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| **Title: Cytokine detection and measurement with Multiplex Technologies in the context of a cytokine secretion assay**  |
| The cytokine release syndrome, also called cytokine storm, is an adverse drug reaction which can occur after treatment with biologics, as well as [adoptive T-cell therapies](https://en.wikipedia.org/wiki/Cancer_immunotherapy#Adoptive_T-cell_therapy). This adverse event is characterized by a strong systemic immune response due to the rapid release of several inflammatory mediators. Up to 150 different mediators can be involved in CRS, such as cytokines, chemokines, oxygen radicals, complement coagulation or factors. The release of these mediators is the result of an uncontrolled activation of several immune cell types, including monocytes, macrophages, T and B lymphocytes. Following the [TGN 1412](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/tgn1412) incident, testing for [cytokine](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/cytokine) release-inducing activity has been increasingly included in the nonclinical studies conducted to support clinical testing of [mAbs](https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/monoclonal-antibody) or other therapies. The test molecules’ potential to induce a cytokine release response can be assessed in vitro using a Whole Blood Assay (WBA) or a PBMC cell activation assay and measurement of a set of cytokines in the plasma or supernatant (TNF-α, IL-2, IL-8, IFN-γ, IL-6, IL- 10) with Multiplex Technologies. Certain cytokines, called early phase cytokines such as TNF-α, IL-2, IL-8, are first released. They are followed by a second wave of cytokines, called late phase cytokines, comprising of IFN-γ, IL-6, IL- 10. Also, the incubation time in this assay is critical to assess the cytokine of interest and assays should be customized considering the degree of knowledge of the mechanism of action of the product |