SANTA CRUZ BIOTECHNOLOGY, INC.

Rae-1β/γ (Xc-12): sc-80310

SANTA CRUZ BIOTECHNOLOGY
The Power to Question

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 NKG2-D, H60 and retinoic acid early inducible (Rae-1), 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 NKG2-D 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. NKG2-D binds to H60 with approximately 25-fold higher affinity than to Rae-1. Rae-1 and H60 compete directly for occupancy of NKG2-D and, thus, NKG2-D can be occupied by only one ligand at a time. Additionally, Rae-1 and H60 ligands of the NKG2-D receptor stimulate tumor immunity.

REFERENCES

1. 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.
2. Diefenbach, A., Jamieson, A.M., Liu, S.D., Shastri, N. and Raulet, D.H. 2000. Ligands for the murine NKG2-D receptor: expression by tumor cells and activation of NK cells and macrophages. Nat. Immunol. 1: 119-126.
3. 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 NKG2-D receptor in mice. Immunity 12: 721-727.
4. O'Callaghan, C.A., Cerwenka, A., Willcox, B.E., Lanier, L.L. and Bjorkman, P.J. 2001. Molecular competition for NKG2-D: H60 and Rae-1 compete unequally for NKG2-D with dominance of H60. Immunity 15: 201-211.
5. Diefenbach, A., Jensen, E.R., Jamieson, A.M. and Raulet, D.H. 2001. Rae-1 and H60 ligands of the NKG2-D receptor stimulate tumour immunity. Nature 413: 165-171.
6. Steinle, A., Li, P., Morris, D.L., Groh, V., Lanier, L.L., Strong, R.K. and Spies, T. 2001. Interactions of human NKG2-D with its ligands MICA, MICB, and homologs of the mouse Rae-1 protein family. Immunogenetics 53: 279-287.
7. Li, P., McDermott, G. and Strong, R.K. 2002. Crystal structures of Rae-1β and its complex with the activating immunoreceptor NKG2-D. Immunity 16: 77-86.
8. Carayannopoulos, L.N., Naidenko, O.V., Kinder, J., Ho, E.L., Fremont, D.H. and Yokoyama, W.M. 2002. Ligands for murine NKG2-D display heterogeneous binding behavior. Eur. J. Immunol. 32: 597-605.
9. 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/NKG2-D interactions. Eur. J. Immunol. 33: 92-100.

CHROMOSOMAL LOCATION

Genetic locus: Raet1b/Raet1c (mouse) mapping to 10 A3.

SOURCE

Rae-1β/γ (Xc-12) is a rat monoclonal antibody raised against full length recombinant Rae-1β/γ and BaF/3 cells transfected with Rae-1β of mouse origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Rae-1β/γ (Xc-12) is recommended for detection of Rae-1β/γ of mouse and rat origin by flow cytometry (1 µg per 1 x 10^6 cells) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of Rae-1β/γ: 28 kDa.

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 for detailed protocols and support products.