

CONFÉRENCE

« Conférence prononcée en anglais – Lecture given in English »

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Titre de la conférence :

«Regulating virulence and stress response with small proteins and regulatory RNAs in *Salmonella* Typhimurium»

Abstract

Pathogens must express their stress response and virulence genes at precisely the right time to cause disease. To do so, they rely on the action of small proteins and regulatory RNAs that control the activity and the abundance of signal transduction pathway components that are essential for promoting bacterial adaptation to environmental insults. We have uncovered two novel regulatory mechanisms controlling virulence and stress response pathways in the pathogen *Salmonella enterica* serovar Typhimurium (*S. Typhimurium*). First, we identified a novel small protein that governs a critical virulence program for *S. Typhimurium*. We established that the novel small protein UgtS prevents the virulence protein UgtL from activating the master virulence regulator PhoP inside macrophages. *S. Typhimurium* produces two *ugtSugtL* mRNAs but only one of them allows *ugtS* translation. UgtS regulatory role appears to be critical for causing disease in warm-blooded animals because the *ugtS* gene is absent from *S. enterica* serovars that infect cold-blooded animals. Our findings establish how a horizontally acquired bicistron enables pathogens to time their virulence programs by controlling ancestral regulators. Second, we have determined that the small regulatory RNA STnc850 acts as a negative feedback regulator of the Rcs envelope stress response that mediates bacterial adaptation to outer membrane stress and cell wall perturbations. Future work will aim at elucidating the mechanism of action and the physiological relevance of STnc850. Because overactivation of the Rcs pathway attenuates virulence, STnc850 regulatory action is expected to contribute to *Salmonella's* ability to cause disease.

Jeudi 21 avril 2022 à 11h30-12h30

Diffusion en ligne via la plateforme **Zoom**

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ID de réunion : 895 5852 9177

Code secret : 473303

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