

Technology Offer

CSIC/RA/001

Targeted drug delivery system with diagnostic capability



Polypeptides that functionalize hydrophobic supports for use in the treatment of a disease, disorder, or condition, with diagnostic properties.

Intellectual Property

Priority patent application

Stage of development

Efficacy demonstrated at laboratory scale

Intended Collaboration

Licensing and/or co-development

Contact

Marina Ruiz Amigo
Vice-presidency for Innovation and Transfer
transferencia@cib.csic.es
comercializacion@csic.es



Market need

The nanomedicine market is growing exponentially, driven by the need to develop treatments integrating diagnosis and therapy. This approach allows adjustment of both drug dose and release timing according to patient response. The use of micro- and nanoparticles to deliver hydrophobic drugs improves the bioavailability of poorly water-soluble compounds, ensuring greater efficacy and enabling lower doses, thereby reducing potential side effects. However, to ensure drug release at the site of action, these particles must be functionalized with molecules that specifically recognize the target cell.



Proposed solution

Micro- and nanoparticles, both soluble and insoluble in aqueous media, composed of a hydrophobic support and at least one polypeptide with affinity for said support, which can be fused to a protein of interest to confer biological functionality to these complexes.

This system enables the development of drug delivery systems encapsulated in liposomes or extracellular vesicles and targeted to specific cells, as well as the production of magnetic nanoparticles with diagnostic and/or therapeutic capability.

Competitive advantages

- Innovative procedure for functionalization of hydrophobic nanoparticles using new affinity polypeptides.
- The affinity polypeptide is soluble under physiological conditions.
- It enables easy purification of recombinant proteins and their direct adsorption onto hydrophobic nanocarriers.
- High versatility: liposomes, magnetic nanoparticles, extracellular vesicles, etc.