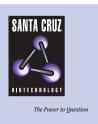
## SANTA CRUZ BIOTECHNOLOGY, INC.

# Rae-1 (I-19): sc-55795



## BACKGROUND

Natural killer (NK) cells attack tumor and infected cells, but the receptors and ligands that stimulate them are poorly understood. Two murine ligands for the lectin-like receptor NKG2D, H60 and retinoic acid early inducible (Rae-1 $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  and  $\epsilon$ ), are distant relatives of major histocompatibility complex class I molecules. These molecules are encoded by Rae-1 and H60 minor histocompatibility antigen genes on mouse chromosome 10 and show weak homology with MHC class I. Expression of the NKG2D ligands is low or absent on normal, adult tissues; however, they are constitutively expressed on some tumors and upregulated by retinoic acid. Ectopic expression of Rae-1 and H60 confers target susceptibility to NK cell attack. NKG2D binds to H60 with approximately 25-fold higher affinity than to Rae-1. Rae-1 and H60 compete directly for occupancy of NKG2D; therefore, NKG2D can be occupied by only one ligand at a time. Additionally, Rae-1 and H60 ligands of the NKG2D receptor stimulate tumor immunity.

#### REFERENCES

- Zou, Z., Nomura, M., Takihara, Y., Yasunaga, T. and Shimada, K. 1996. Isolation and characterization of retinoic acid-inducible cDNA clones in F9 cells: a novel cDNA family encodes cell surface proteins sharing partial homology with MHC class I molecules. J. Biochem. 119: 319-328.
- Diefenbach, A., Jamieson, A.M., Liu, S.D., Shastri, N. and Raulet, D.H. 2000. Ligands for the murine NKG2D receptor: expression by tumor cells and activation of NK cells and macrophages. Nat. Immunol. 1: 119-126.
- Cerwenka, A., Bakker, A.B., McClanahan, T., Wagner, J., Wu, J., Phillips, J.H. and Lanier, L.L. 2000. Retinoic acid early inducible genes define a ligand family for the activating NKG2D receptor in mice. Immunity 12: 721-727.
- Steinle, A., Li, P., Morris, D.L., Groh, V., Lanier, L.L., Strong, R.K. and Spies, T. 2001. Interactions of human NKG2D with its ligands MICA, MICB, and homologs of the mouse Rae-1 protein family. Immunogenetics 53: 279-287.
- Diefenbach, A., Jensen, E.R., Jamieson, A.M. and Raulet, D.H. 2001. Rae-1 and H60 ligands of the NKG2D receptor stimulate tumour immunity. Nature 413: 165-171.
- O'Callaghan, C.A., Cerwenka, A., Willcox, B.E., Lanier, L.L. and Bjorkman, P.J. 2001. Molecular competition for NKG2D: H60 and RAE1 compete unequally for NKG2D with dominance of H60. Immunity 15: 201-211.
- Carayannopoulos, L.N., Naidenko, O.V., Kinder, J., Ho, E.L., Fremont, D.H. and Yokoyama, W.M. 2002. Ligands for murine NKG2D display heterogeneous binding behavior. Eur. J. Immunol. 32: 597-605.
- 8. Li, P., McDermott, G. and Strong, RK. 2002. Crystal structures of Rae-1 $\beta$  and its complex with the activating immunoreceptor NKG2D. Immunity 16: 77-86.
- Backstrom, E., Chambers, B.J., Ho, E.L., Naidenko, O.V., Mariotti, R., Fremont, D.H., Yokoyama, W.M., Kristensson, K. and Ljunggren, H.G. 2003. Natural killer cell-mediated lysis of dorsal root ganglia neurons via Rae-1/ NKG2D interactions. Eur. J. Immunol. 33: 92-100.

#### CHROMOSOMAL LOCATION

Genetic locus: RAET1E (human) mapping to 6q25.1; Raet1e (mouse) mapping to 10 A3.

## SOURCE

Rae-1 (I-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of Rae- $1\varepsilon$  of mouse origin.

## PRODUCT

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

Blocking peptide available for competition studies, sc-55795 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## **APPLICATIONS**

Rae-1 (I-19) is recommended for detection of Rae-1 $\alpha$ , Rae-1 $\beta$ , Rae-1 $\gamma$ , Rae-1 $\delta$  and Rae-1 $\epsilon$  of mouse 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).

Molecular Weight of mature Rae-1: 25 kDa.

Molecular Weight of Rae-1 precursor: 32 kDa.

#### **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) Immunofluo-rescence: 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.

### **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.

#### PROTOCOLS

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