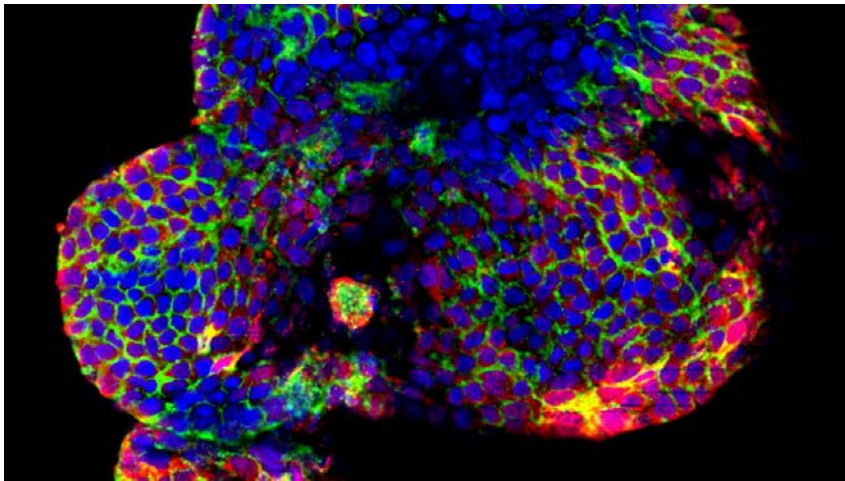


Organotypic 3-D modelling of liver tissue fibrosis



Ref. Nr

6.1994

Keywords

Regenerative, tissue fibrosis, hydrogel, tunable, organoids, progenitor cells, liver stiffness

Intellectual Property

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Description

In the recent years, there has been rapid progress in developing 3D models of the fibrotic liver to study the impact of potential therapeutic molecules. One of the major challenges though is the replication of a 3D model which closely mimics the physiological and immunogenic properties of the human liver in vivo.

These 3D matrices used for organoid derivation have a limitation of batch to batch variability.

These chemically defined and mechanically tunable hydrogels are used for the derivation of both human and mouse hepatic organoids, by:

- Establishing chemically defined and mechano-modulatory 3D culture system
- Deriving liver organoids with tuned mechanical properties mimicking in vivo status
- Modelling the stiffness of a fibrotic liver
- Tuning the shear modulus

Advantages

- Liver organoids grown in PEG-RGD hydrogels overcome the limitations of Matrigel
- The model matches the physiological stiffness of the liver
- Efficient proliferation of liver progenitor cells
- Low batch to batch variability
- No animal derived components in any step of the process

Applications

- validating genetic target treatment for clinical application
- efficacy and toxicity testing of drug candidates
- research and development tools
- therapeutics screening, validation