

IL-10 (INTERLEUKIN 10)

The sensitivity and precision provided by the Singulex IL-10 assay allows differentiation of IL-10 concentrations in healthy and diseased states, enabling researchers to better elucidate the multiple roles of IL-10 in the modulation of innate immunity.

BIOLOGY AND DISEASES

Interleukin-10 (IL-10) is a cytokine with both stimulatory and suppressive effects on the immune system. The protein originates from several cell lines, including Th2 cells, mast cells, macrophages, monocytes and B-cells. Its main functions are to impede inflammatory responses and to inhibit synthesis of other pro-inflammatory cytokines, such as IL-2, IL-3, GM-CSF, IFN- γ and TNF- α . Besides its anti-inflammatory capabilities, IL-10 also regulates the production of natural killer cells and lymphocytes. Due to its multiple roles, proper function of IL-10 is required to maintain a healthy immune system. Improper function of IL-10 can result in disease development, as over-expression of IL-10 has been linked to lymphoma, whereas IL-10 deficiency has implications for psoriasis and Crohn's disease.

THERAPIES

The importance of IL-10 in the regulation of innate immunity makes it a prime candidate for therapeutic development. Animal studies that use recombinant human IL-10 to treat atherosclerosis have generated promising results, prompting further investigation into the cytokine's clinical utility. Ongoing clinical trials are examining the use of a recombinant human IL-10 for treating inflammatory disorders such as gastric cancer and Crohn's disease, and as a therapy for viral infections such as chronic hepatitis C and HIV.

UNMET NEED

Despite successful antipsoriatic effects with IL-10, clinical results for treatment of other disorders have been unsatisfactory. Therefore, improved therapeutic methods with greater efficacy will continue to be the focus of pharmaceutical development. In order for IL-10 to be a useful biomarker for inflammatory and immunodeficiency disorders, it is essential to have a high sensitivity assay that can establish IL-10 concentrations in both healthy and diseased subjects. Furthermore, a broad detection range will be useful when measuring IL-10 responses across a broad range of dosing studies.

SINGULEX ANSWER

Singulex's IL-10 assay, optimized for use on the Erenna System, can accurately quantify baseline and abnormally elevated IL-10 concentrations in plasma. Superior assay sensitivity enables detection of small, discreet concentration changes during disease development or following therapy. The Singulex IL-10 assay has an LLoQ of 1.6 pg/mL and a reading range of 0.46–2000 pg/mL. This will significantly improve the efficiency of clinical trials, especially when evaluating the effectiveness of IL-10 therapeutic compounds.

This assay will allow investigators to:

1. Measure the efficacy and dosing of therapeutics designed to modulate the concentrations of IL-10, particularly in treating inflammatory and immunodeficiency disorders.
2. Design robust clinical and preclinical studies when IL-10 concentration is used as a therapeutic endpoint.
3. Understand how IL-10 concentrations change in patients as they transition from a healthy to diseased state.

ERENNA TECHNOLOGY ACCESS PROGRAM.

Through the Erenna Technology Access Program (ETAP), Singulex offers an interactive, results-driven solution to biomarker challenges faced by the pharmaceutical industry during product development. Singulex assists the development programs of our ETAP collaborators by developing customer-driven assays and access to a menu of fully-validated assays. Participants in ETAP gain access to the Singulex Erenna Immunoassay System, our proven expertise developing high-value immunoassays and our world-class customer support. Together with Singulex, our ETAP collaborators are expanding the utility of protein biomarkers and using them as tools to measure disease progression, drug efficacy and toxicity.

TABLE 1: Analytical sensitivity of the Singulex IL-10 assay.

Lower Limit of Detection (LoD)	0.46 pg/mL
Lower Limit of Quantification (LLoQ)	1.6 pg/mL
Reading Range	0.46-2000 pg/mL



TABLE 2: IL-10 assay low-end standard curve data.

[IL-10] pg/mL	Detected Events	Std Dev	CV
100	4352	431	10%
50	2235	87	4%
25	1164	92	8%
12.5	645	4	1%
6.25	365	19	5%
3.13	236	30	13%
1.56	154	18	12%
0.78	109	7	7%
0.00	82	10	12%

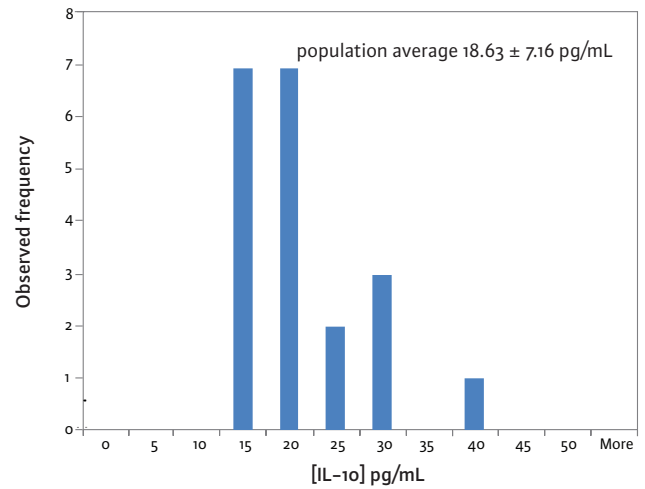


FIGURE 1: Plasma IL-10 concentration in healthy human subjects.

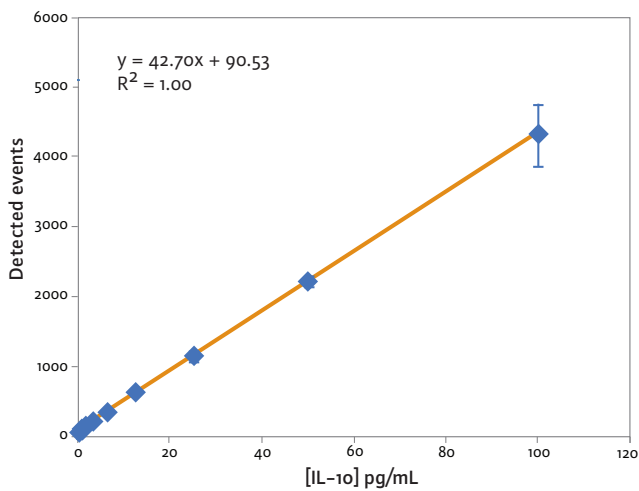


FIGURE 2: IL-10 low-end standard curve signal.

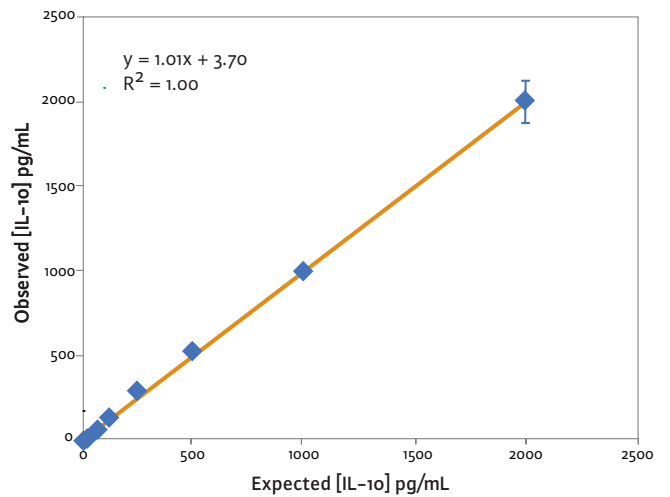


FIGURE 3: IL-10 assay curve fit.

These standard curves are for representational purposes only. A standard curve must be run with each assay.

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