# BIO X

| BIO X |
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| **Tool Type:** Extrusion-based Bioprinter |
| **Manufacturer:** CELLINK |
| **Location:** OASIS 413 |
| **Principal Scientist** |
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## About

The Cellink Bio X 3D Bioprinter is an easy to use extrusion based printer. It features modular printheads, allowing for the simultaneous use of up to three different bioinks, making it possible to create complex, multi-material constructs. This printer offers precise temperature control for both the printheads and print bed, enabling the use of a wide range of materials. To ensure a sterile printing environment, it includes a built-in HEPA filter and UV-C germicidal light, minimizing the risk of contamination during the printing process. Its intuitive touchscreen interface and user-friendly software make it accessible for researchers with varying expertise levels. With high precision and resolution through pneumatic, inkjet, and mechanical extrusion technologies.

## Detailed Specifications

* **Print technology:** FDM
* **Layer thickness** 20 µm
* **Z-precision (motor-driven):** 50 µm
* **Heated Platform:** Max 37 ºC
* **Max build volume:** 128 X 85 X 37 mm (400 mL)

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## Safety Concerns

The print bead or platform is heated. Follow the following precautions:

• Always inspect equipment prior to use. Check for cracks before using.

• Do not use in the presence of flammable or combustible materials. Fire or explosion may result.

• Read the manufactures’ instructions before using.

• Do not place metal foil or metal containers on the print bed – the top can be damaged and shock hazard may result.

This printer uses UV light to clean the chamber. Humans cannot perceive UV directly so follow the following precautions when using it:

• Never look directly at the UV light source.

• The epithelial cells of the cornea absorb radiation in the actinic portion of the UV spectrum (200 – 315 nm). This exposure produces symptoms known as photokeratitis, which are not felt until several hours after the exposure. Photokeratitis is very painful and produces the sensation of having sand in your eye. It also causes an aversion to bright light, as well as the production of tears. The effects typically last up to 48 hours but will disappear as the cells of the cornea are replaced. Long-term effects can also occur. Most of the UV radiation that enters the eye is absorbed in the cornea, but UVA absorption by the lens can alter proteins in the lens and result in cataract formation.

• Excessive UV exposure in the actinic range (200-315 nm) produces symptoms that are comparable to sunburn and includes redness, swelling, pain, blistering, and peeling of the skin. Factors that can affect skin response to UV include your degree of skin pigmentation and photosensitization by certain foods (e.g., figs, limes, parsnips and celery root) and drugs (e.g. tetracycline). You will recover from short-term skin damage, but chronic exposure to UV may increase your risk of skin cancer.

• Protective Clothing: Wear a fully buttoned lab coat, long pants and closed toe shoes. Make sure that ALLskin is protected, including face, neck, hands and arms. Make sure there are no gaps in your protective clothing, especially at the wrist and neck areas. Gloves: Wear disposable latex or nitrile gloves to protect exposed skin on the hands. Do not use vinyl gloves, which can transmit significant amounts of actinic UV.

• Eye/Face Protection: Always wear a full face shield. To protect the eyes and face, use a polycarbonate face shield stamped with the ANSI Z87.1-1989 UV certification. Note: if you’re working with splash or projectile hazards, you may also need to wear safety glasses or goggles under the face shield.

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# Interchangeable Print Heads

| pneumatic head | electromagnetic head | syringe pump head |
|---|---|---|
| T = 30 - 65 °C (± 0.5 °C)<br>3 mL cartridge | T = 30 - 65 °C (± 0.5 °C)<br>different dropsizes<br>3 mL cartridge | T = 30 - 65 °C (± 0.5 °C) |
| **temperature control head** | **thermoplastic head** | **pneumatic head** |
| T =4 - 65 °C (± 0.5 °C)<br>3 mL cartridge | several nozzels<br>T = 250 °C<br>ideal for: PLA, PCL, PLGA | T = 30 - 65 °C (± 0.5 °C)<br>3 mL cartridge |

# Reference Documentation

Bio X User Manual

Bio X Temperature-controlled Printhead User Manual

Bio X Standard 3-mL Pneumatic Printhead User Manual

Bio X EMD Printhead User Manual

Bio X Syringe Printhead User Manual

Bio X Thermoplastic Printhead User Manual

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