CELLENDES
Cell • Environment • Design

3-D Life

Biomimetic Hydrogels for Three-Dimensional Cell Culture

A modular system

User defined modification with bioactive components

Non-toxic dissolution of gels for easy cell recovery

Robust and rapid gel formation

Easy handling

Wide range of ligand density

Tunable gel stiffness

The *3-D Life* Hydrogel system:

User-controlled composition of extracellular environments

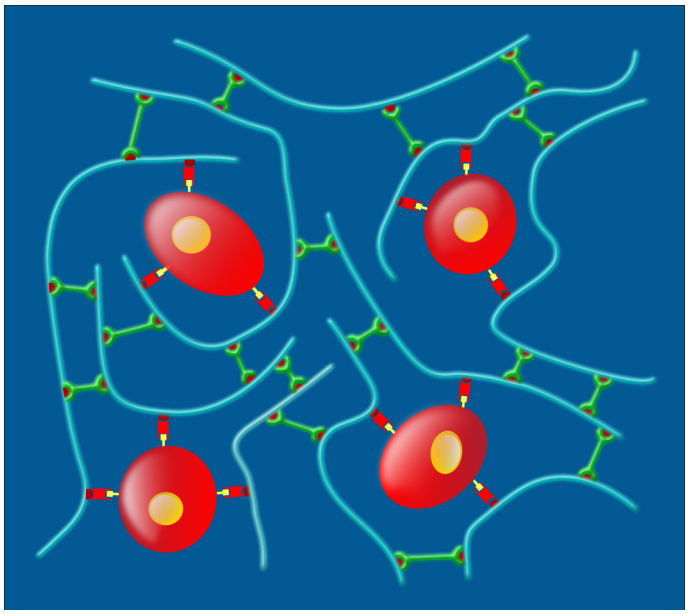
The *3-D Life* Hydrogel system is a complete set of reagents for a flexible design of extracellular matrix compositions in three-dimensional cell cultures. Ease of use and complete control of biomolecular modification allow the creation of hydrogels applicable for many cell types.

The maleimide-functionalized polymers Polyvinyl alcohol (PVA) or dextran represent the biologically inert basis of *3-D Life* Hydrogels.

Adhesion peptides such as *3-D Life* RGD Peptide bind via thiol groups of their terminal cysteines to a portion of the maleimides on the polymer and provide a cell-adhesive matrix.

Cells bind to the polymer-peptide conjugates with their corresponding adhesion receptors, e.g. integrins.

Thiol-functionalized crosslinkers based on polyethylene glycol (PEG) react with the remainder of the maleimide groups on the polymer and crosslink the polymer molecules to form the gel.



- ### Control over cell spreading and migration

  PVA or dextran polymer can be crosslinked either with PEG-Link or the cell-degradable CD-Link. While PEG-Link is biologically stable during the culture period, CD-Link contains a peptide which can be cleaved by cell-secreted matrix-metalloproteases. Use of CD-Link in combination with a cell adhesion peptide (e.g. *3-D Life* RGD Peptide) allows spreading and migration of motile cells within the gel.

- ### Independent variation of peptide densities and gel strength

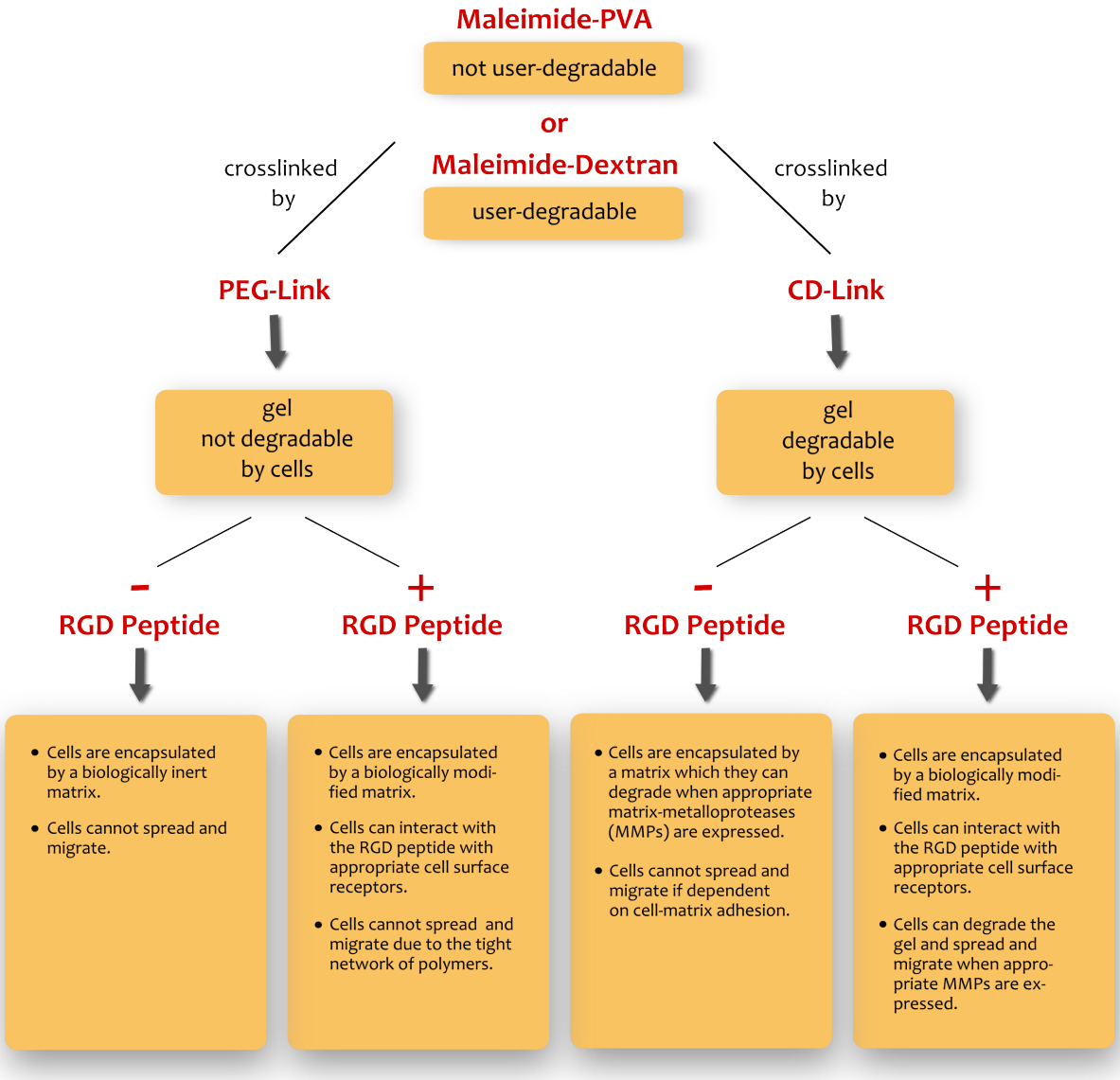
  Peptide densities and gel stiffness can be varied independently by adjusting concentrations of peptide, maleimide polymer and crosslinker. Equal gel strengths can be maintained at different peptide densities.

- ### Easy recovery of cells after culture

  Gels made of dextran polymer can be degraded by the addition of dextranase after culture to recover live or chemically fixed cells. The degradation is protease-free and does not harm cells.

Choice of hydrogel components determines hydrogel properties

Biomimetic variations provide different 3-D cell environments for different cell culture requirements. The choice of crosslinker determines whether cells can locally degrade the hydrogel and create space to move. The addition of RGD Peptide provides a cell adhesive extracellular environment, a prerequisite for most cells to spread and migrate.



For examples of cell culture applications please see our webpage www.cellendes.com for Application Notes.

Product and ordering information

	Product Name	Unit Size	*3-D Life* Hydrogel Volume	Catalog Number
Hydrogel kits[1]	*3-D Life* PVA[2]-PEG Hydrogel Kit	1 kit	1-2 ml[3]	09-G-001
	3-D Life PVA[2]-CD Hydrogel Kit	1 kit	1-2 ml[3]	G81-1
	3-D Life Dextran-PEG Hydrogel Kit	1 kit	1-2 ml[3]	G90-1
	3-D Life Dextran-CD Hydrogel Kit	1 kit	1-2 ml[3]	G91-1
Hydrogel components[4]	*3-D Life* PEG-Link	200 µl	applicable for 1-2 ml[3]	L50-1
		3x 200 µl	applicable for 3-6 ml[5]	L50-3
	3-D Life CD-Link	200 µl	applicable for 1-2 ml[3]	L60-1
		3x 200 µl	applicable for 3-6 ml[5]	L60-3
	3-D Life Maleimide-PVA[2] *Set*[6]	1 set	applicable for 3-6 ml[5]	M80-3
	3-D Life Maleimide-Dextran Set[6]	1 set	applicable for 3-6 ml[5]	M90-3
Adhesion Peptides	*3-D Life* RGD Peptide	1 µmol[7]		09-P-001
		3x 1 µmol[7]		P10-3
	3-D Life Scrambled RGD Peptide	1 µmol[7]		09-P-003
		3x 1 µmol[7]		P11-3

[1] Kits contain all reagents for formation of hydrogels w/o peptide. Peptides need to be purchased separately. Kits for dextran gels include dextranase for gel dissolution.
[2] Maleimide-PVA not available in the USA and Canada.
[3] Sufficient for up to 2 ml gel depending on gel stiffness (2 ml at soft stiffness, 1 ml at medium stiffness).
[4] Products designed for separate purchase of crosslinker (PEG-Link and CD-Link) and maleimide polymer (Maleimide-PVA Set and Maleimide-Dextran Set). This allows for mixing and matching of reagents according to experimental needs.
[5] Sufficient for up to 6 ml gel depending on gel stiffness (6 ml at soft stiffness, 3 ml at medium stiffness).
[6] Sets contain maleimide polymer, buffer, thioglycerol, and water. Sets for Dextran gels include also dextranase for gel dissolution.
[7] 1 µmol peptide is sufficient for modification of 2 ml hydrogel at a final peptide concentration of 0,5 mmol/l.

Distributors

Cellendes products are available in many countries worldwide. Please visit our webpage at www.cellendes.com/products to find a distributor near you.

To order products directly from Cellendes please

- send an e-mail (order@cellendes.com)
- call us at +49-7121-15940-11
- or complete our order form on www.cellendes.com and fax it to +49-7121-15940-99.

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Not for diagnostic procedures.

Cellendes GmbH
Markwiesenstr. 55
72770 Reutlingen
Germany
t +49 7121 15940 0
f +49 7121 15940 99
info@cellendes.com

www.cellendes.com