

Expanding the toolbox: recent advances in multiprotein expression systems.

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Multiprotein complexes are key regulators of most biomolecular mechanisms. Numerous multiprotein expression technologies (ACEMBL, MultiBac, etc) [1] developed in our lab have played an important role in recent breakthroughs in studying these complexes. This multiprotein expression toolbox has always been under continuous improvisation. Various recent advances made in these systems will be discussed here.

Recently a Polyprotein strategy was developed to improve the stoichiometry of different subunits within a protein complex. A SynBac [2] system is being developed to further stabilize the baculovirus genome in order to improvise the expression of much bigger protein complexes. Multiprotein complex expression was successfully expanded to mammalian cells with MultiMam and MultiBacMam. Various tools for expression of modified protein complexes have also been developed in our lab. A new system, MultiBacTAG [3] made it possible to do multiprotein complex engineering for various structural and functional studies. Protein (complexes) were successfully expressed with specific post-translational modification by introducing various enzymes into the MultiBac system, for example glycosylases (SweetBac), deglycosylases, kinases and acetylases.

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