Supplementary Information (SI) for RSC Pharmaceutics.
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# Supporting Information

## Multilamellar Nanovectors composed of Microbial Glycolipid-Polylysine Complexes for Drug Encapsulation

Silvia Alonso-de-Castro[a], Sergio Oliveira Formoso[a], Chloé Seyrig[a], Korin Ozkaya[a], Julien Dumont[b], Luisa Riancho[c], Javier Perez[d], Christophe Hélary[a,*], Niki Baccile[a,*]

[a] Sorbonne Université, Centre National de la Recherche Scientifique, Laboratoire de Chimie de la Matière Condensée de Paris, LCMCP, F-75005 Paris, France

[b] Centre interdisciplinaire de recherche biologique, Collège de France, 75005 Paris, France

[c] Centre de Recherche INSTITUT DE LA VISION, UMR_S968 Inserm / UPMC / CHNO des Quinze-Vingts, 75012, Paris, France

[d] Synchrotron Soleil, L'Orme des Merisiers, Saint-Aubin, BP48, 91192 Gif-sur-Yvette Cedex, France

*$^1$H NMR*

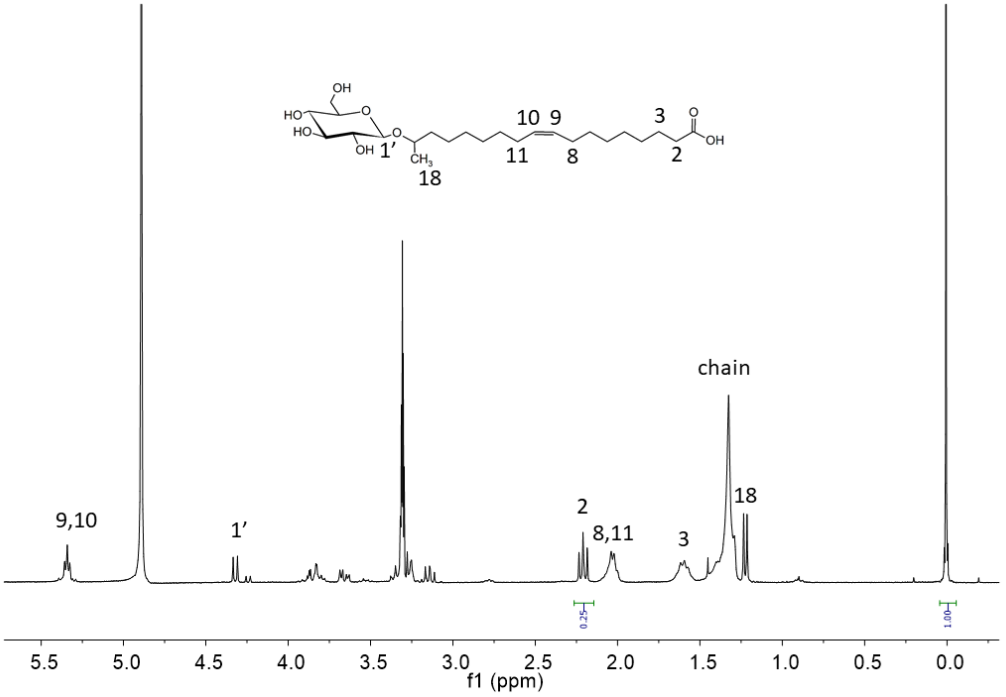


**Figure S1. $^1$H NMR of control GC in methanol-*d*$_4$.**

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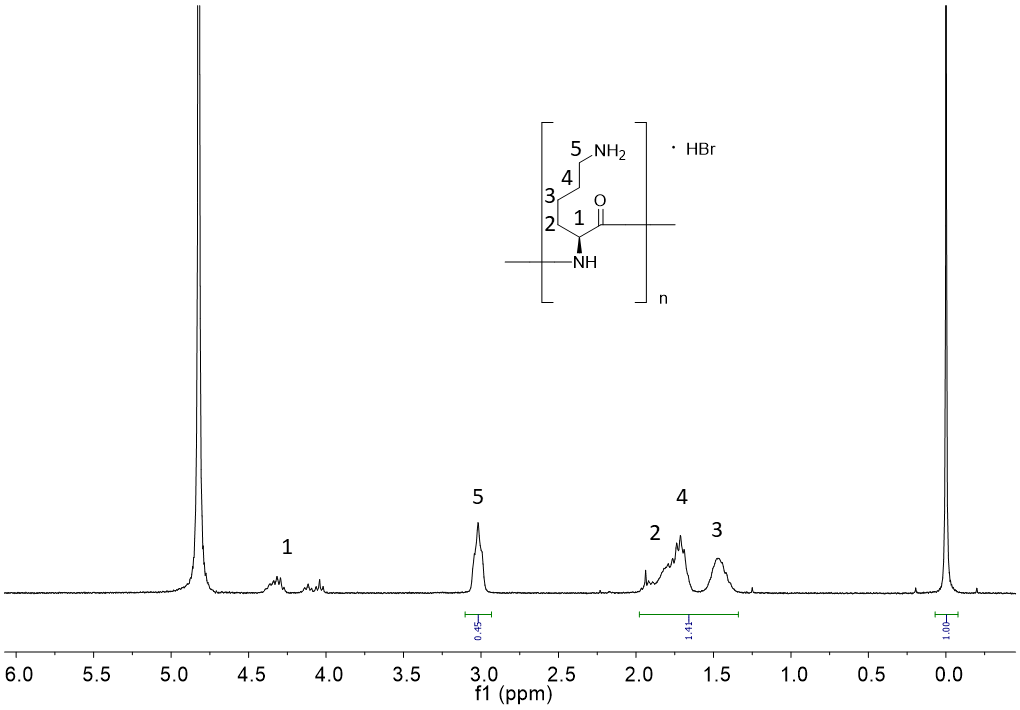



**Figure S2. $^1$H NMR of control PLL in D$_2$O.**

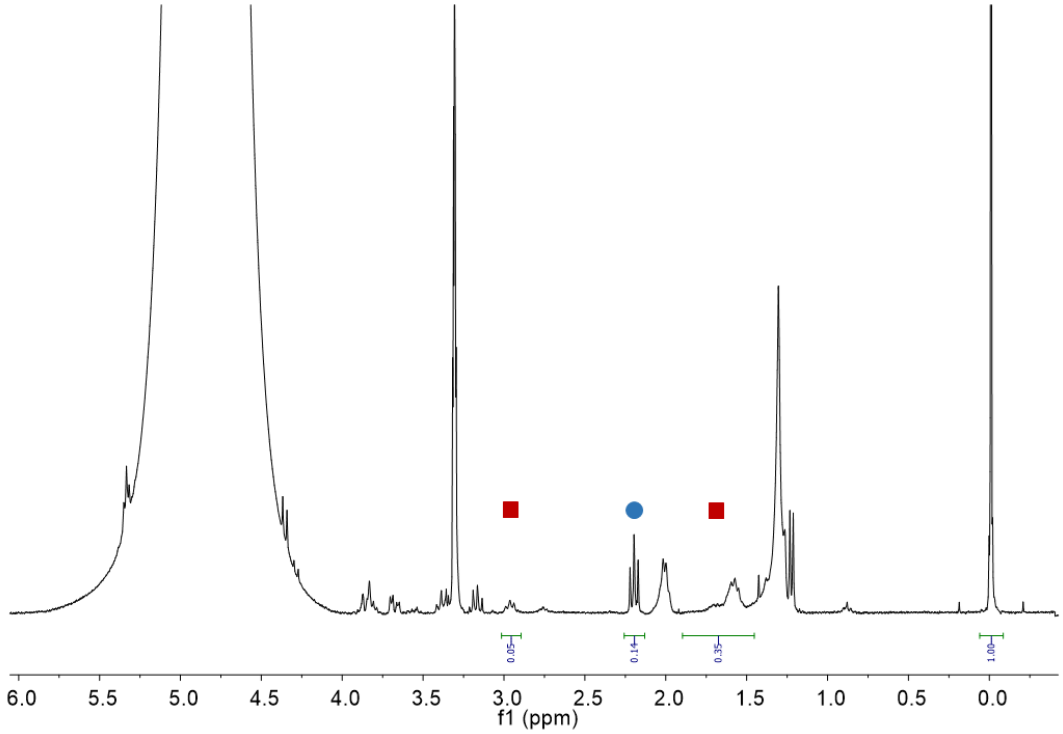



**Figure S3. $^{1}$H NMR from sample GCPLL in $H_2O$, centrifuged pellet and dissolved in methanol-$d_4$, where peaks assigned with ■ and ● correspond to PLL and GC, respectively.**

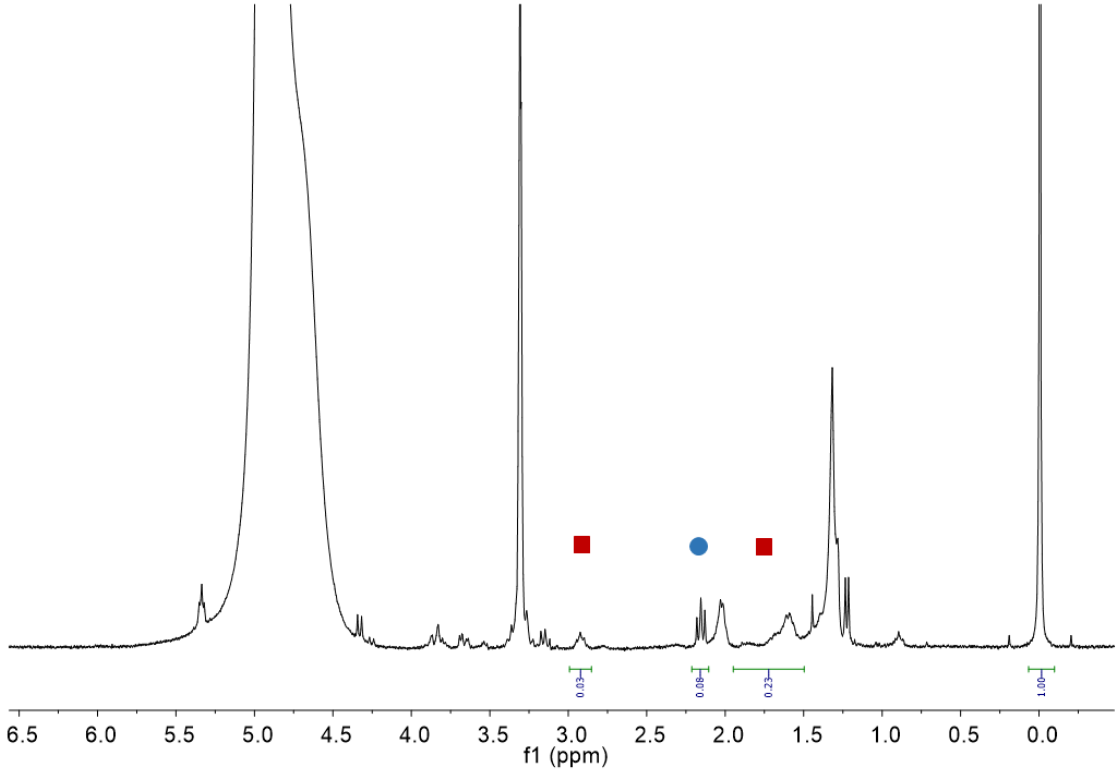
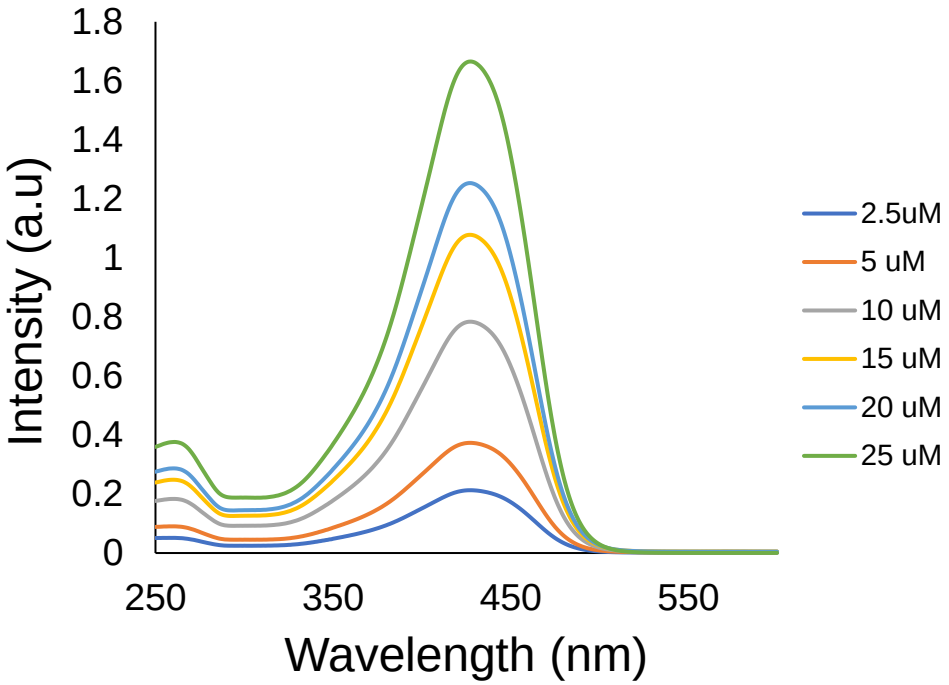



**Figure S4 $^{1}$H NMR from sample GCPLL in DMEM, centrifuged and dissolved in methanol-$d_4$, where peaks assigned with ■ and ● correspond to PLL and GC, respectively.**

**Table S1. Quantitative analysis of the integrals corresponding to the $^1$H NMR spectra of the GCPLL prepared in $H_2O$ (pH 5) and DMEM cell culture media (pH 7.5) and the resulting pellet dissolved in MeOD-$d_4$, shown in Figures S1-4. PLL is represented by the $(RC\underline{H_2}NH_2)_x$ (where *x* ~20) peak at δ= 2.8 ppm. The *M*w (PLL)≈ 1-5 KDa, then we consider an average *M*w (PLL)= 2.5 kDa, whereas the *Mw* of each monomer is 128 g/mol, yielding an average of 20 monomers per PLL chain. The valence of the $(RC\underline{H_2}NH_2)_x$ (*x*~ 20) peak is then taken as 40. G-C18:1 is represented by the $RC\underline{H_2}C=O$ peak at δ= 2.2ppm. The *M*w (G-C18:1)= 460 g/mol and each G-C18:1 bears a single COOH group. The valence of the $RC\underline{H_2}C=O$ peak is then taken as 2. The peak at δ= 0 ppm corresponds to the reference (TMSP-$d_4$, 1 mg.mL$^{-1}$ ≡ 5.8mM), having a valence of 9. Subscripts: in= initial; f: final.**

| | Integrals | | | $C_{in}$ (mM) | | $C_f$ (mM) | | $C_f/C_{in}$ (%) | | Molar ratio | | Functional group |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GC (2H) | PLL (40H) | TMSP-d4 (9H) | $[GC]_{in}$ | $[PLL]_{in}$ | $[GC]_f$ | $[PLL]_f$ | $GC_{f/in}$ | $PLL_{f/in}$ | $GC_{in}/PLL_{in}$ | $GC_f/PLL_f$ | $[COOH]/[NH_2]$ |
| $H_2O$ | 0.14 | 0.05 | 1 | 5.4 | 1 | 3.7 | 0.065 | 70 | 6.5 | 5.4 | 57 | 2.8 |
| DMEM | 0.09 | 0.03 | 1 | 5.4 | 1 | 2.4 | 0.04 | 45 | 4 | 5.4 | 60 | 3 |



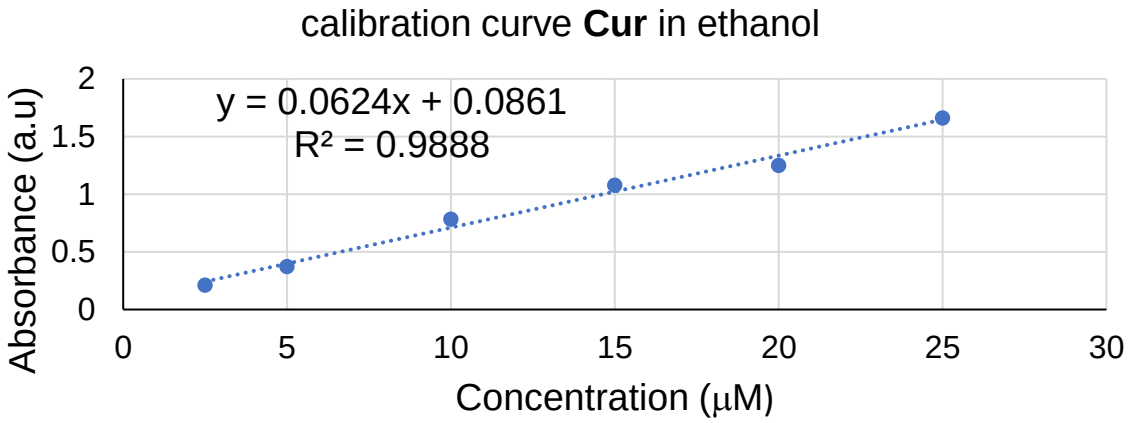




**Figure S5. UV-Vis spectra of the calibration curve of *Cur* in ethanol.**

*Fluorescence Microscopy*

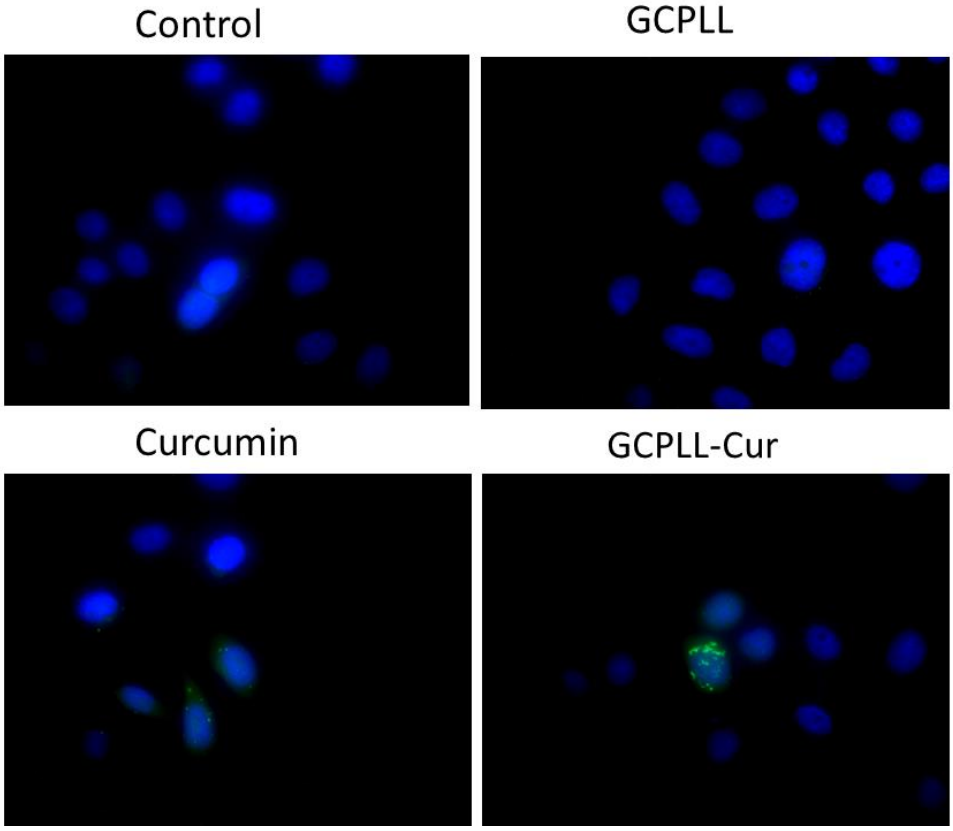



**Figure S6. Fluorescence microscopy of Hela cells stained with DAPI for nucleus.**

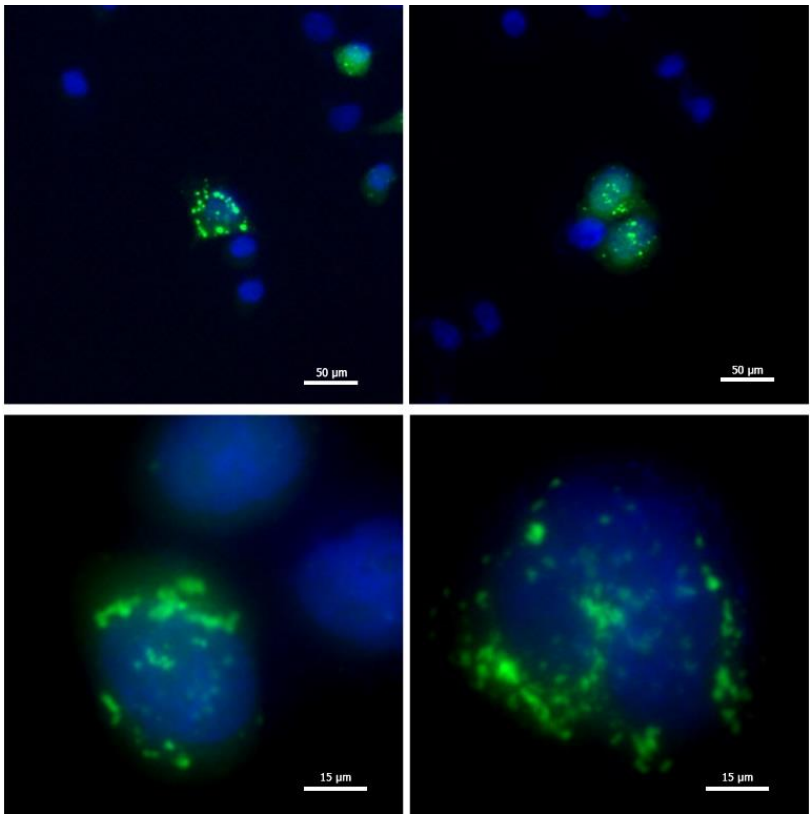



**Figure S7. Fluorescence microscopy images of Hela cells stained with DAPI for nucleus after incubation with GCPLL-*Cur* MLWVs.*Cur* is in green.**