



ELISA PRODUCT INFORMATION & MANUAL

Human IL6R ELISA Kit (Colorimetric) *NBP1-89870*

Enzyme-linked Immunosorbent Assay for quantitative detection. For research use only.

Not for diagnostic or therapeutic procedures.

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Novus kits are guaranteed for 6 months from date of receipt

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1 Intended Use

The human IL-6R ELISA is an enzyme-linked immunosorbent assay for the quantitative detection of human IL-6R. **The human IL-6R ELISA is for research use only. Not for diagnostic or therapeutic procedures.**

2 Summary

Interleukin-6 (IL-6) is a multifunctional cytokine involved in the regulation of the immune response, hematopoiesis and acute phase response. It has been recognized to be a member of the α -helical cytokine family.

IL-6 exerts its action via a cell surface receptor which consists of two subunits, an 80 kDa ligand binding subunit (gp80) of 468 amino acids and a 130 kDa signal transducing protein (gp130) of 896 amino acid residues. The cDNAs of both proteins have been cloned. Both subunits belong to the recently recognized hematopoietic receptor superfamily which includes many cytokine receptors. Characterisation of the extracellular portion of the 80 kDa IL-6 receptor revealed the existence of a single immunoglobulin-like domain in the NH₂-terminal of the extracellular region, which does not contribute to ligand binding. The remainder of the extracellular domain however is essential for low affinity ligand binding, which consecutively triggers the association of the receptor and gp130 thus forming a high affinity binding site for IL-6.

For many cytokine receptors soluble forms have been demonstrated. These soluble molecules have been observed to retain ligand binding capacity and therefore compete with the membrane receptors, thus acting as antagonists. A soluble form of the human gp80 protein has been detected in serum and urine samples. This 55 kDa protein representing the extracellular portion of gp80 is generated by shedding, a process that seems to be controlled by protein kinase C. It is still functional, indicating that soluble gp80 plays a biological role in promoting IL-6 activity. So far, the soluble IL-6 receptor is unique in acting as an agonist together with its ligand.

The role of soluble IL-6R as a marker for a number of pathological situations has been demonstrated.

- **HIV:** IL-6R levels are increased in patients with human immunodeficiency virus infection.
- **Multiple myeloma (MM), monoclonal gammopathy of undertermined significance (MGUS):** Serum soluble IL-6R levels are significantly increased in individuals with MGUS and in patients with MM as compared to age-related healthy individuals. These levels are independent of previously recognized prognostic factors in MM, especially serum IL-6 levels and myeloma cell mass.
- **Hodgkin's Disease (HD):** Elevated levels of IL-6 receptor expression in the mixed cellularity subtype of HD have been demonstrated.

3 Principles of the Test

An anti-human IL-6R coating antibody is adsorbed onto microwells.

Human IL-6R present in the sample or standard binds to antibodies adsorbed to the microwells. A HRP-conjugated anti-human IL-6R antibody is added and binds to human IL-6R captured by the first antibody.

Following incubation unbound HRP-conjugated anti-human IL-6R is removed during a wash step, and substrate solution reactive with HRP is added to the wells.

A coloured product is formed in proportion to the amount of human IL-6R present in the sample or standard. The reaction is terminated by addition of acid and absorbance is measured at 450 nm. A standard curve is prepared from 7 human IL-6R standard dilutions and human IL-6R concentration determined.

Figure 1

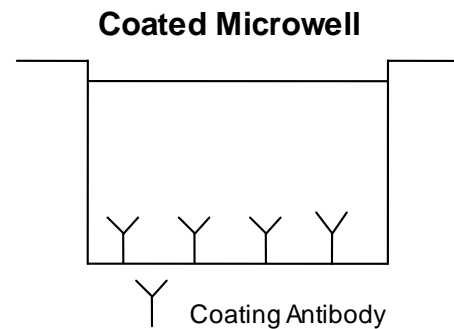


Figure 2

First Incubation

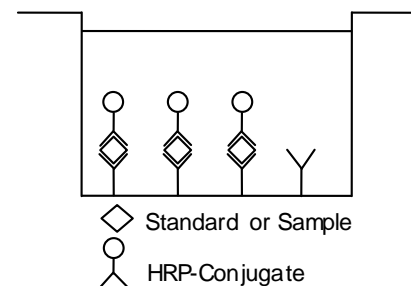


Figure 3

Second Incubation

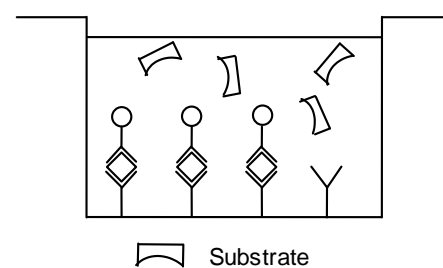
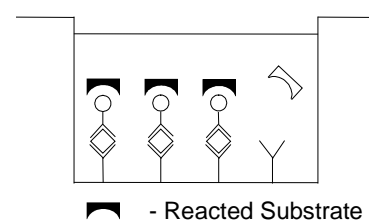


Figure 4



4 Reagents Provided

4.1 Reagents for human IL-6R ELISA NBP1-89870(96 tests)

- 1 aluminium pouch with a **Microwell Plate coated** with monoclonal antibody to human IL-6R
- 2 vials (5 µl) **HRP-Conjugate** anti-human IL-6R monoclonal antibody
- 2 vials human IL-6R **Standard** lyophilized, 5 ng/ml upon reconstitution
- 1 vial (5 ml) **IL-6R Assay Buffer Concentrate 20x**
(PBS with 1% Tween 20, 10% BSA)
- 1 bottle (50 ml) **Wash Buffer Concentrate 20x**
(PBS with 1% Tween 20)
- 1 vial (15 ml) **Substrate Solution** (tetramethyl-benzidine)
- 1 vial (15 ml) **Stop Solution** (1M Phosphoric acid)
- 2 **Adhesive Films**

4.2 Reagents for human IL-6R ELISA NBP1-89870 (10x96 tests)

- 10 aluminium pouches with a **Microwell Plate coated** with monoclonal antibody to human IL-6R
- 10 vials (5 µl) **HRP-Conjugate** anti-human IL-6R monoclonal antibody
- 10 vials human IL-6R **Standard** lyophilized, 5 ng/ml upon reconstitution
- 6 vials (5 ml) **IL-6R Assay Buffer Concentrate 20x**
(PBS with 1% Tween 20, 10% BSA)
- 3 bottles (50 ml) **Wash Buffer Concentrate 20x**
(PBS with 1% Tween 20)
- 10 vials (15 ml) **Substrate Solution** (tetramethyl-benzidine)
- 1 vial (100 ml) **Stop Solution** (1M Phosphoric acid)
- 10 **Adhesive Films**

5 Storage Instructions – ELISA Kit

Store kit reagents between 2° and 8°C. Immediately after use remaining reagents should be returned to cold storage (2° to 8°C). Expiry of the kit and reagents is stated on labels.

Expiry of the kit components can only be guaranteed if the components are stored properly, and if, in case of repeated use of one component, this reagent is not contaminated by the first handling.

6 Specimen Collection and Storage Instructions

Cell culture supernatant, serum, plasma (EDTA, citrate, heparin), amniotic fluid, and urine were tested with this assay. Other biological samples might be suitable for use in the assay. Remove serum or plasma from the clot or cells as soon as possible after clotting and separation.

Pay attention to a possible “**Hook Effect**” due to high sample concentrations (see chapter 11).

Samples containing a visible precipitate must be clarified prior to use in the assay. Do not use grossly hemolyzed or lipemic specimens.

Samples should be aliquoted and must be stored frozen at -20°C to avoid loss of bioactive human IL-6R. If samples are to be run within 24 hours, they may be stored at 2° to 8°C (for sample stability refer to 13.5).

Avoid repeated freeze-thaw cycles. Prior to assay, the frozen sample should be brought to room temperature slowly and mixed gently.

7 Materials Required But Not Provided

- 5 ml and 10 ml graduated pipettes
- 5 μl to 1000 μl adjustable single channel micropipettes with disposable tips
- 50 μl to 300 μl adjustable multichannel micropipette with disposable tips
- Multichannel micropipette reservoir
- Beakers, flasks, cylinders necessary for preparation of reagents
- Device for delivery of wash solution (multichannel wash bottle or automatic wash system)
- Microwell strip reader capable of reading at 450 nm (620 nm as optional reference wave length)
- Glass-distilled or deionized water
- Statistical calculator with program to perform regression analysis

8 Precautions for Use

- All chemicals should be considered as potentially hazardous. We therefore recommend that this product is handled only by those persons who have been trained in laboratory techniques and that it is used in accordance with the principles of good laboratory practice. Wear suitable protective clothing such as laboratory overalls, safety glasses and gloves. Care should be taken to avoid contact with skin or eyes. In the case of contact with skin or eyes wash immediately with water. See material safety data sheet(s) and/or safety statement(s) for specific advice.
- Reagents are intended for research use only and are not for use in diagnostic or therapeutic procedures.
- Do not mix or substitute reagents with those from other lots or other sources.
- Do not use kit reagents beyond expiration date on label.
- Do not expose kit reagents to strong light during storage or incubation.
- Do not pipette by mouth.
- Do not eat or smoke in areas where kit reagents or samples are handled.
- Avoid contact of skin or mucous membranes with kit reagents or specimens.
- Rubber or disposable latex gloves should be worn while handling kit reagents or specimens.
- Avoid contact of substrate solution with oxidizing agents and metal.
- Avoid splashing or generation of aerosols.
- In order to avoid microbial contamination or cross-contamination of reagents or specimens which may invalidate the test use disposable pipette tips and/or pipettes.
- Use clean, dedicated reagent trays for dispensing the conjugate and substrate reagent.

- Exposure to acid inactivates the conjugate.
- Glass-distilled water or deionized water must be used for reagent preparation.
- Substrate solution must be at room temperature prior to use.
- Decontaminate and dispose specimens and all potentially contaminated materials as they could contain infectious agents. The preferred method of decontamination is autoclaving for a minimum of 1 hour at 121.5°C.
- Liquid wastes not containing acid and neutralized waste may be mixed with sodium hypochlorite in volumes such that the final mixture contains 1.0% sodium hypochlorite. Allow 30 minutes for effective decontamination. Liquid waste containing acid must be neutralized prior to the addition of sodium hypochlorite.

9 Preparation of Reagents

Buffer Concentrates should be brought to room temperature and should be diluted before starting the test procedure.

If crystals have formed in the **Buffer Concentrates**, warm them gently until they have completely dissolved.

9.1 Wash Buffer (1x)

Pour entire contents (50 ml) of the **Wash Buffer Concentrate (20x)** into a clean 1000 ml graduated cylinder. Bring to final volume of 1000 ml with glass-distilled or deionized water.

Mix gently to avoid foaming.

Transfer to a clean wash bottle and store at 2° to 25°C. Please note that Wash Buffer (1x) is stable for 30 days.

Wash Buffer (1x) may also be prepared as needed according to the following table:

Number of Strips	Wash Buffer Concentrate (20x) (ml)	Distilled Water (ml)
1 - 6	25	475
1 - 12	50	950

9.2 IL-6R Assay Buffer (1x)

Pour the entire contents (5 ml) of the **IL-6R Assay Buffer Concentrate (20x)** into a clean 100 ml graduated cylinder. Bring to final volume of 100 ml with distilled water. Mix gently to avoid foaming.

Store at 2° to 8°C. Please note that the IL-6R Assay Buffer (1x) is stable for 30 days.

IL-6R Assay Buffer (1x) may also be prepared as needed according to the following table:

Number of Strips	IL-6R Assay Buffer Concentrate (20x)(ml)	Distilled Water (ml)
1 - 6	2.5	47.5
1 - 12	5.0	95.0

9.3 HRP-Conjugate

Please note that the HRP-Conjugate should be used within 30 minutes after dilution.

Dilute the **HRP-Conjugate** 1:100 just prior to use by adding 495 µl IL-6R Assay Buffer (1x) to the tube containing the HRP-Conjugate concentrate. Mix the contents of the tube well.

Make a further 1:100 dilution with IL-6R Assay Buffer (1x) in a clean plastic tube.

The second dilution (1:100) of the HRP-Conjugate may be prepared as needed according to the following table:

Number of Strips	Prediluted (1:100) HRP-Conjugate (ml)	IL-6R Assay Buffer (1x) (ml)
1 - 6	0.03	2.97
1 - 12	0.06	5.94

After usage remaining 1:100 prediluted HRP-Conjugate cannot be stored and has to be discarded.

9.4 Human IL-6R Standard

Reconstitute **human IL-6R standard** by addition of distilled water. Reconstitution volume is stated on the label of the standard vial. Swirl or mix gently to insure complete and homogeneous solubilization (concentration of reconstituted standard = 5 ng/ml). Allow the standard to reconstitute for 10-30 minutes. Mix well prior to making dilutions.

After usage remaining standard cannot be stored and has to be discarded.

Standard dilutions can be prepared directly on the microwell plate (see 10.d) or alternatively in tubes (see 9.4.1).

9.4.1 External Standard Dilution

Label 6 tubes, one for each standard point.

S2, S3, S4, S5, S6, S7

Then prepare 1:2 serial dilutions for the standard curve as follows:
Pipette 225 μ l of IL-6R Assay Buffer (1x) into tubes S2 – S7.

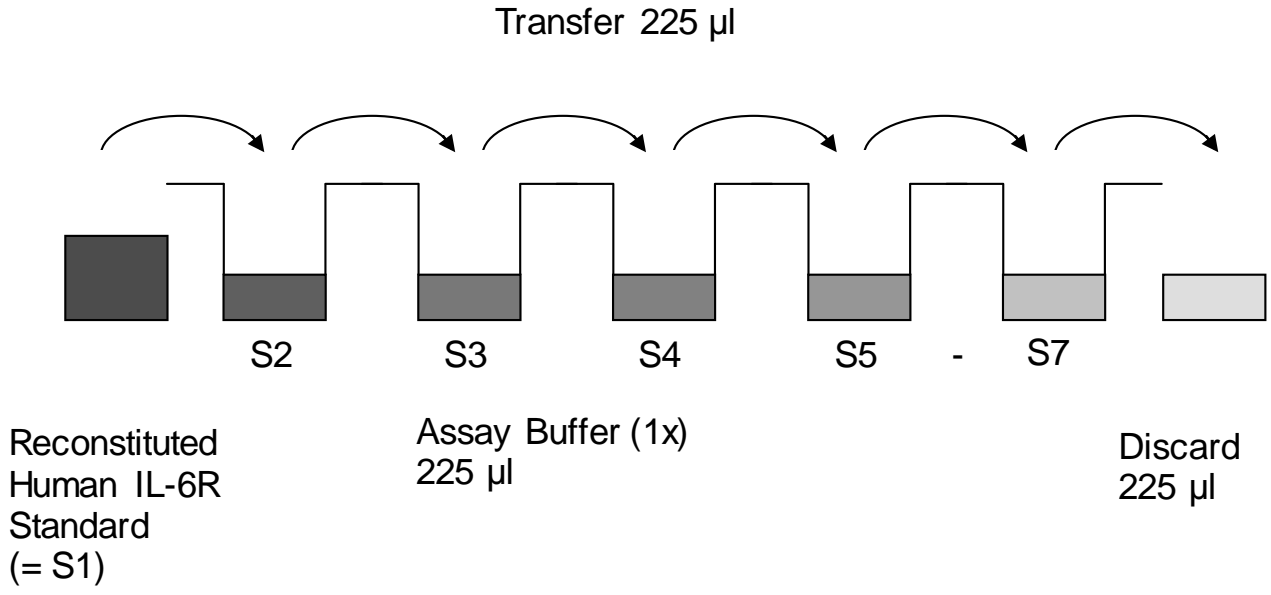
Pipette 225 μ l of reconstituted standard (serves as the highest standard S1, concentration of standard 1 = 5 ng/ml) into the first tube, labelled S2, and mix (concentration of standard 2 = 2.5 ng/ml).

Pipette 225 μ l of this dilution into the second tube, labelled S3, and mix thoroughly before the next transfer.

Repeat serial dilutions 4 more times thus creating the points of the standard curve (see Figure 5).

IL-6R Assay Buffer (1x) serves as blank.

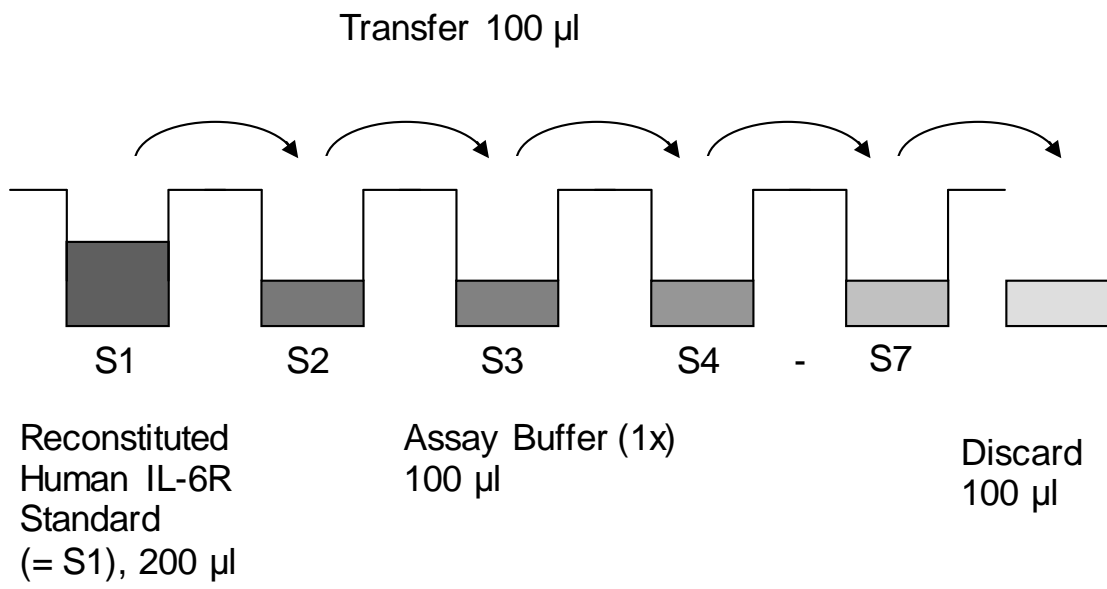
Figure 5



10 Test Protocol

- a. Predilute samples before starting with the test procedure. Dilute serum and plasma samples 1:50 with IL-6R Assay Buffer (1x) according to the following scheme:
10 µl sample + 490µl IL-6R Assay Buffer (1x)
- b. Determine the number of microwell strips required to test the desired number of samples plus appropriate number of wells needed for running blanks and standards. Each sample, standard, blank and optional control sample should be assayed in duplicate. Remove extra microwell strips from holder and store in foil bag with the desiccant provided at 2°-8°C sealed tightly.
- c. Wash the microwell strips twice with approximately 400 µl **Wash Buffer** per well with thorough aspiration of microwell contents between washes. Allow the Wash Buffer to sit in the wells for about **10 – 15 seconds** before aspiration. Take care not to scratch the surface of the microwells.
After the last wash step, empty wells and tap microwell strips on absorbent pad or paper towel to remove excess Wash Buffer. Use the microwell strips immediately after washing. Alternatively microwell strips can be placed upside down on a wet absorbent paper for not longer than 15 minutes. **Do not allow wells to dry.**
- d. **Standard dilution on the microwell plate** (Alternatively the standard dilution can be prepared in tubes - see 9.4.1):
Add 100 µl of IL-6R Assay Buffer (1x) in duplicate to **standard wells** B1/2- G1/2, leaving A1/A2 empty. Pipette 200 µl of prepared **standard** (see Preparation of Standard 9.4, concentration = 5.00 ng/ml) in duplicate into well A1 and A2 (see Table 1). Transfer 100 µl to wells B1 and B2. Mix the contents of wells B1 and B2 by repeated aspiration and ejection, and transfer 100 µl to wells C1 and C2, respectively. (see Figure 6). Take care not to scratch the inner surface of the microwells. Continue this procedure 4 times, creating two rows of human IL-6R standard dilutions ranging from 5.00 to 0.08 ng/ml. Discard 100 µl of the contents from the last microwells (G1, G2) used.

Figure 6



In case of an **external standard dilution** (see 9.4.1), pipette 100 μ l of these standard dilutions (S1 - S7) in the standard wells according to Table 1.

Table 1

Table depicting an example of the arrangement of blanks, standards and samples in the microwell strips:

	1	2	3	4
A	Standard 1 (5.00 ng/ml)	Standard 1 (5.00 ng/ml)	Sample 1	Sample 1
B	Standard 2 (2.50 ng/ml)	Standard 2 (2.50 ng/ml)	Sample 2	Sample 2
C	Standard 3 (1.25 ng/ml)	Standard 3 (1.25 ng/ml)	Sample 3	Sample 3
D	Standard 4 (0.63 ng/ml)	Standard 4 (0.63 ng/ml)	Sample 4	Sample 4
E	Standard 5 (0.31 ng/ml)	Standard 5 (0.31 ng/ml)	Sample 5	Sample 5
F	Standard 6 (0.16 ng/ml)	Standard 6 (0.16 ng/ml)	Sample 6	Sample 6
G	Standard 7 (0.08 ng/ml)	Standard 7 (0.08 ng/ml)	Sample 7	Sample 7
H	Blank	Blank	Sample 8	Sample 8

- e. Add 100 µl of **IL-6R Assay Buffer (1x)** in duplicate to the **blank wells**.
- f. Add 80 µl of **IL-6R Assay Buffer (1x)** to the **sample wells**.
- g. Add 20 µl of each **sample** in duplicate to the **sample wells**.
- h. Prepare **HRP-Conjugate** (see Preparation of HRP-Conjugate 9.3).
- i. Add 50 µl of **HRP-Conjugate** to all wells.
- j. Cover with an adhesive film and incubate at room temperature (18 to 25°C) for 2 hours, if available on a microplate shaker set at 400 rpm.
- k. Remove adhesive film and empty wells. **Wash** microwell strips 3 times according to point c. of the test protocol. Proceed immediately to the next step.
- l. Pipette 100 µl of **TMB Substrate Solution** to all wells.
- m. Incubate the microwell strips at room temperature (18° to 25°C) for about 10 min. Avoid direct exposure to intense light.

The colour development on the plate should be monitored and the substrate reaction stopped (see next point of this protocol) before positive wells are no longer properly recordable. Determination of the ideal time period for colour development has to be done individually for each assay.

It is recommended to add the stop solution when the highest standard has developed a dark blue colour. Alternatively the colour development can be monitored by the ELISA reader at 620 nm. The substrate reaction should be stopped as soon as Standard 1 has reached an OD of 0.9 – 0.95.

- n. Stop the enzyme reaction by quickly pipetting 100 µl of **Stop Solution** into each well. It is important that the Stop Solution is spread quickly and uniformly throughout the microwells to completely inactivate the enzyme. Results must be read immediately after the Stop Solution is added or within one hour if the microwell strips are stored at 2 - 8°C in the dark.

- o. Read absorbance of each microwell on a spectro-photometer using 450 nm as the primary wave length (optionally 620 nm as the reference wave length; 610 nm to 650 nm is acceptable). Blank the plate reader according to the manufacturer's instructions by using the blank wells. Determine the absorbance of both the samples and the standards.

Note: In case of incubation without shaking the obtained O.D. values may be lower than indicated below. Nevertheless the results are still valid.

11 Calculation of Results

- Calculate the average absorbance values for each set of duplicate standards and samples. Duplicates should be within 20 per cent of the mean value.
- Create a standard curve by plotting the mean absorbance for each standard concentration on the ordinate against the human IL-6R concentration on the abscissa. Draw a best fit curve through the points of the graph (a 5-parameter curve fit is recommended).
- To determine the concentration of circulating human IL-6R for each sample, first find the mean absorbance value on the ordinate and extend a horizontal line to the standard curve. At the point of intersection, extend a vertical line to the abscissa and read the corresponding human IL-6R concentration.
- **If instructions in this protocol have been followed, samples have been diluted 1:250 (1:50 external predilution, 1:5 dilution on the plate: 20 µl sample + 80 µl IL-6R Assay Buffer (1x)) and the concentration read from the standard curve must be multiplied by the dilution factor (x 250).**
- **Calculation of samples with a concentration exceeding standard 1 will result in incorrect, low human IL-6R levels (Hook Effect). Such samples require further external predilution according to expected human IL-6R values with IL-6R Assay Buffer (1x) in order to precisely quantitate the actual human IL-6R level.**
- It is suggested that each testing facility establishes a control sample of known human IL-6R concentration and runs this additional control with each assay. If the values obtained are not within the expected range of the control, the assay results may be invalid.
- A representative standard curve is shown in Figure 7. This curve cannot be used to derive test results. Each laboratory must prepare a standard curve for each group of microwell strips assayed.

Figure 7

Representative standard curve for human IL-6R ELISA. Human IL-6R was diluted in serial 2-fold steps in IL-6R Assay Buffer (1x). Do not use this standard curve to derive test results. A standard curve must be run for each group of microwell strips assayed.

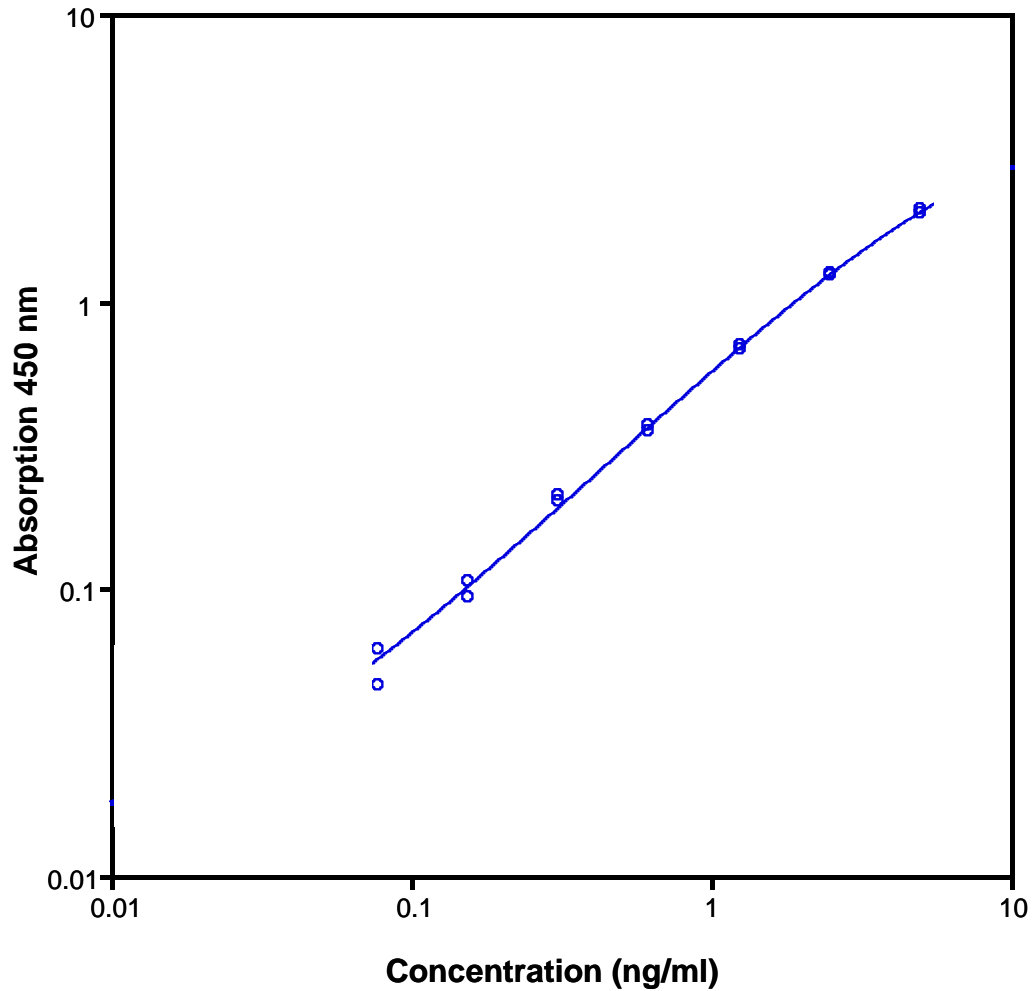


Table 2

Typical data using the human IL-6R ELISA

Measuring wavelength: 450 nm

Reference wavelength: 620 nm

Standard	Human IL-6R Concentration (ng/ml)	O.D. at 450 nm	Mean O.D. at 450 nm	C.V. (%)
1	5.00	2.072 2.000	2.036	2.5
2	2.50	1.243 1.231	1.237	0.7
3	1.25	0.696 0.675	0.686	2.2
4	0.63	0.368 0.350	0.359	3.5
5	0.31	0.200 0.210	0.205	3.4
6	0.16	0.105 0.093	0.099	8.6
7	0.08	0.061 0.046	0.052	8.2
Blank	0	0.006 0.007	0.007	7.7

The OD values of the standard curve may vary according to the conditions of assay performance (e.g. operator, pipetting technique, washing technique or temperature effects). Furthermore shelf life of the kit may affect enzymatic activity and thus colour intensity. Values measured are still valid.

12 Limitations

- Since exact conditions may vary from assay to assay, a standard curve must be established for every run.
- Bacterial or fungal contamination of either screen samples or reagents or cross-contamination between reagents may cause erroneous results.
- Disposable pipette tips, flasks or glassware are preferred, reusable glassware must be washed and thoroughly rinsed of all detergents before use.
- Improper or insufficient washing at any stage of the procedure will result in either false positive or false negative results. Empty wells completely before dispensing fresh wash solution, fill with Wash Buffer as indicated for each wash cycle and do not allow wells to sit uncovered or dry for extended periods.
- The use of radioimmunotherapy has significantly increased the number of patients with human anti-mouse IgG antibodies (HAMA). HAMA may interfere with assays utilizing murine monoclonal antibodies leading to both false positive and false negative results. Serum samples containing antibodies to murine immunoglobulins can still be analysed in such assays when murine immunoglobulins (serum, ascitic fluid, or monoclonal antibodies of irrelevant specificity) are added to the sample.

13 Performance Characteristics

13.1 Sensitivity

The limit of detection of human IL-6R defined as the analyte concentration resulting in an absorbance significantly higher than that of the dilution medium (mean plus 2 standard deviations) was determined to be 0.01 ng/ml (mean of 6 independent assays).

13.2 Reproducibility

13.2.1 Intra-assay

Reproducibility within the assay was evaluated in 3 independent experiments. Each assay was carried out with 6 replicates of 8 serum samples containing different concentrations of human IL-6R. 2 standard curves were run on each plate. Data below show the mean human IL-6R concentration and the coefficient of variation for each sample (see Table 3). The calculated overall intra-assay coefficient of variation was 1.7%.

Table 3

The mean human IL-6R concentration and the coefficient of variation for each sample

Sample	Experiment	Mean Human IL-6R Concentration (ng/ml)	Coefficient of Variation (%)
1	1	196.6	0.9
	2	192.3	1.8
	3	188.5	1.9
2	1	200.7	0.1
	2	201.6	2.0
	3	196.3	1.6
3	1	169.6	0.4
	2	168.0	0.4
	3	164.4	0.9
4	1	132.8	1.8
	2	137.7	0.7
	3	134.2	2.6
5	1	180.0	1.6
	2	182.8	0.5
	3	177.7	1.5
6	1	137.2	1.0
	2	137.8	4.2
	3	133.4	1.4
7	1	94.7	2.2
	2	105.4	3.3
	3	96.4	4.8
8	1	88.2	0.8
	2	87.8	3.7
	3	90.4	2.1

13.2.2 Inter-assay

Assay to assay reproducibility within one laboratory was evaluated in 3 independent experiments. Each assay was carried out with 6 replicates of 8 serum samples containing different concentrations of human IL-6R. 2 standard curves were run on each plate. Data below show the mean human IL-6R concentration and the coefficient of variation calculated on 18 determinations of each sample (see Table 4). The calculated overall inter-assay coefficient of variation was 2.2%.

Table 4

The mean human IL-6R concentration and the coefficient of variation of each sample

Sample	Mean Human IL-6R Concentration (ng/ml)	Coefficient of Variation (%)
1	192.4	2.1
2	199.5	1.4
3	167.3	1.6
4	134.9	1.9
5	180.1	1.4
6	136.1	1.8
7	98.8	5.8
8	88.8	1.6

13.3 Spike Recovery

The spike recovery was evaluated by spiking 4 levels of human IL-6R into different pooled normal human serum samples. Recoveries were determined in 3 independent experiments with 4 replicates each. The amount of endogenous human IL-6R in unspiked serum was subtracted from the spike values.

The recovery ranged from 94% to 108% with an overall mean recovery of 101%.

13.4 Dilution Parallelism

4 serum samples with different levels of human IL-6R were analysed at serial 2 fold dilutions with 4 replicates each.

The recovery ranged from 95% to 104% with an overall recovery of 99% (see Table 5).

Table 5

Sample	Dilution	Expected Human IL-6R Concentration (ng/ml)	Observed Human IL-6R Concentration (ng/ml)	Recovery of Expected Human IL-6R Concentration (%)
1	1:250	-	203.2	-
	1:500	101.6	97.4	95.9
	1:1000	50.8	50.0	98.5
	1:2000	25.4	24.0	94.6
2	1:250	-	179.4	-
	1:500	89.7	85.6	95.4
	1:1000	44.8	44.8	99.9
	1:2000	22.4	21.5	95.8
3	1:250	-	205.0	-
	1:500	102.5	99.5	97.1
	1:1000	51.2	53.3	104.1
	1:2000	25.6	26.0	101.6
4	1:250	-	141.1	-
	1:500	70.7	71.1	100.5
	1:1000	35.4	36.0	101.8
	1:2000	17.7	17.2	97.6

13.5 Sample Stability

13.5.1 Freeze-Thaw Stability

Aliquots of serum samples (spiked or unspiked) were stored at -20°C and thawed 5 times, and the human IL-6R levels determined. There was no significant loss of human IL-6R immunoreactivity detected by freezing and thawing.

13.5.2 Storage Stability

Aliquots of serum samples (spiked or unspiked) were stored at -20°C, 2-8°C, room temperature (RT) and at 37°C, and the human IL-6R level determined after 24, 48 and 96 h. There was no significant loss of human IL-6R immunoreactivity detected during storage under above conditions.

13.6 Comparison of Serum and Plasma

From 22 individuals, serum as well as EDTA, citrate, and heparin plasma obtained at the same time point, was evaluated. All these blood preparations are suitable for human IL-6R determinations. It is nevertheless highly recommended to assure the uniformity of blood preparations.

13.7 Specificity

The interference of circulating factors of the immune system was evaluated by spiking these proteins at physiologically relevant concentrations into a human IL-6R positive serum. There was no crossreactivity detected.

13.8 Expected Values

A panel of 22 serum samples from randomly selected apparently healthy donors (males and females) was tested for human IL-6R. The detected human IL-6R levels ranged between 65.9 and 202.7 ng/ml with a mean level of 105.2 ng/ml and a standard deviation of 29.7 ng/ml.

14 Reagent Preparation Summary

14.1 Wash Buffer (1x)

Add **Wash Buffer Concentrate 20x** (50 ml) to 950 ml distilled water.

Number of Strips	Wash Buffer Concentrate (ml)	Distilled Water (ml)
1 - 6	25	475
1 - 12	50	950

14.2 IL-6R Assay Buffer (1x)

Add **IL-6R Assay Buffer Concentrate 20x** (5 ml) to 95 ml distilled water.

Number of Strips	IL-6R Assay Buffer Concentrate (ml)	Distilled Water (ml)
1 - 6	2.5	47.5
1 - 12	5.0	95.0

14.3 HRP-Conjugate

Make a 1:100 predilution of the **HRP-Conjugate** in 495 μ l IL-6R Assay Buffer (1x).

Make a further 1:100 dilution in IL-6R Assay Buffer (1x):

Number of Strips	Prediluted (1:100) HRP-Conjugate (ml)	IL-6R Assay Buffer (1x) (ml)
1 - 6	0.03	2.97
1 - 12	0.06	5.94

14.4 Human IL-6R Standard

Reconstitute lyophilized **human IL-6R standard** with distilled water. (Reconstitution volume is stated on the label of the standard vial.)

15 Test Protocol Summary

1. Predilute serum and plasma samples with IL-6R Assay Buffer (1x) 1:50.
2. Determine the number of microwell strips required.
3. Wash microwell strips twice with Wash Buffer.
4. Standard dilution on the microwell plate: Add 100 µl IL-6R Assay Buffer (1x), in duplicate, to all standard wells leaving the first wells empty. Pipette 200 µl prepared standard into the first wells and create standard dilutions by transferring 100 µl from well to well. Discard 100 µl from the last wells.
Alternatively external standard dilution in tubes (see 9.4.1): Pipette 100 µl of these standard dilutions in the microwell strips.
5. Add 100 µl IL-6R Assay Buffer (1x), in duplicate, to the blank wells.
6. Add 80 µl IL-6R Assay Buffer (1x) to sample wells.
7. Add 20 µl sample in duplicate, to designated sample wells.
8. Prepare HRP-Conjugate.
9. Add 50 µl HRP-Conjugate to all wells.
10. Cover microwell strips and incubate 2 hours at room temperature (18° to 25°C).
11. Empty and wash microwell strips 3 times with Wash Buffer.
12. Add 100 µl of TMB Substrate Solution to all wells.
13. Incubate the microwell strips for about 10 minutes at room temperature (18° to 25°C).
14. Add 100 µl Stop Solution to all wells.
15. Blank microwell reader and measure colour intensity at 450 nm.

Note: If instructions in this protocol have been followed samples have been diluted 1:250 (1:50 external predilution, 1:5 dilution on the plate: 20 µl sample + 80 µl IL-6R Assay Buffer (1x)), the concentration read from the standard curve must be multiplied by the dilution factor (x 250).