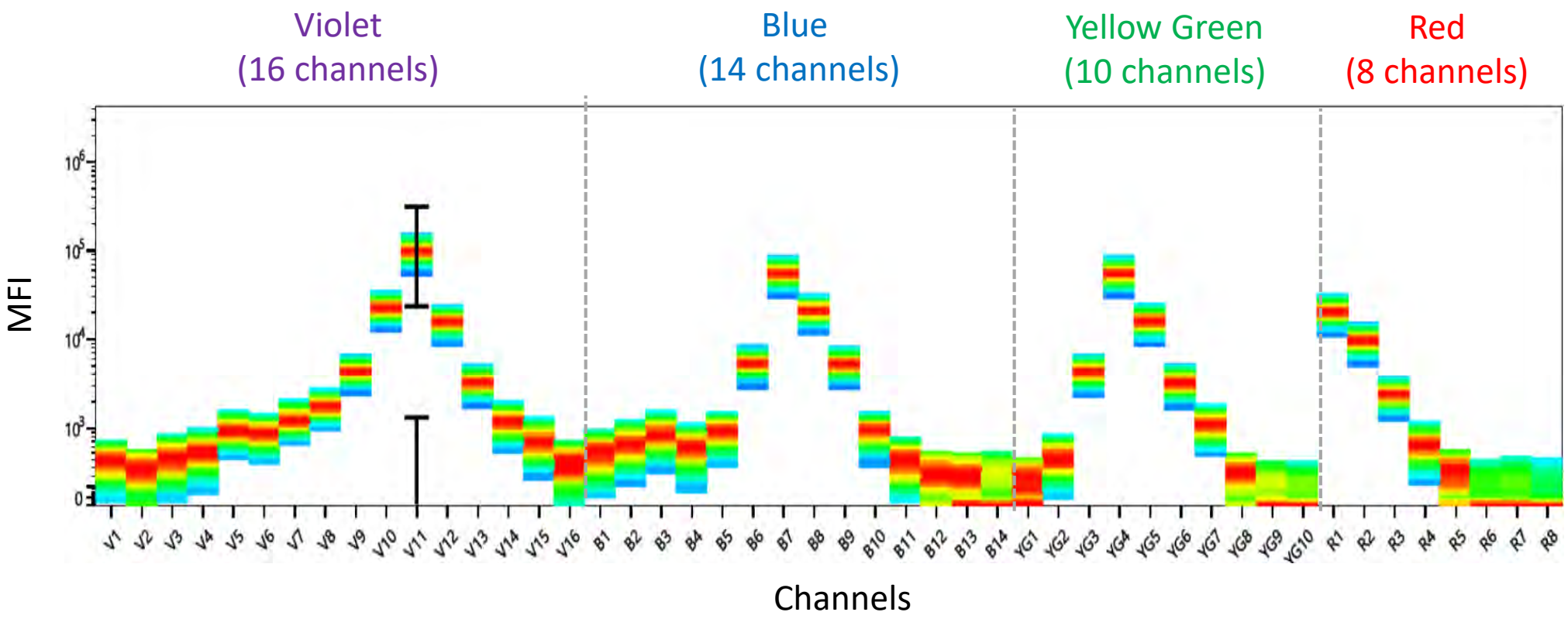
Last Updated: October 24, 2018

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 25).

How to Read Full Spectrum Fluorochrome Signatures

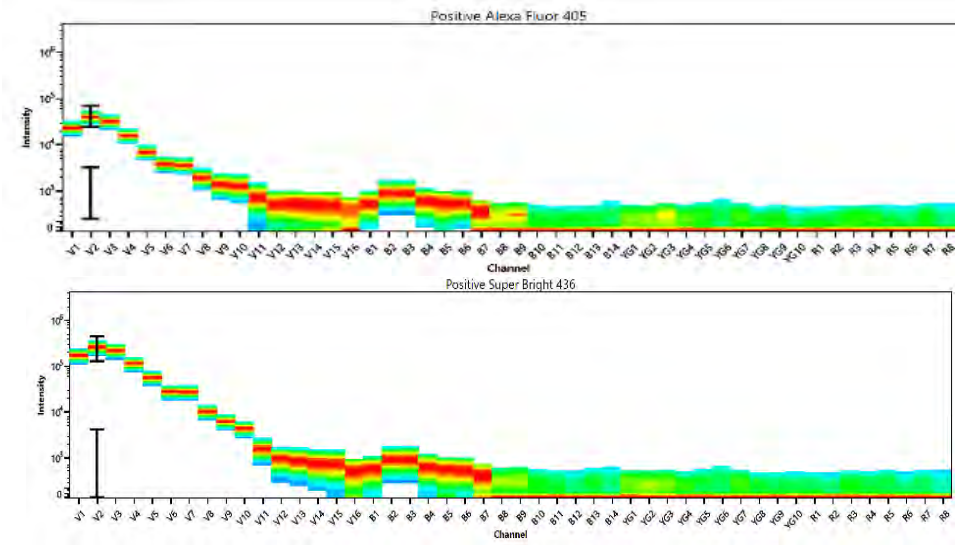


This dye is excited by all 4 lasers. The peak channel (indicated by the black bar) is in channel V11, and it has secondary emission in channels B7, YG4 and R1. Based on this information, expect this dye to introduce spread into dyes emitting at similar wavelengths.

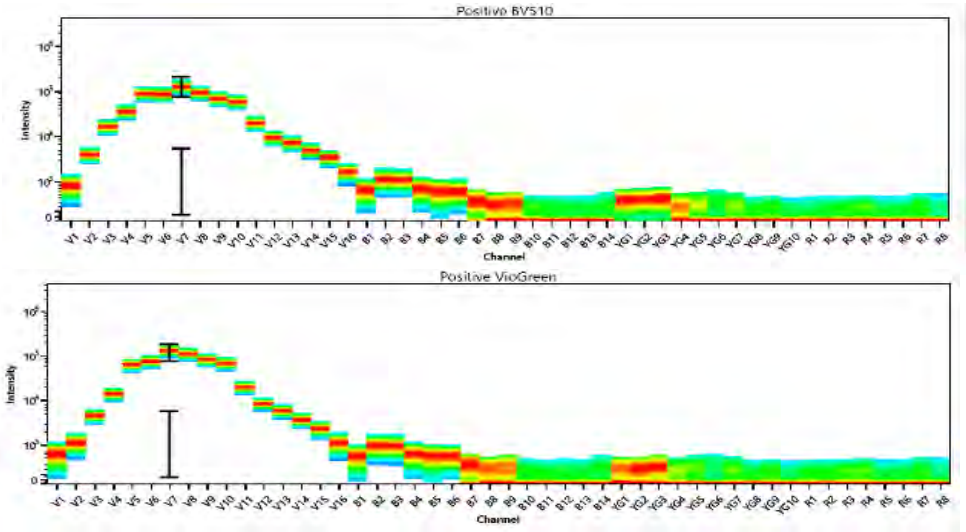
Dyes Primarily Excited by the Violet Laser

Violet Laser Excitable Dyes with Similar Signatures

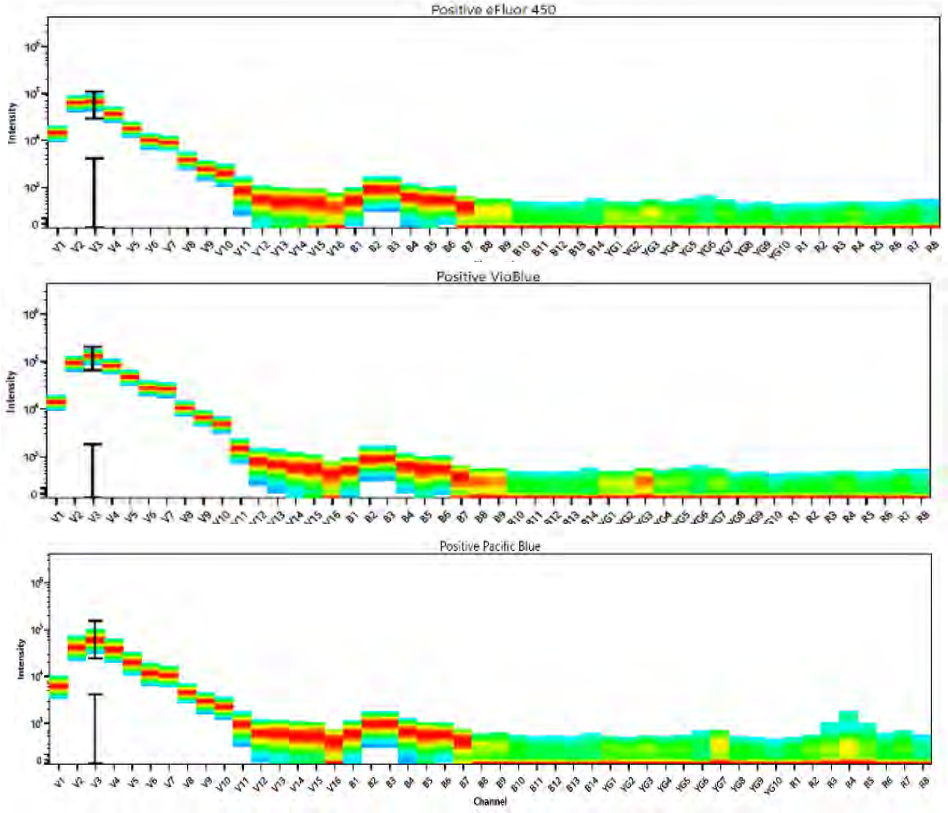
Alexa Fluor 405 and SB436



BV510 and VioGreen

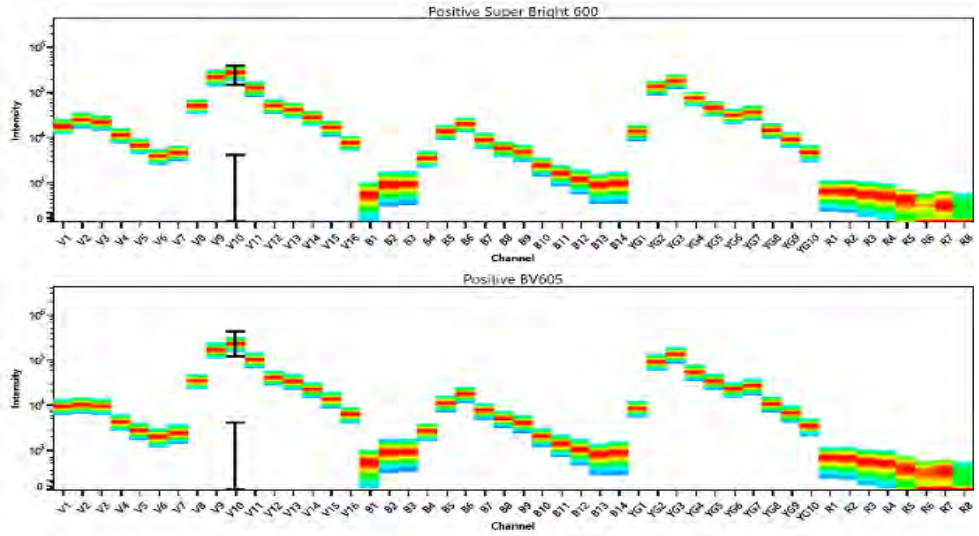


eFluor 450, VioBlue and Pacific Blue

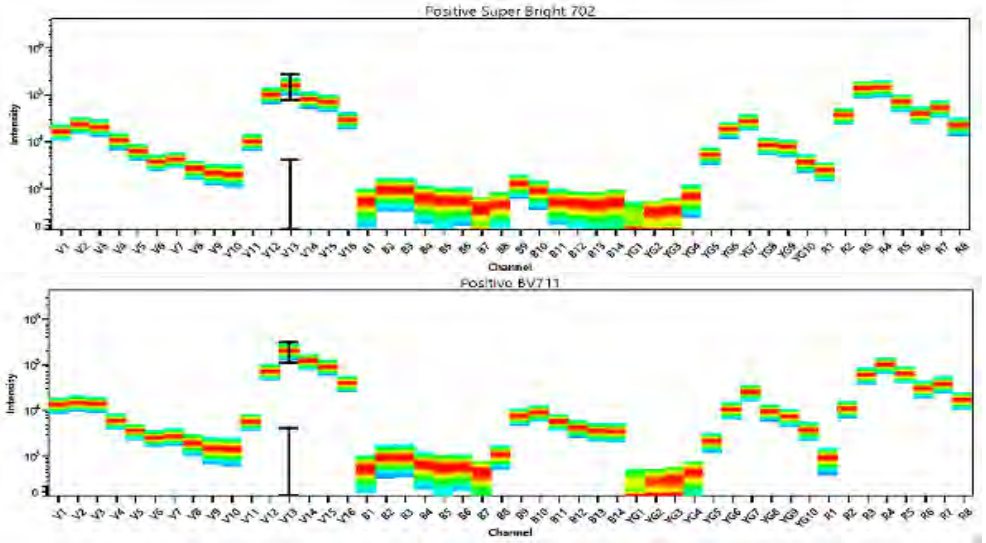


Violet Laser Excitable Dyes with Similar Signatures

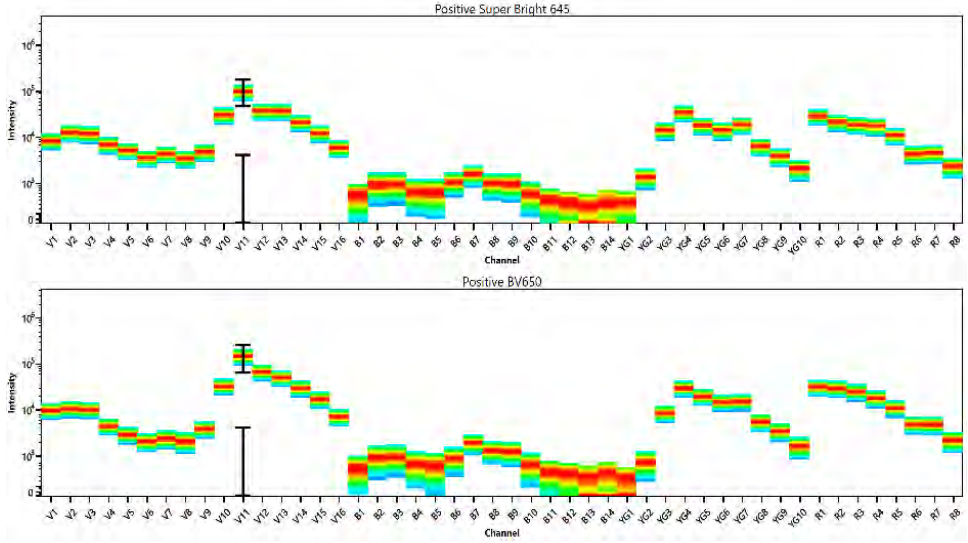
Super Bright 600 and BV605



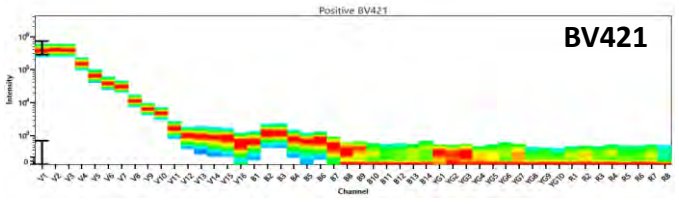
Super Bright 702 and BV711

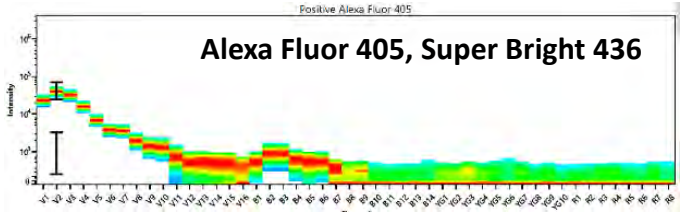


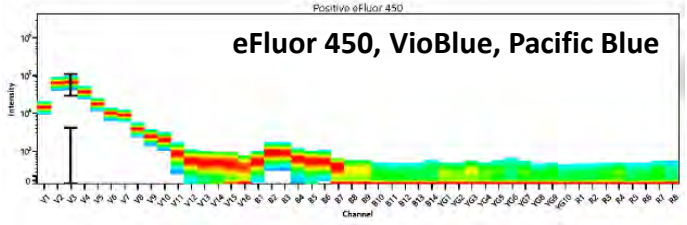
Super Bright 645 and BV650

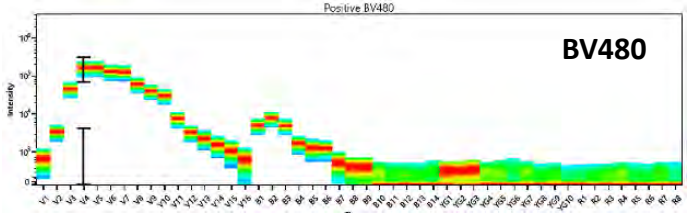


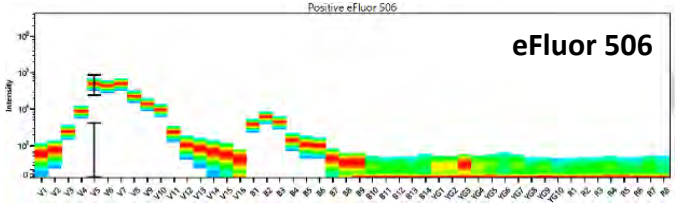
Violet Laser Excitable Dyes with Unique Signatures

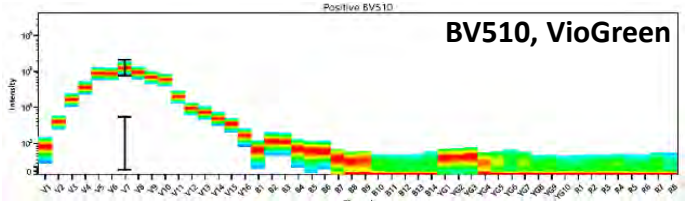


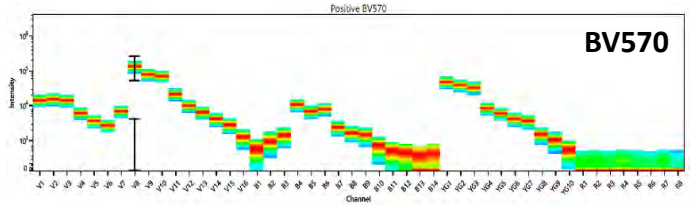


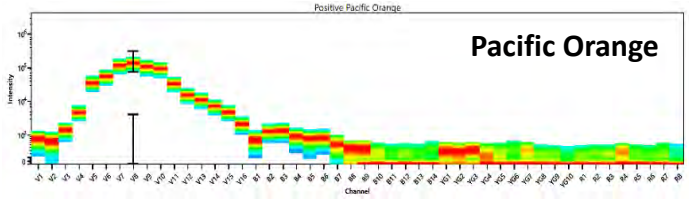


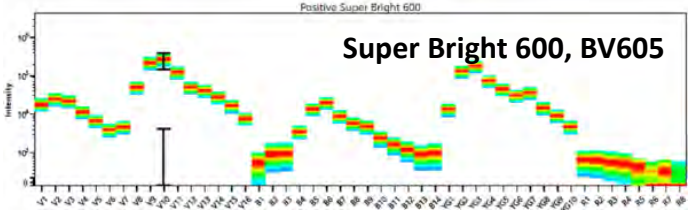


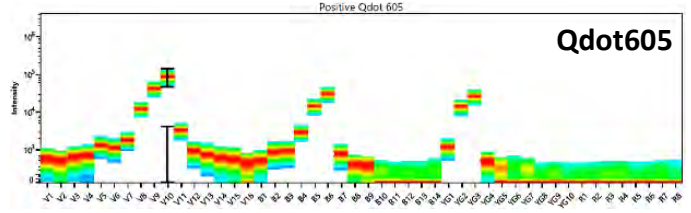


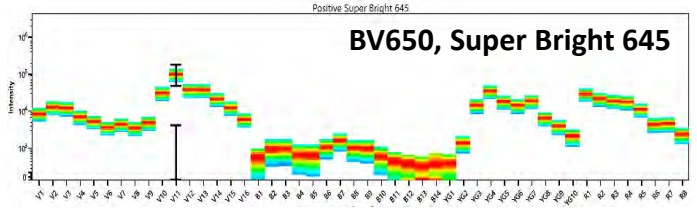


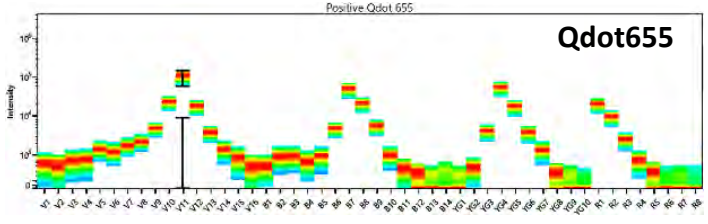


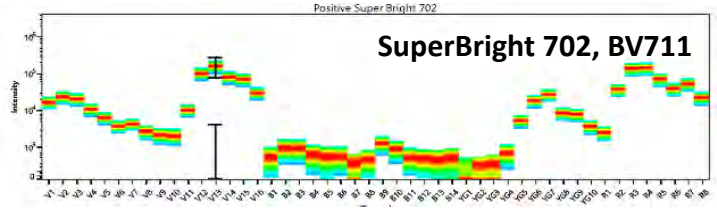


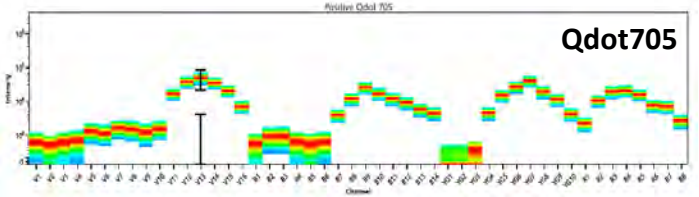


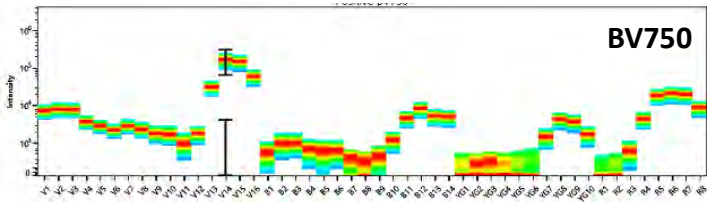


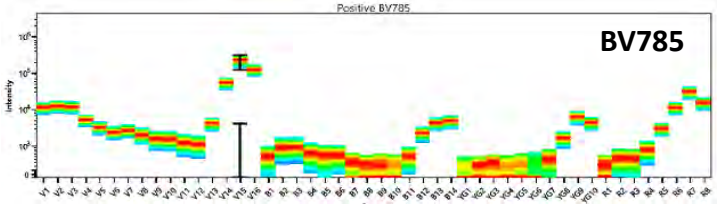


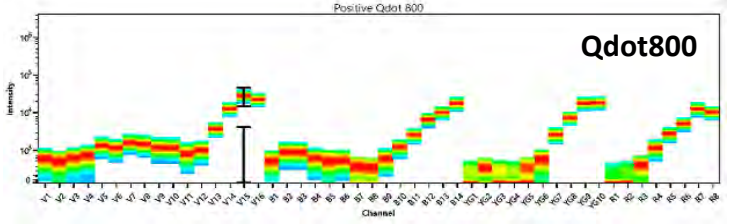








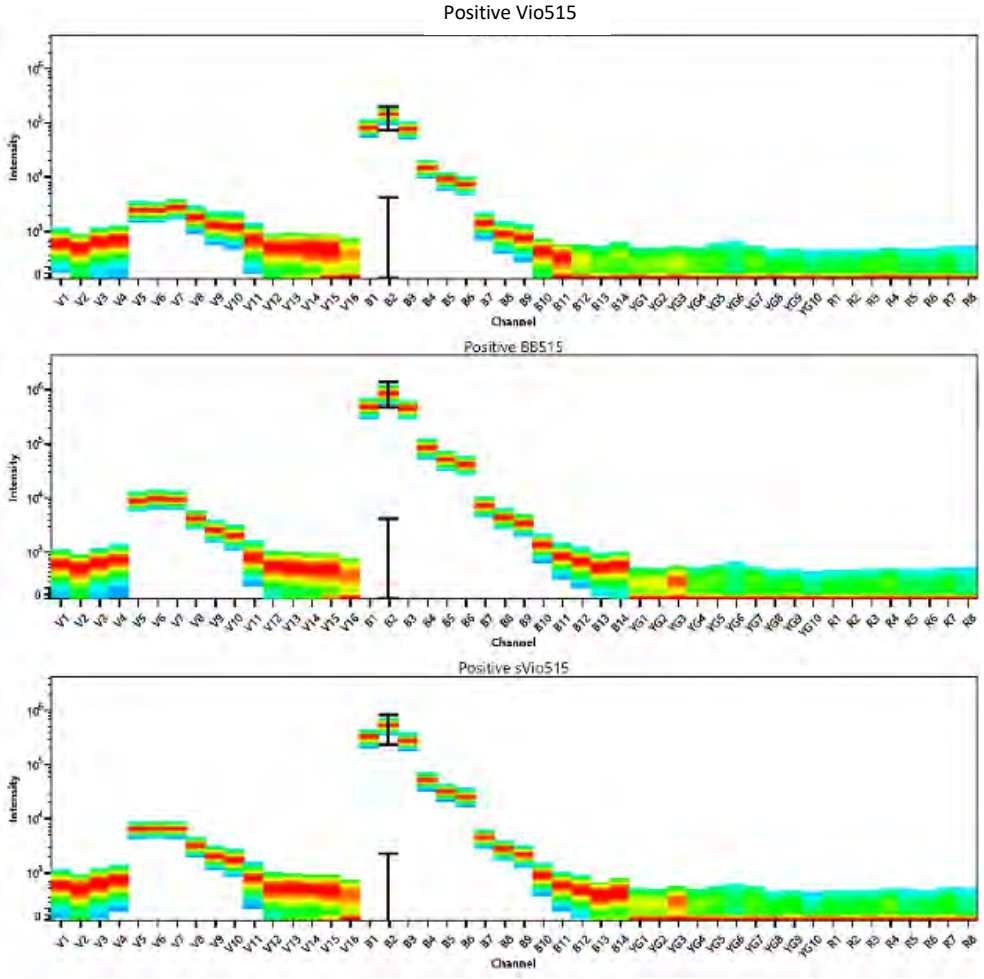


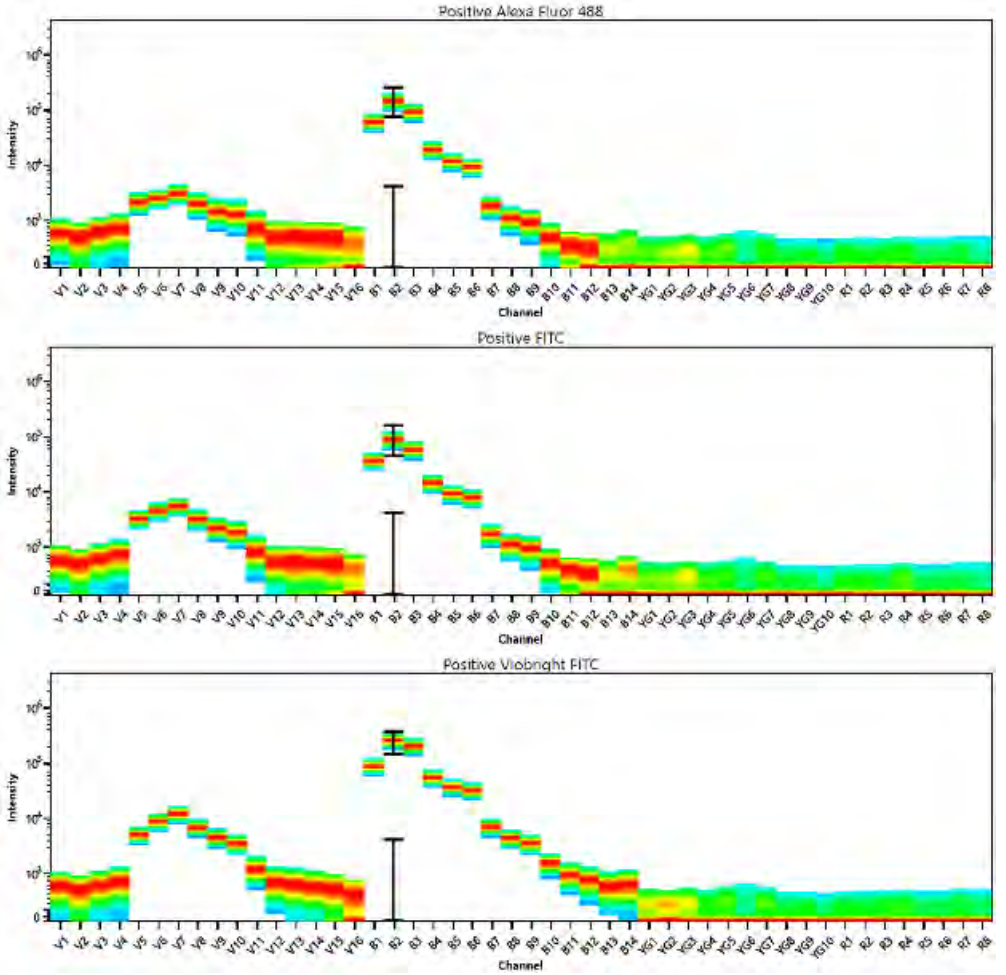


Dyes Primarily Excited by the Blue Laser

Blue Laser Excitable Dyes with Similar Signatures

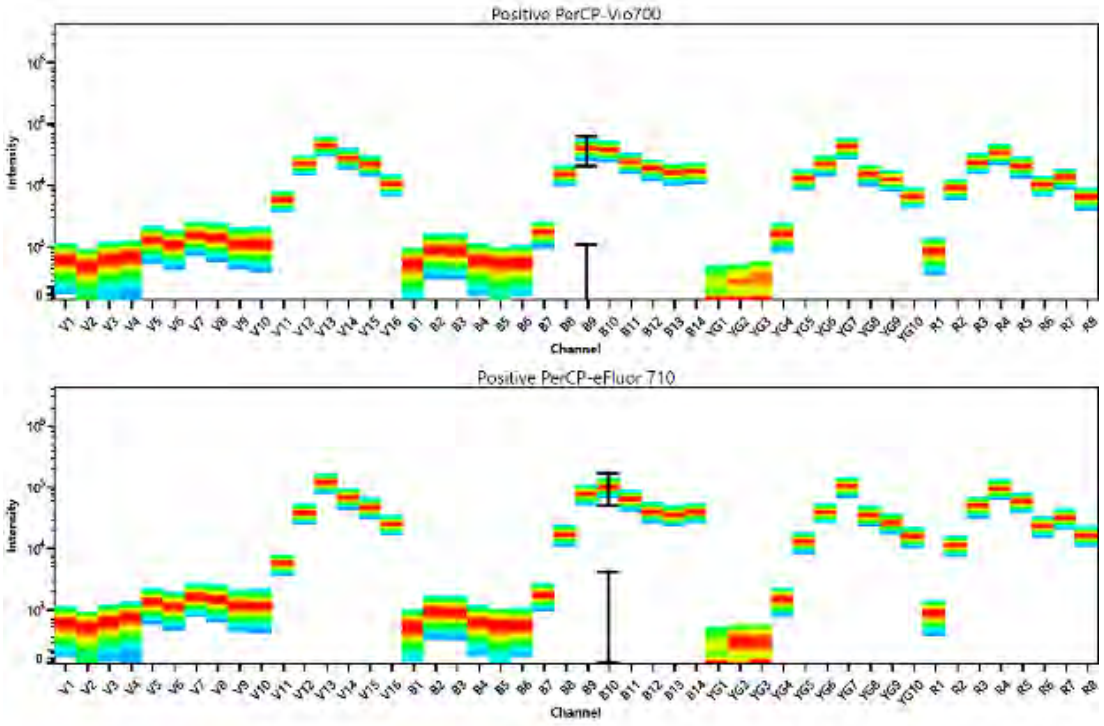
Vio 515, BB515, sVio 515, Alexa Fluor 488, FITC, VioBright FITC



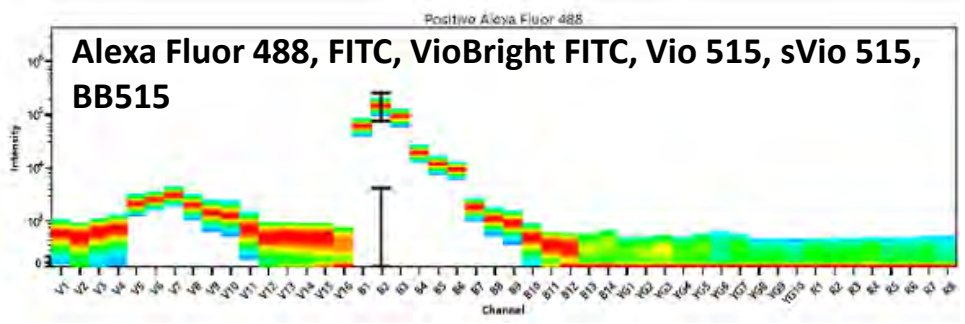


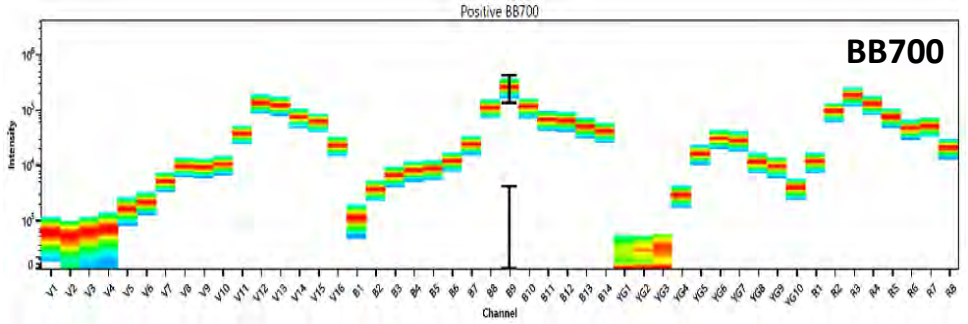
Blue Laser Excitable Dyes with Similar Signatures

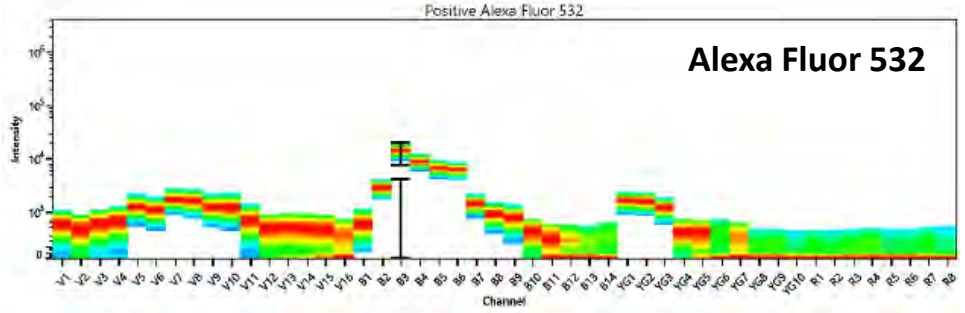
PerCP-Vio 710 and PerCP-eFluor 710

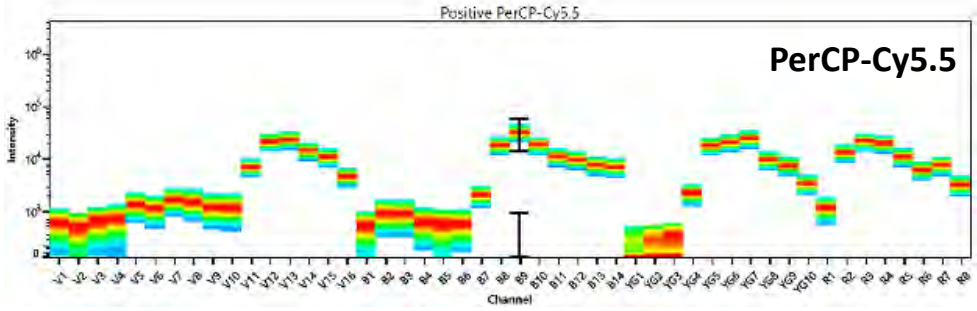


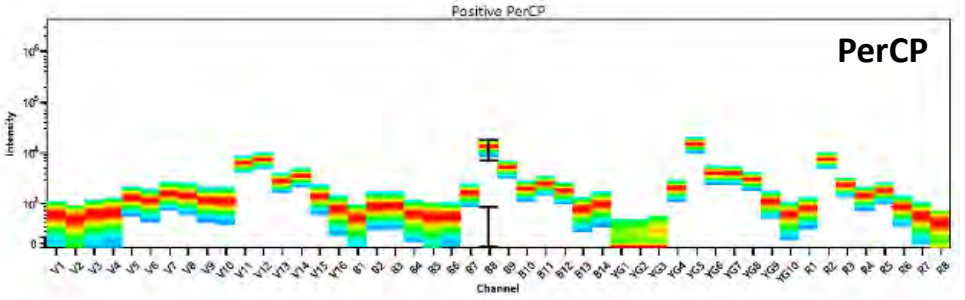
Blue Laser Excitable Dyes with Unique Signatures

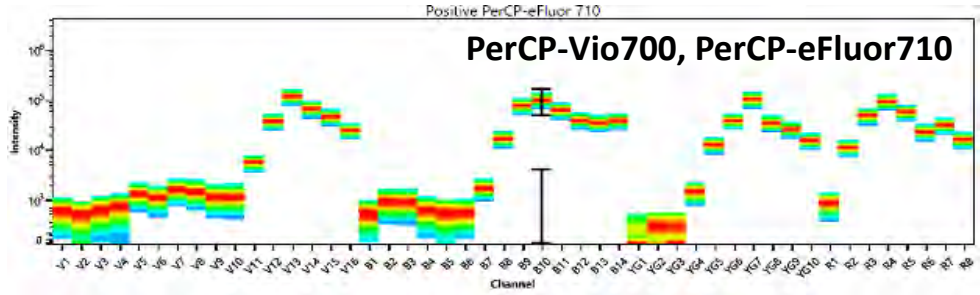








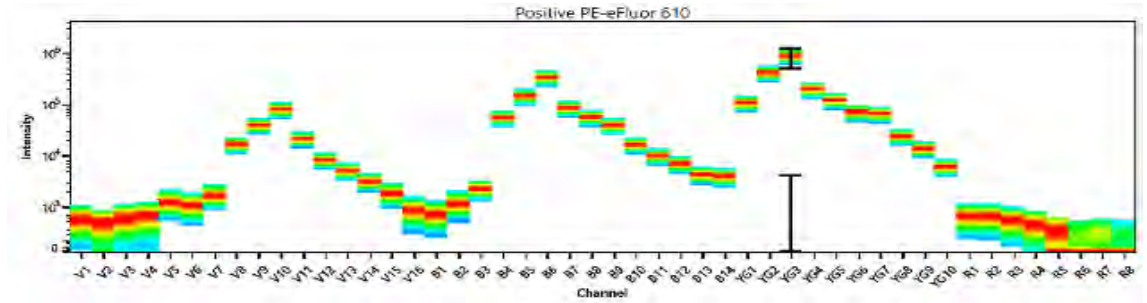


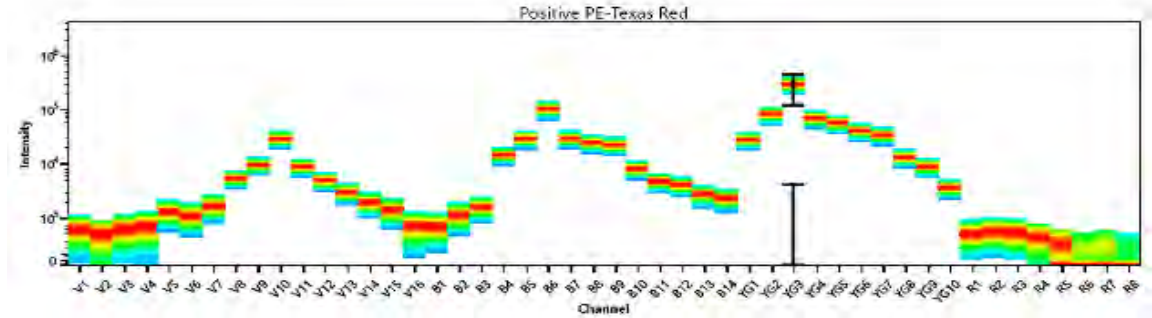


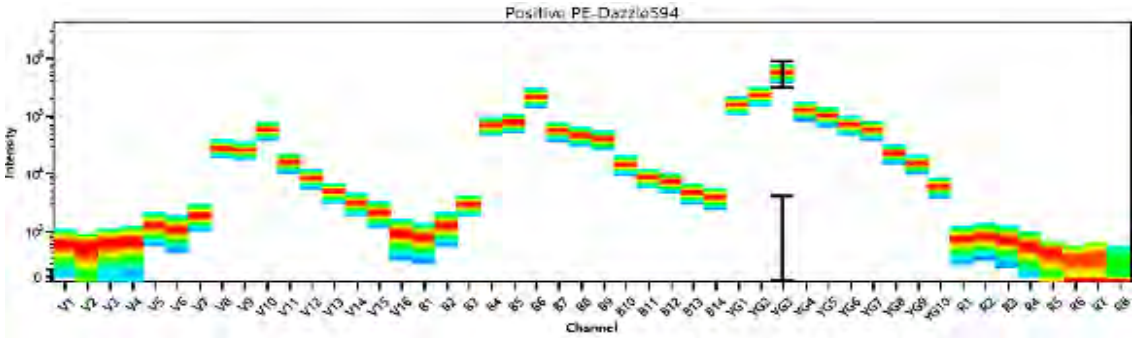
Dyes Primarily Excited by the Yellow Green Laser

Yellow Green Laser Excitable Dyes with Similar Signatures

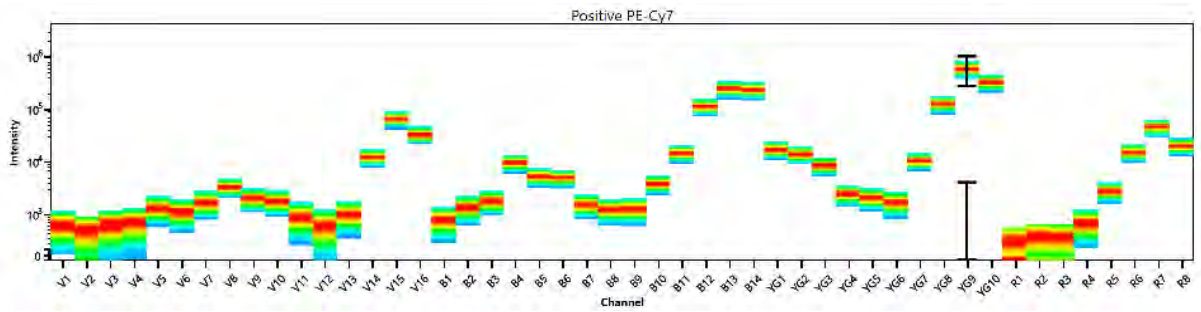
PE-eFluor 610, PE-Texas Red and PE/Dazzle 594

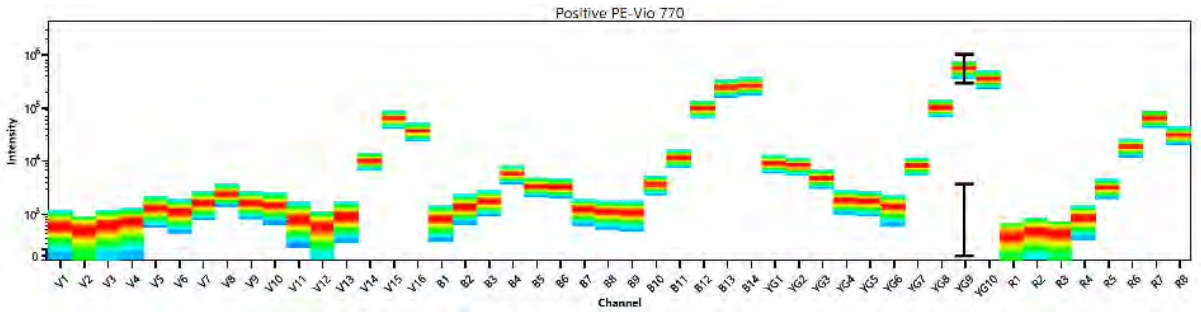




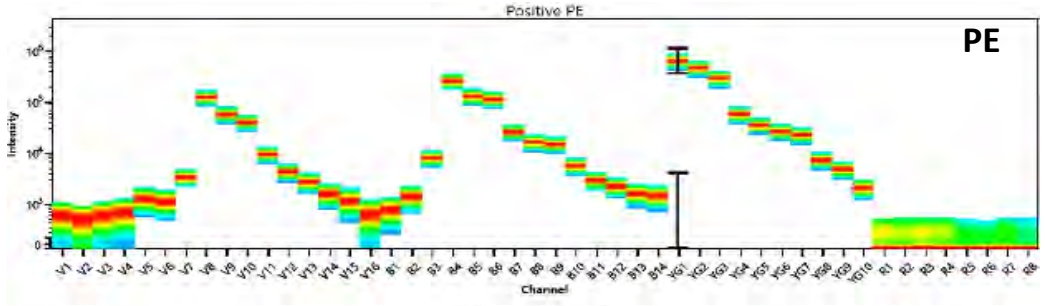


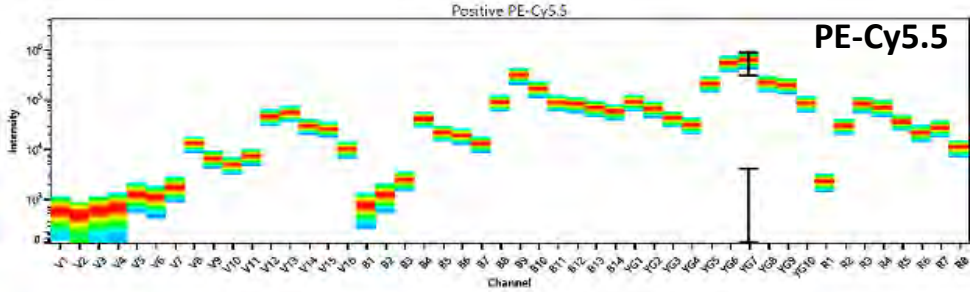
PE-Cy7, PE-Vio 770

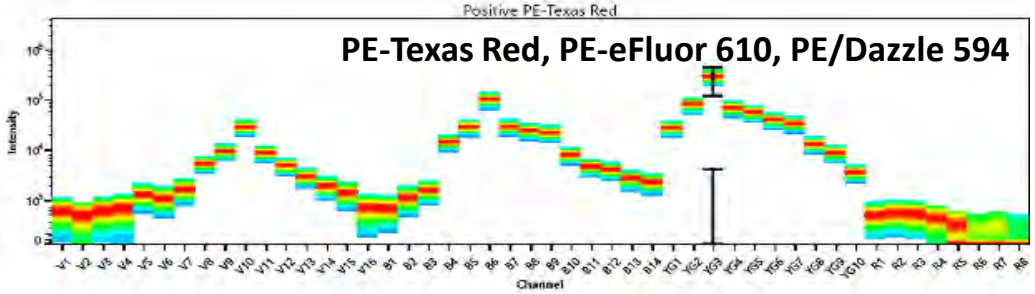


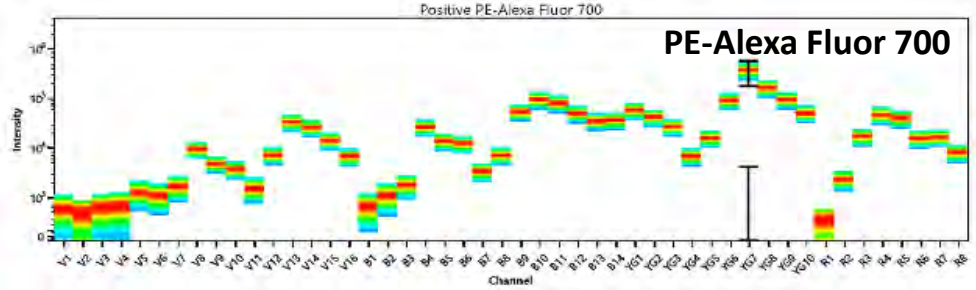


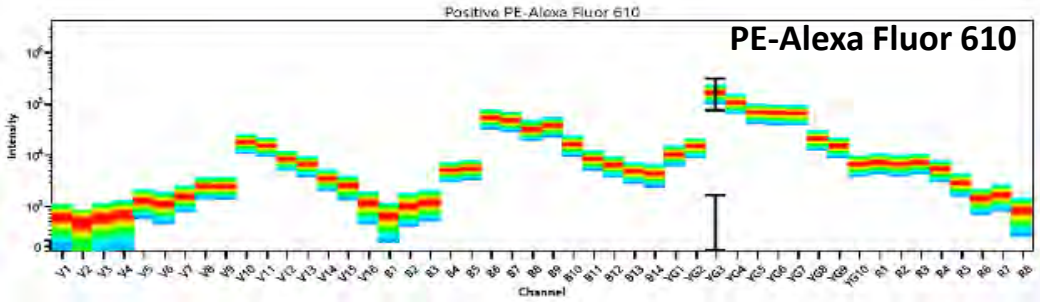
Yellow Green Laser Excitable Dyes with Unique Signatures

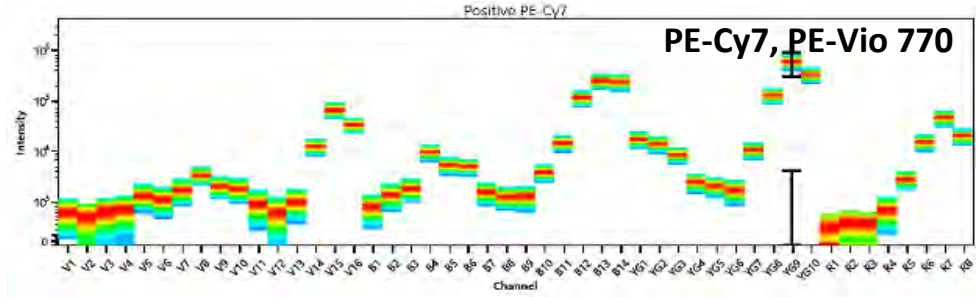


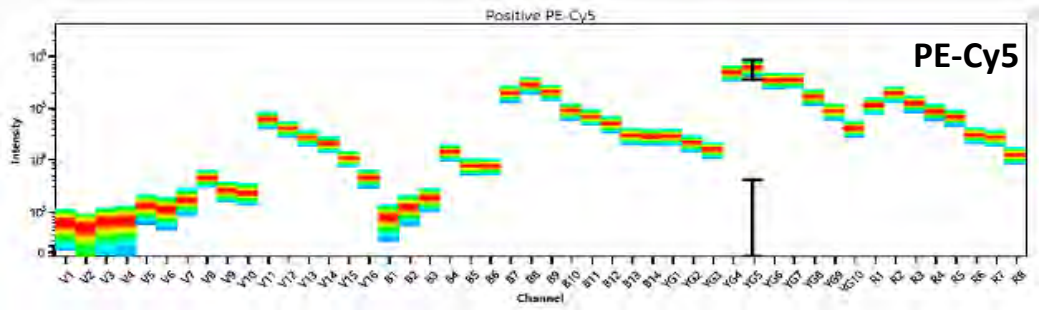








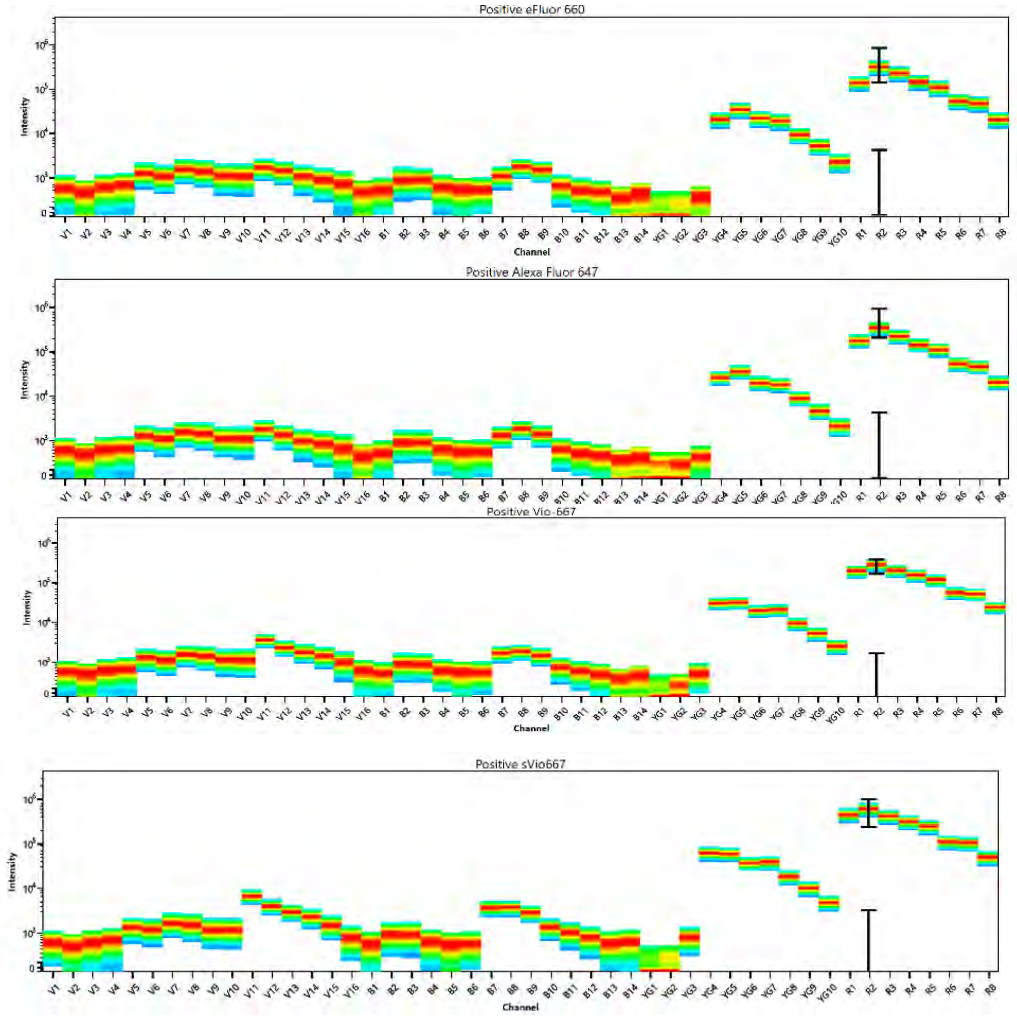




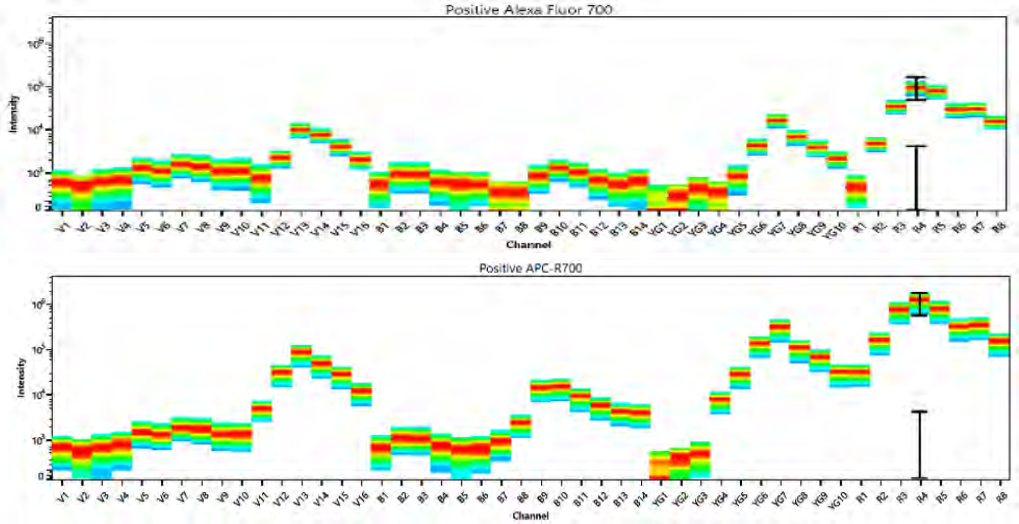
Dyes Primarily Excited by the Red Laser

Red Laser Excitable Dyes with Similar Signatures

eFluor 660, Alexa Fluor 647, Vio 667 and sVio 667

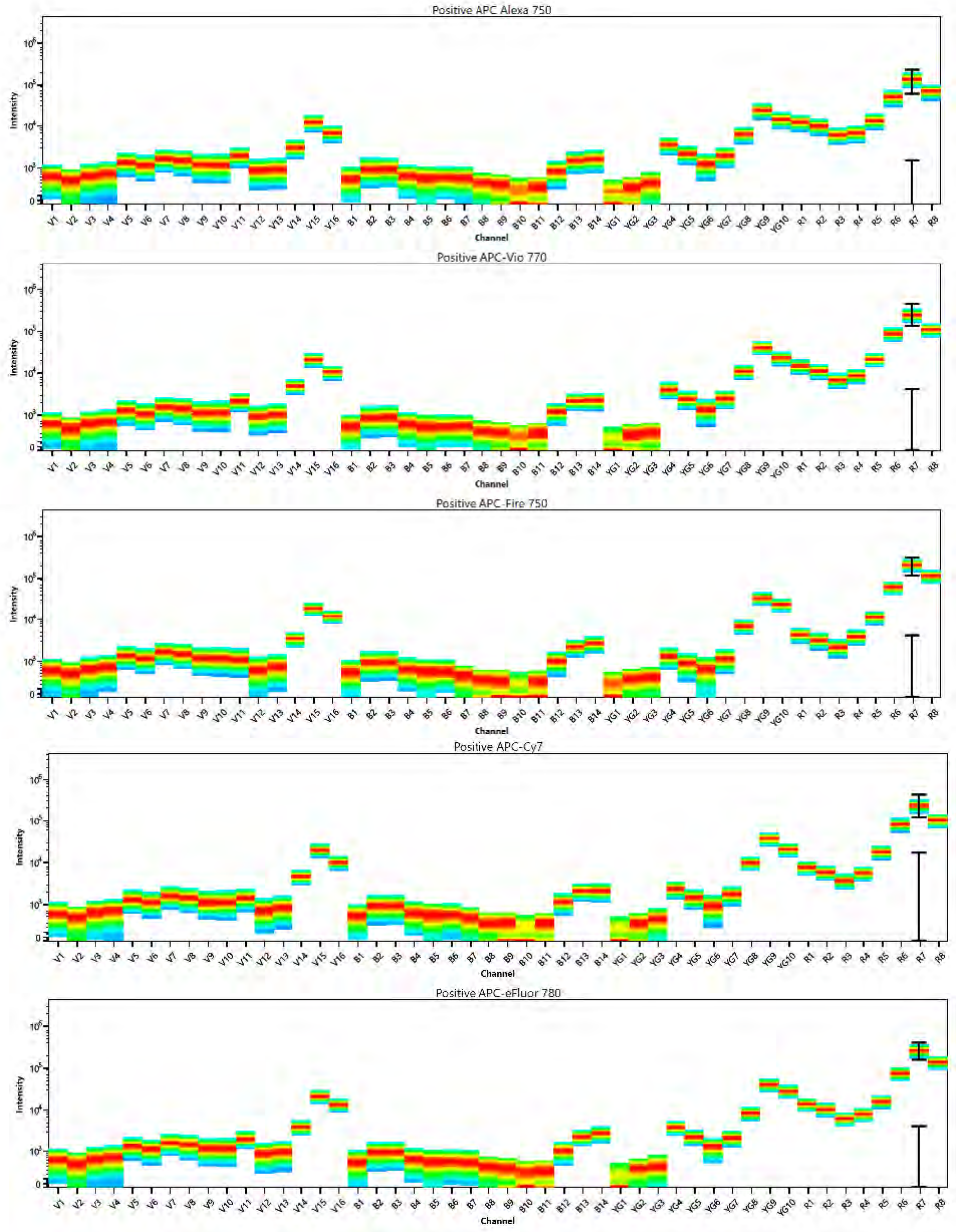


Alexa Fluor 700, APC-R700

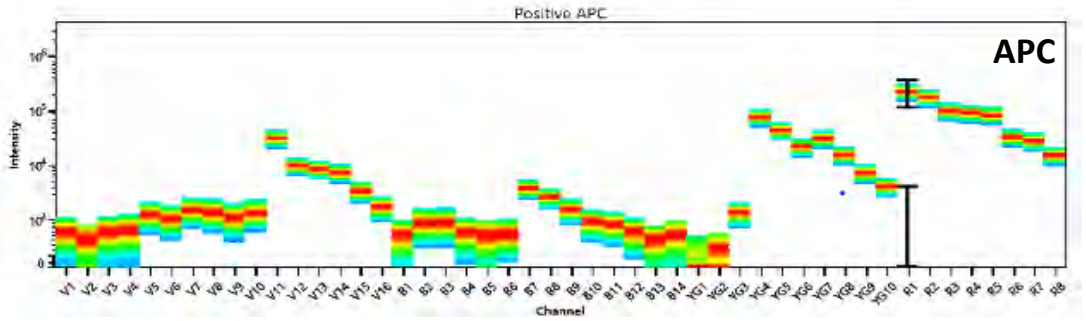


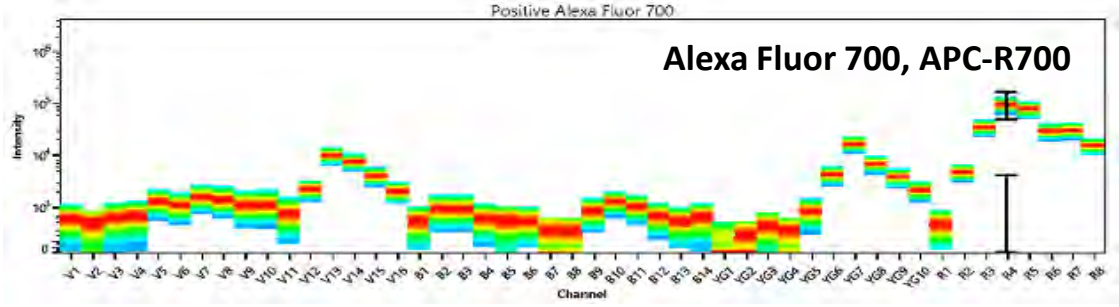
Red Laser Excitable Dyes with Similar Signatures

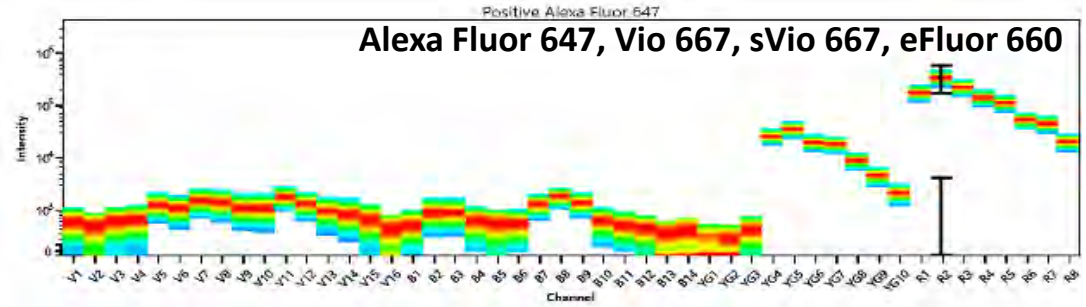
APC-Alexa 750, APC-Vio 770, APC/Fire 750, APC-Cy7, APC-eFluor 780

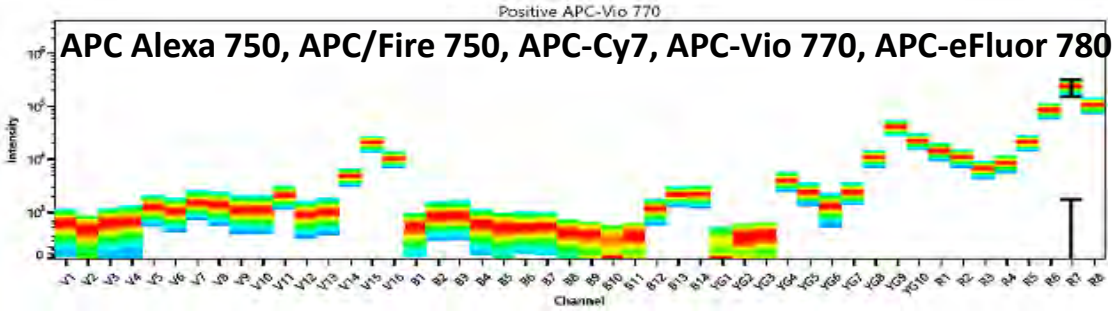


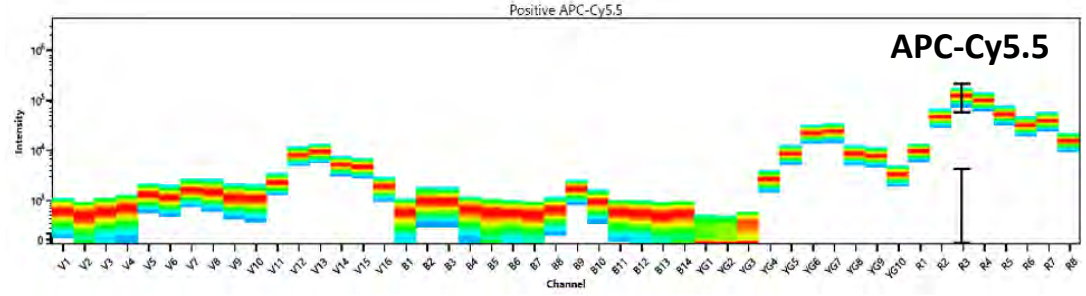
Red Laser Excitable Dyes with Unique Signatures

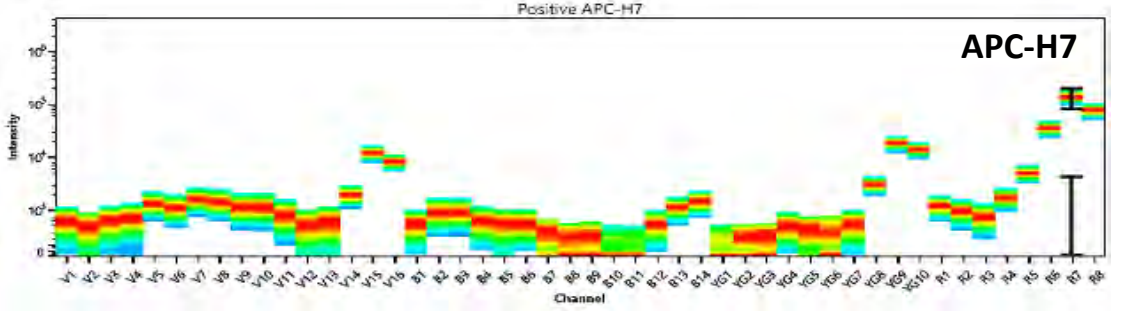












Fluorochrome Peak Channels

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, BB700	V14
BV785, BV786, Qdot 800	V15
Blue Excited Fluors	
Alexa Fluor 488, FITC, vioBright FITC, Vio 515, sVio 515, BB515	B2
Alexa Fluor 532	B3
PerCP	B8
PerCP-Cy5.5	B9
PerCP-eFluor 710, PerCP-Vio 700	B10
Yellow Green Excited Fluors	
PE	YG1
PE-Dazzle 594, PE-CF 594, PE-TexasRed, PE-efluor 610, PE-Alexa Fluor 610	YG3
PE-Cy5	YG5
PE-Cy5.5, PE-AlexaFluor 700	YG7
PE-Cy7, PE-Vio 770	YG9
Red Excited Fluors	
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

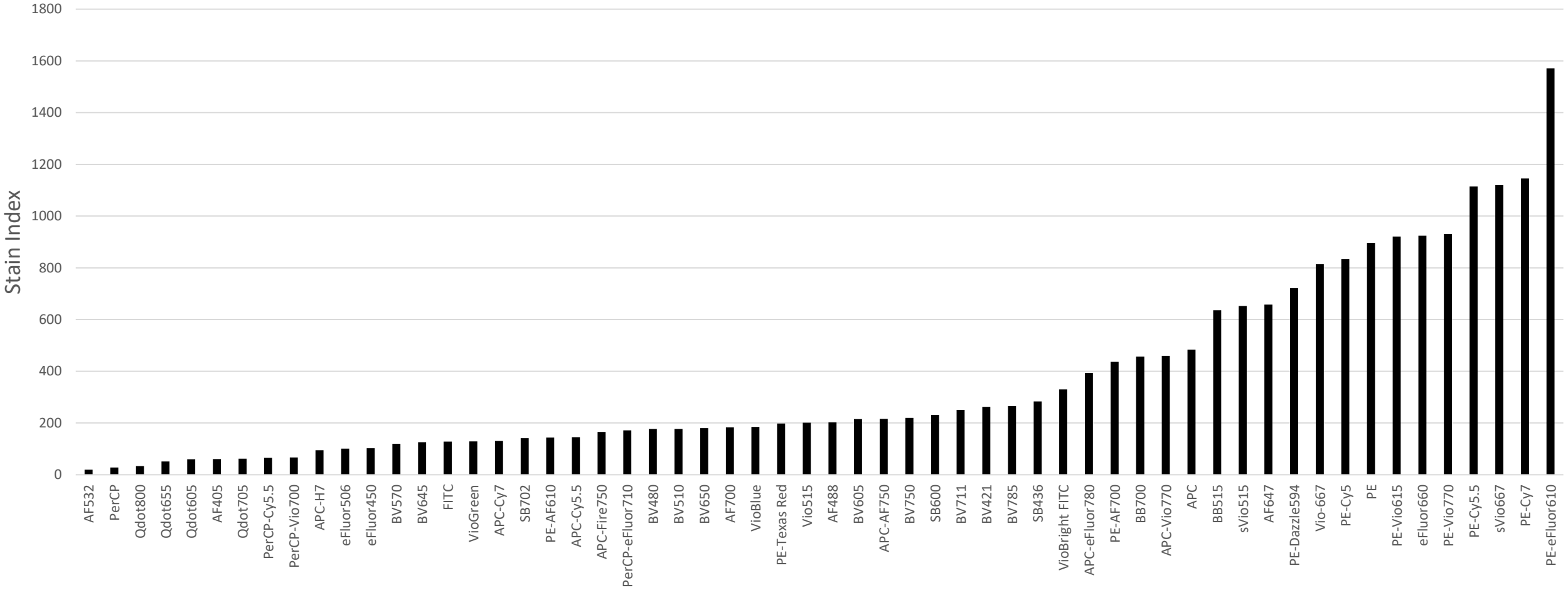
Example of 23 Dyes that Can Be Used in Combination (CAREFUL PANEL DESIGN IS NEEDED)

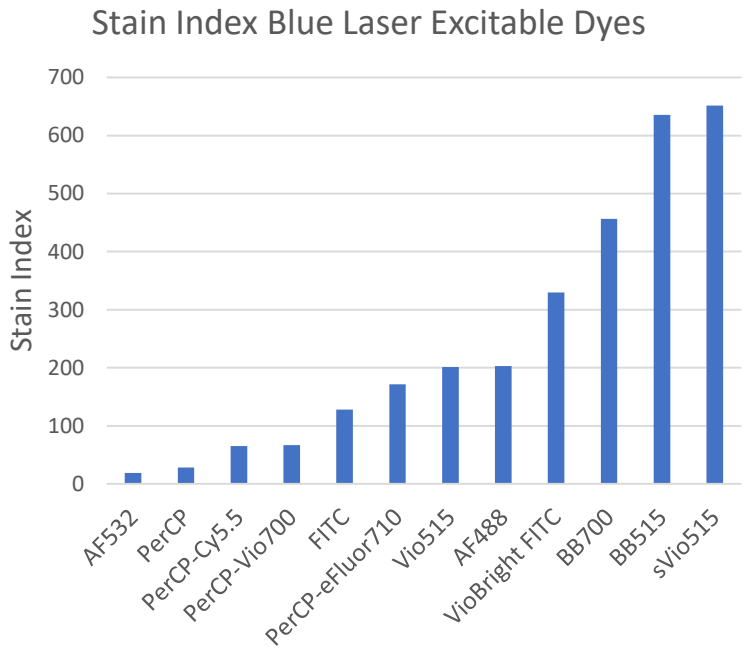
Violet Excited Fluors	Blue Excited Fluors	Yellow Green Excited Fluors	Red Excited Fluors
BV421	Alexa Fluor 488	PE	APC
SuperBright 436	Alexa Fluor 532	PE/Dazzle594	Alexa647
efluor450	PerCP-Cy5.5	PE-Cy5	APC-R700
BV480	PerCP-eFluor 710	PE-Cy7	APC/Fire750
BV510			
BV570			
BV605			
BV650			
BV711			
BV750			
BV785			

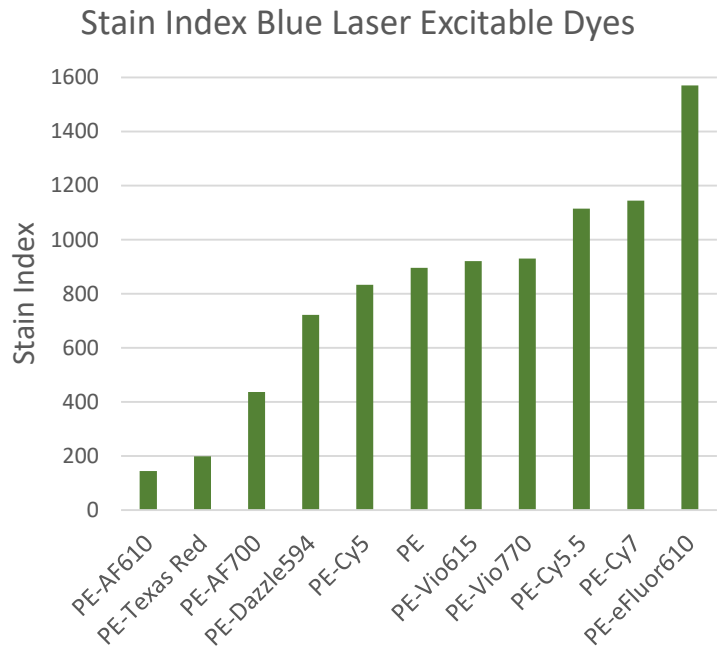
Stain Indexes

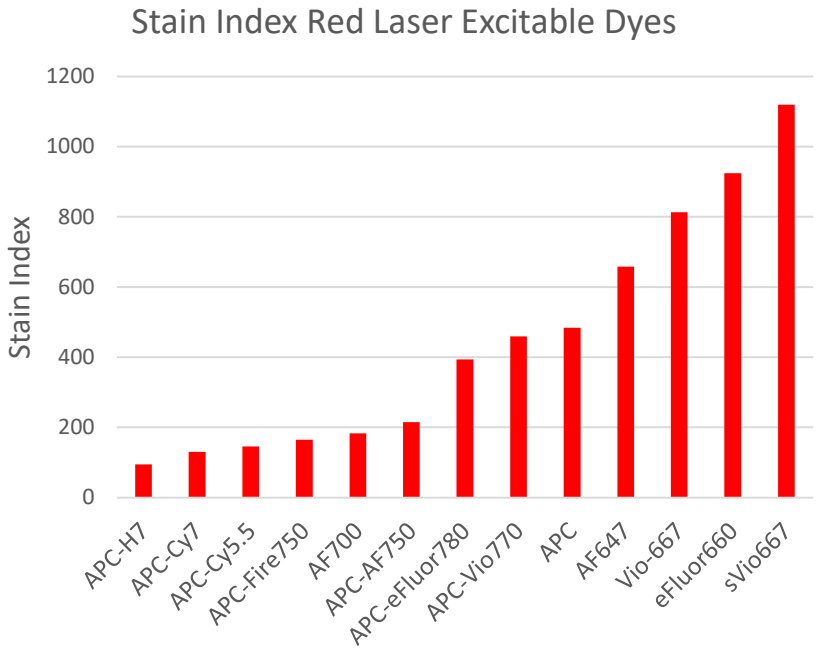
Data generated using CD4 staining in human whole blood

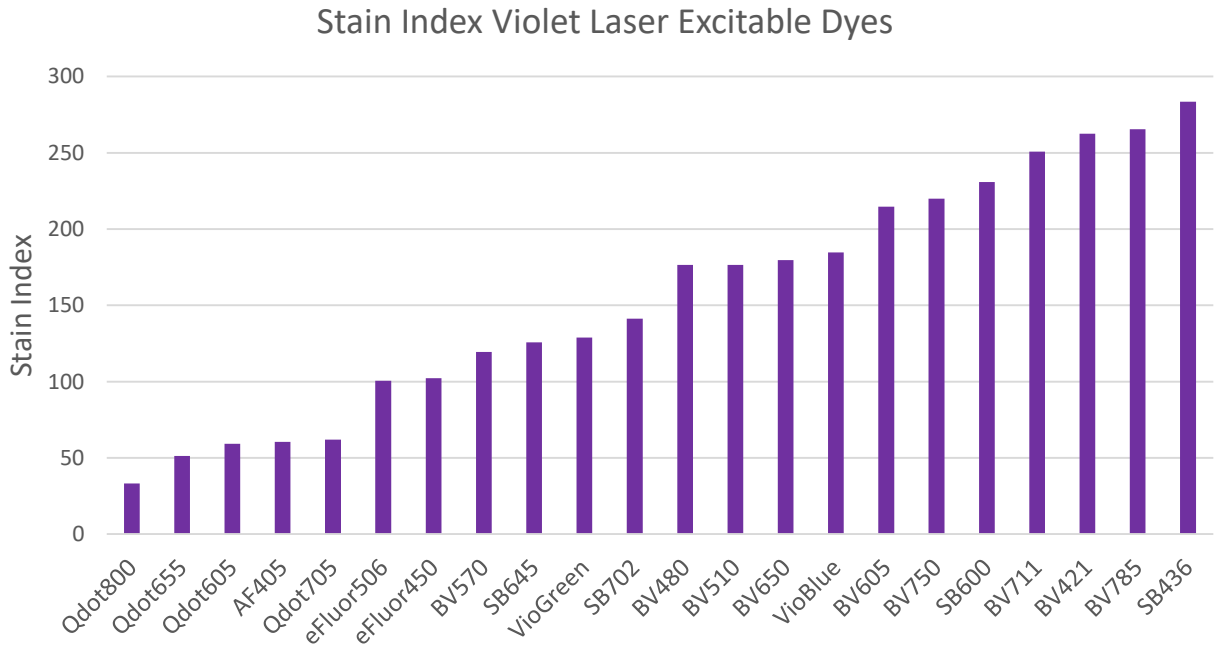
Stain Indexes - 4 Laser System, 58 Dyes




Stain Index Blue Laser Excitable Dyes
Stain Index
700
600
500
400
300
200
100
0
AF532
PerCP
PerCP-Cy5.5
PerCP-Vio700
FITC
PerCP-eFluor710
Vio515
AF488
VioBright FITC
BB700
BB515
sVio515


Stain Index Blue Laser Excitable Dyes
Stain Index
1600
1400
1200
1000
800
600
400
200
0
PE-AF610
PE-Texas Red
PE-AF700
PE-Dazzle594
PE-Cy5
PE
PE-Vio615
PE-Vio770
PE-Cy5.5
PE-Cy7
PE-eFluor610


Stain Index Red Laser Excitable Dyes
Stain Index
1200
1000
800
600
400
200
0
APC-H7
APC-Cy7
APC-Cy5.5
APC-Fire750
AF700
APC-AF750
APC-eFluor780
APC-Vio770
APC
AF647
Vio-667
eFluor660
sVio667


Stain Index Violet Laser Excitable Dyes
Stain Index
300
250
200
150
100
50
0
Qdot800
Qdot655
Qdot605
AF405
Qdot705
eFluor506
eFluor450
BV570
SB645
VioGreen
SB702
BV480
BV510
BV650
VioBlue
BV605
BV750
SB600
BV711
BV421
BV785
SB436

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 23 fluors that can be use in combination

	BV421	SB436	eFlour450	BV480	BV510	BV570	BV605	BV650	BV711	BV750	BV785	A488	A532	PE	PE-Dazzle594	PE-Cy5	PerCP-Cy55	PerCP-eF710	PE-Cy7	APC	AF647	AF700	APC-Fire750
BV421																							
SB436																							
eFlour450																							
BV480																							
BV510																							
BV570																							
BV605																							
BV650																							
BV711																							
BV750																							
BV785																							
A488																							
A532																							
PE																							
PE-Dazzle594																							
PE-Cy5																							
PerCP-Cy55																							
PerCP-eF710																							
PE-Cy7																							
APC																							
AF647																							
AF700																							
APC-Fire750																							

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.