# CELL-MEDIATED EFFECTOR RESPONSES

DATE: 13/05/22
PAGE:

## Cell-mediated Response:

Cytotoxic T-cells induces APOPtosis in the target cells.
It performs through two pathways -

(i) Fas Pathway (ii) Perforin / Granzyme Pathway

(ii) Perforin / Granzyme Pathway

Perforin → Pore-forming Protein

Granzyme → Protease

Two pathways that initiates Proteolytic cleavage by Granzyme B.
- Activation of Procaspase 3
- Activation of Bid (BCL-2 Family → Pro-apoptotic proteins)

Mode of Action:

* CTL (Cytotoxic T Lymphocytes) recognizes & binds to virus-infected cells
* CTL Programs target for death (including DNA fragmentation)
* CTL migrates to new target
* Target cell dies by apoptosis

## NK Cells - Effector Response:

Killing by NK cells works similar to ~~CTL-mediated Killing~~ CTLs ($T_c$ Lymphocytes). They induce deaths in virally-infected cells and cancer cells / tumour cells.
IFN-α & IFN-β are released from virus-infected cells soon after infection. These cytokines stimulate the NK cells, quickly leading to rise in NK cells population. NK cells help contain the infection during the period required for generation of CTLs.

NOTE: Various non-specific (non-MHC dependent) cytotoxic cells (like NKC, Neutrophils, eosinophils, macrophages) can also kill target cells. They bind to Fc region of Ab on target cells & release lytic enzymes, perforin, or TNF that damages target cell membrane, a process called Antibody-dependent cell-mediated cytotoxicity (ADCC).