

P - 635: Inactivation of a cellular mutagenic system

Keywords

- Inactivation of the APOBEC mutagenic system
- Improved yield of retrovirus production in APOBEC+ cells
- Lower mutation rate in retrovirus production from APOBEC+ cells
- Higher genetic stability of retroviral vectors

Abstract

APOBEC proteins are a family of cellular cytidine deaminases. Several members of this family have been shown to have potent antiviral properties against retroviruses. Also, members of the APOBEC family have been found to be overexpressed in some cancer cells. From the mutagenic potential of these enzymes it can be concluded that they may play a role in cancer-promoting mutagenesis. The foamy virus derived protein bet inactivates APOBEC proteins and thus abrogates the effects of these proteins.

The Technology

Members of the APOBEC family of proteins catalyze the deamination of cytidine residues in single-stranded cellular DNA. The primary target of e.g. the APOBEC3G protein is retroviral cDNA; the antiviral activity is associated with the ability to cause hypermutation of retroviral cDNA, leading to reduced yield and lower infectivity of retroviral particles and marked genetic instability of retroviral cultures.

Our researchers have found that the bet protein of foamy virus has the capacity to inhibit the function of APOBEC, in a similar way to the function of HIV vif. So the presence of bet in APOBEC+ cells can be used to increase genetic stability and thus yields of replication competent virus produced in such a cellular background.

Furthermore, inhibition of APOBEC proteins by bet may be a useful tool to study the mutagenic potential of APOBEC proteins in cells.

Applications and Commercial Opportunity

- maintenance and production of retroviruses
- scientific studies of APOBEC contribution to tumorigenesis

Inventors

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Intellectual Property

Patent Applications in Europe (EP 05 751 715) and the USA (11/628,218).

Further Information

No other public information is currently available, but further information (speaking with the inventor) is available under a signed Confidential Disclosure Agreement (CDA).

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