3D Printing of functional organoids at room temperature

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Organoids derived from stem cells represent a powerful tool to study the growth, development and function of normal and pathologic human tissues. In addition, they have the potential to serve as excellent models to test drugs, thereby reducing the need for animal tests. Unfortunately, it is still challenging to fabricate organoids that display a similar functionality as natural tissues *in vitro*. Organoids are typically grown from hydrogel-based scaffolds with well-defined 3D shapes. To obtain tight control over the 3D structure, hydrogels are frequently 3D printed. Matrigel, the most commonly used scaffold that can be 3D printed, must be processed at low temperatures and the printing duration is very limited because the rheological properties of Matrigel change over time.

In this poster, I will outline a possible route to address this limitation by using cell-loaded viscoelastic capsules that can be processed into 3D printable inks. Importantly, this formulation would enable room temperature 3D printing for an extended time, thereby addressing the most stringent limitations of Matrigel.