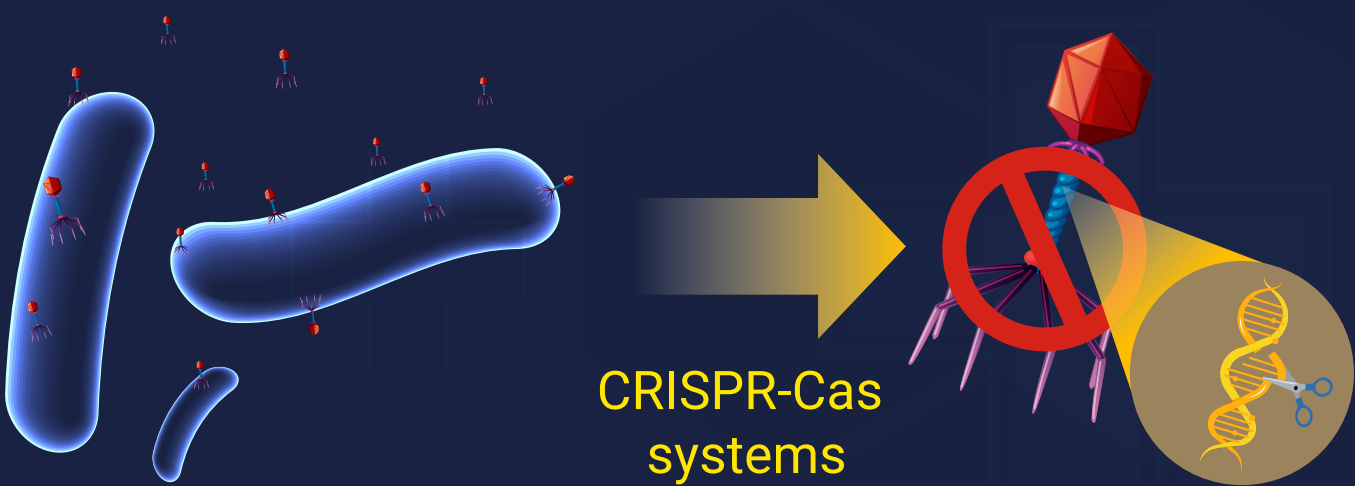
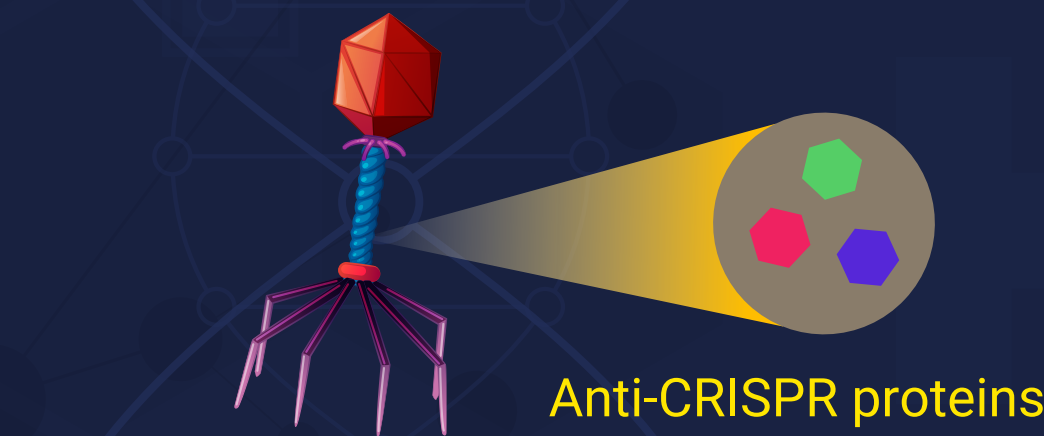


Anti-CRISPR Proteins: Insight into the Rapidly Evolving Defensive Strategy in Bacteriophages

CRISPR-Cas systems are an adaptive immune strategy in bacteria to combat viruses that invade them



In response, viruses have developed a potent protective strategy by producing anti-CRISPR proteins



Understanding anti-CRISPR proteins further can have important implications in CRISPR-Cas-mediated genome editing



Anti-CRISPR proteins were first discovered

Strategies for probing for new proteins



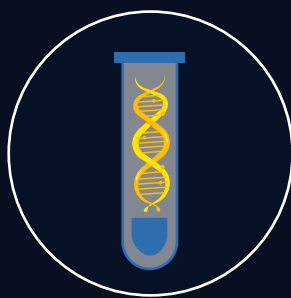
Guilt-by-association bioinformatics

Finding similarities with anti-CRISPR-associated sequences like *aca1* and *aca2*



Self-targeting spacers in bacteria

Identifying bacterial defense against self-targeting sequences



Cell-free transcription-translation functional screen

Building a fully functional CRISPR-Cas system *in vitro*



Phage-first approach

Identifying anti-CRISPR genes in bacteriophages via cloning and expression

Functional mechanisms



Blocking DNA binding



Preventing DNA cleavage

Gaining insight into anti-CRISPR proteins can pave the way for biotechnological tools such as genome editing regulators