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Autore	D' ALESSIO, FEDERICO
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Sommario	The catalytically active form of vitamin B6, pyridoxal 5'-phosphate (PLP), acts as a coenzyme in a variety of different enzymatic reactions. PLP is essential for the normal growth and development of all the organisms, but only plants and microorganisms can synthetise it de novo, while the other organisms must recycle it from nutrients. The PLP is a very reactive molecule thanks to its aldehyde group and its intracellular concentration must be kept low to avoid undesired toxic reaction in the organism. The regulation of the free PLP concentration in cells occurs through a variety of mechanism, such as its dephosphorylation to PL or, as recently discovered, through the binding to PLP Binding Protein. In Escherichia coli an important candidate for this role has recently been discovered: YggS is a non-catalytic protein able to bind PLP. It belongs to the COG0325 family, a class of protein sharing structure homology with PLP-dependent enzymes, such as alanine racemase and some decarboxylases that have the same Fold-type III. The metabolism of PLP in E. coli has been studied for years. In this work, our group have deepened the regulation of the PLP metabolism, studying and elaborating the state of the art, and crossing the available literature data with those produced in our lab about the regulation of the expression of the genes involved in PLP

	homeostasis and focusing the analysis on the most important genes. Our studies have also analysed in vivo the phenotypes linked to the genes involved in PLP homeostasis when E. coli is grown in different media and in presence of vitamers, in order to better understand the role of the analysed genes. The study has also considered the expression of the genes involved in PLP homeostasis in presence of vitamin B6 vitamers and during different growth phases. Finally, given the importance of the gene yggS in E. coli, the attention was focused on the characterization of the protein YggS, whose role has not yet been discovered. This protein is hypothesised to be both a PLP binding protein and a carrier of this important cofactor to the apo PLP-dependent enzymes. Our studies were focused on YggS capacity to bind PLP and, using mutant forms of this protein, we have verified and studied the transfer mechanism of PLP to the apo PLP-dependent enzymes.
Localizzazioni e accesso	http://memoria.depositolegale.it/*/http://hdl.handle.net/11573/1470147