

CELLDIRECTOR[®] 2D

PRODUCT
NOTE

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Investigate Chemotaxis Towards Stable Gradients

Easy to use - easy on cells

CellDirector 2D is a cell-based assay optimised for the analysis of cell migration and cell behavior in response to stable chemotactic concentration gradients. All types of adherent cells can be studied. Time-lapse imaging allows for live cell tracking of individual cells, with full control over gradient shape throughout the entire experiment. Migration data from both gradient conditions as well as controls are collected during a single experiment.

Stable gradients in 2D cell cultures for live cell tracking

Gradients of signaling molecules control fundamental biological processes. Cell behavior such as migration, survival, and differentiation is *in vivo* impacted by instructive gradients of growth factors and other signaling proteins. The ability of cells to respond to gradients is thus essential to most aspects of animal development and disease. CellDirector 2D generates fully controllable gradients in cell cultures to study how e.g. endothelial cells, neutrophils or cancer cells respond to gradients of signaling proteins such as VEGF, IL-8 and EGF. Cell migration is preferably recorded by time-lapse imaging.

How it works

Two different cell culture media solutions are used for each CellDirector 2D experiment. The source medium contains the substance to be evaluated. For most experiments, the sink medium contains only serum-free media, but shallower gradients can be achieved by using lower concentrations of the active substance in the sink medium. Gradients are formed in the centrally positioned **gradient region** by diffusion of the chemotactic substance between fluid streams generated from the two different media solutions. Importantly, CellDirector 2D also features **two control regions** where cells experience no gradient, but instead are exposed to only the source or the sink media solutions.

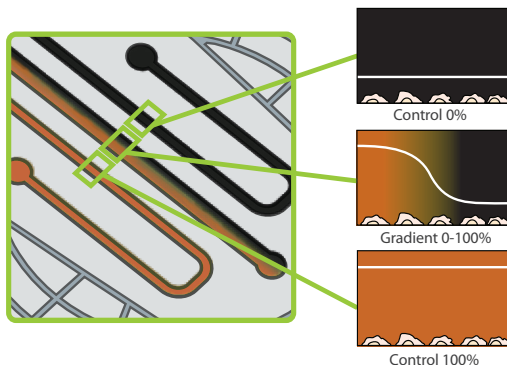


Figure 1. Analyse live cell responses from the gradient region and the two control regions in a single CellDirector 2D experiment.

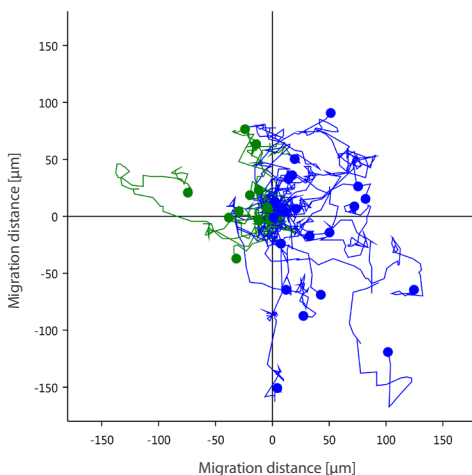


Figure 2. Migration response of human neutrophils to a gradient of IL-8 (0-50 ng/ml) increasing to the right.

Benefits

- » Stable and highly reproducible gradients
- » Gradients can be turned off, modified or reversed during an experiment
- » Live cell tracking of individual cells
- » No assembly needed, simple to handle
- » Distinguishes between random and directed cell migration

Example of research applications

- » Neutrophil and macrophage chemotaxis
- » Metastatic cancer cell chemotaxis
- » Chemotaxis of endothelial cells
- » Cell differentiation

Get started

- » Start-Kit 2D (REF 21-001), includes 20 assays
- » Fusion 100 (REF 90-001) or equal syringe pump

Technical information

Outer dimensions	Ø 42 mm x14 mm (height)
Time to steady-state gradient	15 min
Max. run time (using included syringes)	16 h
Min. working distance of objective	0.17 mm
Transmission wave lengths	300-1200 nm
	Delivered sterile
Catalogue # (10 assays/box)	REF 11-001-10