SANTA CRUZ BIOTECHNOLOGY, INC.

ATR2/CMG2 siRNA (h): sc-60231

BACKGROUND

Anthrax toxin receptor 2 (ATR2), also designated capillary morphogenesis gene 2 (CMG2), is a cellular receptor for anthrax toxin. ATR2/CMG2 is a type 1 membrane protein that includes an extracellular von Willebrand factor A (VWA) domain with a metal ion-dependent adhesion site (MIDAS) motif. ATR2/CMG2 binds to protective antigen (PA) which is one of the three monomeric proteins which are released as anthrax toxin from *Bacillus anthracis.* Once bound, PA facilitates the delivery of the other two proteins, edema factor (EF) and lethal factor (LF), into the cytosol. Mutations in the gene ATR2/CMG2 result in inhibition of binding by the vWA domain, associated with infantile systemic hyalinosis (ISH) and juvenile hyaline fibromatosis (JHF). ISH and JHF are rare stiff-skin syndromes characterized by hyaline desposition in various organs, especially the skin and gingiva.

REFERENCES

1. Scobie, H.M., et al. 2003. Human capillary morphogenesis protein 2 functions as an anthrax toxin receptor. Proc. Natl. Acad. Sci. USA 100: 5170-5174.
2. Lacy, D.B., et al. 2004. Crystal structure of the von Willebrand factor A domain of human capillary morphogenesis protein 2: an anthrax toxin receptor. Proc. Natl. Acad. Sci. USA 101: 6367-6372.
3. Lacy, D.B., et al. 2004. Structure of heptameric protective antigen bound to an anthrax toxin receptor: a role for receptor in pH-dependent pore formation. Proc. Natl. Acad. Sci. USA 101: 13147-13151.
4. Wigelsworth, D.J., et al. 2004. Binding stoichiometry and kinetics of the interaction of a human anthrax toxin receptor, CMG2, with protective antigen. J. Biol. Chem. 279: 23349-23356.
5. Scobie, H.M. and Young, J.A. 2005. Interactions between anthrax toxin receptors and protective antigen. Curr. Opin. Microbiol. 8: 106-112.
6. Banks, D.J., et al. 2005. Anthrax toxin receptor 2 mediates *Bacillus anthracis* killing of macrophages following spore challenge. Cell. Microbiol. 7: 1173-1185.

CHROMOSOMAL LOCATION

Genetic Locus: ANTXR2 (human) mapping to 4q21.21.

PRODUCT

ATR2/CMG2 siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ATR2/CMG2 shRNA Plasmid (h): sc-60231-SH and ATR2/CMG2 shRNA (h) Lentiviral Particles: sc-60231-V as alternate gene silencing products.

For independent verification of ATR2/CMG2 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-60231A, sc-60231B and sc-60231C.

RESEARCH USE

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

STORAGE AND RESUSPENSION

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

ATR2/CMG2 siRNA (h) is recommended for the inhibition of ATR2/CMG2 expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ATR2/CMG2 gene expression knockdown using RT-PCR Primer: ATR2/CMG2 (h)-PR: sc-60231-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Arévalo, M.T., et al. 2014. Targeted silencing of anthrax toxin receptors protects against anthrax toxins. J. Biol. Chem. 289: 15730-15738.
2. Meng, L., et al. 2021. Genetic deletion of CMG2 exacerbates systemic-to-pulmonary shunt-induced pulmonary arterial hypertension. FASEB J. 35: e21421.
3. Hsu, C.Y., et al. 2022. Carbon monoxide releasing molecule-2 attenuates angiotensin II-induced IL-6/Jak2/Stat3-associated inflammation by inhibiting NADPH oxidase- and mitochondria-derived ROS in human aortic smooth muscle cells. Biochem. Pharmacol. 198: 114978.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.