



Departamento de Biología

# SEMINARIO EXTRAORDINARIO



## ***“Regulation of bacterial cell wall growth”.***

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Bacteria surround their cytoplasmic membrane with an essential, stress-bearing peptidoglycan (PG) sacculus which is a net-like molecule made of glycan chains connected via short peptides. Growing and dividing cells increase the surface of their PG layer by the incorporation of nascent PG synthesized from lipid II precursor. PG growth is catalysed by dynamic cytoplasmic membrane-anchored multi-protein complexes, which are composed of PG synthases and cell morphogenesis proteins and guided by cytoskeletal elements. In

*Escherichia coli* growth of the mainly single layered PG is also regulated by the outer membrane-anchored lipoproteins LpoA and LpoB. Both span the periplasm to interact with and activate their cognate PG synthase, penicillin-binding protein (PBP) 1A and 1B, respectively, which are major, bi-functional enzymes with glycan chain polymerizing (glycosyltransferase) and peptide cross-linking (transpeptidase) activities. PBP1B-LpoB have a main role in the synthesis of septal PG during cell division, and PBP1B interacts with essential cell division proteins such as PBP3 and FtsN. Septal PG synthesis is coupled with outer membrane constriction by the Tol-system via CpoB, a periplasmic protein that interacts with both PBP1B and TolA. CpoB and TolA modulate the activity of PBP1B-LpoB depending on the status of the Tol-system to coordinated PG synthesis and outer membrane constriction.

**Anfitrión: Dr. Octavio Monasterio**

***Viernes 27 de noviembre de 2015, a las 12:00 hrs.***  
***Auditorio Prof. Hermann Niemeyer F., edificio Biología-Milenio.***