Adalimumab
Activity and Neutralizing Antibody
Reporter cells carry a TNF-alpha-inducible, NFkB-regulated, firefly luciferase reporter-gene construct. When TNF-α is added to the reporter cells, the reporter gene turns on and generates firefly luciferase. Firefly luciferase expression is normalized relative to the expression of the renilla luciferase gene, which is under the control of a constitutive promoter also carried by the same reporter cell.
Serum from a patient taking adalimumab is mixed with TNF-α and added to the reporter cells. Adalimumab blocks the activity of TNF-α. The amount of adalimumab present inversely correlates to the amount of luminescence.

The amount of adalimumab in serum can be calculated by comparing the level of TNF-α with calibrators of known adalimumab concentrations.
In the presence of neutralizing antibodies, the reporter gene is turned on despite the presence of exogenous drug in the assay.

Antibody titer is obtained by identifying the dilution point of patient’s serum where blocking of adalimumab activity is no longer observed.

Some patients develop antibodies to adalimumab. It is important to detect detrimental antibodies that neutralize the drug and not those that bind to the drug but do not block drug activity. In the presence of neutralizing antibodies, the reporter gene is turned on despite the presence of exogenous drug in the assay.


