

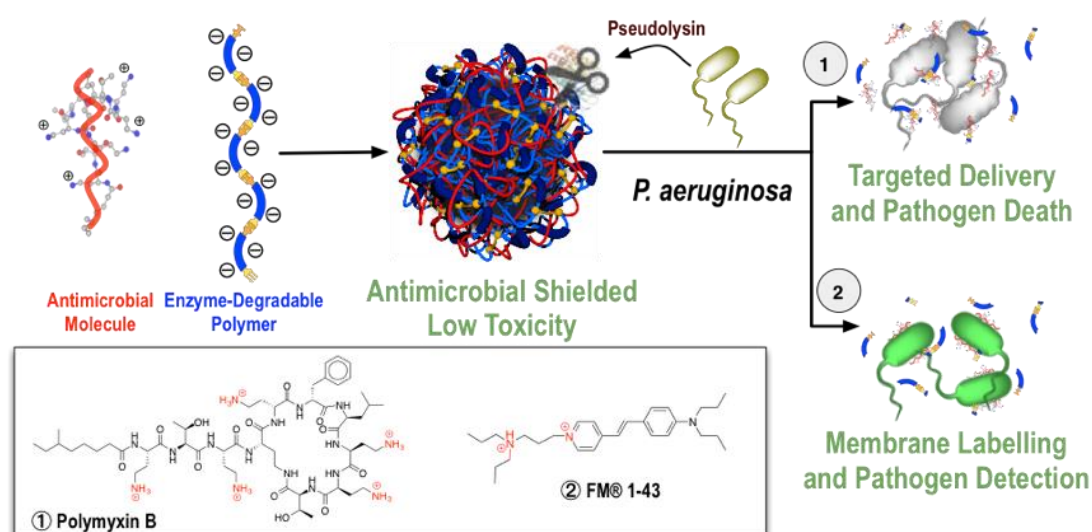
## Enzyme-Degradable Polyion-Complex (PIC) Particles for the delivery of antimicrobial peptide polymyxin B.

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PIC particles are stabilised by these electrostatic interactions between its components, and thus are especially suited for the delivery of charged (bio)molecules (e.g. nucleic acids and proteins), which are prevalent in nature. This way, delivery vehicles can be formulated without the need to introduce chemical modifications to these (bio)molecules and as a result the biological activity of these molecules should be maintained upon release. Here, we describe novel polyion complex (PIC) particles for the delivery of Polymyxin B (*Pol-B*), an antimicrobial peptide currently used in the clinic as a last resort antibiotic against multidrug-resistant gram-negative bacteria. Towards this end, we have prepared polymer containing peptide sequence (-Glu-Gly-Leu-Ala-) this sequence is selectively degraded by *pseudolysin*, an elastase produced by opportunistic pathogen *Pseudomonas aeruginosa*.<sup>1</sup> A range of conditions for the controlled assembly of Pol-B with polymer containing peptides has been identified which let us prepare stable colloidal PIC particles containing different Pol-B:Polymer ratios. Their stability under simulated physiological conditions (*i.e.* pH, osmotic pressure and temperature) characterised. Furthermore, preliminary evaluation of the antimicrobial activity of these Pol-B containing PIC particles has been performed, by monitoring their effect on the growth of *Pseudomonas aeruginosa*, an opportunistic gram-negative bacterium.



- 1) Insua, I., Wilkinson, A. & Fernandez-Trillo, F. Polyion complex (PIC) particles: Preparation and biomedical applications. *Eur. Polym. J.* 81, 198–215 (2016)