

# FR (N-20): sc-16387



The Power to Question

## BACKGROUND

Folate is an essential vitamin that must be obtained from food intake through intestinal absorption in mammals. Folate and reduced folic acid derivatives bind to the folate receptor (FR) family, which mediates the endocytosis of 5-methyltetrahydrofolate into the cell. The folate receptors consist of five members,  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\gamma'$  (which is produced by alternative splicing) and  $\delta$ .  $\alpha$ -FR and  $\beta$ -FR are attached to the membrane by a GPI anchor and are expressed in malignant tissues of epithelial and nonepithelial origin, respectively.  $\gamma$ -FR is expressed in tissues of hematopoietic origin, such as spleen, thymus and bone marrow, but the expression pattern of  $\delta$ -FR is elusive, which suggests that it is highly restricted both spatially and temporally.  $\alpha$ -FR is used as a highly selective tumor marker and may be targeted for the delivery of therapeutic compounds to tumor cells by coupling to derivatives of folic acid.

## REFERENCES

1. Prasad, P.D., et al. 1994. Selective expression of the high-affinity isoform of the folate receptor (FR- $\alpha$ ) in the human placental syncytiotrophoblast and choriocarcinoma cells. *Biochim. Biophys. Acta* 1223: 71-75.
2. Shen, F., et al. 1995. Folate receptor type  $\gamma$  is primarily a secretory protein due to lack of an efficient signal for glycosylphosphatidylinositol modification: protein characterization and cell type specificity. *Biochemistry* 34: 5660-5665.
3. Wang, H., et al. 1998. Structure and regulation of a polymorphic gene encoding folate receptor type  $\gamma/\gamma'$ . *Nucleic Acids Res.* 26: 2132-2142.
4. Said, H.M., et al. 2000. Adaptive regulation of intestinal folate uptake: effect of dietary folate deficiency. *Am. J. Physiol. Cell Physiol.* 279: 1889-1895.
5. Spiegelstein, O., et al. 2000. Identification of two putative novel folate receptor genes in humans and mouse. *Gene* 258: 117-125.
6. Wang, H., et al. 2000. Differentiation-independent retinoid induction of folate receptor type  $\beta$ , a potential tumor target in myeloid leukemia. *Blood* 96: 3529-3536.
7. Sudimack, J., et al. 2000. Targeted drug delivery via the folate receptor. *Adv. Drug Deliv. Rev.* 41: 147-162.
8. Zhu, W.Y., et al. 2001. The rate of folate receptor  $\alpha$  (FR  $\alpha$ ) synthesis in folate depleted CHL cells is regulated by a translational mechanism sensitive to media folate levels, while stable overexpression of its mRNA is mediated by gene amplification and an increase in transcript half-life. *J. Cell. Biochem.* 81: 205-219.

## SOURCE

FR (N-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of FR of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-16387 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

FR (N-20) is recommended for detection of  $\alpha$ ,  $\beta$ ,  $\gamma$  and, to a lesser extent,  $\delta$ -FR of human origin and  $\alpha$ ,  $\beta$  and, to a lesser extent,  $\delta$ -FR of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

FR (N-20) is also recommended for detection of  $\alpha$ ,  $\beta$ ,  $\gamma$  and, to a lesser extent,  $\delta$ -FR in additional species, including equine, canine, bovine, porcine and avian.

Molecular Weight of mature FR glycoprotein: 36-39 kDa.

Positive Controls: JAR cell lysate: sc-2276, JEG-3 whole cell lysate: sc-364255 or mouse placenta extract: sc-364247.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## SELECT PRODUCT CITATIONS

1. Chen, W.T., et al. 2005. Arthritis imaging using a near-infrared fluorescence folate-targeted probe. *Arthritis Res. Ther.* 7: R310-R317.
2. Saba, N.F., et al. 2009. Examining expression of folate receptor in squamous cell carcinoma of the head and neck as a target for a novel nanotherapeutic drug. *Head Neck* 31: 475-481.
3. Zhou, J., et al. 2011. Real time monitoring of biomaterial-mediated inflammatory responses via macrophage-targeting NIR nanoprobes. *Biomaterials* 32: 9383-9390.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

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



Try **FR (E-11): sc-515521** or  **$\beta$ -FR (4B12): sc-293199**, our highly recommended monoclonal alternatives to FR (N-20).