

Names for DO (ISBT 014) Blood Group Alleles

General description: The Dombrock blood group system consists of 7 antigens carried on a GPI-linked glycoprotein (DO, ART4, CD297) that consists of 314 amino acids. It has a leader sequence and a GPI motif, both of which are cleaved from the membrane bound protein.

Gene name: *ART4*
 Gene label for use in allele names: *DO*
 Number of exons: 3
 Initiation codon: Within exon 1
 Stop codon: End of exon 3
 Entrez Gene ID: 420
 LRG sequence: NG_007477.1 (transcript)
 NM_021071.2 (genomic)
 Reference allele: *DO*01* (shaded)
 Acceptable: *DO*A*
 Reference protein: NP_066549.2

Reference allele <i>DO*01</i> encodes DO1, DO3, DO4, DO5, DO6, DO7				
Phenotype	Allele name	Nucleotide change	Exon	Predicted amino acid change
DO:1+ or Do(a+)	<i>DO*01</i> or <i>DO*A</i>			
DO:2 or Do(b+)	<i>DO*02</i> or <i>DO*B</i>	c.793A>G	2	p.Asn265Asp
DO:-4 or Hy-	<i>DO*02.-04</i>	c.323G>T	2	p.Gly108Val
DO:-5 or Jo(a-)	<i>DO*01.-05</i>	c.350C>T	2	p.Thr117Ile
DO:-6 or DOYA-	<i>DO*01.-06</i>	c.547T>G	2	p.Tyr183Asp
DO:-7 or DOMR-	<i>DO*02.-07</i>	c.431C>A; c.432C>A; c.793A>G	2	p.Ala144Glu; p.Asn265Asp [†]
DO:-8 or DOLG-	<i>DO*02.-08</i>	c.674T>A; c.793A>G	2	p.Leu225Gln; p.Asn265Asp [1]
DO:-9 or DOLC-	<i>DO*01.-09</i>	c.566C>T	2	p.Thr189Met [2]
DO:-10 or DODE-	<i>DO*01.-10</i>	c.405C>A	2	p.Asp135Glu
Null phenotypes				
DO:-3 or Gy(a-)	<i>DO*01N.01</i>	c.442C>T	2	p.Gln148Stop [‡]
DO:-3 or Gy(a-)	<i>DO*01N.02</i>	c.343_350del	2	p.Met115Hisfs*18
DO:-3 or Gy(a-)	<i>DO*02N.01</i>	c.145-2A>G	2	Alternative splicing
DO:-3 or Gy(a-)	<i>DO*02N.02</i>	c.144+2T>C	2	Alternative splicing

DO:–3 or Gy(a–)	<i>DO*02N.03</i>	c.185T>C; c.793A>G	2	p.Phe62Ser; p.Asn265Asp
DO:–3 or Gy(a–)	<i>DO*02N.04</i>	c.268C>T; c.793A>G	2	p.Gln90Ter; p.Asn265Asp

† The background for this allele is actually *DO*B-WL* (378T, 624C, 793G), but as 378 and 624 are silent changes, they are not listed.

‡ The background for this allele is actually *DO*A-HA* (378T, 624T, 793A), but as 378 and 624 are silent changes, the allele is not listed in this transfusion medicine table.

1. Karamatic Crew V, et al. DOLG, a novel high incidence antigen in the Dombrock blood group system. *Vox Sang.* 2011;101 (Suppl.1):263
2. Karamatic Crew V, et al. Serological and molecular characterization of DOLC, a novel high incidence antigen in the Dombrock blood group system. *Vox Sang.* 2013; 105 (Suppl.1), 30
3. Shakarian G, et al. A Dombrock system antibody detects a new high-prevalence antigen, DODE. *Transfusion* 2015; 55 (Suppl), 35A
3. Onodera T, et al. A novel DO null allele with a c.268C>T (p.Gln90Stop) mutation in Japanese. *Vox Sang* 2015, 109:191-3