

Lysine crotonylation

Lysine [crotonylation](#) is a newly discovered [post-translational modification](#), which is structurally and functionally different from the widely studied [lysine acetylation](#). Recent advances in the identification and quantification of [lysine](#) crotonylation by mass spectrometry have revealed that non-histone proteins are frequently crotonylated, implicating it in many biological processes through the regulation of chromatin remodelling, metabolism, cell cycle and cellular organization. In a review, Wan et al summarize the writers, erasers, and readers of lysine crotonylation, and their physiological functions, including [gene transcription](#), acute kidney injury, spermatogenesis, depression, telomere maintenance, HIV latency, and cancer process. These findings not only point to the new functions for lysine crotonylation but also highlight the mechanisms by which crotonylation regulates various cellular processes ¹⁾.

Lysine crotonylation has been discovered in [histone](#) and non-histone [proteins](#) and found to be involved in diverse diseases and biological processes, such as neuropsychiatric disease, [carcinogenesis](#), spermatogenesis, tissue injury, and [inflammation](#). The unique carbon-carbon π -bond structure indicates that lysine crotonylation may use distinct regulatory mechanisms from the widely studied other types of [lysine acetylation](#).

In a review, Jiang et al. discussed the regulation of lysine crotonylation by enzymatic and non-enzymatic mechanisms, the recognition of substrate proteins, the physiological functions of lysine crotonylation, and its cross-talk with other types of modification ²⁾

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Wan J, Liu H, Chu J, Zhang H. Functions and mechanisms of lysine crotonylation. J Cell Mol Med. 2019 Nov;23(11):7163-7169. doi: 10.1111/jcmm.14650. Epub 2019 Sep 1. PMID: 31475443; PMCID: PMC6815811.

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Jiang G, Li C, Lu M, Lu K, Li H. Protein lysine crotonylation: past, present, perspective. Cell Death Dis. 2021 Jul 14;12(7):703. doi: 10.1038/s41419-021-03987-z. PMID: 34262024.

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