Synthesis and Characterization of Amphiphilic Fluorescent Molecules for Liposome Formulation and Imaging

Josef Hamacek, Chiraz Benabdesselam, Federico Perche

To cite this version:

Josef Hamacek, Chiraz Benabdesselam, Federico Perche. Synthesis and Characterization of Amphiphilic Fluorescent Molecules for Liposome Formulation and Imaging. SFNANO annual meeting, Dec 2021, Angers, France. hal-03482178

HAL Id: hal-03482178
https://hal.science/hal-03482178
Submitted on 10 Oct 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Synthesis and Characterization of Amphiphilic Fluorescent Molecules for Liposome Formulation and Imaging

Josef Hamacek, Chiraz Benabdesselam, Federico Perche

Centre de Biophysique Moléculaire, CNRS UPR4301 45071, Orléans, France. Josef.Hamacek@cnrs.fr

Context

During last years, lipids and their derivatives are the subject of increasing interest, not only due to their investigations in biological systems, but also due to their use in different formulations and therapeutic and/or imaging strategies. Here we are interested in the incorporation of new polytopic fluorescent molecules in cells/membranes.

Synthesis and Characterization of L1 and L2

Part of the 1H NMR spectrum of L1: characteristic aromatic signals

Normalized excitation and emission spectra of L1 and L2

Uptake of Liposomes

• Analysis of transfected cells with flow cytometry

Fluorescence Imaging

• Uptake of liposomes by cells followed by confocal microscopy

Conclusions

• Water-stable intermediates and amphiphiles L1 and L2
• Multitopic fluorescent platforms/anchors
• Successful formation of liposomes and their uptake by cells

Perspectives

Tests of cytotoxicity and stability in cellular media
Synthesis of more complex lipides
Optimization for drug delivery strategies

Acknowledgement

Financial support from the CNRS, the Cancéropôle Grand Ouest and La Ligue contre le cancer is gratefully acknowledged. We thank the Mass spectrometry platform at the CBM for recording mass spectra.