Popular fluorophores for dSTORM imaging

ONI

Fluorophore	Laser line (nm)	Excitation max (nm)	Emission max (nm)	Buffer composition	Compatible with ONI buffer	Comments
Fluorescent labels						
Alexa Fluor® 488	488	495	519	MEA/OS	Yes	One of the most commonly chosen dSTORM dyes in the 488 nm excitation range, it is considered to be a high quality dSTORM dye.
ATTO 488	488	501	523	MEA/OS	Yes **(ONI's top recommended fluorophore)**	One of the highest performing dSTORM dyes using 488 nm excitation. This is recommended to use over Alexa Fluor® 488.
Alexa Fluor® 555	532	555	580	MEA/OS	Yes **(ONI's top recommended fluorophore)**	An exceptional dSTORM dye in the red range. Alexa Fluor® 555 emits a high number of photons per switching cycle.
Cy3B	561	559	570	BME/OS or MEA/OS	Yes	Considered to be the best dye for dSTORM imaging in the red range.
Dylight 550	561	562	576	BME/OS or MEA/OS	Yes	This dye is recommended for dSTORM imaging, however Alexa Fluor® 555 is a better alternative for this range.
Alexa Fluor® 568	561	578	603	MEA/OS	Yes	Considered a good dye for dSTORM microscopy. Alexa Fluor® 555 is still recommended to use over Alexa Fluor® 568.
Cy5	640	649	670	BME/OS or MEA/OS	Yes	One of the highest performing dSTORM dyes. Considered one of the best dyes for dSTORM imaging
Alexa Fluor® 647	640	650	665	BME/OS or MEA/OS	Yes **(ONI's top recommended fluorophore)**	This is regarded as the best dye for dSTORM imaging due to its ability to emit thousands of photons per switching cycle.
Nuclear dyes						
SYTO13	488	481	509	BME/OS or MEA/OS	Further testing needed	Nucleic acid stain that is cell permeant. This dye is not DNA specific and can bind to RNA . This dye cannot be activated with a 405 nm laser.
YOYO-1	488	491	509	BME/OS or MEA/OS	Further testing needed	A high affinity nucleic acid stain which is cell impermeant. This dye is not DNA specific and can bind to RNA.YOYO-1 is often chosen over other dyes for super-resolution imaging of DNA.
SYTOX™ Green	488	504	523	MEA/ OS	Yes	Nucleic acid stain that is cell impermeant. A good quality dSTORM dye for the green range. This dye is not DNA specific and can bind to RNA.
Other dyes						
Tetramethyl Rhodamine (TMR)	532	546	570	MEA/OS	Yes	This organic fluorophore can be conjugated to genetically coded self labeling tag proteins, ie HaloTag® or SNAP-Tag®. The brighter Alexa Fluor® 555 has similar spectral properties to TMR, and would be recommended in this range.
Janelia Fluor® 549	532	549	571	PBS or MEA	Yes	Janelia Fluor® dyes can be conjugated to genetically coded self labeling tag proteins, ie HaloTag® or SNAP-Tag®. These dyes are reported as compatible with dSTORM microscopy in fixed cells.
CellMask™ Orange Plasma Membrane Stain	561	554	567	BME/OS or MEA/OS	Yes	A good stain for the labeling the plasma membrane. This dye can survive cell fixation but not cell permabilisation. This dye has been investigated for dSTORM microscopy, but needs further testing before recommending as a suitable dye.
LysoTracker™ Red	561	577	590	BME/OS or MEA/OS	Further testing needed	High selectivity for staining acidic organelles such as lysosome membranes. This dye has been investigated for dSTORM microscopy, but needs further testing before recommending as a suitable dye.
MitoTracker™ Deep Red	640	644	665	BME/OS or MEA/OS	Further testing needed	Specifically stains the mitochondria of cells. This dye has been investigated for dSTORM microscopy, but needs further testing before recommending as a suitable dye.
CellMask™ Deep Red Plasma Membrane Stain	640	649	666	BME/OS or MEA/OS	Yes	A good stain for the labeling the plasma membrane. This dye can survive cell fixation but not cell permabilisation. This dye has been investigated for dSTORM microscopy, but further testing is needed before recommending as a suitable dye.
Janelia Fluor® 646	640	646	664	PBS or MEA	Yes	Janelia Fluor® dyes can be conjugated to genetically coded self labeling tag proteins, ie HaloTag® or SNAP-Tag®. These dyes are reported as compatible with dSTORM microscopy in fixed cells.

LEGEND

OS: Oxygen Scavenger **MEA:** Mercaptoethanol **BME:** ß-Mercaptoethanol
PBS: Phosphate Buffer Solution **SMLM:** single-molecule localization microscopy

Read our article's on dSTORM buffers and optimising your immunostaining at:
www.insights.oni.bio/blog