

Accepted Manuscript

Title: The outer membrane protein OprF and the sigma factor SigX regulate antibiotic production in *Pseudomonas fluorescens* 2P24

Authors: Xu Li, Gao-Qi Gu, Wei Chen, Li-Juan Gao, Xue-Hong Wu, Li-Qun Zhang



PII: S0944-5013(17)30559-1
DOI: <https://doi.org/10.1016/j.micres.2017.10.006>
Reference: MICRES 26079

To appear in:

Received date: 12-6-2017
Revised date: 9-9-2017
Accepted date: 15-10-2017

Please cite this article as: Li Xu, Gu Gao-Qi, Chen Wei, Gao Li-Juan, Wu Xue-Hong, Zhang Li-Qun. The outer membrane protein OprF and the sigma factor SigX regulate antibiotic production in *Pseudomonas fluorescens* 2P24. *Microbiological Research* <https://doi.org/10.1016/j.micres.2017.10.006>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

<AT>The outer membrane protein OprF and the sigma factor SigX regulate antibiotic production in *Pseudomonas fluorescens* 2P24

<AU>Xu Li^a, Gao-Qi Gu^a, Wei Chen^a, Li-Juan Gao^c, Xue-Hong Wu^{a,b}, Li-Qun Zhang^{a,b*} ##Email##zhanglq@cau.edu.cn##/Email##

<AU>

<AFF>^aDepartment of Plant Pathology, China Agricultural University, Beijing, China

<AFF>^bKey Laboratory of Pest Monitoring and Green Management, Ministry of Agriculture, Beijing, China

<AFF>^cBeijing Centre for Physical and Chemical Analysis, Beijing 100089

<PA>Tel.: (86) 10 62731464.

<ABS-HEAD>Abstract

<ABS-P>*Pseudomonas fluorescens* 2P24 produces 2,4-diacetylphloroglucinol (2,4-DAPG) as the major antibiotic compound that protects plants from soil-borne diseases. Expression of the 2,4-DAPG biosynthesis enzymes, which are encoded by the *phlACBD* locus, is under the control of a delicate regulatory network. In this study, we identified a novel role for the outer membrane protein gene *oprF*, in negatively regulating the 2,4-DAPG production by using random mini-Tn5 mutagenesis. A sigma factor gene *sigX* was located immediately upstream of the *oprF* gene and shown to be a positive regulator for *oprF* transcription and 2,4-DAPG production. Genetic analysis of an *oprF* and *sigX* double-mutant indicated that the 2,4-DAPG regulation by *oprF* was dependent on SigX. The *sigX* gene did not affect PhlA and PhlD expression, but positively regulated the level of malonyl-CoA, the substrate of 2,4-DAPG synthesis, by influencing the expression of acetyl-CoA carboxylases. Further investigations revealed that *sigX* transcription was induced under conditions of salt starvation or glycine addition. All these findings indicate that SigX is a novel regulator of substrate supplements for 2,4-DAPG production.

<KWD>Keywords: *Pseudomonas fluorescens*; 2,4-diacetylphloroglucinol; *sigX*;

oprF; acetyl-coenzyme A carboxylase; outer membrane stress

Download English Version:

<https://daneshyari.com/en/article/8423258>

Download Persian Version:

<https://daneshyari.com/article/8423258>

[Daneshyari.com](https://daneshyari.com)