

# p16 siRNA (h): sc-36143



The Power to Question

## PROTEIN BACKGROUND

The progression of cells through the cell cycle is regulated by a family of protein kinases known as cyclin-dependent kinases (Cdks). The sequential activation of individual members of this family and their consequent phosphorylation of critical substrates promotes orderly progression through the cell cycle. The cyclins function as differentially expressed positive regulators of Cdks. Negative regulators of the cycle include the p53 inducible 21 kDa WAF1/Cip1 protein designated p21, Kip1 p27 and p16. The complexes formed by Cdk4 and the D-type cyclins have been strongly implicated in the control of cell proliferation during the G1 phase. It has recently been shown that p16 binds to Cdk4 and inhibits the catalytic activity of the Cdk4/cyclin D complex. Moreover, the gene encoding p16 exhibits a high frequency of homozygous deletions and point mutations in established human tumor cell lines.

## PRODUCT

p16 siRNA (h) is a target-specific 20-25 nt siRNA designed to knockdown gene expression. Each vial contains a 10  $\mu$ M solution of siRNA suitable for 50-100 transfections.

## PROTOCOLS

For protocols and product citations, please visit our website at [www.scbt.com](http://www.scbt.com)

## STORAGE

Store lyophilized siRNA duplex at -20° C with desiccant; Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## BACKGROUND REFERENCES

- Hunter, T. 1993. Braking the cycle. *Cell* **75**: 839-841.
- Sherr, C.J. 1993. Mammalian G1 cyclins. *Cell* **73**: 1059-1065.
- El-Deiry, W.S., et al. 1993. WAF1, a potential mediator of p53 tumor suppression. *Cell* **75**: 817-825.
- Harper, J.W., et al. 1993. The p21 cdk-interacting protein Cip1 is a potent inhibitor of G1 cyclin-dependent kinases. *Cell* **75**: 805-816.
- Xiong, Y., et al. 1993. p21 is a universal inhibitor of cyclin kinases. *Nature* **366**: 701-704.
- Polyak, K., et al. 1994. p27Kip1, a cyclin-Cdk inhibitor, links transforming growth factor- $\beta$  and contact inhibition to cell cycle arrest. *Genes and Dev.* **8**: 9-22.

## siRNA BACKGROUND

RNA Interference (RNAi) is one of the most exciting discoveries of the past decade in functional genomics and proteomics. While first recognized in nematodes as a response to exogenously introduced long double-stranded RNA, it is now clear that RNAi is utilized by most eukaryotes *in vivo* for anti-viral defense, transposon activity modulation and gene regulation, and is rapidly becoming an important research tool for gene silencing.

Long double-stranded RNAs (dsRNAs; typically >200 nucleotides) can be used to silence the expression of target genes in a variety of organisms and cell types. Upon introduction, the long dsRNAs enter a cellular pathway that is commonly referred to as the RNA interference (RNAi) pathway. First, the dsRNAs get processed by a RNase III-like enzyme called Dicer into small interfering RNAs (siRNAs), short RNA duplexes of 19-21 nucleotides with two nucleotide 3' overhangs on each strand. Then, the siRNAs assemble into endoribonuclease-containing complexes known as RNA-induced silencing complexes (RISCs), unwinding in the process. Activated RISCs subsequently bind to complementary transcripts by base pairing interactions between the siRNA anti-sense strand and complementary mRNA. The bound mRNA is cleaved and sequence specific degradation of mRNA results in gene silencing.

In mammalian cells, introduction of long dsRNA (>30 nucleotides) initiates a potent anti-viral response, exemplified by nonspecific inhibition of protein synthesis and RNA degradation. The mammalian anti-viral response can be bypassed, however, by the introduction of siRNAs.

Santa Cruz Biotechnology, Inc. is currently offering over 2600 target-specific 19-25 nucleotide siRNAs that can be used to knockdown protein expression in a broad variety of mammalian cell types. Our product line includes siRNAs designed to silence a large selection of proteins including tumor suppressors, kinases, transcription regulators, cell cycle proteins, membrane receptors, kinases, signaling intermediates, cell adhesion proteins and proteins involved in lymphocyte signaling. In addition, for each siRNA we offer an appropriate "matched" control antibody for confirmation of targeted mRNA silencing by either Western blotting or fluorescent antibody cell staining. Transfection reagent, appropriate buffers and fluorochrome-labeled non-targeted siRNA designed to monitor transfection efficiency are also available.

## SUPPORT REAGENTS

Control Antibody: p16 (C-20): sc-468

RT-PCR Primer: p16 (h)-PR: sc-36143-PR, 20  $\mu$ l  
RT-PCR product size: 473 bp

siRNA Transfection Reagent: sc-29528, 0.3 ml

siRNA Transfection Medium: sc-36868, 20 ml

siRNA Dilution Buffer: sc-29527, 1.5 ml

Control siRNA (Fluorescein Conjugate): sc-36869, 10  $\mu$ M in 60  $\mu$ l

Control siRNA: sc-37007, 10  $\mu$ M in 60  $\mu$ l