UNIVERSITÀ DI PAVIA
Dipartimento di
Biologia e Biotecnologie
"Lazzaro Spallanzani"

Seminar

Magic bullet or magic target? Shedding electrons on antibiotics binding the ribosome

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Antimicrobial resistance represents one of the greatest threats to human civilization. The World Health Organization estimates that by 2050, the majority of global fatalities will result from lethal infections caused by antimicrobial-resistant pathogens. The ribosome is a key target for many clinically used antibiotics, but the rise of multidrug resistance is rendering our current antimicrobial arsenal increasingly ineffective. Cryo-electron microscopy (Cryo-EM) is a powerful technique that allows for detailed atomic-level descriptions of the interactions between antimicrobial compounds and their target binding sites in the bacterial ribosome, including the roles of water molecules and ions in stabilizing these bond networks. Recent advancements in Cryo-EM and medicinal chemistry are facilitating structure-based drug design, enabling the optimization of existing inhibitors. Furthermore, large-scale screening of both natural6 and synthetic molecules for translation-inhibitory activity, combined with structural analysis, is revealing previously unknown scaffolds with clinical potential. These molecules bind to the ribosome in uncharted cavities and exhibit novel mechanisms of action.

Friday 16th May 2025
02:00 PM

DBB, Aula Buzzati-Traverso, Edificio Genetica, Via Ferrata 9A

HOST: F. Forneris

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