

OVERVIEW

“Printing Life to Shape the Future”

INNOREGEN, INC.

- InnoRegen, Inc. (since April 25, 2018)
- CEO : Jang Soo Suh, MD, PhD, Professor of Kyungpook National University, Korea
- Co-CEO : Young K. Yoon, MD, PhD, Physiatrist (Physical Medicine and Rehabilitation)
- Location: 1501, 33 Cheombokro, Donggu, Daegu, 41069 Republic of Korea
- Main business model: Bioinks for 3D bioprinting & additive manufacturing and bioink-based medical devices
- November 2018, Selected as a TIPS (TECH INCUBATOR PROGRAM FOR START UP) project
- July 2019, Selected as a 'Regulatory Sandbox' project
- Patent (2), Patent Application (15), PCT (2)

SCIENTIFIC ADVISORY BOARD

- James J. Yoo, MD, PhD, Professor, Wake Forest School of Medicine, USA
- Sang Jin Lee, PhD, Professor, Wake Forest School of Medicine, USA
- Moon Suk Kim, PhD, Professor, Ajou University, Korea
- Grace Lim, PhD, Professor, Kyungpook National University, Korea
- Tae G. Kwon, MD, PhD, Professor, Kyungpook National University, Korea
- Hoon Je Cho, PhD, CEO of ActnerLAB, Korea

COMPANY MISSION

- InnoRegen, Inc. is committed to develop and provide standardized bioinks that are optimally formulated for bioprinting of cells, tissues, and organs.
- Our mission is to contribute to the advancement of bioprinting/biofabrication field that will change the way medicine is practiced.

Company video :

<https://youtu.be/cGLa80bG9Jo>

Products video :

<https://youtu.be/UbY9XrB2yNo>

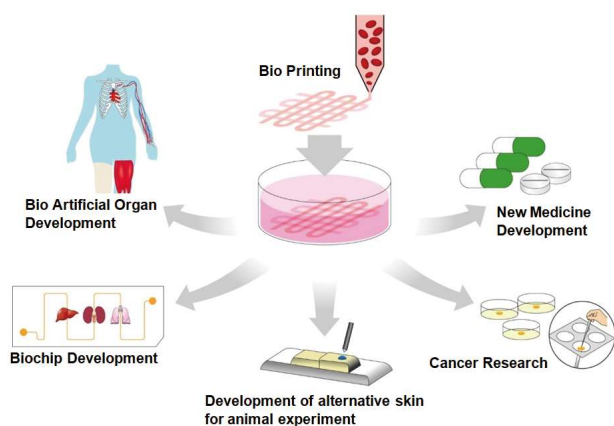
BIOINK

What is "BIOINK"?

Biomaterials for making artificial organs that can be realized by 3D printer.



Utilization of Functional BIOINK

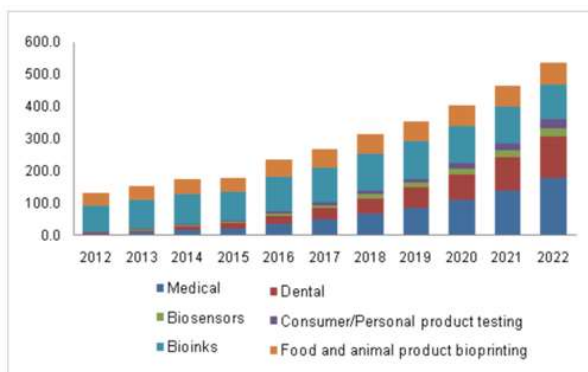


BACKGROUND STATEMENT

- 3D bioprinting technology has gained much attention recently due to its potential for revolutionizing medical practices in the field of medicine/healthcare.
- Recent research advances have enabled bioprinting of cells, biocompatible materials, and supporting components into complex 3D functional living tissues.
- This developing field promises to address the dire need for tissues and organs suitable for transplantation.

3D bioprinting market scale (North America)

by technology, 2012-2022 (USD Million)



PRODUCTS

Gel4Cell®

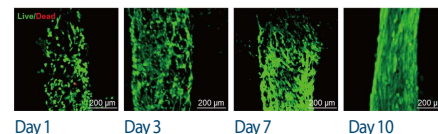
With IMPROVED Gel4Cell® Bioink, You Can Now Print with Even More Confidence!



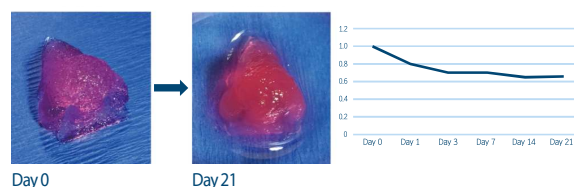
- The InnoRegen's Gel4Cell® formulation has been tested to generate multiple layered 3D tissue constructs that maintain structural integrity over a long-term in vitro. Although Gel4Cell® bioink is specifically formulated for bioprinting applications, it can be used for other research studies that require 3D culture environment.
- Solution type (1 kit, 10 mL)

Bioprinting of Organized C2C12 Myoblasts

Gel4Cell®



Normalized length of bioprinted construct



Gel4Tissue®

Gel4Tissue Peptide Bioinks for Tissue-specific Regeneration!



- Gel4Tissue bioink formulations derived from pig small intestinal submucosa (SIS) can support the cell proliferation and accelerate the tissue maturation/formation for various tissue engineering applications.
- Gel4Tissue bioink contains various types of collagen, lycosaminoglycans (GAGs), hyaluronic acid, heparan sulfate, chondroitin sulfate, and growth factors such as FGF - 2 and TGF - β .

PRODUCTS

Gel4Cell® - BMP (Peptides)

Gel4Cell® - Peptide Bioinks for Tissue-specific Regeneration!



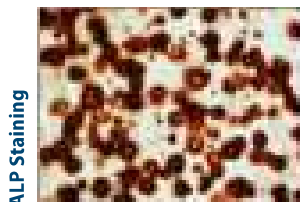
- Gel4Cell® - BMP is BMP-2 mimetic peptide conjugated to Gel4Cell® bioink and cell compatible & osteoinductive bioink for bone tissue engineering applications.



Printed construct containing human bone marrow - derived stem cells (hMSCs)

Control

BMP-peptide



ALP Staining

Gel4Cell® - TGF (Peptides)



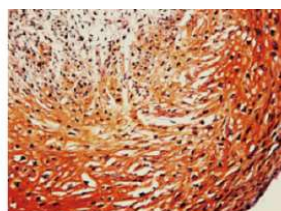
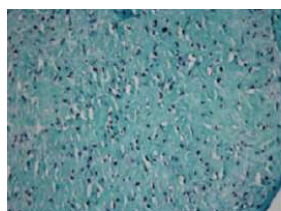
- Gel4Cell® - TGF is TGF mimetic peptide conjugated to Gel4Cell® bioink and cell compatible & chondrogenic bioink for cartilage tissue engineering applications.



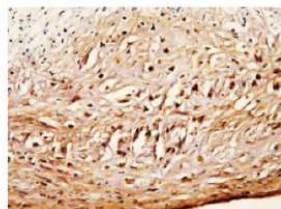
Printed construct containing human bone marrow - derived stem cells (hMSCs)

Control

TGF-peptide



Safranin-O



Collagen II

PRODUCTS

Gel4Cell® - VEGF (Peptides)



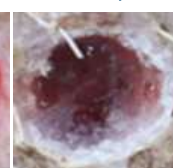
- Gel4Cell® - VEGF is VEGF mimetic peptide conjugated to Gel4Cell® bioink and cell compatible & angiogenic bioink for accelerating vascularization.

Effect of wound healing with Yucatan Pigs

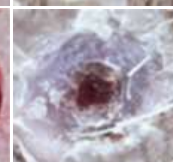
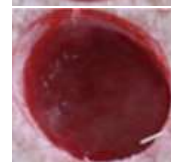
1 Day

14 Day

Gauze



Gel4Cell® - VEGF Skin patch



PolyInks® - PCL, PLA



PCL

PLA

ϵ - caprolactone

L - lactide

Printing temp. : 65 - 100°C

Printing temp. : 200 - 250°C

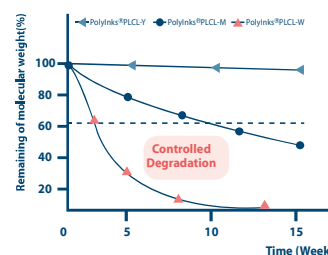
Excellent biodegradability

Powder

PolyInks® - PLCL - W, M, Y

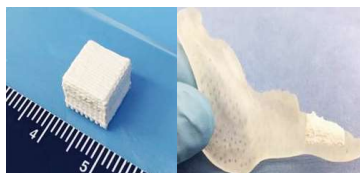
Biodegradable polymer

- PolyInks® - PLCL W (2 - 6 weeks)
- PolyInks® - PLCL M (6 - 10 weeks)
- PolyInks® - PLCL Y (10 - 16 weeks)

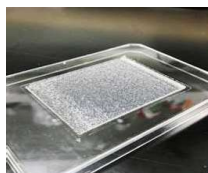


PRODUCTS

PRODUCTS under Development



Gel4Cell®- TCP (Tricalcium phosphate)



Gel4Cell®- VEGF Skin Patch

• Gel4Cell®- TCP

Gel4Cell®- TCP can be used for bone regeneration and bone graft.

• Gel4Cell®- VEGF Skin Patch

Gel4Cell®- VEGF Skin Patch containing VEGF peptide that helps angiogenesis and has an excellent effect on wound healing.

• Fibrin Gel

Fibrin Gel with excellent biocompatibility without photo-gelation.

• Xeno-free Gel

Xeno-free bioink using human-derived materials

• Gel Dressing

Gel wound dressing helps to regenerate tissues by creating wet environment.

Product Name	Catalog #	Type	Specific Features
Gel4Cell® (kit), 10 mL	IR - 101	S	Basic formulation
Gel4Cell® - BMP (kit), 10 mL	IR - 102	S	Osteoinductive material
Gel4Cell® - VEGF (kit), 10 mL	IR - 103	S	Angiogenic material
Gel4Cell® - TGF (kit), 10 mL	IR - 104	S	Chondrogenic material
Gel4Tissue® (kit), 10 mL	IR - 105	S	
Col4Cell(kit), 10 mL	IR - 106	S	
PolyInks® - PCL, 50 g	IR - 201	P	> 2 years
PolyInks® - PLA, 5 g	IR - 202	P	> 2 years
PolyInks® - PLCL - W, 1 g	IR - 203	P	2 – 6 weeks
PolyInks® - PLCL - M, 1 g	IR - 204	P	6 – 10 weeks
PolyInks® - PLCL - Y, 1 g	IR - 205	P	10 – 16 weeks
Gel-linker (365 nm), 2 mL	IR - 301	S	
Gel-linker (405 nm), 2 mL	IR - 302	S	

S : Solution, P : Powder

PRODUCTS

Hydrogel - based BIOINKs for cell-based 3D bioprinting



IR - 101
Gel4Cell®



IR - 102
Gel4Cell® - BMP



IR - 103
Gel4Cell® - VEGF



IR - 104
Gel4Cell® - TGF



IR - 105
Gel4Tissue®



IR - 106
Col4Cell

Polymeric BIOINKs for structure-based 3D bioprinting



IR - 201
PolyInks®-PCL powder



IR - 202
PolyInks®-PLA powder



IR - 203
PolyInks®PLCL - W powder



IR - 204
PolyInks®PLCL - M powder



IR - 205
PolyInks®PLCL - Y powder

Headquarter : 1501, 33 Cheombokro, Donggu, Daegu, 41069 Korea

R&D Center : 604, 88 Dongnaero, Donggu, Daegu, 41061 Korea

INNOREGEN, INC.

Tel. +82-53-745-5447 Fax. +82-53-311-5447

Order. info@innoregen.com

www.innoregen.com