BRING YOUR WORK TO LIFE

ALLEVI

by 3D SYSTEMS®

Revolutionizing 3D Disease Modeling and Regenerative Medicine through Evidence-based Bioprinting Technologies



ABOUT ALLEVI

Allevi creates tools and solutions to design, engineer and build with life. Our 3D bioprinters and bioinks are used by leading researchers around the world to find solutions to humanity's most difficult problems – to cure disease, to test novel drugs, and to eliminate the organ waiting list.

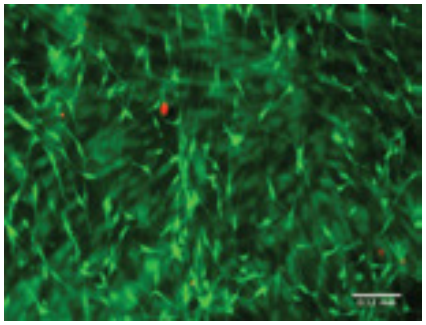
Founded in 2014, our mission is to make it easy to design and engineer 3D tissues. We created our desktop 3D bioprinters to be the most versatile, powerful and easy-to-use bioprinters on the market. Allevi is trusted by leading researchers and industry giants in hundreds of labs worldwide.

We believe everyone has the potential to change the course of medicine for the better. **What will you build?**

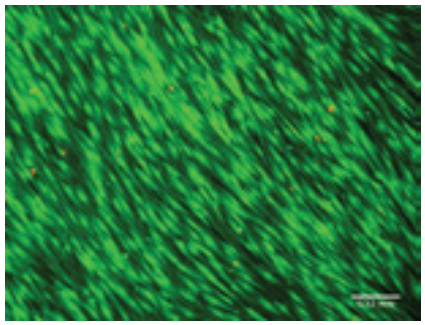
WHY 3D BIOPRINT?

Recent update on the FDA Modernization Act highlights advances in animal-free preclinical models to accelerate development in human based in vitro models. Through 3D bioprinting, researchers can create more physiologically relevant tissue models that express more accurate biomarkers than their 2D counterparts and are more reliable than animal models.

3D bioprinting offers design freedom and high throughput capabilities that allows users to study tissue in a reproducible and relevant manner.



Traditional Manual Pipette



Allevi 3D Bioprinted

WHAT IS A 3D BIOPRINTER?

3D bioprinters use biocompatible materials (bioinks) mixed with cells to print living tissues. The device builds a 3D structure by depositing materials layer by layer until you have the desired structure.

WHAT IS A BIOINK?

Bioinks are natural or synthetic biomaterials that mimic the extracellular matrix (ECM) to support the adhesion, proliferation, and differentiation of living cells. These materials give cells important cues they need to live, grow, and create functional 3D tissue.





> BIOPRINTERS

KEY FEATURES

PATENTED CORE PRINTHEADS

The patented Cell Optimized Removable Extruders (CORE™) are engineered to ensure high viability across a wide range of bioinks. UV and Blue LED Photocuring and homogeneous cooling and heating components allow you to print everything from hard to soft tissues without having to purchase additional printheads.

SMART CALIBRATION

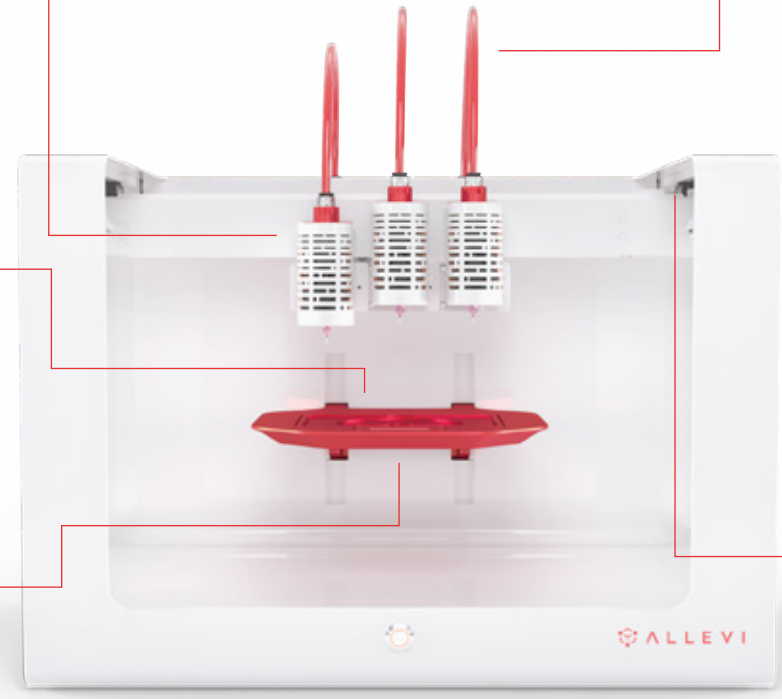
Auto-calibration comes standard on Allevi 1 & Allevi 3 bioprinters. Choose any needle tip and any print dish and your bioprinter will automatically calibrate the printheads.

PRINT BED FOR EVERY DISH

The Allevi print bed is designed to fit different printing dishes with inserts for slides, petri dishes, and well plates.

VERSATILITY

Allevi bioprinters allow you to print with any cell-line in any bioink to create any geometry for any application that you can imagine.



EXTRUSION BIOPRINTING

Powerful and automatic pressure regulators allow you to easily control the flow of a wide range of viscosities from soft hydrgels to thermoplastics. Control the extrusion rate from your Allevi software and even save print profiles for future work.

DESIGNED FOR STERILITY

Designed with you workflow in mind. From testing on a lab bench to working with cells in a tissue culture hood, Allevi bioprinters are portable and easy to sterilize under your cell-culture hood. No doors to get in your way - we know how you work.

PRECISION

Linear rails ensure single micron movements on X, Y, & Z axes. This precision allows you to easily print into well-plates and seed cells.

Allevi CORE™ Technology



The patented Allevi CORE™ printhead is standard on the Allevi 1 and Allevi 3 bioprinters

Do more with less with multiple features all on 1 Allevi CORE™ printhead

KEY FEATURES

Temperature Control
4°C - 160°C

Photocuring
UV (365nm) and Blue Light (405nm)

Syringe-Based System
5 mL luer lock syringes

Calibration
Auto-Calibration for any needle length

Future Proofed:
Printheads are interchangeable

Find the **Allevi bioprinter** that's right for your lab



	Allevi 3	Allevi 2	Allevi 1
Extruders	1x Allevi CORE	1 x Fixed	1x Allevi CORE
Footprint (W x H x D)	9 x 6 x 13 cm (702 cm^3)	9 x 6 x 13 cm (702 cm^3)	9 x 6 x 13 cm (702 cm^3)
Temperature Range	4 - 160° C	Extruder 1: RT - 160° C Extruder 2: RT - 70° C	4 - 160° C
Photocuring	LED - 365 and 405 nm	LED - 405 nm standard 365 nm optional	LED - 365 and 405 nm
Print Bed	RT - 60° C	Room Temperature	Room Temperature


Calcium Chloride
Qty: 7g
Storage: RT
Polycaprolactone
Storage: Dry
PDMS - Part A
Qty: 30 mL
Storage: RT
PDMS - Part B
Qty: 3 mL
Storage: RT
Pluronic F
Qty: 100ml

> BIOINKS



Allevi Bioinks

High printability without sacrificing viability

We know how important it is for you to work with the best possible biomaterials. We have rigurously tested each and every one of our bioinks in our lab to ensure that they can be easily extruded from your Allevi bioprinter without sacrificing cell viability.

The versatility of Allevi bioprinters means that you can print biomaterials as soft as brain, hard as bone, and every tissue in between.

Our dedicated team of Bioengineers charactizes every bioink to ensure consistent results while bioprinting. The syringe-based system ensures that you can continue working with your own biomaterials and custom formulations.

With our approach to evidence-based biomaterial and bioink development, it's no wonder that leading researchers and industry giants alike rely on Allevi for their bioink needs.

A BIOINK FOR EVERY APPLICATION

Allevi 3D bioprinters are engineered to bioprint the widest range of bioinks. To achieve best results, cells should be encapsulated in materials that contain their native ECM components.

Our bioinks are largely human and animal-derived and do not contain viscosity agents, promising better tissue viability and function. You have high standards for your research and we have high standards for our bioinks.



LIVER	Collagen, Lifeink200, PhotoHA, PhotoCol, GelMA, LAP
HEART	Alginate, GelMA, PhotoHA, PhotoCol, LAP
BONE	Hyperelastic Bone, Polycaprolactone, PLGA, Alginate
CARTILAGE	Lifeink200, PhotoHA, PhotoCol, GelMA, LAP, Polycaprolactone, PLGA, Alginate
KIDNEY	Lifeink200, PhotoCol, PhotoHA, PureCol, GelMA, Alginate, LAP
NERVOUS SYSTEM	Lifeink200, PhotoCol, PhotoHA, GelMA, Alginate, LAP
SKIN	Lifeink200, PhotoCol, PhotoHA, PureCol, GelMA, Human Collagen Type III, LAP
VASCULARIZATION	Lifeink200, PhotoCol, PhotoHA, PureCol, GelMA, Pluronic, Gelatin, Alginate, Human Collagen Type III, LAP
LUNG	Lifeink200, PhotoCol, PhotoHA, PureCol, GelMA, Human Collagen Type III, LAP
BRAIN	PhotoCol, PhotoHA, PureCol, Alginate, LAP

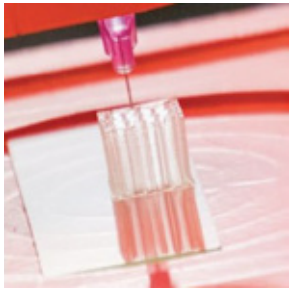
VISIT THE BIOINK SHOP

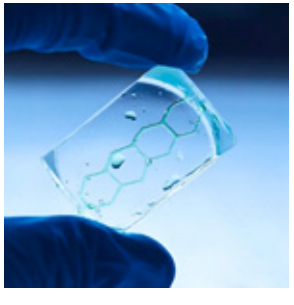
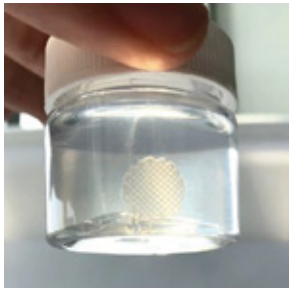
Allevi Bioink Protocols

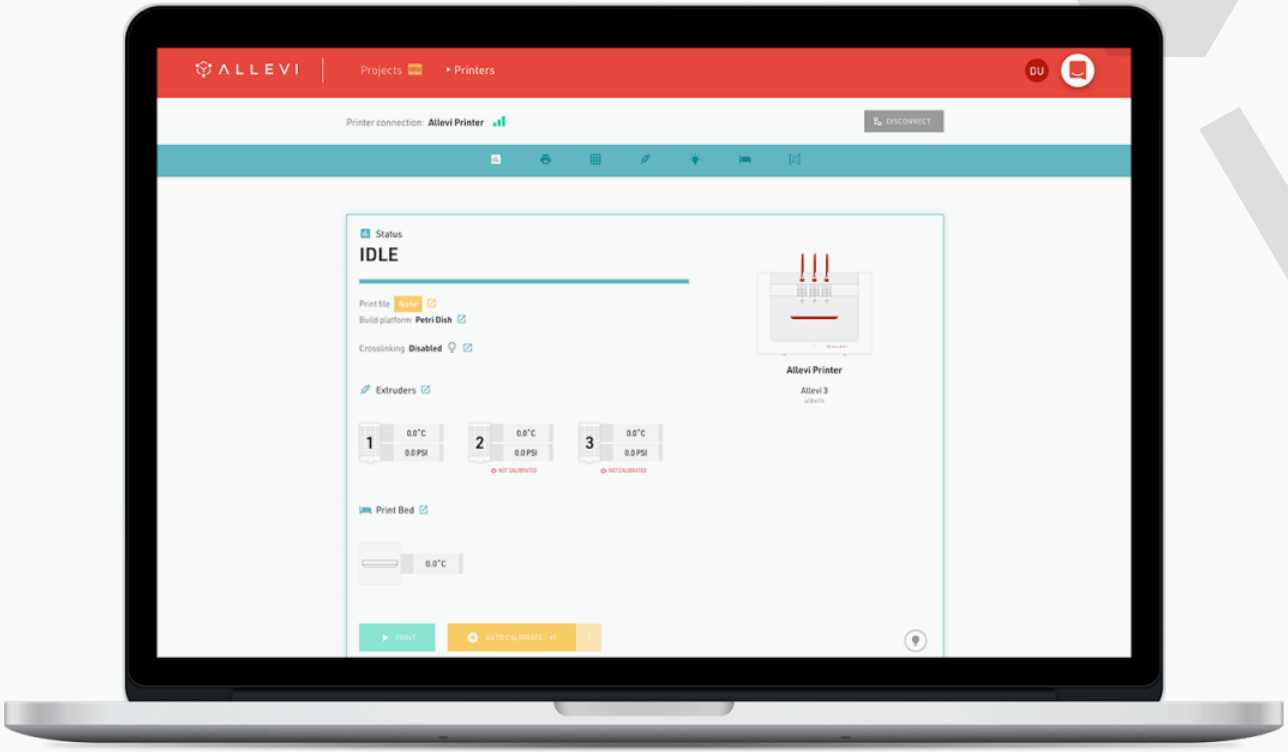
Our bioengineer-designed protocols were adapted from high-impact papers published by our amazing community of users. Allevi bioink protocols are rigorously tested in our lab and include all of the steps you need to easily and quickly recreate state-of-the-art bioprints at your bench.

Follow our step-by-step protocols and bring your research to the next level

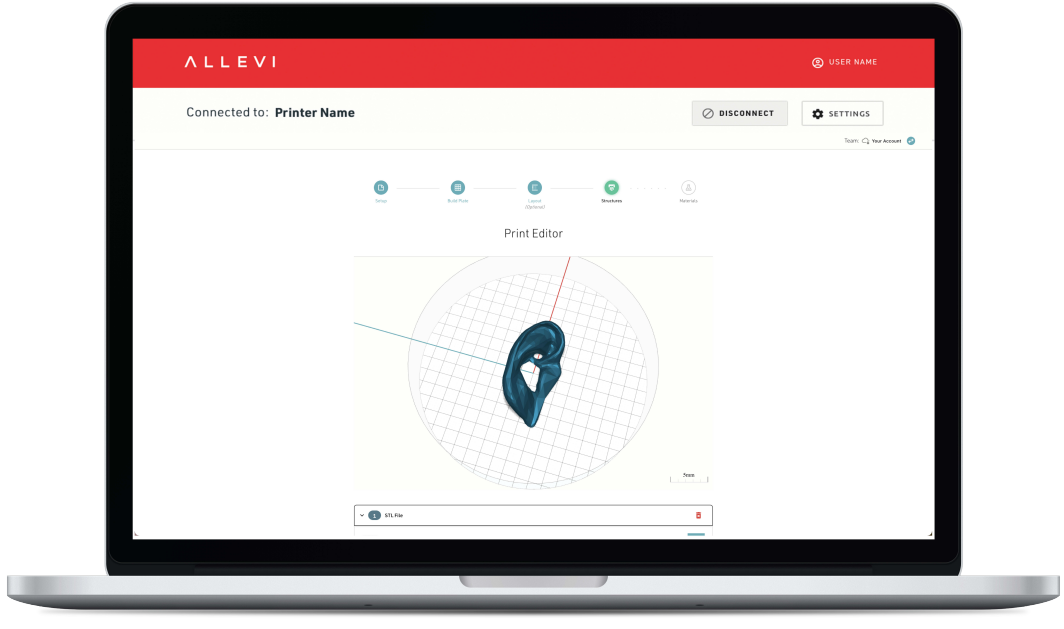
- Bone
- Organ-on-a-chip
- Skin/Fibroblast
- FRESH Method
- Collagen for Tissue Layering
- Vascularity
- Sterile GelMA
- Spheroids/Organoids
- Coaxial
- Triaxial


ALLEVI
Projects
Printers
Printer connection: Allevi Printer
DISCONNECT
Status
IDLE
Print file None
Build platform Petri Dish
Crosslinking Disabled
Extruders
1
2
3
0.0°C
0.0 PSI
Print Bed
0.0°C
PRINT
Allevi Printer
Allevi 3

> SOFTWARE



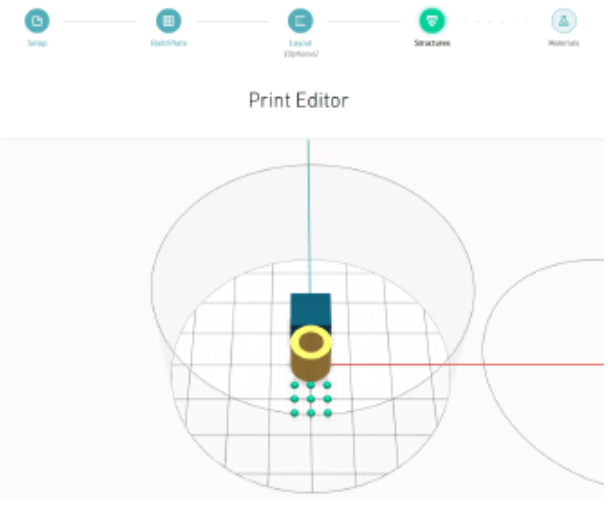
DESIGN.
BIOPRINT.
REPEAT.

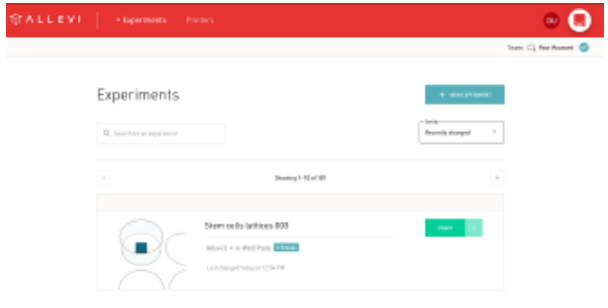
Designing and building with life is easier now than ever before.

The Allevi software empowers novice and expert 3D bioprinting users alike to quickly and easily achieve their goals.

The Allevi software transforms the way you run bioprinting experiments.

BIOPRINTING. SIMPLIFIED.





Web-based workflow

Print settings and data are stored securely in the cloud
Print from any computer with no additional setup

Built-in material profiles, validated for Allevi bioinks

Ideal print parameters take the guess work out of new bioinks
Save time and money by using profiles as a jumping off point

Integrated slicer with shape editor for building models

No need for 3rd party slicing software with complicated settings
Interactive 3D renders show your structure before you print

Project-based workflow for optimal print repeatability

Set up your model, wellplate configuration, and print parameters once, then hit “print” to make identical copies
Easily modify projects and save additional versions

Allevi dynamic printing options

Interpolate multiple parameters across a wellplate, to quickly detemine the best settings for your experiment, or run multiple trials simultaneously

ALLEVI PROTOCOLS

The first ever **online repository** for 3D bioprinting best practices and protocols. From choosing the best materials for your application to detailed instructions for complex prints, Allevi protocols are here to help you succeed.

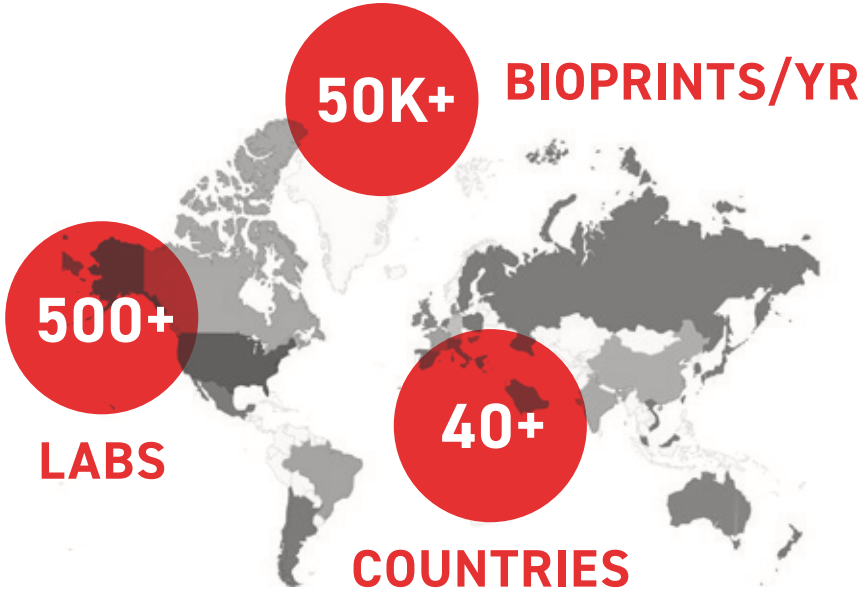
Our repository is constantly updated to have the cutting-edge techniques and best practices to help keep your research relevant.

Accelerate the pace of discovery.
Build with Life.



> COMMUNITY

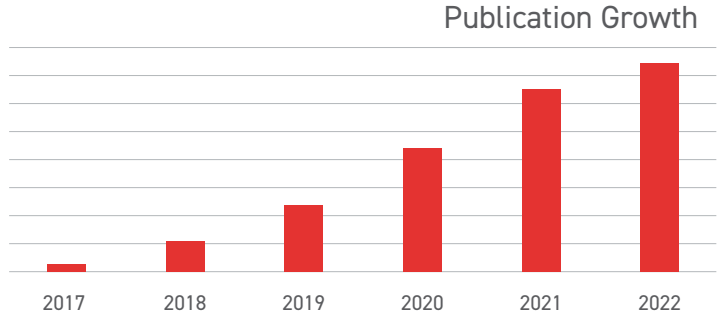
Allevi By Numbers



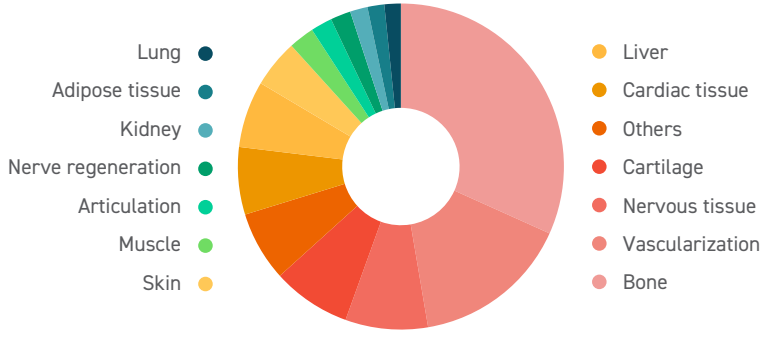
Massachusetts Institute of Technology · Penn · Genentech · Johnson & Johnson

Imperial College London · Karolinska Institutet · BWH BRIGHAM AND WOMEN'S HOSPITAL

User Publications By Year



User Tissue Types



Dedicated to Your Success

At Allevi's core is our dedication to your success. We work to make our devices and software user-friendly and intuitive. We publish guides, write protocols, and post videos which help you bioprint faster and better.

Our relationship doesn't end after your purchase. We're here to help you succeed with your Allevi bioprinter and bionks. The Allevi Customer Success team is available to assist with everything from on-boarding to application specific projects.

We're here to help you reach your goals.

"The Allevi Customer Success Team is incredibly helpful in terms of providing us with relevant information. They are always available, accessible and quick in responding to any of our queries. Getting started with our newly set-up equipment was much smoother with their support, and we never feel like we are experimenting on our own. Being part of the Allevi community is a privilege because they are always thinking ahead and implementing the latest technology with their systems, making them accessible for their user."



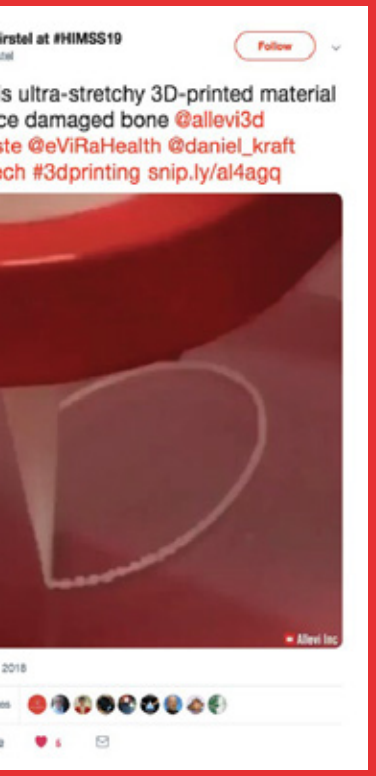
MEYSAM KESHAVARZ
Imperial College of London

"We are currently using this technology at the University of Limerick to find new ways of regenerating cartilage tissue. Overall I have found the equipment, the software and interface are very user friendly and simple to learn for new users. The printer is very versatile as it allows the user to print a variety of bioinks including customised composite bioinks and also allows for the co-printing with thermoplastic materials. One of the main aspects of Allevi that I find invaluable is the support provided. I have found the team very quick and helpful in responding to any queries that I have had."

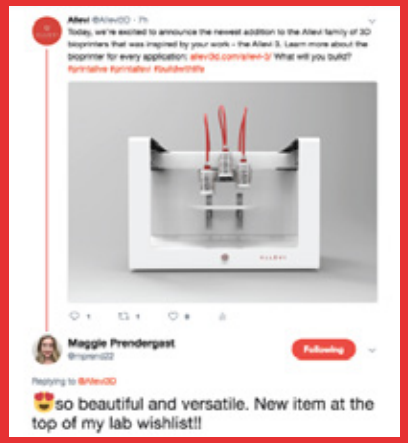


CAROLINE MURPHY
University of Limerick

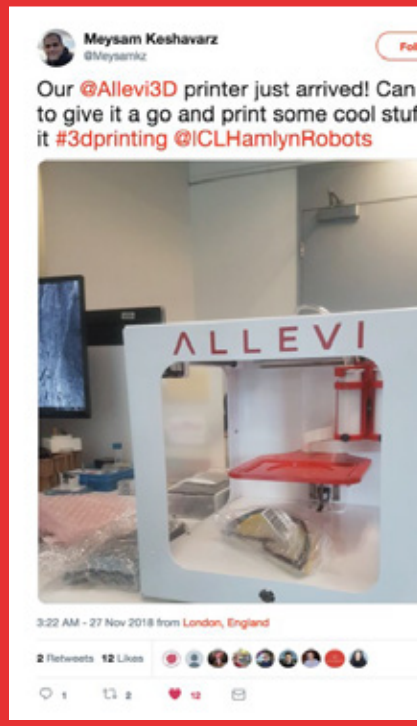
#bioprintallevi #buildwithlife

























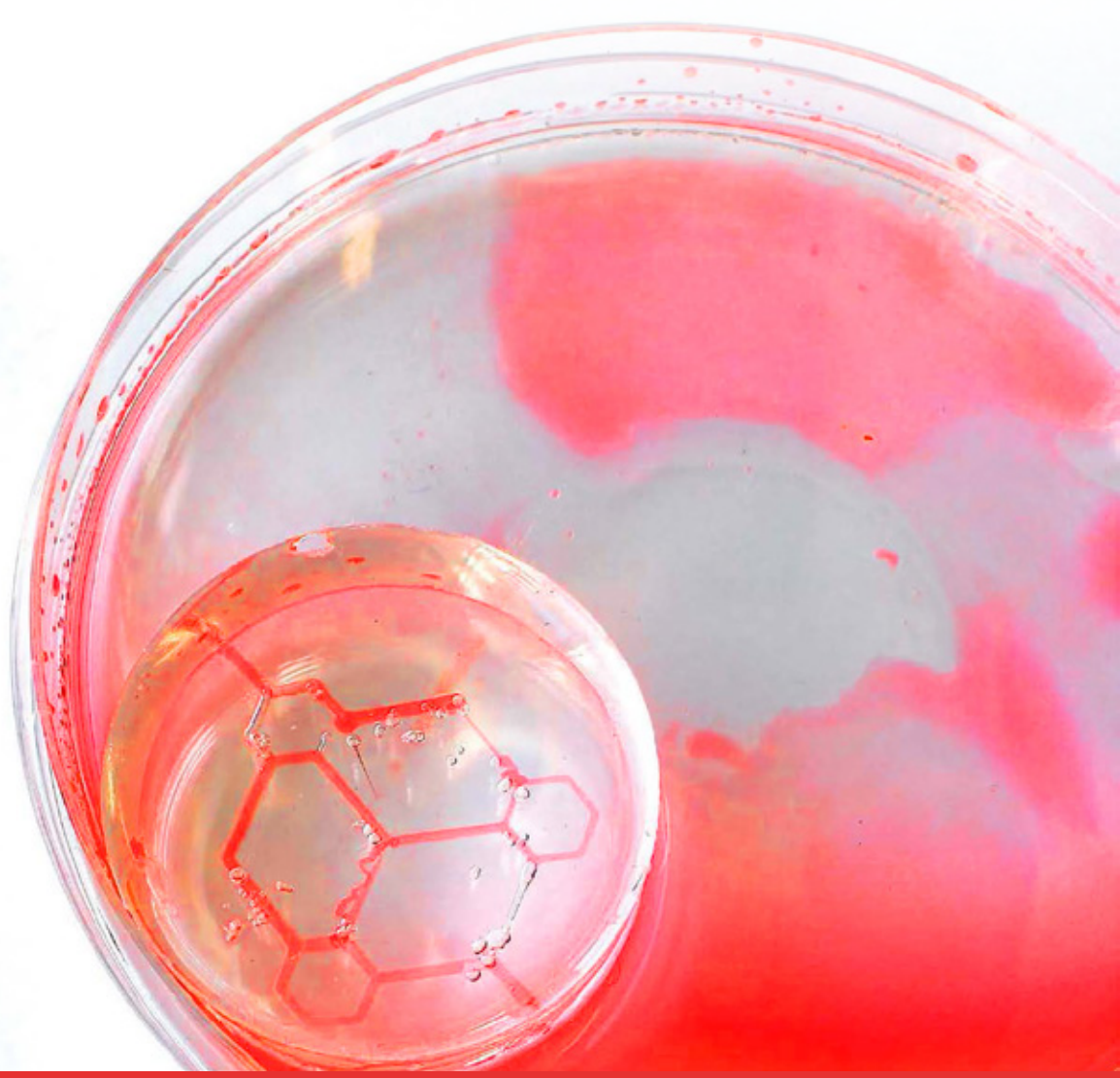
PUBLICATIONS

- **Catalyzed frontal polymerization-aided 3D printing of epoxy thermosets |** Zhang, Z., Gao, C., Liu, R., Li, W., Qiu, J., & Wang, S. April 25, 2022
- **Green Bioprinting with Layer-by-Layer Photo-Crosslinking: A Designed Experimental Investigation on Shape Fidelity and Cell Viability of Printed Constructs |** Thakare, K., Jerpseth, L., Pei, Z., & Qin, H. April 9, 2022
- **Applying Layer-by-Layer Photo-Crosslinking in Green Bioprinting: Shape Fidelity and Cell Viability of Printed Hydrogel Constructs Containing Algae Cells |** Thakare, K., Jerpseth, L., Pei, Z., & Qin, H. April 8, 2022
- **3D-printed implantable devices with biodegradable rate-controlling membrane for sustained delivery of hydrophobic drugs |** Picco, C. J., Domínguez-Robles, J., Utomo, E., Paredes, A. J., Volpe-Zanutto, F., Malinova, D., Donnelly, R. F., & Larrañeta, E. April 1, 2022
- **Continuous fiber extruder for desktop 3D printers toward long fiber embedded hydrogel 3D printing |** Sun, W., Feinberg, A., & Webster-Wood, V. March 31, 2022
- **3D and 4D additive manufacturing techniques for vascular-like structures – A review |** Solis, D. M., & Czekanski, A. March 29, 2022
- **Fabrication of Porous Spherical Beads from Corn Starch by Using a 3D Food Printing System |** Ahmadzadeh, S., & Ubeyitogullari, A. March 22, 2022
- **Development and in vitro investigation of a biodegradable mesh for the treatment of stress urinary incontinence |** MacCraith, E., Joyce, M., do Amaral, R. J. F. C., O'Brien, F. J., & Davis, N. F. March 21, 2022
- **A multifunctional micropore-forming bioink with enhanced anti-bacterial and anti-inflammatory properties |** Wang, M., Li, W., Luo, Z., Tang, G., Mu, X., Kuang, X., Guo, J., Zhao, Z., Flores, R. S., Jiang, Z., Lian, L., Japo, J. O., Ghaemmaghami, A. M., & Zhang, Y. S. March 11, 2022
- **Biosurfactant-Stabilized Micropore-Forming GelMA Inks Enable Improved Usability for 3D Printing Applications |** Qin, X.-S., Wang, M., Li, W., & Zhang, Y. S. March 10, 2022
- **Directional Freezing Assisted 3D Printing to Solve a Flexible Battery Dilemma: Ultrahigh Energy/Power Density and Uncompromised Mechanical Compliance |** Li, X., Ling, S., Zeng, L., He, H., Liu, X., & Zhang, C. February 23, 2022
- **Viscoelastic Chondroitin Sulfate and Hyaluronic Acid Double-Network Hydrogels with Reversible Cross-Links |** Mihajlovic, M., Rikkers, M., Mihajlovic, M., Viola, M., Schuiringa, G., Ilochonwu, B. C., Masereeuw, R., Vonk, L., Malda, J., Ito, K., & Vermonden, T. February 23, 2022
- **Bio-inspired artificial printed bioelectronic cardio-3D-cellular constructs |** Sanjuan-Alberte, P., Whitehead, C., Jones, J. N., Silva, J. C., Carter, N., Kellaway, S., Hague, R. J. M., Cabral, J. M. S., Ferreira, F. C., White, L. J., & Rawson, F. J. January 28, 2022
- **Additive manufacturing of cartilage-mimetic scaffolds as off-the-shelf implants for joint regeneration |** Wang, B., Chariyev-Prinz, F., Burdis, R., Eichholz, K., & Kelly, D. J. January 24, 2022
- **Repair of infected bone defect with Clindamycin-Tetrahedral DNA nanostructure Complex-loaded 3D bioprinted hybrid scaffold |** Li, J., Lai, Y., Li, M., Chen, X., Zhou, M., Wang, W., Li, J., Cui, W., Zhang, G., Wang, K., Liu, L., & Lin, Y. January 22, 2022
- **Development and in vitro investigation of a biodegradable mesh for the treatment of stress urinary incontinence |** MacCraith, E., Joyce, M., do Amaral, R. J. F. C., O'Brien, F. J., & Davis, N. F. March 21, 2022
- **3D Culture Platform for Enabling Large-Scale Imaging and Control of Cell Distribution into Complex Shapes by Combining 3D Printing with a Cube Device |** Takano, A., Koh, I., & Hagiwara, M. January 18, 2022
- **Three-Dimensional Bioprinted MR-Trackable Regenerative Scaffold for Postimplantation Monitoring on T1-Weighted MRI |** Loai, S., Szulc, D. A., & Cheng, H. M. January 7, 2022
- **Enhancing Precision in Bioprinting Utilizing Fuzzy Systems |** Sedigh, A., DiPiero, D., Shine, K. M., & Tomlinson, R. E. January 3, 2022

BRING YOUR WORK TO LIFE

www.allevi3d.com

> sales.allevi3d@3dsystems.com
> support.allevi3d@3dsystems.com



@allevi3d @Allevi3d linkedin.com/company/allevi