A novel platform for expressing multi-subunit protein complexes and pathways

Circular plasmids frequently are difficult to use for expression of multiple or large genes, repetitive or toxic proteins, and pathways or multi-component gene circuits. The inherent supercoiling of circular plasmids imparts instability for these and other complex gene sequences. The pJAZZ plasmid is a unique linear cloning vector that tolerates nearly any DNA sequence including AT-rich genes and highly repetitive sequences that are impossible to capture in typical circular vectors. pJAZZ has a cloning capacity of up to 40 kb and lacks the cloning bias inherent to circular plasmids, enabling the assembly of complex multi-gene systems. We are developing pJAZZ expression vectors for a variety of applications including expression of mega Dalton proteins, expression of multiple proteins (up to six currently) and production of metabolites from prokaryotic pathways. The vector includes improved light-inducible expression cassettes that have distinct advantages over small-molecule induction such as: Precise spatial control of expression; instantaneous initiation and termination of inducing agent; tunability and lack of toxicity or cross-reactivity. The light inducible gene circuit has proven to be significantly more efficient in the linear pJAZZ backbone than in circular vectors.

Biography
David Mead leads Research and Development efforts for the Company’s research use only products. He has earned his PhD in Physiology and Biophysics at the University of Illinois–Champaign/Urbana. He is the Inventor of TA cloning and he is the co-author of fifty two publications.

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