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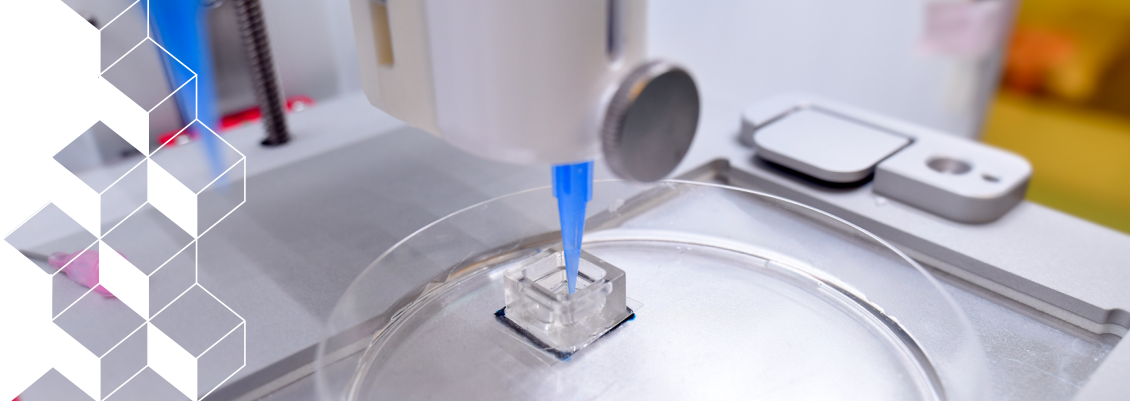


Organoids & Organoids-on-chip

Development of human organ models

A systemic and multi-scale understanding of physio-pathological processes

- Development of avatars of healthy or pathological human organs.
- Design of 3D innovative matrices in compliance with the European directives.
- 3D phenotypic screening for the discovery of new therapeutic targets, biomarkers and drug candidates.

Using innovative technologies to build the medicine of the future

- Bioproduction and large-scale characterization of standardised organoids.
- On-chip reproduction of controlled microenvironments.
- Real-time monitoring of the functional response of organoids.
- Implementation of biological protocols on chip to be used in clinical use or by CROs.
- Personalised medicine: design and development of tools as an aid to therapeutic decisions.

Applications

Cancer/metastases
Pancreatic diseases
Skin diseases
Inflammation
Cholangiopathies
Tissue engineering / regenerative medicine
Personalised medicine

Technologies

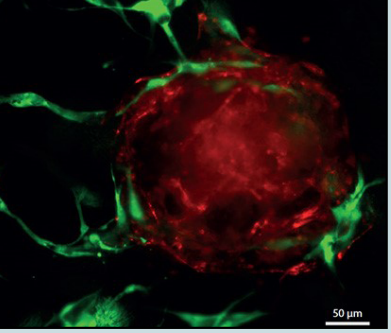
Microencapsulation
3D cell engineering
Decellularized matrices
3D bioprinting / bioinks
Adult or induced stem cells
Lens-free imaging
Micropatterning
Microfluidics
Biosensors

In figures

4 PhD students incl. CIFRE per year
32 researchers
9 publications per year
9 patents
7 EU projects
4 industrial partnerships

Networks & ecosystem

CHU Grenoble Alpes
EUROOCS European Organ-on-Chip Society
BIOVALLEY france l'innovation santé
cea leti
cnrs GDR Groupement de recherche Organoïdes
Medicalps



Pseudo vascularised pancreatic islets on chip

Automated measurement of insulin from a single pseudo islet

› Perspectives of islet transplantation in diabetic patients

Biosensors & Bioelectronics, 2022, 202, 113967

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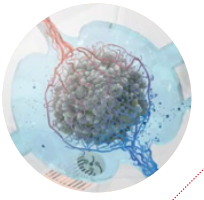
3D cell models

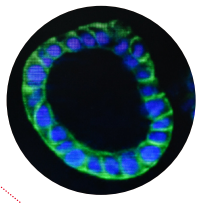
Pancreas

Type I and II diabetes.
Cancer.



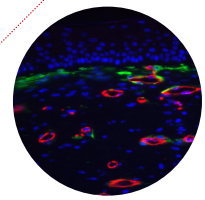
Glandular epithelia

Prostate, Breast, Pancreas.
Large-scale production of standardised organoids by microencapsulation.



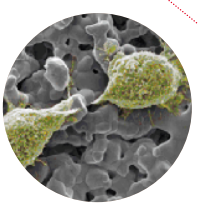
Skin

Organoids and tumoroids, reconstructed and 3D. bioprinted skin models.
Decellularised 3D matrices.



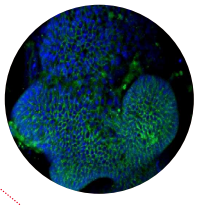
Self-assembled films

Biomimetic and functionalizable organic polymers of the microenvironment (bioactive molecules).



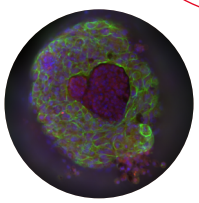
Barrier models

Intestinal barrier.
Intestine on chip, lung.
Placental barrier .
Blood-brain barrier.



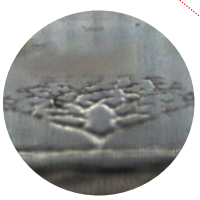
Kidney

Spheroids of cell lines.
Xenografts of tumors in mice.
Sections of tumor tissue obtained either from implanted tumors in mice or from patients.
Tumoroid.



Biliary ductules

3D bioconstruction of polarised and functional biliary networks.
Hepatobiliary organoids



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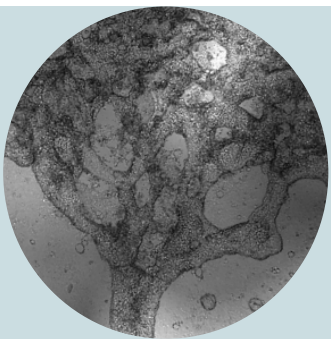
Tissue engineering by high-resolution 3D bioprinting

The first *in vitro* model of an intrahepatic biliary tree

› Applications in regenerative medicine

Biomaterials 2021, 279, 121207



irig.cea.fr

Interdisciplinary Research Institute of Grenoble
CEA-Grenoble
17 avenue des Martyrs
38054 Grenoble cedex 9

Contact
Partnership development: irig-dpv-sante@cea.fr