

# PRODUCT INFORMATION



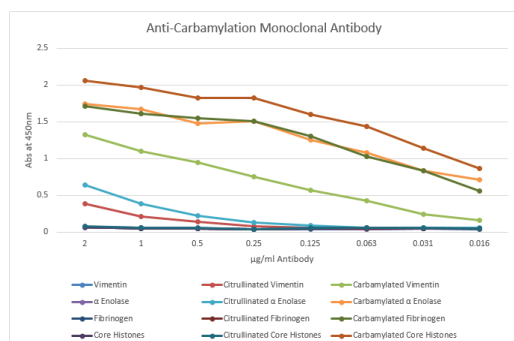
## Anti-Carbamylation (Homocitrulline) Monoclonal Antibody

Item No. 23203

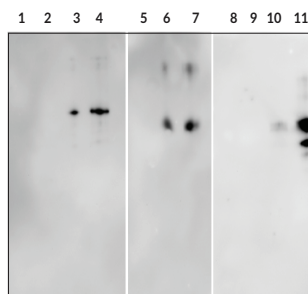
### Overview and Properties

<b>Contents:</b>	This vial contains 100 µg protein G-purified antibody.
<b>Immunogen:</b>	Carbamylated protein
<b>Species Reactivity:</b>	Species independent
<b>Form:</b>	Liquid
<b>Storage:</b>	-20°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Storage Buffer:</b>	PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide
<b>Clone:</b>	1C6
<b>Host:</b>	Mouse
<b>Isotype:</b>	IgG1
<b>Applications:</b>	ELISA, Immunoprecipitation (IP), and Western blot (WB); the recommended starting dilution for ELISA and WB is 1:1,000 and 5 µg of antibody per IP test. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

### Images

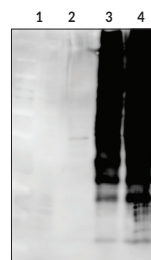


ELISA detection of the Anti-Carbamylation Monoclonal Antibody against carbamylated and unmodified proteins.



Western blot detection of carbamylated proteins.

Lane 1: Unmodified α-Enolase (100 ng)  
Lane 2: Citruinated α-Enolase (100 ng)  
Lane 3: Carbamylated α-Enolase (5 ng)  
Lane 4: Carbamylated α-Enolase (25 ng)  
Lane 5: Unmodified BSA (100 ng)  
Lane 6: Carbamylated BSA (5 ng)  
Lane 7: Carbamylated BSA (25 ng)  
Lane 8: Unmodified Fibrinogen (100 ng)  
Lane 9: Citruinated Fibrinogen (100 ng)  
Lane 10: Carbamylated Fibrinogen (5 ng)  
Lane 11: Carbamylated Fibrinogen (25 ng)



Western blot detection of the Anti-Carbamylation Monoclonal Antibody in carbamylated HeLa cell lysates.

Lane 1: HeLa Cell Lysate (10 µg)  
Lane 2: Citruinated HeLa Cell Lysate (10 µg)  
Lane 3: Carbamylated HeLa Cell Lysate (5 µg)  
Lane 4: Carbamylated HeLa Cell Lysate (10 µg)

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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## Description

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Carbamylation is a non-enzymatic and irreversible post-translational modification whereby cyanate reacts with lysine residues within polypeptide chains to generate  $\epsilon$ -carbamyl-lysine (homocitrulline).<sup>1</sup> Cyanate originates from the decomposition of urea and exists in equilibrium with its reactive form isocyanic acid.<sup>2</sup> Neutrophil-derived MPO mediates the conversion of thiocyanate to isocyanate at sites of inflammation.<sup>1,3</sup> Increased levels of urea associated with chronic kidney disease result in elevated cyanate concentrations and a higher potential for carbamylated proteins.<sup>4</sup> The presence of carbamylated proteins has been associated with rheumatoid arthritis.<sup>5</sup> Homocitrulline residues are structurally similar to citrulline, the presence of an additional methylene group on homocitrulline being the only difference. Peptidylarginine deiminase (PAD)-catalyzed formation of citrulline residues on proteins and peptides can indicate many of the same disease states as the presence of homocitrulline residues. The ability to differentiate between citrullinated and carbamylated proteins has been difficult using traditional techniques. Cayman's Anti-Carbamylation (Homocitrulline) Monoclonal Antibody specifically detects carbamylated proteins and does not detect the unmodified or citrullinated counterparts.

## References

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1. Verbrugge, F.H., Tang, W.H.W., and Hazen, S.L. Protein carbamylation and cardiovascular disease. *Kidney Int.* **88(3)**, 474-478 (2015).
2. Binder, V., Bergum, B., Jaisson, S., *et al.* Impact of fibrinogen carbamylation on fibrin clot formation and stability. *Thromb. Haemost.* **117(5)**, 899-910 (2017).
3. Gajjala, P.R., Fliser, D., Speer, T., *et al.* Emerging role of post-translational modifications in chronic kidney disease and cardiovascular disease. *Nephrol. Dial. Transplant.* **30(11)**, 1814-1824 (2015).
4. El-Gamal, D., Holzer, M., Gauster, M., *et al.* Cyanate is a novel inducer of endothelial ICAM-1 expression. *Antioxid. Redox Signal.* **16(2)**, 129-137 (2012).
5. Shi, J., Knevel, R., Suwannalai, P., *et al.* Autoantibodies recognizing carbamylated proteins are present in sera of patients with rheumatoid arthritis and predict joint damage. *Proc. Natl. Acad. Sci. USA* **108(42)**, 17372-17377 (2011).

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