Structural Proteomics

SynBac: Enhanced baculovirus genomes by iterative recombineering

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Abstract

Baculovirus expression vector systems (BEVS) are widely used to produce heterologous proteins for a wide range of applications. Developed more than 30 years ago, BEVS have been constantly modified to improve product quality and ease-of-use. Plasmid reagents were tailored and engineered to facilitate introduction of heterologous genes into baculoviral genomes. At the same time, detrimental modalities such as genes encoding proteases or apoptotic factors were removed to improve protein yield. Advances in DNA synthesis and manipulation now enable the engineering of part or whole synthetic baculovirus genomes, opening up new avenues to redesign and tailor the system to specific applications. Here, we describe a simple protocol for designing and constructing baculovirus genomes comprising segments of synthetic DNA through the use of iterative Red/ET homologous recombination reactions.