

# CELLINK® PRINTHEAD

The future of medicine is here



**CELLINK<sup>®</sup>** BIO X system is the most flexible and versatile bioprinting platform on the market thanks to its Exchangeable Printheads, providing unparalleled research possibilities. The BIO X offers a wide range of extrusion methods to accommodate your unique bioprinting research. We know that your research is completely unique, and for that reason we offer a unique flexibility.

With multiple printhead mounts and the exchangeable printhead system, we can ensure that your research is always on the cutting edge. The snap-on feature offers a fast exchange for a wide range of printheads, including a temperature-control printhead, thermoplastic printhead, electromagnetic drop-let printhead, syringe printhead, HD cameras, photocuring toolheads and many more.

The collection of printheads in combination with our state-of-the-art bioprinters allows you to print with a wide range of materials, from low to high viscosity. They allow you to delicately control the temperature of the print bed and printhead, enabling a high level of printing quality, regardless of the bioink's viscosity.

Our systems are capable of fabricating constructs containing a wide range of cell types, supporting the fabrication of human tissue and organ models. Use specialized cells for your desired applications, create rapid 3D models for drug screening, vascularized tissue models, microfluidic devices and much more-the possibilities are endless!

The printheads we provide are carefully designed and of the highest quality. We strive to meet your cultural standards, compromising nothing to support your bioprinting projects. This is the beginning of a new era of bioprinting.







## PRINT HEAD PORTFOLIO

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### PNEUMATIC PRINTHEAD

TEMP: 65 ° C

The pneumatic printhead is air pressure controlled and capable of extruding a wide range of high and low viscosity materials. It is available in both 3 mL and 10 mL.



### THERMOPLASTIC PRINTHEAD

TEMP: 250 ° C

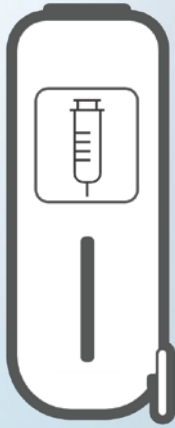
Enables the use of thermoplastics in the bioprinting process to reinforce the bioinks, creating a stronger construct.



### TEMPERATURE- CONTROLLED PRINTHEAD

TEMP: 4° C (  $\Delta T=17^\circ C$  )

This printhead makes it possible to print collagen-based bioinks and other bioinks that require a cooled temperature for extrusion.



### SYRINGE PUMP PRINTHEAD

Enables you to have better control of the bioink extrusion process by controlling the flow rate and deposited volume, no matter the viscosity.



### ELECTROMAGNETIC DROPLET PRINTHEAD (EMD PH) TEMP: 65 ° C

The inkjet technology allows for a high printing speed with precision. It can print a wide range of low and medium viscosity bioinks, combined with heating control.



### PHOTO-CURING TOOL HEAD

If the integrated photocuring modules aren't what you seek, The photocuring toolhead can be attached to have better control over the crosslinking area, particularly when bioprinting in 96 wellplates.



### HD CAMERA TOOL HEAD

An HD camera tool to give high-precision video feedback. It is also a good way of keeping track of the printing process to ensure quality.

# FEATURES

	Pneumatic PH	Syringe Pump PH	EMD PH	Thermoplastic PH	Cooled Pneumatic PH
Dispensing mode	Contact dispensing	Contact dispensing	Drop on-demand jetting / Contact dispensing	Contact dispensing	Contact dispensing
Viscosity range (mPa.s)	1 - 300,000+	1 - 300,000	1 - 10,000	1 - 300,000+	1 - 300,000+
Maximum fluid pressure (kPa)	700	n/a	700	700	700
Minimum actuation time (ms)	5	n/a	0.4	5	5
Cartridge volume (mL)	3 (standard) 5 and 10 (available)	3 (standard)	3 (standard)	10 (standard)	3 (standard)
Maximum temperature (°C)	65	65	65	250	65
Minimum temperature (°C)	n/a	n/a	n/a	n/a	4°C (at 21°C ambient temperature) $\Delta T = 17^\circ C$
Nozzle diameter ( $\mu m$ )	50 to 1600 10 and 30 (available)	50 to 1600 10 and 30 (available)	100, 150 and 300	200, 300 and 400	50 to 1600 10 and 30 (available)
Accessories	Nozzles and cartridges	Nozzles and syringes	Microvalve, nozzles and cartridges	Nozzles and cartridges	Nozzles and cartridges

# COMPATIBLE MATERIALS

	Pneumatic Printhead	Syringe Pump Printhead	EMD Printhead	Thermoplastic Printhead	Temperature Control Printhead
Gelatin Methacryloyl		√	√		√
Collagen methacryloyl (Collagen solution and precipitated)	√ <sup>ab</sup>	√ <sup>ab</sup>			√
Hyaluronan	√	√	√		√
Alginate	√	√	√		√
Chitosan	√	√			√
Silk	√	√			√
Nanocellulose	√	√	√ <sup>a</sup>		√
PEG/PEGDA	√	√	√		√
Fibrinogen/thrombin	√	√	√		√
Decellularized ECM	√ <sup>ab</sup>	√ <sup>ab</sup>	√		√
Pluronic F127	√	√	√ <sup>a</sup>		√
Propylene Glycol	√	√	√		√
Polycaprolactone				√	
Polylactic Acid				√	

- a. The printability depends on the concentration and viscosity of the bioinks.  
 b. The printability depends on the pH of the solution.



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