

Supporting Information

Polyethyleneimine-Mediated Flocculation of *Shewanella oneidensis* MR-1 : Impacts of Cell Surface Appendage and Polymer Concentration

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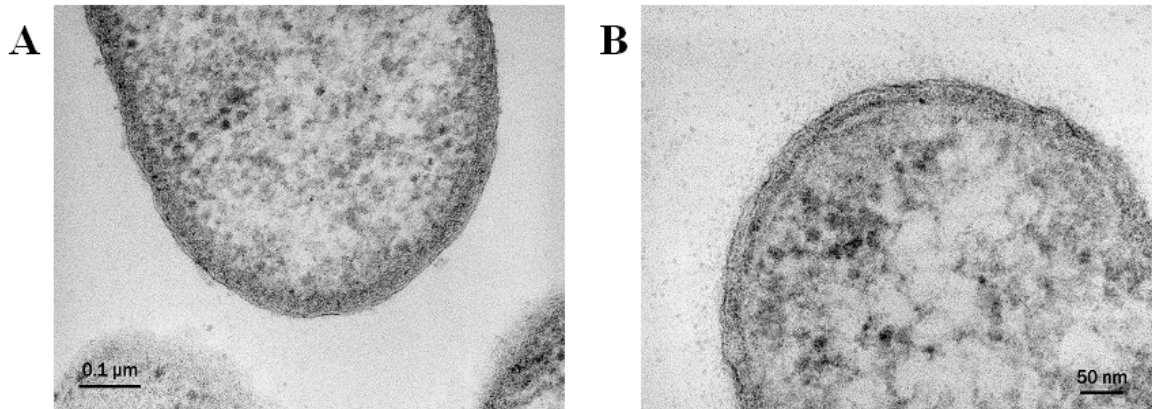


Figure S1. Observations by transmission electron microscopy of A) free and B) decorated LPS O-antigen *Shewanella oneidensis* MR-1 bacteria grown at 30 and 20°C respectively.

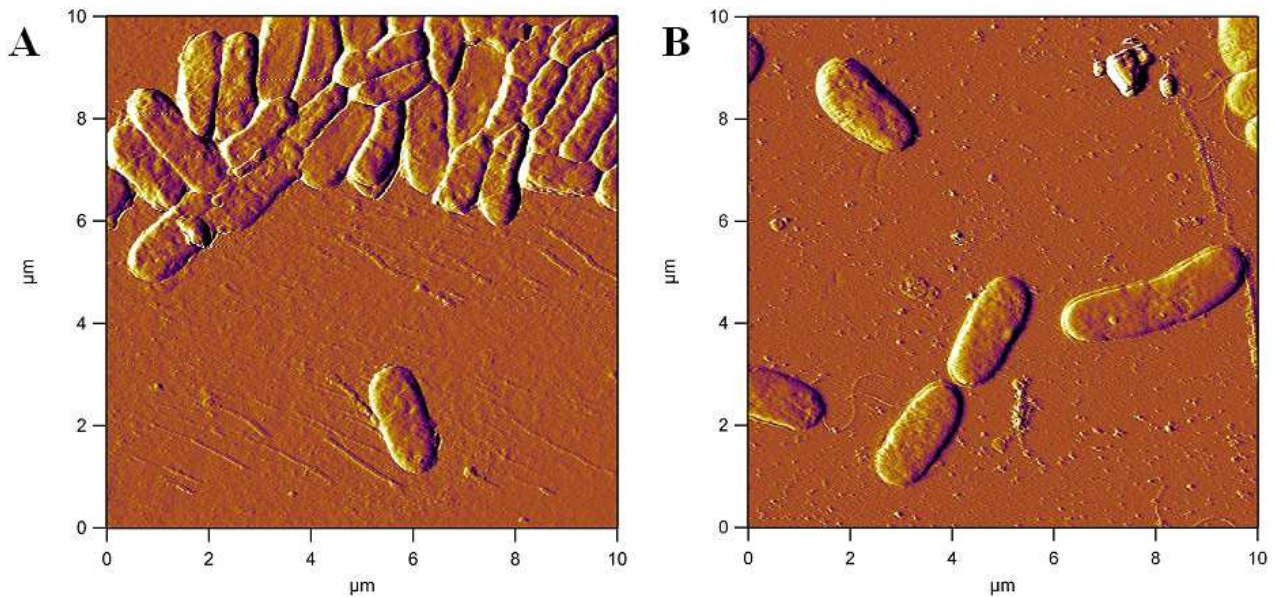


Figure S2. Observations by atomic force microscopy (under air condition) of A) free and B) decorated LPS O-antigen *Shewanella Oneidensis* MR-1 bacteria.

CRYSTAL VIOLET RELEASE EXPERIMENTS

The aim of this experiments was to characterize bacterial membrane permeability.

1 mL aliquots of bacterial suspension at an OD_{600} of 1 were mixed with crystal violet (0.1 g/L), for 1 hour. Bacterial suspensions were then washed several times by alternating centrifugation at 13000 g for 3 minutes and dispersion in a fresh 1 mM KNO_3 solution. After each centrifugation, the supernatant absorbance was measured by spectrophotometry (540 nm) till the amount of violet crystal released by the bacteria became negligible. The bacterial suspensions were then redispersed in 1 mM KNO_3 solution before the addition of PEI at a given concentration in the range 0-100 mg/L. After a delay of 49 minutes, a final centrifugation (13000 g for 3 minutes) was performed and the absorbance of supernatant was measured. A 100% release of crystal violet was obtained by lysing crystal violet stained bacteria with acetic acid. The amount of violet crystal released by PEI-treated bacteria was estimated from the ratio of the absorbances measured in the supernatant of PEI-treated and acetic acid-treated bacterial suspensions. This method allows us to provide a rough estimate of the permeabilization of the bacterial membranes considered in our study.

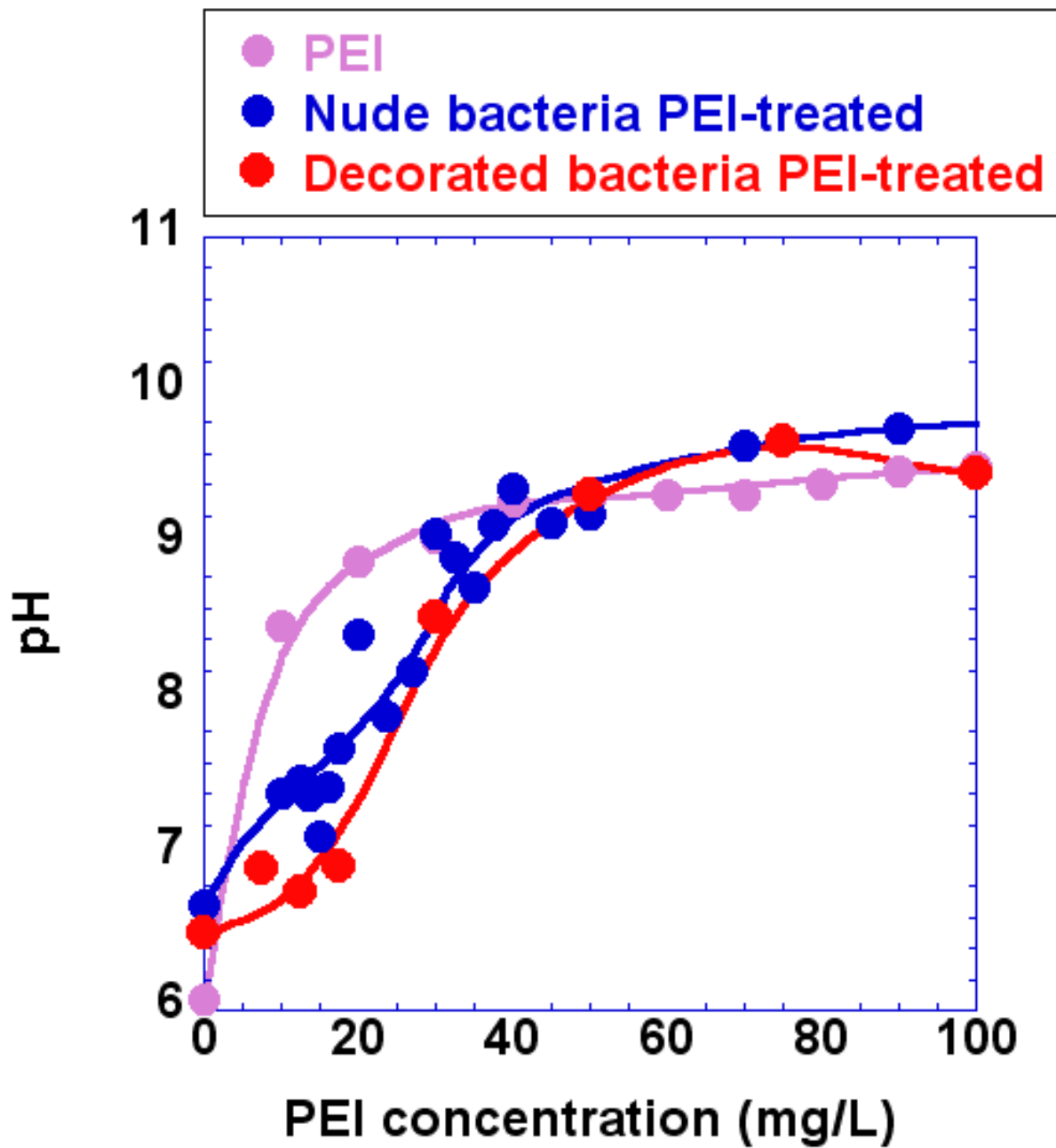


Figure S3. Dependence of pH on PEI concentration in 1 mM KNO₃ solution in the presence/absence of bacteria presenting or not LPS O antigen.

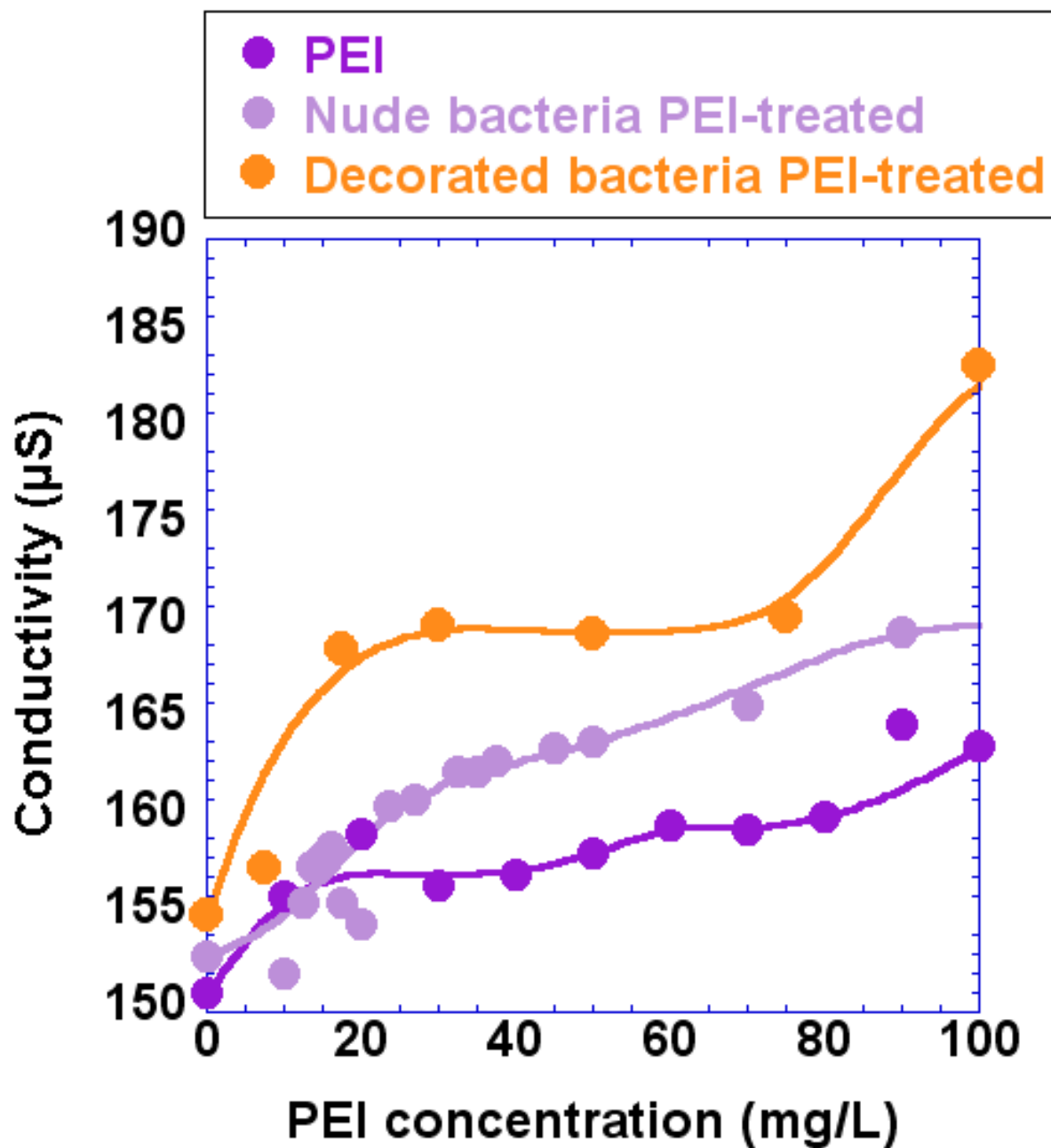


Figure S4. Dependence of conductivity on PEI concentration in 1 mM KNO_3 solution in the presence/absence of bacteria presenting or not LPS O-antigen.

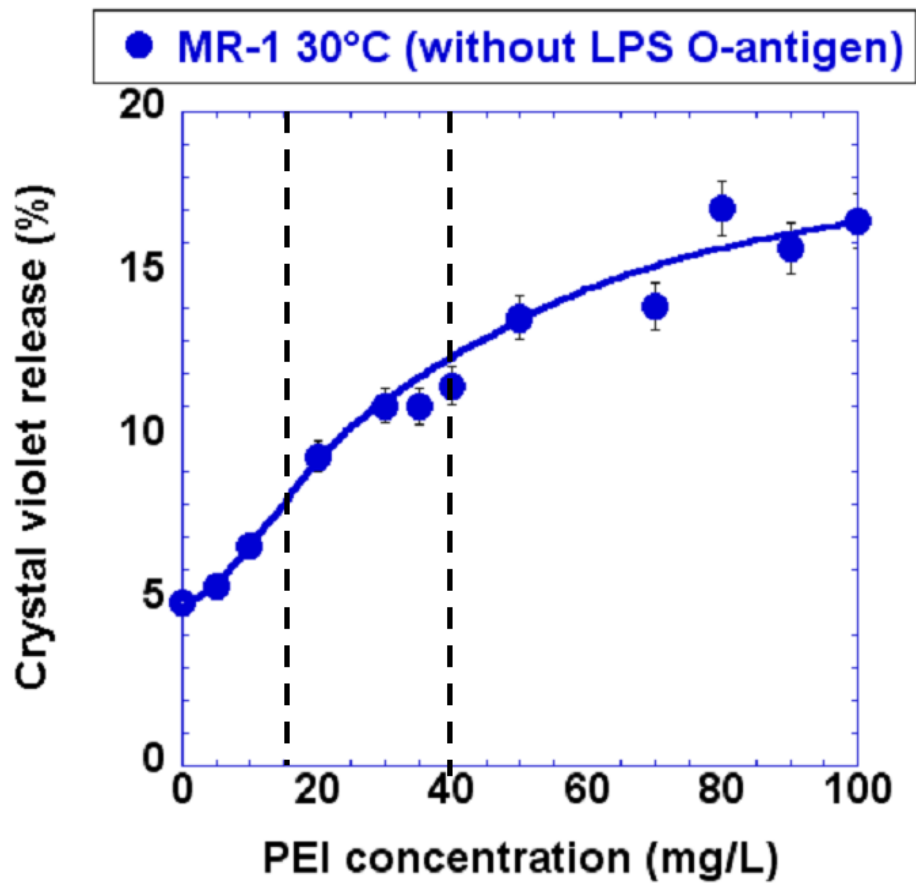


Figure S5. Dependence of crystal violet release on PEI concentration for a suspension containing free LPS O-antigen *Shewanella oneidensis* MR-1 bacteria.

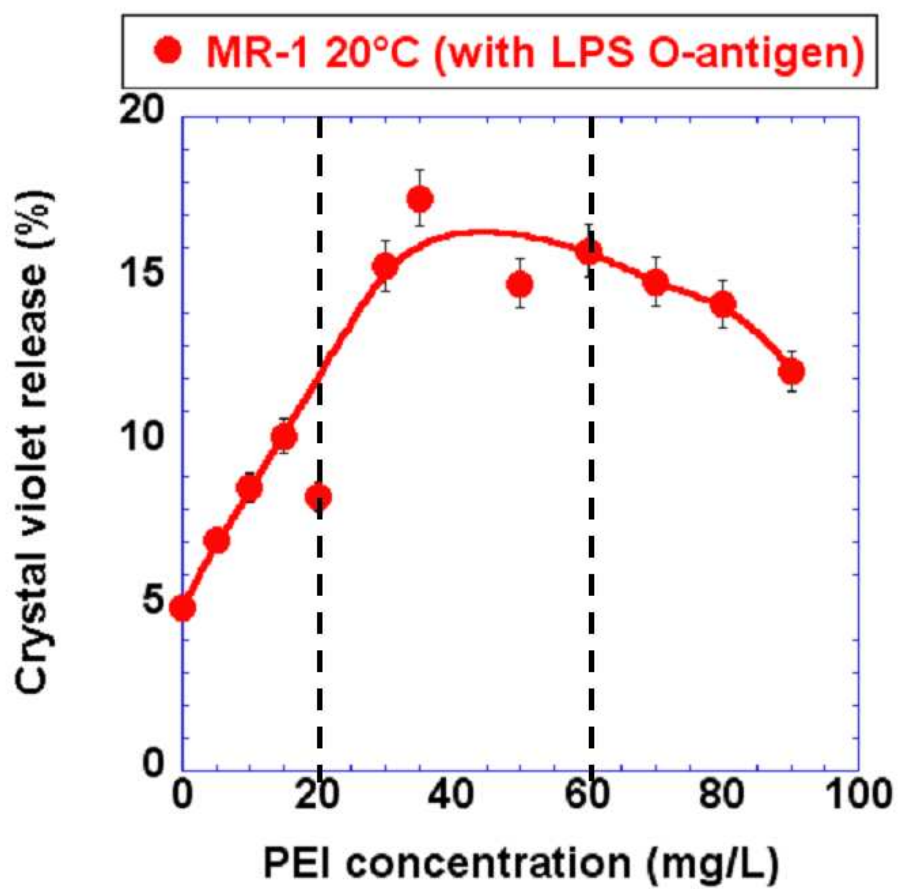


Figure S6. Dependence of crystal violet release on PEI concentration for a solution containing decorated LPS O-antigen *Shewanella oneidensis* MR-1 bacteria.

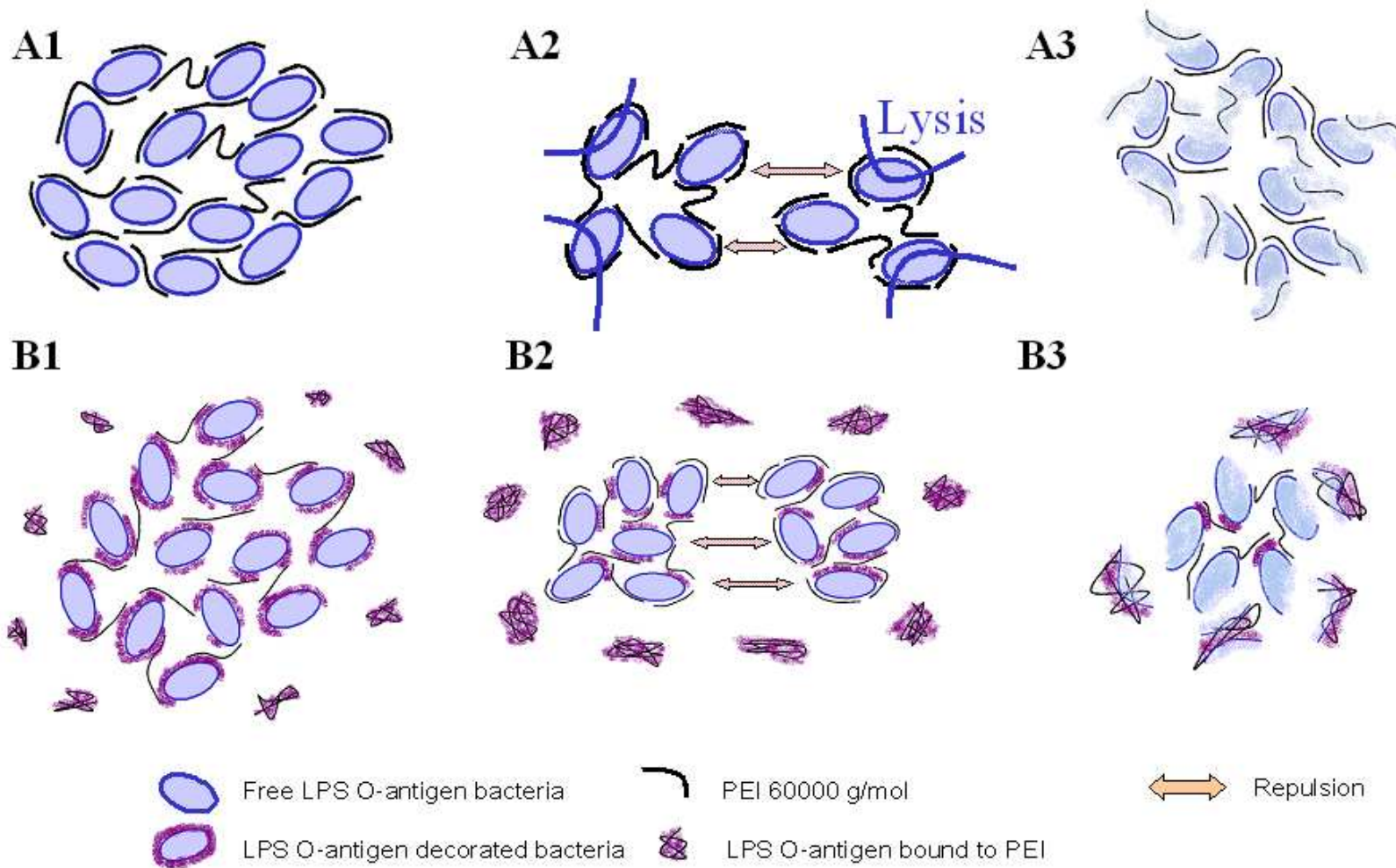


Figure S7. Schematic illustrations of the 3 aggregation regimes for free LPS O-antigen bacteria upon increase of PEI concentration: **A1)** aggregation, **A2)** lysis and flocs erosion and **A3)** aggregation of cell residues. Schematic illustrations of aggregation regimes for LPS O-antigen decorated bacteria : **B1)** aggregation, release of LPS O-antigen surface appendage, **B2)** PEI-mediated binding of neighboring LPS O-antigen free bacterial membranes and **B3)** lysis.