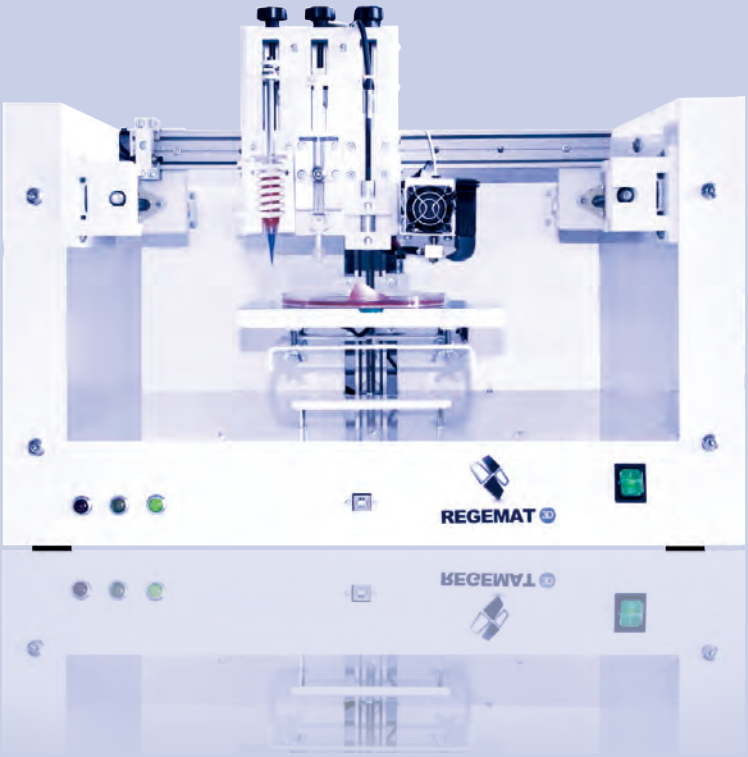


3D生物打印机

模块化设计

个性化解决方案

西班牙Regemat

www.apgbio.com

挤出式打印原理

打印材料适用范围广，打印方式灵活多变，为3D生物打印的科研工作者提供更多可行性。

生物材料

1、胶原（Collagen）

2、透明质酸（hyaluronic acid）

3、明胶（Gelatin）

4、藻朊酸盐（Alginate）

5、纤维蛋白（Fibrin）

6、琼脂糖（Agarose）

7、聚氨基葡萄糖（Chitosan）

8、纳米纤维素（nanocellulose）

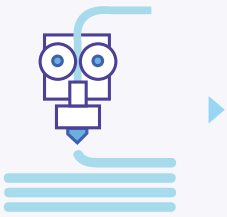
...

细胞系与细胞株

1、间充质干细胞
2、心肌细胞
3、成纤维细胞
4、软骨细胞
5、肌肉细胞
...

热塑性高分子材料

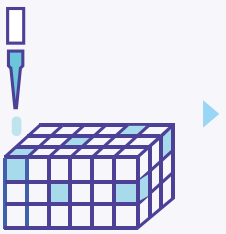
1、聚乳酸（PLA）：
熔点155-185° C
2、聚己内酯（PCL）：
熔点59～64℃
...



FDM

熔融层积成型技术（Fused Deposition Modeling）

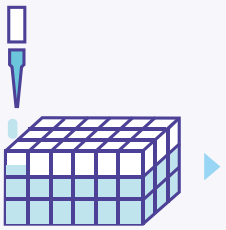
通过熔融层积成型技术，我们可以打印具有复杂外部结构和网状内部结构的骨架。在这个增材制造的过程中，热塑性的材料被挤出机加热软化后挤出，逐步层层黏连叠加。



IPF

注孔填充（Injection Pore Filling）

通过注孔填充技术，可实现精确定位到特定层，特定孔的细胞填充。甚至可以进行定量的填充，和不同层进行不同量的填充。该技术可增强细胞活力和确保细胞的存活率，即使在高温的热塑性材料的极端环境中。



IVF

注射体积填充（Injection Volume Filling）

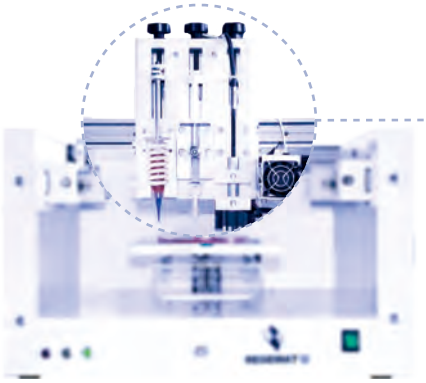
注射体积填充技术通过注射生物墨水，将打印后的每一层进行彻底地填充。该技术使小区域体积填充变得容易，如在骨软骨损伤再生修复的应用中。

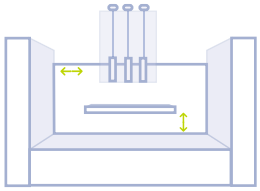
模块化设计

采用模块化设计理念，支持定制，为您不同的研究项目提供针对性的3D生物打印方案。

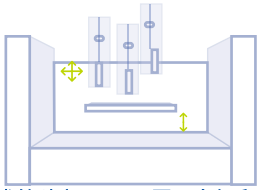
一体式设计/独立设计

打印机头部，可为任何应用装配不同的
注射泵模块和打印喷头。





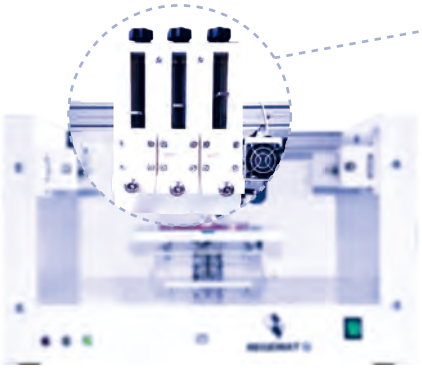
一体式的头部可以配置4 个不同的打印喷头，
可以在x/y 轴上进行移动。

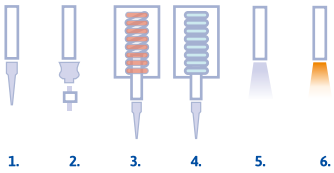


独立式的头部，可配置3 个打印喷头，
每个喷头可在x/y轴独立的移动。

打印模块

我们设计的组件可以根据打印材料的
自然属性和特点进行调整。

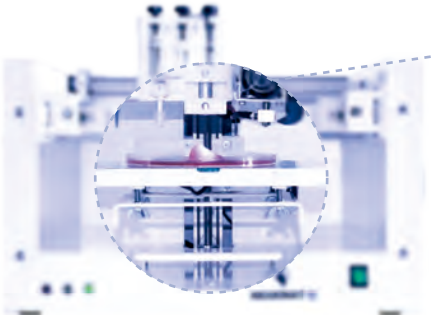


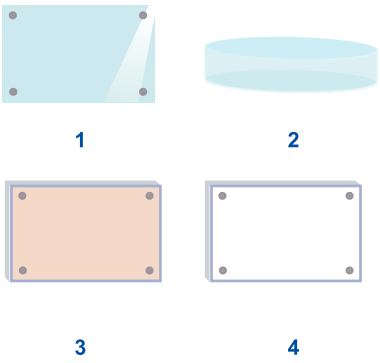


打印模块：
1.加热打印头（标配）
2.双组分打印头
3.高温挤压打印头
4.低温打印头
5.紫外固化系统
6.红外固化系统
...

打印表面

挤出材料的高度通过x,y,z 轴坐标的
自动校准和在Z轴上的独立位移来实现。



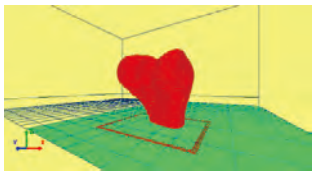


打印表面：
1. 玻璃平面　2. 细胞培养皿　3. 加热床　4. 低温床

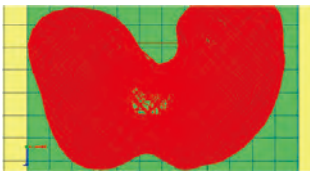
强大的软件功能

简便易用，灵活多变，多种参数灵活可调，满足不同3D生物打印方案。

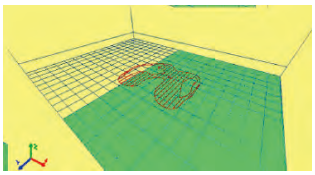
通过设计或导入结构数据文件，我们可对包括内部网状结构在内的很多打印参数进行设置。



G- Code展示



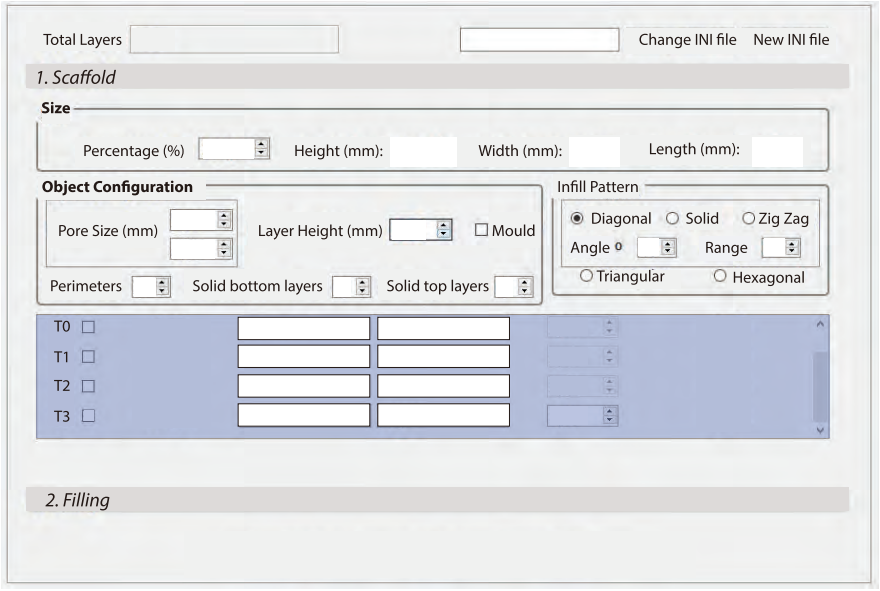
分层展示



内部网状结构展示

骨架设定

为每个喷头选择打印层数和打印边长



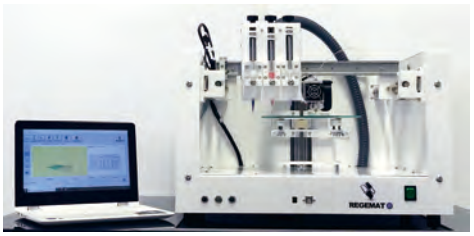
打印参数设置

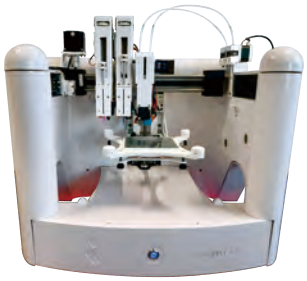
注射泵参数设定

注射层数选择

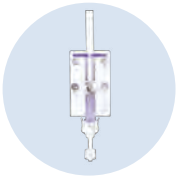
注射方式设定

型号及参数：

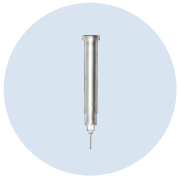




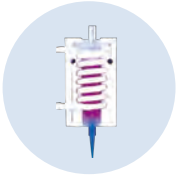
	REGEMAT V1	REG4LIFE
打印技术	挤出式	挤出式
最大构建体积	150mm x 160mm x 110mm	150mm x 160mm x 110mm
打印模式	熔融层积成型（FDM）、注孔填充（IPF）、注射体积填充（IVF）	熔融层积成型（FDM）、注孔填充（IPF）、注射体积填充（IVF）
最快打印速度	20mm/s	60mm/s
校准	半自动	自动（激光传感器）
打印头	加热打印头、高温打印头、低温打印头、紫外固化头、双组分打印头、同轴打印头、热塑性挤出打印头	加热打印头、高温打印头、低温打印头、紫外固化头、双组分打印头、同轴打印头、双热塑性挤出打印头
打印床	高温打印床、低温打印床、培养皿打印床、多孔板打印床	高温打印床、低温打印床、培养皿打印床、多孔板打印床
X 、Y轴移动精度	150μm	150μm
Z轴移动精度	0.4μm	0.4μm
机身设计	不锈钢	ABS结构
打印头Z轴独立移动	否	是



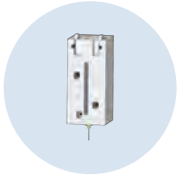
双组分打印头



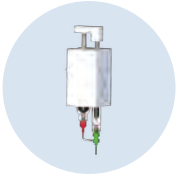
金属打印头



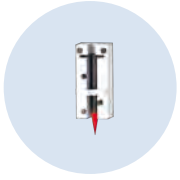
低温打印头



高温挤压打印头



同轴打印头

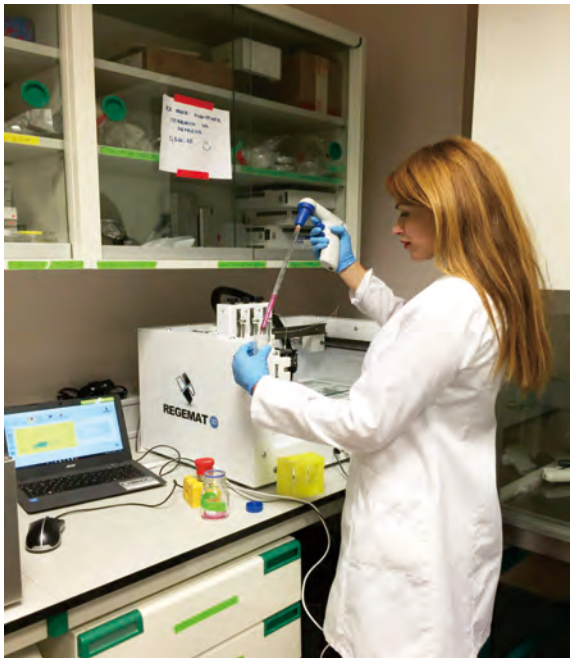


加热打印头（标配）

代表用户

格拉纳达大学
新型生物材料的开发

Virgen del Roc í o Hospital
腹部的网状结构



悉尼大学
心肌细胞打印

哥伦比亚国家康复医学研究所
软骨打印

挪威纸和纤维研究所
纳米纤维素

Hospital Universitario La Paz
皮肤和软骨再生

美国爱荷华大学
唇裂和腭裂, 骨再生医学

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