

# Reference Protocol for Anti-CD38 (HS-537 003) Immunohistochemistry using DAB as Chromogen

## Tissue Fixation

- 3.7% formaldehyde (24 h), 3.5 µM paraffin sections

## Materials and Reagents

- Food Steamer Braun, Multigourmet
- Staining Containers with slide holders (e.g. Tissue-Tek)
- Protein Block, Serum-Free Agilent X0909
- Antibody diluent Agilent S2022
- Biotinylated anti-rabbit antibody Jackson 111-065-144
- ABC HRP Kit, Standard Vectorlabs PK-4000
- ImmPACT DAB Vectorlabs SK-4105
- Hydrogen peroxide 30% Merck 1.07298.0250
- PBS (pH 7.4)
- TBST (TBS, 0.05% Tween 20, pH 7.6)
- Antigen Retrieval buffer:  
**Citrate Buffer (10 mM Citrate, 0.05% Tween 20, pH 6.0)**
- Xylene, 100% ethanol, 90% ethanol, 80% ethanol and 70% ethanol, 2-propanol
- Optional: Hematoxylin Solution (Mayer's, Modified) or other nuclear counterstain
- Optional: Avidin/Biotin Blocking Kit Vectorlabs SP-2001
- Non-aqueous mounting medium

## Method

### 1. Deparaffinize and hydrate tissue sections

- |                    |            |
|--------------------|------------|
| a. Xylol           | 2 x 5 min  |
| b. 100% EtOH       | 2 x 2 min  |
| c. 90% EtOH        | 1 x 2 min  |
| d. 80% EtOH        | 1 x 2 min  |
| e. 70% EtOH        | 2 x 2 min  |
| f. Deionized Water | 1 x 20 sec |
| g. PBS             | 1 x 2 min  |

\*Keep the slides in PBS until ready to perform the Antigen Retrieval.  
Do not allow the slides to dry out\*

## 2. Antigen Retrieval (AR) using a food steamer

- a. Heat the steamer with a suitable staining container filled with Antigen Retrieval buffer to **~97°C**
- b. Transfer the sections into the staining box, wait until the temperature reaches **97°C**
- c. Incubate the sections in the steamer for **30 min**
- d. Remove the staining container from the steamer and allow the slides to cool down for **20 min** (target end temperature **~60°C**)

3. Wash slides in PBS, 3 x 1 min

## 4. Blocking endogenous peroxidase activity

- a. Incubate the sections with 3% hydrogen peroxide in PBS (freshly prepared!) for **5 min**

5. Wash slides in PBS, 2 x 1 min

6. Wash slides in TBST, 1 x 2 min

7. **Optional:** Perform Avidin-Biotin-Block according to manufacturer's instructions.

*Note: Certain tissues (e.g. liver, kidney) contain high levels of endogenous biotin. The Avidin-Biotin blocking step is recommended when using the ABC system for these tissues. If the background problem persists, consider trying a polymer-based detection system instead of biotinylated secondary antibody / ABC system.*

8. Block in Protein Block, Serum-Free for **10 min**

9. **Drain slides (do not rinse)**

10. **Apply primary antibody diluted in Antibody Diluent** and incubate in a humidified chamber for **1 h at room temperature**  
**\*Suggested dilution: 1:200 in Antibody Diluent\***

11. Wash slides in TBST, 3 x 2 min

12. **Apply secondary antibody diluted in Antibody Diluent for 30 min at room temperature.**  
**\*Suggested concentration: 5 µg/ml\***  
**\*Perform step 13 in the interim\***

13. **Prepare the ABC-reagent:** 5 ml PBS + 1 drop A + 1 drop B, incubate for 30 min

14. Wash slides in TBST, 3 x 2 min

15. **Apply the ABC reagent for 30 min at room temperature**

16. Wash slides in TBST, 3 x 2 min

17. **Apply the DAB substrate, 1-10 min**

*\*Observe the staining with a microscope!*

*Development times may differ depending upon the level of antigen\**

18. Stop the DAB reaction with deionized water

19. **Optional: Counterstain**

- a. Follow the manufacturer's instructions for counterstaining and bluing

20. Wash slides in deionized water for 1 min

21. **Dehydrate tissue sections:**

- a. **70% EtOH**    **2 x 10 sec**
- b. **80% EtOH**    **1 x 10 sec**
- c. **90% EtOH**    **1 x 10 sec**
- d. **2-Propanol**    **2 x 1 min**
- e. **Xylol**            **3 x 2 min**

22. **Mount slides in a suitable organic mounting medium and add coverslip**

*Note: The SYSY standard protocol generates good results in the SYSY labs and may be used as a reference. However, to achieve the highest specific*

*signal and lowest non-specific background signal, the best antigen retrieval condition, antibody concentration, incubation temperature, and incubation time must be determined individually. Please also refer to our general protocols.*