## Crystal Structure of PA0740, a Novel Zinc Hydrolase of *Pseudomonas aeruginosa*

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Pseudomonas aeruginosa is an opportunistic pathogen causing acute and chronic infections. During infection, P. aeruginosa expresses a range of virulence factors as well as proteins needed for biofilm formation. Expression of most of these proteins is primarily regulated by a sophisticated acyl-homoserinelactone (AHL) based quorum sensing system. By means of transposon mutagenesis we searched for further virulence factors of P. aeruginosa. During these efforts a strain in which the gene coding for the 73 kDa protein PA0740 had been knocked out, showed an increased production of AHLs. Therefore PA0740 presumably has an AHL degrading activity and may hence regulate P. aeruginosa quorum sensing. To further investigate the function of PA0740, we solved the crystal structure at 2.7 Å resolution. PA0740 is a symmetric dimer, exhibiting an unusual  $\alpha$ -helical dimer interface in which the monomers are intricately intertwined. Each monomer contains an N-terminal B-sandwich domain reminiscent of class B  $\beta$ -lactamases. Molecular modelling indicates that 3-Oxo-C12-HSL, a putative substrate, could comfortably bind to the active site, resulting in its hydrolysis. The central domain of PA0740 is involved in dimerization, while the C-terminal domain is structurally similar to sterol carrier protein-2. Keywords: P. aeruginosa, quorum sensing, zinc hydrolase