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DESIGN OF A INNOVATIVE INJECTABLE AND POROUS EFFERVESCENT HYDROGEL FOR SOFT TISSUE ENGINEERING APPLICATIONS

I2B TEAM

Context

WOUND CARE WITH HYDROGELS

INJECTABLE

-Minimally invasive
-Less traumatic for patients
-Conform to complex shapes

POROUS

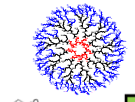
-Allow cells infiltration & functional regeneration of tissue

HYDROGELS BOTH INJECTABLE & POROUS → CHALLENGING

Method and tools

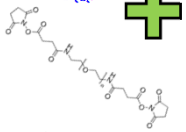
DESIGN OF A 3D HYDROGEL

CROSS LINKING



Lysine dendrimers

+



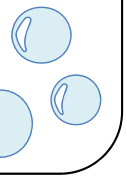
PEG-NHS

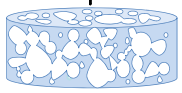
● Hydrogel formulation

EFFERVESCENCE

ACID CH_3COOH + **BASE** K_2CO_3

● CO2 bubbles generation

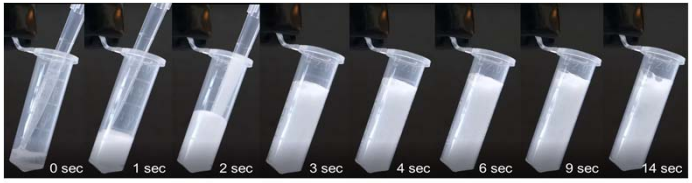


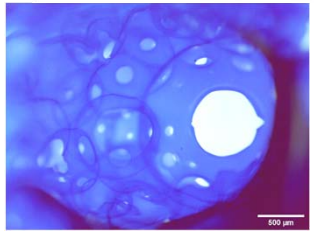


CYTO-COMPATIBILITY OF THE 3D HYDROGEL

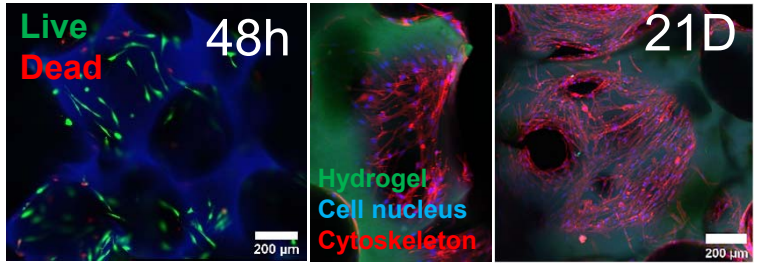
Live/dead assay after 48h
Dapi/phalloidin staining after 21days post seeding

Results





→ **An interconnected** porosity can be created, remnant of the effervescently-generated CO_2 bubbles



→ **Validation** of its potential as **3D support** without any washing or post-formulation treatment