

## Anti-SIRT1

produced in rabbit, affinity isolated antibody

Catalog Number **S5447**

### Product Description

Anti-SIRT1 is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 580-593 of human SIRT1 (GeneID: 23411), conjugated to KLH via an N-terminal cysteine residue. The corresponding sequence differs by three amino acids in rat and mouse Sirt1. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-SIRT1 recognizes human SIRT1. The antibody can be used in immunoblotting (~120 kDa) and immunoprecipitation. Detection of the SIRT1 band by immunoblotting is specifically inhibited by the immunizing peptide.

Eukaryotic genomes are organized as functional domains that facilitate the fundamental processes of transcription, replication, and DNA repair. Inactivation of large domains of DNA by packaging them into a specialized inaccessible chromatin structure leads to gene silencing. This type of inactivation is involved in the regulation of gene expression and is also associated with the chromosomal structure required for chromosome maintenance and inheritance.<sup>1</sup> Genetic and biochemical studies in budding yeast have identified the main regulatory sites and proteins that collaborate to assemble silenced DNA.<sup>2</sup> Sir2, one of the silent information regulator genes in yeast, is a nicotinamide adenine dinucleotide (NAD)-dependent deacetylase that modulates gene silencing, aging, and energy metabolism.<sup>3</sup> Sir2 maintains the heterochromatic state at the mating-type loci, telomers, and rRNA-encoding DNA repeats.<sup>4</sup> Sir2 controls the activity of acetyl-coenzyme A synthetase (AceCS), a metabolic evolutionarily conserved enzyme that converts acetate to acetyl-CoA, and mediates the effect of caloric restriction on lifespan extension.<sup>3,5,6</sup> Sir2 belongs to a family of proteins that is found in organisms ranging from bacteria to complex eukaryotes. Members of this family contain a 250 amino acid core domain that shares about 25-60% sequence identity.<sup>7</sup> The mammalian Sir2 gene family is comprised of seven members which are designated Sirt1-7.<sup>8</sup>

SIRT1 resides in the nucleus and is the most closely related to yeast Sir2. It is a NAD-dependent deacetylase which has been implicated in the regulation of several transcription factors, including p53, FOXO, NFκB, Mef2, and PGC-1α.<sup>9</sup> SIRT1 deacetylates and downregulates p53. Increased activity of SIRT1 in culture cells reduces p53 transcriptional activity and p53-mediated apoptosis in response to radiation or oxidative stress. SIRT1 also deacetylates and represses the activity of the forkhead transcription factor FOXO3a and other mammalian forkhead factors, and reduces forkhead-dependent apoptosis. SIRT1 represses the terminal differentiation in dividing myocytes by binding to the myoD cofactor, pCAF.<sup>10</sup> It has been shown that SIRT1 modifies chromatin and silences transcription of integrated reporter genes via histone deacetylation.<sup>11</sup> SIRT1 was found to protect against neurodegeneration in models for Alzheimer's disease and amyotrophic lateral sclerosis.<sup>12</sup> Resveratrol was found to stimulate SIRT1-mediated deacetylation of the transcriptional coactivator PGC-1α, promoting longevity and improving glucose homeostasis in mice.<sup>13</sup>

### Reagent

Supplied as a solution in 0.01 M phosphate buffered saline pH 7.4, containing 15 mM sodium azide as preservative.

Antibody concentration: ~1.0 mg/mL

### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

### Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

### Product Profile

Immunoblotting: a working concentration of 2.5-5 µg/mL is recommended using whole extracts of human Jurkat cells.

Immunoprecipitation: a working amount of 5-10 µg is recommended using extracts of human Jurkat cells.

**Note:** In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

### References

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