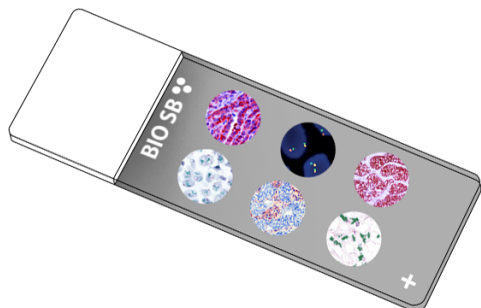


# Cathepsin K Control Slides



## Intended Use

For In Vitro Diagnostic Use.

## Summary and Explanation

Cathepsin K is a cysteine protease, which may be secreted as a pro-enzyme and is activated in a low-pH environment such as lysosomes. Cathepsin K accepts Arg and Lys residues at the P1 active site, acting on Proteolytically Activated Receptors (PARs) in extracellular matrix. Cathepsin K also cleaves collagen and degrades bone matrix, and is involved in the mTOR signaling pathway of cellular autophagy and apoptosis. Cathepsin K has also been shown to induce aggregation in platelets and in the Hedgehog signaling pathway.

As a protease active in the extracellular matrix and lysosomes, Cathepsin K has been implicated in cancer progression and invasiveness. Cathepsin K has been shown to have specific proteolytic activity on PAR-3 and PAR-4, which are expressed in the EMC of epithelial-mesenchymal cells in breast cancer. Proteolytic cleavage of PARs stimulates platelet aggregation and p38 phosphorylation in the MAPK pathway. Cathepsin K-induced proteolytic cleavage induces upregulation of proteins related to metastasis in bone and prostate cancer, and epithelial-mesenchymal-like cells in breast cancer.

## Presentation

Five slides of Cathepsin K positive tissues, each mounted on Hydrophilic Plus Slides, provided in a plastic mailer.

Catalog No.	Quantity
BSB-9438-CS	5 slides

**Storage** Store at 20-25°C

## Precautions

1. For professional users only. Results should be interpreted by a qualified medical professional.
2. Ensure proper handling procedures are used with this reagent.
3. Always wear personal protective equipment such as a laboratory coat, goggles, and gloves when handling reagents.
4. Dispose of unused solution with copious amounts of water.
5. Follow safety precautions of the heating device used for epitope retrieval (TintoRetriever Pressure Cooker or similar).
8. For additional safety information, refer to Safety Data Sheet for this product.
9. For complete recommendations for handling biological specimens, please refer to the CDC document, "Guidelines for Safe Work Practices in Human and Animal Medical Diagnostic Laboratories" (see References in this document).

## Stability

**This product is stable up to the expiration date on the product label.**

Do not use the after expiration date listed on the package label.

## IHC Protocol

1. Subject tissues to heat induced epitope retrieval (HIER) using a suitable retrieval solution such as ImmunoDNA Retriever with Citrate (BSB 0020-BSB 0023) or EDTA (BSB 0030-BSB 0033).

2. Any of three heating methods may be used:

### a. TintoRetriever Pressure Cooker or Equivalent

Place tissues/slides in a staining dish or coplin jar containing the ImmunoDNA Retriever with Citrate or EDTA and place on trivet in the pressure cooker. Add 1-2 inches of distilled water to the pressure cooker and turn heat to high. Incubate for 15 minutes. Open and immediately transfer slides to room temperature.

### b. TintoRetriever PT Module or Water Bath Method

Place tissues/slides in a pre-warmed staining dish or coplin jar containing the ImmunoDNA Retriever with Citrate or EDTA at 95°-99° C. Incubate for 30-60 minutes.

### c. Conventional Steamer Method

Place tissues/slides in a pre-warmed staining dish or coplin jar containing the ImmunoDNA Retriever with Citrate or EDTA in a steamer, cover and steam for 30-60 minutes.

3. After heat treatment, transfer slides in ImmunoDNA Retriever with Citrate or EDTA to room temperature and let stand for 15-20 minutes.
4. For manual staining, perform antibody incubation at ambient temperature. For automated staining methods, perform antibody incubation according to instrument manufacturer's instructions.
5. Wash slides with ImmunoDNA washer or DI water.
6. Continue IHC staining protocol. Wash slides between each step with ImmunoDNA washer solution.

## Abbreviated Immunohistochemical Protocol

Step	ImmunoDetector AP/HRP	PolyDetector AP/HRP	PolyDetector Plus HRP
Peroxidase/AP Blocker	5 min.	5 min.	5 min
Primary Antibody	30-60 min.	30-60 min.	30-60 min.
1st Step Detection	10 min.	30-45 min.	15 min.
2nd Step Detection	10 min.	Not Applicable	15 min.
Substrate- Chromogen	5-10 min.	5-10 min.	5-10 min.
Counterstain/Coverslip	Varies	Varies	Varies

#### Abbreviated IF Protocol

Step	Incubation Time
Rinse slides in IF wash buffer	5 minutes
Drain and wipe excess IF wash buffer off slide	
Conduct remaining steps in the dark	
Apply Antibody	30-60 minutes
Rinse with 3 changes of IF wash buffer	3x15 minutes each
Coverslip with IF mounting medium	

#### Mounting Protocols

For detailed instructions using biodegradable permanent mounting media such as XyGreen PermaMunter (BSB 0169-0174) or organic solvent based resin such as PermaMunter (BSB 0094-0097), refer to PI0174 or PI0097.





#### Product Limitations

Due to inherent variability present in immunohistochemical procedures (including fixation time of tissues, dilution factor of antibody, retrieval method utilized, and incubation time), optimal performance should be established through the use of positive and negative controls. Results should be interpreted by a qualified medical professional.

#### References

1. Andrade S, et al. Cathepsin K induces platelet dysfunction and affects cell signaling in breast cancer - molecularly distinct behavior of cathepsin K in breast cancer. BMC Cancer. 2016;16:173.
2. Yang H, et al. The Potential Role of Cathepsin K in Non-Small Cell Lung Cancer. Molecules. 2020;25(18):4136.
3. Horne, W. C. (2008). Regulating Bone Resorption: Targeting Integrins, Calcitonin Receptor, and Cathepsin K. In Principles of Bone Biology (3rd ed., pp. 221–236). Academic Press.
4. Liang W, et al. Targeting cathepsin K diminishes prostate cancer establishment and growth in murine bone. J Cancer Res Clin Oncol. 2019;145(8):1999-2012.

#### Symbol Key / Légende des symboles/Erläuterung der Symbole

<b>EC</b> <b>REP</b> QAdvis EAR AB Ideon Science Park Scheelevägen 17 SE-223 70 Lund, Sweden	 Storage Temperature Limites de température Zulässiger Temperaturbereich	 Manufacturer Fabricant Hersteller	<b>REF</b> Catalog Number Référence du catalogue Bestellnummer
<b>IVD</b> In Vitro Diagnostic Medical Device Dispositif médical de diagnostic in vitro In-Vitro-Diagnostikum	 Read Instructions for Use Consulter les instructions d'utilisation Gebrauchsanweisung beachten	 Expiration Date Utiliser jusqu'à Verwendbar bis	<b>LOT</b> Lot Number Code du lot Chargenbezeichnung