

**Real time visualization of cytotoxic T lymphocyte killing  
of vaccinia virus infected target cells**

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A primary function of CD8<sup>+</sup> T cells (T<sub>CD8+</sub>) is to kill virus-infected cells. Here we use live confocal laser scanning microscopy to visualize and characterize in real time the interaction of T<sub>CD8+</sub> with virus-infected cells *in vitro*. We find that contrary to the general notion that target cell lysis often occurs within 10 min of establishing firm contact with T<sub>CD8+</sub>, lysis occurs with a much greater delay, generally 45- to 120 min. During this time many T<sub>CD8+</sub> remain in contact with target cells and often the transfer of viral proteins and class I molecules to T<sub>CD8+</sub> can be detected. After the prolonged interaction, the impending death of the target cell is heralded by a rapid loss in mitochondrial membrane potential followed rapidly by the disintegration of the target cell resulting in the explosive release of a viral nuclear protein.