Title of Project: Construction of T-complex \textit{in vitro} as a gene delivery system for human gene therapy

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Short Description

One of the current challenges in human gene therapy is the development of ideal DNA delivery systems. The gene delivery systems currently available for human gene therapy not only are inefficient in term of the frequency and size of DNA fragment that can be delivered as desired, but also generate unwanted multiple-gene-copy integration. \textit{Agrobacterium tumefaciens} can efficiently transfer large size single-stranded (ss) DNA fragment as a nucleoprotein complex (T-complex) into plant cells and often generate single-gene-copy integration in plant genome. The bacterial virulence proteins VirD2 and VirE2 are the essential components of T-complex which facilitate the gene delivery process. We have embarked on a project to reconstitute the T-complex \textit{in vitro} and to test if this system can be used as a gene delivery system for human cells.