

Review of: "Engineered miniature CRISPR-Cas system for mammalian genome regulation and editing"

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CRISPR-cas systems are powerful in genome engineering. However, the large size of the CRISPR-cas systems (e.g. Cas9 or Cas12a) hinders their wide applications. The development of novel CRISPR-cas systems with a smaller size but a comparable genome editing capability as the currently used CRISPR-cas systems is highly desirable. In this paper, Xu et al. report a miniature Cas system engineered from the type V-F Cas12f system which has 529 amino acids and 62% and 57% smaller than the SpCas9 (1368 amino acids) and LbCas12a (1228 amino acids) respectively. This miniature Cas system is below the AAV packaging limit of 4.7 kb. Moreover, it is possible to be easily delivered by nanocarriers such as lipid nanoparticles or gold nanoclusters for a wide range of applications including cell engineering and gene therapy in vitro and in vivo. Totally speaking, this pioneering work may accelerate the popularization of CRISPR-cas technology in the fields of life science and clinical gene therapy.