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Website: <http://ibgri.blood.co.uk>Email: [enquiries.IBGRL@nhsbt.nhs.uk](mailto:enquiries.IBGRL@nhsbt.nhs.uk)**Antigen** Blood Group Kell related / CD238**Clone** BRIC 68**Product Code** 9441**Immunoglobulin Class** Mouse IgG2a, kappa light chain**Antigen Description and Distribution**

The Kp<sup>a</sup>, Kp<sup>b</sup>, and Kp<sup>c</sup> antigens are part of the Kell (CD 238) blood group system<sup>1</sup>. The antigens of the Kell system are carried on an erythrocyte membrane glycoprotein of 93 kDa, which is firmly bound to the cytoskeleton<sup>2</sup>. The Kell antigen was designated CD 238 at the 7<sup>th</sup> human leucocyte differentiation antigen workshop. There are approximately 8-18 x 10<sup>3</sup> copies of Kell antigen/red cell. The protein has been cloned and a full protein sequence deduced from the nucleotide sequence. The Kell cDNA sequence encodes a protein of 731 amino acids with a single membrane spanning domain of 20 residues and an intracellular N-terminal domain that is thought to comprise 46 residues. The predicted extracellular domain (665 amino acids) has 15 cysteine residues, some of which are likely to form disulphide bonds, and five potential N-glycosylation sites. It has homology with neutral endopeptidases and the CALLA antigen<sup>3</sup>. The antigen is found on human erythrocytes, liver sinusoidal cells<sup>4</sup> and testis with weaker expression in a large number of other tissues such as brain and lymphoid tissues. Immunohistochemistry reveals human Kell protein is localized to the Sertoli cells of the testis and the follicular dendritic cells of the spleen and tonsil. On erythrocytes, Kell is linked by a single disulfide bond to XK. The absence of XK, as occurs in the McLeod phenotype, is associated with a set of clinical symptoms that include nerve and muscle disorders and red cell acanthocytosis. The Molecular Weight of Kell is 120 kDa.

**Clone**

BRIC 68 was made in response to intact human erythrocytes. In indirect haemagglutination tests, BRIC 68 agglutinates normal erythrocytes of the Kell blood group phenotype but fails to agglutinate erythrocytes expressing the K<sub>0</sub> or McLeod phenotype. BRIC 68 fails to agglutinate erythrocytes treated with 6% aminoethylisothiuronium bromide or pronase. BRIC 68 agglutinates erythrocytes treated with either trypsin or chymotrypsin but fails to agglutinate erythrocytes treated sequentially with trypsin followed by chymotrypsin. BRIC 68 specifically immunoprecipitates a component of 95.6 kDa from Kell positive erythrocytes<sup>5,6</sup>. In quantitative binding studies using IgG it is estimated that there are from 2000 (BRIC 18) to 4000 (BRIC 68) copies of the Kell glycoprotein per erythrocyte. Using Fab fragments the estimates are in the range 4000 (BRIC 18) to 18 000 (BRIC 68) copies. In competitive binding assays the four epitopes defined by the BRIC monoclonal antibodies (BRIC 18, BRIC 68, BRIC 107 and BRIC 203) fall into two non-overlapping groups. The first group comprises BRIC 18, BRIC 68, BRIC 203 and an antibody (6-22) with anti-K14 specificity. The second group contains BRIC 107 and two further anti-k-like monoclonal antibodies (BS45 and OSK5). The results suggest that the polymorphisms encoded at the *K/k* and *Kp<sup>a</sup>/Kp<sup>b</sup>/Kp<sup>c</sup>* loci may be located in two spatially distinct regions of the Kell glycoprotein(s)<sup>6</sup>.

**References**

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