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CIC biomaGUNE
CENTER FOR COOPERATIVE RESEARCH IN BIOMATERIALS

seminar

Thursday, 25th October, 11.30 pm, Seminar Room

Host: Dr. Jesús Ruiz-Cabello

Multiscale preclinical and clinical cell tracking

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The field of cell therapies has seen explosive growth in recent years, both in immuno-oncology and in regenerative medicine. However, surprisingly little is known about the cells once they are injected in the subject. In particular, there is a strong need for an early, quantitative marker of therapy success in the clinic. My group has been working on the development of nanoparticles for multimodal imaging, which can be used to track the therapeutic cells in a noninvasive manner in vivo. Multimodal imaging is necessary, as no single imaging modality can provide a "complete picture" of what is going on in vivo. We have developed nanoparticles that are suitable for 19F MRI, fluorescence, ultrasound and photoacoustics, with the possibility to add tracers for PET or SPECT. Currently, we are producing the agents at GMP-grade for clinical use. Furthermore, we are also working on microfluidic techniques to upscale production. The nanoparticles have a unique structure, which results in the unique imaging properties, as well as fast clearance in vivo. The nanoparticles have been applied to various cell types, although our focus is primary human therapeutic dendritic cell subsets. Overall, we are working to optimize cell therapies through non-invasive multimodal imaging.