Abstract of Presentation

<u>Presentation Title:</u> CHEMOTACTIC AND STRUCTURAL STUDIES IN THE PHOTOSYNTHETIC BACTERIUM *Rhodobacter sphaeroides**.

Ana Martínez del Campo, David Castillo, Teresa Ballado, Javier de la Mora, Laura Camarena and Georges Dreyfus

Instituto de Fisiología Celular, Instituto de Investigaciones Biomédicas.

Universidad Nacional Autónoma de México.

Abstract:

Rhodobacter sphaeroides has two clusters of flagellar genes (fla1, fla2) and several reiterated chemotactic genes. The fla1 system has been shown to be functional and required for the synthesis of a single subpolar flagellum. We demonstrate that the fla2 system encodes a functional flagellum, which produces polar flagella. Phylogenic analysis suggests that the fla1 system was acquired by horizontal transfer from a γ -proteobacterium; while the fla2 system contains the native genes. Some of the chemotaxis gene copies are required when the cell is swimming with the fla1 flagellum. The presence of the fla2 flagellum suggests that some of the chemotaxis genes could be involved in its tactic control. We show evidence that CheY1, CheY2 and CheY5 control de chemotactic behavior mediated by fla2 flagella. Additionally, we identified that the open reading frame *RSP6099* encodes the fla2 FliM protein.

We also studied the HAP1*Rs* (FlgK*Rs*) central non-conserved region of 860-aa (three times larger than enteric HAP1), by monitoring the effects of scanning mutations tested on swimming and swarming without or with Ficoll 400. Two mutants do not assemble flagella, two were paralyzed and five exhibited reduced swimming speeds. Some mutants displayed unusual swarming patterns. A central segment of 200-aa in HAP1*Rs* is similar to the variable domain of flagellin from other g- and b-proteobacteria.

* CONACyT Grant 47172/A-1