Clontech

Retro-X™ Q Vectors

The Retro-X Q Vectors have been engineered to provide high viral titers, ensure reliable expression levels, and reduce the possibility of promoter interference (1).

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The Q Vectors are designed to express a target gene along with an antibiotic or fluorescent selection marker (Figure 1) and, following integration into the host genome (Figure 2), inactivate the promoter in the 5' LTR. Self-inactivating vectors provide improved expression due to a reduced chance of promoter interference (2–5). They demonstrate more consistent expression in cell types that do not efficiently express transcripts from the MMLV LTR (6), and they are better experimental models because they are less likely to activate cellular sequences upon integration into the genome (7). Also, Q vectors are safer to work with because they are less likely to form replication-competent retrovirus.

Self-Inactivating Vectors Generate Higher Viral Titers

The CMV/MSV hybrid promoter in the 5' LTR drives the high titers during the packaging step. Then during integration into the host genome, a deletion in the U3 region of the 3' LTR is duplicated to the 5' LTR, which inactivates it. The expressed transcripts are then solely driven by the internal CMV promoter immediately upstream of the MCS. The vector set includes three vectors with selectable resistance markers (Hyg, Pur, Neo) that will be expressed via an internal ribosome entry site (IRES) as a bicistronic message with the gene of interest. A fourth, LacZ control vector, (pQCLIN) is also included with the set.

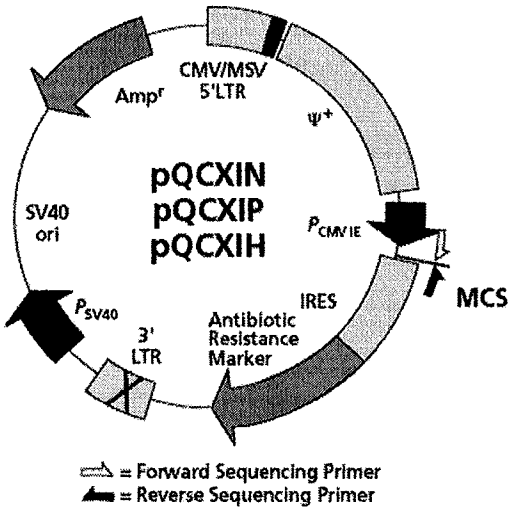

Figure 1. Composite Retro-X Q Vector Set map. In this generalized version of the Q Vector Map, the common elements of all the vectors are represented. Immediately downstream of the CMV immediate early promoter, the multiple cloning site (MCS) is followed by a eukaryotic IRES that ensures a second ORF (an antibiotic resistance marker or another gene in the case of pQCXIX) is cotranscribed with the gene cloned into the MCS. The expression cassette has all of the essential elements for retroviral integration and expression.