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THE ROLE OF LYSINE-SPECIFIC METHYLTRANSFERASE Set7/9 IN DIFFERENTIATION OF EMBRYONAL STEM CELLS

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Stem cells are able to self-renewal for prolonged period of time and can differentiate into various cell types in response to signaling queues. It is known that multidirectional processes of maintenance and alteration of chromatin structure are key regulators of stem cell proliferation and differentiation. These processes are controlled by covalent modifications, including histone and non-histone protein methylation. One of the crucial modifications among them is histone lysine methylation. This review addresses the role of lysine-specific methyltransferase Set7/9 in regulation of stem cell pluripotency and differentiation via its methylating enzymatic activity. In particular, we consider the overall value of methylation of lysines in histone and non-histone proteins, the structure and functions of Set7/9, and the effect of this methyltransferase on key transcription factors that determine the pluripotent status of stem cells and regulate their differentiation.

Key words: lysine methylation, Set7/9 methyltransferase, chromatin
