

Supporting information

Table S1. Recent reported LFBs based on light-up dyes (2010-2016).

DNA structure	Dye	Analyte	Combination technology	Ref.	year
ssDNA	PTCDI	lysozyme	—	[1]	2010
	PMVP- <i>co</i> -MVP	ssDNA	—	[2]	2014
	QATPE	T4 DNA ligase	amplification / RCA	[3]	2015
	PTCDI	microRNA	amplification / DSN	[4]	2015
dsDNA	[Pt(C [^] N [^] N)(4-appt)] ⁺	Hg ²⁺	logic gate / “OR”	[5]	2012
	A ₂ HPS·HCl	dsDNA	nanomaterial / GO	[6]	2012
	Hoechst dye	DNA / Exo III	nanomaterial / GO	[7]	2013
	Hoechst dye	EcoRI activity	—	[8]	2014
	SYBR green I	nucleic acid	amplification / TCPA	[9]	2014
	SYBR green I	NAD ⁺	Exo I & Exo III	[10]	2016
	DAPI	DNA	ratiometric detection	[11]	2016
Triplex DNA	DMT	DNA	—	[12]	2015
	berberine	H ⁺ / Ag ⁺	logic gate / “OR”	[13]	2015
	chelerythrine	pH	—	[14]	2016
i-motif	PMNT	pH	—	[15]	2010
	crystal violet	H ⁺ / K ⁺	logic gate / “NOTIF”	[16]	2013
	DMSB	H ⁺ / Ag ⁺	logic gate / “OR” “INHIBIT”	[17]	2014
	DMSB	Ag ⁺	—	[18]	2015
	[Ir(phq) ₂ (Cl-phen)]PF ₆	TdT	—	[19]	2015
	thiazole orange	H ⁺ / Ag ⁺	logic gate / “OR	[20]	2015
G-quadruplex	PPIX	ATP	DNA junction & TSD & logic cascade	[21]	2014
	NMM	DNA	logic gates and cascade	[22]	2014
	NMM	Pb ²⁺	—	[23]	2015
	thioflavin T	Zn ²⁺	—	[24]	2015
	NMM	T4 PNK	TSD	[25]	2015
	ZnPPIX	methyltransferase	amplification / EXPAR	[26]	2015
	hemin	DNA	logic gate & ratiometric detection	[27]	2016
	malachite green	microRNA	amplification / DSN	[28]	2016

PTCDI: perylene tetracarboxylic acid diimide

PMVP-*co*-MVP: poly(N-perylenemethyl 4-vinylpyridine bromide-*co*-N-methyl 4-vinyl-pyridine iodide)

QATPE: 1,1,2,2-tetrakis {4-[(trimethylammonium)butoxy]phenyl} tetraphenylethene tetra-bromide

RCA: rolling circle amplification

DSN: duplex specific nuclease

[Pt(C[^]N[^]N)(4-appt)]⁺: C[^]N[^]N = 6-phenyl-2,2-bipyridine; 4-appt=2-amino-4-phenylamino-6-(4-pyridyl)-1,3,5-triazine)

A₂HPS•HCl: cationic silole derivative

EcoRI: a restriction endonuclease enzyme isolated from species *E. coli*

GO: graphene oxide

TCPA: target-triggered cyclized polymerization amplification

NAD⁺: nicotinamide adenine dinucleotide

Exo I: exonuclease I

Exo III: exonuclease III

DAPI: 4,6-diamidino-2-phenylindole

DMT: methyl-2,6-[2-(4-methyl-sulfanyl-phenyl)-vinyl]-pyridine

PMNT: poly[3-(3'-N,N,N-triethylamino-1-propyloxy)-4-methyl-2,5-thiophene hydrochloride]

DMSB: 2,2-diethyl-9-methyl-selenacarbocyanine bromide

TdT: terminal deoxynucleotidyl transferase

PPIX: protoporphyrin IX

TSD: toehold-mediated strand displacement

NMM: N-methyl mesoporphyrin IX

T4 PNK: T4 polynucleotide kinase

ZnPPIX: Zinc(II)-protoporphyrin IX

EXPAR: exponential isothermal amplification reaction

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