Allevi 1
User Guide – 1.0.5

BUILD WITH LIFE

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This User Manual will help get you started using your Allevi bioprinter.

In the first section of this guide you will learn about the basic components of your Allevi, how to set it up, and load bioinks.

The second section of this guide will teach you how to use our software as your notebook. It can be used both to control your bioprinter and to store your results and information.

In the third section, you will find instructions on using the Allevi software to print a single material structure.

Following this guide will help ensure that you are getting the most out of your machine. We can’t wait to see what you will create!

SPECIFICATIONS

Mechanical
Construction: Aluminum Frame
Build Structure: Tissue Culture Plates
XYZ Position Precision: 5 microns
Dimensions: 12 x 10 x 10 in
30.5 x 25.4 x 25.4 cm

Electrical
Power/Voltage Requirements: 6Amp AC Desktop Adaptor
Connectivity: WiFi

Software
Bundle: Allevi Bioprint Online (WiFi, Ethernet)
Supported File Types: STL, gcode
Operating System: Windows, MacOSX, Linux

Printing
Print Technology: Fused Deposition Manufacturing
Layer Resolution: 100 microns
Print File Type: Gcode
Build Volume: 5.1 x 3.5 x 2.4 in (42.8 in^3)
13 x 9 x 6 cm (702 cm^3)

Extruder
Max Temp: 160°C
Min Temp: 4°C
Pressure Range: 0-120PSI (0-820kPa)
LED Range: 365 nm and 405 nm

WARNING: The Allevi 1 includes moving parts that can cause injury. Never reach inside the printer while it is in operation.
WARNING: Do not leave the printer unattended while it is in operation.
WARNING: Always wear safety goggles when using the printer.
WARNING: Extruders heat to high temperatures both when heating and cooling. Always allow time for the extruder to cool before handling.

CAUTION: Always power off the printer before reaching inside.

Let’s Get Started!

WHAT'S IN THE BOX

Allevi 1 bioprinter

Power cord

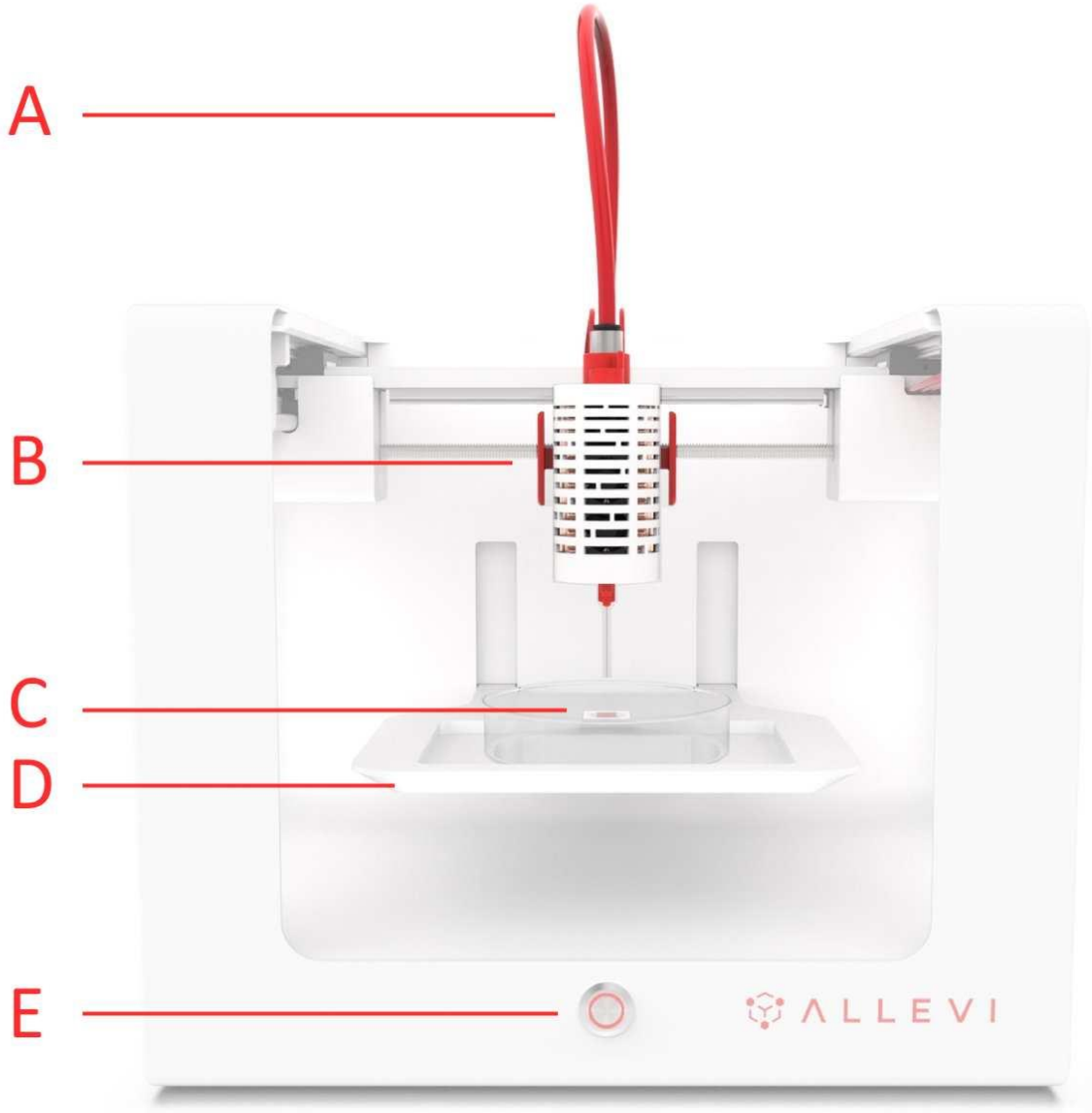
Air compressor*

Compressor hose

Starter bioink kit

*Air compressor arrives separately

ALLEVI 1 DIAGRAM



A. Air Compressor Line
B. CORE™ printhead
C. Autocalibration pad
D. Build Plate
E. Power On/Off

GETTING SETUP

Setting up your printer

1. Carefully remove your printer from the packaging by grasping the printer frame firmly with both hands.

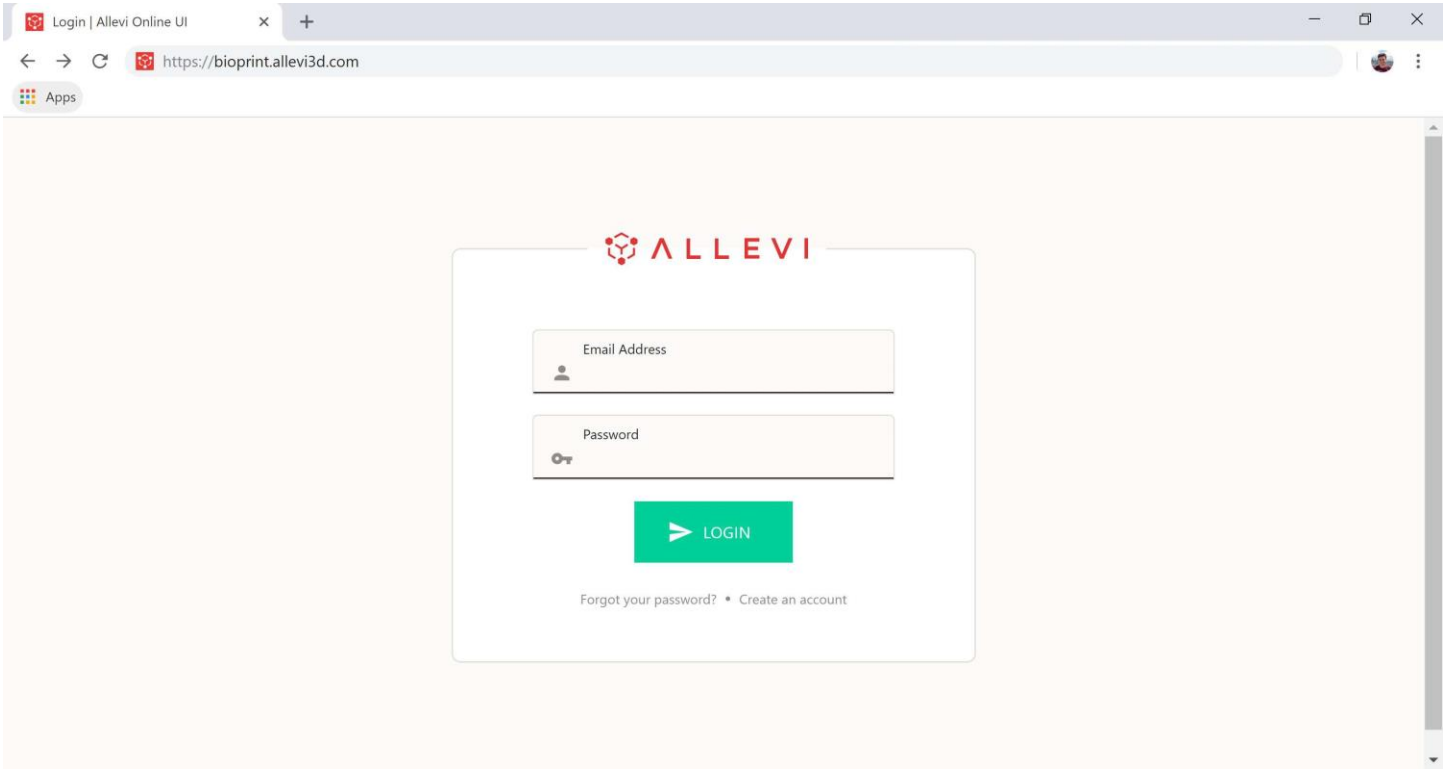
2. Use the power cable to connect the printer to a power supply via the port located on the right side of the printer (labelled Step 2).

3. Power on the printer by pressing the power button located front of the printer.

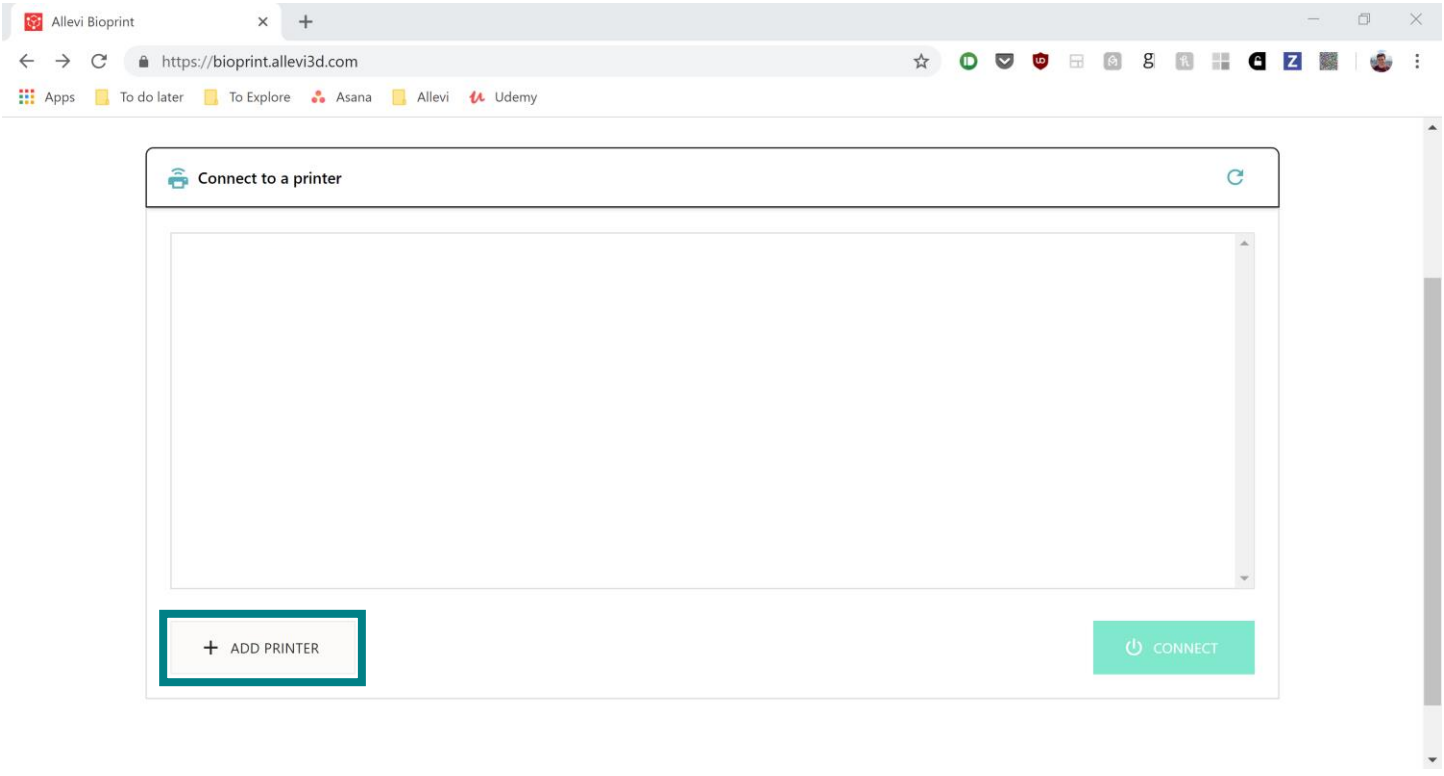
4. Attach the air compressor to the printer by connecting the compressor hose to nozzle on the left side of the printer (labelled Step 4). This can be a tricky maneuver, so for more in-depth directions on connecting the air compressor, watch this quick video. **The air compressor must remain turned on for the entirety of the print.** We recommend keeping the air compressor set to a pressure significantly higher than your print pressure. This is so that as the air compressor loses some pressure and refills, your print is not affected. The air compressor's pressure can be adjusted by turning the black knob. It has a max pressure of 120PSI.

Setting up your software

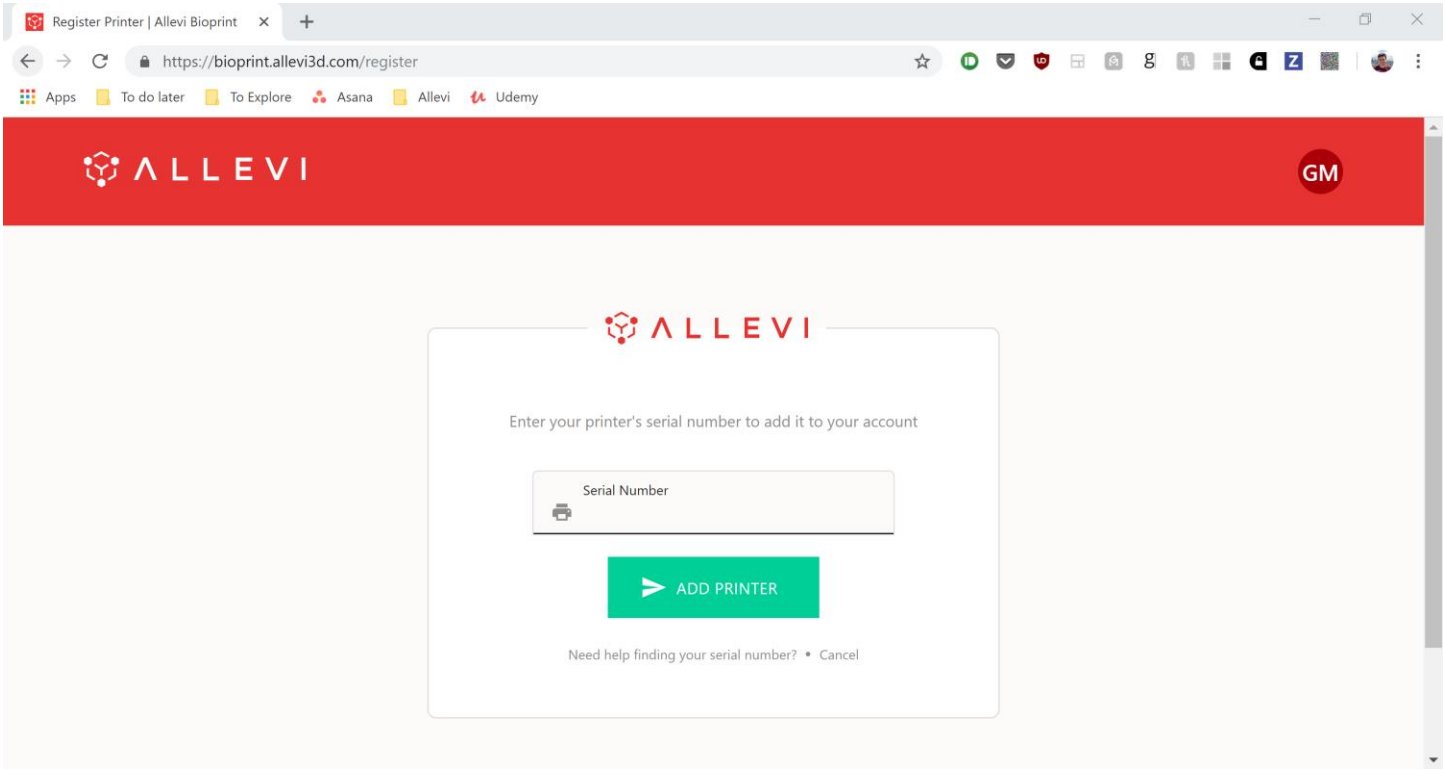
1. Go to bioprint.allevi3d.com. Our software runs out of a browser and requires no downloads! We recommend Google Chrome or Firefox, but the following browsers are also acceptable: Safari or Edge.
2. Login to the software. To set up an account, click ‘Create an account’ and fill out the form.



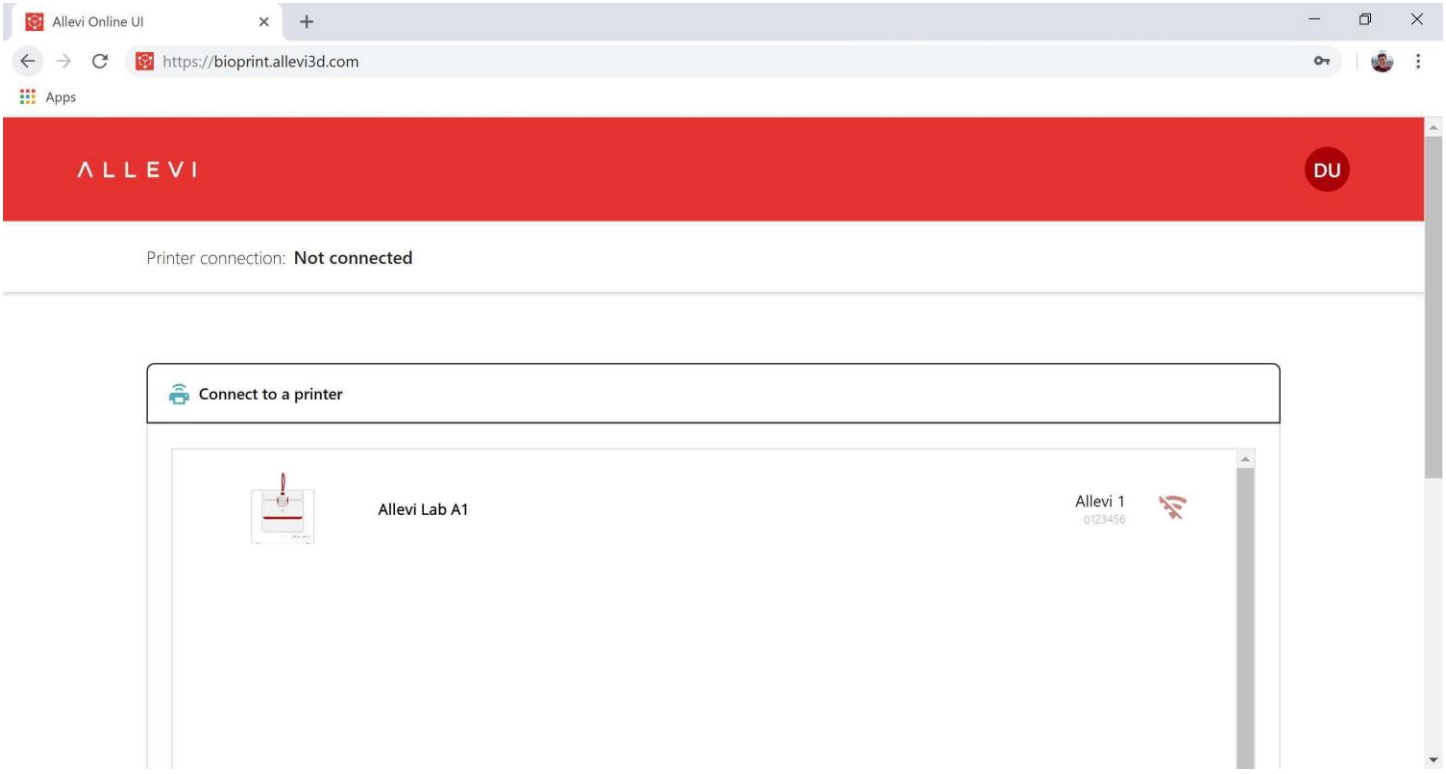
3. To register your printer, scroll down in your printer list and click ‘Add printer.’



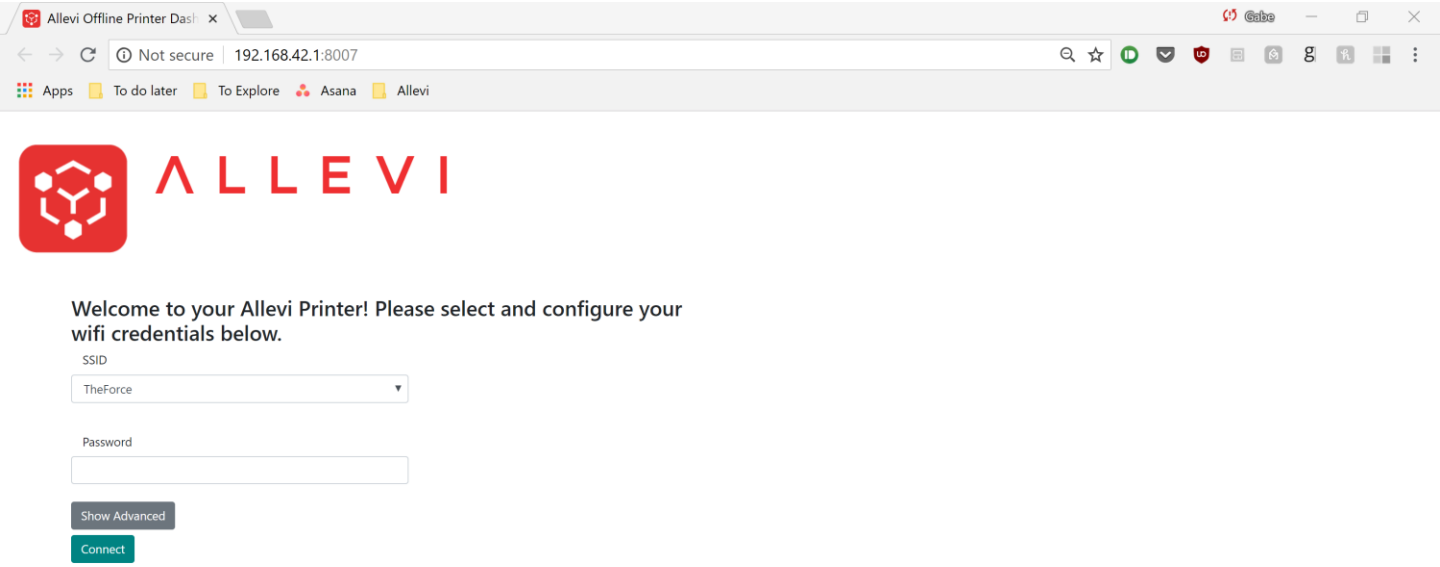
4. Type in your device serial number and click ‘Add printer.’ Your serial number can be found on the back of your printer or in your onboarding email from the Allevi Support Team.



5. Once your printer is registered, it will appear as an available printer in your printer list.



6. To connect your Allevi bioprinter to the Internet, open your WiFi settings, and look for a network called “Allevi WiFi Connect.” Connect to it, then go to the Offline Dashboard at http://192.168.42.1:8007. By connecting to this, your computer will briefly lose access to the Internet.
    a. To connect to WiFi, choose your WiFi network from the dropdown menu under ‘SSID,’ type in the password, and hit connect. **The chosen WiFi network should be a private network without a ‘Click to accept’ intermediate page.** Your computer’s WiFi will be restored and your printer will connect to the Internet.



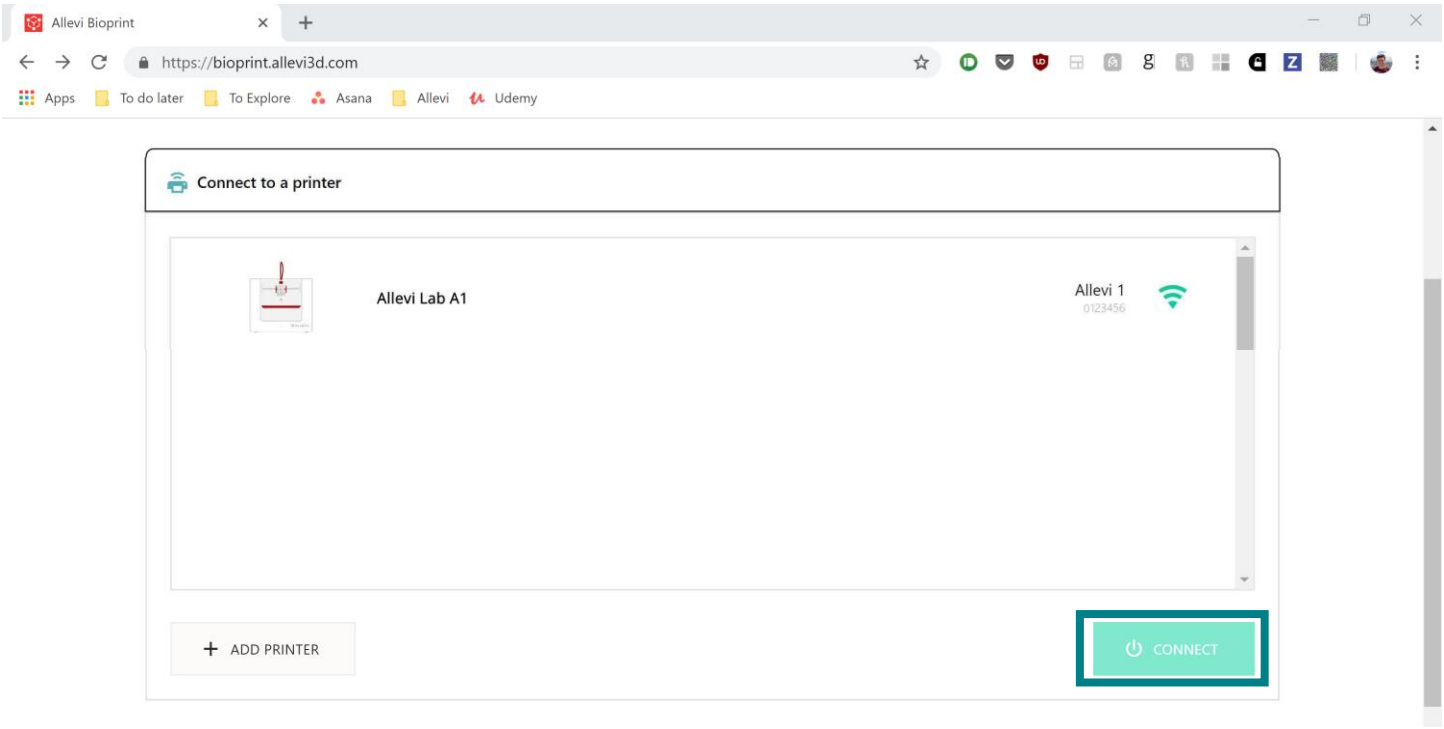
Let’s Start Printing!

GETTING STARTED

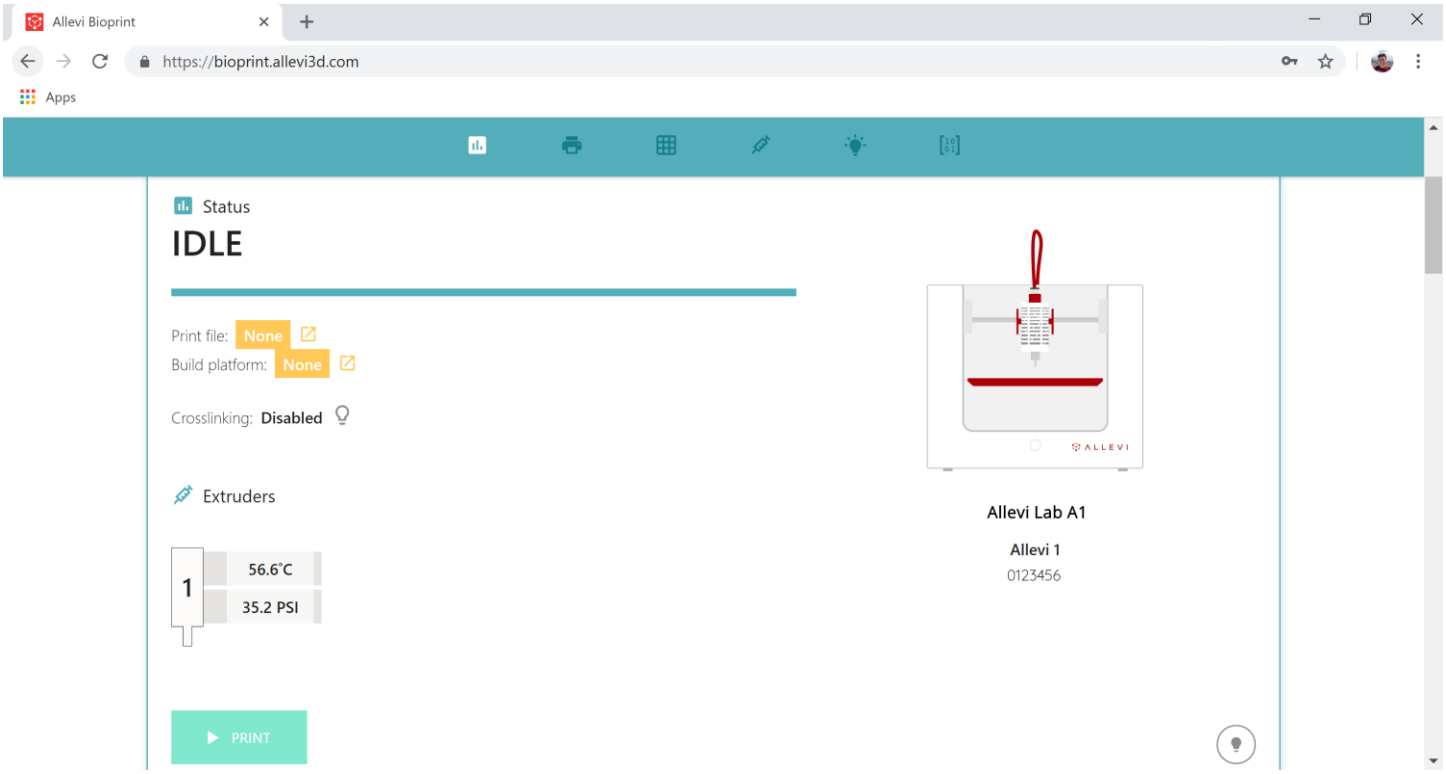
Your First Bioprint

The Allevi Bioprint Online software is the most comprehensive and versatile bioprinting software. We recommend watching this introduction video. If you prefer watching videos, visit allevi3d.com/getting-started and watch the 'Your First Bioprint' video.

1. Turn on your printer. Yellow lights will stay on while the printer loads its firmware and connects to the Internet. You can connect to your printer once the yellow lights are off.
2. Login to bioprint.allevi3d.com. Select your printer from the printer list and click 'Connect.'



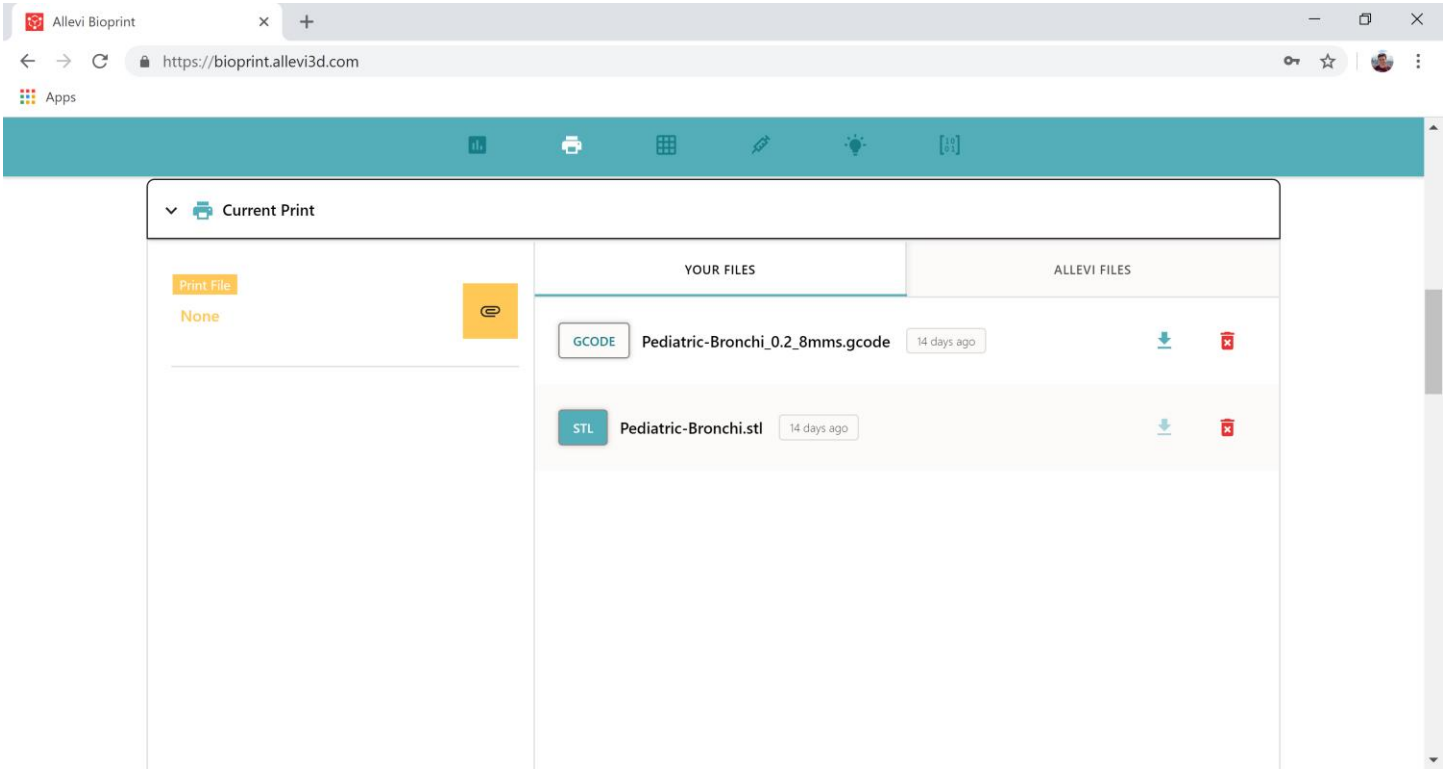
3. This will bring you to your printer Status section. Here you can get an overview of your print settings. We recommend always autocalibrating first. **Do not autocalibrate with a dish on the bedplate.**



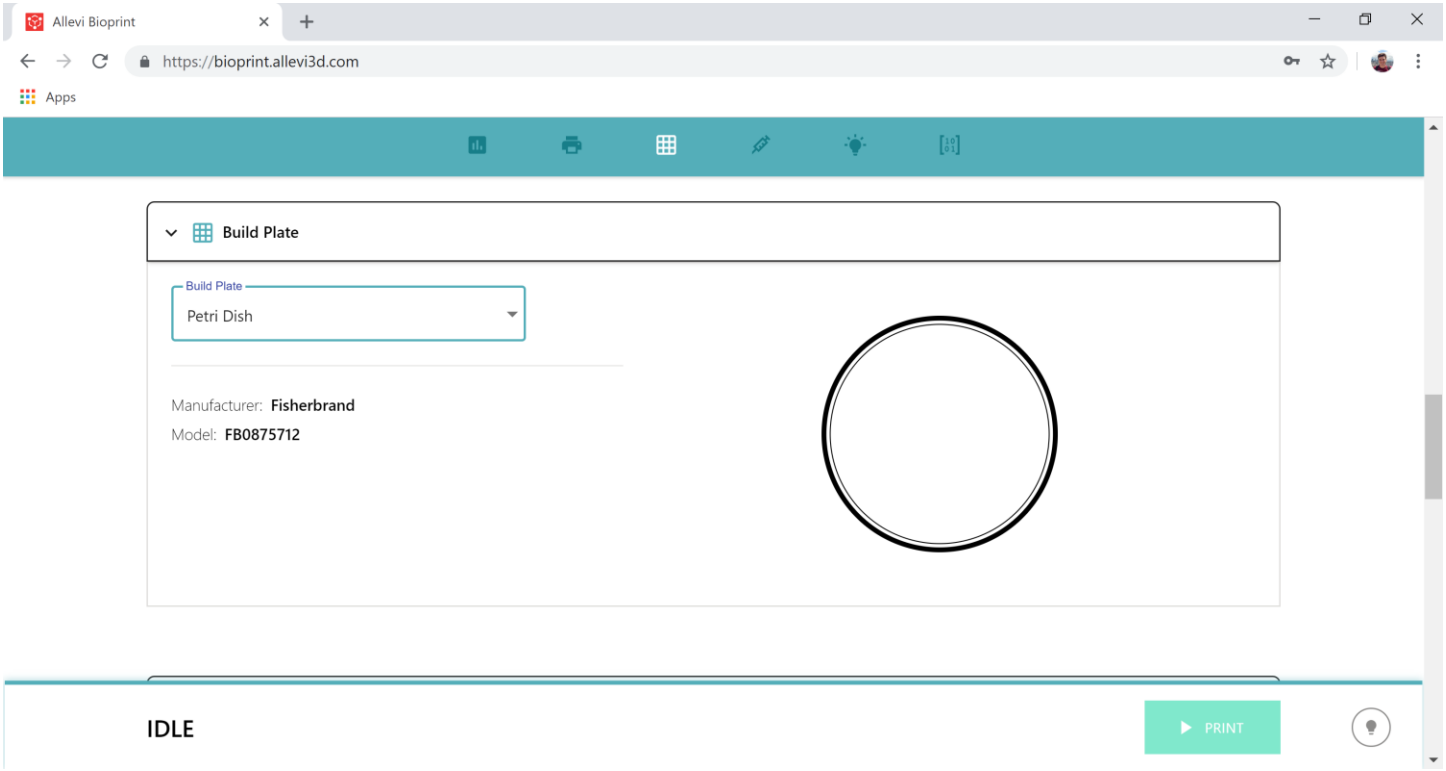
4. Load your syringe with Pluronic F127. An instructional video is available on the Getting Started page. We suggest filling your syringe with about 3 ml of material for your first print.
    a) Attach a 30 gauge 0.25” (pink) needle to the syringe, load syringe into the extruder canister, and twist the cap to secure.

NOTE: Bioinks will be loaded differently and use different needles depending on the type of material.

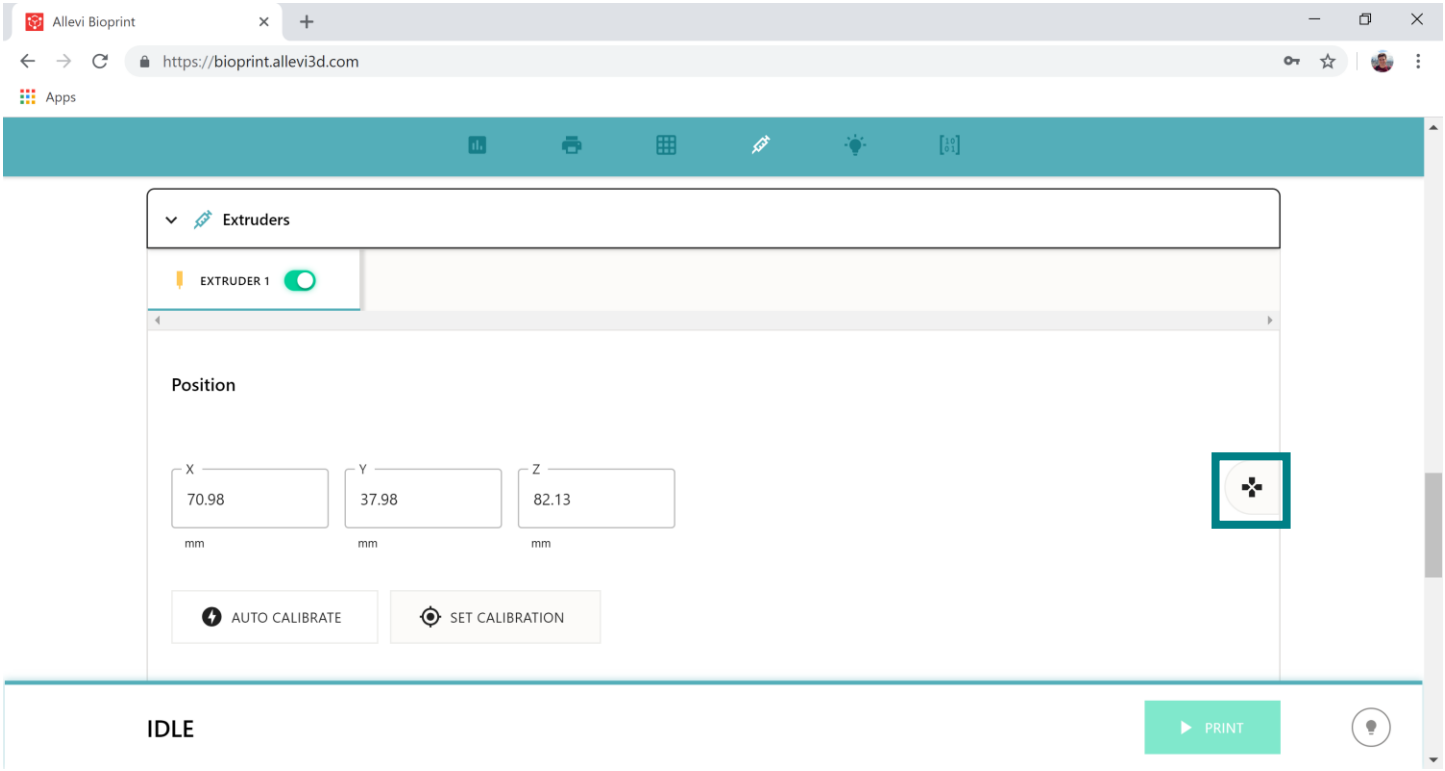
5. Select your print file.



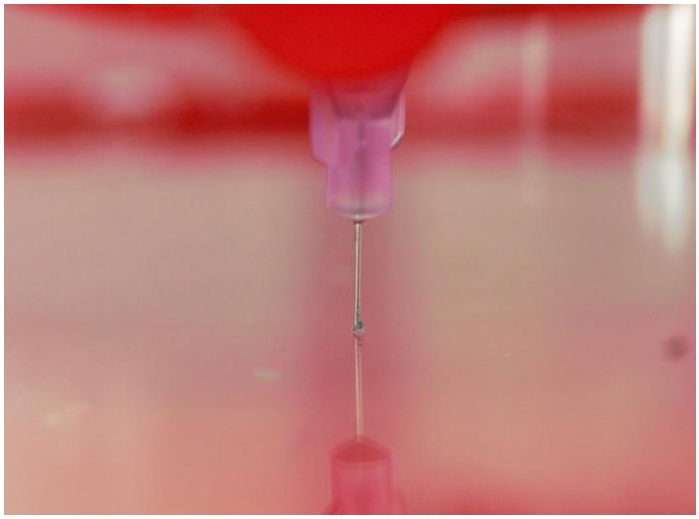
6. Select your wellplate. For your first bioprint, we'll be using a petri dish.



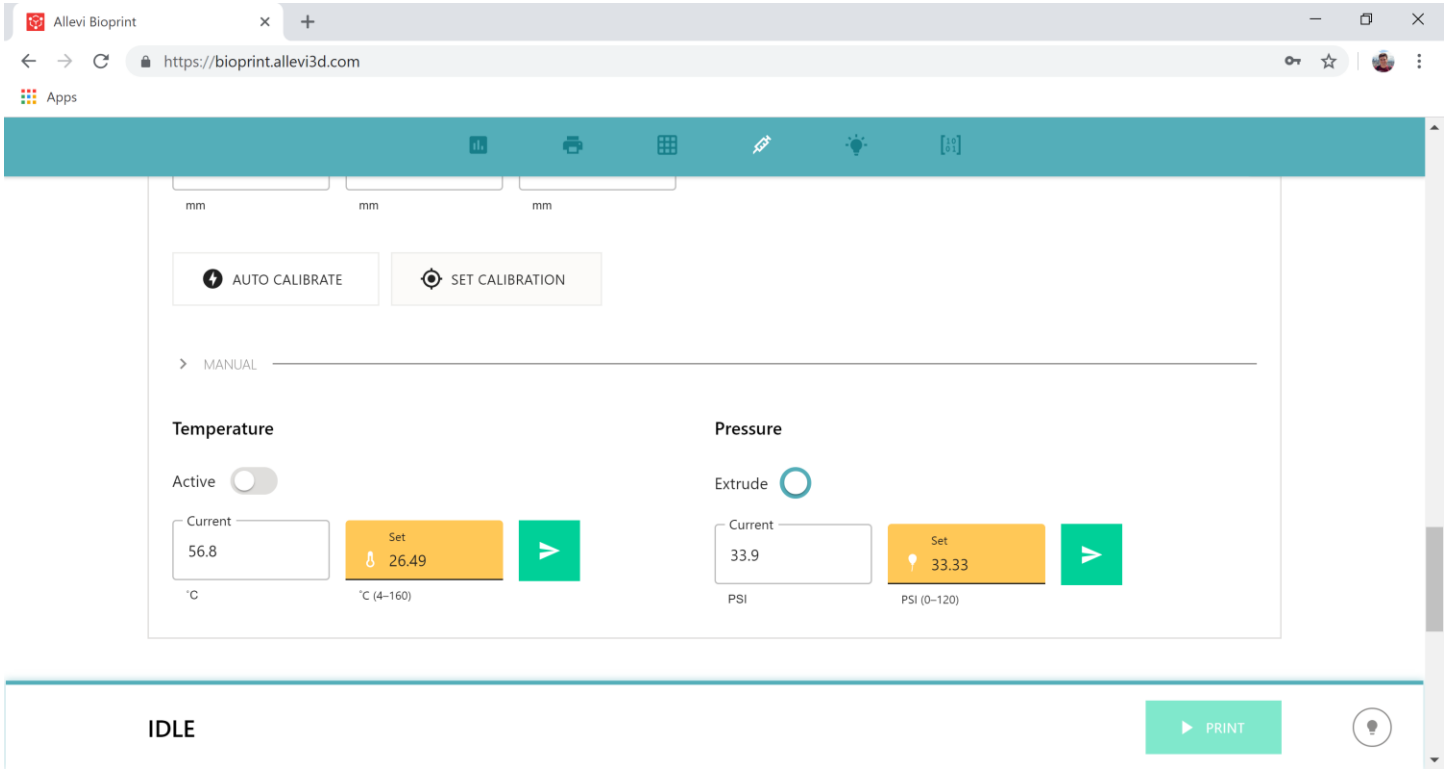
7. If you haven't already autocalibrated, you can here. You also manually calibrate.



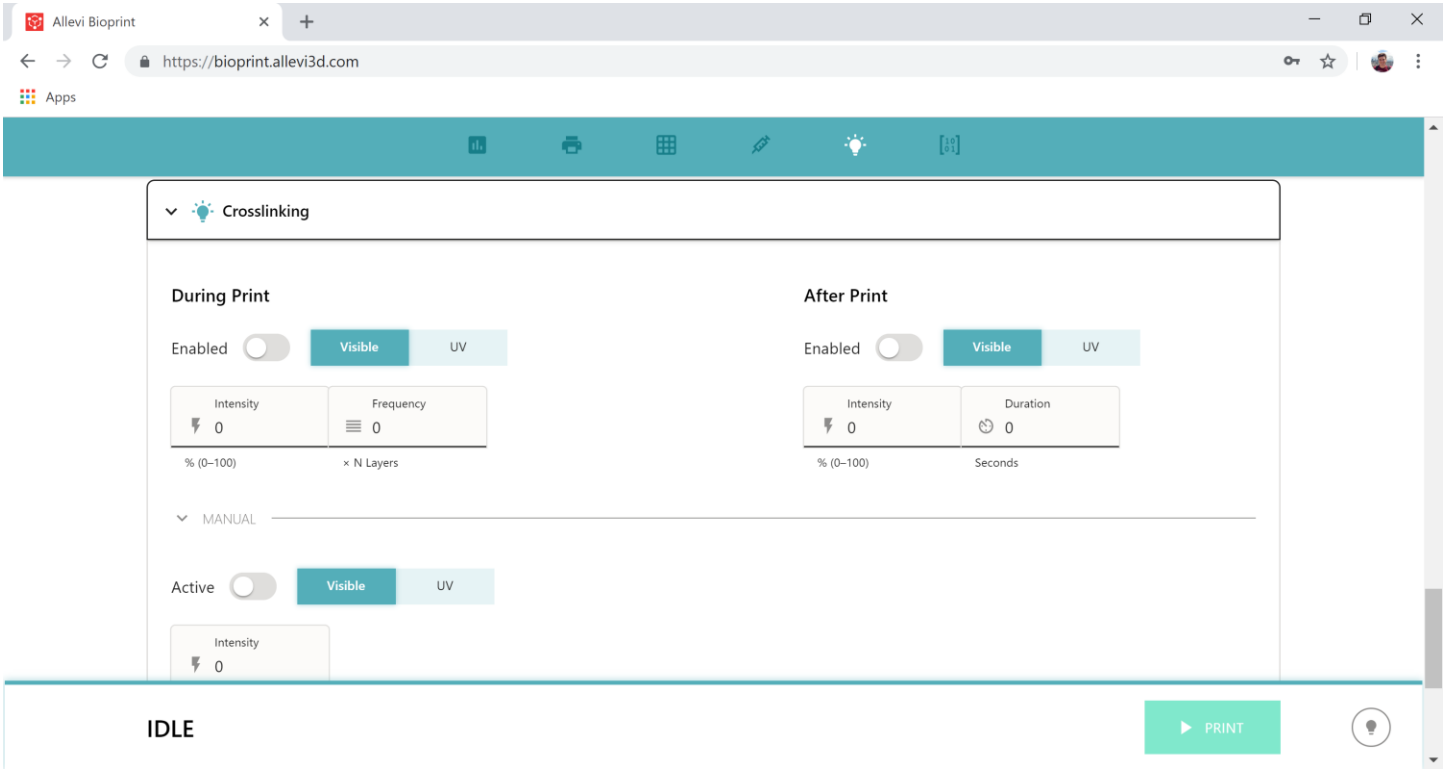
a) To manually calibrate the printer with the manual controls:
   i. First, home the Z axis, followed by the X/Y axis.
   ii. Using the X and Y arrows, move the loaded extruder to over where you want to print. If it's for a wellplate, calibrate in the upper left well. We recommend using the 20mm step size for large movements.
   iii. Switch step size from 20mm to a smaller size, depending on the needle length. Then use up and down buttons to move the bed plate (Z) closer to the extruder to the point where the dish is almost touching the needle. **Do not leave a big gap between the needle and dish as the gcode automatically adds the appropriate layer height.** Finer 0.1mm movement can be used when approaching the dish.
   iv. Click 'Set Calibration.' to calibrate.



8. In the Extruder section, you can also set extruder temperature, pressure, and test extrude by holding the button.

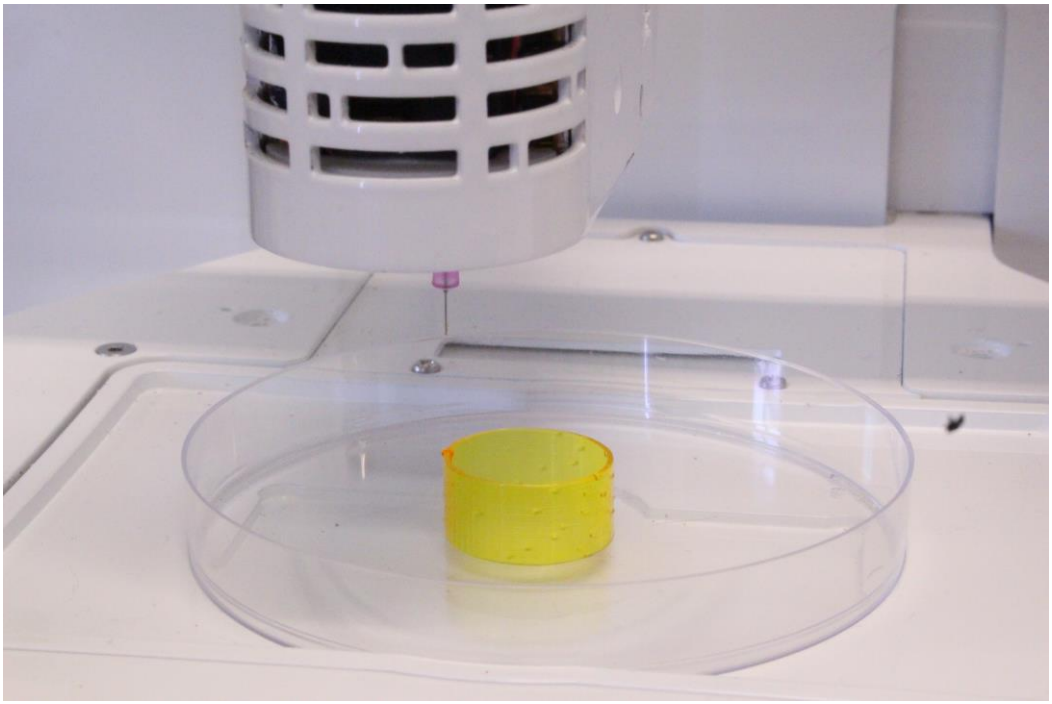


9. For photocurable bioinks, the Allevi 1 offers both UV and visible light crosslinking, which can be changed using the UV/Visible toggle. There are three main settings for crosslinking: Always On, During Print, and Post Print. They use variables such as light intensity, layer frequency, and duration.



10. Once the everything is ready to go, ‘Print’ to start building with life!

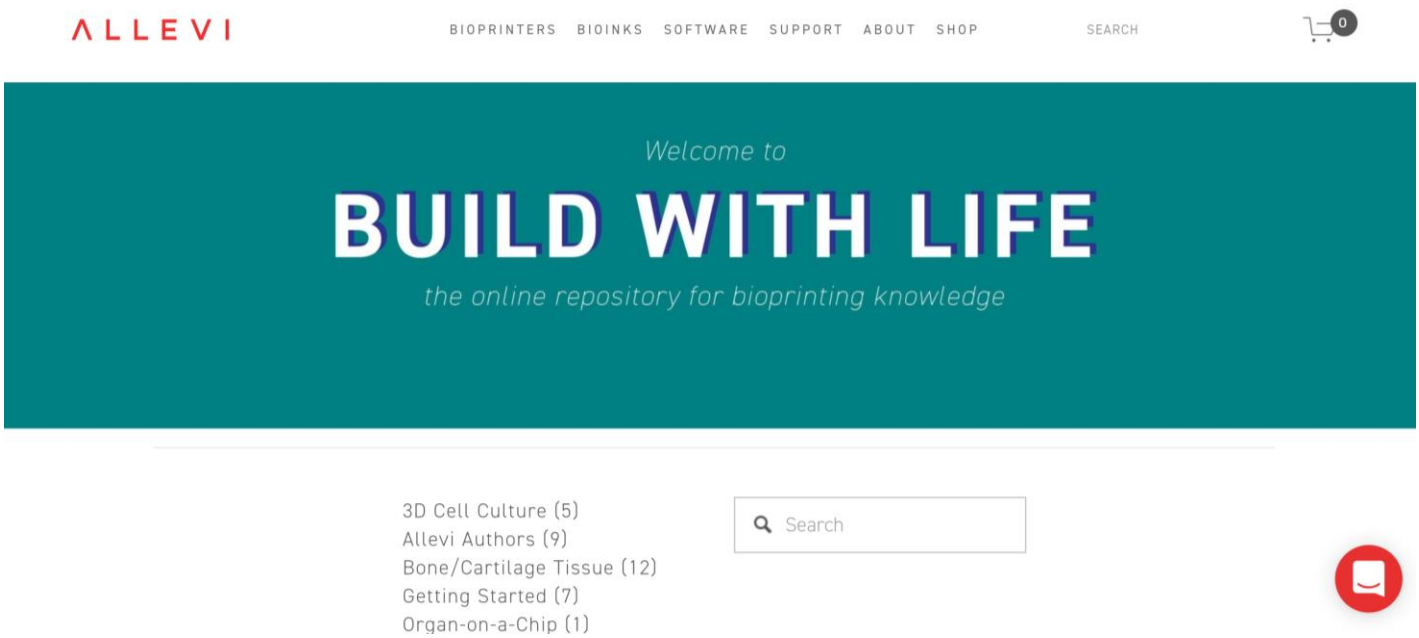
11. Sit back and watch your printer go!



TROUBLESHOOTING AND MORE INFORMATION

When you buy an Allevi bioprinter, you're not just getting a biofabrication platform; you're gaining the Allevi Advantage, which is all the experience and expertise Allevi has to offer.

One very useful resource is Allevi's Build With Life repository. We upload protocols, experiments, and guides to help you be more successful with bioprinting.



You can also visit the Allevi YouTube channel for video instructions.

Have more questions or need help?
Visit us on the Allevi Support page or email us at support@allevi3d.com!

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