Graduate Schools
Infection Immunity and Cancer, UniGe & UniL: CUS
Biology & Medicine, CMU

Seminar in Microbiology

Monday, March 9, 2015

Salle de séminaire 7172, CMU

11:30 – 12:30

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Rho factor moonlighting: coupling transcription termination to translational control

The transcription terminator factor Rho is a ring-shaped bacterial RNA-DNA helicase that is thought to bind to the 5' end of the mRNA and to translocate in a 5'-3' direction. Once it encounters a RNA polymerase elongation complex, it will induce transcription termination. Due to transcription-translation coupling in bacteria, the elongation complex is protected from Rho, except if translation is impaired. Recent work by this laboratory has shown that a small regulatory RNA can influence the activity of the termination factor Rho "at distance" and induce downstream transcription termination.
In a recent study the laboratory has extend this work and shown that a regulatory protein, CsrA, can bind in the 5' region of an mRNA and thereby opens a secondary structure and frees a Rho factor loading site. This in turn will lead to transcription termination.

http://www.cgm.cnrs-gif.fr/spip.php?article238&lang=fr

References:

Figueroa-Bossi et al., RNA remodeling by bacterial global regulator CsrA promotes Rho-dependent transcription termination. Genes Dev. 2014; 28:1239-51. doi: 10.1101/gad.240192.114.

Plumbridge et al., Interplay of transcriptional and small RNA-dependent control mechanisms regulates chitosugar uptake in Escherichia coli and Salmonella. Mol Microbiol. 2014; 92:648-58.

Yang et al., Translation enhancing ACA motifs and their silencing by a bacterial small regulatory RNA. PLoS Genet. 2014; 10:e1004026.

Bossi et al., A role for Rho-dependent polarity in gene regulation by a noncoding small RNA. Genes Dev. 2012; 26: 1864-73.

Contact: P. Linder & P. Viollier
Sandwiches will be offered after the seminar