



## Silencing FKBP38 gene by siRNA induces activation of mTOR signaling in goat fetal fibroblasts

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Genet. Mol. Res. 14 (3): 9675-9682 (2015)  
Received February 10, 2015  
Accepted May 15, 2015  
Published August 14, 2015  
DOI <http://dx.doi.org/10.4238/2015.August.14.30>

**ABSTRACT.** FKBP38 (also known as FKBP8) is a unique member of the FK506-binding protein (FKBP) family, and its role is controversial because it acts as an upstream regulator of the mTOR signaling pathway, which controls cell growth, proliferation, and differentiation. This study aimed to explore the role of FKBP38 in the activation of mTOR signaling in Cashmere goat (*Capra hircus*) fetal fibroblasts. To construct a Cashmere goat FKBP38 siRNA eukaryotic expression vector that targets FKBP38 mRNA, we designed shRNA based on the gene sequence deposited in GenBank (accession No. JF714970) and synthesized a DNA fragment encoding the shRNA. The DNA fragment was inserted into the pRNAT-U6.1/Neo vector to construct an expression vector of shRNA, which was labeled pRNAT-FKBP38-shRNA. The recombinant plasmid was used to transfect Cashmere goat fetal fibroblasts (GFb) using lipofectamine™2000. We found that cells were successfully transfected with pRNAT-U6.1/Neo-FKBP38-shRNA. Green fluorescence could be observed in cells following 48-h transfection. Proteins were then isolated from GFbs transfected with pRNAT-FKBP38-shRNA and from control

cells, and protein expression was analyzed by western blot. Expression of FKBP38 decreased and mTOR signaling was activated, which induced the phosphorylation of mTOR, S6, and 4EBP1. Thus, FKBP38 gene-silencing activates mTOR signaling in goat cells.

**Key words:** FKBP38, Short hairpin RNA; mTOR; Fetal fibroblasts; Inner Mongolia Cashmere goat