

# PRODUCT INFORMATION



## Detyrosinated $\alpha$ -Tubulin Rabbit Monoclonal Antibody (Clone RM444) Item No. 35807

### Overview and Properties

<b>Contents:</b>	This vial contains 100 $\mu$ l of protein A-affinity purified monoclonal antibody.
<b>Synonyms:</b>	Glu-tubulin
<b>Immunogen:</b>	A peptide corresponding to detyrosinated $\alpha$ -tubulin
<b>Cross Reactivity:</b>	(+) Detyrosinated $\alpha$ -tubulin
<b>Species Reactivity:</b>	(+) Human
<b>Form:</b>	Liquid
<b>Storage:</b>	-20°C (as supplied)
<b>Stability:</b>	$\geq$ 1 year
<b>Storage Buffer:</b>	PBS with 50% glycerol, 1% BSA, and 0.09% sodium azide
<b>Host:</b>	Rabbit
<b>Isotype:</b>	IgG
<b>Applications:</b>	Immunocytochemistry (ICC), immunofluorescence (IF), Western blot (WB); the recommended starting dilution is 1:100-1:200 for ICC and IF and 1:1,000-1:2,000 for WB. Other applications were not tested, therefore optimal working concentration/ dilution should be determined empirically.

### Description

Detyrosinated  $\alpha$ -tubulin is a form of the cytoskeletal protein  $\alpha$ -tubulin that has been post-translationally modified by the tubulin carboxypeptidases vasohibin 1 (VASH-1) and VASH-2, which remove the C-terminal tyrosine from  $\alpha$ -tubulin.<sup>1</sup> Detyrosination of  $\alpha$ -tubulin occurs in the cytosol and exposes two consecutive glutamate residues that can be further processed to form  $\Delta$ 2- or  $\Delta$ 3-tubulin. Detyrosinated  $\alpha$ -tubulin monomers can be re-tyrosinated by tubulin tyrosine ligase and be incorporated into microtubules again.  $\alpha$ -Tubulin detyrosination is associated with, but not sufficient for, increased stability of the microtubule and is involved in a variety of biological processes, including neuronal development,  $\beta$ -oxidation, mitosis, and cardiomyocyte contraction.<sup>1-4</sup> Increased levels of detyrosination are associated with tumor development *in vitro*, have been found in tumor tissue from patients with breast cancer, and are positively correlated with breast cancer aggressiveness.<sup>5,6</sup> Cayman's Detyrosinated  $\alpha$ -Tubulin Rabbit Monoclonal Antibody (Clone RM333) can be used for immunocytochemistry (ICC), immunofluorescence (IF), and Western blot (WB) applications.

### References

1. Nieuwenhuis, J. and Brummelkamp, T.R. The tubulin detyrosination cycle: Function and enzymes. *Trends Cell Biol.* **29(1)**, 80-92 (2019).
2. Chen, J., Kholina, E., Szyk, A., *et al.*  $\alpha$ -tubulin tail modifications regulate microtubule stability through selective effector recruitment, not changes in intrinsic polymer dynamics. *Dev. Cell* **56(14)**, 2016-2028.e4 (2021).
3. Herms, A., Bosch, M., Reddy, B.J.N., *et al.* AMPK activation promotes lipid droplet dispersion on detyrosinated microtubules to increase mitochondrial fatty acid oxidation. *Nat. Commun.* **6**, 7176 (2015).
4. Chen, C.Y., Caporizzo, M.A., Bedi, K., *et al.* Suppression of detyrosinated microtubules improves cardiomyocyte function in human heart failure. *Nat. Med.* **24(8)**, 1225-1233 (2018).
5. Wattanathamsan, O. and Pongrakhananon, V. Post-translational modifications of tubulin: Their role in cancers and the regulation of signaling molecules. *Cancer Gene Ther.* (2021).
6. Mialhe, A., Lafanechère, L., Peloux, I.T.N., *et al.* Tubulin detyrosination is a frequent occurrence in breast cancers of poor prognosis. *Cancer Res.* **61(13)**, 5024-5027 (2001).

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.

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