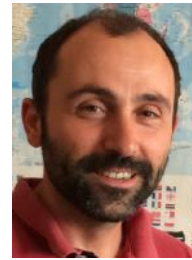


# Hepatic tissue engineered in 3D printed scaffolds

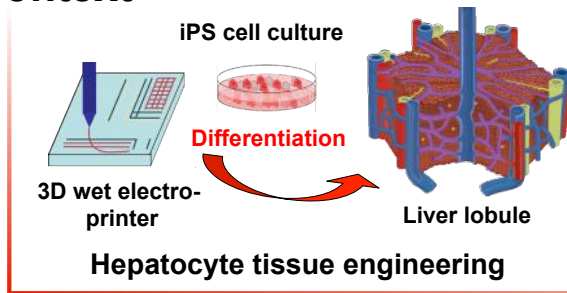
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Keywords: tissue engineering, iPS cells, liver-on-chip



## Context



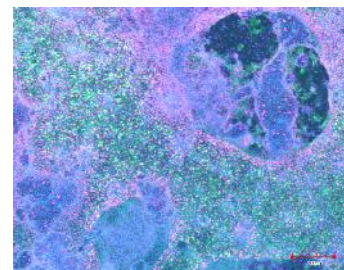
**Overall goal:** combine new 3D wet electro-printing technology with iPS cell differentiation culture in order to produce liver tissue.

**Challenges:**

- Design a hepatic cellular architecture of the liver tissue ;
- Improve the maturity of hepatocytes.

## Objectives

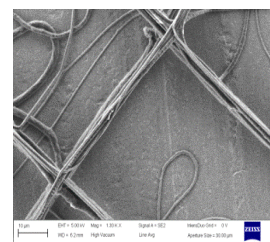
- To fabricate a 3D printed biochip made of resorbable polymer and functionalized with bioactive components ;
- To achieve the hepatic differentiation from iPS cells in the new 3D printed scaffold ;
- To characterize the cellular architecture of the tissue according to the original design.



iPS cells differentiated in hepatocytes

## Preliminary results

- Characterization of the first 3D printed scaffolds made of resorbable biocompatible polymer ;
- Differentiation of hepatocytes from iPS cells induced by new growth hormone analogs possessing higher life time ;
- Formation of a perivenous tissue profile when the hepatic progenitors (differentiated from iPS cells) are cultivated in 3D biochip.



3D printed scaffold

## Perspectives

- Regenerative medicine in case of liver graft ;
- Modelling for drug screening and determination of liver detoxification ability ;
- Extend these new biochips for differentiating other types of tissue or organ.

## Contacts

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This project is done in collaboration with Dr. Salles (LMI UMR 5615 –University of Lyon)

