

Characteristics of Cell Tracking Reagents

Desired Characteristic	Lipid Intercalators		Covalent Protein Tags		Genetic Markers	Radio-labels
	PKH Dyes	Dil, DiO	CFSE	Biotin-SE	GFP, β -Gal	In-111, Cr-51
Fast, simple labeling	+++	varies	+++	++	-	+
Intense labeling	++++	varies	++++	++++	varies	+
Uniform and reproducible	+++	varies	+++	+++	+	+
Applicable to most cell types	++++	varies	+++	+++	varies	varies
Not immunogenic	++++	++++	+	+	++	++++
No effect on cell receptors or functions	++++	++	varies	varies	+	-
Stable over many generations	++	++	++	+	+++	-
Immediate proliferation monitoring possible	++++	++++	24-48 hr delay	24-48 hr delay	-	varies
Easy to monitor distribution <i>in vivo</i>	+	+	+	+	+/-	+++

Abbreviations: Dil = 1,1'-dioctadecyl-3,3,3',3'-tetramethylindocarbocyanine perchlorate; DiO = 3,3'-dioctadecyloxacarbocyanine perchlorate; CFSE = carboxyfluorescein succinimidyl ester; Biotin-SE = biotin-succinimidyl ester; GFP = green fluorescent protein; β -Gal = beta-galactosidase