

Bioprinting of a vascularized scaffold for nerve tissue engineering

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Tissue engineering				Medical context	
Active molecules: grantibodies, small mo	owth factors, lecules	Biomaterials: co processing, P	omposition, roperties: Geometry, Porosity, Mechanical properties, Degradability and	Spinal Cord Injury Axons damaged Inflammation	



Prevascularization: bioprinting of

Process by stereolithography (STL): high resolution, quick, and versatile, mild conditions ³



Bionova X 3D printer

endothelial cells

Graft survival and integration ⁶

Schwann cells: secretion of growth factors and extracellular matrix ^{4,5}

Oriented axonal growth

Objective: Generate a biomimetic prevascularized scaffold



Bioprinting and scaffold characterization



Cells viability and vascularization

Viability analysis overtime

- Live-dead staining
- Metabolic activity assay

Self organisation, vessel-like structure formation

Cell staining and observation





 \checkmark Light intensity

Scaffolds characterizations

• Structure and porosity analysis using optical and electron Microscopy



Macroscopic view



Microscopic view

with confocal microscopy (MRI platform)



 $1\,\mathrm{mm}$ *Top view of a multichannel* scaffold, phalloidin staining





Sde view of a channel, phalloidin and DAPI staining

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