

4Dcell photomasks for micropatterning Sizes & shapes

Set of different shapes and sizes available Customization of micropattern designs

High resolution imaging





4Dcell photomask specifications

4Dcell 2.5 inches quartz photomasks (60x60 mm) allow photoprinting of 4 glass coverslips simultaneously. These photomasks are designed for **24mm diameter glass coverslips** (glass No. 1.5 / 0.13-0.17 μ m). The photomasks are also compatible with other coverslip dimensions (e.g 18 and 12 mm round coverslips). If the round formats do not fit your experiments, square and rectangular coverslips can also be printed.

4Dcell provides six standard designs: **disk (round), line, square, rectangle, triangle, grid**. Others designs for specific applications are also available (culture of spheroids, growth of neurons, etc.).







4DCELL STANDARD PHOTOMASKS



4Dcell Quartz photomask – Disk (round) Shape

A. Example of applications of 'Disk (round)' shaped micropatterns

- Standardize cell shape
- Control the position of cells
- Control surface area of cell adhesion
- Free cell polarisation
- Cell chirality, Ciliogenesis ...
- Small patterns can be used to make attached quasi-spherical cells (mimic detached cells)
- B. Line mask reference: UM001
- **C.** Features of the patterns





4Dcell Quartz photomask – Line Shape

A. Example of applications of 'Line' shaped micropatterns

- Cell migration
- Cell-cell interaction
- Culture of cardiomyocytes, and muscle cells for optimal differentiation
- Cell contractility

B. Line mask reference: UM002





Zoom in ...

Each size range has lines arranged in rectangular bundles of 1200 x 800 um followed by bundles of longer lines. This organization is applicable to all sizes.

The image below depicts the case of the 20 μ m area: there are lines of a fixed length to fit a 10 x field of view, and there are areas with longer lines, to study, for instance, migration.





4Dcell Quartz photomask – Square Shape

A. Example of applications of 'Square' shaped micropatterns

- Restricted area of migration for cells without imposing a shape (on large squares)
- Can impose specific axes to the cell division
- Study of cellular protrusions (lamellipoda, filipodia, and pseudopodia) at the tips of the squares

B. Line mask reference: UM003





4Dcell Quartz photomask – Triangle Shape

A. Example of applications of 'Triangle' shaped micropatterns

- Can impose specific axes of polarization to cells

- Can impose specific axes to cells during divison
- B. Line mask reference: UM004
- C. Features of the patterns





4Dcell Quartz photomask – Rectangle Shape

A. Example of applications of 'Rectangle' shaped micropatterns

- Restricted area of migration for cells without imposing a shape (on large rectangles)

- Culture of muscle cells
- Maturation of iPSC-cardiomyocytes
- Organelle positioning and morphology
- Cell polarization
- B. Line mask reference: UM005





4Dcell Quartz photomask – Grid Shape

A. Example of applications of 'Grid' shaped micropatterns

- Cell migrationNeuronal networks and synaptic connections
- B. Line mask reference: UM006
- C. Features of the patterns







4DCELL SPECIFIC PHOTOMASKS



4Dcell Quartz photomask – Large disk Shape

A. Example of applications of 'Large disk' shape micropatterns

- Formation of spheroids
- Controlled cell migration with dynamic micropatterns

B. Line mask reference: UM007





4Dcell Quartz photomask – Specific design Neurons

A. Features

Coverslip Format: from **10 mm to 24 mm** (round glass coverslips) Coverslip thickness: **170 \mum** Disk diameter: **50 \mum** Line length: **300 \mum** Line thickness: **5 \mum**

B. Line mask reference: UMN50

UMN50: Disks and lines





4Dcell Quartz photomask – Specific design Rectangles '5 to 15 µm'

A. Features

Coverslip Format: **24 mm** coverslips Rectangle length: **20 µm, 30 µm, 50 µm** Rectangle width: **5 to 15 µm** Separation between patterns: **300 µm** Number of patterns per coverslip: **2739**

B. Line mask reference: UMR05-15





4Dcell Quartz photomask – Specific design Rectangles '15 to 25 μ m'

A. Features

Coverslip Format: **24 mm** coverslips Rectangle length: **40 µm, 60 µm, 100 µm** Rectangle width: **15 to 25 µm** Separation between patterns: **300 µm** Number of patterns per coverslip: **2178**

B. Line mask reference: UMR15-25





4Dcell Quartz photomask – Specific design Rectangles '25 to 35 µm'

A. Features

Coverslip Format: **24 mm** coverslips Rectangle length: **90 µm, 120 µm, 150 µm** Rectangle width: **25 to 35 µm** Separation between patterns: **300 µm** Number of patterns per coverslip: **2112**

B. Line mask reference: UMR25-35





4Dcell Quartz photomask – Specific design Rectangles '35 to 45 µm'

A. Features

Coverslip Format: **24 mm** coverslips Rectangle length: **120 µm**, **160 µm**, **200 µm** Rectangle width: **35 to 45 µm** Separation between patterns: **300 µm** Number of patterns per coverslip: **1782**

B. Line mask reference: UMR35-45





The link between biophysics and biology

Based on the experience of the R&D team, 4DCell offers other a product whose innovation lies in its flexibility of use.

Our goal is to provide affordable biophysical tools adapted to customized applications, thus meeting your research needs. This is ensured without compromising quality, thanks to the extensive know-how the R&D team has and which we apply to select the best materials and methods to deliver perfect products fabricated to order, in-house in our labs in Montreuil, Paris, France.

Sales contact contact@4dcell.com

4Dcell SAS

14 rue de la beaune 93100 Montreuil France

www.4dcell.com