PRODUCT INFORMATION & MANUAL

Human IL-17 Valukine™ ELISA

VAL129

For the quantitative determination of natural and recombinant human IL-17 concentrations

For research use only.
Not for diagnostic or therapeutic procedures.

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Please refer to the kit label for expiry date.
Novus kits are guaranteed for 3 months from date of receipt

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I. BACKGROUND

Human Interleukin 17 (IL-17), also known as IL-17A and CTLA-8, is a 15-20 kDa, variably glycosylated polypeptide that belongs to the IL-17 family of cytokines (1-5). Human IL-17/17A is synthesized as a 155 amino acid (aa) precursor that contains a 23 aa signal sequence and a 133 aa mature region that possesses a cysteine-knot fold (4-6). In both human and mouse, there is one conserved N-linked glycosylation site that likely contributes 5 kDa to its native molecular weight. IL-17A forms both a 32-38 kDa disulfide-linked homodimer, and a 40-45 kDa covalent heterodimer with IL-17F (7-9). Most secreted IL-17A is in the form of the IL-17A: F heterodimer, however, the IL-17A: A homodimer is the most bioactive of the two forms (8). Mature human IL-17A is 61%, 74%, and 99% aa identical to mouse, porcine, and chimpanzee IL-17A, respectively (10-12). Mammalian cells known to produce IL-17 are the $CD4^+$ Th17 T cells, Paneth cells, $GR1^+CD11b^+$ myeloid suppressor cells, $CD27^-$γδ T cells, $CD1^+NK1.1^-$iNKT cells, and $CD3^-CD4^+$ LTi-like cells (9, 13-17).

A high affinity receptor for human IL-17 has been reported, and appears to be a heteromultimer of IL-17RA and IL-17RC, likely in a 2:1 ratio (1, 18). IL-17RA is a 130 kDa, type I transmembrane glycoprotein that bears no resemblance to members of the cytokine, TNF or immunoglobulin receptor superfamily (2, 10, 15). IL-17RC is also a type I transmembrane protein, approximately 90-95 kDa in size, that shares less than 30% aa identity with IL-17RA (19, 20). Both receptors are needed for IL-17A and IL-17A: F activity. The two receptors appear to form a functional association following ligand binding to IL-17RA (1, 21, 22).

IL-17 is best known for its participation in the recruitment and survival of neutrophils (14, 15, 23, 24, 25). Its induction was initially described to be the result of antigen stimulation of dendritic cells, resulting in IL-23 secretion. In a T cell receptor-independent event, IL-23 induces T cell production of IL-17 (14). Once secreted, IL-17 in the bone marrow would seem to induce stromal/fibroblast expression of both G-CSF and stem cell factor (membrane form), an effect that increases polymorphonuclear neutrophils (PMN) differentiation and production. IL-17 may complement this by directly blocking neutrophil apoptosis, promoting greater circulating PMN numbers (23). In the tissues, IL-17 would also seem to promote neutrophil extravasation, principally through its effects on macrophages and endothelial cells (EC). On macrophages, IL-17 induces TNF-α, IL-1β and IL-6 production (26). TNF-α and IL-1β then act on local ECs to induce G-CSF secretion, an effect that is potentiated by IL-17 (27). IL-17 further contributes to PMN influx by inducing EC CXC chemokine release and NO production, which may increase vascular permeability (14, 28). IL-17 effects are not limited to inflammation. In synovial joints, IL-17 upregulates RANKL expression on osteoblasts. This provides a stimulus for osteoclast formation and subsequent bone resorption (24). In conjunction with IL-4 and CD40L, IL-17A also promotes the generation of IgE secreting cells (29). And in white fat, IL-17A inhibits adipocyte differentiation from preadipocytes, and impairs glucose uptake by mature adipocytes (30).

II. OVERVIEW

A. PRINCIPLE OF THE ASSAY

This assay employs the quantitative sandwich enzyme immunoassay technique. An antibody specific for human IL-17 has been pre-coated onto a microplate. Standards and samples are pipetted into the wells and any IL-17 present is bound by the immobilized antibody. After washing away any unbound substances, a biotin-linked detect antibody specific for human IL-17 are pipetted into the wells. After washing away any unbound substances, streptavidin-HRP is added. Following a wash to remove any unbound antibody-enzyme reagent, a substrate solution is added to the wells and color develops in proportion to the amount of IL-17 bound in the initial step. The color development is stopped, and the intensity of the color is measured.

B. LIMITATIONS OF THE PROCEDURE

- **FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.**
- This kit is suitable for cell culture supernate and serum.
- The kit should not be used beyond the expiration date on the kit label.
- Do not mix or substitute reagents with those from other lots or sources.
- If samples generate values higher than the highest standard, dilute the samples with Calibrator Diluent and repeat the assay.
- Any variation in operator, pipetting technique, washing technique, incubation time or temperature, and kit age can cause variation in binding.

III. ADVANTAGES

A. PRECISION

Intra-assay Precision (Precision within an assay)

Three samples were tested twenty times on one plate to assess intra-assay precision.

Inter-assay Precision (Precision between assays)

Three samples were tested in twenty separate assays to assess inter-assay precision.

CELL CULTURE SUPERNATE / SERUM

	Intra-assay Precision			**Inter-assay Precision**		
Sample	1	2	3	1	2	3
Mean (pg/mL)	24.0	102.9	378.4	25.4	103.7	383.1
Standard Deviation	1.1	3.0	6.6	1.1	3.3	20.2
CV%	4.5	2.9	1.7	4.3	3.2	5.3

B. RECOVERY

The recovery of human IL-17 spiked to three levels throughout the range of the assay in cell culture media was evaluated. The recovery ranged from 93.4-100.4% with an average of 98.0%.

The recovery of human IL-17 spiked to three levels throughout the range of the assay in human serum was evaluated. The recovery ranged from 85.4-91.5% with an average of 89.5%.

C. SENSITIVITY

The minimum detectable dose (MDD) of IL-17 is typically less than 2.93 pg/mL.

The MDD was determined by adding two standard deviations to the mean optical density value of twenty zero standard replicates and calculating the corresponding concentration.

D. CALIBRATION

This immunoassay is calibrated against a highly purified *E.coli*-expressed recombinant human IL-17 produced at R&D Systems®.

E. LINEARITY

To assess the linearity of the assay, different samples containing or spiked with high concentrations of IL-17 and diluted with Calibrator Diluent 1× to produce samples with values within the dynamic range of the assay.

Dilution	Average % of Expected	Range (%)
1:2	106.5	103.6-109.1
1:4	111.6	105.8-117.5
1:8	108.8	107.6-110.7
1:16	91.9	83.9-107.8

F. SAMPLE VALUES

Five serum samples were evaluated for the presence of IL-17 in this assay. All samples measured less than the lowest human IL-17 standard, 15.6 pg/mL.

G. SPECIFICITY

This assay recognizes both natural and recombinant human IL-17. The following factors prepared at 50 ng/mL were assayed and exhibited no cross-reactivity or interference.

Recombinant Human	**Recombinant Mouse**
IFN-γ	IL-17
IL-10	
IL-12	
IL-16	
IL-17B	
IL-17C	
IL-17D	
IL-17F	

Recombinant human IL-17E does not cross-react in this assay but does interfere at concentrations greater than 6.25 ng/mL.

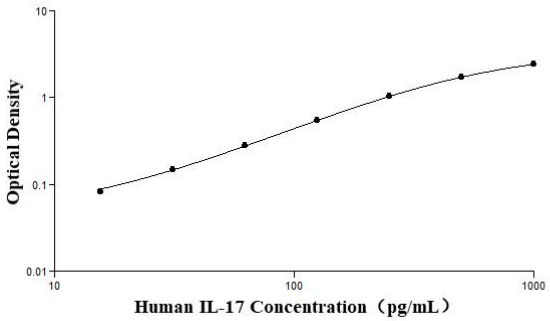
A sample containing 500 pg/mL of recombinant human IL-17A/F heterodimer reads as 108 pg/mL (21.7% cross-reactivity).

IV. EXPERIMENT

EXAMPLE STANDARD

The standard curve is provided for demonstration only. A standard curve should be generated for each set of samples assayed.

CELL CULTURE SUPERNATE / SERUM



pg/ml	O.D.	Average	Corrected
0	0.025 0.025	0.025	–
15.6	0.084 0.082	0.083	0.058
31.3	0.153 0.147	0.150	0.125
62.5	0.290 0.272	0.281	0.256
125	0.555 0.535	0.545	0.520
250	1.034 1.016	1.025	1.000
500	1.733 1.708	1.720	1.695
1000	2.411 2.421	2.416	2.391

V. KIT COMPONENTS AND STORAGE

A. MATERIALS PROVIDED

Store the unopened kit at 2-8°C. Do not use past kit expiration date.

Parts	Description	Size
Human IL-17 Microplate	96 well polystyrene microplate (12 strips of 8 wells) coated with a mouse antibody against human IL-17.	1 plate
Human IL-17 Standard	Recombinant human IL-17 in a buffered protein base; lyophilized. Refer to the vial label for reconstitution volume.	2 vials
Human IL-17 Detection Antibody	Biotinylated IL-17 polyclonal antibody, lyophilized. Refer to the vial label for reconstitution volume.	1 vial
Streptavidin-HRP B (40×)	40× Streptavidin conjugated to horseradish peroxidase.	1 vial
Reagent Diluent (10×)	A 10× concentrated buffered protein base used to dilute Detection Antibody and HRP.	1 vial
Calibrator Diluent (2×)	A 2× concentrated buffered protein base used to dilute standard and samples.	1 vial
Wash Buffer Concentrate (25×)	A 25× concentrated solution of buffered surfactant with preservatives.	1 vial
Color Reagent A	Stabilized hydrogen peroxide.	1 vial
Color Reagent B	Stabilized chromogen (tetramethylbenzidine).	1 vial
Stop Solution	2 N sulfuric acid.	1 vial
Plate Sealers	Adhesive strips.	3 strips

B. STORAGE

<table>
<tr><td>Unopened Kit</td><td colspan="2">Store at 2-8°C. Do not use past kit expiration date.</td></tr>
<tr><td rowspan="9">Opened/ Reconstituted Reagents</td><td>Streptavidin-HRP B</td><td rowspan="5">May be stored for up to 1 month at 2-8°C.*</td></tr>
<tr><td>Diluted Wash Solution</td></tr>
<tr><td>Unmixed Color Reagent A</td></tr>
<tr><td>Unmixed Color Reagent B</td></tr>
<tr><td>Stop Solution</td></tr>
<tr><td>Standard</td><td>Prepare fresh for each assay.</td></tr>
<tr><td>Detection Antibody</td><td>Aliquot and store for up to 1 month at -20°C in a manual defrost freezer. *</td></tr>
<tr><td>Reagent Diluent (10×)</td><td>May be stored for up to 1 month at 2-8°C.*
Use and discard diluted Reagent Diluent (1×). Prepare fresh for each assay.</td></tr>
<tr><td>Calibrator Diluent (2×)</td><td>May be stored for up to 1 month at 2-8°C.*
Use and discard diluted Reagent Diluent (1×). Prepare fresh for each assay.</td></tr>
<tr><td>Microplate Wells</td><td>Return unused wells to the foil pouch containing the desiccant pack, reseal along entire edge of zip-seal. May be stored for up to 1 month at 2-8°C.*</td></tr>
</table>

* Provided this is within the expiration date of the kit.

C. OTHER SUPPLIES REQUIRED

- Microplate reader capable of measuring absorbance at 450 nm, with the correction wavelength set at 540 nm or 570 nm.
- Pipettes and pipette tips.
- Deionized or distilled water.
- Squirt bottle, manifold dispenser, or automated microplate washer.
- Test tubes for dilution of standards.
- 100mL and 500 mL graduated cylinder.

D. PRECAUTION

- Some components in this kit contain a preservative which may cause an allergic skin reaction. Avoid breathing mist.
- Color Reagent B may cause skin, eye, and respiratory irritation. Avoid breathing fumes.
- The Stop Solution provided with this kit is an acid solution. Wear protective gloves, clothing, eye, and face protection. Wash hands thoroughly after handling.

VI. PREPARATION

A. SAMPLE COLLECTION AND STORAGE

Cell Culture Supernates - Remove particulates by centrifugation and assay immediately or aliquot and store samples at ≤ -20°C. Avoid repeated freeze-thaw cycles.

Serum - Use a serum separator tube (SST) and allow samples to clot for 30 minutes at room temperature before centrifugation for 15 minutes at 1000 x g. Remove serum and assay immediately or aliquot and store samples at ≤ -20°C. Avoid repeated freeze-thaw cycles.

B. SAMPLE PREPARATION

Cell culture supernate samples require a 2-fold dilution prior to the assay. A suggested 2-fold dilution is 100 µL of sample + 100 µL of Calibrator Diluent (1×).

Serum samples require a 4-fold dilution prior to the assay. A suggested 4-fold dilution is 50 µL of sample + 150 µL of Calibrator Diluent (1×).

C. REAGENT PREPARATION

Note: Bring all reagents to room temperature before use.

Wash Buffer - If crystals have formed in the concentrate, warm to room temperature and mix gently until the crystals have completely dissolved. Dilute 20 mL of Wash Buffer Concentrate (25×) into deionized or distilled water to prepare 500 mL of Wash Buffer.

Reagent Diluent (1×) - Add 3 mL of Reagent Diluent (10×) into 27 mL of deionized or distilled water to prepare 30 mL of Reagent Diluent (1×).

Detection Antibody- Reconstitution Volume refer to vial label with Reagent Diluent (1×). Aliquot and store if needed. Dilute stock solution in Reagent Diluent (1×) to the working concentration of 20 ng/mL. Prepare at least 15 minutes prior to use.

Streptavidin-HRP B (1×) **-** Dilute to the working concentration specified on the vial label using Reagent Diluent (1×).

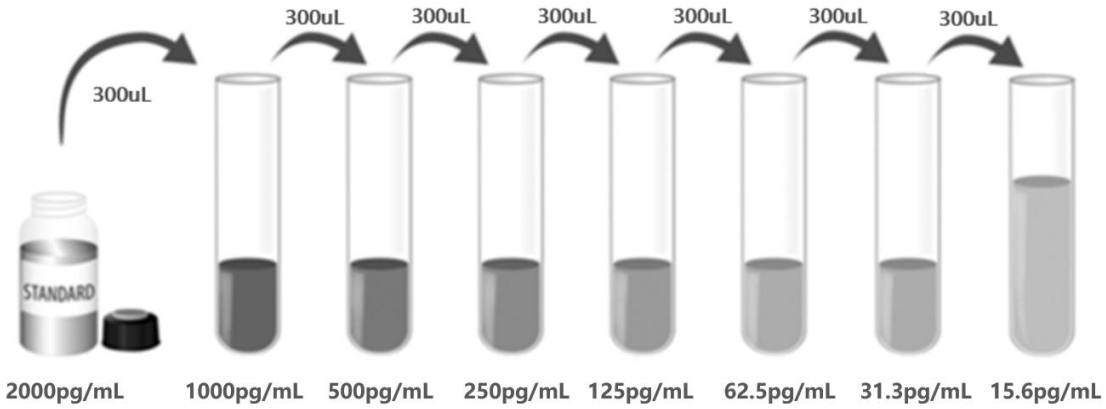
Substrate Solution - Color Reagent A and B should be mixed together in equal volumes within 15 minutes of use. Protect from light. 100 µL of the resultant mixture is required per well.

IL-17 Standard – Refer to the vial label for the reconstitution volume* using Calibrator Diluent 1×. This reconstitution produces a stock solution of 2000 pg/mL. Allow the standard to sit for a minimum of 15 minutes with gentle agitation prior to making dilutions.

*if you have any question, please seek help from our Technical Support.

Pipette 300 µL of Calibrator Diluent 1× into each tube. Use the stock solution to

produce a dilution series (below). Mix each tube thoroughly before the next transfer. The 1000 pg/mL standard serves as the high standard. The Calibrator Diluent 1× serves as the zero standard (0 pg/mL).



D. TECHNICAL HINTS

- When mixing or reconstituting protein solutions, always avoid foaming.
- To avoid cross-contamination, change pipette tips between additions of each standard level, between sample additions, and between reagent additions. Also, use separate reservoirs for each reagent.
- It is recommended that the samples be pipetted within 15 minutes.
- To ensure accurate results, proper adhesion of plate sealers during incubation steps is necessary.
- Substrate Solution should remain colorless until added to the plate. Keep Substrate Solution protected from light. Substrate Solution should change from colorless to gradations of blue.
- Stop Solution should be added to the plate in the same order as the Substrate Solution. The color developed in the wells will turn from blue to yellow upon addition of the Stop Solution. Wells that are green in color indicate that the Stop Solution has not mixed thoroughly with the Substrate Solution.

VII.ASSAY PROCEDURE

Note: *Bring all reagents and samples to room temperature before use. It is recommended that all samples and standards be assayed in duplicate.*

1. Prepare all reagents and working standards as directed in the previous sections.
2. Remove excess microplate strips from the plate frame, return them to the foil pouch containing the desiccant pack, and reseal.
3. Add 100 µL of Standard, or prepared sample per well. Cover with the adhesive strip provided. Incubate for 2 hours at room temperature. A plate layout is provided for a record of standards and samples assayed. (Samples may require dilution. See Sample Preparation section.)
4. Aspirate each well and wash, repeating the process three times for a total of four washes. Wash by filling each well with Wash Solution (400 µL) using a squirt bottle, manifold dispenser, or autowasher. Complete removal of liquid at each step is essential to good performance. After the last wash, remove any remaining Wash Buffer by aspirating or decanting. Invert the plate and blot it against clean paper towels.
5. Add 100 µL of the Detection Antibody diluted in Reagent Diluent, to each well. Cover with a new adhesive strip and incubate 2 hours at room temperature.
6. Repeat the aspiration/wash as in step 4.
7. Add 100 µL of the working dilution of Streptavidin-HRP B to each well. Cover the plate and incubate for 20 minutes at room temperature. Avoid placing the plate in direct light.
8. Repeat the aspiration/wash as in step 4.
9. Add 100 µL of Substrate Solution to each well. Incubate for 20 minutes at room temperature. Avoid placing the plate in direct light.
10. Add 50 µL of Stop Solution to each well. Gently tap the plate to ensure thorough mixing.
11. Determine the optical density of each well immediately, using a microplate reader set to 450 nm. If wavelength correction is available, set to 540 nm or 570 nm. If wavelength correction is not available, subtract readings at 540 nm or 570 nm from the readings at 450 nm. This subtraction will correct for optical imperfections in the plate. Readings made directly at 450 nm without correction may be higher and less accurate.
12. **CALCULATION OF RESULTS：** Average the duplicate readings for each standard, control, and sample and subtract the average zero standard optical density (O.D.). Create a standard curve by reducing the data using computer software capable of generating a four parameter logistic (4-PL) curve-fit. As an alternative, construct a

standard curve by plotting the mean absorbance for each standard on the y-axis against the concentration on the x-axis and draw a best fit curve through the points on the graph. The data may be linearized by plotting the log of the IL-17 concentrations versus the log of the O.D. and the best fit line can be determined by regression analysis. This procedure will produce an adequate but less precise fit of the data. If samples have been diluted, the concentration read from the standard curve must be multiplied by the dilution factor.

VIII. REFERENCES

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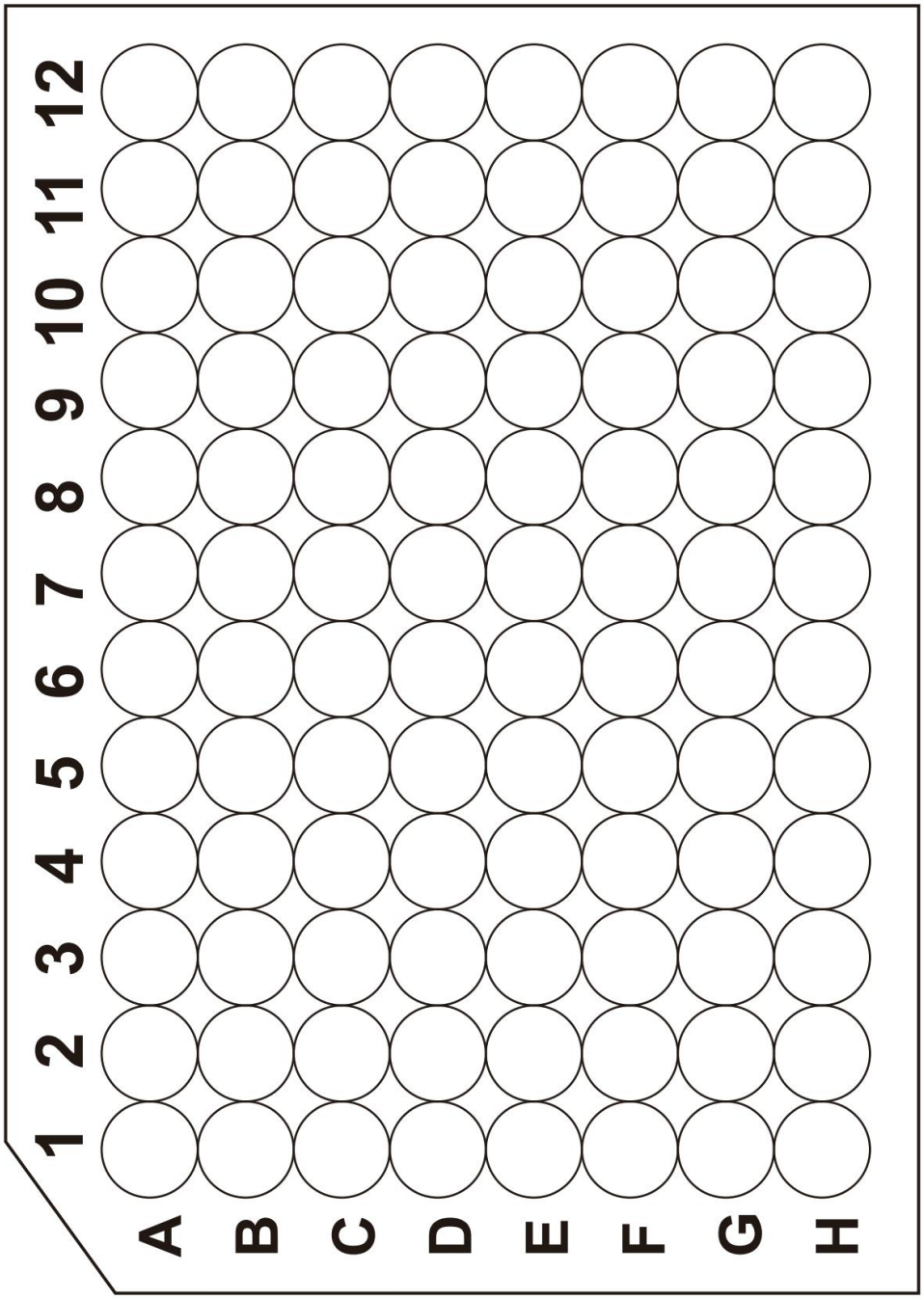
PLATE LAYOUT

Use this plate layout to record standards and samples assayed.



产品信息及操作手册

人 IL-17 Valukine™ ELISA 试剂盒

目录号：VAL129

适用于定量检测天然和重组人 IL-17 的浓度

科研专用，不可用于临床诊断

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目录

I. 背景

人白细胞介素17 (IL-17)，也被称为IL-17A和CTLA-8，是一种15-20 kDa、多种糖基化的多肽，属于IL-17家族的细胞因子 (1-5)。人IL-17/17A被合成为155个氨基酸(aa)的前体，包含23个aa的信号序列和133个aa的成熟区，该区域包含一个半胱氨酸-结折叠 (4-6)。在人类和小鼠中，都有一个保守的N-糖基化位点，该位点可能贡献了5 kDa 的天然分子量。IL-17A与IL-17F形成32-38 kDa 二硫键连接的同型二聚体和40-45 kDa 共价异二聚体 (7- 9)。分泌最多的IL-17A以IL-17A: F异二聚体的形式存在，而IL-17A: A同型二聚体是这两种形式中最具生物活性的 (8)。成熟的人类IL-17A与小鼠、猪和黑猩猩IL-17A分别有61%、74%和99%的aa相同 (10-12)。已知的哺乳动物能产生IL-17的细胞有：$CD4^+$ T细胞Th17， Paneth细胞，$GR1^+CD11b^+$骨髓抑制细胞，$CD27^-$γδT细胞，$CD1^+$ $NK1.1^-$iNKT细胞，$CD3^-CD4^+$LTi-like细胞 (9, 13-17)。

据报道，人类IL-17 的高亲和力受体，似乎是IL-17RA和IL-17RC的异源多聚体，其比例可能为2:1 (1, 18)。IL-17RA是一种130 kDa 的I型跨膜糖蛋白，与细胞因子、TNF或免疫球蛋白受体超家族成员无相似之处 (2, 10, 15)。IL-17RC也是一种I型跨膜蛋白，其大小约为90-95 kDa，与IL-17RA的aa同源性不足30% (19, 20)。IL-17A和IL-17A: F的活性都需要这两种受体。在配体与IL-17RA结合后，这两个受体似乎形成了一种功能联系 (1, 21, 22)。

IL-17以参与中性粒细胞的募集和存活而闻名 (14, 15, 23, 24, 25)。其诱导最初被描述为抗原刺激树突状细胞的结果，导致IL-23的分泌。在与T细胞受体无关的事件中，IL-23诱导T细胞产生IL-17 (14)。一旦分泌，骨髓中的IL-17似乎会诱导基质/成纤维细胞表达G-CSF和干细胞因子(膜形式)，从而增加多形核中性粒细胞(PMN)的分化和产生。IL-17可能通过直接阻断中性粒细胞凋亡，促进更大的PMN循环来补充这一机制(23)。在组织中，IL-17似乎也会主要通过对巨噬细胞和内皮细胞 (EC) 的作用而促进中性粒细胞外渗，。在巨噬细胞中，IL-17诱发TNF-α、IL-1β和IL- 6产生 (26)。TNF-α和IL-1β作用于ECs诱导局部G-CSF分泌，而IL-17会增强此作用 (27)。IL-17通过诱导EC CXC趋化因子释放和NO的产生进一步促进PMN流入，从而增加血管通透性 (14, 28)。IL-17的作用并不局限于炎症反映。在滑膜关节中，IL-17可以在成骨细胞中增强RANKL的表达。这为破骨细胞的形成和随后的骨吸收提供了刺激 (24)。IL-17A与IL-4和CD40L共同促进IgE分泌细胞的生成 (29)。而在白色脂肪中，IL-17A抑制脂肪细胞从前脂肪细胞分化，阻碍成熟脂肪细胞对葡萄糖的摄取 (30)。

II. 概述

A. 检测原理

本实验采用双抗体夹心ELISA法。抗人IL-17捕获抗体包被于微孔板上，经过孵育，样品和标准品中的IL-17会与固定在板上的抗体结合，游离的成分被洗去；接着加入生物素化的抗人IL-17检测抗体进行孵育，洗涤去除未结合的物质后，加入链霉亲和素标记的辣根过氧化物酶(streptavidin-HRP) 孵育。洗涤后，加入显色底物，避光显色。溶液颜色与结合的目标蛋白成正比；加入终止液；用酶标仪测定吸光度。

B. 检测局限

- **仅供科研使用，不可用于体外诊断；**
- 该试剂盒适用于细胞培养上清样本和血清样本；
- 请在试剂盒有效期内使用；
- 不同试剂盒及不同批号试剂盒的组分不能混用；
- 样本值若大于标准曲线的最高值，应将样本用标准品稀释液（1×）稀释后重新检测；
- 检测结果的不同可由多种因素引起，包括实验人员的操作、移液器的使用方式、洗板技术、反应时间或温度、试剂盒的储存等。

III. 优势

A. 精确度

板内精确度（同一板内不同孔间的精确度）

已知浓度的三个样本，在同一板内分别检测 20 次，以确定板内精确度。

板间精确度（不同板之间的精确度）

已知浓度的三个样本，在不同板中分别检测 20 次，以确定板间精确度。

细胞培养上清/血清

	板内精确度			板间精确度		
样本	1	2	3	1	2	3
平均值（pg/mL）	24.0	102.9	378.4	25.4	103.7	383.1
标准差	1.1	3.0	6.6	1.1	3.3	20.2
CV%	4.5	2.9	1.7	4.3	3.2	5.3

B. 回收率

在细胞培养基样本中掺入检测范围内不同水平的人 IL-17，测定其回收率。回收率范围在 93.4-100.4%，平均回收率在 98.0%。

在血清样本中掺入检测范围内不同水平的人 IL-17，测定其回收率。回收率范围在 85.4-91.5%，平均回收率在 89.5%。

C. 灵敏度

人 IL-17 的最低可测剂量（MDD）一般小于 2.93 pg/mL。

MDD 是根据 20 个重复的零标准品孔的吸光度值的平均值加两倍标准差计算得到的相对应浓度。

D. 校正

此 ELISA 试剂盒经由 R&D Systems®生产的大肠杆菌表达的高纯度重组人 IL-17 蛋白所校正。

E. 线性

不同的样本中含有或掺入高浓度的人 IL-17，然后用标准品稀释剂（1×）将样本稀释到检测范围内，测定其线性。

稀释倍数	平均期待值（%）	范围（%）
1:2	106.5	103.6-109.1
1:4	111.6	105.8-117.5
1:8	108.8	107.6-110.7
1:16	91.9	83.9-107.8

F. 样本值

使用本试剂盒检测了5份人血清样本中IL-17的水平。5份样本的检测值均低于人IL-17最低标准，15.6 pg/mL。

G. 特异性

此ELISA法可检测天然及重组人IL-17蛋白。对制备的50 ng/mL的下列因素进行了测定，无交叉反应或干扰。

重组人蛋白	重组小鼠蛋白
IFN-γ	IL-17
IL-10	
IL-12	
IL-16	
IL-17B	
IL-17C	
IL-17D	
IL-17F	

重组人IL-17E在本实验中不发生交叉反应，但在浓度大于6.25 ng/mL 时发生干扰。

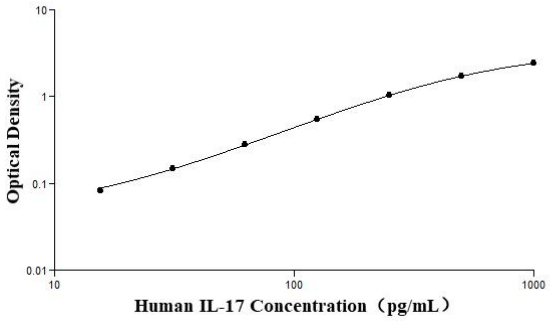
含有500 pg/mL重组人IL-17A/F异源二聚体检测值为108 pg/mL (21.7%交叉反应)。

IV. 实验

标准曲线实例

该标准曲线数据仅供参考，每次实验应绘制其对应的标准曲线。

细胞培养上清/血清



pg/ml	O.D.	Average	Corrected
0	0.025 0.025	0.025	–
15.6	0.084 0.082	0.083	0.058
31.3	0.153 0.147	0.150	0.125
62.5	0.290 0.272	0.281	0.256
125	0.555 0.535	0.545	0.520
250	1.034 1.016	1.025	1.000
500	1.733 1.708	1.720	1.695
1000	2.411 2.421	2.416	2.391

V. 试剂盒组成及储存

A. 试剂盒组成

组成	描述	规格
Human IL-17 Microplate	包被小鼠抗人 IL-17 抗体的 96 孔聚苯乙烯板，8 孔×12 条	1 块板
Human IL-17 Standard	标准品（冻干粉），参考瓶标签进行重溶	2 瓶
Human IL-17 Detection Antibody	生物素化的 IL-17 检测抗体，冻干粉，参考瓶标签进行重溶	1 瓶
Streptavidin-HRP B (40×)	40×浓缩的链霉亲和素标记的 HRP	1 瓶
Reagent Diluent (10×)	浓缩的试剂稀释液（10 ×）	1 瓶
Calibrator Diluent (2×)	标准品稀释剂（2 ×）	1 瓶
Wash Buffer Concentrate (25×)	浓缩洗涤缓冲液（25 ×）	1 瓶
Color Reagent A	显色液 A	1 瓶
Color Reagent B	显色液 B	1 瓶
Stop Solution	终止液	1 瓶
Plate Sealers	封板膜	3 张

B. 试剂盒储存

<table>
<tr><td>未开封试剂盒</td><td colspan="2">2-8℃储存；请在试剂盒有效期内使用</td></tr>
<tr><td rowspan="10">已打开，稀释或重溶的试剂</td><td>链霉亲和素-HRP B</td><td rowspan="5">2-8℃储存，最多 30 天*</td></tr>
<tr><td>洗涤缓冲液（1×）</td></tr>
<tr><td>显色剂 A</td></tr>
<tr><td>显色剂 B</td></tr>
<tr><td>终止液</td></tr>
<tr><td>标准品</td><td>使用时新鲜配制*</td></tr>
<tr><td>检测抗体</td><td>分装，-20℃储存，最多 30 天*</td></tr>
<tr><td>试剂稀释液（10×）</td><td>2-8℃储存，最多 30 天*
请每次使用新鲜配制的 1×稀释液</td></tr>
<tr><td>标准品稀释剂（2×）</td><td>2-8℃储存，最多 30 天*
请每次使用新鲜配制的 1×稀释液</td></tr>
<tr><td>包被的微孔板条</td><td>将未用的板条放回带有干燥剂的铝箔袋内，密封：2-8℃储存，最多 30 天*</td></tr>
</table>

*必须在试剂盒有效期内

C. 实验所需自备试验器材

- 酶标仪（可测量450 nm检测波长的吸收值及540 nm或570 nm校正波长的吸收值）
- 高精度加液器及一次性吸头
- 蒸馏水或去离子水
- 洗瓶（喷瓶）、多通道洗板器或自动洗板机
- 用来稀释标准品的试管
- 100 mL及500 mL量筒

D. 注意事项

- 试剂盒中的一些组分含有防腐剂，可能引起皮肤过敏反应，避免吸入。
- Color Reagent B 可能引起皮肤、眼睛和呼吸道刺激，避免吸入。
- 试剂盒中的终止液是酸性溶液，使用时请做好眼镜、手、面部及衣服的防护。使用后请彻底洗手。

VI. 实验前准备

A. 样品收集及储存

细胞培养上清液： 颗粒物应离心去除；立刻检测样本。样本收集后若不及时检测，需按一次使用量分装，冻存于-20℃冰箱内，避免反复冻融。

血清样本： 用血清分离管 (SST) 分离血清。使血样室温凝集30分钟，然后1000 x g离心15分钟。吸取血清样本之后即刻用于检测，或者分装，-20℃贮存备用。避免反复冻融。

B. 样本准备工作

细胞上清样本需要用标准品稀释剂（1×）2倍稀释后进行检测，例如：100 µL细胞上清液+100 µL标准品稀释剂（1×）。

血清样本需要用标准品稀释剂（1×）4倍稀释后进行检测，例如：50 µL血清+150 µL标准品稀释剂（1×）。

C. 检测前准备工作

使用前请将所有试剂放置于室温

洗涤液：从冰箱中取出的浓缩洗涤液可能有结晶，属于正常现象；放置室温，轻摇混匀，待结晶完全溶解后再配制洗涤液。可将20 mL浓缩洗涤液用蒸馏水或去离子水稀释配置成500 mL工作浓度的洗涤液。可4℃存储。

试剂稀释液（1×）：加3 mL试剂稀释液（10×）至27 mL 蒸馏水或去离子水中，制成30 mL试剂稀释液（1×）。

检测抗体： 参考检测抗体瓶标签指示，用试剂稀释液（1×）将冻干粉进行重溶。再用试剂稀释液（1×）稀释至工作浓度20 ng/mL，至少在使用前15 分钟准备。

标准品稀释剂（1×）：使用蒸馏水或去离子水稀释配置成标准品稀释剂（1×）。

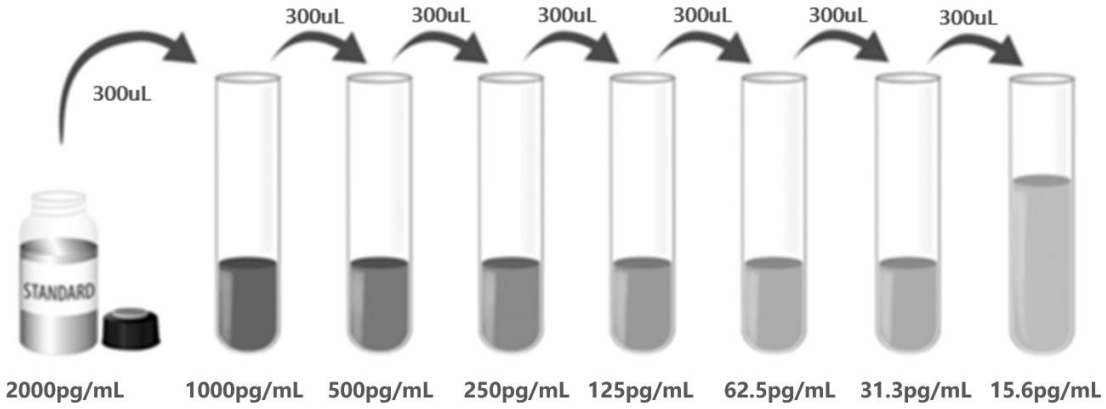
链霉亲和素- HRP B：用试剂稀释液（1×） 将链霉亲和素- HRP B（40×）稀释至工作浓度链霉亲和素- HRP B（1×）。

显色剂：按试验所需用量（100 µL/孔）将显色液A和显色液B等体积混合，避光保存，现用现配，须在15分钟内使用。

标准品：参照冻干标准品瓶身注明的方式重溶冻干标准品*，得到浓度为2000 pg/mL标准品母液。轻微震摇至少15分钟，使其充分溶解。

***如有疑问，请咨询我们的技术支持。**

每个稀释管中加入300 µL标准品稀释剂（1×）。将标准品母液参照下图做系列稀释，每管须充分混匀后再移液到下一管。1000 pg/mL管作标准曲线最高点，标准品稀释剂（1×）可用作标准品零点（0 pg/mL）。



D. 技术小提示

- 当混合或重溶蛋白液时，尽量避免起沫；
- 为了避免交叉污染，配置不同浓度标准品、上样、加不同试剂都需要更换枪头。另外不同试剂请分别使用不同的移液槽；
- 建议15分钟内完成一块板的上样；
- 每次孵育时，正确使用封板膜可保证结果的准确性；
- 混合后的显色剂在上板前应为无色，请避光保存；加入微孔板后，将由无色变成不同深度的蓝色；
- 终止液上板顺序应同显色底物上板顺序一致；加入终止液后，孔内颜色由蓝变黄；若孔内有绿色，则表明孔内液体未混匀，请充分混合。

VII. 操作步骤

使用前请将所有试剂和样本放置于室温，建议所有的实验样本和标准品做复孔检测

1. 按照上一节的说明，准备好所有需要的试剂和标准品；
2. 从已平衡至室温的密封袋中取出微孔板，未用的板条请放回铝箔袋内，重新封口；
3. 分别将不同浓度标准品，实验样本或者质控品加入相应孔中，每孔100 µL。用封板膜封住反应孔，室温孵育2小时。说明书提供了一张96孔模板图，可用于记录标准品和试验样本的板内位置；（样本需要稀释，详情参见样本制备部分。）
4. 将板内液体吸去，使用洗瓶、多通道洗板器或自动洗板机洗板。每孔加洗涤液400 µL，然后将板内洗涤液吸去。重复操作3次，共洗4次。每次洗板尽量吸去残留液体会有助于得到好的实验结果。最后一次洗板结束，请将板内所有液体吸干或将板倒置，在吸水纸拍干所有残留液体；
5. 在每个微孔内加入100 µL配置好的检测抗体。用封板膜封住反应孔，室温孵育2小时；
6. 重复第4步洗板操作；
7. 在每个微孔内加入100 µL稀释好的链霉亲和素- HRP B工作液。用封板膜封住反应孔，室温孵育20分钟，**注意避光**；
8. 重复第4步洗板操作；
9. 在每个微孔内加入100 µL显色剂，室温孵育20分钟，**注意避光**；
10. 在每个微孔内加入50 µL终止液，请轻拍微孔板，使溶液混合均匀。孔内溶液颜色会从蓝色变为黄色；
11. 加入终止液后30分钟内，使用酶标仪测量450 nm的吸光度值，设定540 nm或570 nm作为校正波长。如果没有使用双波长校正，结果准确度可能会受影响；
12. **计算结果：**将每个标准品和样品的校正吸光度值（OD450-OD540/OD570），复孔读数取平均值，然后减去平均零标准品OD值。使用计算机软件作四参数逻辑（4-PL）曲线拟合创建标准曲线。另一种方法是，可以通过绘制标准品浓度做对数与相应OD值对数生成曲线，并通过回归分析确定最佳拟合线。通过样本的OD值，可从标准曲线上得到样本中人IL-17的浓度。如果样品被稀释，从标准曲线读取的浓度必须乘以稀释倍数。

VIII. 参考文献

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