

CYP2D12 siRNA (m): sc-142693

BACKGROUND

The cytochrome P450 proteins (CYPs) are monooxygenases that catalyze reactions involved in both drug metabolism and in the synthesis of cholesterol, steroids and other lipids. Because of their ability to catalyze oxygen insertion into a wide range of substrates, P450 enzymes have important applications in synthetic biology for oxychemical production. P450 enzymes are classified into subfamilies based on sequence similarities. The CYP2 subfamily is potentially important for their role in drug metabolism, as approximately 85% of medications currently prescribed are metabolized by the enzymes in the P450 family, and CYP2 genes show a large range of genetic variation between different ethnic groups influencing tailored therapies. CYP2D12 (Cytochrome P450, family 2, subfamily d, polypeptide 12) is a 504 amino acid transmembrane protein that belongs to the cytochrome P450 family. The gene for CYP2D12 is located on mouse chromosome 15 E1.

REFERENCES

- Nelson, D.R., Kamataki, T., Waxman, D.J., Guengerich, F.P., Estabrook, R.W., Feyereisen, R., Gonzalez, F.J., Coon, M.J., Gunsalus, I.C. and Gotoh, O. 1993. The P450 superfamily: update on new sequences, gene mapping, accession numbers, early trivial names of enzymes, and nomenclature. *DNA Cell Biol.* 12: 1-51.
- Chen, C. and Wang, D.W. 2015. Cytochrome P450-CYP2 family-epoxygenase role in inflammation and cancer. *Adv. Pharmacol.* 74: 193-221.
- Toselli, F., Booth Depaz, I.M., Worrall, S., Etheridge, N., Dodd, P.R., Wilce, P.A. and Gillam, E.M. 2015. Expression of CYP2E1 and CYP2U1 proteins in amygdala and prefrontal cortex: influence of alcoholism and smoking. *Alcohol. Clin. Exp. Res.* 39: 790-797.
- Kim, J.H., Cheong, H.S., Park, B.L., Kim, L.H., Shin, H.J., Na, H.S., Chung, M.W. and Shin, H.D. 2015. Direct sequencing and comprehensive screening of genetic polymorphisms on CYP2 family genes (CYP2A6, CYP2B6, CYP2C8, and CYP2E1) in five ethnic populations. *Arch. Pharm. Res.* 38: 115-128.
- He, Z.X., Chen, X.W., Zhou, Z.W. and Zhou, S.F. 2015. Impact of physiological, pathological and environmental factors on the expression and activity of human cytochrome P450 2D6 and implications in precision medicine. *Drug Metab. Rev.* 47: 470-519.
- Girvan, H.M. and Munro, A.W. 2016. Applications of microbial cytochrome P450 enzymes in biotechnology and synthetic biology. *Curr. Opin. Chem. Biol.* 31: 136-145.
- Almeida, D., Maldonado, E., Khan, I., Silva, L., Gilbert, M.T., Zhang, G., Jarvis, E.D., O'Brien, S.J., Johnson, W.E. and Antunes, A. 2016. Whole genome identification, phylogeny and evolution of the cytochrome P450 family 2 (CYP2) sub-families in birds. *Genome Biol. Evol.* 8: 1115-1131.

CHROMOSOMAL LOCATION

Genetic locus: *Cyp2d12* (mouse) mapping to 15 E1.

PROTOCOLS

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

PRODUCT

CYP2D12 siRNA (m) is a pool of 2 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CYP2D12 shRNA Plasmid (m): sc-142693-SH and CYP2D12 shRNA (m) Lentiviral Particles: sc-142693-V as alternate gene silencing products.

For independent verification of CYP2D12 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-142693A and sc-142693B.

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

APPLICATIONS

CYP2D12 siRNA (m) is recommended for the inhibition of CYP2D12 expression in mouse 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 μ M in 66 μ l. 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 CYP2D12 gene expression knockdown using RT-PCR Primer: CYP2D12 (m)-PR: sc-142693-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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