

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