Revision 1

Store at -20C

#15159

Propionyl-Lysine [Prop-K] (D3A9R) Rabbit mAb

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	Source/Isotype:
W	All	Endogenous	Rabbit IgG

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

Propionyl-Lysine (D3A9R) Rabbit mAb recognizes endogenous levels of proteins only when propionylated at a lysine residue. This antibody does not cross-react with other lysine modifications.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide library containing propionyl-lysine.

Background

Lysine is subject to a wide array of regulatory post-translational modifications due to its positively charged ε-amino group side chain. The most prevalent of these are ubiquitination and acetylation, which are highly conserved among prokaryotes and eukaryotes (1,2). Acyl group transfer from the metabolic intermediates acetyl-, succinyl-, malonyl-, glutaryl-, butyryl-, propionyl-, and crotonyl-CoA all neutralize lysine's positive charge and confer structural alterations affecting substrate protein function. Lysine acetylation is catalyzed by histone acetyltransferases, HATs, using acetyl-CoA as a cofactor (3,4). Deacylation is mediated by histone deacetylases, HDACs 1-11, and NAD-dependent Sirtuins 1-7. Some sirtuins have little to no deacetylase activity, suggesting that they are better suited for other acyl lysine substrates (5).
Protein propionyl and butyryl transferase activity has been reported for p300 and CREB-binding protein, two acetyltransferases that can autoacylate as well as target histone proteins and p53 in vitro. Sirt1 (Sir2 in yeast) has been shown to have depropionylase activity and may be a major eukaryotic depropionylase (6,7). In the cytosol, acetyl-CoA carboxylase (ACC) converts acetyl-CoA to Malonyl-CoA and the reverse reaction is catalyzed by Malonyl-CoA decarboxylase (MCD), but in the mitochondria, propionyl-CoA carboxylase takes the role of ACC. Both MCD and ACC are regulated by AMPK, glucose levels, and insulin, underscoring their importance in intermediary metabolism (8).

Background References

1. Liu, Z. et al. (2014) *Nucleic Acids Res* 42, D531-6.
2. Lee, S. (2013) *Toxicol Res* 29, 81-6.
3. Lin, H. et al. (2012) *ACS Chem Biol* 7, 947-60.
4. Zhang, Z. et al. (2011) *Nat Chem Biol* 7, 58-63.
5. Du, J. et al. (2011) *Science* 334, 806-9.
6. Chen, Y. et al. (2007) *Mol Cell Proteomics* 6, 812-9.
7. Cheng, Z. et al. (2009) *Mol Cell Proteomics* 8, 45-52.
8. Newman, J.C. et al. (2012) *J Biol Chem* 287, 42436-43.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

All: All Species Expected

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Limited Uses

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