Ribosome inhibition by nascent or antimicrobial peptides

Axel Innis*[1]

[1]Institut Européen de Chimie et Biologie (IECB) – Inserm : U1212, CNRS : UMR5320, Université de Bordeaux – 2, rue Robert Escarpit 33607 Pessac Cedex, France

Résumé

During protein synthesis by the ribosome, some nascent peptides block their own production by forming stable interactions with the large ribosomal subunit. Biochemical and structural studies of these arrest peptides have yielded key insights into their mode of action, but their ability to act as sensors for different types of small molecules, their impact on the regulation of gene expression and the precise molecular details behind the arrest process are still largely unexplored.
The aim of my ERC Consolidator research program is to decipher the arrest code governing nascent chain-mediated translational arrest in bacteria. My approach is based on *inverse toeprinting*, a technique that was recently developed in my group to precisely map the position of an arrested ribosome nascent chain complex on the mRNA while retaining the entire peptide-coding region up to the point of stalling.
By addressing the natural diversity and molecular bases of the arrest process, we will gain deeper insights into a unique form of gene regulation. Moreover, our expanded knowledge in this area will promote the design of next-generation antibiotics.

*Intervenant