

Mechanisms of Programmable DNA Transposition

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Transposons are powerful drivers of evolutionary change, creating large genomic rearrangements using protein-encoded machinery. An important class of Tn7-like transposons uses a guide-RNA sequence to target insertions using a CRISPR-like effector, endowing these CRISPR-associated transposons (CAST) with genome-editing capabilities that have powerful implications for bioengineering and medicine. Transposon-encoded machinery is sufficient to carry out site-specific integrations occurring within a narrow window, with orientation specificity, and target-site immunity. In this talk I will share our recent mechanistic work aimed at explaining the remarkable properties of this self-regulated transposon