

Tuesday, 19<sup>th</sup> October, 9.30am, SEMINAR ROOM

*Host: Dr. Silvia Collavini*

## **Repeating repeats: novel protein structural assemblies through repeat protein crystal contact modifications**

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Three-dimensional bioprinting technologies have been used for the rapid fabrication of scaffolds with precise control for supported tissue growth. Despite significant efforts have been focused on the development of increasingly complex and more realistic 3D models, high resolution imaging and detection tools able to precisely monitor cell behaviour within 3D microenvironments are still needed. To solve this problem, inks possessing extra functionalities can be prepared to create scaffolds with sensing properties, able to monitor in situ the evolution of certain diseases. In this talk, I will highlight the recent advances in Surface Enhanced Raman Scattering (SERS) active inks for the fabrication of 3D printed hydrogel-based scaffolds. To produce inks with SERS sensing properties, different (bio)polymers have been incorporated to plasmonic nanoparticle suspensions. SERS can be applied within these scaffolds for the spatiotemporal detection of biologically relevant analytes, to study drug diffusion or to image 3D structures when using plasmonic nanoparticles labelled with specific SERS tags. Moreover, these SERS-labelled nanoparticles can be also internalized by cells allowing for the imaging of 3D cell models supported by the scaffold.