Targeting the latent cytomegalovirus reservoir with an antiviral fusion toxin protein

Reactivation of human cytomegalovirus (HCMV) in transplant recipients can cause life-threatening disease. Consequently, for transplant recipients, killing latently infected cells could have far-reaching clinical benefits. In vivo, myeloid cells and their progenitors are an important site of HCMV latency, and one viral gene expressed by latently infected myeloid cells is US28. This viral gene encodes a cell surface G protein-coupled receptor (GPCR) that binds chemokines, triggering its endocytosis. We show that the expression of US28 on the surface of latently infected cells allows monocytes and their progenitor CD34+ cells to be targeted and killed by F49A-FTP, a highly specific fusion toxin protein that binds this viral GPCR. As expected, this specific targeting of latently infected cells by F49A-FTP also robustly reduces virus reactivation in vitro. Consequently, such specific fusion toxin proteins could form the basis of a therapeutic strategy for eliminating latently infected cells before haematopoietic stem cell transplantation.

General information
Publication status: Published
Organisations: National Veterinary Institute, University of Cambridge, University of Copenhagen, Robert Koch Institute
Number of pages: 9
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Nature Communications
Volume: 8
Article number: 14321
ISSN (Print): 2041-1723
Ratings:
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 12.41 SJR 6.582 SNIP 2.934
Web of Science (2017): Impact factor 12.353
Web of Science (2017): Indexed yes
Original language: English
Electronic versions:
ncomms14321.pdf
DOIs:
10.1038/ncomms14321
Source: FindIt
Source-ID: 2351822500

Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review