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Assembly of supramolecular frameworks for 3D bioprinting (extension)

Initiative: Integration molekularer Komponenten in funktionale makroskopische Systeme (beendet, nur noch

Fortsetzungsanträge)

Bewilligung: 23.06.2019

Laufzeit: 3 Jahre

Cells, as macroscopic systems, exhibit biochemical properties that are strongly influenced by the surrounding extracellular matrix. The aim of the project is to rewire living cells by in situ lateral organization of membrane receptors and thus exert control over signaling networks by light. Wavelength-selective as well as two-photon photo-activatable supramolecular interaction pairs will be developed to direct receptor clustering with high spatiotemporal resolution. The one- and two-photon activation will facilitate a non-invasive protein organization in 2D and 3D. Combined with super-resolution microscopy and single-molecule imaging, the multi-photon patterning will provide valuable insights into suprastructures of receptors and their impact on cell response. The approach will ultimately allow control of receptor organization in a macroscopic 3D cell culture at the systemic level.

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