

*Alloantigens on White Blood Cells*

Alloantigens on leukocytes and platelets: biochemistry

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Alloantigens of leukocytes and platelets are coded by genes located in the class I and II regions of the HLA complex. The class I region has at least 17 genes of which the HLA-A, B and C loci code for a glycosylated transmembrane polypeptide of 43kDa (kilo Daltons) which is associated non-covalently with  $\beta_2$ -microglobulin a non-glycosylated, non-polymorphic 12kDa polypeptide. The 43kDa polypeptide comprises three domains ( $\alpha_1$ ,  $\alpha_2$  and  $\alpha_3$ ) on the cell surface. Amino acid changes clustered in the  $\alpha_1$  and  $\alpha_2$  domains mediate class I antigen polymorphism. The  $\alpha_3$  domain and  $\beta_2$ -microglobulin are structurally homologous to an immunoglobulin constant region. The class II antigens are composed of two different, noncovalently associated, glycosylated transmembrane polypeptides ( $\alpha$  and  $\beta$ ) of 33 and 28kDa. Their respective genes are arranged into three subregions (DP, DQ and DR) which code for at least four groups of class II antigens. The  $\beta$  genes of all three subregions are polymorphic. However, whereas the DR $\alpha$  genes are non-polymorphic, the  $\alpha$  genes of the DP and especially DQ subregions are polymorphic. The  $\alpha$  and  $\beta$  polypeptides each comprises two domains on the cell surface, of which the two closest to the cell surface membrane are structurally homologous to an immunoglobulin region and the two most exposed domains mediate the serologically- and cellularly-detected polymorphisms.