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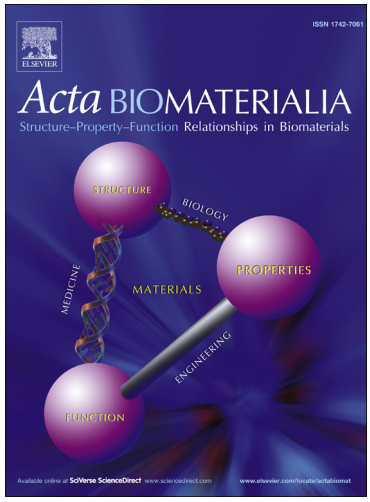

Plasma membrane functionalization using highly fusogenic immune activator liposomes

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Plasma membrane functionalization using highly fusogenic immune activator liposomes

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Abstract

Cell surface functionalization and target molecule incorporation into living cell membranes without functional damages represent major biotechnological challenges. A possible way to reach these goals is to induce cell membrane fusion with an artificial membrane containing molecules equipped with reactive groups or ligands. In this work we developed a carrier system to incorporate lipopolysaccharide (LPS), an immune cell activating molecule from Gram negative bacteria, into mammalian membranes. LPS is not present in untreated mammalian cells which hence are not detectable by the immune system. Here, we demonstrate a successful incorporation of LPS into fusogenic liposomes (FLs) and a subsequent incorporation into mammalian plasma membranes using these fusogenic liposomes. Additionally, the presence of LPS in cell membranes was probed by the addition of non-activated macrophages. A high concentration of LPS in the plasma membrane of immortalized fibroblasts activated the immune cells, which in turn started to eliminate LPS exhibiting cells. Our method for cellular membrane functionalization is a promising tool for biomedical applications and could provide the basis for specific cell targeting approaches.

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