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





RESEARCH PRODUCTS		NHS Blood & Transplant
Antigen	CD34	500 North Bristol Park Northway Filton Bristol
Clone	BIRMA K3	
Product Code	9437	BS34 7QH
Immunoglobulin Class	Mouse IgG1, κ kappa light chain	Tel: +44 (0)117 921 7200 Fax: +44 (0)117 912 5796
Antinen Description and Distribution		Web: http://ibgrl.blood.co.uk

Antigen Description and Distribution

The CD34 antigen is a 105-120 kDa single transmembrane glycoprotein encoded by a gene located on chromosome 1¹. It is expressed on most haematopoietic colony forming cells from human bone marrow, including unipotent (BFU-E, CFU-GM, CFU-meg, CFU-Eo, CFU-Osteoclast) and multipotent progenitors (CFUmix or CFU-GEMM, pre-CFU, CFU-Blast)²⁻⁴. CD34 appears to be expressed at the highest levels on the earliest progenitors, and to decrease progressively with maturation². CD34 is a stage-specific, rather than a lineagespecific, leucocyte differentiation antigen. The most immature definable B-lymphoid precursors (CD19positive/CD10-positive/TdT-positive) are CD34 positive. Based on bone-marrow transplant data and the expression of CD34 on rare cases of T cell leukaemias, CD34 is presumably expressed on progenitors for T cells as well^{2,5}. Monoclonal antibodies (Mabs) to CD34 can be confined to three main classes and are defined from the sensitivity of the corresponding CD34 epitopes to degradation by enzymes such as neuraminidase, chymopapain and a glycoprotease from P. haemolytica. The expression of CD34 in malignancies appears to parallel normal cellular expression. The following haematopoietic malignancies are CD34 positive: Some acute myeloid leukaemias, undifferentiated leukaemias and acute lymphoblastic leukaemias^{2,4,6,7,8}. In contrast, chronic lymphocytic leukaemias, lymphomas, myelomas and non-haemopoietic malignancies are CD34 negative^{2,4,8}.

Clone

BIRMA K3 was produced from a mouse hybridoma derived from the fusion of Balb/c spleen cells with X63Aq8.653 myeloma cells. BIRMA K3 reacts with CD34 present on immature haemopoietic cells in the bone marrow and umbilical cord by immunoblotting and immunostaining. BIRMA K3 is a class III Mab that recognizes a CD34 epitope which is resistant to degradation by glycoproteases¹⁰. BIRMA K3 labels immature lymphohaematopoietic progenitor cells². BIRMA K3 can be used in immunostaining by flow cytometry. It has also been used successfully on cytocentrifuged cell preparations using the APAAP tachnique and in immunohistochemical studies have shown that BIRMA K3 reacts specifically with capillary endothelial cells. BIRMA K3 was submitted to the 6th leucocyte workshop¹¹. FITC labelled BIRMA K3 resulted in staining of acute leukemias and CD34+ cell counts in patients submitted to high dose chemotherapy and stem cell transplatation¹⁰.

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