GrowDex®

GrowDex®

HYDROGEL RANGE

Next generation solution for reproducible and scalable animal-free 3D cell culture applications providing convenience and consistent results.

What is GrowDex?

GrowDex is an animal free, ready to use hydrogel made of nanofibrillated cellulose (NFC) that mimics the extracellular matrix (ECM) and supports cell growth and differentiation with consistent results.

GrowDex is a proven solution for automation and high throughput screening. GrowDex can be used for 3D cell culture for spheroids and organoids, in personalised medicine, regenerative medicine, organ-on-a-chip models, drug release studies and more.

Features and benefits of GrowDex hydrogels

Animal free
Clean and well-defined hydrogels consisting of only nanofibrillar cellulose and purified water. No animal DNA interfering with readouts.

*excludes GrowDex-A after addition of biotinylated ligands

Reproducible lots
Do not add variation to your results. Our GrowDex hydrogels are manufactured to the highest standards with strict quality control criteria, so you can be sure the performance will be the same regardless of the production batch ordered.

Ready to use
No gel preparation steps required. GrowDex hydrogels are provided ready to use, and they can be used and stored at room temperature. Just mix the hydrogel with your media and cells, dispense and incubate.

One-step cell recovery
Cells and organoids can be recovered from GrowDex with a gentle one-step enzymatic process with our GrowDase without affecting the cells.

Temperature stable
Easy and fast handling. Store and work at room temperature, no need to work on ice or at elevated temperatures.

Tunability
Tune the microenvironment to suit your cells. The optimal stiffness is achieved by dilution with cell culture medium, and the culturing matrix can be customized easily by simply adding components such as growth factors or proteins directly to the gel.

Microscope compatible
GrowDex hydrogels do not have auto-fluorescence so imaging with any microscope or high content imaging system is simple.The ambient handling of the hydrogels makes them ideal for high throughput assays.

HTS optimized
The ambient handling of the hydrogels makes them ideal for high throughput assays.

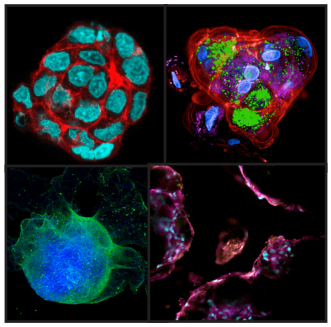
Applications and cell types

GrowDex hydrogels work as a blank canvas for you to customize cell culture conditions with media and growth factors. This allows you to retain control to yourself over culturing properties. GrowDex hydrogels have more than 150 optimized protocols for different cell types.

Stem cells

Cancer

Liver



Cardiac & vasculature

Epithelial & Endothelial

Kidney

Bone & Cartilage

Neuronal cells

Fibroblasts

Easy transition from 2D to 3D

- Control the environment without added animal proteins interfering with your readouts.
- Get easy and reproducible workflows for setting up assays, dispensing and imaging.
- Tune the matrix by adjusting the stiffness or by adding growth factors and ECM proteins.
- Recover your cells safely without affecting the cell proteins or causing mechanical stress to cells.

Proven solution for HTS/HCS applications

- Automate High Throughput and High Content Screening with high-precision and speed in room temperature.
- Stop worrying about temperature control, clogging pipette tips or unexpected polymerization of the matrix.
- Avoid challenging optimization steps and focus on analyzing your cells. End-point analysis is robust and accurate as the matrices are not auto-fluorescent.

GrowDex can also be used in other life science applications:

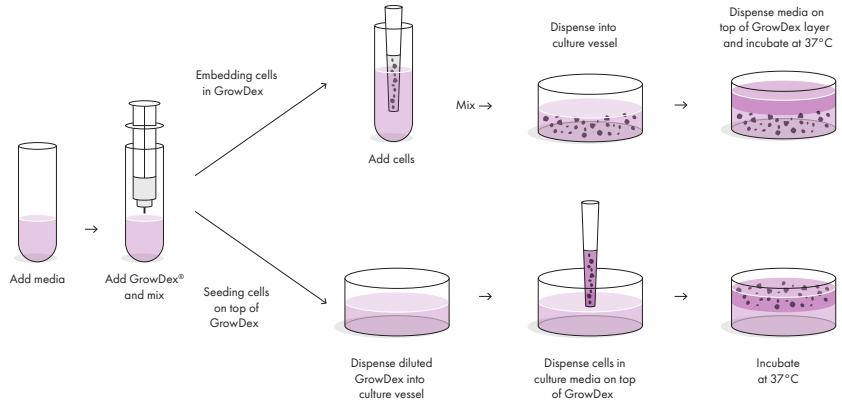
- 3D cell model
- 2D hydrogel coating
- Co-culture
- Invasion assay
- 3D migration
- Animal injection
- Controlled release
- Hight content screening
- High throughput screening

GrowDex®

Animal free hydrogel for 3D cell culture

GrowDex is an animal free, ready to use hydrogel that mimics the extracellular matrix (ECM) and supports cell growth and differentiation with consistent results. With over 150 different assay protocols available GrowDex is our original hydrogel. Highly biocompatible GrowDex has been used widely for the culture of primary cells through to iPS and ES cells.

Bridging the gap between in vitro and in vivo studies ,GrowDex can be used for 3D cell culture for spheroids and organoids, in personalised medicine, regenerative medicine, organ-on-a-chip models, high throughput screening, drug release studies and more. GrowDex hydrogel is also manufactured according to ISO13485 standards guaranteeing the same great quality every batch.



GrowDex Hydrogel*		
Cat. No.	**Product**	**Product size**
100 103 002	GrowDex 2.5 ml syringe	2.5 ml
100 103 005	GrowDex 5 ml syringe	5 ml
100 103 010	GrowDex 10 ml syringe	10 ml
100 103 305	GrowDex multipack (3x5 ml syringe)	15 ml
100 103 905	GrowDex 5 ml syringe + GrowDase 2.5 ml combo pack	5 ml + 2.5 ml

* For research use only

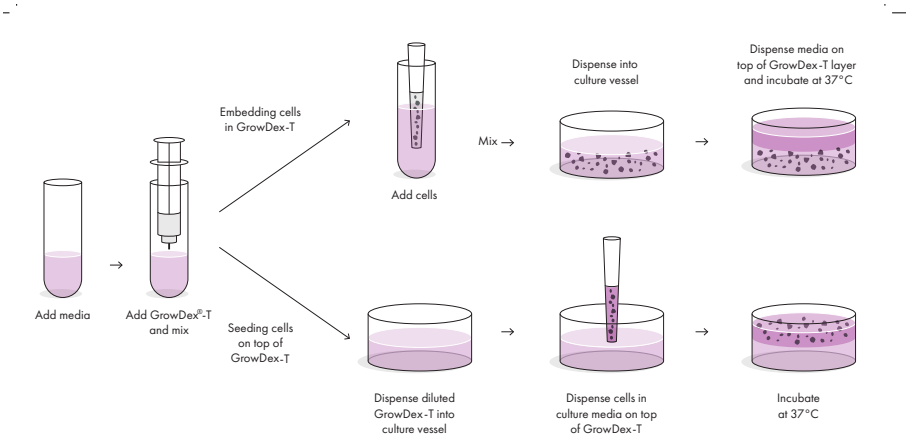
"We tested using GrowDex as an alternative for animal derived extracellular matrices in cell-based 3D high-throughput drug screening (HTS). The results demonstrated that GrowDex is compatible for use in large-scale 3D drug screens and supports long-term culture of primary patient derived tumor cell cultures."
Juha K. Rantala, Ph.D., CEO, Principal Investigator at Misvik Biology

GrowDex®-T

Transparent hydrogel for 3D cell culture

GrowDex-T is a ready to use hydrogel that has been specifically developed to offer superior imaging properties, but without compromising on any of the advantages of our original hydrogel GrowDex.

GrowDex-T can be mixed directly with cells and culture media, no gelation or cross-linking step required. Ambient handling and shear thinning properties of GrowDex-T enable easy dispensing and use in automated systems.



GrowDex-T Hydrogel*		
Cat. No.	**Product**	**Product size**
200 103 002	GrowDex-T 2.5 ml syringe	2.5 ml
200 103 005	GrowDex-T 5 ml syringe	5 ml
200 103 010	GrowDex-T 10 ml syringe	10 ml
200 103 305	GrowDex-T multipack (3x5 ml syringe)	15 ml

*For research use only

"We used GrowDex and GrowDex-T to establish HTS methodology for hepatocellular carcinoma organoids. Major advantages of the GrowDex-T for us were the ease of handling at room temperature using a Gyger Certus Flex, and the fact that it is an animal-free product. Our organoids showed the same morphology as well as treatment response when compared to the standard hydrogel HTS assay."
Tijmen Booij and Lola Fäs – ETH Zürich - NEXUS Personalized Health Technologies

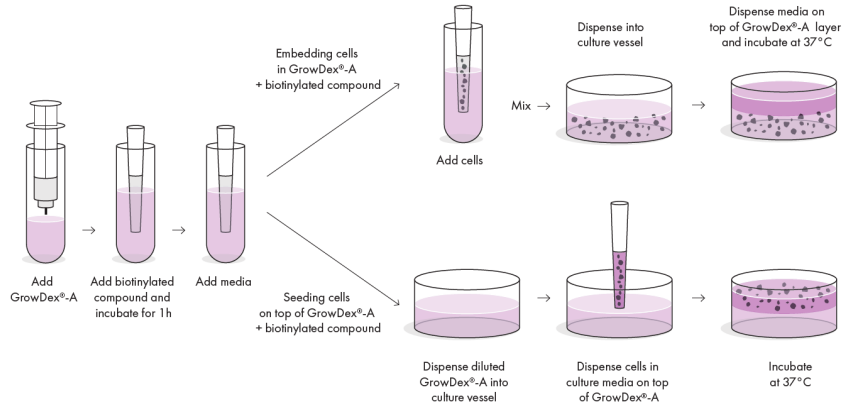
GrowDex®-A

Hydrogel for 3D cell culture with functionalization capabilities

GrowDex-A is a ready to use, transparent hydrogel that has been specifically developed to bind different biotinylated molecules, whose presence may enhance cell culture conditions for specific 3D applications.

GrowDex-A consists of avidin conjugated nanofibrillar cellulose which can be customised by binding different biotinylated molecules e.g. proteins or peptides, to create a cell specific matrix.

Ambient handling and shear thinning properties of GrowDex-A enable easy dispensing and use in automated systems.



GrowDex-A Hydrogel*		
Cat. No.	**Product**	**Product size**
300 103 002	GrowDex-A 2.5 ml syringe	2.5 ml
300 103 005	GrowDex-A 5 ml syringe	5 ml
300 103 010	GrowDex-A 10 ml syringe	10 ml
300 103 305	GrowDex-A multipack (3x5 ml syringe)	15 ml

*For research use only

" I noticed the GrowDex family of products during one of my visits of the vendor space of a conference. It turned out to be a wonderfully neutral ECM substrate, devoid of the vagaries of some of the growth-factor and ligand-rich products in common use. It made me realize how much of cellular behavior can be governed by ECM factors and that we should question even very commonly accepted cell culture protocols. With the ability to easily functionalize GrowDex, it could be a welcome alternative to probe the effects of ECM-bound proteins and their impact on cellular differentiation, locomotion, and survival. " Jan M. Bruder, PhD, Max Planck Institute for Molecular Biomedicine

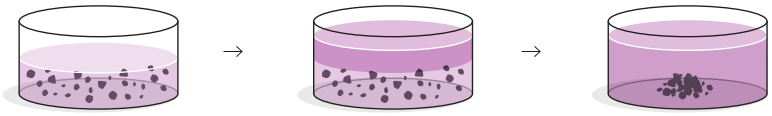
GrowDase™

One step cell recovery

GrowDase™ enzyme breaks down GrowDex® hydrogel to form a solution in an easy one step efficient cell recovery process. 3D cell structures such as spheroids, organoids or biopsies are retained with no impact on cell viability or functionality. Liberated cells can be used in gene or protein expression studies, flow cytometry, or for future experiments.

Harvest your cells

Recovering your cells or organoids post culture is a one step process. Add our GrowDase™ enzyme to your culture and incubate at 37°C. The enzyme digests the GrowDex leaving your cells in solution for re-plating or downstream processing.

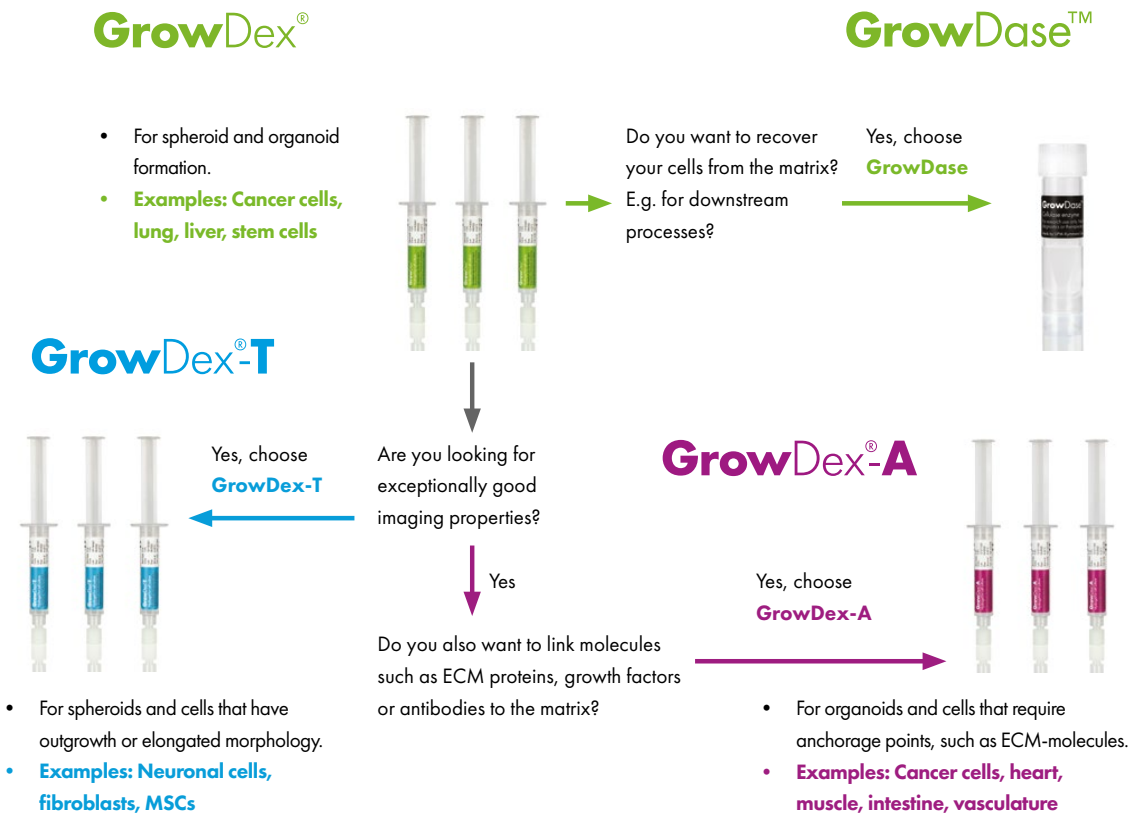


Cells cultured in GrowDex → GrowDase added, sample incubated at 37°C → GrowDex degraded to glucose, cells are in solution

GrowDase enzyme*		
Cat. No.	**Product**	**Product size**
900 102 001	GrowDase 1.25 ml vial	1.5 ml
900 102 002	GrowDase 2.5 ml vial	2.5 ml

*For research use only

Which GrowDex hydrogel to choose?



FEATURE	GrowDex®	GrowDex®-T	GrowDex®-A
Cellulose type	Native	Anionic	Anionic
Cellulose fiber charge	Neutral	Negative	Negative
Stock concentration	1.5%	1.0%	1.0%
Working concentration range	0.2% - 1.5%	0.1% - 1.0%	0.1% -1.0%
Visual appearance	Opaque	Transparent	Transparent
Brightfield	**	***	***
Phase contrast	**	***	***
Fluorecence	***	***	***
Ready-to-use	Yes	Yes	Yes, mix with biotinylated molecule
Shelf life	12 months	12 months	6 months

GrowDex®

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