

Gene name: **CD177**

External Ids for **CD177 Gene**: HGNC: [30072](#) NCBI Gene: [57126](#) Ensembl: [ENSG00000204936](#) OMIM®: [162860](#) UniProtKB/Swiss-Prot: [Q8N6Q3](#)

**NCBI Gene Summary:** This gene encodes a glycosyl-phosphatidylinositol (GPI)-linked cell surface glycoprotein that plays a role in neutrophil activation. The protein can bind platelet endothelial cell adhesion molecule-1 and function in neutrophil transmigration. Mutations in this gene are associated with myeloproliferative diseases. Over-expression of this gene has been found in patients with polycythemia rubra vera. Autoantibodies against the protein may result in pulmonary transfusion reactions, and it may be involved in Wegener's granulomatosis. A related pseudogene, which is adjacent to this gene on chromosome 19, has been identified.

**GeneCards Summary:** CD177 (CD177 Molecule) is a Protein Coding gene. Diseases associated with CD177 include [Neutropenia, Severe Congenital, X-Linked](#) and [Polycythemia](#). Among its related pathways are [Innate Immune System](#) and [Diseases of hemostasis](#). An important paralog of this gene is [LYPD4](#).

**UniProtKB/Swiss-Prot Summary:** In association with beta-2 integrin heterodimer ITGAM/CD11b and ITGB2/CD18, mediates activation of TNF-alpha primed neutrophils including degranulation and superoxide production (PubMed:[21193407](#)). In addition, by preventing beta-2 integrin internalization and attenuating chemokine signaling favors adhesion over migration (PubMed:[28807980](#)). Heterophilic interaction with PECAM1 on endothelial cells plays a role in neutrophil transendothelial migration in vitro.

**Cellular localization:** extracellular region and plasma membrane.

**CD177**, also known as **neutrophil antigen B1 (NB1)** or **PRV-1**, is a glycosylphosphatidylinositol (GPI)-anchored glycoprotein predominantly expressed on the surface of neutrophils. It plays a significant role in neutrophil function, including adhesion, migration, and activation.

**Function in Sepsis:** In sepsis CD177 expression on neutrophils is notably altered:

- **Upregulation in Sepsis:** Studies have shown that CD177 expression is markedly increased in sepsis patients, suggesting its involvement in the body's response to severe infection.
- **Neutrophil Migration and Activation:** CD177 modulates neutrophil migration through activation-mediated mechanisms. It interacts with  $\beta 2$  integrins, influencing neutrophil adhesion and transmigration during inflammatory responses, which are critical processes in sepsis.

#### Diagnostic and Prognostic Role:

- **Potential Biomarker:** Elevated levels of CD177 have been identified as potential diagnostic indicators for septic shock. Bioinformatics analyses have highlighted CD177 among six hub genes with significant expression differences in septic shock patients, suggesting its utility in early diagnosis.
- **Association with Disease Severity:** Increased CD177 expression correlates with the severity of sepsis, indicating its potential role in prognostication. However, further clinical studies are necessary to validate its prognostic value.

**Genetic Variations:** Genetic variants of CD177 can influence its function and expression. For instance, certain single nucleotide polymorphisms (SNPs) have been shown to affect CD177's role as an IgG Fc receptor, potentially impacting immune responses during sepsis

**Therapeutic Implications:** Given its role in neutrophil function and its altered expression in sepsis, CD177 may serve as a potential therapeutic target. Modulating CD177 expression or function could influence neutrophil activity and the inflammatory response in sepsis. However, more research is needed to explore this possibility.