Enhanced Lentivirus Safety Features:
Replication Incompetency

Introduction and Principle

During lentivirus transduction of target cells, it is very important to minimize the risk of generating replication-competent Lentivirus (RCL) in order to contain the virus. This commonly involves the deletion or modification of a part of the viral genome critical for viral replication. Such a virus can then efficiently transduce target cells but, once the transduction has taken place, the virus cannot produce new virions.

All of **abm**'s Lentiviral Expression Systems include the following safety features to ensure lack of RCL:

- An enhancer deletion in the U3 region of 3'ΔLTR ensures self-inactivation of the lentiviral vector following transduction and integration into the target cell's genomic DNA.
- The number of lentiviral genes necessary for packaging, replication and transduction is limited to three (Gag/Pol/Rev), and their expression is derived from different plasmids, all lacking packaging signals. These plasmids share no significant homology to the expression vector, thus preventing the generation of replication-competent virus by recombination events.
- None of the Gag, Pol, or Rev genes will be incorporated into in the packaged viral genome, thus making the mature virus replication-incompetent.

Quality Control

All of **abm**'s Ready-to-Use Lentiviruses are tested for replication-incompetency using **abm**'s qPCR Lentivirus Titration (Titer) Kit (**Cat. No. LV900**).

Figure 1. Schematic Procedure of **abm**'s qPCR Lentivitus Titration (Titer) Kit.
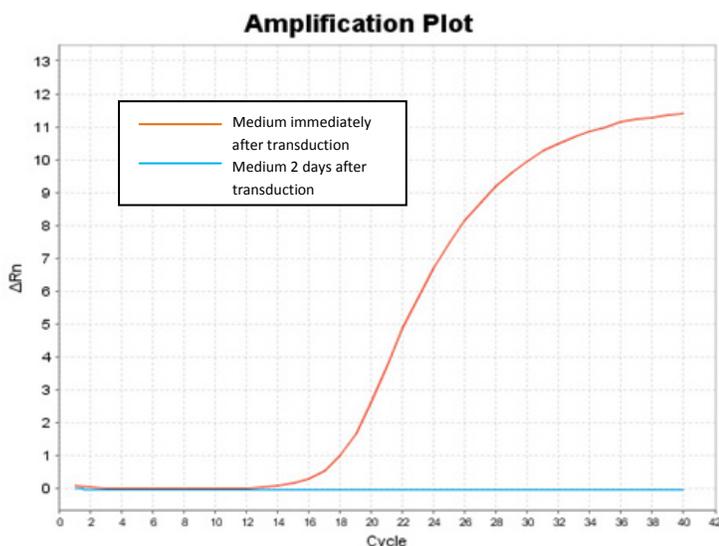

Figure 2. Ready-to-use Lentivirus was used to transduce target cells, and the cell culture medium was replaced 24 hours post-transduction. Samples are taken immediately after lentiviral transduction (red line) and 72 hours post-transduction (48 hours after media change (blue line). The lack of qRT-PCR amplification in the latter sample indicates no detectable virion, hence demonstrating the replication-incompetency in **abm**'s Ready-to-Use Lentivirus.