Supplementary Table 1. Performance of selected FPs in proExM.

Protein	Ex max, nm	Em max, nm	Molecular brightness relative to EGFP, %	Brightness in proExM cells, % of live cells	Addgene plasmid code	Reference
EBFP2	383	448	54	62±4	55243	1
mTagBFP2	399	454	98	65±9	55302	2
mTurquoise2	434	474	85	68±8	36207	3
mCerulean3	433	475	105	69±4	55421	4
ECFP	434	477	39	51±2	55344	5,6
mTFP1	462	492	165	70±7	55488	7
mEmerald	487	509	118	53±4	54112	8
EGFP	489	509	100	65±5	56436	9
mClover	505	515	128	61±4	56533	10
EYFP	514	527	155	64±7[c]	56592	11
mVenus	515	528	159	44±5	56615	12
mCitrine	516	529	177	54±7	56555	13
mOrange2	549	565	105	32±2	57962	14
LSSmOrange	437	572	71	42±3	37133	15
tdTomato	554	581	144	67±4	58102	16
mRuby2	559	600	130	90±7	55898	10
mCherry	587	610	48	72±3	55056	16
mKate2	588	633	76	37±3	NA[a]	17
mCardinal	604	659	50	36±3	56161	18
iRFP	690	713	15	14±1	NA[b]	19

[a]mKate2 gene from Addgene plasmid 37132 was swapped with LSSmOrange gene in Addgene plasmid 37133.

[b]cloned as N-terminus fusion with nuclear localization sequence.

[c]since EYFP is particularly sensitive to the high Cl^- used to shrink the gel[20], retention of EYFP fluorescence was measured in fully expanded gel.

Supplementary Table 2. Performance of selected secondary antibody dyes in proExM.

Dye	**Ex max, nm**	**Em max, nm**	**Brightness in proExM as % of post antibody stain**	**Source**
DyLight405	400	421	28±5	Life Technologies
CF405M	408	452	51±4	Biotium
Alexa488	495	519	48±2	Life Technologies
Alexa546	556	573	68±3	Life Technologies
Alexa594	590	617	46±2	Life Technologies
CF633	630	650	51±10	Biotium
Alexa647	650	668	7±3	Life Technologies
Atto647N	644	669	55±2	Sigma

Supplementary Table 3. Performance of selected photoswitchable and photoactivatable FPs in proExM.

Protein	Ex max, nm	Em max, nm	Molecular brightness relative to EGFP, %	Brightness in proExM cells, % of live cells	Addgene plasmid code	Reference
Dendra2	490	507	68	21±3	57725	[21]
	553	573	58	ND		
mEos2	506	519	143	45±9	57384	[22]
	573	584	92	ND		
mKikGR	505	515	102	31±2	57326	[23]
	580	591	53	ND		
PATagRFP	562	595	76	66±7	NA[a]	[24]

[a]PATagRFP gene from Addgene plasmid 31945 was swapped with LSSmOrange gene in Addgene plasmid 37133.

ND, not determined.

Supplementary Table 4. Primary antibodies used.

Target	Host	Clonality	Manufacturer	Catalog No.
GFP	chicken	poly	Abcam	ab13970
GFP	rabbit	poly	Life Technologies	A11122
bassoon	mouse	mono	Abcam	ab82958
homer	rabbit	mono	Abcam	ab184955
homer	rabbit	poly	Synaptic Systems	160 003
lamin A/C	mouse	mono	Cell Signaling Technologies	4777S
TOM20	rabbit	poly	Santa Cruz Biotech	sc-11415
post-synaptic density 95	mouse	mono	Neuromab	73-028
glutamic acid decarboxylase	rabbit	poly	Millipore	AB1511
myelin basic protein	rabbit	poly	Abcam	ab40390
vimentin	chicken	poly	Abcam	ab24525
glial fibrillary acid protein	mouse	mono	Santa Cruz Biotech	sc-166458