CYTOOchips™ & CYTOOplates™

Motility

CYTOO

Cells in motion.

CYTOOchips & CYTOOplates *Motility*

Cell migration is a central process in the development and maintenance of all organisms. Tissue formation during embryonic development, wound healing and immune responses all require the orchestrated movement of cells. Errors during this process have serious consequences, including mental retardation, vascular disease, tumor formation, cell invasion and metastasis.

Recent studies have clearly shown that in contrast to classical 2D cell migration on flat substrates, 1D migration obtained on adhesive tracks shows a spectacular mimicry with cell migration in 3D scaffolds and *in vivo*.

Our micropatterned adhesive tracks are available in CYTOOchip as well as 24 and 96-well CYTOOplate formats, both for basic research and screening applications.

The CYTOOchip and CYTOOplate *Motility* have been designed to offer adhesive lines in a range of widths from 2.5 to 20 µm.

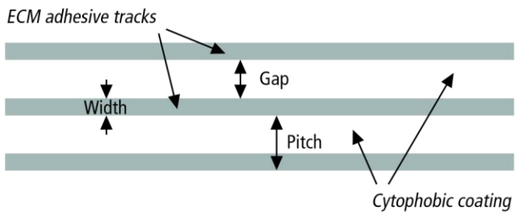
Benefits and key features

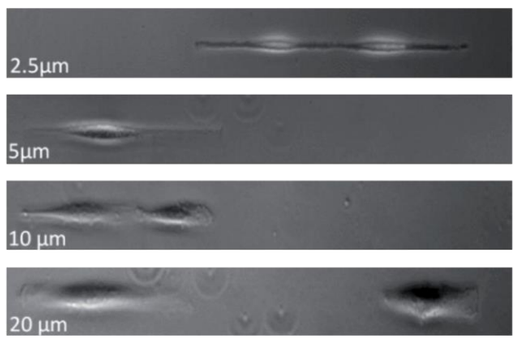
- Adhesive tracks with widths of 2.5, 5, 10 and 20 µm.
- Straightforward cell tracking and speed measurements
- Side-by-side 1D vs 2D migration comparison (on CYTOOchips)
- 1D/2D cell migration transitions areas (on CYTOOchips)
- Easy navigation and acquisition thanks to the integrated localization grid (on CYTOOchips)
- Optional: fluorescently labeled tracks

Applications

- Cell adhesion, spreading, polarization and motility studies
- Cytoskeleton dynamics and focal adhesion studies
- Robust quantification of migration parameters (velocity, path persistence)
- Cell pairing and streaming (e.g. cancer cells and macrophages streaming)
- Cell division studies over multiple cell cycles
- Neurite outgrowth

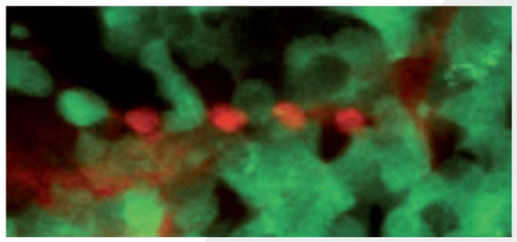
1D micropattern geometry

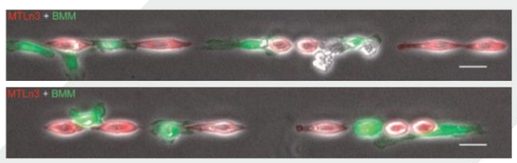




HUVEC cells cultured on fibronectin tracks.
Courtesy of M. Chatelais, University Hospital Nantes

Example: tumor cell streaming

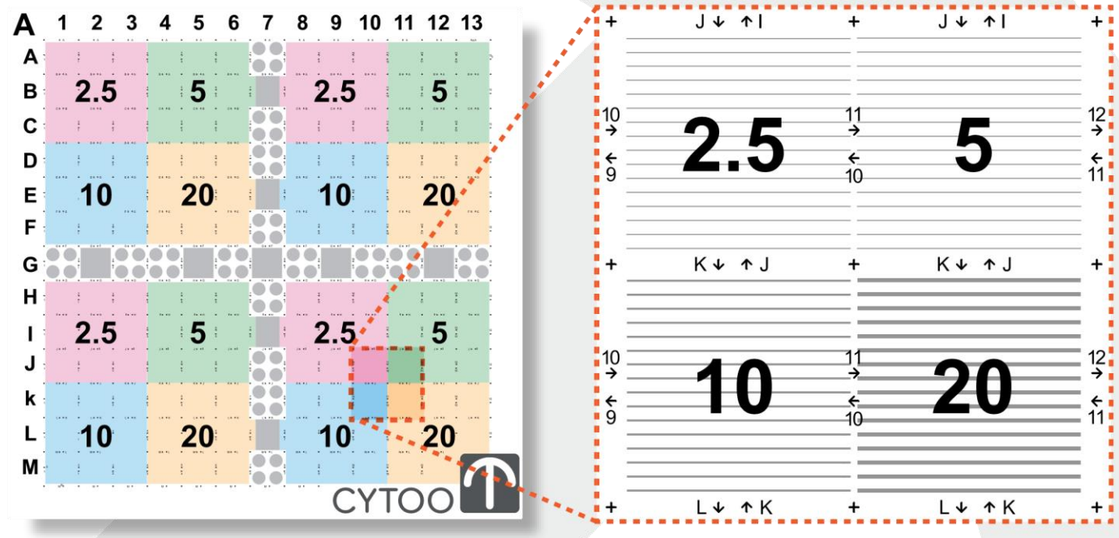




Top: *In vivo* imaging of tumor cells co-migrating with macrophages on collagen fibers.

Bottom: Co-assembly of alternating tumor cells (MTLn3, green) and macrophages (red) on 2.5 µm-wide fibronectin tracks. Sharma et al 2012, courtesy of Landes Bioscience, reproduced from IntraVital 2012;1(1) 77-85.

CYTOOchip *Motility*

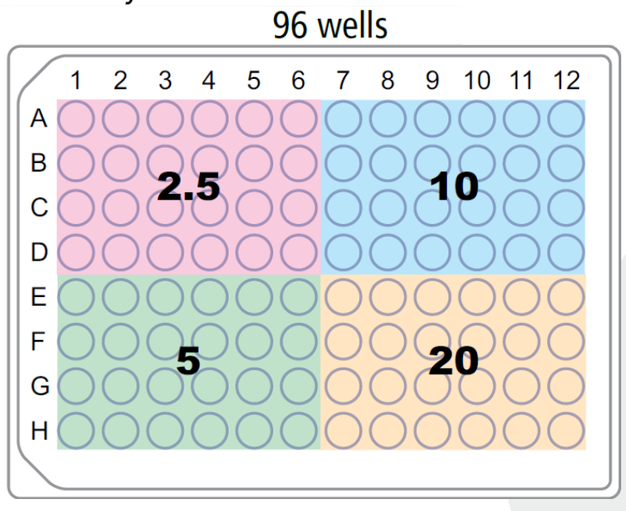


The CYTOOchip *Motility* offers lines of various widths for 1D migration and areas for 2D migration. The lines are organized over the chip in 4 identical quadrants (compatible with our 4well CYTOOchamber). Each quadrant is again divided into 4 zones and each line width is arrayed over 3x3 blocks (line length = 3800µm). There are 16 lines per block with a constant pitch of 75 µm for all line widths. 2D migration areas (500 µm-diameter discs, 1150 µm squares and 1D/2D transitions) are situated in column 7 and row G of the chip.

CYTOOchambers™ for Live Cell Imaging

CYTOOchambers are magnetic devices enabling direct time-lapse experiments on our CYTOOchips Available in 1- 2- or 4-well formats, CYTOOchambers have a 35 mm-diameter footprint and fit into standard microscope stage adaptors. Only line geometries are accessible when using the 4 well CYTOOchamber.

CYTOOplates *Motility*



24 identical wells per line width. Well Ø 6.3 mm

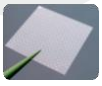
Product specifications

Format	CYTOOchips	CYTOOplates
Description	19.5x19.5 mm^2 glass coverslip with alphanumeric grid	Standard SBS format; Black polystyrene; flat glass bottom, alphanumeric well coding; with lid
Substrate	170 µm (1.5) micropatterned high quality low fluorescence glass	
Number of wells	1,2 or 4 (with a CYTOOchamber)	96
Imaging compatibility	Inverted microscopes; HCS instruments	
Storage and Shelf life	Store at 4°C in original packaging, stable 6 months after date of production	
Line width	2.5, 5, 10 and 20 µm	
Pitch line-to-line	75 µm	62.5 / 60 / 55 / 45 µm *
Gap between lines	47.5 / 50 / 55 / 65 µm *	45 µm
Line length	3800 µm (over 3 blocks)	Throughout the wells
Other features	500 µm discs; 2D sq. areas and 1D/2D transitions	-
Adhesion protein	Fibronectin (FN), FN650 (fluorescently labeled FN, exc. 650 nm), or Ready-to-coat (Activated)**	
Packaging	By 6 chips in a blister pack	Single plate; sealed in an aluminum bag under inert gas
Working temp. range	+4°C to +37°C; Do not freeze	
Other Information	For single use only	

* Respectively for 2.5 / 5 / 10 / 20 µm;

** Activated CYTOOchips for adsorption of the protein of your choice (Collagen, Laminine, Matrigel®, specific antibodies etc.). Protein may be fluorescently labeled. Contact us for recommended coating protocols and specific needs.

Ordering information

Product	Cat. No.	Product name	Product	Cat. No.	Product name
	10-020-X-06	CYTOOchips Motility		30-010 30-012 30-011	CYTOOchamber 35mm 1well CYTOOchamber 35mm 2wells CYTOOchamber 35mm 4wells
				20-031- X	CYTOOplate 96 RW Motility

To generate Cat. No. replace X by
- 00 – A - Activated ready-to-coat (no ECM protein);
- 10 – FN - Fibronectin or
- 13 – FN650 - Fluorescent FN with excitation at 650 nm

For inquiries please contact us at www.cytoo.com/contact

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CYTOO

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