

Bioengineered 3D tissue models

Cristina C. Barrias

Bioengineered 3D Microenvironments Group

i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto

INEB - Instituto de Engenharia Biomédica, Universidade do Porto

Bioengineered hydrogels recapitulating main features of the native extracellular matrix (ECM) are useful for creating advanced 3D models for the study of pathophysiological processes *in vitro*, under highly defined and tuneable conditions. The design of 3D matrices incorporating specific biochemical and biophysical cues, combined with relevant cell types, can be used to guide morphogenesis and formation of engineered tissues. By deconstructing the complexity associated with natural tissues into a smaller number of discrete interactions, these models are central for understanding how cells exchange information with their extracellular environment, including the matrix and other cells. This knowledge can then be translated into more effective therapeutic strategies in different areas. This presentation will cover some examples of studies we have been conducting using these useful tools.