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METHYLTRANSFERASE Set7/9 REGULATES EXPRESSION OF NUCLEAR RECEPTOR NR4A1

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Nuclear receptors form a large class of transcription factors involved into control of various cellular processes such as metabolism, proliferation, inflammation, apoptosis. Among the orphan nuclear receptors (ligands are not discovered) there is a special group of proteins called NR4A (NR4A1, NR4A2, NR4A3), and the most studied one is the NR4A1 receptor. This study demonstrates the effect of methyltransferase Set7/9 on expression of the nuclear receptor NR4A1. Lysine-specific methyltransferase Set7/9 (SETD7) is an enzyme that methylates the fourth lysine of the canonical histone H3 (H3K4me1). In this study it was shown that Set7/9 affects the expression of NR4A1 both at the mRNA level and at the protein level. It is important to note that the catalytic function of the methyltransferase Set7/9 is necessary for the regulation of NR4A1 expression.

Key words: nuclear receptor NR4A1, methyltransferase Set7/9, expression of the setd7 gene, CRISPR/Cas9 genomic editing system