UNIVERSITÉ LAVAL

INSTITUT DE BIOLOGIE INTÉGRATIVE ET DES SYSTÈMES IBIS

C O N F É R E N C E

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Do small bioactive molecules play a role in Phaeobacter inhibens pathogenesis? A role for T4SS and its candidate effectors

LE JEUDI 24 OCTOBRE 2019 À 12 H 30
Conjointement avec Québec Océan

Pavillon Charles-Eugène-Marchand, salle Hydro-Québec (1210)

Small bioactive molecules frequently mediate species-species interactions, allowing organisms to alter the physiology and survival of their partner. However, in vitro biological activity of these molecules does not always match their in situ function. This mismatch can be due to differences between effective and environmental levels or nuances in regulation and production of these molecules. Since our discovery of roseobacticides, a novel class of algaecidal antibiotics potent against the phytoplankton, Emiliania huxleyi, we have found roseobacticide-resistant E. huxleyi strains. These resistant strains correspond to two of the cell types within its cell cycle, including the numerically dominant calcifying cell type found in algal blooms. However, this resistant cell type is still susceptible to the bacterial pathogen producing roseobacticides, Phaeobacter inhibens. We show that P. inhibens kills its host, E. huxleyi, by activating its apoptotic-like programmed cell death (AL-PCD) pathway. This led us to postulate that P. inhibens has multiple virulence mechanisms that it differentially employs against the various E. huxleyi cell types. To identify the virulence system it uses against the calcifying cell type, an extensive transposon mutant library of this bacterium was screened. We found that the type IV secretion system (T4SS) is essential for P. inhibens pathogenesis, with mutations in genes coding for this apparatus resulting in completely attenuated virulence. Additionally, candidate T4SS effectors that interfere with host ubiquination and initiate AL-PCD were found. Our results demonstrate that E. huxleyi's environmentally abundant calcifying cell type is killed through a roseobacticide-independent mechanism whereby P. inhibens causes its host to kill itself.

Lunch et breuvages seront offerts.
SVP confirmer votre présence sur : https://doodle.com/poll/6xyrdg7svc4gm8af
avant le mercredi 23 octobre, 10 h

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