

# NEST

# NEST Biotechnology Co., Ltd.

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Your Best Choice For Laboratory and Medical Consumables

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## 01 Organoid Culture Solution

**GelNest™ Matrix**

**Organoid Culture Kit**

**Growth Factor, B-27 Supplement**

**Ultra-Low Attachment Surface**

**Fetal Bovine Serum (FBS)**

## 02 Bioprocess New Products

**Aseptic Connectors**

**Quick Connectors**

**Luer Connectors**

**TC Connectors**

**Tubing Accessories**

## 03 Biopharmaceutical Packaging and Medical Devices

**Pen Injector, Pen Injector Assembly**

**COP Prefillable Syringe**

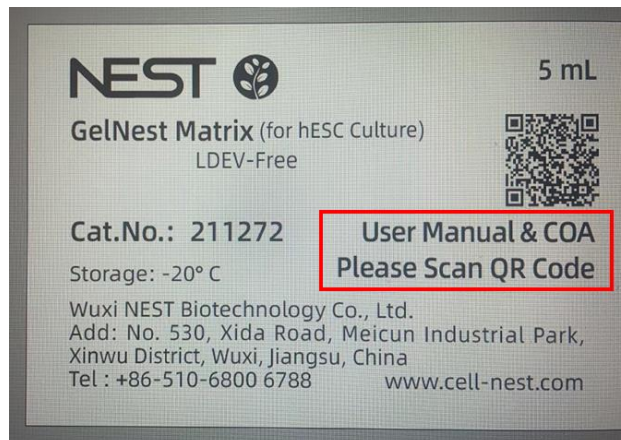
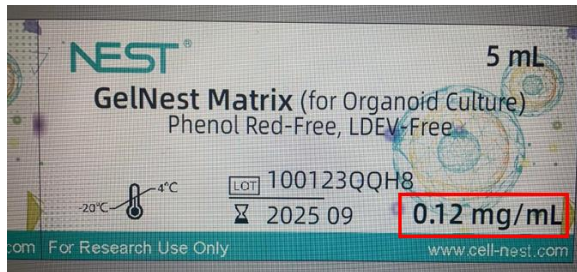


## Product Introduction

GelNest™ Matrix is prepared from the basement membrane components extracted from mouse tumor tissue, with the main components being laminin, type IV collagen protein, heparan sulfate proteoglycan, etc.

## Product Features

- Protein concentration: 8~20mg/mL
- High safety performance: no LDEV (lactate dehydrogenase elevation virus), bacteria and mycoplasma
- Endotoxin: <10EU/mL
- Packaging: COP bottles are not easy to break and can withstand -80°C and -196°C low temperature storage.



## Product Applications

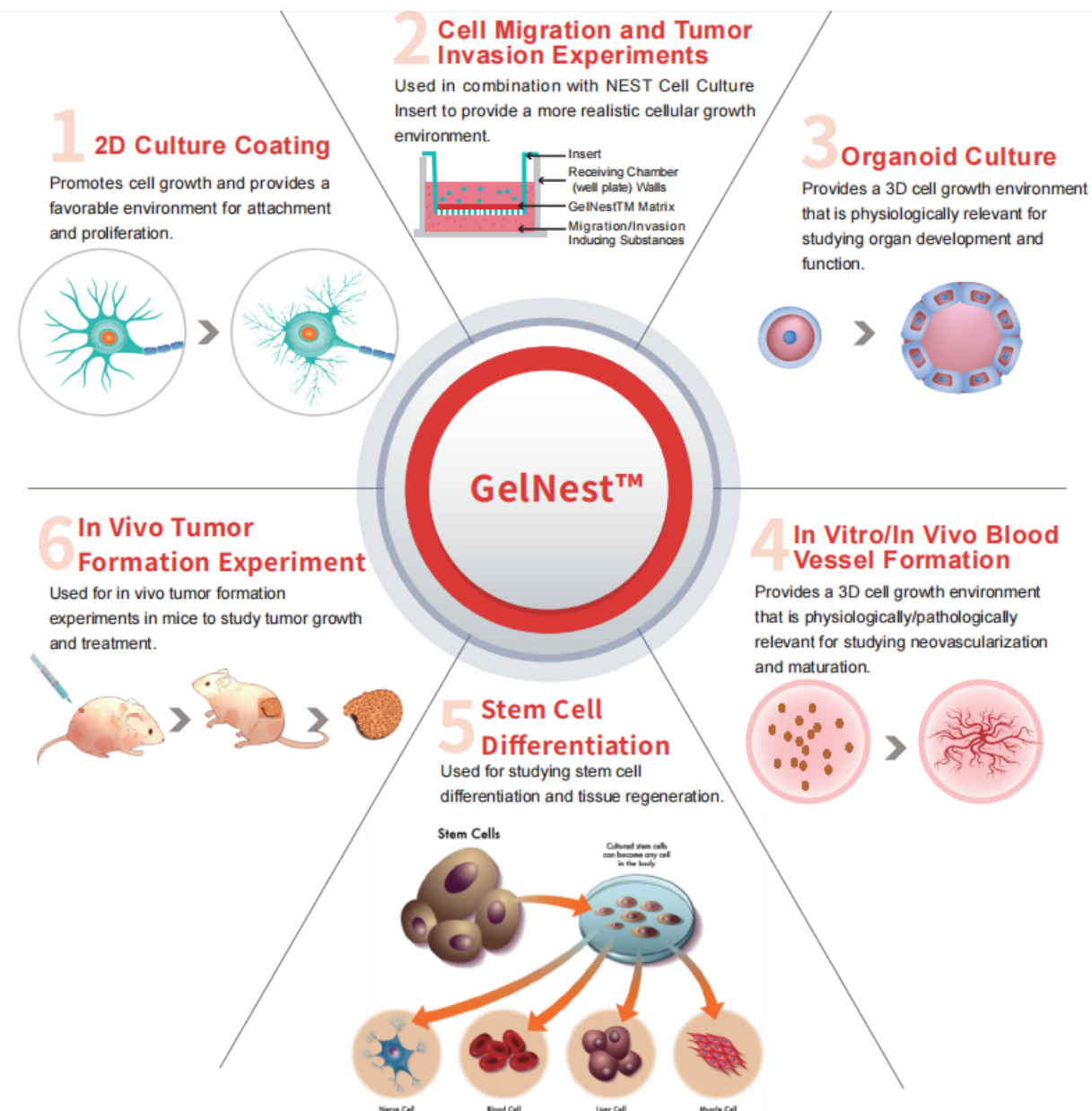
- Organoid culture, stem cell differentiation, angiogenesis, cell invasion, tumorigenesis, and other research.

# GelNest™ Matrix Selection Guide

Product	Growth Factor	Phenol Red	Recommended Applications	/Pack	/Case	Cat.NO
GelNest™ Matrix	Normal	Yes	General 2D, 3D cell culture	5 mL	1	211212
GelNest™ Matrix, without Phenol Red	Normal	No	Requires colorimetric identification (such as fluorescence) or sensitivity to steroids	5 mL	1	211222
GelNest™ Matrix, low growth factor	Low	Yes	2D, 3D cell culture with higher accuracy requirements for matrix components and requires	5 mL	1	211232
GelNest™ Matrix, low growth factor, without Phenol Red	Low	No	2D, 3D cell culture with higher accuracy requirements for matrix components and requires colorimetric identification or sensitivity to steroids	5 mL	1	211242
GelNest™ Matrix, high concentration	Normal	Yes	In vivo tumor formation, thrombosis test, angiogenesis experiment, general cell culture, etc.	5 mL	1	211252
GelNest™ Matrix, high concentration, without Phenol Red	Normal	No		5 mL	1	211262
GelNest™ Matrix, for stem cells	Low	Yes	hESC stem cell culture	5 mL	1	211272
GelNest™ Matrix, for organ-like structures, without Phenol Red	Low	No	Organoid culture and differentiation	5 mL	1	211282

## Storage and Transportation

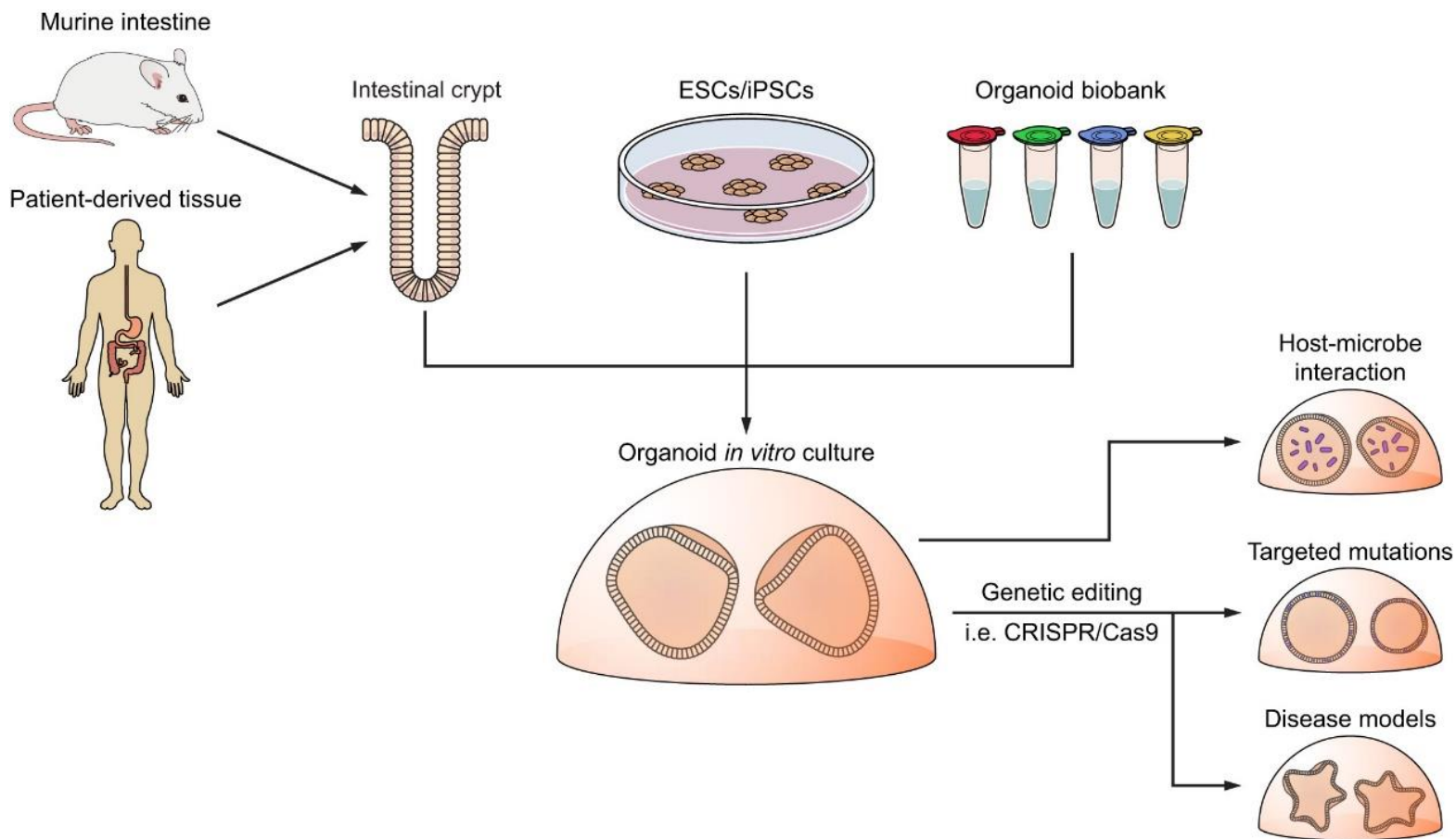
Transported on dry ice. GelNest™ Matrix can be stored at -20°C or -80°C before dispensing, with a shelf life of 2 years. Do not store GelNest™ Matrix in a frost-free refrigerator.





# Organoid Culture Intro

- a mini 'artificially' grown mass of cells produced in-vitro in 3D that shows realistic micro-anatomy
- Derived from (i) **iPSCs/ESCs**, (ii) **tissue-specific** adult stem cells.
- Researchers embed pluripotent cells in an **extracellular matrix** to support the cells. Specific **growth factors** and proteins that mimic the in-vivo environment maintain the stem cell phenotype. Based on the initial stem cell population and growth factors chosen, the matrix-embedded cells will self-assemble into 3-D organoid structures that behave similarly to a specific tissue.



# Main Customer Groups



**Hospitals (Oncology Department, Surgical Center Laboratory)**

**Universities (Mainly Medical Universities and Medical Schools)  
(Direction: Organoids, Stem Cells, Anti-Tumor, Angiogenesis)**

**Research Institutes (Cancer, Stem Cells, Safety Evaluation)**

**Other Research Institutes, Cancer Drug Companies, Cell Therapy Companies**

# GelNest™ Matrix Quality Control



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## CERTIFICATE OF ANALYSIS

**PRODUCT:** Corning® Matrigel® Basement Membrane Matrix, 5 ml vial  
**CATALOG NUMBER:** 356234

**LOT NUMBER:** 9343008

**SOURCE:** Engelbreth-Holm-Swarm (EHS) Mouse Tumor  
**FORMULATION:** Dulbecco's Modified Eagle's Medium with 50 µg/ml gentamycin  
 Corning Matrigel Basement Membrane Matrix is compatible with all culture media  
**STORAGE:** Store at -20°C. Avoid multiple freeze-thaws. Do not store in frost-free freezer. **KEEP FROZEN.**

### QUALITY CONTROL:

Specification	Criteria	Result
Protein Concentration	Results obtained by Lowry method and represented in mg/ml.	9.8
Endotoxin	Endotoxin units (EU)/ml are measured by Limulus Amoebocyte Lysate assay.	< 1.5
Gelling	Tested for ability to gel quickly and maintain this form with culture medium for a period of 14 days at 37°C.	PASS
Biological Activity	Biological activity is determined using a neurite outgrowth assay. Chick dorsal root ganglia are plated on a 1.0 mm layer of Corning Matrigel Matrix. Tested for a positive neurite outgrowth response after 48 hours without addition of nerve growth factor.	PASS
Sterility	Tested for the presence of bacteria, fungi and mycoplasma.	NEGATIVE
MAP Test	Mouse colonies screened for Sendai, MHV, PVM, TEMV/GDVII, Ectro, Polyoma, MRV/EDIM, LCM, MCMV, M.Ad, Reo, MPV, LDEV/LDHV, MTV, Hantaan, K, RCMV, CARB	NEGATIVE
PCR Test	Tumor source tested for <i>Mycoplasma spp.</i> , <i>Helicobacter</i> , LDEV/LDHV, Sendai, MHV, PVM, MMV/MVM, MPV, Reo (1, 2, 3), MRV/EDIM, Ectro, LCM, K, MTV, Polyoma, Hantaan, Seoul, M. Ad (1, 2), MCMV, Norovirus, TMEV/GDVII, KRV, Toolan's H-1, RCV/SDA Finished goods tested for LDEV/LDHV.	NEGATIVE

Expiration Date: February 02, 2022

**SAFETY RECOMMENDATION:** Handle in accordance with good industrial hygiene and laboratory safety practices

Quality Assurance

Date

January 20, 2020

Discovery Labware, Inc., Two Oak Park, Bedford, MA 01730, Tel: 1.978.442.2200 (U.S.)  
 CLSTechServ@Corning.com www.corning.com/lifesciences

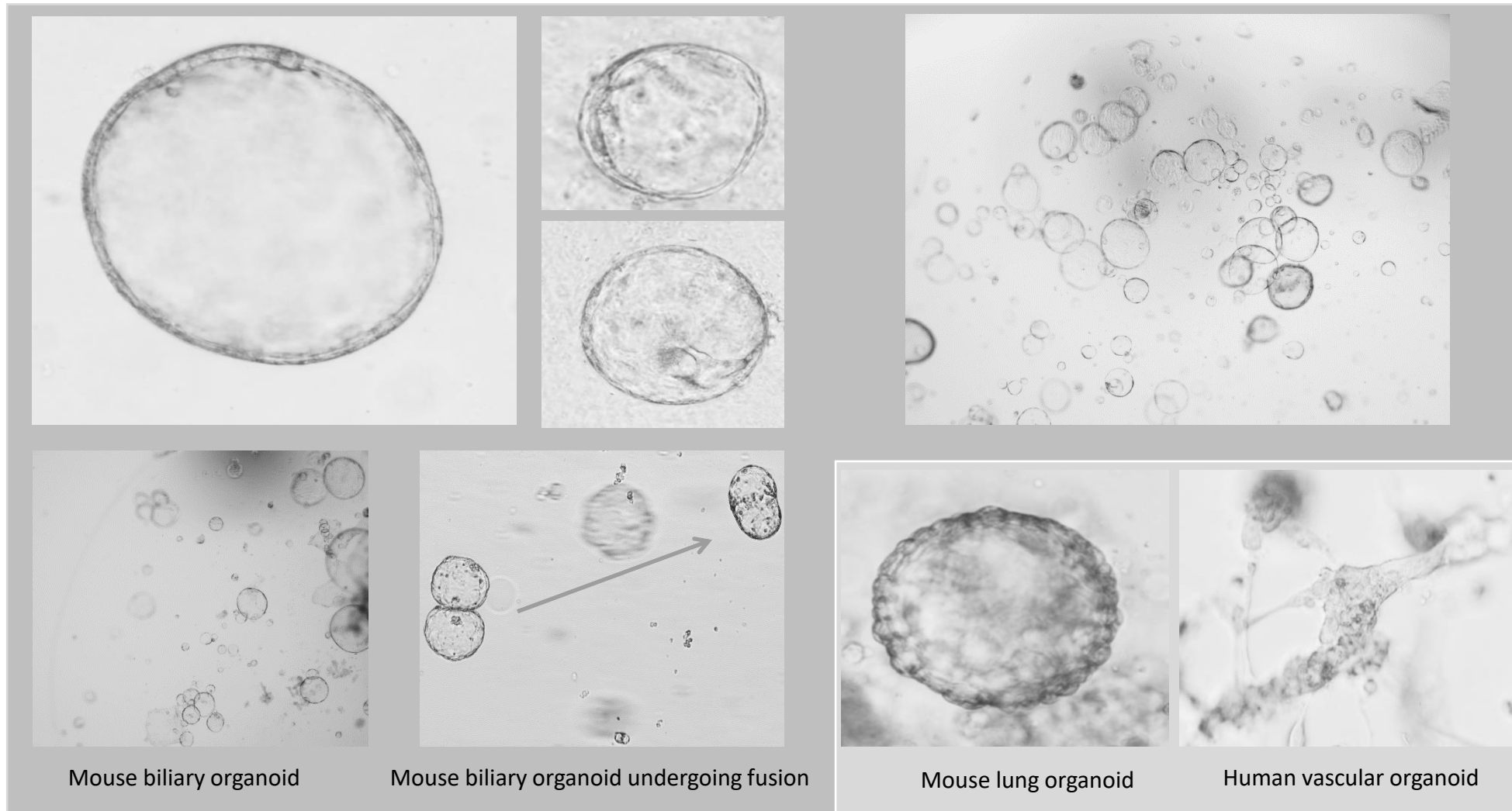
**CORNING**

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Product Name	GelNest Matrix		
Product Number		Lot No.	
Shelf Life	24 months	Expiration Date	2025/10/05
Storage Conditions	-20°C	Shipping Conditions	Dry Ice Shipping
Quality Control Content:			
Test Item	Acceptance Criteria	Test Result	
Protein Concentration	>8mg/mL	11mg/mL	
Gelation Time	<30 minutes	<5 minutes	
Lactate Dehydrogenase-Elevating Virus (LDEV)	PCR Negative	PCR Negative	
Fungi, Bacteria, Mycoplasma	Negative	Negative	
Gel Stability (37°C, 14 days)	Stable	Stable	
Organoid Growth	Supported	Supported	
Neurite Growth	Supported	Supported	
Endotoxin	<4EU/mL	<1EU/mL	
Conclusion	Qualified	Report Date	2023.10.05
Inspector		QC Manager	

# GelNest™ Matrix Cultivation Showcase



Mouse biliary organoid

Mouse biliary organoid undergoing fusion

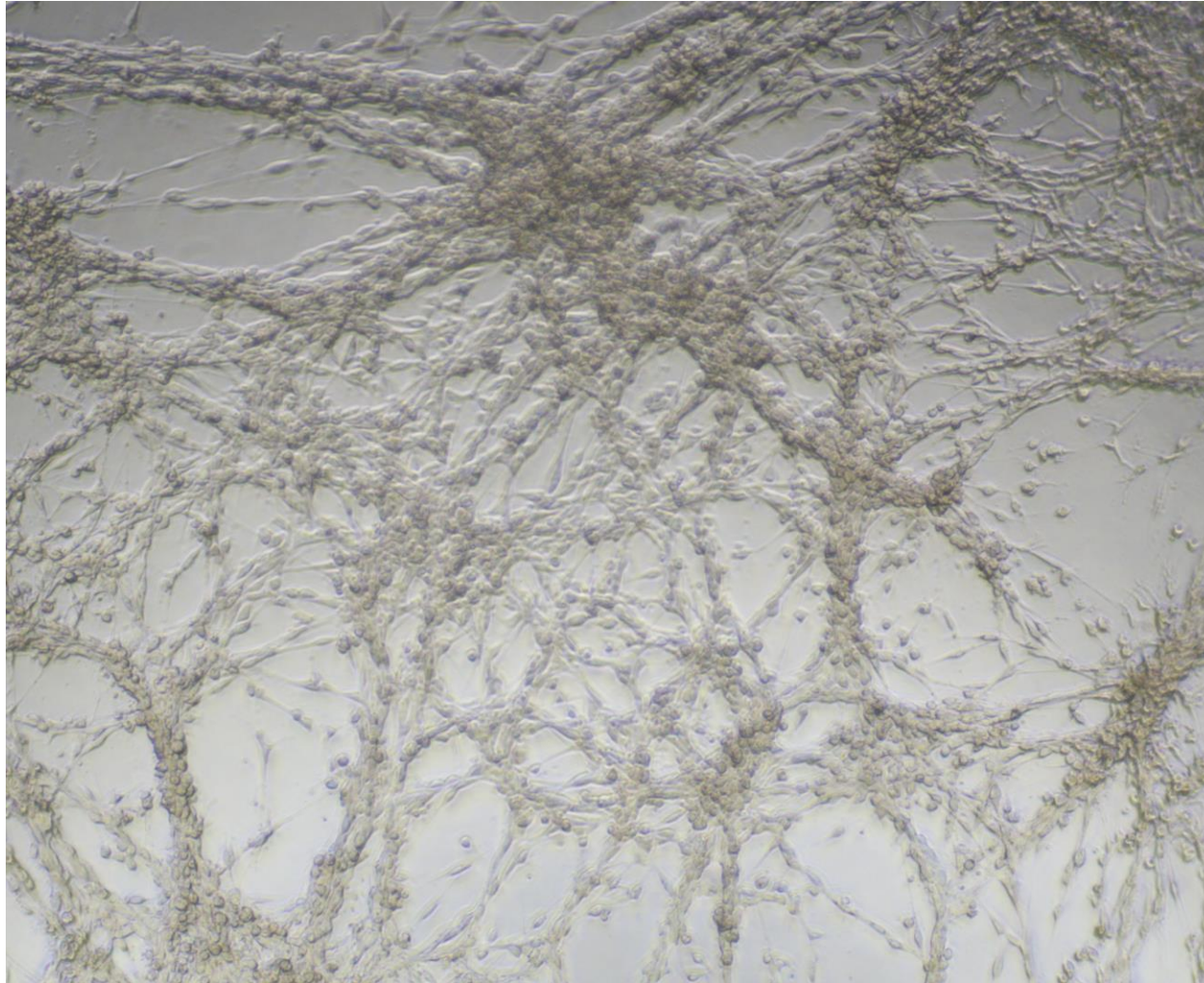
Mouse lung organoid

Human vascular organoid

GelNest matrix can support the growth of organoids well and the phenomenon of adjacent organoid fusion can be observed, indicating a good growth state of the organoids.



# GelNest™ Matrix Showcase: Angiogenesis (Blood Vessel Formation)

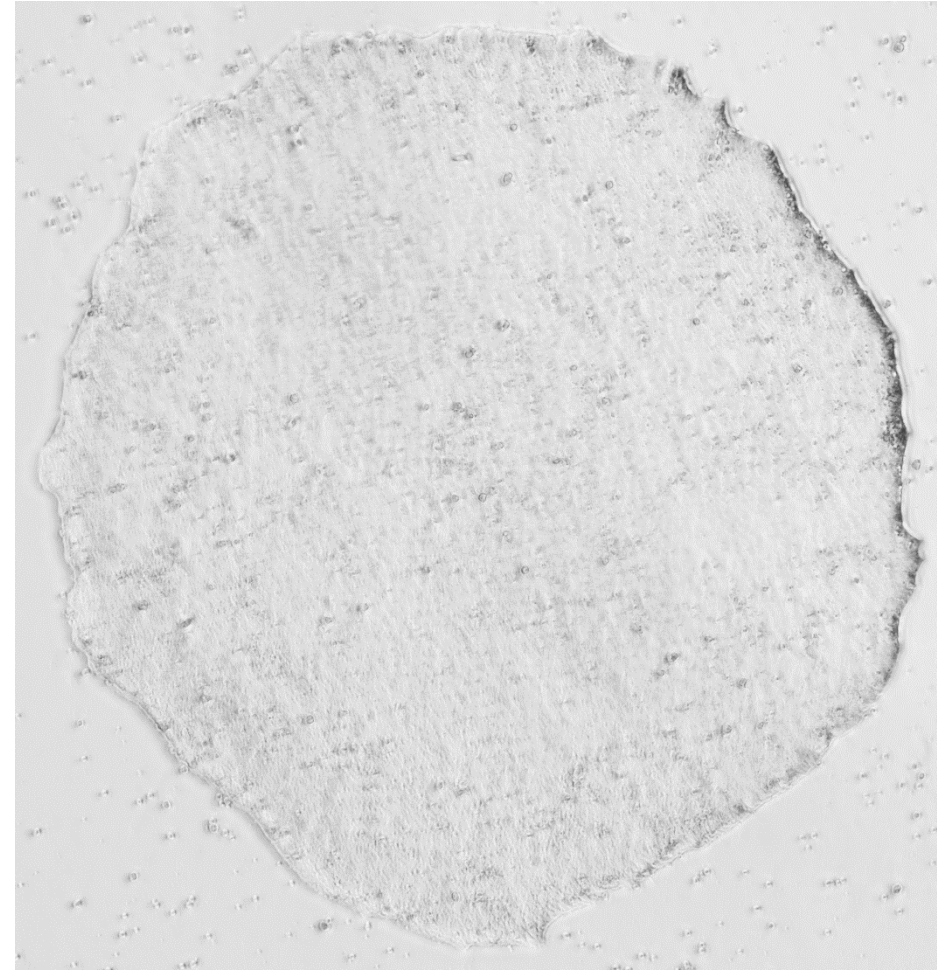


GelNest matrix can support the formation of vascular networks on the surface of the matrix gel, indicating that the matrix gel has good biological activity.

# GelNest™ Matrix Cultivation Showcase: Stem Cells



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GelNest matrix can support the culture of induced pluripotent stem cells (iPSC) (4X magnification), and the smooth edges of iPSC clones indicate that this gel can effectively maintain the pluripotency of iPSC cells.



# NEST Organoid Culture Kits

## Product Intro

The iPSC-induced organoid differentiation kit is an efficient and reliable tool for differentiating iPSCs into the desired organoid cells.

## Product Advantages

Efficiency: efficient differentiation of iPSCs into target organoid cells

Reproducibility: high reliability and repeatability

## Transport and Storage

Transported on dry ice. Store at -20°C, valid for 1 year.



210721



210731

Product Name	Usage	Packaging Info	Order No.
iPSC-derived Biliary Organoid Culture Kit	Supply the differentiation from iPSCs to biliary organoids with essential culture media and growth factors	100mL/Bottle, 1mL/Vial, 1mL/Vial.	210731
iPSC-derived Liver Organoid Culture Kit	Supply the differentiation from iPSCs to liver organoids with essential culture media and growth factors	100mL/Bottle, 1mL/Vial, 1mL/Vial.	210721

# NEST Organoid Growth Factor

## Product Introduction

Contains three growth factors: Wnt3a (W), R-spondin-3 (R), and Noggin (N)

These growth factors affect the Wnt signaling pathway, which is crucial for the proliferation of LGR5+ crypt stem cells in organoids. The activation of Wnt is essential for the in vitro growth of human intestinal organoids.

## Storage and Transportation

Transported on dry ice. Stored at -20°C, valid for 1 year.



## Product Application

Intestinal organoid culture

Other epithelial organoid culture

## Research Area

Stem cell biology: Study the proliferation and self-renewal mechanism of LGR5+ crypt stem cells in organoids.

Gastrointestinal diseases: such as gastrointestinal cancer, inflammatory bowel disease, etc.

Product Name	Packaging Info	Order No.
Wnt3A, R-spondin 3, Noggin Growth Factor, Mouse Origin, 10X Conditioned Media	100mL/bottle, 1 bottle/pack	211511



# NEST B-27 Culture Supplement



## Product Application

Serum replacement

iPSC differentiation

Hippocampal neuron growth

Growth of various CNS neurons

Additive of neuronal basic culture medium

Organoid culture

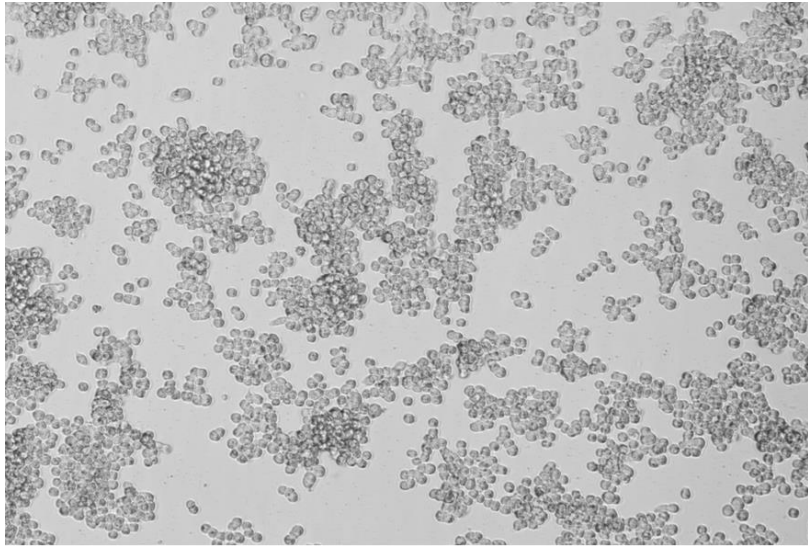
## Storage and Transportation

Transported on dry ice

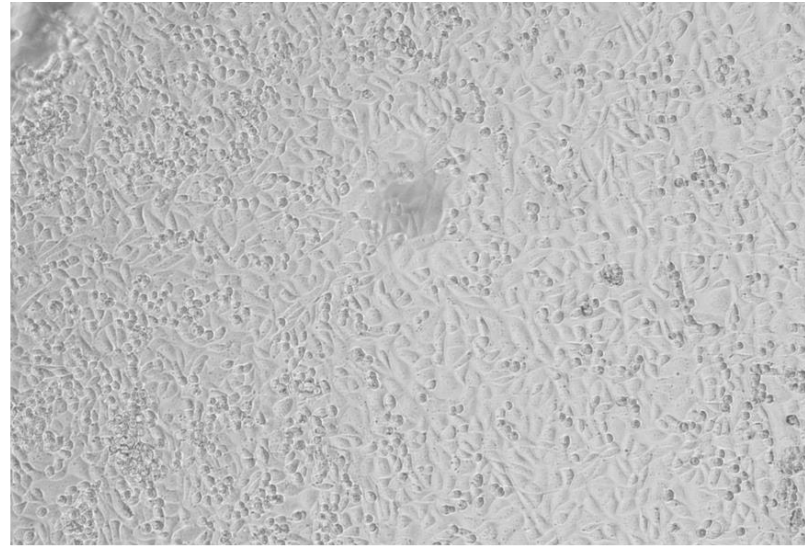
Stored at -20°C, valid for one year

Order No.	Product Name	Packaging Info
211611	B-27 Serum Free Supplement, 50X	Bag Package, 5 mL/bottle, 2 bottle/bag
211621	B-27 Serum Free Supplement, minus Vitamin A, 50X	Bag Package, 5 mL/bottle, 2 bottle/bag
211631	B-27 Serum Free Supplement, minus insulin, 50X	Bag Package, 5 mL/bottle, 2 bottle/bag

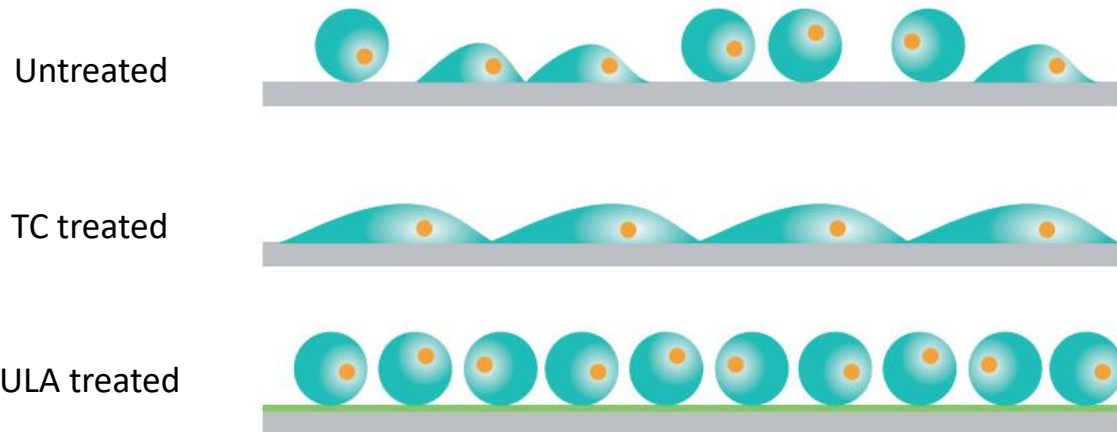
# NEST Ultra-Low Attachment Surface



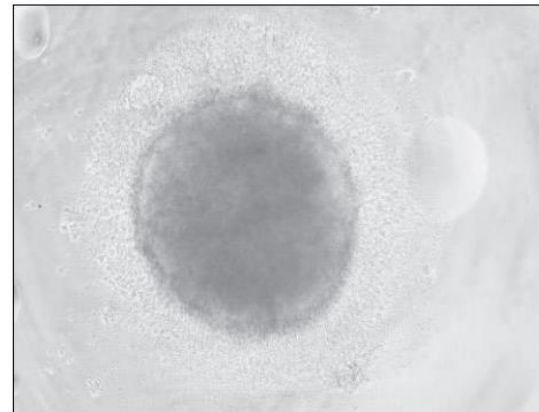
HUVEC on ULA surface



HUVEC on TC treated surface



Spheroid on ULA surface



## Product Features

- Keeps cells in a suspended, unattached state
- Prevents stem cell attachment-mediated differentiation
- Prevents anchorage-dependent cell division
- Reduces the binding of adhesive proteins and serum proteins to the substrate

## Product Application

- Promotes 3D multicellular sphere formation
- Neurobiology: neurosphere formation
- Stem cell biology: embryoid body formation
- Tumor research: multicellular sphere formation

# NEST Fetal Bovine Serum



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- Uruguayan blood source in South America
- The endotoxin in a single batch can be as low as 1EU/mL or below (based on COA)
- Suitable for the culture of various cancer cells, primary cells, and sensitive cells

## CERTIFICATE OF ANALYSIS Fetal Bovine Serum

Lot N°: [REDACTED]  
Catalog N°: [REDACTED]  
Validation date: 29 August 2023  
Expiry Date: 29 August 2028

Storage: - 20 °C  
Appearance: Clear straw to amber liquid  
Origin: URUGUAY  
Filtration: Triple 0.1 μm filtered  
Volume: 815 Liters

### QUALITY PROFILE

Test	Unit	Specification	Result
Bacteria and Fungi:		Sterile	Sterile
Sterility testing		Passed	Passed
Mycoplasma:		Negative	Negative
pH:		7.3 ± 0.5	7,78
Osmolality:	mOsm/kg	310 ± 35	309
Endotoxin:	EU/ml	< 30	<0,2
Hemoglobin:	mg/100ml	< 30	13,34
Protein:	g/l	30 - 45	36,7
BVD Virus:		Not detected	Not detected
IBR Virus:		Not detected	Not detected
PI3 Virus:		Not detected	Not detected

### CHEMICAL PARAMETERS

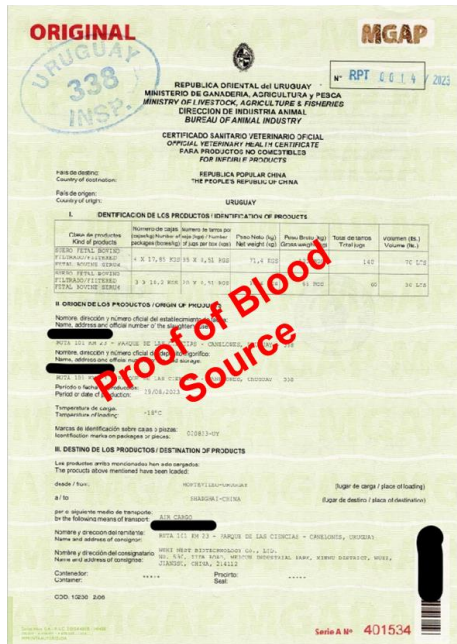
Test	Unit	Specification	Result
Chlorid:	mMol/l	For information	101
Creatinin:	mg/100ml	For information	2,8
Urea:	mg/100ml	For information	39
Glucose:	mg/100ml	For information	67
Uric Acid:	mg/100ml	For information	2,0
Triglyceride:	mg/100ml	For information	60
Gamma GT:	IU/l	For information	7
Phosphorus:	mg/100ml	For information	9,1
Bilirubin:	mg/100ml	For information	0,16
Calcium:	mg/100ml	For information	13,8
SGOT:	IU/l	For information	29
SGPT:	IU/l	For information	<6
LDH:	IU/l	For information	548
Sodium:	mMol/l	For information	135
Alkaline Phosphatase:	IU/l	For information	382
Cholesterol:	mg/100ml	For information	36
Iron:	μg/100ml	For information	174
Potassium:	mMol/l	For information	11,2

### PROTEIN ELECTROPHORESIS

Test	Unit	Specification	Result
Albumin:	g/l	For information	17,8
Alpha Globulins:	g/l	For information	16,8
Beta Globulins:	g/l	For information	2,1
Gamma Globulins:	g/l	For information	0,1

### ELISA TEST

Test	Unit	Specification	Result
IgG:	mg/l	For information	154





## Closed System Connectors

- Aseptic Connectors
- Quick Connectors
- Luer Connectors
- TC connectors



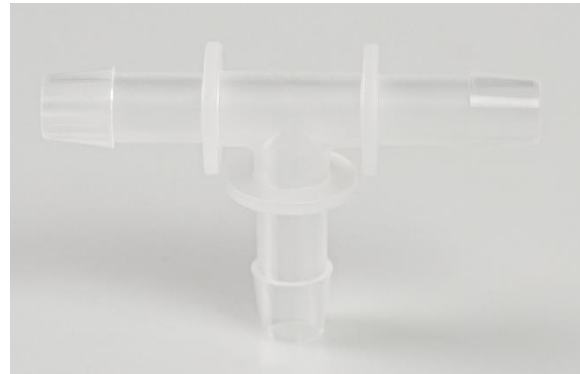
Aseptic Connectors

Female/Male Quick  
Connectors

TC Clamp

## Other Closed System Accessories

- Tube Clamp
- Tube Adaptors
- Tube Coil Clamp



Tube to Tube Series



Tube Clamp

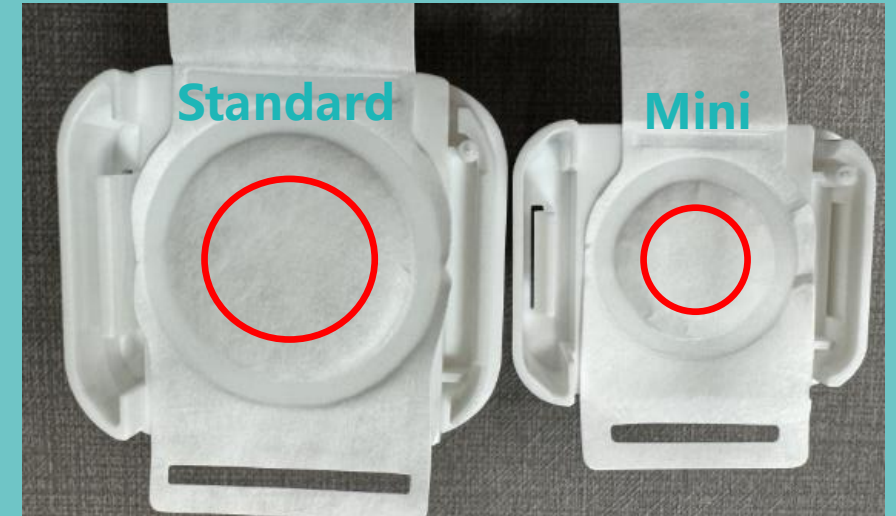


Tube Coil Clamp



## Product Specifications

- NEST aseptic connector is genderless.
- Models designed for different throughputs.
- Standard models and mini models are not interchangeable.



# NEST Quick Connectors

## Female Connector



## Sealing Plug (Male)



## Male Connector

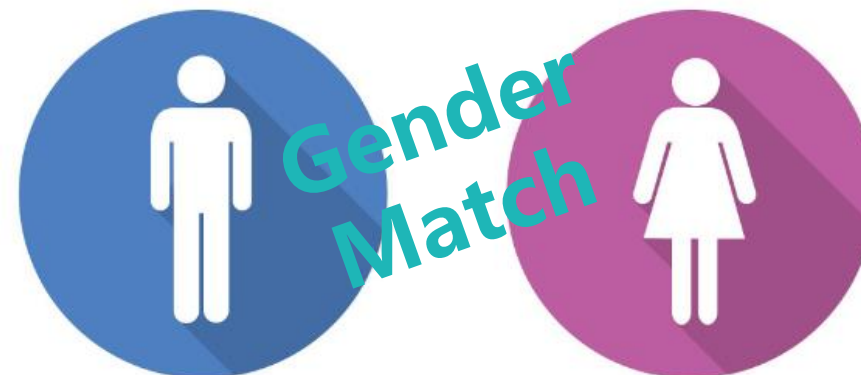


## Sealing Cap (Female)



## Product Features

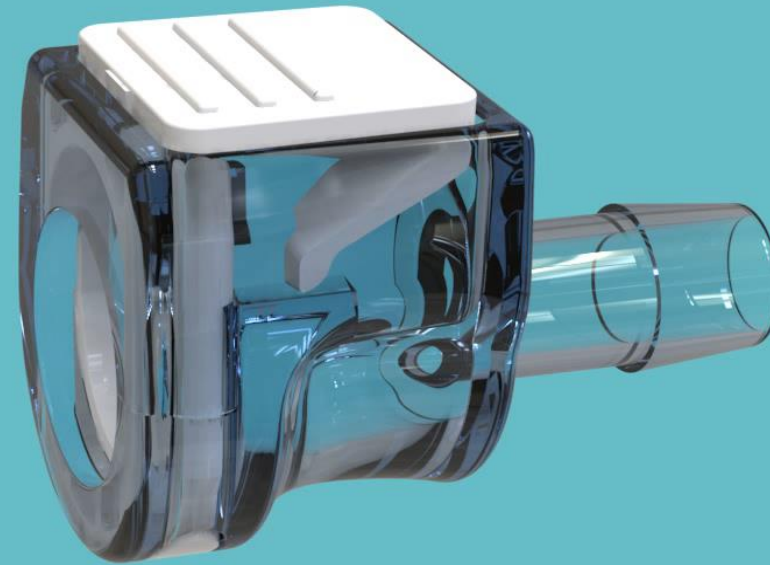
- Adapts to various inner diameters of pipes: 1/8", 1/4", 3/8"
- Compatible with other similar quick connectors on the market;
- Meets the requirements for biocompatibility, in line with USP 87, USP 88, ISO 10993 standards
- Under normal temperature, it can withstand 410 Kpa (30min) without leakage;
- Support electron beam irradiation sterilization (up to 50 kGy) or high temperature and pressure sterilization (121°C, 20min);
- The button area is large and has a stripe design, making it more convenient to use.



# NEST Quick Connectors

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# NEST Luer Connectors

## Luer Male Connector



## Luer Cap (Female)



## Luer Female Connector

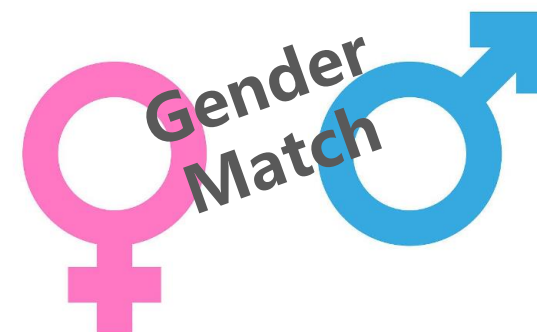


## Luer Plug (Male)



## Product Features

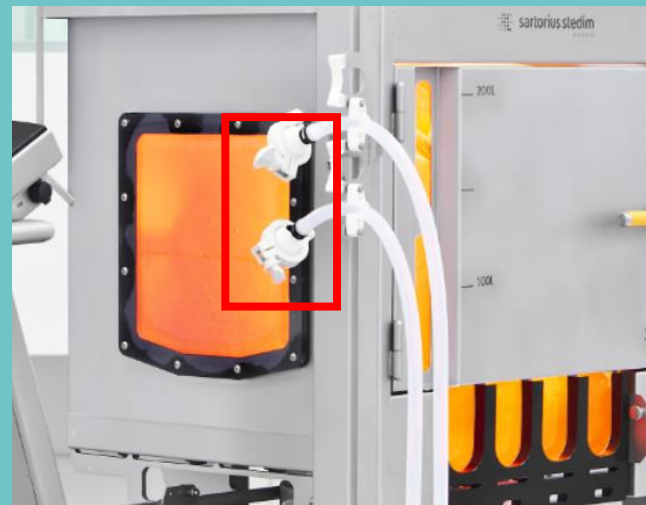
- Adapts to various inner diameters of pipes: 1/16", 3/32", 1/8", 5/32", 3/16", 1/4"
- The product supports electron beam irradiation sterilization (the maximum dose can reach 50kGy), high temperature and pressure sterilization (121°C 20min);
- Tested according to the corresponding national standards of the GB/T 1962.2-2001 luer connector, strictly controlling the quality of the product from structure to performance;
- Meets the requirements for biocompatibility, in line with USP 87, USP 88, ISO 10993 standards, and has undergone physical testing, which can meet the stringent application and strict testing requirements.





# NEST TC Connector

## Connection Type



## Application

# NEST Closed System Accessories Validation List



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## NEST Tests

Product-specific performance tests

Sealing test

Radiation resistance test

High temperature and pressure  
resistance test

Freezing resistance test

Microbial challenge experiment

Fluid creep simulation experiment

Endotoxin test

Nuclease test

Insoluble particle test

## Third-Party Tests

ISO 10993-4 Hemolysis test

ISO 10993-5/USP 87 In vitro cytotoxicity

ISO 10993-6 Intramuscular implantation test

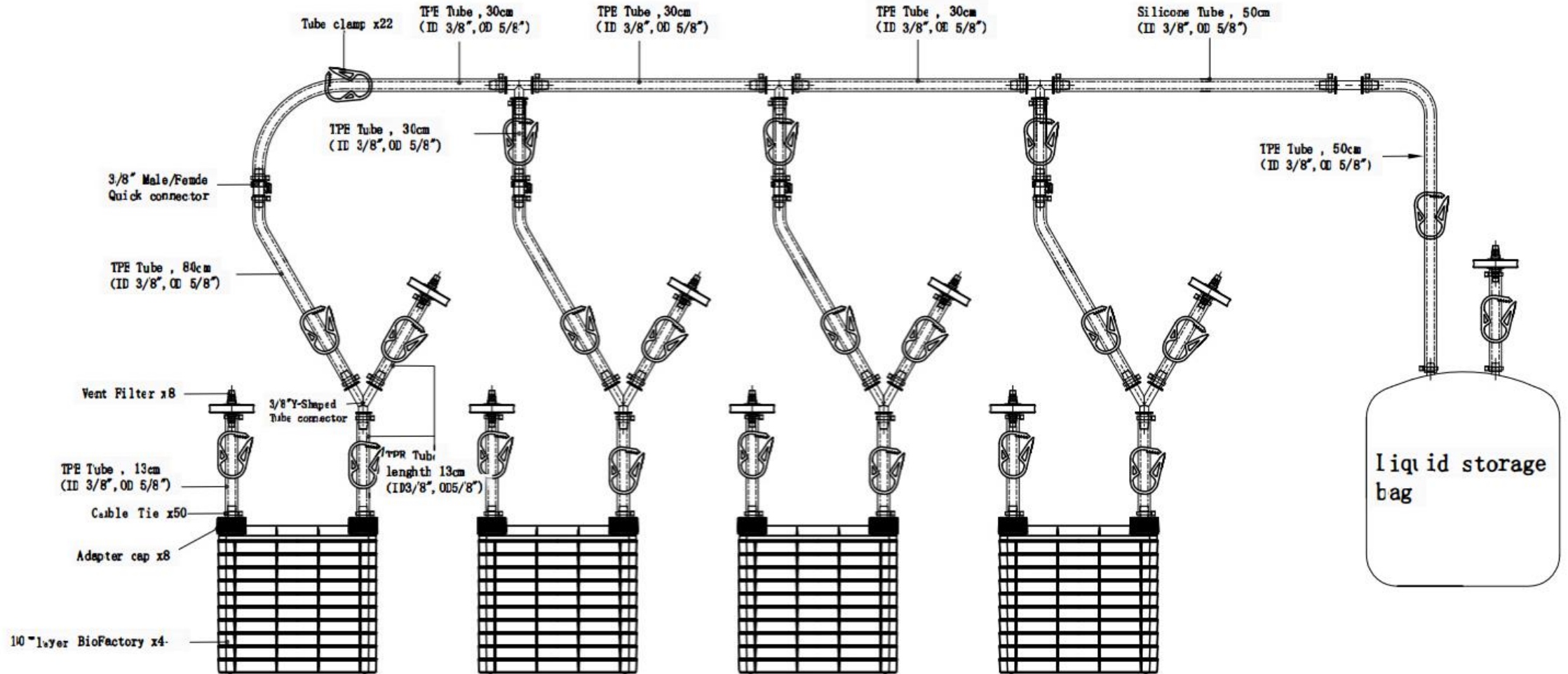
ISO 10993-10 Stimulation and delayed (sustained)  
hypersensitivity test

ISO 10993-11/USP 88 Systemic toxicity test

ISO 10993-23 Skin irritation test

Extraction and leaching tests: USP<665> USP<1665>

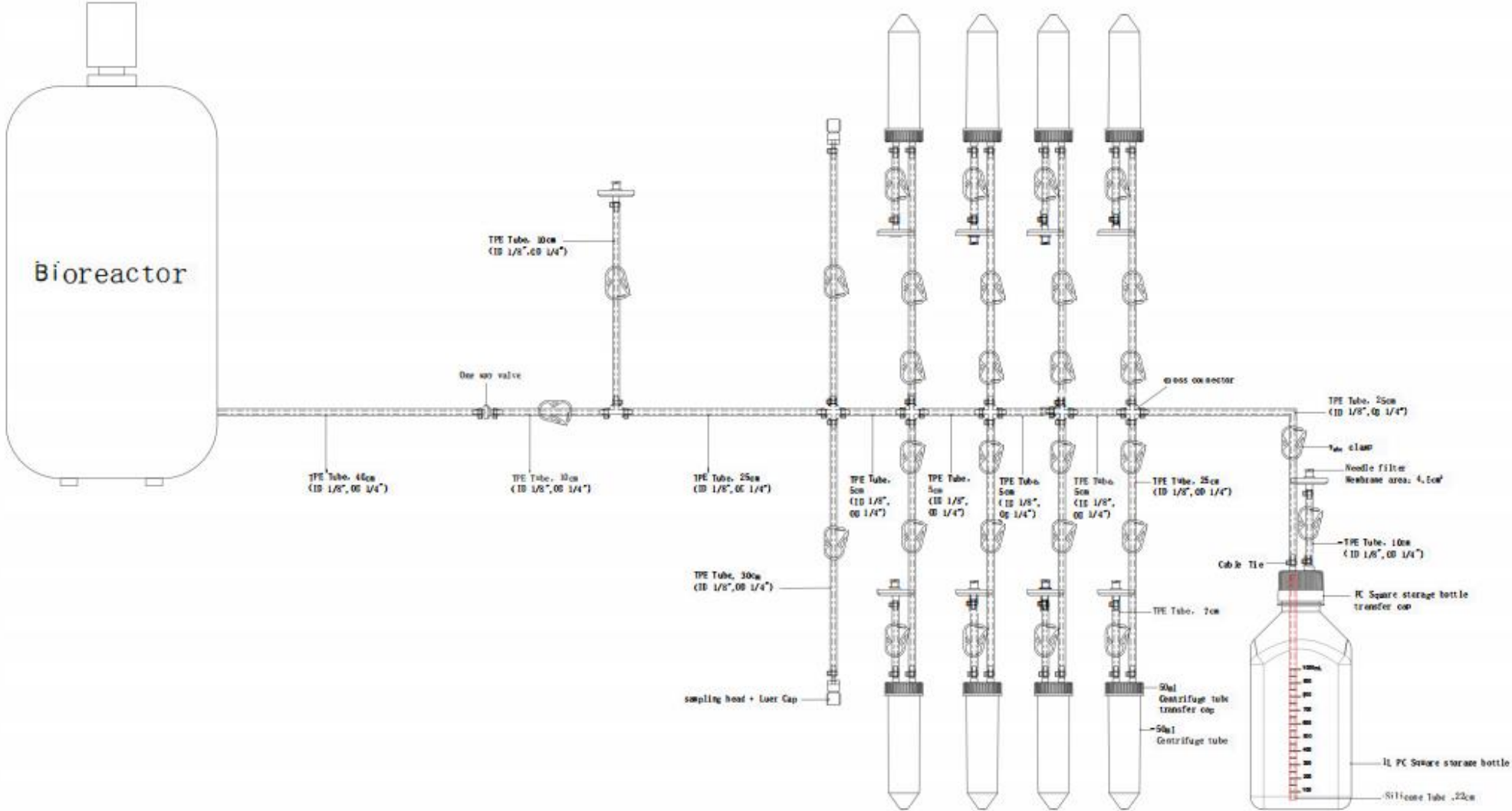
# NEST Closed System Solution



# NEST Closed System Solution



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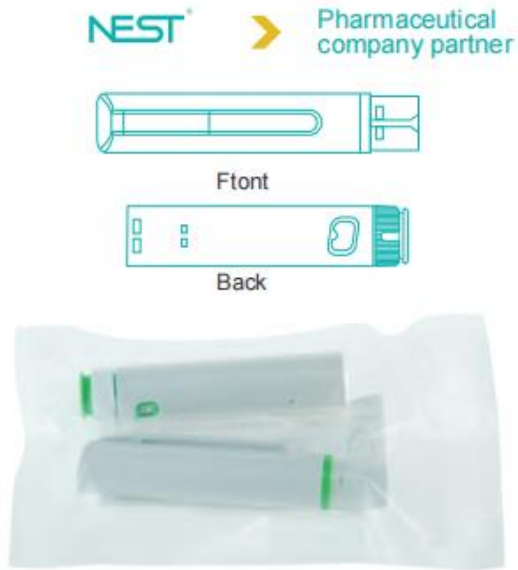




## Pharmaceutical Packaging and Medical Devices

### Disposable Pen Injectors

- Highly Customizable
- Suitable for Injection of follicle-stimulating hormone (FSH) drugs, Insulin Degludec/ Liraglutid, Insulin Degludec and Insulin Aspart Injection.



### Reusable Pen Injectors

- Highly Customizable
- Suitable for Injection of follicle-stimulating hormone (FSH) drugs, Insulin Degludec/ Liraglutid, Insulin Degludec and Insulin Aspart Injection.



## Pharmaceutical Packaging and Medical Devices

### COP Prefillable Syringe



- Used for high-value products such as biological products, biochemical products, antithrombotic drugs, beauty products, etc.
- Outstanding drug stability, low protein adsorption
- Eliminates drug configuration, reduces the risk of drug contamination, and avoids changes in the proportion of on-site drug dispensing

### COP Bottle



- AccureVial® COP bottle combines the best features of plastic and glass packaging, with an inert contact surface, high transparency, high rigidity, low refractive index, no heavy metals and tungsten, excellent temperature tolerance (-80°C~121°C), low protein adsorption, and no delamination.

### Disposable Intranasal Atomization Device



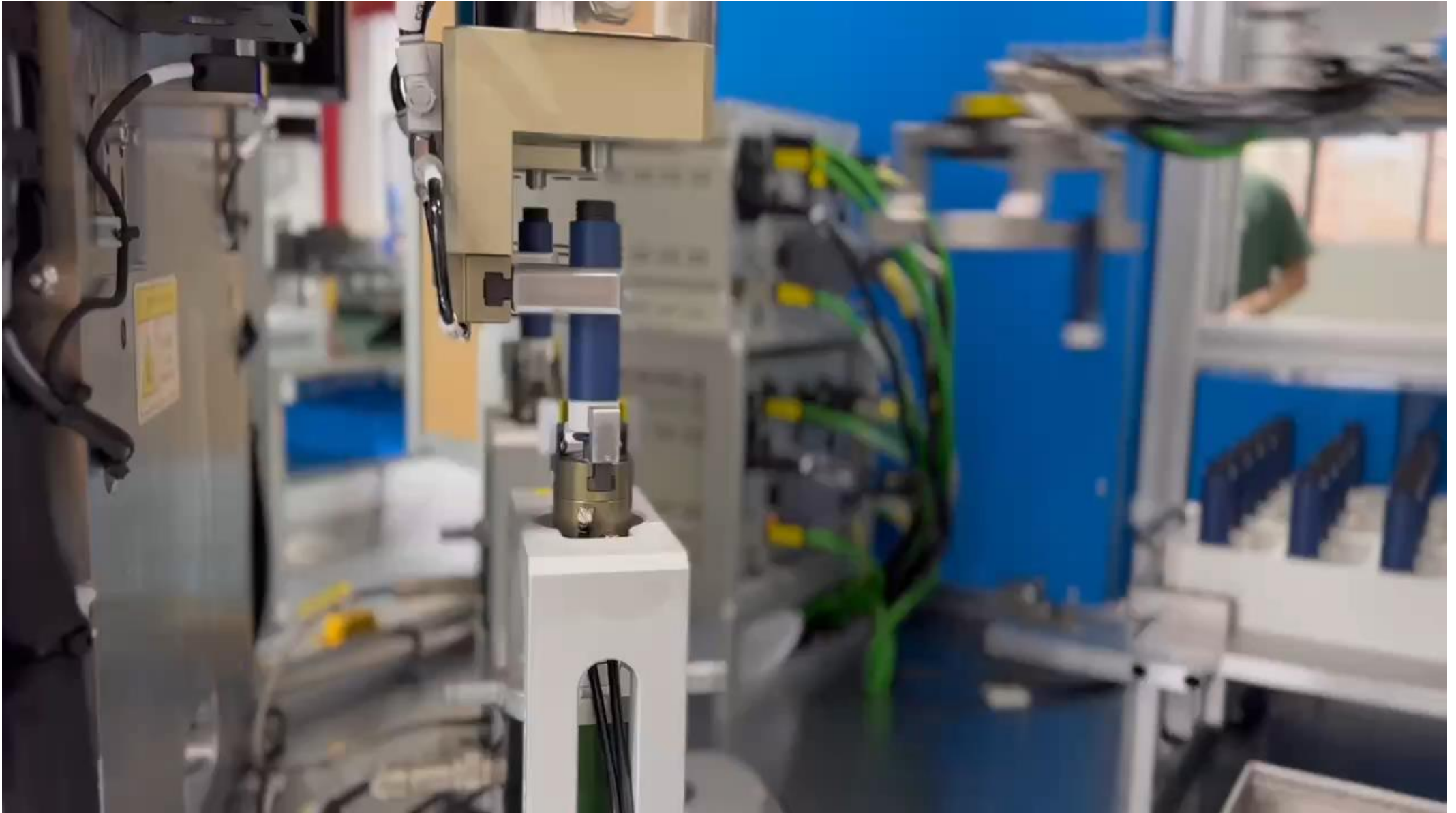
Pre-fills the drug solution in the glass tube, effectively stores the drug for a long time, and is stable. It solves the problem of drug dose loss and waste caused by residual equipment.

When in use, it converts the drug solution into uniformly sized fine mist particles, which are sprayed on the patient's mucous membrane (such as nasal mucosa, oral mucosa), thereby achieving the purpose of administration.

# Production Line— In-Line Test for Pen Injectors

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Thanks

[www.cell-nest.com](http://www.cell-nest.com)