# Retrovirus Detection

Published date: Feb. 1, 2012

## Technology description

## Summary

The detection of retrovirus is potentially of great importance both for diagnosis of numerous serious diseases and for monitoring retroviral-based gene therapy. However, since it is difficult to ascertain whether or not a given retrovirus may be present in a patient, the identification of diseases with possible retroviral etiology has not been straight forward and application of retroviral gene therapy techniques has been inhibited. In the case of rheumatoid arthritis, for example, the disease has been intensively investigated, yet its origins remain unresolved. Many researchers hypothesize that rheumatoid arthritis is caused by several viruses, including retroviruses. There have been reported links to retroviruses to other diseases but such links have usually been difficult to confirm These difficulties are due to the uncertainty of reliably detecting reverse transcriptase activity (by PERT for example) over background for cellular enzymes (such as telomerase). Assays such as electron microscopy visualizations and immunofluorescent probing methods are also not useful due to their low sensitivity.

## Description

Scientists at the University of California have developed a method of testing either laboratory or clinical specimens for the presence or amount of a retrovirus that are present at a low level. Murine retroviral constructs, originally developed by UC scientists as safe and efficient vehicles for gene replacement therapy, were found to be useful for the detection of previously unknown retroviruses. In this system, a viral construct can be pseudotyped into an infectious retrovirus if a helper virus provides certain essential components.

## Advantages

In preliminary experiments, the UC assay may facilitate the effective study of rheumatoid arthritis and other diseases whose etiology is likely to be preliminarily bases on retroviral infection. Moreover, the assay method would also have considerable value when evaluating gene therapy drugs for contamination with unknown or partially replication-incomplete retroviruses.

Institution

University of California, San Diego