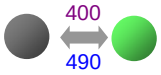
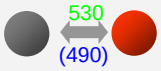
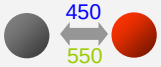
Fluorophores for superresolution:
I. Fluorescent proteins for PAL-M

The intention of this leaflet is to provide a first guide for choosing fluorophores for localization microscopy experiments. The order is purely alphabetic, therefore mutants may be listed separately if they carry a different name. The complex biochemical and spectral properties of these proteins cannot be represented completely in tabular form; for more detailed, we have included references to the scientific literature. For a selection of review literature on superresolution microscopy in general, you can visit www.zeiss.de/elyra. In the following table, single/double arrows indicate, respectively, (irreversible) photoconversion and (reversible) photoswitching.

	scheme	*reference*	*form*	*description*
Dendra		1 (2006)	monomer	conversion by UV or alternatively intense blue light
Dronpa		2 (2004)	monomer	fast photoswitching with high contrast, 3 variants Dronpa1-3 differ in switching kinetics
EosFP		3 (2004)	tetramer (see descriptio)	mutants tdEos (tandem dimer) and mEos (monomeric; requires maturation below 30°C).
Kaede		4 (2002)	tetramer	irreversible conversion (backbone cleavage).
KFP1		5 (2003)	tetramer	(ir)reversibility of conversion depends on light intensity
KikGR		6 (2005)	tetramer	brighter and faster maturation than Kaede
Padron		7 (2008)	monomer	Dronpa mutant with inversed switching wavelengths
PA-GFP		8 (2002)	monomer	first published monomeric protein suitable for PAL-M
PA-mCherry		9 (2009)	monomer	recently developed, optimized for photoactivation contrast; 3 variants
PA-mRFP1-1		10 (2005)	monomer	some reversibility (as KFP1), relatively low brightness
PS-CFP2		11 (2004)	monomer	conversion from cyan to green
rsCherry		12 (2008)	monomer	reversible dark to red switching
rsCherryRev		12 (2008)	monomer	reversible dark to red switching, switching wavelengths inversed compared to rsCherry
rsFastLime		13 (2007)	monomer	Dronpa point mutant with increased off switching kinetics

1 Gurskaya et al., Nat. Biotechnol. 24:461-5
2 Ando et al., Science 306:1370-3
3 Wiedenmann et al., PNAS 101:15905-10
4 Ando et al., PNAS 99:12651-6
5 Chudakov et al., Nat. Biotechnol. 21:191-4
6 Tsutsui et al., EMBO Rep. 6 :233-8
7 Andresen et al., Nat. Biotechnol. 26:1035-40
8 Patterson et al., Science 297:1873-7
9 Subach et al., Nat. Meth. 6 :153-9
10 Verkhusha et al., Chem. Biol. 12:279-85
11 Chudakov et al., Nat. Biotechnol. 22 :1435-1439
12 Stiel et al., Biophys. J 95 :2989-97
13 Stiel et al., Biochem. J 402:35-42