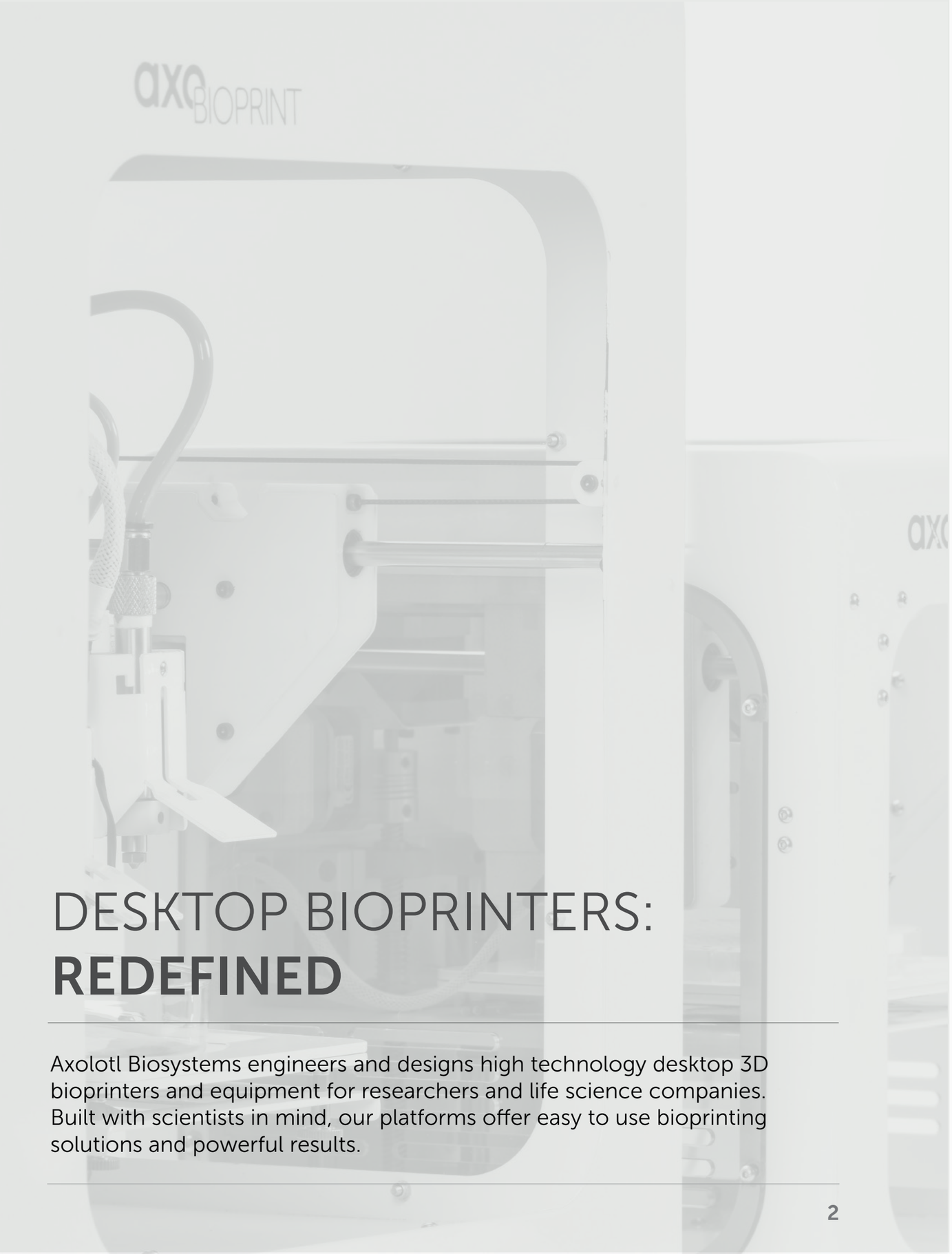
axolotl
BIOSYSTEMS

NEXT GENERATION OF **3D BIOPRINTING**

AXOLOTL BIOSYSTEMS
Industry and Trade Limited Company



DESKTOP BIOPRINTERS: **REDEFINED**

Axolotl Biosystems engineers and designs high technology desktop 3D bioprinters and equipment for researchers and life science companies. Built with scientists in mind, our platforms offer easy to use bioprinting solutions and powerful results.

WIDE RANGE OF **TEMPERATURE & PRESSURE**

Axolotl Biosystems offers 3D Bioprinters that have a wide range of temperature and pressure so researchers can work with any material no matter viscosity of the material is. Printheads can be heated up to 250°C and cooled down to 3°C, while printbed's heat can range between 1°C to 60°C. Pressure range allows our products to work with broad range and capacity.

HIGH LAYER RESOLUTION & HIGH **MECHANICAL PRECISION**

We offer high precision with magnetic encoders integrated into stepper motors with 10 microns of XY resolution and 1.25 microns of Z resolution. 50 Microns of layer resolution will enable researchers to work in detail.

AIR FILTERING & **UV CURING**

With the UV-LED curing system, wavelengths available in 365nm, 395nm, 405nm and power values available in 3W, 6W, 10W can be choosen specifically for your application. Our platforms enable air filtering with add-on or integrated options for your needs.

CUSTOMIZABLE PLATFORM

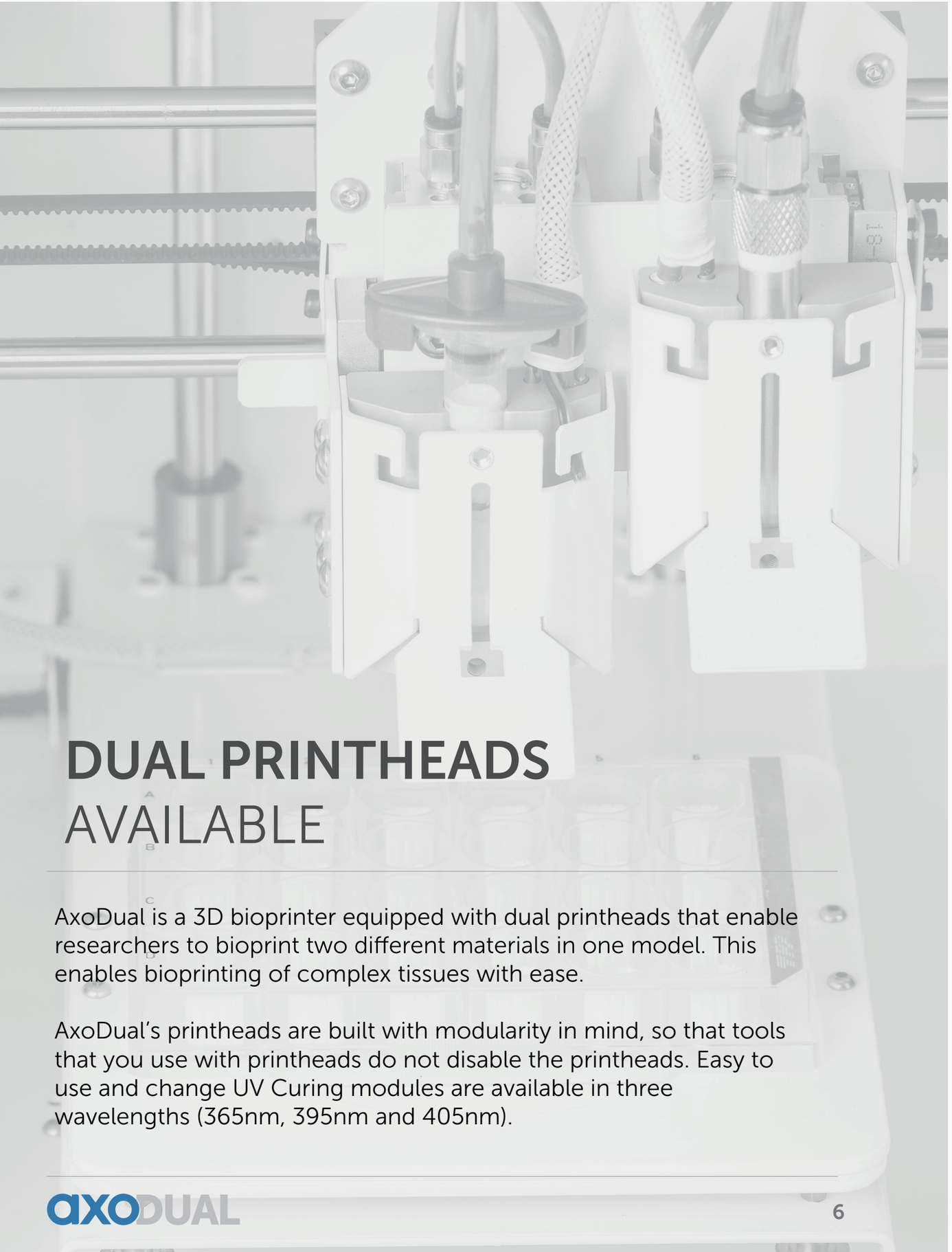
Axolotl Biosystems offers products that will fit your needs with its many types of equipment and open platform.

AXODUAL

AxoDual is the leading 3D Bioprinter with dual printheads produced by Axolotl Biosystems. With its technical capabilities and customizable parts, AxoDual enables researches to modify and fit the platform to their needs.

Easy to change printheads and accessible tools enable dual bioprinting at all times, while providing UV-Curing, HD Camera and air filtering. These tools and add-ons are easy to configure and use which makes the platform the basic tool for regenerative research and tissue engineering.

The platform and tools of AxoDual will enable you to bioprint at a wide range of temperatures and pressure while providing any other necessities.



DUAL PRINTHEADS AVAILABLE

AxoDual is a 3D bioprinter equipped with dual printheads that enable researchers to bioprint two different materials in one model. This enables bioprinting of complex tissues with ease.

AxoDual's printheads are built with modularity in mind, so that tools that you use with printheads do not disable the printheads. Easy to use and change UV Curing modules are available in three wavelengths (365nm, 395nm and 405nm).

BIOPRINTING **INTRICATE** TISSUES

Dual Bioprinting enables building of complex tissues that require simultaneous 3D printing of materials and live tissues.

OPEN PLATFORM TO FIT SPECIFIC NEEDS

AxoDual has an open platform for researchers who need specific type of machine that fits their needs. Axolotl Biosystems offers upgrades and custom mades solutions for scientists. These upgrades and modular printheads and additional tools will enable AxoDual to become your own bioprinting platform.

EFFECTIVE AND **PRACTICAL** PROCESS

AxoDual offers effective and practical process for complex tasks of bioprinting.
The tool enables researchers to get the results they aim for without the complicated processes other methods and products offer.

TECHNICAL **SPECIFICATIONS**

BIOPRINTING

Build Volume: 100x100x50 mm
Layer Resolution: 5 Microns
Positioning: 2 Microns
Calibration: Automatic
Filtering: High Efficiency Particulate Air Filter & Prefilter with Dual Power Fans
Bioprinting Noozles: Different Sizes and Types Available
Photocuring: 365nm, 395nm, 405nm
Extruder Air Pressure Range: 0 - 145psi
Printing Materials: PLA, PEG/PEGDA, Silk, Alginate, Propylene Glycol, Nanocellucose Collagen&Gelatin Solutions, Cells

PRINTHEADS&PRINTBED

Printhead Temperature: 4°C to 250°C
Printbed Temperature: 1°C to 60°C
Dual Printheads: Available
Changable Printheads: Available
Syringe Pump Printhead
Heated & Heated+ (85°C-225°C)
Cooled Printhead (3°C)
Ink-Jet Printhead
Thermoplastic Filament Extruder (250°C)

SOFTWARE

Connectivity: USB
File Format: GCode

MECHANICAL

Body: Powder-Coated High Grade Steel
Build Platform: Coated Aluminium
XYZ Bearings: Stainless Steel

DIMENSIONS

Body: 420mm x 330mm x 485mm
Shipping Box: 500mm x 500mm x 650mm
Weight: 18 kg
Shipping Weight: 21 kg

AXOMONO

AxoMono is the new 3D Bioprinter that will satisfy all your 3D Bioprinting needs in a small yet efficient product. Built to operate on a wide range of temperatures for printbed and printhead and capable of handling pressure, AxoMono will be your new go-to product in your researches.

AxoMono will enable you to bioprint at wide range of temperatures, pressure while providing flexible options of research. AxoMono requires little effort to work with, so you can get fast results at ease.

POWERFUL MADE **FAST** AND **EFFORTLESS**

A Bioprinter that is space efficient, powerful with temperature and pressure control, platform engineered to be powerful and easy to use design: AxoMono.

AxoMono offers the results of a regular bioprinter in efficiency without giving up on capacity and technical features.

BASICS OF 3D **BIOPRINTING**

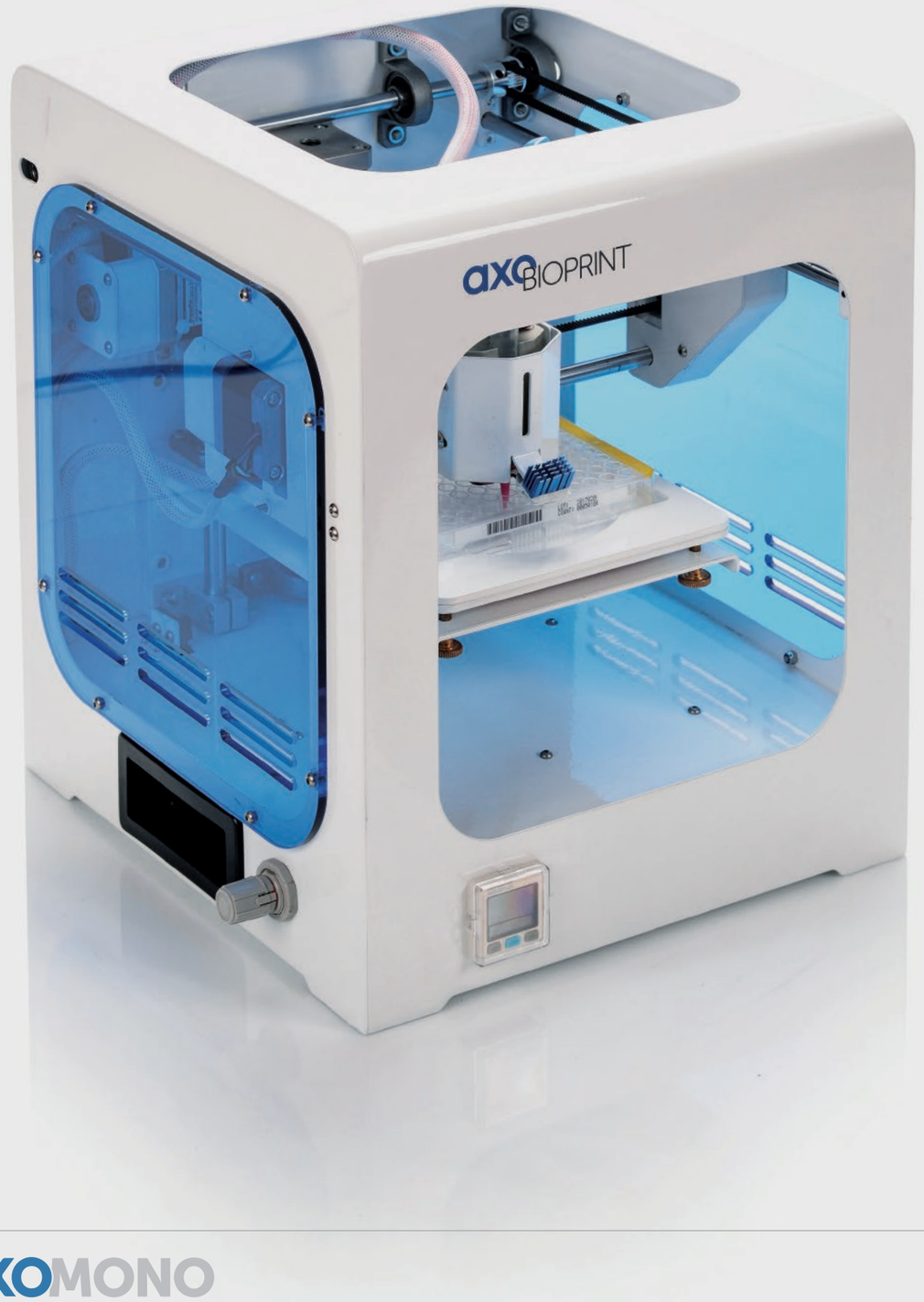
AxoMono will provide researchers a basic tool for all their bioprinting needs. The main aim of this product is to provide a PnP option for scientists. Wide range of pressure and tempature with powerful equipment makes AxoMono the reliable tool for research. The open platform and equipments makes AxoMono a fit for most of basic research using bioprinting.

SMALL YET **POWERFUL**

AxoMono is a significantly smaller desktop 3D Bioprinter while still having all the necessary specifications of a regular bioprinter. Just being 270x270x330mm, it can fit into sterile biological safety cabins without taking much of the space. The compact design enables the product to stay this small but still have a 100x 100x50mm build volume.

RELIABLE RESULTS

AxoMono provides reliable bioprinting results. It is a product that can be used in many bioprinting applications. Scaffolds and bone graft production is a fit for AxoMono.



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Bioprinting Noozles: Different Sizes and Types Available
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Extruder Air Pressure Range: 7 - 101psi
Printing Materials: PLA, PEG/PEGDA, Silk, Alginate, Propylene Glycol, Nanocellucose Collagen&Gelatin Solutions, Cells

PRINTHEADS&PRINTBED

Printhead Temperature: 4°C to 250°C
Printbed Temperature: 1°C to 60°C
Dual Printheads: Available
Changable Printheads: Available
Heated Printheads: Heated & Heated+ (85°C-225°C)
Ink-Jet Printhead
Syringe Pump Printhead
Thermoplastic Filament Extruder (250°C)

SOFTWARE

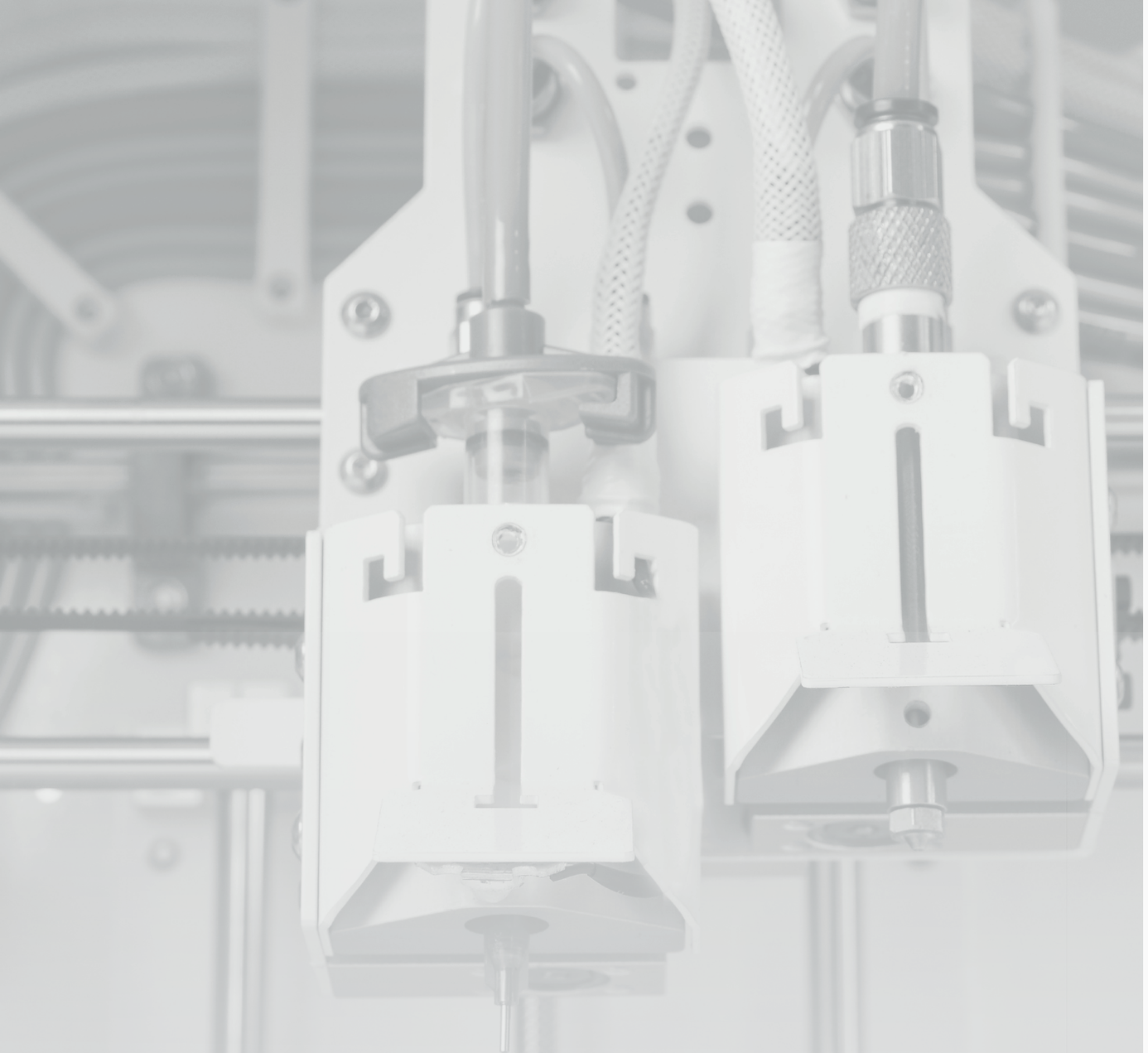
Connectivity: USB
File Format: GCode

MECHANICAL

Body: Powder-Coated High Grade Steel
Build Platform: Coated Aluminium
XYZ Bearings: Stainless Steel

DIMENSIONS

Body: 270mm x 270mm x 330mm
Shipping Box: 450mm x 450mm x 500mm
Weight: 12 kg
Shipping Weight: 15 kg



PRINTHEADS:
VARIABLE OPTIONS

Axolotl Biosystems designs and engineers different printhead options to provide all needs for your research. With different printhead options AxoDual and AxoMono will become the tools of choice with all of its different printheads.

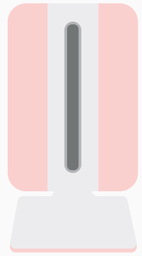
Your bioprinting needs will find a match with the selection of bioprinting printheads.

SYRINGE PUMP PRINTHEAD

Mechanical high precission driven,
Designed for high viscosity biomaterials

INK-JET PRINTHEAD

Specially designed for biopatterning applications,
250 picoliter resolution, working with stem cells



HEATED & HEATED+ PRINTHEADS

For working with bioresorbable polymers and biocompatible polymers, room temperature to 245°C.
Temperature range enables researchers to work with many different polymer types

COOLED PRINTHEAD

With its revolutionary adaptive peltier control system the printhead can cool down to 3 celcius. Eesearchers can print "collagen" for bioprint stroma(a part of cornea) or "pluronics f127" for microfluidics applications or "matrigel" for advance tissue engineering applications.

THERMOPLASTIC FILAMET EXTRUDER

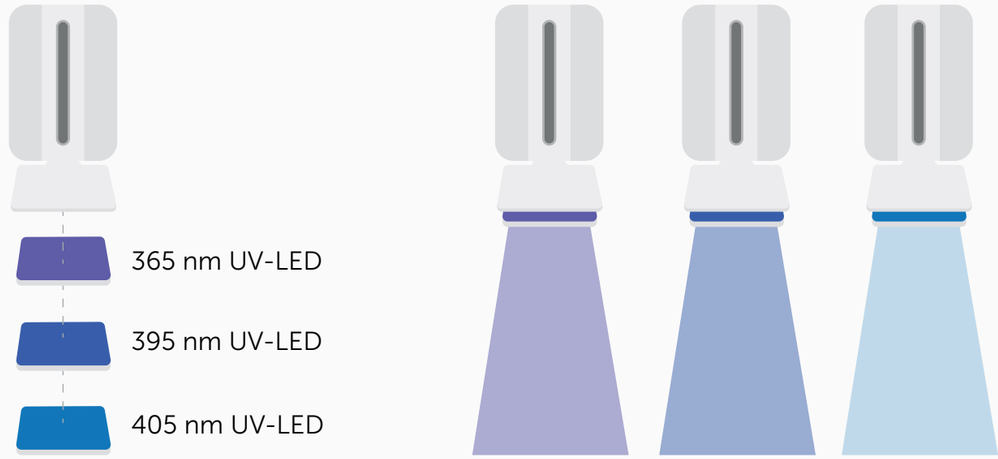
For working with PCL, PLLA filament(diameter: 1.75mm), layer resolution: 50 micron, suitable for printing scaffolds.

TOOLS FOR YOUR **BIOPRINTING** PLATFORM

Axolotl Biosystem 3D Bioprinting products have additional printhead tools for bioprinting. With its modular additioning technique, tools do not disable printheads and you can still print while printheads are working.

UV CURING
(365nm, 395nm, 405nm UV)

With our UV-LED Modules researchs work with different type of photoiniators. Because of the modular design of the UV curing system users can change the wavelenght in few seconds. Depends on the application users choose different power values. with this two options, make AxoDual X, most innovative UV Curing system.



HD CAMERA

HD camera tool head enables researchers to observe bioprinting with in-situ control system. With that specification researchers can easily prepare pictures for their academic papers and stream bioprinting from their computers easily.

BIOMATERIALS

With its revolutionary pneumatic extrusion technology enhanced with wide range temperature and pressure controls, Axolotl Biosystem offers 3D Bioprinters that can work with variety of biomaterials.

Viscosity of the materials can be altered with heated printheads, printbed temperature can be lowered down to 3°C, which enables the structures to preserve their shape.

BIOMATERIALS

Gelatin Methacrylol
Collagen Methacrylol
Decellularized ECM
Collagen solution
Hyaluronan
Alginate
Chitosan
Silk
Nanocellulose
Gellan gum
PEG/PEGDA/Multi-arm PEGs
Gelatin
Pectin
Agarose

BIOINKS FOR SPECIFIC PURPOSES

PDMS Elastomers E.g. Sylgard 184, SE 1700
Laponite
Micro Crystalline Cellulose
Starch Ether
Alginate
Magnesium Aluminum Silicate
Bentonite Clay
Carrageenan
Pluronics F127
Propylene Glycol

THERMOPLASTICS

PCL
PLA
PLGA

BIOPRINTING **LIVING TISSUES:**

Bone Marrow Stromal Cells
Mesenchymal Stem Cells
Cardiac Progenitor Cells
Human Umbilical Vein Endothelial Cells
Chondroctyes
Fibroplast

Axolotl Biosystems create products which enables researchers to bioprint constructs containing different types of cells. These bioprinted structures lets the researchers construct desired tissue of human biology with wide range of applications.

Bone marrow stromal cells (BMSCs) and mesenchymal stem cells (MSCc) can be utilized in bioprinting process to advance the tissues' structure. Our bioprinting process enables using specialized cells for different applications such as chondroctyes for cartilage or fibroblasts for dermal applications.Human Umblicial Vein Endothelial Cells enables building vascular networks and Cardiac Progenitor Cells (CPC) lets construction of cardiac patches. Rapid models with Hepatocytes will save time in drug screening and diseases models can be advanced with Stellate Cells.

CONSUMABLES:
FOR EVERY NEED

Axolotl Biosystems offer consumables of variety for every type of bioprinting needs from nozzles to cartridges.

BIOPRINTING NOZZLES:
FOR EVERY MATERIAL

Axolotl Biosystems offers you different type of needles, dispensing tips and stainless steel nozzles depending on your needs.

Wide range of inner diameter of bioprinting needles: 14G to 34 G
Lenght option of bioprinting needles: 0,5 inch, 1 inch

Stainless Steel nozzles for printing scaffold: 100 micron, 200 micron, 250 micron, 300 micron, 400 micron

Brass nozzles for printing scaffold: 100 micron, 200 micron, 250 micron, 300 micron, 400 micron

With these kinds of inner diameters researchers, can print microfluidic chips with high precision.

CARTRIDGES
DIFFERENT NEEDS

Axolotl Biosystems offers you different type of cartridges depending of application.

Bioprinting Cartridge is the basic cartridge in bioprinting of many od the BioInk formulations.

Stainless Steel Cartridge is used in bioprinting over 70°C.

UV Shielding Cartridge is used when UV Curing or UV Sterilization is used.

www.axolotlbio.com

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