



REUNION CONJUNTA DE SOCIEDADES DE BIOCIENCIAS

Abstract
ID:1559

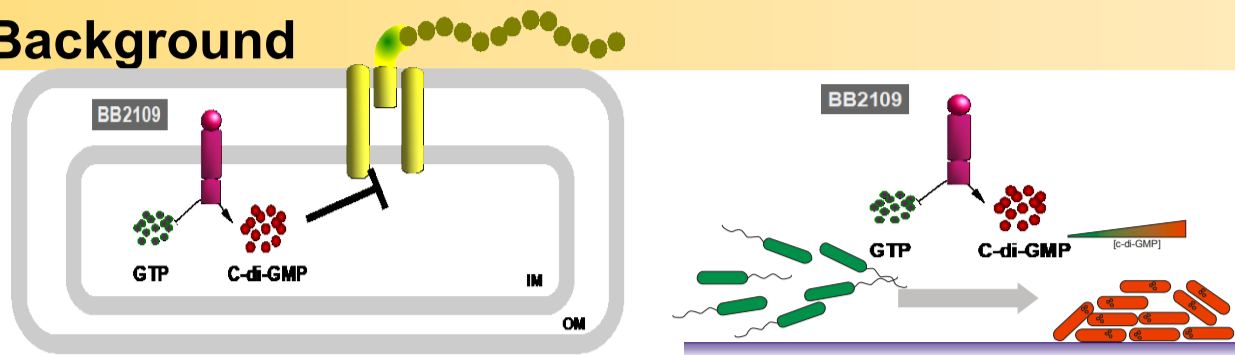
A diguanylate cyclase regulates motility and biofilm formation in *Bordetella bronchiseptica* mediated by a GGDEF-EAL protein



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Belhart, K., Gutierrez, M.P., Zacca, F., Sisti, F. and Fernández, J.

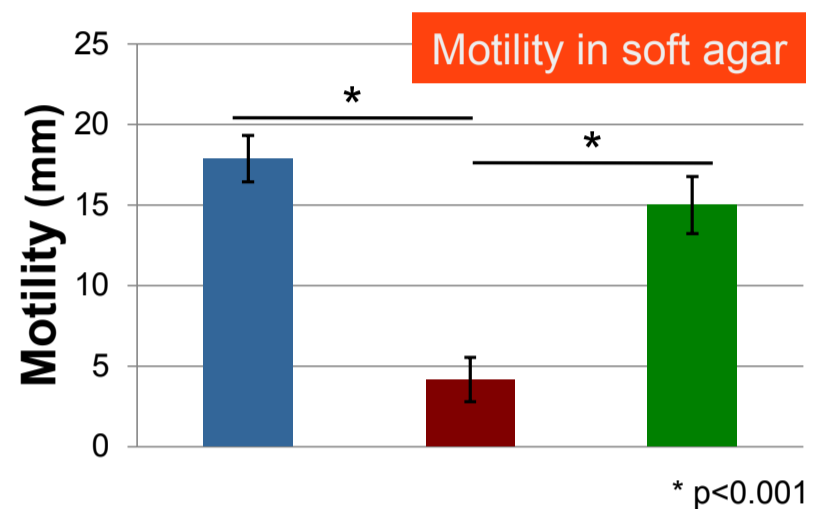
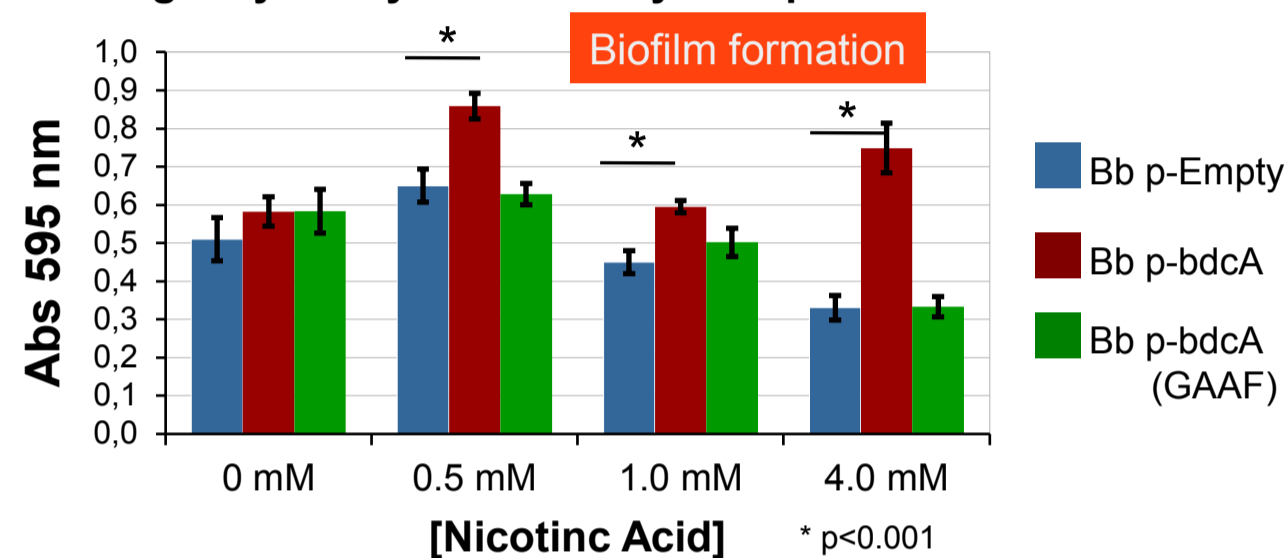
Background



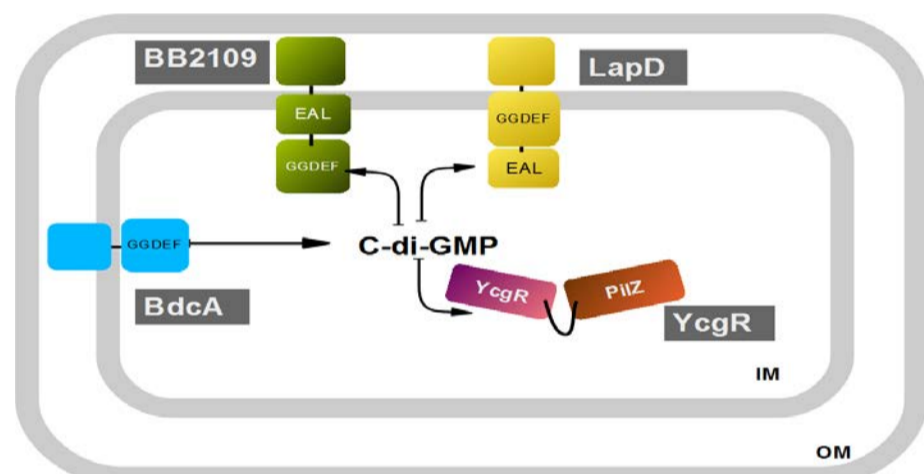
Bordetella bronchiseptica is a bacterium that causes respiratory infections in a variety of mammalian hosts. We have already described c-di-GMP role in motility and biofilm formation. We previously showed that over expressing BdcA (*Bordetella* diguanylate cyclase A) triggers high c-di-GMP levels and significantly impaired movement and enhanced biofilm formation.

Results

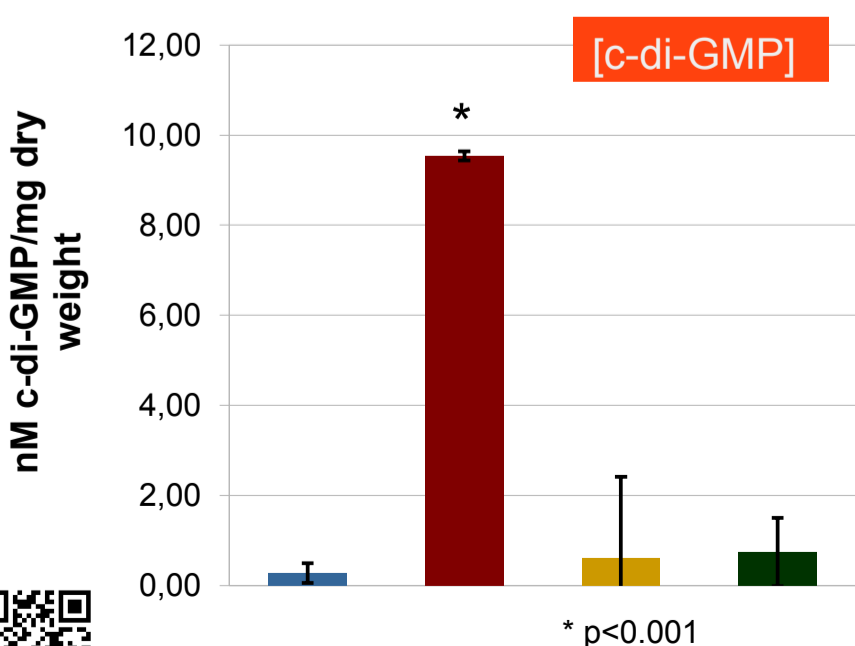
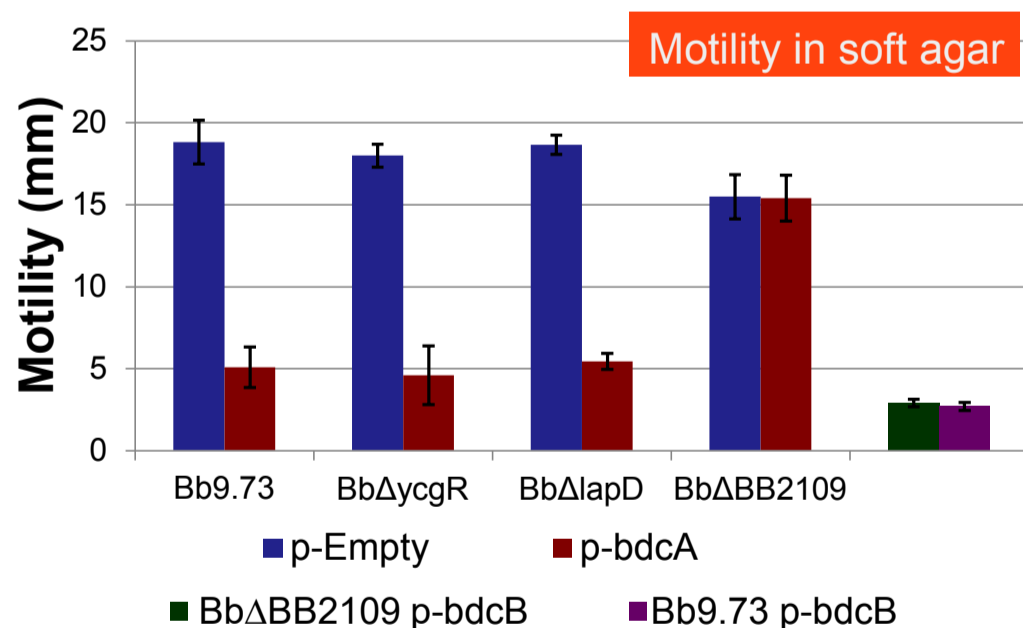
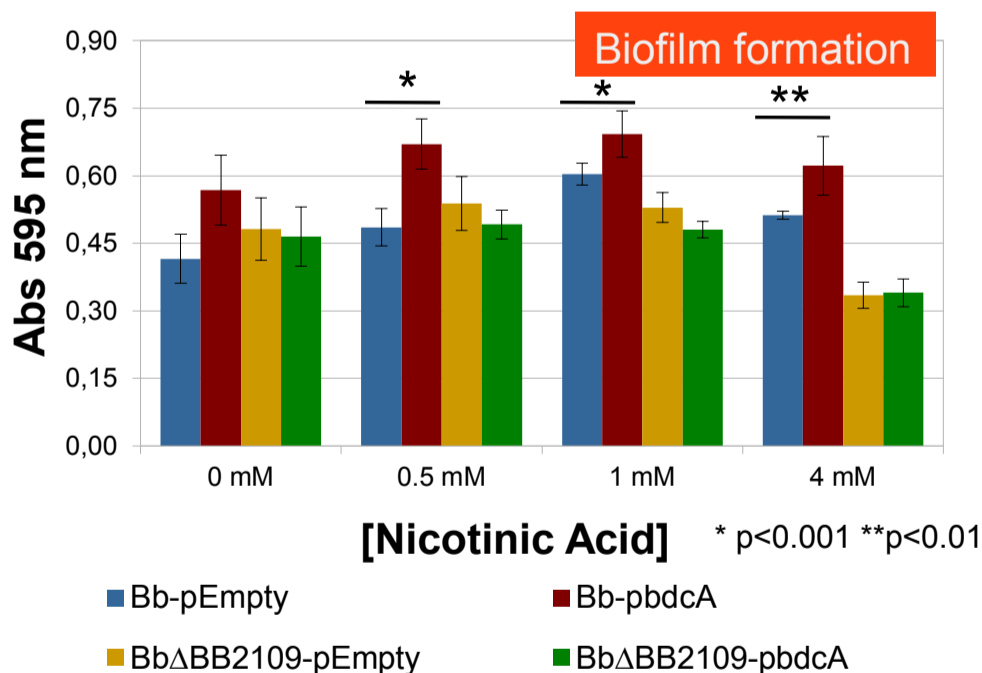
Diguanylate cyclase activity is important for BdcA function



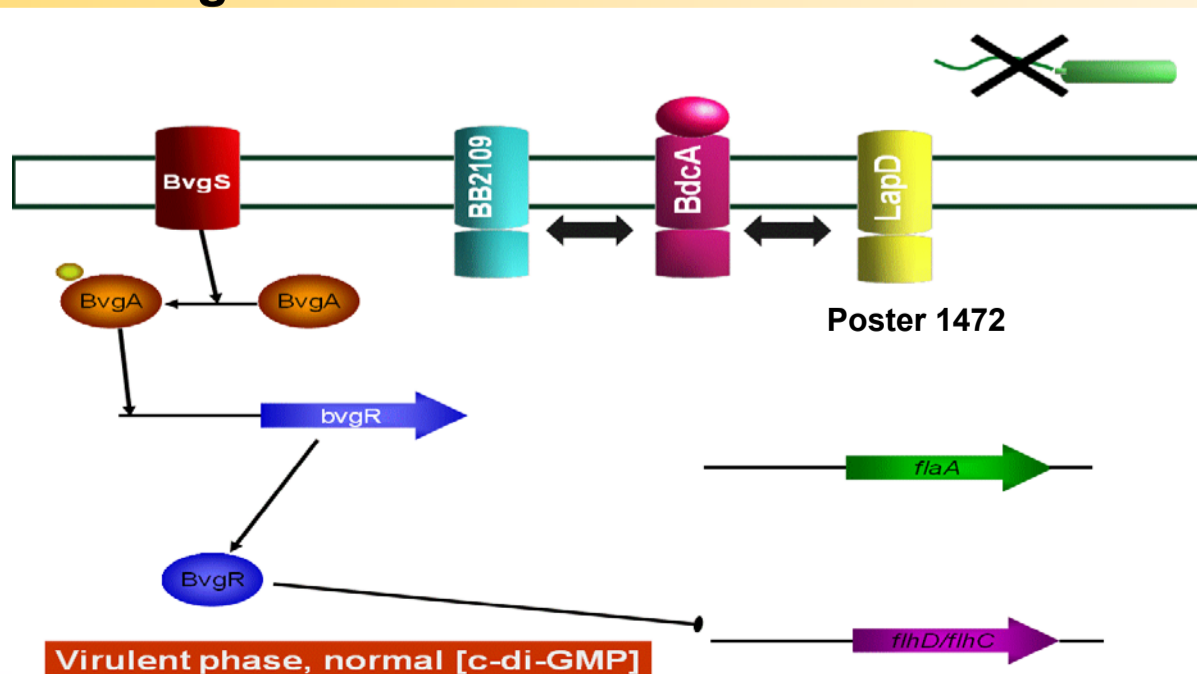
A dual protein is necessary for motility inhibition



If c-di-GMP regulates biofilm and motility in *B. bronchiseptica* one or more binding proteins should participate. We analyzed three candidates shown in the figure at the left. **YcgR**. A protein with a PilZ domain, an ubiquitous receptor in bacteria for c-di-GMP. **LapD**. At the N terminal portion of BdcA a Cache like domain is predicted like in GcbC, an active DGC that interacts with LAPD in *P. fluorescens*. **BB2109**. Some DGCs interact with EAL domains through particular protein surfaces called "bar code and reader". We modeled BdcA and all GGDEF domains present in *B. bronchiseptica* RB50 genome with Phyre2 software and search for bar code-reader matching pares. We found that BB2109, a dual GGDEF-EAL membrane protein, plausible matched with BdcA.



Working Model



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