



COLLAGEN CELL CARRIER

The Universal Carrier Membrane

Collagen is the most common protein in mammalian tissue and is an essential structural element of the extracellular matrix (ECM). That makes collagen an ideal substrate for cell and tissue culture. Thanks to its special characteristics and its availability in R&D and medical qualities, the Collagen Cell Carrier (CCC) from Viscofan BioEngineering is the perfect material to be used as a membrane in medical applications or for the production of complex cell and tissue structures.



Medical applications

CCC is manufactured following a continuous extrusion process and, therefore, can be offered in custom-made sizes and in different thicknesses (from 20 to 200 µm) to comply with the needs of our customers developing medical technology applications. Its high mechanical stability combined with its elasticity enables perfect adherence of the membrane to the underlying surface and direct suture to tissues even in wet conditions.

Research applications

This collagen matrix is also an excellent cell carrier for research applications in regenerative medicine or tissue engineering, for example. It is offered in two qualities for research and clinical use which immediately ensures much easier bench-to-bedside translation of regenerative therapies developed by our customers.

The outstanding mechanical stability of the collagen matrix permits ease of handling, e.g. when transferring intact cell-matrix structures for implantation into host tissues or for further biological, chemical, and histological analyses. The cell-populated carrier can be treated directly with standard fixing reagents and is suitable for embedding in paraffin or preparation for cryostat microtomy to produce ultra-thin histological sections. Cryopreservation is possible as well.

In phase contrast microscopy, the CCC's native collagen fibres hamper direct monitoring of flatly adhering cells. However, due to the low thickness (< 20 µm) and nearly no auto-fluorescence of the Collagen Cell Carrier, cells on top of the membrane can be directly stained with live cell dyes or other fluorescence markers and easily monitored even by inverted epifluorescence microscopy.

For cell analysis, cells can be lysed easily on the CCC and used directly for PCR or protein assays with low contamination by collagen proteins.

R&D Applications

- ▶ Tissue engineering
- ▶ Cell-based assays
- ▶ Culture of primary cells
- ▶ Culture of stem cells and iPSCs

Benefits

- ▶ Available in research and medical grade
- ▶ Ideal matrix even for delicate cells
- ▶ High mechanical stability and biocompatibility
- ▶ Standardised thanks to industrial manufacture

Medical Applications

- ▶ Tissue engineering
- ▶ Medical technologies and devices
- ▶ Regenerative medicine

Benefits

- ▶ Can be sutured even in wet conditions
- ▶ Biodegradable
- ▶ As cell carrier, increases cell retention
- ▶ High cell densities possible with nearly no induction of apoptosis

Properties of CCC

The Collagen Cell Carrier is made of native collagen Type I fibres without chemical cross-linking. This unique *in vivo*-like structure facilitates the attachment and cultivation even of challenging cells and accelerates tissue formation.

Chemical-Physical	Cell culture	Quality
Mechanically stable and elastic	Not biodegradable in cell culture	Collagen type I from bovine skin
Chemically stable	Suitable for primary cells	Raw material for medical quality from countries with negligible BSE risk
Non-chemically cross-linked	Very good results for >30 cell types tested	Quality control according to ASTM F 2212-02
Thermostable -175 to +50°C	Proven excellent biocompatibility	Available in medical grade
Ultra-thin (20µm)	Permeable to most soluble factors	ISO 9001 certified
Nearly no auto-fluorescence	High cell densities achievable	γ-sterilised

Standard size or tailor made?

The different sizes of the Collagen Cell Carrier are tailored for use in standard well plates from 6 wells up to 96 wells. Additionally, Viscofan BioEngineering offers the membrane in bigger squares and shaped for 10 cm dishes. If needed, they can all be easily cut by the customer according to his requirements using sterilized scissors or a scalpel for use in any cell culture vessel.

Ideal cell matrix for tissue regeneration

The excellent cell compatibility of the Collagen Cell Carrier has been demonstrated in numerous *in vitro* cell culture experiments. Studies *in vivo* revealed only very minor immunoreactions by the host tissue and demonstrated significant enhancement of cell retention at the implantation site by the CCC and consistent amelioration of tissue function (Araña et al. Biomaterials 2014). Depending on the target tissue, the CCC maintains its integrity in the body for several weeks and is then completely biodegraded. It is permeable for most for soluble factors thus enabling tissue nutrition and paracrine cell-to-cell communication.

The unique manufacturing process developed by Viscofan BioEngineering ensures a highly standardised and safe product ideally suited for cell biological applications and implantation studies.

Order Information

Please review our product portfolio on / Please order online on: www.viscofan-bioengineering.com/shop
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