IBGRL RESEARCH PRODUCTS

NHS Blood and Transplant

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Antigen	CD233 / Band 3 (N-terminal cytoplasmic domain)
Clone	BRAC 66
Product Code	9494
Immunoglobulin Class	Rat IgG2a, kappa light chain

Antigen Description and Distribution

CD233 (also known as erythrocyte band 3, EPB3, anion exchange protein 1, AE1, solute carrier family 4, SLC4A1) is an integral membrane protein in human erythrocytes, present at approximately 10^6 copies per human erythrocyte. It comprises two domains that are structurally and functionally distinct. The cytoplasmic N-terminal 40kDa domain has binding sites for erythrocyte cytoskeletal proteins, namely ankyrin and protein 4.2, which help to maintain the mechanical properties and integrity of the erythrocyte. This domain also binds a number of other erythrocyte peripheral proteins. The 55kDa glycosylated C-terminal membrane-associated domain contains 12-14 membrane spanning segments which function as a chloride/bicarbonate anion exchanger involved in carbon dioxide transport. The cytoplasmic tail at the extreme C-terminus of the membrane domain binds carbonic anhydrase II. CD233 associates with the erythrocyte membrane protein glycophorin A (GPA) which promotes the correct folding and translocation during biosynthesis of CD233. Many CD233 mutations are known in man and these mutations can lead to two types of disease; destabilization of the erythrocyte membrane leading to hereditary spherocytosis, and defective kidney acid secretion leading to distal renal tubular acidosis. Other CD233 mutations that do not give rise to disease result in novel blood group antigens, which form the Diego blood group system. The CD233 gene is located on chromosome 17q21-q22[1].

Clone

BRAC 66 was made in response to endo F-treated 55 kD tryptic bound domain of band 3. BRAC 66 binds to a location near the N-terminal cytoplasmic tail of CD233 and does not agglutinate normal erythrocytes. BRAC 66 has been used to investigate the key membrane protein changes during *in vitro* erythropoesis of Protein 4.2 cells[1].

References and further reading

1. Van den Akker E *et al* (2010). Investigating the key membrane protein changes during in vitro erythropoiesis of protein 4.2 (-) cells (mutations Chartres 1 and 2). Haematologica Aug; **95** (8):1278-86.
2. Bruce L.J. and Tanner M.J.A. (Review) (2001) PROW **2**, 9-17.