

Cryo-EM studies of type V CRISPR-Cas12 nucleases

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CRISPR-Cas systems are adaptive immunity systems in bacteria and archaea against mobile genetic elements and have been developed as tools for genome editing with Cas9 being the most well-known. These systems use guide RNAs and effector proteins to specifically target foreign nucleic acids for degradation. Recently, the functionally diverse Cas12 nucleases have been developed to expand genome editing applications. I will discuss our recent structural and mechanistic studies of Cas12 nucleases, including Cas12f, Cas12g, Cas12i and Cas12k, to elucidate how these nucleases are adapted to their respective functions.