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Arribas Perez, M, Moriones, OH, Bastús, NG et al. (3 more authors) (2019) Mechanomodulation of Lipid Membranes by Weakly Aggregating Silver Nanoparticles. Biochemistry, 58 (47). pp. 4761-4773. ISSN 0006-2960

https://doi.org/10.1021/acs.biochem.9b00390

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SUPPORTING INFORMATION

Mechanomodulation of lipid membranes by weakly aggregating silver nanoparticles

Marcos Arribas Perez[1,2], Oscar H. Moriones[3,4], Neus G. Bastús[3], Victor Puntes[3,4,5,6], Andrew Nelson[1] and Paul A. Beales[1,2,*]

1. School of Chemistry, University of Leeds, Leeds, LS2 9JT, UK.
2. Astbury Centre for Structural Molecular Biology, University of Leeds, Leeds, LS2 9JT, UK.
3. Institut Català de Nanociència y Nanotecnologia (ICN2),Campus UAB,08193, Bellaterra, Barcelona, Spain.
4. Universitat Autonòma de Barcelona (UAB), campus UAB, 08193, Bellaterra, Barcelona, Spain.
5. Vall d`Hebron Institut de Recerca (VHIR), 08035, Barcelona, Spain.
6. Institució Catalana de Recerca i Estudis Avançats (ICREA), 08010, Barcelona, Spain.

* Corresponding author: p.a.beales@leeds.ac.uk

Keywords: Nanotoxicology, colloidal stability, medium effects, mechanobiology, lipid bilayer, vesicles

UV–Vis Spectroscopy

UV–visible spectra were acquired with a Shimadzu UV-2401 PC spectrophotometer. A 10% (v/v) of Ag NP solution was placed in a cell and the spectral analysis was performed in the 300–800 nm wavelength range at room temperature.

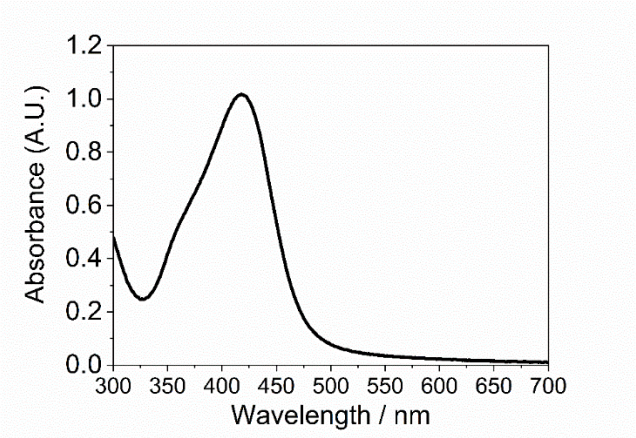

Figure SI-1. Experimental absobance spectrum of AgNPs. The maximum absobtion peak is observed at 417.4 nm.

AgNPs concentration conversion

For the calculating the aggregation kinetics, the concentration of AgNPs was converted from from moles Ag / L (c) to number of particles / m^3 (N) using the following equation:

$$N = c\frac{3}{4\pi r^3 \rho}$$

Where r is the radius of the AgNPs obtained by TEM and ρ is the density of silver. The results are sumarised in table S1.

Table S1. Concentration of AgNPs in µmoles Ag / L (c) and number of particles / m^3 (N)	
c (µM)	**N**
50	9.29×10^{16}
100	1.86×10^{17}
250	4.64×10^{17}

Leakage assay interference control

The dye 5(6)-Carboxyfluorescein (CF) was diluted in 20mM HEPES 150mM NaCl (HEPES saline buffer) or 20mM HEPES 300mM glucose (HEPES glucose buffer) at concentrations from from $3x10^{-4}$ µM to 0.01 µM.Two sets of samples were prepared, one of them with 100 µM AgNPs and one without NPs. The samples were incubated 30 minutes and then the fluorescence intensity was measured at 514 nm.

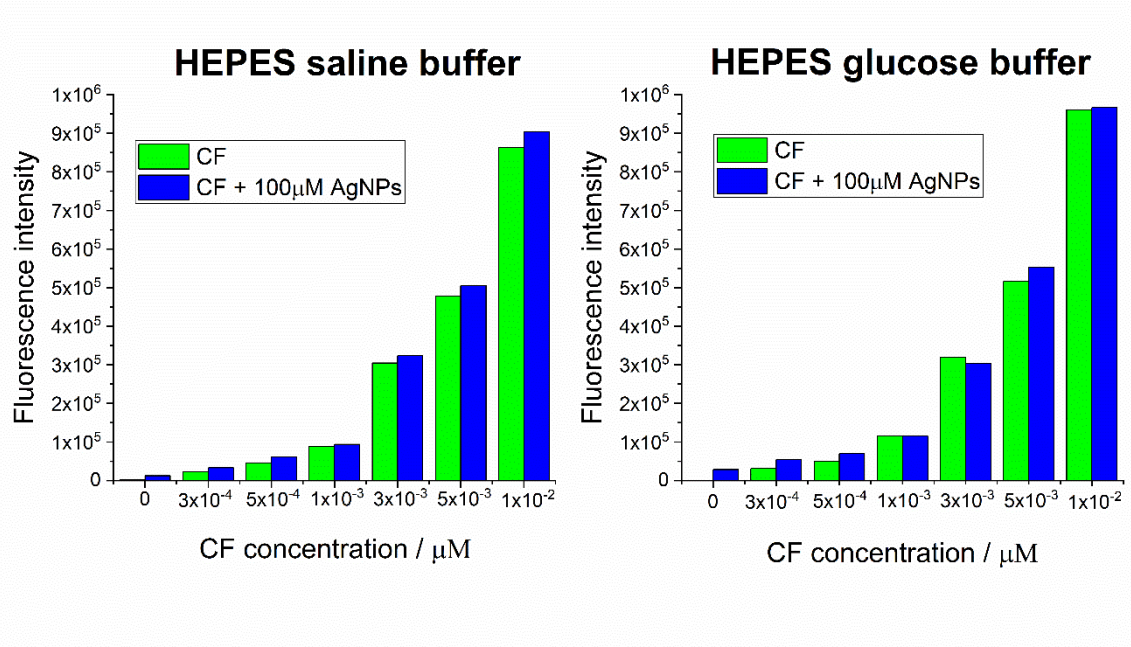

Figure SI-2. Comparison of fluorescence intensity signal of CF samples at different concentrations in the presence and abesence of 100 µM AgNPs. The presence of AGNPs barely affect the fluorescence intensity of CF.

Evaluation of the effect of Ag^+ in DOPC GUVs

To asses whether the membrane perturbations observed in physiological ionic stregth buffer are produced by the release of Ag^+ or by the AgNPs themselves, we performed control experiments adding $AgNO_3$ at concentrations equivalent to the AgNPs. Our results show that Ag^+ do not induce changes in membrane permeability, morphology, fluidity and mechanics (Figure S3 a-d).

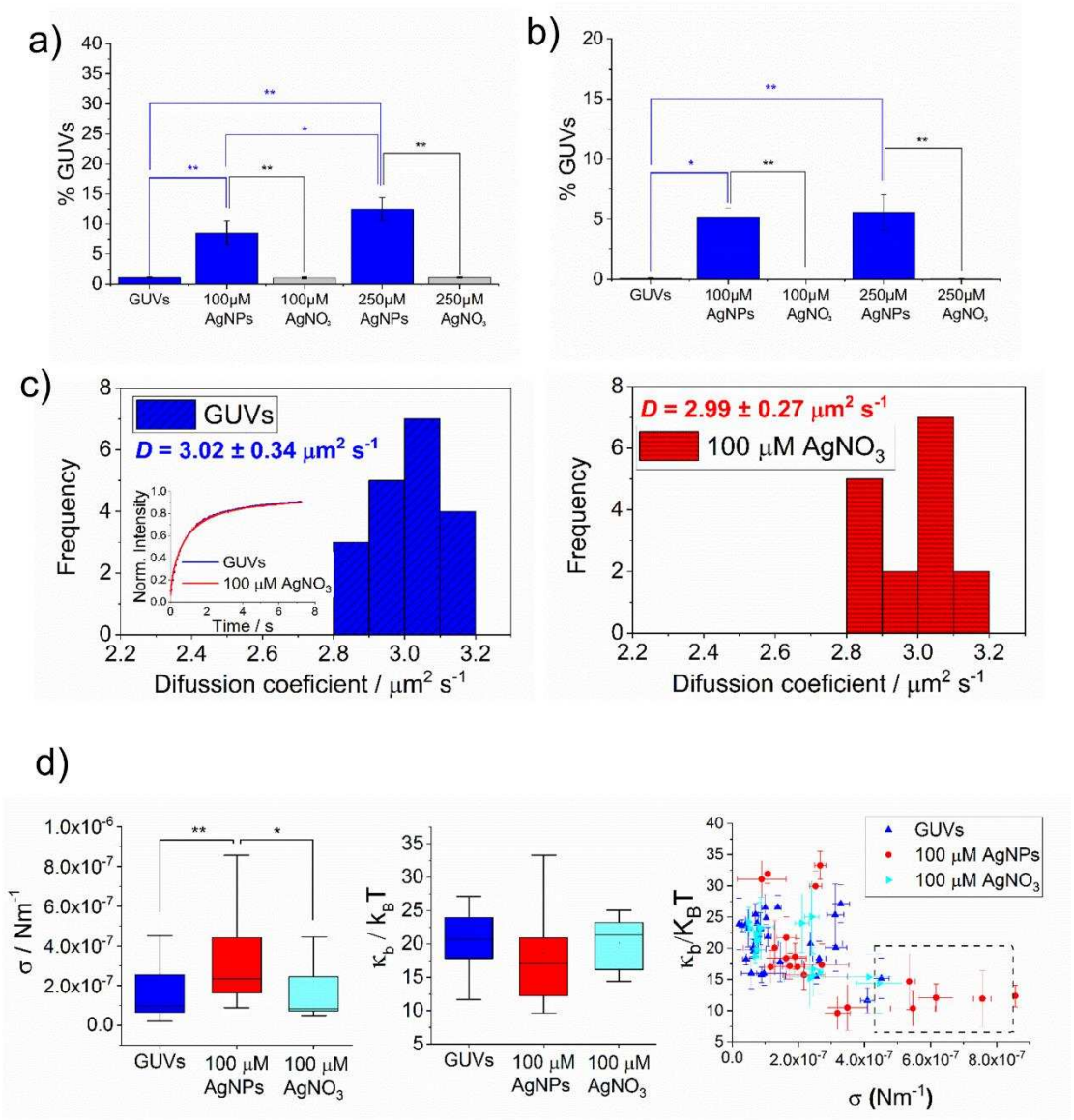

Figure S3. Summary of results from control experiments with Ag^+. a) Comparison between the effect of AgNPs and $AgNO_3$ in the permeability of DOPC GUVs to 10 kDa dextran. b) Comparison between the proportion of DOPC GUVs with ILVs after exposure to AgNPs and $AgNO_3$. c) Distribution of diffusion coefficients obtained from FRAP recovery curves of DOPC GUVs before and after exposure to 100 μM $AgNO_3$. d) Comparison between the effect of AgNPs and $AgNO_3$ in the mechanical properties of DOPC GUVs.