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PRINTING PROTOCOL

CELLINK START

This is a suggested procedure, please adjust according to your experimental needs. If using sterile CELLINK START, work under sterile conditions to maintain the sterility of the product.

Protocol aim

The aim of this protocol is to provide instructions for printing of CELLINK START using the INKREDIBLE, INKREDIBLE+, BIO X, or BIO X6. Changing the parameters in the protocol might change printing pressure required. CELLINK START is a polyethylene oxide-based ink that can be used for structural support as well as for evaluation of construct geometry for education and training purposes.

Materials needed

- CELLINK START*
- Conical bioprinting nozzles, 22-27G recommended*
- BIO X*, BIO X6* or INKREDIBLE-series* 3D bioprinter
- Well plate or Petri dish*
- PBS

*The product can be purchased in the CELLINK shop at www.cellink.com/shop.

Protocol

This protocol can be performed with printheads and print bed at room temperature, where room temperature is between 20-25°C.

1. Preparing the ink

MATERIAL

CELLINK START

DESCRIPTION

- Use CELLINK START at room temperature. It is recommended not to heat CELLINK START beyond 25°C, as the viscosity of the ink will decrease.

Note: It is not recommended to blend cells with CELLINK START as it is intended for use as a support or training material.

2. Printing

MATERIAL

Conical bioprinting nozzles, 22-27G recommended

BIO X, BIO X6 or INKREDIBLE series bioprinter

Well plate or Petri dish

DESCRIPTION

- Cap the cartridge with a printing nozzle of choice and place in the printhead. Connect the cartridge to the air adapter.
- For optimal printability use a layer height equal to the nozzle inner diameter and print at faster translation rates. See Figure 1 for suggested printing pressures for corresponding nozzle size and printing speed.
- Print structures onto a well plate or Petri dish. If printability is not as desired, adjust the pressure up/down by 1 kPa to extrude more/less material.

Note: If waiting too long between extrusions the ink can dry in the nozzle causing it to clog. If this occurs, replace with new nozzle.

Note: Test the flow of the ink after the calibration is performed and start with a low pressure and increase stepwise.

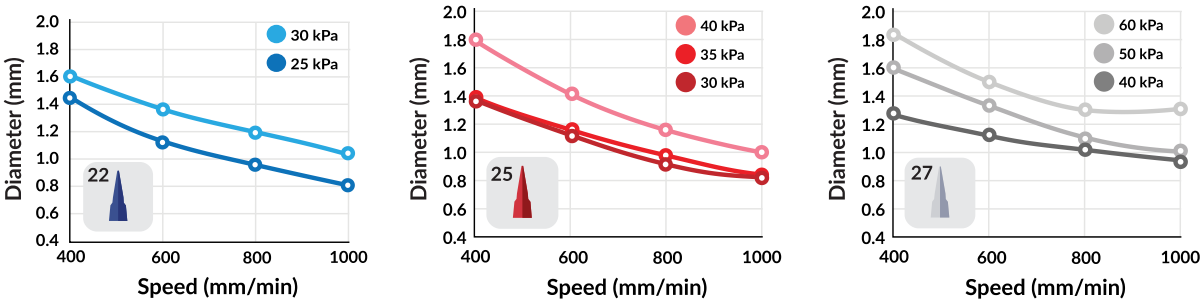

***Figure 1**. Resulting filament diameter when printing at different nozzle sizes, printing pressures and printing speeds.*

3. Washing

MATERIAL

Warm PBS

DESCRIPTION

- CELLINK START cannot be crosslinked as it is intended for use as a support material. Gently wash with warmed PBS solution to completely remove the CELLINK START from the construct after printing.