

**Polink DS-MM kit for Double Staining (DAB /AP-Red+) Kit**  
 Polymer double staining kit for **two mouse antibodies**  
 (With DAB and AP-Red+ chromogens)

Storage: 2-8°C

Catalog No.: D78-6A  
 Size: 6ml (Polymer Conjugates)  
 Good for 60 Slides

**Intended Use:**

The Polink DS-MM kit is designed to use with user supplied two mouse antibodies to detect two distinct antigens on human tissue or cell samples. Specimen can be frozen or paraffin embedded tissues, and freshly prepared monolayer cell smears.

Double staining is one of most common methods used in immunohistostaining that allow revealing two distinct antigens in a single tissue<sup>1, 2</sup>. Polink DS-MM kit from Golden Bridge International supplies two polymer enzyme conjugates: Goat anti-Mouse IgG-HRP and Goat anti-Mouse IgG-AP with two distinct substrates/chromogens, DAB (brown color, use with Goat anti-Mouse IgG-HRP) and AP-Red+ (red color, use with Goat anti-Mouse IgG-AP). Polink DS-MM kit is non-biotin system that avoids endogenous biotin non-specific binding.

**Kit Components:**

Component No.	Content	Size
Reagent 1	Ready-to-use Pre-blocking solution	12 ml
Reagent 2	Ready-to-use Goat anti Mouse IgG-peroxidase (HRP) polymer conjugate	6 ml
Reagent 3A	Ready-to-use DAB substrate buffer	12 ml
Reagent 3B	Concentrated DAB chromogen	1.5 ml
Reagent 4	DS-MM Blocker	12ml
Reagent 5	Ready-to-use Goat anti Mouse IgG-alkaline phosphatase(AP) polymer conjugate	6 ml
Reagent 6A	Concentrated AP-Red Plus Enhancer (40x)	1ml
Reagent 6B	Concentrated AP-Red Plus Solution (40x)	1ml
Reagent 6C	Concentrated AP-Red Plus Substrate (20x)	2ml
Reagent 7	Ready-to-use Simpo-Mount solution	12 ml

**Recommended Protocol:**

1. Fixation: To ensure the quality of the staining and obtain reproducible performance, user needs to supply appropriately fixed tissue and well prepared slides.
2. Tissue need to be adhered to the slide tightly to avoid tissue falling off.
3. Paraffin embedded section must be deparaffinized with xylene and rehydrated with a graded series of ethanol before staining.
4. Cell smear samples should be made as much monolayer as possible to obtain satisfactory results.
5. Three control slides will aid the interpretation of the result: positive tissue control, reagent control (slides treated with Isotype control reagent), and negative control.
6. It takes about 30 minutes to dissolve AP-Red+ tablet into the substrate buffer. Make sure to start preparing AP-Red+ solution near the end of the secondary antibody incubation.
7. Proceed IHC staining: DO NOT let specimen or tissue dry from this point on.

Reagent	Staining Procedure	Incubation Time (Min.)
1. Peroxidase Blocking Reagent Not provided	a. Incubate slides in peroxidase blocking reagent (Ready-to-use 3% H <sub>2</sub> O <sub>2</sub> solution) for 10 minutes. b. Rinse the slide using distilled water.	10
2. HIER Pretreatment: Refer to antibody data sheet.	a. Heat Induced Epitope Retrieval (HIER) may be required for primary antibody suggested by vendor. b. Wash with PBS for 2 min., 3 times.	
3. <b>Reagent 1:</b> Pre-Blocking Solution	a. Add 2 drops (100ul) or enough volume of Pre-Blocking Solution to cover the tissue section and Incubate b. Drain or blot off solution. <b>DO NOT RINSE.</b>	10
4. Mouse Antibody 1: Supplied by user	<b>Notes:</b> Investigator needs to optimize dilution and incubation times prior to double staining. a. Apply 2 drops or enough volume of mouse primary antibody 1 to cover the tissue completely. Incubate in moist chamber for 30-60 min.	30-60

	b. Rinse with PBS containing 0.05% Tween-20 for 2 min., 3 times.	
5. <b>Reagent 2:</b> Polymer-HRP conjugated Secondary Antibodies	a. Apply 1 drop (50ul) of Goat anti Mouse. IgG-HRP Polymer Conjugate to cover each section. b. Incubate in moist chamber for 30 min. c. Rinse with PBS containing 0.05% Tween-20 for 2 min., 3 times.	15
6. <b>Reagents 3A, 3B:</b>  3A: DAB Substrate 3B: DAB Chromogen	a. Add 1 drop or <b>2 drops</b> (for higher sensitivity and contrast) of Reagent <b>3B</b> to 1 mL Reagent <b>3A</b> . Mix well. Protect from light and use within 5 hours. b. Apply 2 drops or enough volume of DAB CHROMOGEN to completely cover tissue. Incubate for 3-10 min. c. Rinse thoroughly with distilled water 4 times, 2 minutes each time.	3-10 min
7. <b>Reagent4:</b> DS-MM Blocker	a. Apply 2 drops or enough volume of DS-MM Blocker to cover the tissue completely. Mix well on the slide and Incubate in moist chamber for 10 min. b. Rinse with PBS containing 0.05% Tween-20 for 2 min., 3 times.	10
8. Mouse antibody 2: Supplied by user	<b>Notes:</b> Investigator needs to optimize dilution and incubation times prior to double staining. a. Apply 2 drops or enough volume of mouse primary antibody 2 to cover the tissue completely. b. Rinse with PBS containing 0.05% Tween-20 for 2 min., 3 times.	30-60
9. <b>Reagent 5:</b> Polymer –AP conjugated Secondary Antibodies (Ready-to-use)	a. Apply 1 drop (50ul) of Goat anti Mouse. IgG-AP Polymer Conjugate to cover each section. b. Incubate in moist chamber for 30 min. c. Rinse with PBS containing 0.05% Tween-20 for 2 min., 3 times.	15
10. <b>Reagent 6A, 6B, 6C:</b> AP-Red+ Chromogen:	a. Add 1 drop (50ul) of reagent <b>6A</b> and 1 drop of reagent <b>6B</b> to a test tube. Mix well and set at room temperature for 5 minutes. b. Add 2ml of distilled water to the mixture. Mix well. c. Add 2 drops (100ul) of Reagent <b>6C</b> and mix well. d. Apply 2 drops (100 µL) or enough volume of AP-Red Plus solution to completely cover the tissue. Incubate for 15-20 min., observe appropriate color development e. Rinse well with distilled water. ( <b>AP-Red Plus is alcohol soluble; do not dehydrate.</b> )	15-20 min
11. HEMATOXYLIN Not provided	a. Counterstain with 2 drops (100 µL) or enough volume of hematoxylin to completely cover tissue. Incubate for 10-15 seconds. c. Rinse thoroughly with tap water for 2-3 min b. Put slides in PBS until show blue color (about ½ - 1 min.) c. Rinse well in distilled water	
12. <b>Reagent 7:</b> Simpo-Mount	a. Apply 2 drops (100 µL) or enough volume to cover tissue when tissue is wet. Rotate the slides to allow Simpo-Mount spread evenly. DO NOT coverslip. b. Place slides horizontally in an oven at 40-50°C for at least 30 minutes or leave it at room temperature until slides are thoroughly dried. Hardened Simpo-Mount forms an impervious polymer barrier to organic solvent. Do not use oil directly on the top of dried Simpo-Mount.	30 min. in 40-50°C oven Or: overnight at room temperature

#### Protocol Notes:

1. The fixation, tissue slide thickness, antigen retrieval and primary antibody dilution and incubation time effect results significantly. Investigator needs to consider all factors and determine optimal conditions when interpret the result.
2. Simpo-Mount is water-based mounting medium for immunohistology. It may be used as the permanent mounting media. It does not need coverslip. However, if you need to coverslip, after Simpo-Mount dried, dip the slide in xylene and take out immediately. Apply O-Mount (organic mounting solution, Catalog No. E02-15) on the tissue and place cover glass on the slide. Store it after dry completely.

#### Precautions:

DAB may be carcinogenic. Please wear gloves and take other necessary precautions.

#### Remarks:

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

#### References:

1. De Pasquale A, Paterlini P, Quaglino D. *Immunochemical demonstration of different antigens in single cells in paraffin-embedded histological sections.* Clin Lab Haematol. 1982;4(3):267-72.
2. Polak J. M and Van Noorden S. Introduction to Immunocytochemistry Second Edition. Bios Scientific Publishers. P41-54. 1997