Fighting antibiotic resistance : Synthetic antibodies target and inhibit efflux pump membrane transporter of ESKAPE bacteria

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Antimicrobial resistance is a major current health challenge. Gram-negative bacteria from the ESKAPE group (*E. faecium, S. aureus, K. pneumoniae, A. baumannii, P. aeruginosa, Enterobacter sp.*) thereby have the highest resistance indices [1]. One of the main mechanisms of resistance is overexpression of efflux pumps, which expel antibiotics from bacteria cells [2]. We report molecularly imprinted polymer (MIP) [3] nanogels obtained by solid-phase synthesis on an immobilized epitope peptide [4] able to target and inhibit an *E. coli* efflux pump. MIPs were characterized for their specificity and affinity through batch binding assays, and using flow cytometry and confocal microscopy on *E. coli* cells. They were able to inhibit the efflux pump resulting in increased antibiotic efficiency.

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