

## Application of light-up aptamers in imaging & analysis of coding and non-coding RNA

RNA target	Application	Aptamer/Dye combination	Ref.
mRNA	Live cell imaging ( <i>E. coli</i> ) of specific endogenous mRNA	Spinach derivative/ DFHBI	[1]
	Live cell imaging (mammalian cells) of specific endogenous mRNA	Broccoli & Spinach derivatives/ DFHBI-1T	[2]
lncRNA	Live cell imaging (mammalian cells) of aptamer-tagged lncRNA	Broccoli derivative/DFHBI-1T	[3]
miRNA	miRNA detection <i>in vitro</i>	Spinach derivative/DHFBI	[4]
		Spinach derivatives/DHFBI-1T	[5]
snoRNA	Live cell imaging (yeast) of aptamer-tagged snoRNA	Broccoli derivative/DHFBI-1T	[6]
tRNA	Live cell imaging ( <i>E.coli</i> ) of ribosome activity	Spinach derivative/DFHBI	[7]
snoRNA/tRNA/ 5S RNA	Live cell imaging (mammalian cells) and quantification of transcription	Corn/DFHO	[8]

### Selected References

- [1] Ong *et al.* (2017) Live cell imaging of endogenous mRNA using RNA-based Fluorescence „Turn-On“ Probe. *ACS Chem Biol* **12(1)**:200.
- [2] Wang *et al.* (2019) Visualizing mRNA in live mammalian cells. *Methods* **2023(18)**:30287.
- [3] O’Leary *et al.* (2017) Long non-coding RNA PARTICLEbridges histone and DNA methylation. *SCIENTIFIC Reports* **7**:1790.
- [4] Zhou *et al.* (2019) Cascade transcription amplification of RNA aptamer for ultrasensitive microRNA detection. *Anal. Chem.* **91**:5295.
- [5] Ying *et al.* (2018) Spinach-based fluorescent light-up biosensors for multiplexed and label-free detection of microRNAs. *Chem. Commun.* **54**:3010.
- [6] Zinskie *et al.* (2018) Live-cell imaging of small nucleolar RNA tagged with the broccoli aptamer in yeast. *Chem. Commun.* **54**:3010.
- [7] Masuda *et al.* (2017) A genetically encoded fluorescent tRNA is active in live cell protein synthesis. *Nucleic Acids Res.* **45(7)**:4081.
- [8] Warner *et al.* (2017) A homodimer interface without base pairs in an RNA mimic of red fluorescent protein. *Nat. Chem. Biol.* **13(11)**:1195.