425a Titration of Baculovirus Transducing Ability in Mammalian Cells

Zun-Ren Chan, Chia-Wei Lai, Hsiao-Ping Lee, Huang-Chi Chen, and Yu-Chen Hu

Baculovirus has emerged as a promising vector for in vivo or ex vivo gene therapy. To date, the infectious titer and multiplicity of infection (MOI) based on the ability of baculovirus to infect insect cells are commonly adopted to indicate the virus dosage. However, the infectious titer and MOI do not reliably represent the baculovirus transducing ability. To determine the baculovirus transducing ability more rapidly and reliably, we developed a protocol to evaluate the transducing titers of baculovirus stocks. The virus was diluted 2-fold serially and used to transduce HeLa cells. The resultant transduction efficiencies were measured by flow cytometry for the calculation of transducing titers. Comparing to the infectious titer, the determination of transducing titer is more reproducible. Also, the transducing titers can be obtained in 24 hr, which is significantly faster as opposed to 4-7 days to obtain the infectious titer. More importantly, baculoviruses with higher transducing titers could transduce cells at higher efficiency and yield stronger and longer transgene expression, confirming that the transducing titer was representative of the baculovirus transducing ability. This finding is particularly significant for ex vivo gene delivery whereby unconcentrated viruses are used for transduction and long-term transgene expression is desired. In this regard, our titration protocol provides a simple, fast and reliable measure to evaluate the quality of virus stocks during virus production and purification, and is helpful to predict the performance of vector supernatants and ensure reproducible gene delivery experiments.