

Scientific Talk I - Dr. Trappmann, MPI

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Scientific Talk from Dr. Britta Trappmann (Max-Planck-Institut Münster)

“Regulation of angiogenesis by the extracellular matrix –a biomaterials approach”

A major challenge in the field of tissue engineering is the generation of new materials that can support angiogenesis, wherein endothelial cells from existing vasculature invade the surrounding matrix to form new blood vessels. To proceed, material design criteria based on natural tissue characteristics are needed, but currently lacking because we do not know how extracellular matrix (ECM) properties affect angiogenic sprouting and ultimately, blood vessel formation. Due to the complex nature of native ECMs, it is difficult to identify the role of individual matrix properties. Here, we have developed synthetic hydrogels with independently tunable properties, which are integrated into a microfluidic platform that mimics the process of angiogenesis in vitro. In this talk, I will present our efforts to understand how matrix stiffness, adhesiveness and degradative properties jointly regulate angiogenic sprouting, and importantly, vascular lumen formation.