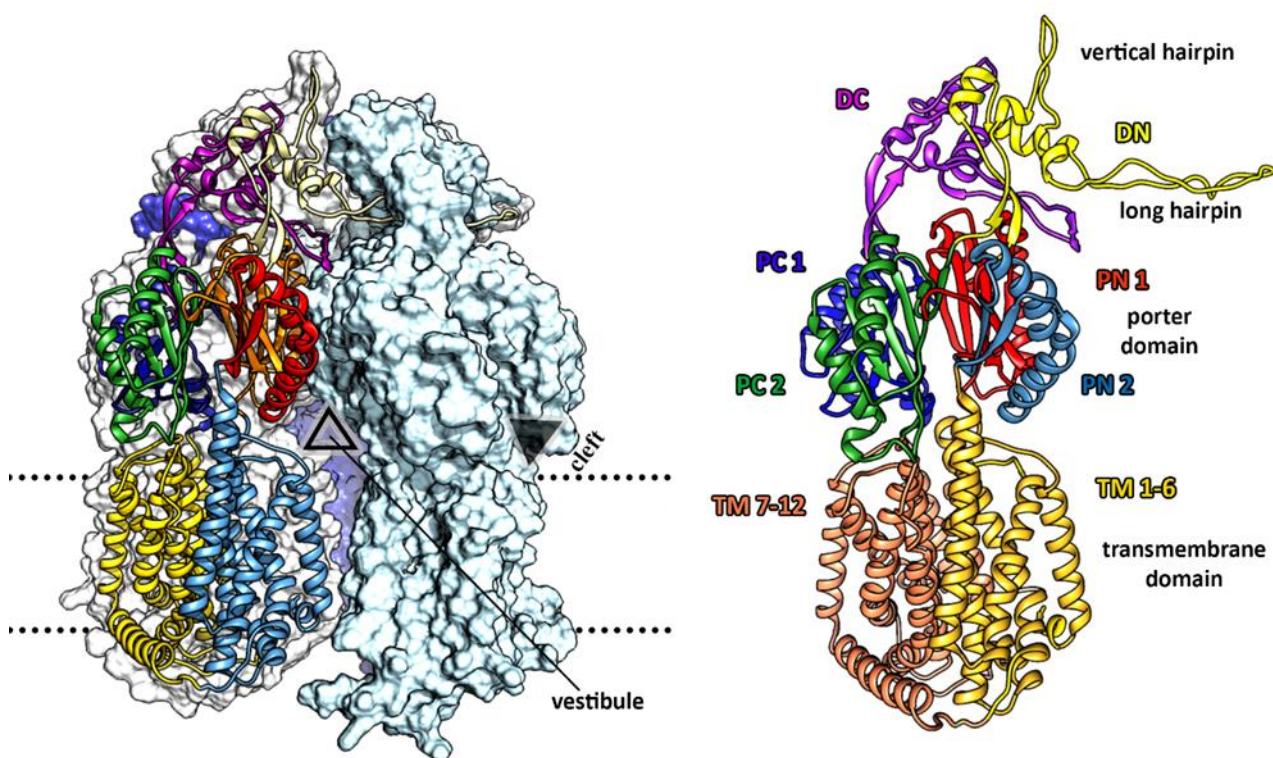


## Computer-aided drug design of new inhibitors targeting efflux pumps of Gram-Negative Bacteria: novel approaches to overcome drug resistance

Nowadays infections caused by multiresistant (MDR) and biofilm-producing (BP) pathogens are cause of great concern since they don't respond to antibiotic treatment. Gram-negative pathogens such as *P.Aeruginosa*, *E.Coli* are among the most problematic MDR-BP infectious agents, in particular in Cystic Fibrosis patients where they cause chronic pulmonary infections are the main cause of mortality of these patients.

This research theme aim to contribute to overcome these hurdles, using the strength of high level computational techniques and biomolecular modelling approaches such as Molecular docking and High Throughput Virtual Screening, molecular dynamics (i.e. classical, Steered molecular dynamic and FEP calculations as few examples) in order to identify novel efflux pumps inhibitors with high selectivity and low toxicity. These *in silico* approaches can also be combined with *in vitro* essays to test and verify its previsionsal capabilities.



**3D structure** of MexY (*P.Aeruginosa* efflux pump) as determined by comparison with the homologous membrane transporter AcrB (*E.Coli* efflux pump).