Fluorescent and Biotin Modified Lipoparticles

Lipoparticle Technology

Lipoparticles are virus-like particles (VLPs) that incorporate high concentrations of properly folded and oriented membrane proteins on their surface. GPCRs, ion channels, and other complex membrane proteins can be incorporated into Lipoparticles at concentrations of 50-200 pmol/mg, 10-100 fold greater than cells or membrane preparations. Integral Molecular now offers biochemically modified Lipoparticles containing biotin tags and fluorophores for use in specialized applications including:

- Flow cytometry based screening
- Probing cells and microarrays
- Phage and yeast display
- Hybridoma screening for monoclonal antibodies
- Biosensor binding kinetics

Fluorescent and Biotin Modified Lipoparticles

The addition of chemical moieties to proteins represents a strategy utilized in many areas of research to capture and visualize target proteins. For example, the biotinylation of proteins enables their attachment to avidin surfaces with high affinity while the addition of fluorophores allow for protein localization, quantification, and sorting. These biochemical modifications have been applied to Lipoparticles to enable membrane proteins to be captured on solid supports and visualized without disrupting the conformation of incorporated receptor targets. Biotinylated Lipoparticles attached to neutravidin microplates have been used to screen antibodies and hybridoma supernatants by ELISA for highly reactive monoclonal antibodies **(Figure 1A)**. Biotinylated Lipoparticles immobilized onto avidin wells and beads have also been used to enrich phage libraries for reactive antibodies. Additionally, biotinylated Lipoparticles have been immobilized onto streptavidin coated biosensor chips to enable detailed kinetic measurements of MAb binding to membrane protein targets **(Figure 1B)**.

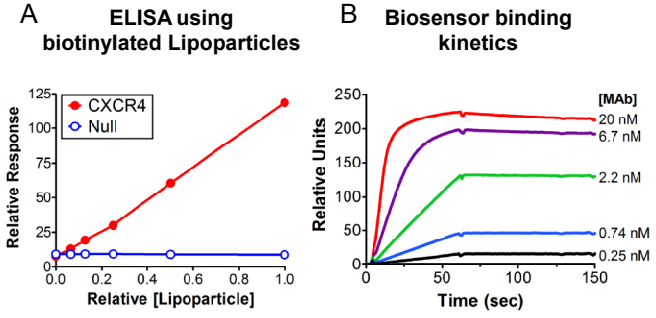

Figure 1. A. Biotinylated Lipoparticles containing CXCR4 were captured onto streptavidin coated ELISA plates and probed with the conformation specific anti-CXCR4 antibody 12G5. B. Biotinylated Lipoparticles containing CXCR4 were captured onto a streptavidin biosensor chip and increasing concentrations of the conformational antibody 12G5 were used as the flowed analyte.

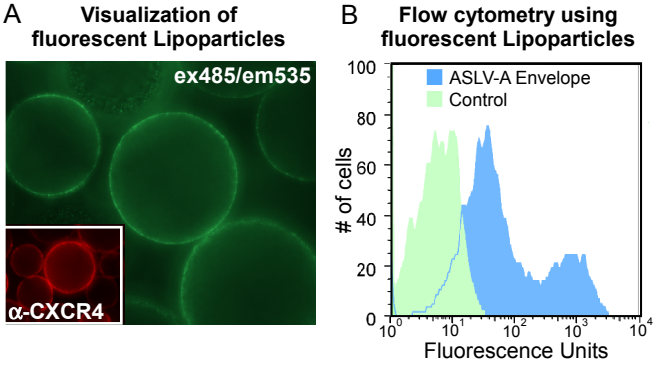

Figure 2. A. Fluorescent Lipoparticles incorporating CXCR4 were bound to beads and visualized by fluorescence microscopy. Bound Lipoparticles were then immunostained using a conformationally sensitive anti-CXCR4 antibody (inset) to demonstrate conformational integrity of the incorporated receptor. **B**. Fluorescent Lipoparticles incorporating the TVA receptor were used to probe cells expressing the envelope of the Avian Sarcoma-Leukosis Virus (ASLV-A) or a control non-specific envelope. Flow cytometry was used to identify cells expressing the TVA receptor.

Lipoparticles that have been biochemically modified to contain fluorophores enable advanced visualization, quantification, and sorting of target proteins by microscopy, microplate fluorescent readers, and flow cytometry. Fluorescent Lipoparticles have been immobilized on WGA coated agarose beads **(Figure 2A)** and used to probe membrane protein interactions by flow cytometry **(Figure 2B)**. Modifications to Lipoparticles, including biotinylation and fluorescence, can facilitate a variety of screening strategies for isolating and characterizing monoclonal antibodies. These tools have the potential for helping develop key diagnostic and therapeutic reagents against this challenging class of proteins.

Contact Us

Custom fluorescent and biotinylated Lipoparticles containing your receptor of interest are available from Integral Molecular. Sample kits containing fluorescent or biotinylated CXCR4 or CCR5 Lipoparticles are also available. For more information or a custom quote contact us at:

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