***In vivo* macrophage tracking using anchored fluorescent microcapsules.**

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In our research we explore the concept of use of autologous cells (macrophages or stem cells) extracted from the organism to carry impregnated vehicles and to deliver them to defined side of the body where these cells are meant to be accommodated after injections. For cell-based therapy as a "Trojan horse" concept was demonstrated on two cell types namely monocyte/macrophage-like cells (RAW 264.7) and primary bone marrow derived macrophages (BMDM).
The aim of the study was to develop an approach for in vivo bioimaging of macrophages. As cell tag and also as model intracellular container, we exploit the widely studied and robust micron-sized polyelectrolyte capsules with conjugated fluorescent labels as cargo (BSA-Cy7) and a layer (RITC-BSA in the shell) to monitor cells in fluorescent microscopy and *in vivo* imaging. Cell uptake, effect on cell viability, cell mobility while the cell internalized capsules and potential capsule exchange between the cells have been studied *in vitro* and revealed a minor effect on impregnated cell behaviour and reliable anchoring capsules in the cells. *In vivo* and *ex vivo* analysis of injected cells demonstrated their preferential accumulation in liver (>60%) making up to 5% of whole macrophages in liver containing the internalized capsules, what speaks for capacity of substances to be brought in the organ.
Thus, it is a reliable way to tag cells while injected with anchor-labels not being exchanged in time of days. That makes the approach suitable for cell therapy study where one could see how the injected cells behave and monitor their fate.

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