Bristol Institute for Transfusion Sciences
Incorporating the
International Blood Group Reference Laboratory

NHS Blood and Transplant

IBGRL RESEARCH PRODUCTS

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Antigen	CD42b
Clone	PAB-5
Product Code	9448
Immunoglobulin Class	Mouse IgG1, kappa light chain

Antigen Description and Distribution

The CD42b antigen is part of a complex consisting of four transmembrane components GpIbα/GpIbβ/IX/V, which is collectively designated as CD42. This complex is involved in the initial stages of platelet adhesion at high shear stress to damaged vessel wall via von Willibrand factor (vWf) on the subendothelial matrix. GpIbα (CD42b, M_r 143 kDa) and GpIbβ (CD42c, M_r 22 kDa) are covalently linked by a single disulphide bond and are non-covalently associated with GpIX (CD42a, M_r 20 kDa) and GpV (CD42d, M_r 83 kDa). All these glycoproteins are members of the family of leucine rich repeat proteins. There are approximately 25,000 copies of GpIb/IX and 12,000 copies of GpV per platelet and the whole complex is functionally associated with the low affinity Fc receptor Fc_{γ}RII (CD32). The number of copies of GpIb/IX per platelet is increased upon platelet activation. The primary vWf binding site has been localised within GpIbα but there is evidence that the other three components also contribute to receptor function. The clinically important human platelet antigen (HPA-2) has been localized to CD42b (GpIbα)[1].

Clone

PAB5 enabled the detection of HPA-2b antibodies, GpIb autoantibodies and quinine dependent GpIb antibodies in the monoclonal antibody immobilization of platelet antigens (MAIPA) assay[2]. PAB5 was unreactive with platelets from a patient with Bernard Soulier syndrome, which lack platelet GpIb, in an indirect immunofluorescence test. Epitope mapping studies indicate that the binding site for PAB5 lies between amino acids 200 and 268 of CD42b (GpIbα).

Suggested dilution in MAIPA assay: 1/10
This antibody can be used in flowcytometric immunofluorescence test for detection of GpIb on the surface of platelets in the investigation of suspected cases of Bernard Soulier syndrome:

Please perform your own experiments to confirm optimal dilutions for use in your laboratory.

References

1. Kuijpers, R.W., Faber, N.M., Cuypers, H.T., Ouwehand, W.H. & von dem Borne, A.E. (1992) NH2-terminal globular domain of human platelet glycoprotein Ib alpha has a methionine 145/threonine145 amino acid polymorphism, which is associated with the HPA-2 (Ko) alloantigens. *Journal of Clinical Investigation*, **89**, 381-384.
2. Campbell K, Rishi K, Howkins G, Gilby D, Mushens R, Ghevaert C, Metcalfe P, Ouwehand W, Lucas G (2007). A modified rapid monoclonal antibody-specific immobilisation of platelet antigen assay for the detection of human platelet antigens (HPA) antibodies: a multicentre evaluation. Vox Sanguinis, **93**, 289-297.