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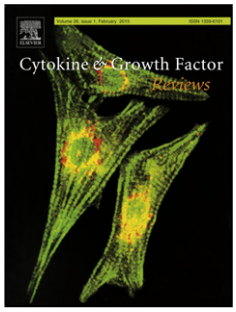

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STING dependent sensing – does HIV actually care?

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Highlights:

- STING-mediated DNA sensing depends on cGAS and IFI16
- HIV regulates the STING pathway by means of NLRX1, Vif and Vpr
- Sensing of HIV is cell-type specific
- cGAMP can be transferred via HIV particles or via membrane fusion
- transferred cGAMP can mediate an antiviral state and suppress HIV
- The STING pathway is a potential therapeutic target against HIV

Abstract

Sensing of DNA is essential for the innate immune system to detect threats, like viruses, intracellular bacteria or cellular DNA damage. At the centre of this conserved mammalian mechanism stands the adaptor protein STING. STING is highly regulated and is part of a complex signalling network. This network depends on the sensors cGAS and IFI16 to detect misplaced DNA in the cytoplasm as well as on the kinase TBK1 and the transcription factor IRF3. The DNA sensing machinery has been implicated in many diseases, among others HIV. Here we present a comprehensive review of current status on the STING pathway with all its components and regulations related to HIV pathogenesis. By this, we try to answer the question if STING-mediated DNA sensing plays a role in HIV infections.

Keywords: STING, HIV, innate sensing, IFI16