EBI3 regulates the NK cell response to mouse cytomegalovirus infection

EBI3 regulates the NK cell response to mouse cytomegalovirus infection

Natural killer (NK) cells are key mediators in the control of cytomegalovirus infection. Here, we show that Epstein-Barr virus-induced 3 (EBI3) is expressed by human NK cells after NKG2D or IL-12 plus IL-18 stimulation and by mouse NK cells during mouse cytomegalovirus (MCMV) infection. The induction of EBI3 protein expression in mouse NK cells is a late activation event. Thus, early activation events of NK cells, such as IFNγ production and CD69 expression, were not affected in EBI3-deficient (Ebi3-/-) C57BL/6 (B6) mice during MCMV infection. Furthermore, comparable levels of early viral replication in spleen and liver were observed in MCMV-infected Ebi3-/- and wild-type (WT) B6 mice. Interestingly, the viral load in salivary glands and oral lavage was strongly decreased in the MCMV-infected Ebi3-/- B6 mice, suggesting that EBI3 plays a role in the establishment of MCMV latency. We detected a decrease in the sustained IL-10 production by NK cells and lower serum levels of IL-10 in the MCMV-infected Ebi3-/- B6 mice. Furthermore, we observed an increase in dendritic cell maturation markers and an increase in activated CD8+ T cells. Thus, EBI3 dampens the immune response against MCMV infection, resulting in prolonged viral persistence.

General information

State: Published
Organisations: Department of Biotechnology and Biomedicine, Department of Bio and Health Informatics, Integrative Systems Biology, University of California, Stanford University
Authors: Jensen, H. (Ekstern), Chen, S. (Ekstern), Folkersen, L. W. (Intern), Nolan, G. P. (Ekstern), Lanier, L. L. (Ekstern)
Pages: 1625-1630
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information

Journal: Proceedings of the National Academy of Sciences of the United States of America
Volume: 114
Issue number: 7
ISSN (Print): 0027-8424
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 8.56 SJR 6.321 SNIP 2.629
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 6.767 SNIP 2.682 CiteScore 8.84
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 6.853 SNIP 2.725 CiteScore 8.86
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 6.989 SNIP 2.73 CiteScore 9.5
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 6.792 SNIP 2.682 CiteScore 9.49
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 6.771 SNIP 2.636 CiteScore 9.31
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 6.769 SNIP 2.529
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 6.913 SNIP 2.544