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# AKR7A2 shRNA (h) Lentiviral Particles: sc-44477-V

## BACKGROUND

The aldo-keto reductase 7 (AKR7) family includes AKR7A2, AKR7A3 and AKR7A4 in human, AKR7A5 in mouse and AKR7A2 in rat, all of which function in the metabolism of aflatoxin B(1) and other dicarbonyl-containing compounds. More specifically, AKR7A proteins are involved in the metabolism of compounds with ketone groups on adjacent carbon atoms in a broad range of tissues, notably the liver. The human AKR7A2 gene maps to a region frequently deleted in sporadic colorectal cancer. The functional significance of this correlation lies in the constitutive expression of AKR7A2 in human liver to eliminate aflatoxin (an environmental carcinogen), thus acting as an endogenous chemo-preventative agent.

## REFERENCES

1. Ellis, E.M., et al. 1995. Substrate specificity of an aflatoxin-metabolizing aldehyde reductase. *Biochem. J.* 312: 535-541.
2. Ireland, L.S., et al. 1998. Molecular cloning, expression and catalytic activity of a human AKR7 member of the aldo-keto reductase superfamily: evidence that the major 2-carboxybenzaldehyde reductase from human liver is a homologue of rat aflatoxin B<sub>1</sub>-aldehyde reductase. *Biochem. J.* 332: 21-34.
3. Kelly, V.P., et al. 2000. Purification from rat liver of a novel constitutively expressed member of the aldo-keto reductase 7 family that is widely distributed in extrahepatic tissues. *Biochem. J.* 348: 389-400.
4. Kelly, V.P., et al. 2002. Novel homodimeric and heterodimeric rat  $\gamma$ -hydroxybutyrate synthases that associate with the Golgi apparatus define a distinct subclass of aldo-keto reductase 7 family proteins. *Biochem. J.* 366: 847-861.
5. Praml, C., et al. 2003. Aflatoxin B1 aldehyde reductase (AFAR) genes cluster at 1p35-1p36.1 in a region frequently altered in human tumour cells. *Oncogene* 22: 4765-4773.
6. Kozma, E., et al. 2003. The high resolution crystal structure of rat liver AKR7A1: understanding the substrate specificities of the AKR7 family. *Chem. Biol. Interact.* 143-144: 289-297.

## CHROMOSOMAL LOCATION

Genetic locus: AKR7A2 (human) mapping to 1p36.13.

## PRODUCT

AKR7A2 shRNA (h) Lentiviral Particles are concentrated, transduction-ready viral particles containing a target-specific construct that encodes a 19-25 nt (plus hairpin) shRNA designed to knock down gene expression. Each vial contains 200  $\mu$ l frozen stock containing  $1.0 \times 10^6$  infectious units of virus (IFU) in Dulbecco's Modified Eagle's Medium with 25 mM HEPES pH 7.3. Suitable for 10-20 transductions. Also see AKR7A2 siRNA (h): sc-44477 and AKR7A2 shRNA Plasmid (h): sc-44477-SH as alternate gene silencing products.

## STORAGE

Store lentiviral particles at  $-80^\circ\text{C}$ . Stable for at least one year from the date of shipment. Once thawed, particles can be stored at  $4^\circ\text{C}$  for up to one week. Avoid repeated freeze thaw cycles.

## APPLICATIONS

AKR7A2 shRNA (h) Lentiviral Particles is recommended for the inhibition of AKR7A2 expression in human cells.

## SUPPORT REAGENTS

Control shRNA Lentiviral Particles: sc-108080. Available as 200  $\mu$ l frozen viral stock containing  $1.0 \times 10^6$  infectious units of virus (IFU); contains an shRNA construct encoding a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA.

## GENE EXPRESSION MONITORING

AKR7A2 (Y02): sc-100503 is recommended as a control antibody for monitoring of AKR7A2 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor AKR7A2 gene expression knockdown using RT-PCR Primer: AKR7A2 (h)-PR: sc-44477-PR (20  $\mu$ l). Annealing temperature for the primers should be  $55-60^\circ\text{C}$  and the extension temperature should be  $68-72^\circ\text{C}$ .

## BIOSAFETY

Lentiviral particles can be employed in standard Biosafety Level 2 tissue culture facilities (and should be treated with the same level of caution as with any other potentially infectious reagent). Lentiviral particles are replication-incompetent and are designed to self-inactivate after transduction and integration of shRNA constructs into genomic DNA of target cells.

## RESEARCH USE

The purchase of this product conveys to the buyer the nontransferable right to use the purchased amount of the product and all replicates and derivatives for research purposes conducted by the buyer in his laboratory only (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party, or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes.

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