

## Circumvent the membrane barrier strategy to combat multidrug resistant Gram negative bacteria

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The envelope of Gram-negative bacteria is a sophisticated structure comprising two membranes, the outer and the inner membrane that delineate the periplasmic space. The membrane permeability is directly involved in the early bacterial defense mechanisms: The decrease the expression of porins, major hydrophilic pathways through the outer membrane or the increase of the expression of efflux pump systems has been characterized in various clinical isolates showing a multidrug resistant (MDR) phenotype. This adaptation, reported as a efficient response to antibiotic therapy in hospital, can confer a low antibiotic susceptibility that contributes to the bacterial persistence and dissemination, the colonization of the patient and favors the acquisition of additional mechanisms of resistance (target mutations, degrading enzymes). The bacterial cell manages the membrane permeability and the drug translocation process, influx and efflux, to control the intracellular concentration of various molecules. Antibiotics and biocides are substrates of these mechanisms and the continuing emergence of MDR isolates is a growing worldwide health concern. Different strategies could be proposed to bypass the bacterial membrane barrier, comprising influx and efflux mechanisms, in order to restore the activity of antibiotics against resistant bacteria. This presentation is focusing on the strategies that can improve the influx or modulate the efflux in order to increase the intra-bacterial concentrations of antibiotic molecules.

### Biography

Jean Marie Pages has received his Ph.D. in Immunochemistry of Alkaline Phosphatase from university of Provence, France during the period of 1975. Currently he is working as Head of UMR-MD1; Membrane Transporters, Chemoresistance and Drug design. He is the recipient of Medal of Service de Santé des Armées. His research interests include Antibiotic resistance mechanisms in bacteria, e.g. mechanism-biochemistry, epidemiology, regulation and expression, activity and clinical involvement, assessment of risk factors associated with the emerging resistance mechanism.

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