



CHO PhospholipaseB-Like2 (PLBL2) ELISA Kit
(Double Antibody Sandwich Method)

96 Wells

Catalogue Number: CH-P0548

**ELISA Kit for the quantitative Measurement of PLBL2 in Protein Purification Process,
and End-Product**

FOR RESEARCH, DEVELOPMENT AND MANUFACTURING USE ONLY!

NOT FOR CLINICAL OR DIAGNOSTIC APPLICATIONS!

PLEASE READ THROUGH ENTIRE PROCEDURE BEFORE BEGINNING!



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1. BACKGROUND

PLBL2 (Phospholipase B-Like 2) belongs to the phospholipase B-like protein family. Despite the inclusion of the term "phospholipase B" in its nomenclature, there is no definitive evidence to date demonstrating that PLBL2 possesses canonical phospholipase activity, and it is therefore classified as a phospholipase-like protein or putative phospholipase. This protein is predominantly expressed in immune-associated cells, with markedly elevated expression levels particularly in monocytes, macrophages and dendritic cells, implying its potential involvement in innate immune responses or inflammatory regulatory pathways.

Emerging research in recent years has uncovered a potential functional role of PLBL2 during viral infections such as dengue virus and Zika virus infection. Multiple studies have documented significant upregulation of PLBL2 expression post viral infection, indicating it may constitute a component of the host antiviral defense response. Additionally, PLBL2 has been reported to correlate with certain autoimmune disorders and immune modulation within the tumor microenvironment; nevertheless, its precise molecular mechanisms remain to be fully elucidated. Structurally, PLBL2 harbors a conserved GX SXG sequence motif, a hallmark characteristic of the serine hydrolase superfamily. However, the absence of critical catalytic residues may abrogate its classical enzymatic activity. Accordingly, PLBL2 is hypothesized to participate in cellular signal transduction and immune regulation via protein-protein interactions or other non-enzymatic modes of action.

In summary, PLBL2 represents an immune-related protein with incompletely characterized functions. Its potential biological roles in infection, inflammation and immune-mediated diseases have rendered it one of the focal topics in current basic biomedical research.

2. PRINCIPLE OF THE ASSAY

This ELISA kit is applied to the double antibody sandwich Enzyme Linked Immunosorbent Assay to detect the concentration of Insulin in samples. The microtiter plate has been pre-coated with anti-Insulin antibody, standards or samples are then added to the microtiter plate wells and Insulin if present, will bind to the antibody pre-coated wells under specific conditions. Then wash the plate to remove unbound substances, add the HRP-conjugated antibody, and incubate to form a



double-antibody sandwich complex with the coated antibody, Insulin, and detection antibody. Then a TMB substrate solution is added to the wells to incubate. TMB substrate solution turns blue after the oxidation of HRP, and finally turns to yellow immediately after adding the stop solution. Color of TMB substrate positively correlated with total Insulin bound in the initial steps. The color is measured by spectrophotometrically with wavelength of 450nm. The concentration of Insulin in samples is then determined by comparing the O.D. of the samples to the standard curve.

3. KITS' ADVANCEMENT

- 1) High Specificity: Capture antibody and detection antibody are monoclonal antibodies, which respectively identify different epitopes of the antigen and maximizes the specificity of the reaction. No cross-reactivity among homologous analytes.
- 2) High Stability: The experiment uses high-quality capture antibodies and antigens, and also applies the broad-spectrum protein stabilizers, and antibody pre-coated microplate treatment to increase the thermostability of the microplate, and reproducibility of results.

4. MATERIALS (Note: Store at 2-8°C)

	REAGENTS	SPECIFICATION	QUANTITY
1	Pre-Coated Microplate (Detachable)	96 wells	1 plate (Keep Sealed)
2	Standard (Stock Solution) -10µg/mL	10µL	1 vial
3	HRP-conjugated Detection antibody (100×)	150µL	1 vial
4	TMB Substrates	10mL	1 vial (Avoid Light)
5	Stop Solution	10mL	1 vial
6	Wash Solution (100×)	10mL	1 vial
7	Diluent Buffer (10×)	10mL	1 vial
8	Plate Sealer		4 pieces
9	Instruction Manual		1

5. EQUIPMENT REQUIRED BUT NOT PROVIDED

- 1) 10-1000µL Pipettor
- 2) Multichannel Pipettor



- 3) 1L Sterilized Deionized Water or Ultrapure Water
- 4) Sterilized EP tubes
- 5) Absorbent Paper
- 6) Microplate Reader
- 7) High-speed Centrifuge
- 8) Microplate Washer or Washing Bottles
- 9) Incubator or Water Bath (Optional)
- 10) Data Analysis and Graphing Software

6. PREPARATION BEFORE ASSAY

Please read the kit instruction manual carefully before use. All reactions are performed at room temperature (20-25°C; the same applies hereinafter).

7. REAGENT PREPARATION

- 1) Place all kits' components at room temperature for 30 minutes before using.
- 2) The preparation of Wash Solution (1×): Add the contents of 10mL of Wash Solution (100×) into 990mL of deionized water or ultrapure water to prepare 1000mL of Wash Solution (1×). If crystals have formed in the concentrate, allow it to reach room temperature and mix gently until the crystals are completely dissolved.
- 3) The preparation of Diluent Buffer (1×): Dilute 10mL of Diluent Buffer (10×) with 90mL of deionized water or ultrapure water to prepare 100mL of Diluent Buffer (1×). If crystals have formed in the concentrate, warm to room temperature and mix gently until the crystals have completely dissolved. The buffer is used as the Diluent Buffer for standards, samples and detection antibodies.

8. ASSAY PROCEDURES

- 1) Remove the microplate from the foil bag, detach the desired number of strips from the plate, immediately reseal the remaining strips and store at 4°C. Then put the ready-for-use strips on a clean microplate frame, and start the experiment after the strips returned to room temperature (Note: The microplate frame can be reused). The standard may stick to the tube wall due to

transport turbulence. Before using, gently shake it or centrifuge for about 2 seconds.

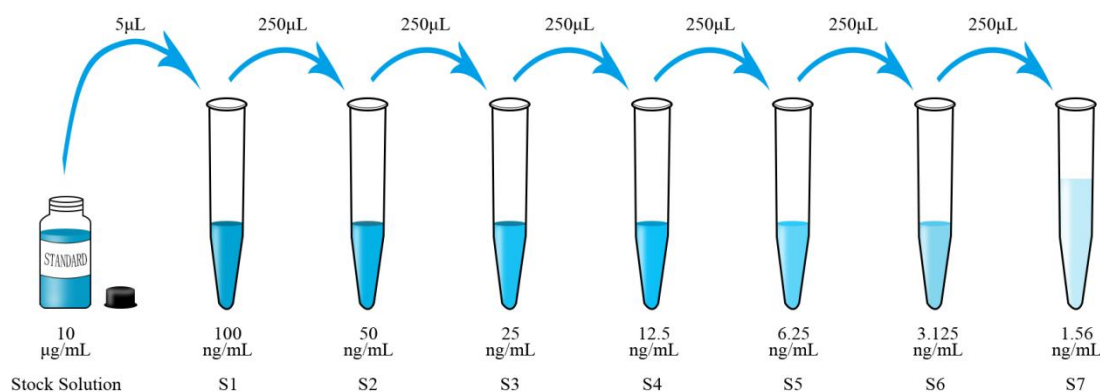
- 2) Prepare Standards: When preparing the standards, label 7 tubes, S1-S7 and add a certain volume of Diluent Buffer (1×): S1 (495μL), S2 to S7 (each 250μL).

- ① Add 5μL of Standard (Stock Solution - 10μg/mL) into the S1. Mix gently by pipetting up and down twice, then invert to mix thoroughly.

(All subsequent mixing steps should be performed in the same manner—do not vortex or use any vigorous mixing method.)

- ② Transfer 250μL of the resulting S1 (100ng/mL) to the tube S2, then transfer 250μL of the resulting S2 solution (50ng/mL) to S3, mix gently. Continue this 2-fold serial dilution sequentially through S7 to achieve a final concentration of 1.56ng/mL.

NOTE: There are 7 points of diluted standards, S1: 100ng/mL, S2: 50ng/mL, S3: 25ng/mL, S4: 12.5ng/mL, S5: 6.25ng/mL, S6: 3.125ng/mL, S7: 1.56ng/mL.



- 3) Sample addition: Add 100μL of standards and samples to be tested into the microplate wells. For the blank control, add only 100μL of sample diluent.
- 4) Cover the plate with a plate sealer, put it on the oscillator to mix and incubate for 90 minutes at room temperature.
- 5) Automated Washing:
 - Put 1000mL Wash Solution (1×) into the washing bottle of the automated microplate washer for standby.
 - Take out the microplate, and discard the incubation mixture. And then wash the microplate with



the automated microplate washer for 5 times.

- After washing, invert plate and blot dry by hitting the plate onto absorbent paper or paper towels until there is no moisture appears.

Or Manual Washing:

- Put 1000mL Wash Solution (1×) into the washing bottle for standby.
- Take out the microplate, and discard the incubation mixture. And then invert plate and blot dry by hitting the plate onto absorbent paper or paper towels until there is no no moisture appears.
- Fill each well with 300μL Wash Solution (1×) by a multi-channel pipette, let stand for 20 seconds, then discard the contents, invert plate, and blot dry by hitting the plate onto absorbent paper. Repeat this washing step for 5 times.

Note: There should be no moisture appears in the fifth washing step.

- 6) Prepare Detection Antibody: Extract 100μL of Detection antibody (100×), and add it into 9.9mL Diluent Buffer to reach its working concentration (1×) and mix gently. Add 100μL of above diluted detection antibody to each well, cover the plate with a sealer, and put it on the oscillator to mix and incubate for 90 minutes at room temperature.
- 7) Washing Step: Repeat the same procedure as step 5.
- 8) Add 100μL TMB substrate to each well. Cover the plate with a sealer, incubate at room temperature for about 15 minutes. If the color is light, the reaction time can be extended appropriately, but not more than 30 minutes.
- 9) Add 50μL of Stop Solution to each well to stop the reaction.
- 10) Run the microplate reader and conduct measurement at 450nm.
- 11) Data analysis: Four parameter curve fitting is recommended.

9. NOTES

1) Sample Preparation

- a) After collection, the samples should be aliquoted and stored at -20°C (less than 3 months) or -80°C (less than 6 months) to maintain protein activity, avoid contamination and multiple freeze-thaw cycles. If samples are to be run within 24 hours, they may be stored at 2- 8°C.
- b) Samples should be frozen and aliquoted if not analyzed shortly after collection. Avoid



multiple freeze-thaw cycles of frozen samples. Thaw completely and mix well by pipette or Vortex, centrifuge to remove flocculent insoluble substances before use.

- c) Certain chemical lysis buffers (e.g., SDS, Triton, etc.) may interfere with the assay and should be used with caution.
- d) It is recommended that all standards, controls and samples be run in duplicate. Gently mix the liquid after adding standards and samples, and confirm there's no bubble inside.
- e) The process of protein purification is often accompanied by complex buffer solutions. To exclude matrix effects, it is recommended to perform a spike recovery test when using each different buffers for the first time, with an acceptable spike recovery range of 80–120% . Generally, high salt, low PH, polysaccharide, organic solvents, and detergents can result in lower recovery rates.

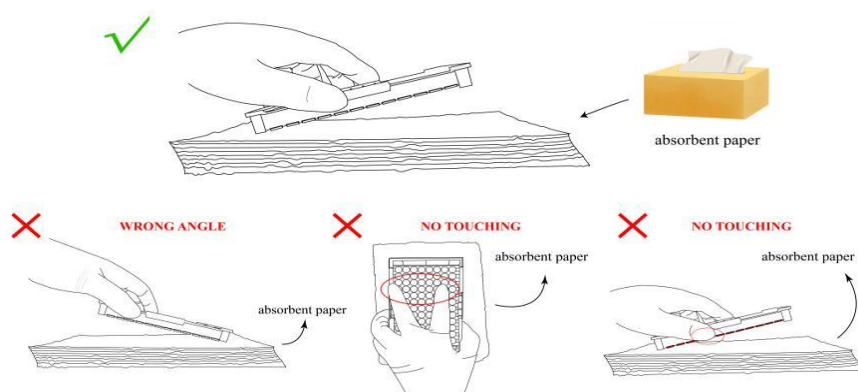
The specific operation procedure is as follow: prepare the mixture by combining the diluted standard S1 (100 ng/mL) with the test solution matrix at a 1:1 volume ratio (e.g., 50 μ L of test solution plus 50 μ L of diluent either with or without 100 ng/mL standard S1). To calculate the spike recovery rate, subtract the background concentration (measured from the unspiked control) from the spiked sample concentration, then divide the result by the theoretical spiked concentration.

2) Experimental Operation

- a) Do not mix or interchange different ELISA kits or same ELISA kit but with different lot.
- b) To avoid cross-contamination, change pipette tips between different diluted standard additions, sample additions, and reagent additions.
- c) Total dispensing time for addition of reagents or samples to the plate should not exceed 10 minutes. When pipetting reagents, maintain a consistent order of addition from well-to-well. This ensures equal incubation times for all wells.
- d) Incomplete washing will adversely affect the test outcome. All washing must be performed with Wash Solution provided. All residual wash liquid must be drained from the wells by efficient aspiration or by decantation followed by tapping the plate forcefully on absorbent

paper. Never insert absorbent paper directly into the wells. Do not directly touch the bottom of the microplate. If it is covered with fingerprints or stains, it will affect the measurement.

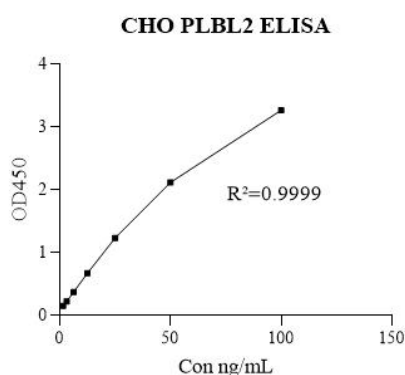
- e) TMB is easily contaminated. please protect it from light and metal.
- f) Monitor the reaction time. After adding TMB substrate, observe the color change of reaction wells at regular intervals (for example, about 10 minutes). If the color turns too deep, add Stop Solution in advance to terminate the reaction.
- g) The Stop Solution provided with this kit is acid solution. Protective gloves, clothes, and face protection should be worn.
- h) The coefficient of determination of the standard curve should be $R^2 \geq 0.95$.
- i) Schematic diagram of tapping the plate:



10. CALCULATION OF RESULTS

- 1) Average the duplicate readings for each standard and sample. All O.D. values are subtracted by the mean value of blank control before result interpretation.
- 2) Construct a standard curve by plotting the average O.D. for each standard on the vertical (Y) axis against the concentration on the horizontal (X) axis, and generate a four parameter logistic (4-PL) curve-fit.
- 3) Calculate the concentration of Insulin in the samples corresponding to the mean absorbance from the standard curve.
- 4) Standard curve for demonstration only.

APPENDIX 1: EXAMPLE OF STANDARD CURVE



	Con ng/mL	OD450
S1	100	3.273
S2	50	2.120
S3	25	1.239
S4	12.5	0.675
S5	6.25	0.375
S6	3.125	0.227
S7	1.56	0.155

11. QUALITY CONTROL

1) Sensitivity:

LOD: 0.78ng/mL

LOQ: 1.56ng/mL

2) Intra Variation%: <10%

Inter Variation%: <10%

12. FAQs & TROUBLESHOOTING

If the experimental results are abnormal, promptly take photos to record the color development results, fully retain the unused strips and reagents, and contact technical support. In addition, you may refer to the troubleshooting information provided below to identify the root cause of the problem.

Problem Description	Possible Causes	Corresponding Solutions
Poor Standard Curve	Incorrect dilution of standards	Dilute the standard curve according to the specified ratio.
	Inaccurate pipetting or sample loading	Check the pipette and pipette tips.
	Incomplete washing of the microplate	Ensure the required number of washing cycles and the volume of washing solution per well.
Weak or Absent Color Development	Insufficient incubation time	Ensure adequate incubation time.
	Incorrect experimental	Use the recommended incubation



	temperature	temperature.
	Insufficient reagent volume or missing addition	Check the pipetting and sample loading process to ensure all reagents are added in sequence with sufficient volume.
	Substrate solution not equilibrated to room temperature	Allow the TMB substrate to stand at room temperature for more than 30 minutes before color development.
Low OD Value Reading	Incorrect microplate reader settings	Verify the wavelength and filter configuration on the microplate reader. Preheat the microplate reader in advance before reading.
High Coefficient of Variation (CV)	Incorrect sample loading	Check the sample loading operation.
	Contamination on the microplate bottom	Inspect the microplate bottom for residual liquid and fingerprints.
	Foreign objects or air bubbles in wells	Confirm no foreign objects in wells before sample loading and no air bubbles after loading.
	Unsealed or incompletely sealed plate during incubation	Seal the plate with plate sealing film.
High Background Value	Incomplete washing of the microplate	Wash the plate according to the method recommended in the instruction manual.
		If using an automated plate washer, check for clogs in all liquid inlets and waste outlets.
		For manual washing, appropriately increase the number of washing cycles.
		Inadequate or missed washing will result in high background.
	Incorrect incubation time or temperature	Operate strictly in accordance with the instruction manual.
	Contaminated consumables	Ensure the tubes, pipette tips and other consumables are clean.



	Contaminated washing solution	Prepare fresh washing solution.
	Contaminated substrate solution	The substrate solution is inherently colorless. Ensure the substrate is not contaminated by metal ions or oxidizing agents before use and store it away from light.
Low Sensitivity	Improper kit storage	Store all relevant reagents according to the requirements in the instruction manual.

13. CONTACT US

Address: 201318, Building 6, Lane 889, Ziping Road, Zhoupu Town, Pudong New Area, Shanghai, China

Website: www.bluegene.cc www.elisakit.cc

Tel: 400-882-6373/021--61106433/021--61106434/021-61106435/021--61106436

International Marketing Department:		
America	Tina	americas@bluegene.cc
America	Luyuan	luyuan@bluegene.cc
Asia & Australia	Diana	asia@bluegene.cc
Europe & Africa	Raina	europe-raina@bluegene.cc
Others	Cheng	sales@bluegene.cc
Technical Support Department:		
Menan	tech@bluegene.cc	