Table 1 Properties of Common Sensor Intrinsic Chromophore Fluorescent Proteins

FP	$\lambda_{ex}/\lambda_{em}$ (nm)	φ	ε ($M^{-1} \cdot cm^{-1}$)	Brightness[a] $\left(\frac{M^{-1}cm^{-1}}{1000}\right)$	Photostability[b] (s)	p*Ka*	Maturation Time (h)	OSER Score[c] (%)	References
EBFP2	383/448	0.56	32,000	17.9	15.31	4.5	0.42	57.0	Ai, Shaner, Cheng, Tsien, and Campbell (2007)
mTagBFP2	399/454	0.64	50,600	32.4	6.21	2.7	0.20	49.8	Subach, Cranfill, Davidson, and Verkhusha (2011)
mTagBFP	399/456	0.63	52,000	32.8	ND	2.7	0.22	ND	Subach et al. (2008)
mTurquoise	434/474	0.84	30,000	25.2	391.51	4.5	ND	93.3	Goedhart et al. (2010)
mTurquoise2	434/474	0.93	30,000	27.9	71.71	3.1	ND	93.8	Goedhart et al. (2012)
Cerulean	433/475	0.62	43,000	26.7	74.63 (mCerulean)	4.7	ND	78.3 (92.6)	Rizzo, Springer, Granada, and Piston (2004)
mCerulean3	433/475	0.87	40,000	34.8	76.83	3.2	ND	91.0	Markwardt et al. (2011)
ECFP	434/477	0.40	32,500	13.0	ND	4.7	ND	ND	Shaner, Steinbach, and Tsien (2005)
CyPet	435/477	0.51	35,000	17.9	ND	5.0	ND	94.0	Nguyen and Daugherty (2005)
mTFP1	462/492	0.85	64,000	54.4	72.34	4.3	ND	92.0	Ai, Henderson, Remington, and Campbell (2006)

Continued

Table 1 Properties of Common Sensor Intrinsic Chromophore Fluorescent Proteins—cont'd

FP	$\lambda_{ex}/\lambda_{em}$ (nm)	φ	ε ($M^{-1} \cdot cm^{-1}$)	Brightness $\left(\frac{M^{-1}cm^{-1}}{1000}\right)$	Photostability (s)	p*Ka*	Maturation Time (h)	OSER Score (%)	References
EGFP	489/509	0.60	55,000	33.0	179.21	5.9	0.42	76.5 (98.1)	Heim et al. (1995)
Clover	505/515	0.76	111,000	84.4	61.83	6.2	0.50	72.9 (90.5)	Lam et al. (2012)
mClover3	506/518	0.78	109,000	85.0	ND	6.5	ND	ND	Bajar, Wang, Lam, et al. (2016)
mNeonGreen	506/517	0.80	116,000	92.8	197.22	5.7	<0.16	90.4	Shaner et al. (2013)
mAmetrine	406/526	0.58	45,000	26.1	ND	6.0	0.80	90.0	Ai, Hazelwood, Davidson, and Campbell (2008)
EYFP	514/527	0.61	84,000	51.2	ND	6.5	ND	ND	Shaner et al. (2005)
Venus	515/528	0.57	92,200	52.6	26.46 (mVenus)	6.0	ND	36.5 (83.9)	Nagai et al. (2002)
Citrine	516/529	0.76	77,000	58.5	15.67 (mCitrine)	5.7	ND	36.2 (93.8)	Griesbeck, Baird, Campbell, Zacharias, and Tsien (2001)
Ypet	517/530	0.77	104,000	80.1	30.83	5.6	ND	62.5	Nguyen and Daugherty (2005)
mOrange2	549/565	0.60	58,000	34.8	353.61	6.5	4.50	91.8	Shaner et al. (2008)

mKO2	551/565	0.62	63,800	39.6	531.84	5.5	ND	68.4	Sakaue-Sawano et al. (2008) and Sun et al. (2009)
tdTomato	554/581	0.69	138,000	95.2	31.81	4.7	1.00	57.6	Shaner et al. (2004)
TagRFP-T	555/584	0.41	81,000	33.2	84.74	4.6	1.70	41.2	Shaner et al. (2008)
mApple	568/592	0.49	75,000	36.8	75.92	6.5	0.50	95.3	Shaner et al. (2008)
mRuby	558/605	0.35	112,000	39.2	40.69	4.4	2.80	93.1	Kredel et al. (2009)
mRuby2	559/600	0.38	113,000	42.9	44.19	5.3	2.50	87.4	Lam et al. (2012)
mRuby3	558/592	0.45	128,000	57.6	ND	4.8	<2.50	ND	Bajar, Wang, Lam, et al. (2016)
mRFP1	584/607	0.25	44,000	11.0	26.3	4.5	<1.00	95.8	Campbell et al. (2002)
mCherry	587/610	0.22	72,000	15.8	318.94	<4.5	0.25	95.0	Shaner et al. (2004)
mKeima	440/620	0.24	14,400	3.5	ND	6.5	4.50	ND	Kogure et al. (2006)
mKate2	588/633	0.40	62,500	25.0	51.61	5.4	0.63	81.1	Shcherbo et al. (2009)

[a]Brightness is calculated as $(\varphi \cdot \varepsilon)/1000$.
[b]Photostability represents bleaching $t_{1/2}$ under constant 80 W illumination, systematically performed according to Cranfill et al. (2016). Where indicated, only the monomeric form of the FP was tested.
[c]OSER score is a measure of monomericity, wherein FPs are expressed in the ER and cells are counted to determine the percentage that lack ER morphological abnormalities. Experiments systematically performed according to Cranfill et al. (2016), wherein the authors suggest a score of >90% indicates a monomeric FP. Values in parentheses indicate the OSER score for the engineered monomeric form of the FP.