

**SirT3 (C73E3) Rabbit mAb**

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

| Applications: | Reactivity: | Sensitivity: | MW (kDa): | Source/Isotype: | UniProt ID: | Entrez-Gene Id: |
|---------------|-------------|--------------|-----------|-----------------|-------------|-----------------|
| W, IP, IHC-P  | H R Mk      | Endogenous   | 28        | Rabbit IgG      | #Q9NTG7     | 23410           |

**Product Usage Information****Application**

Western Blotting  
Immunoprecipitation  
Immunohistochemistry (Paraffin)

**Dilution**

1:1000  
1:50  
1:200

**Storage**

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

**Specificity/Sensitivity**

SirT3 (C73E3) Rabbit mAb detects endogenous levels of SirT3 protein. The antibody does not cross-react with other sirtuins.

**Source / Purification**

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Arg269 of human SirT3 protein.

**Background**

The Silent Information Regulator (SIR2) family of genes is a highly conserved group of genes that encode nicotinamide adenine dinucleotide (NAD)-dependent protein deacetylases, also known as Class III histone deacetylases. The first discovered and best characterized of these genes is *Saccharomyces cerevisiae* Sir2, which is involved in silencing of mating type loci, telomere maintenance, DNA damage response and cell aging (1). SirT3, a mammalian homolog of Sir2, exists in human cells in two forms. The full-length 44 kDa protein localizes to the nucleus, while a processed 28 kDa protein lacking 142 amino terminal residues localizes exclusively to the mitochondria (2-4). The single murine form of SirT3 is equivalent to the processed human SirT3 protein (2). Full-length SirT3 protein is processed in the mitochondrial matrix by the mitochondrial matrix processing peptidase (MMP) (3). Both full-length and processed forms of SirT3 are enzymatically active and de-acetylate histone H3 at Lys9 and histone H4 at Lys16 *in vitro* (2). SirT3 also de-acetylates Lys642 of acetyl-CoA synthetase 2 (AceCS2) and activates AceCS2 activity in the mitochondria (5). Restricted caloric intake, which is linked to increased lifespan in multiple organisms, increases SirT3 expression in white and brown adipocytes of obese mice, suggesting a role for SirT3 in aging (6). Two observations implicate SirT3 in the regulation of mitochondrial thermogenesis. First, exposure to cold temperatures increases SirT3 expression in brown adipocytes, while elevated temperatures reduce SirT3 expression (6). Second, over-expression of SirT3 results in increased levels of the mitochondrial uncoupling protein 1 (UCP1) (6). SirT3 protein levels are also elevated in certain breast cancers (7).

**Background References**

- Guarente, L. (1999) *Nat Genet* 23, 281-5.
- Scher, M.B. et al. (2007) *Genes Dev* 21, 920-8.
- Schwer, B. et al. (2002) *J Cell Biol* 158, 647-57.
- Onyango, P. et al. (2002) *Proc Natl Acad Sci USA* 99, 13653-8.
- Schwer, B. et al. (2006) *Proc Natl Acad Sci USA* 103, 10224-9.
- Shi, T. et al. (2005) *J Biol Chem* 280, 13560-7.
- Ashraf, N. et al. (2006) *Br J Cancer* 95, 1056-61.

**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 **IP:** Immunoprecipitation **IHC-P:** Immunohistochemistry (Paraffin)

**Cross-Reactivity Key**

**H:** Human **R:** Rat **Mk:** Monkey

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