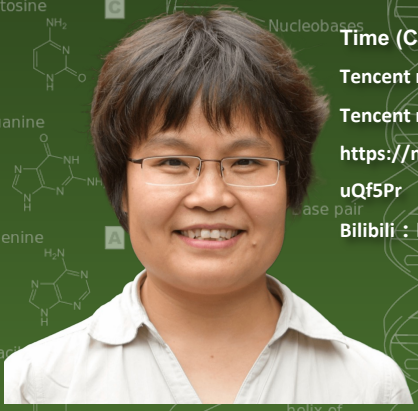
Guangzhou RNA club

The RNA-guided arms race between bacteria and phage



Time (China): 2024-1-17 14:00

Tencent meeting: 660-264-694

Tencent meeting link:

https://meeting.tencent.com/dm/NJfaxMuQf5Pr

Bilibili：https://live.bilibili.com/26427894

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Abstract:

CRISPR-Cas systems are adaptive immune systems found in bacteria or archaea that protect against the invading of mobile genetic elements (MGEs), such as phages and plasmids. To defend against foreign nucleic acids, CRISPR-Cas systems capture short DNA segments from invaders and insert them into the CRISPR array, thus recording a genetic snapshot of potential threats. The CRISPR locus is then transcribed and processed to generate CRISPR RNA (crRNA) that binds and guides the Cas protein effector complex to cleave the genome of the invader when it returns. To counteract CRISPR-Cas systems, phages have evolved numerous small anti-CRISPR proteins to antagonize the CRISPR-Cas system. Here, we demonstrate how the CRISPR-Cas system captures DNA from phages and cleaves the DNA or RNA under the guidance of crRNA.

HOST & PANELISTS

Host: Zhichao Miao

Guangzhou Laboratory
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Jinkai Wang
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Hongtu Zhao
Guangzhou Laboratory

Xuepeng Wei
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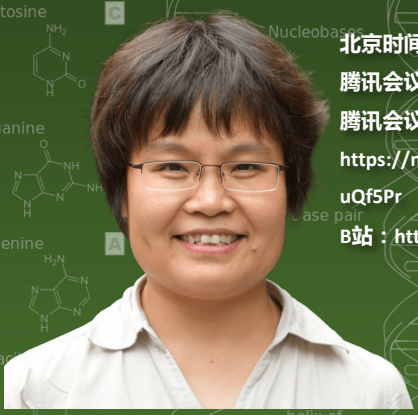
Sponsors

Guangzhou RNA club

RNA引导的细菌和噬菌体之间的军备竞赛



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摘要：

CRISPR-Cas系统是在细菌或古细菌中发现的适应性免疫系统，可以防止噬菌体和质粒等移动遗传元件（MGEs）的入侵。为了抵御外来核酸，CRISPR-cas系统从入侵者那里捕获短DNA片段并将其插入CRISPR阵列，从而记录潜在威胁的遗传快照。然后对CRISPR位点进行转录和加工，生成CRISPR RNA（crRNA），该RNA结合并引导Cas蛋白效应复合物在入侵者返回时切割其基因组。为了对抗CRISPR-Cas系统，噬菌体进化出许多小的抗crispr蛋白来对抗CRISPR-Cas系统。在这里，我们展示了CRISPR-Cas系统如何从噬菌体中捕获DNA并在crRNA的指导下切割DNA或RNA。

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