



# **EZ-Set™ ELISA Kit (DIY Antibody Pairs)**

**Catalog number: EZ1743**

For the development of sandwich ELISA kit to measure **Human VWF** concentrations in cell culture supernatants, serum and plasma (heparin, EDTA, citrate ).

This package insert must be read in its entirety before using this product.  
For research use only. Not for use in diagnostic procedures.

## Human VWF-A2/VWF EZ-Set™ ELISA Kit (DIY Antibody Pairs)

Catalog Number: EZ1743

For the development of sandwich ELISA kit to measure Human VWF in cell culture supernatants, serum and plasma (heparin, EDTA, citrate ).

This kit contains sufficient materials to run ELISAs on at least five 96 well plates, provided the following conditions are met:

- The reagents are prepared as described in this package insert.
- The assay is run as described in the General ELISA Protocol.
- The recommended microplates, buffers, diluents, substrates, and solutions are used.

### Overview

Size	5 plates/kit
Range	312 pg/ml - 20,000 pg/ml
Specificity	Natural and recombinant Human VWF
Immunogen	Expression system for standard: E.coli; Immunogen sequence: D1498-V1665
Cross Reactivity	There is no detectable cross-reactivity with other relevant proteins.
Storage Instructions	Store at 4°C for 6 months, at -20°C for 12 months. Avoid multiple freeze-thaw cycles (Ships with gel ice, can store for up to 3 days in room temperature. Freeze upon receiving.)

### Kit Components/Materials Provided

Catalog number	Description	Quantity	Storage of opened/reconstituted material
EZ1743-CA	Sheep anti-human VWF-A2/VWF polyclonal antibody (Capture Antibody)	500 µl, 4 µg/mL (recommended dilution 1:100)	Store undiluted at 4°C for 1 month or at -20°C for 3 months provided this is within the expiration date of the kit.
EZ1743-DA	Biotinylated sheep anti-human VWF-A2/VWF polyclonal antibody (Detection Antibody)	500 µl (recommended dilution 1:100)	
AR1103	Avidin-Biotin-Peroxidase Complex (ABC)	500 µl (recommended dilution 1:100)	
EZ1743-ST	Lyophilized recombinant human VWF-A2/VWF standard	20 ng/tube×3	Discard the standard stock solution after 12 hours at 4°C. May be stored at -20°C for 48 hours provided this is within the expiration date of the kit.

## Other Materials & Solutions Required But Not Provided

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### Preparation

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Bring all reagents to room temperature before use. Working dilutions should be prepared and used immediately.

#### 1. Plate Preparation

- 1) Dilute the Capture Antibody to the working concentration in 1:100 with Capture Antibody Diluent. (i.e. Add 1  $\mu$ l anti-Human VWF Capture Antibody into 99  $\mu$ l Capture Antibody Diluent.) Immediately coat a 96-well microplate with 100  $\mu$ l per well of the diluted Capture Antibody. Seal the plate and incubate overnight at 4°C.
- 2) Remove the cover and discard the liquid in the wells into an appropriate waste receptacle. Invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid. It is recommended that the wells are not allowed to completely dry at any time.
- 3) Block plates by adding 200  $\mu$ l of Reagent Diluent to each well. Incubate at room temperature for 2 hours.
- 4) Aspirate each well and wash with **PBS**, repeating the process two times for a total of three washes. Wash by filling each well with **PBS** (300-350  $\mu$ l) using a squirt bottle, manifold dispenser, or autowasher. Complete removal of liquid at each step is essential for good performance. After the last wash, remove any remaining **PBS** by aspirating or by inverting the plate and blotting it against clean paper towels. (**Plate Washing Method**)

#### 2. Reconstitution of Human VWF standard

#### 3. Preparation of working solution

- 1) Each vial contains 500  $\mu$ l of .
- 2) should be diluted in 1:100 with Capture Antibody Diluent and mixed thoroughly. (i.e. Add 1  $\mu$ l to 99  $\mu$ l Capture Antibody Diluent.)

#### 4. Preparation of working solution

- 1) Each vial contains 500  $\mu$ l of .
- 2) should be diluted in 1:100 with Reagent Diluent and mixed thoroughly. (i.e. Add 1  $\mu$ l to 99  $\mu$ l Reagent Diluent.)

#### 5. Preparation of Avidin-Biotin-Peroxidase Complex (ABC) working solution

- 1) Each vial contains 500  $\mu$ l of Avidin-Biotin-Peroxidase Complex (ABC).
- 2) Avidin-Biotin-Peroxidase Complex (ABC) should be diluted in 1:100 with Reagent Diluent and mixed thoroughly. (i.e. Add 1  $\mu$ l ABC to 99  $\mu$ l Reagent Diluent.)

## Assay Protocol

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It is recommended that all reagents and materials be equilibrated to room temperature (18-25°C) prior to the experiment (see Preparation Before The Experiment, if you have missed this information).

1. Prepare all reagents and working standards as directed previously.
2. Remove excess microplate strips from the plate frame and seal and store them in the original packaging.
3. Add 100  $\mu$ l of the standard, samples, or control per well. At least two replicates of each standard, sample, or control is recommended.
4. Cover with the plate sealer provided and incubate for 120 minutes at room temperature (or 90 min. at 37°C).
5. Remove the cover and discard the liquid in the wells into an appropriate waste receptacle. Invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid. It is recommended that the wells are not allowed to completely dry at any time.
6. Add 100  $\mu$ l of the prepared 1x to each well.
7. Cover with a plate sealer and incubate for 90 minutes at room temperature (or 60 minutes at 37°C).

8. Wash the plate 3 times with **PBS**:

- a. Discard the liquid in the wells into an appropriate waste receptacle. Then, invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid. It is recommended that the wells are not allowed to completely dry at any time.
- b. Add 300  $\mu$ l of **PBS** to each assay well. (For cleaner background incubate for 60 seconds between each wash).
- c. Repeat steps a-b 2 additional times.
- d. Discard the wash buffer in the wells into an appropriate waste receptacle. Then, invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid.

9. Add 100  $\mu$ l of the prepared 1x Avidin-Biotin-Peroxidase Complex into each well and incubate for 40 minutes at RT (or 30 minutes at 37°C).

10. Wash the plate 5 times with **PBS-T**:

- a. Discard the liquid in the wells into an appropriate waste receptacle. Then, invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid. It is recommended that the wells are not allowed to completely dry at any time.
- b. Add 300  $\mu$ l of **PBS-T** to each assay well. (For cleaner background incubate for 60 seconds between each wash).
- c. Repeat steps a-b 4 additional times.
- d. Discard the wash buffer in the wells into an appropriate waste receptacle. Then, invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid.

11. Add 90  $\mu$ l of Color Developing Reagent to each well and incubate in the dark for 30 minutes at RT (or 25-30 minutes at 37°C). (The optimal incubation time must be empirically determined. A guideline to look for is blue shading the top four standard wells, while the remaining standards remain clear.)

12. Add 100  $\mu$ l of Stop Solution to each well. The color should immediately change to yellow.

13. Within 30 minutes of stopping the reaction, the O.D. absorbance should be read with a microplate reader at 450nm.

## Data Analysis

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Average the duplicate readings for each standard, sample, and control. Subtract the average zero standard O.D. reading.

It is recommended that a standard curve be created using computer software to generate a four-parameter logistic (4-PL) curve-fit. A free program capable of generating a four-parameter logistic (4-PL) curve-fit can be found online at: [www.myassays.com/four-parameter-logistic-curve.assay](http://www.myassays.com/four-parameter-logistic-curve.assay).

Alternatively, plot the mean absorbance for each standard against the concentration. The measured concentration in the sample can be interpolated by using linear regression of each average relative O.D. against the standard curve generated using curve fitting software. This will generate an adequate but less precise fit of the data.

For diluted samples, the concentration reading from the standard curve must be multiplied by the dilution factor.

## Background on VWF

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Von Willebrand factor (VWF) is a blood glycoprotein involved in hemostasis. It is mapped to 12p13.31. The VWF gene encodes von Willebrand factor (VWF), a large multimeric glycoprotein that plays a central role in the blood coagulation system, serving both as a major mediator of platelet vessel wall interaction and platelet adhesion, and as a carrier for coagulation factor VIII. VWF released from endothelial cell Weibel-Palade bodies bound particularly avidly to the extracellular matrix. VWF deficiency or dysfunction (von Willebrand disease) leads to a bleeding tendency, which is most apparent in tissues having high blood flow shear in narrow vessels.

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