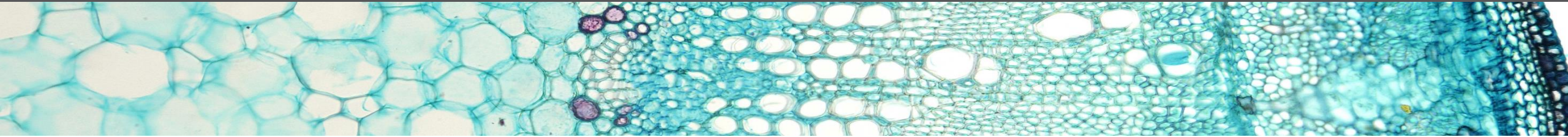




Plateforme Organoïdes de Montpellier (POM)

BCUM



Bi  Campus
Montpellier



Inserm



UNIVERSITÉ DE
MONTPELLIER



MUSE



PÔLE BIOLOGIE-SANTÉ



PÔLE AGRONOMIE
ENVIRONNEMENT-BIODIVERSITÉ



cirad



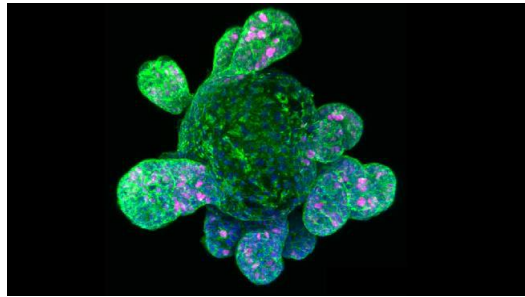
INRAE



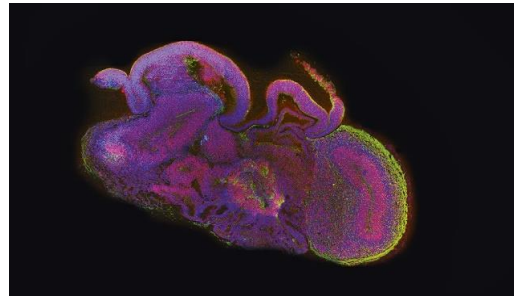
The Montpellier Organoid Platform and its organoid solutions



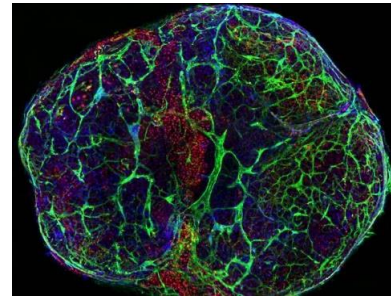
BCM



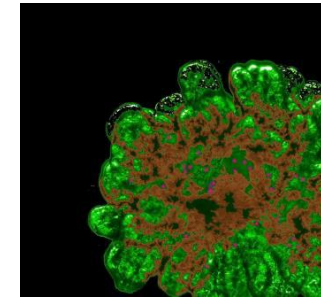
Intestine



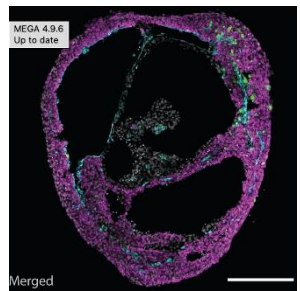
Brain



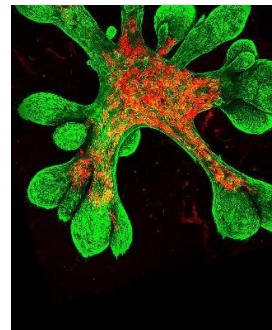
Liver



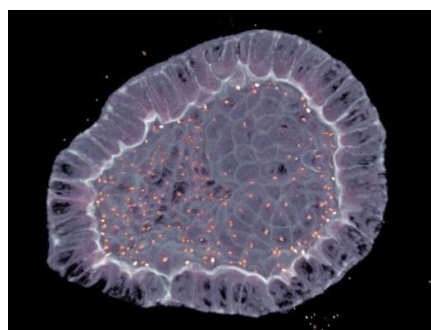
Pancreas



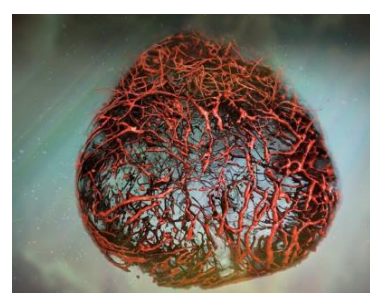
Heart



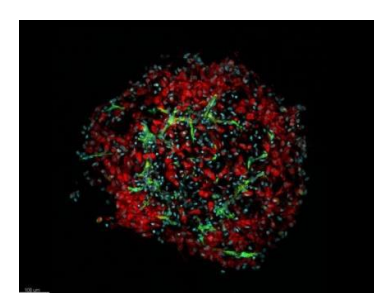
Lung



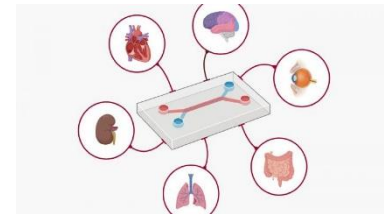
Kidney



Vessel



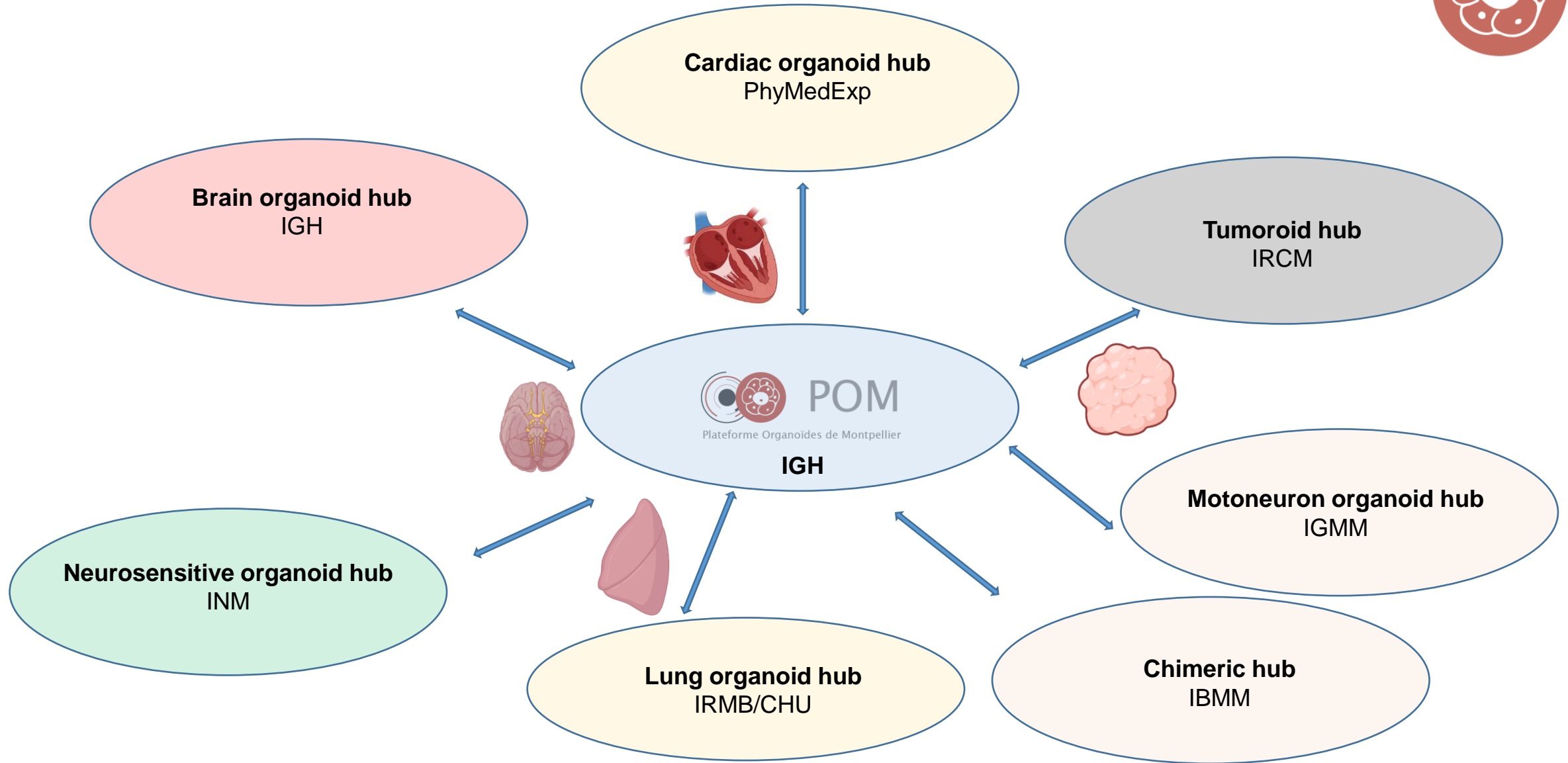
Adipocytes



Organ-on-chip

Currently more than 10 organoid solutions on demand
Check out at www.pom.cnrs.fr

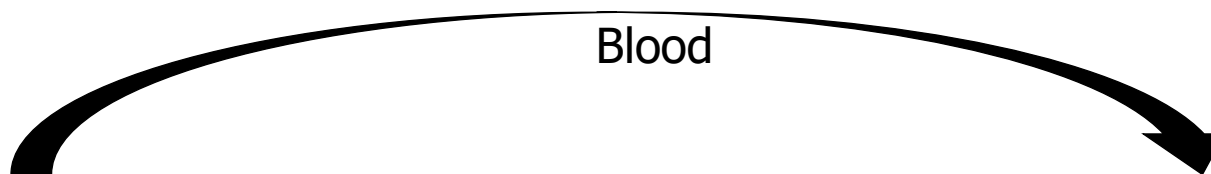
POM and its identified hubs



Production of cardiac organoids

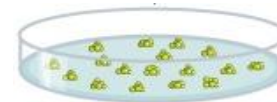


Healthy controls
Patients with inherited cardiopathies

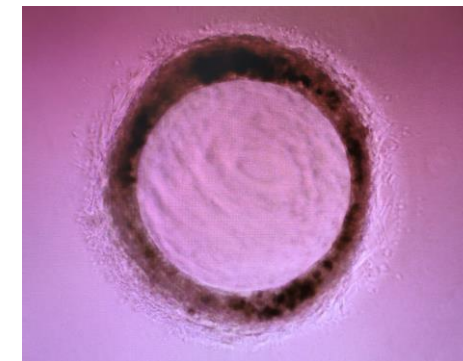
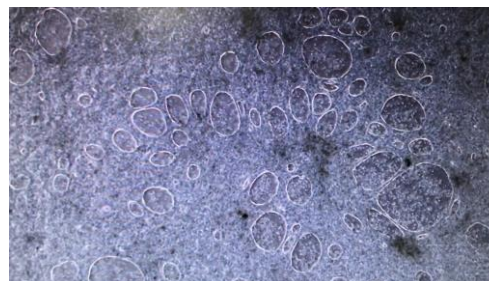


Blood

hiPSC reprogramming



2D cardiac sheet or 3D cardiac organoid (12 or 24 well production)
takes 30 days to produce / availability: up to months



Neuro-cardiac organ-on-a-chip

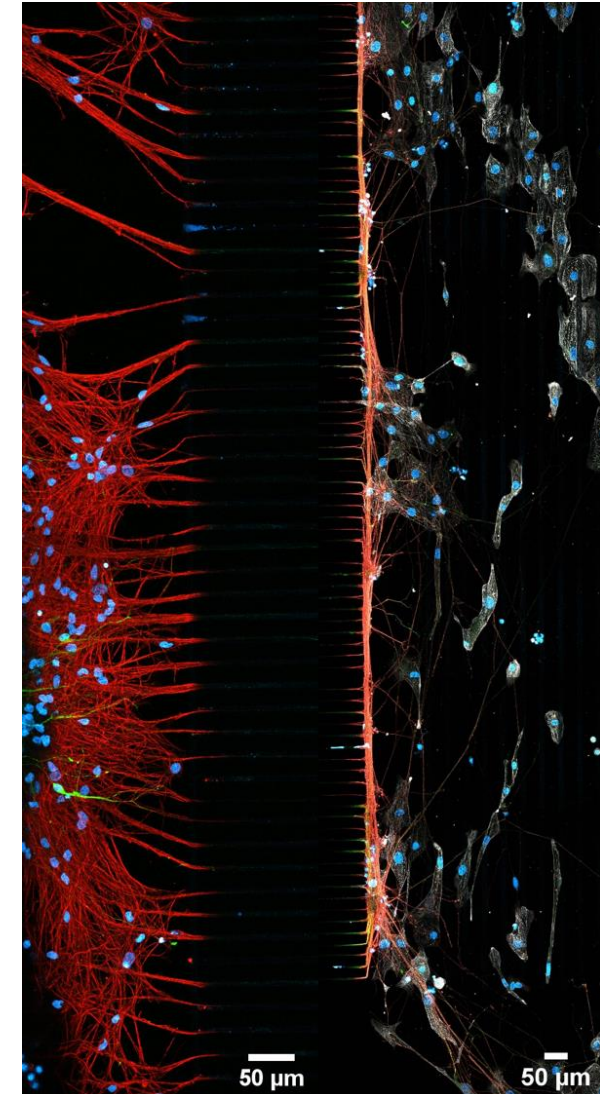


hiPSC-derived neurons

hiPSC-derived cardiomyocytes



Microchannels



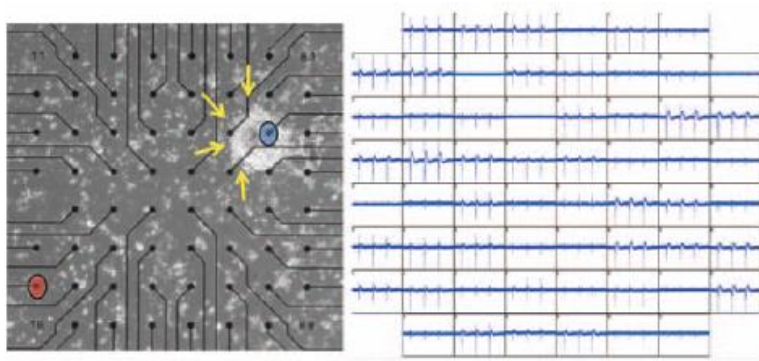
Advantages of patient-specific organ-on-a-chip

- ✓ Cell organization analysis (size, heterogeneity...)
- ✓ Cell labelling and interactions (neurons / myocytes)
 - ✓ 2D/3D structure imaging
- ✓ Functional assays (electrophysiology, calcium, contraction)
 - ✓ Drug screening by cellular chamber
 - ✓ Transcriptomic analysis

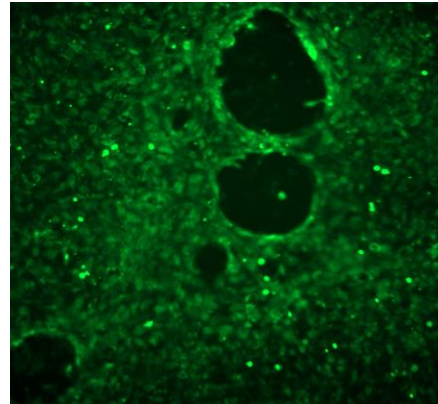
Available quantifiable routine readouts for the cardiac hub



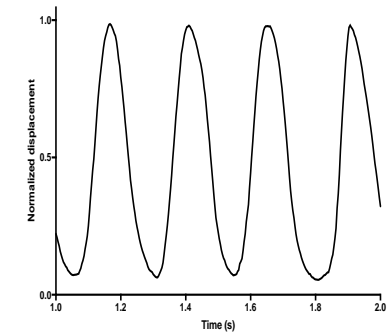
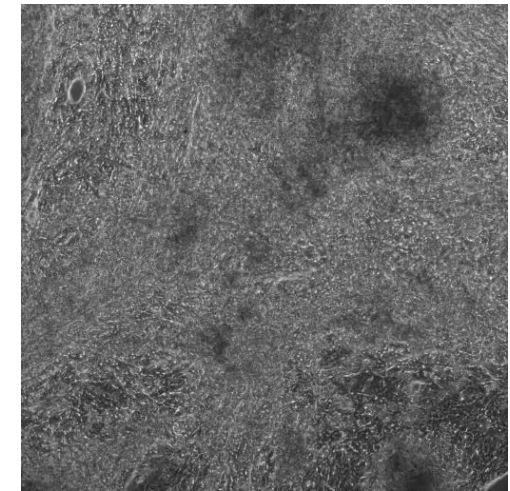
Electrophysiology



Calcium imaging

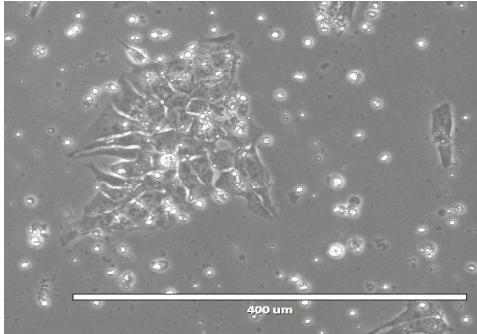


Contraction properties

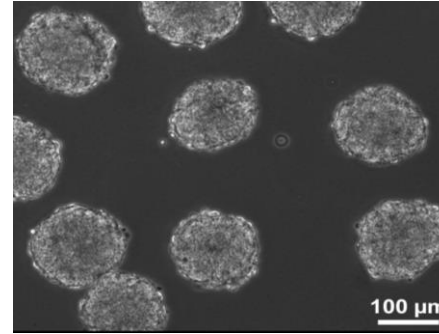


Human neuro-muscular junction (hNMJ) using microfluidics

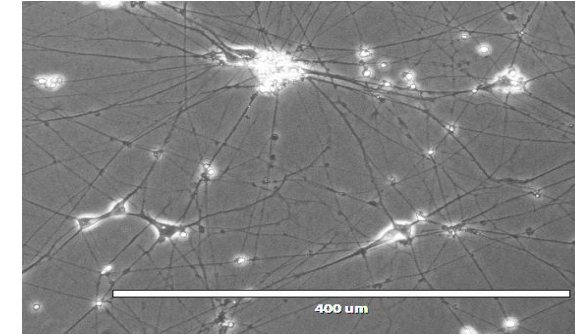
hiPSC



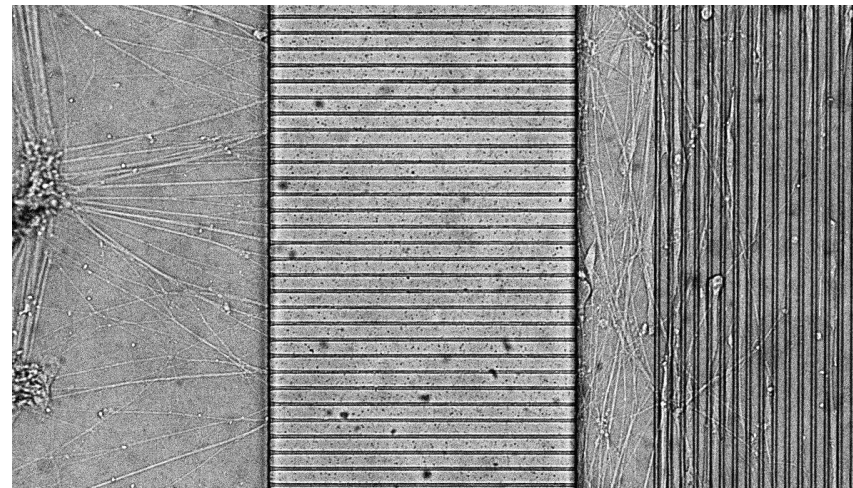
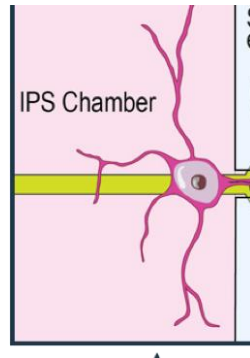
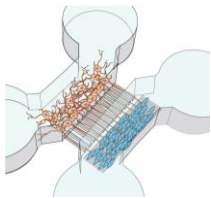
Embryoid bodies



Motoneurons (MN)

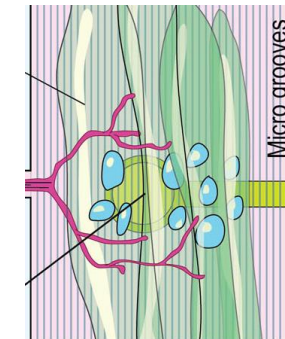


Compartmentalized co-culture using microfluidics



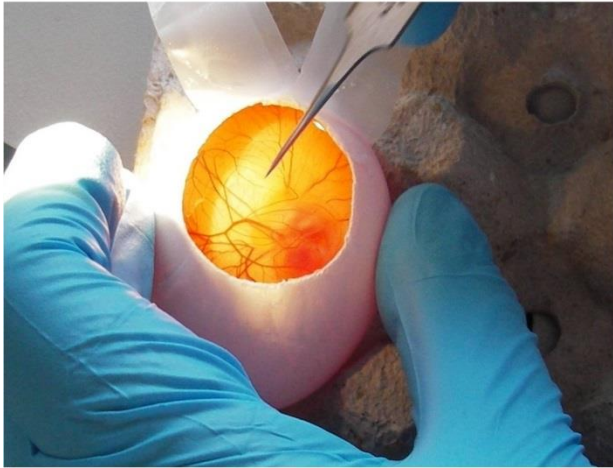
MN (wt/SMA)

Myoblasts (wt/SMA)

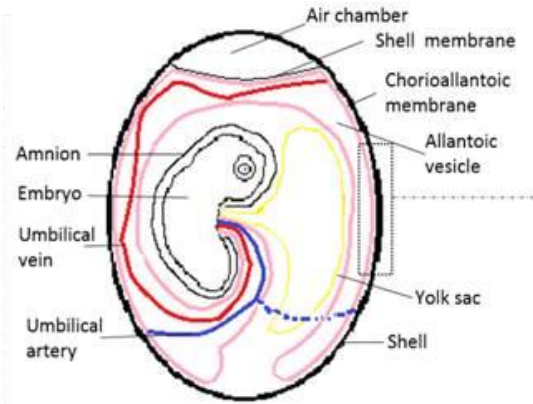


Microfluidic chambers

Chorioallantoic membrane from chicken embryo (CAM)



in-ovo



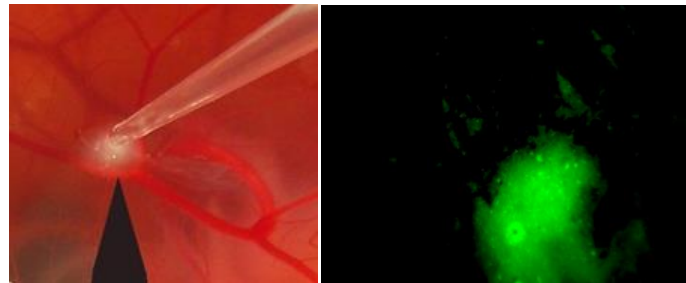
CAM



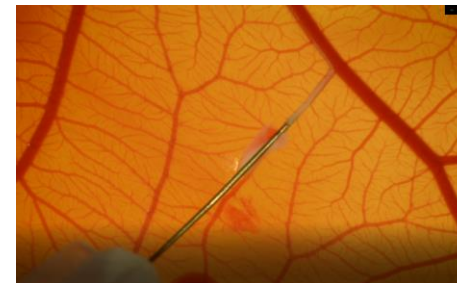
ex-ovo



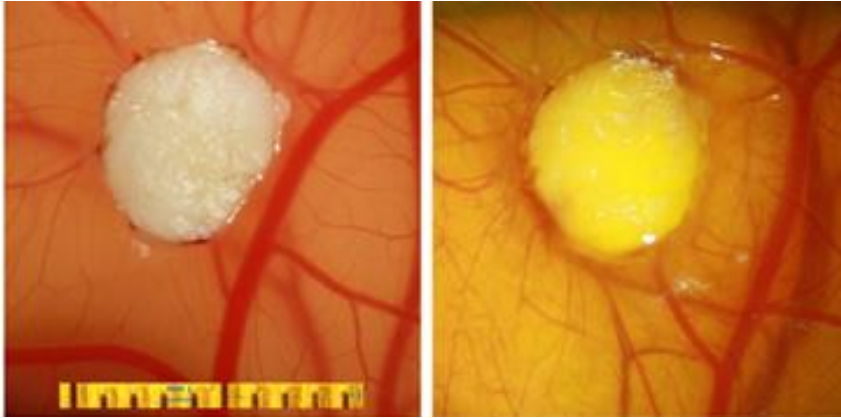
biopsies



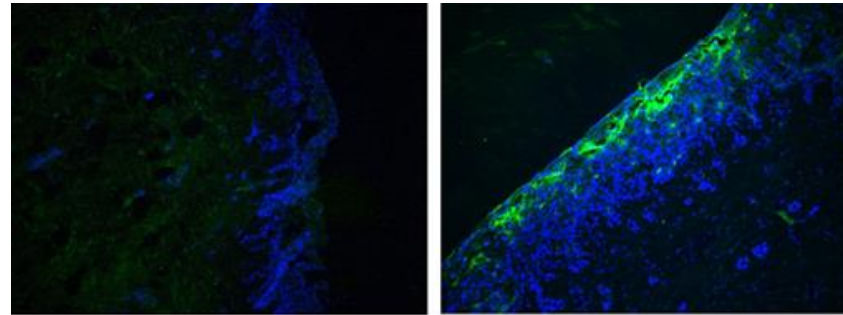
cellular application



intravenous injection



xenotransplantation on CAM



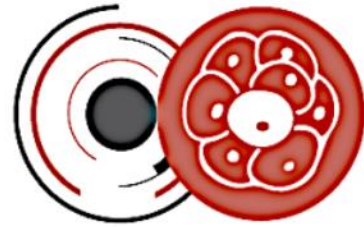
Epidermoid carcinoma



Beating human cardiomyocytes
on vascularized CAM

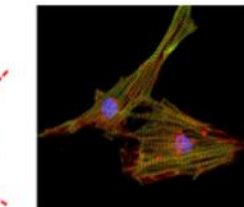
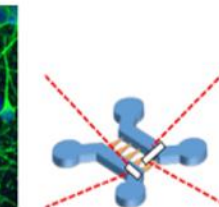
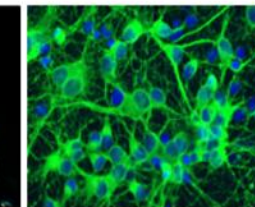
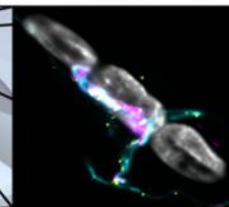
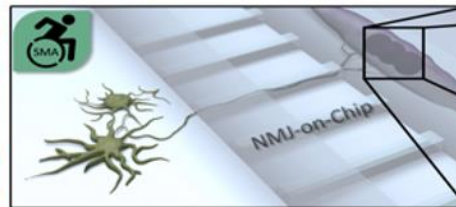
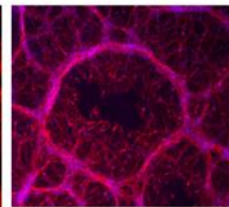
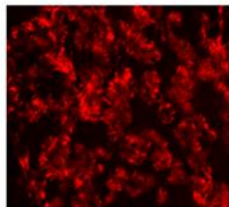
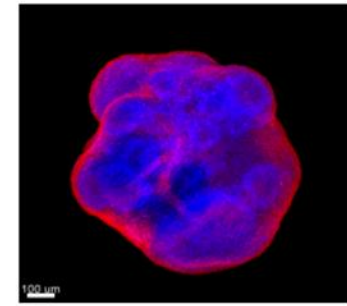
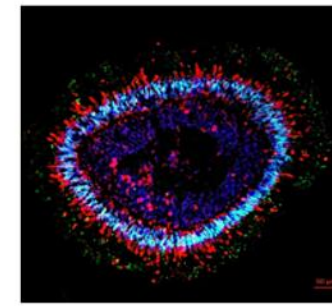
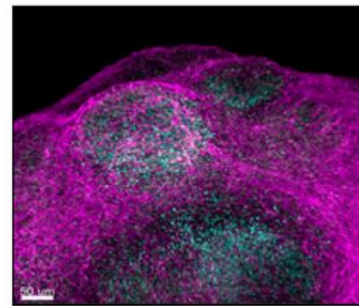
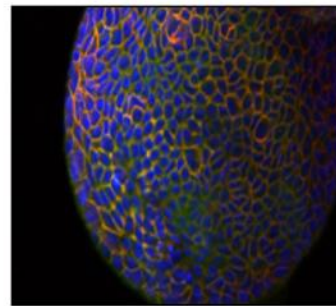
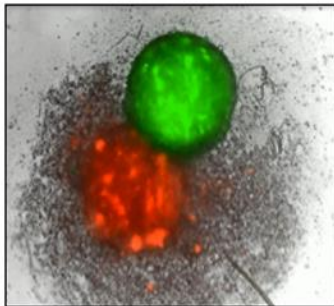
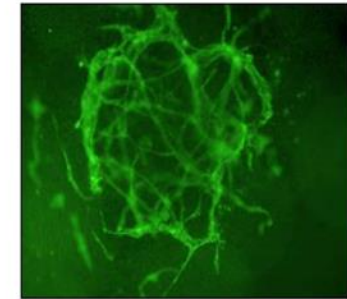
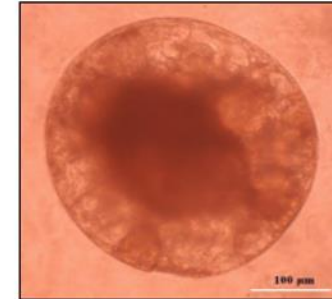
Advantages of CAM:

- ✓ No ethical limits in the first 28 days
- ✓ Xenotransplantation on CAM can be followed over the time
- ✓ 3D structures are functional and vascularized and can be imaged
 - ✓ Drugs can be easily applied (toxicity, treatment)
 - ✓ Impact of vascularization can be evaluated



POM

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Contact: albano.meli@inserm.fr / laetitia.linares@inserm.fr / isabelle.peiffer@igh.cnrs.fr