

L03**Functionalized nanoparticles for intracellular drug delivery and cell-tracking**

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Cell- and tissue-engineering have greatly benefited from huge developments on the nanotechnology field. Important achievements include not only the increasing number of nanoparticles (NP's) that have synthesized but also from the innumerable possibilities for tuning its biological and physicochemical properties by means of surface engineering. Our group has been proposing the functionalization and coating of different nanosystems (e.g. dendrimer-based NP's and gold nanorods) as a strategy to improve biocompatibility, enhance NP's uptake by cells and intracellular drug release, and allow investigating cell fate. The developed surface engineering strategies represent the future of therapeutic approaches envisioning the control of stem cells functions in *in vitro* and *in vivo*, which can open new possibilities for treating different neurodegenerative and musculoskeletal diseases/disabilities.

**L04****Surface-based single-liposome sensing for diagnostics and drug screening applications**

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Measurements of ligand binding events on membrane protein receptors in a near-natural environment would display an advantage in mechanistic studies of membrane receptors. Furthermore, the residence time of drug-target interactions is being increasingly recognized as a key parameter in evaluating drug efficacy, but is