



GRADIENT MARKER FITC 20K AND TRITC 20K

PRODUCT
NOTE

GRADIENT MARKER FITC 20K AND TRITC 20K

Enabling Visualisation of Gradient Formation

Full experimental control

The addition of Gradient Marker FITC 20K or Gradient Marker TRITC 20K to your CellDirector® experiments makes it possible to visualise gradient formation quantitatively. The fluorescently labeled Gradient Marker products have diffusion properties very similar to many common growth factors such as VEGF, NGF and FGF. Thus, the gradient markers allow for direct real-time visualisation of gradient formation and in many cases eliminate the need for direct labeling of the investigated gradient substance.

Easy visualisation of gradient formation in CellDirector®

The Gradient Marker products are dextran-based compounds labeled with the common fluorophores fluorescein isothiocyanate (Gradient Marker FITC 20K) or tetramethyl-rhodamine isothiocyanate (Gradient Marker TRITC 20K). The substances are well tolerated by experimental animals and cells and no toxic effects are expected under normal conditions. The diffusion coefficients are very similar to those of common growth factors. The gradients formed by the visible Gradient Marker products are therefore comparable to gradients formed by many commonly studied gradient substances.

How it works

In the CellDirector products, gradients are formed by diffusion between a source and a sink solution. The source solution is defined as the solution containing the highest concentration of the active gradient substance, that is the substance chosen by the user to be evaluated for its ability to induce cell migration (chemotaxis) or other effects on cell behavior. The sink solution is defined as the solution containing the lowest concentration of the gradient substance.

By adding one of the Gradient Marker products to the source solution, a fluorescent gradient is formed by diffusion reflecting the formation of the unlabeled gradient substance. The gradient that is formed depends on the diffusion coefficient of the molecule of interest. Both Gradient Marker FITC 20K and Gradient Marker TRITC 20K have diffusion coefficients that equal the coefficients of commonly found growth factors in the human body, such as VEGFA, FGF2 and NGF – substances commonly investigated by customers using the CellDirector products (Ref 1-3).

Adding Gradient Marker FITC 20K or Gradient Marker TRITC 20K to your source solution in the CellDirector is therefore a way to visualise the gradient formed by your active substance, as well as being able to control that your set-up is working correctly.

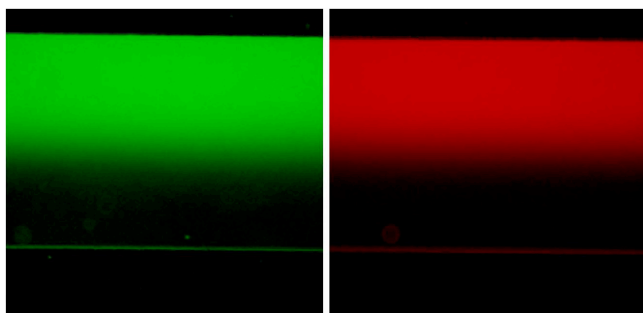


Figure 1. Gradient Marker FITC 20K (left) and Gradient Marker TRITC 20K (right) indicate the formed gradient, here in CellDirector 2D.

Features

- » Biocompatible and non-toxic to cells⁴
- » Non-reactive and soluble in cell culture media
- » Diffusion resembles that of common growth factors
- » Available as FITC- or TRITC-labeled

Optical properties

	Gradient Marker FITC 20K	Gradient Marker TRITC 20K
Emission wavelength [nm]	518	571
Excitation wavelength [nm]	493	550

Characteristics

Diffusion coefficient in water ⁵	~80 $\mu\text{m}^2/\text{s}$
Stoke's radius ⁶	~3.2 nm
Recommended dilution in cell media	1:20-1:50
Buffer used for stock solution	10 mM HEPES
Storage	2–8 °C
Gradient Marker FITC 20K, Catalogue #	REF 80-001
Gradient Marker TRITC 20K, Catalogue #	REF 81-001

References

- 1 Pharmaceutical Research, 24(2), 258-264, (2007)
- 2 Macromol BioScience, Vol. 4, 39-46, (2004)
- 3 Neuroscience, Vol. 103, No. 3, 831-840, (2001)
- 4 Test results with human primary endothelial cells (1:40 dilution), Gradientech AB
- 5 Skin Res Technol, 14(4), 462-467, (2008)
- 6 Acta Biomaterialia, 4(5), 1161-1171, (2008)